LEVEL 0 STORE

PLL ALL 21 CASES

PERMUTATION OF THE LAST LAYER · ALL 21 CASES · + 2-LOOK PLL



PRINTABLE GUIDE TO THE VIDEO SERIES

The last step of CFOP: with the yellow face already oriented, PLL moves every piece of the last layer to its place and the cube is solved. Start with 2-LOOK PLL (6 algorithms) and move on to the 21 cases when you want to do it in a single look. Each page shows the same scenes as its video: the case with its arrows, the cube before each move with its card, and the solved cube. White cross on the bottom · green in front · orange on the right.

@level.cero.bo @LevelCeroBo

HOW TO READ THIS GUIDE

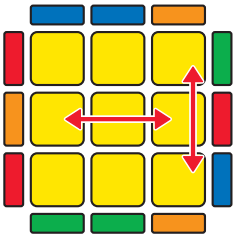
WHAT PLL IS

The fourth and last step of CFOP: after OLL the whole top face is yellow, but the pieces of the last layer may be in the wrong places. PLL permutes them without disturbing their orientation and the cube is solved. Hold the cube with the white cross on the BOTTOM, green in front and orange on the right.

THE COLOURS ARE AN EXAMPLE

Green in front and orange on the right are an example: you can have any side face in front. In PLL what matters is how the colours relate (which sides match, where the headlights are), not which colour they are.

RECOGNISING THE CASE: THE DIAGRAM



The last layer seen from above. The bars around it are the side colours of each piece, and each red arrow takes a piece from where it is to where the algorithm leaves it; a double-headed arrow is a swap. Turn the top layer (U) until your cube matches the diagram and do the algorithm. HEADLIGHTS: two corners of the same colour on one side. BAR: a whole side in one colour.

STICKER BRIGHTNESS

The opposite of OLL: the side colours of the last layer are in full colour with a black outline (that's what you look at to recognise the case); its yellow, already oriented, is faded; the first two layers normal.

NOTATION AND ARROWS

Each move: the letter, a small cube with the turning layer in white, and the red arrow showing the direction. Apostrophe (') = opposite turn; 2 = half turn; M = the middle layer (follows L); x / y = turn the whole cube (follows R / U). A final U or U' is the top-layer adjustment (AUF).

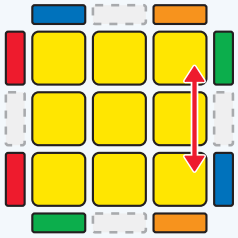
U  TOP LAYER · LEFT	U'  TOP LAYER · RIGHT	U2  TOP LAYER · HALF TURN
R  RIGHT LAYER · UP	R'  RIGHT LAYER · DOWN	R2  RIGHT LAYER · HALF TURN
F  FRONT · CLOCKWISE	F'  FRONT · COUNTER-CLOCKWISE	L  LEFT LAYER · DOWN
L'  LEFT LAYER · UP	L2  LEFT LAYER · HALF TURN	D  BOTTOM LAYER · RIGHT
D'  BOTTOM LAYER · LEFT	D2  BOTTOM LAYER · HALF TURN	M  MIDDLE SLICE · DOWN
M'  MIDDLE SLICE · UP	M2  MIDDLE SLICE · HALF TURN	x  WHOLE CUBE · UP
x'  WHOLE CUBE · DOWN	y  WHOLE CUBE · LEFT	y'  WHOLE CUBE · RIGHT

2-LOOK PLL · START HERE

6 ALGORITHMS INSTEAD OF 21

Before learning the 21 cases, solve PLL in two looks: STEP 1 puts the corners in place (the edges don't matter) with two algorithms, and STEP 2 places the edges with the four edges-only cases. That's six algorithms, and all of them are also cases of the full series.

STEP 1 CORNERS EDGES DON'T MATTER



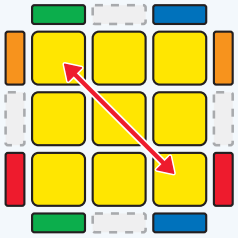
HEADLIGHTS ON ONE SIDE

R U R' U' R' F R2

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

Put the headlights on the LEFT and do the T-perm.

T-PERM p.12



NO HEADLIGHTS

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

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

No side has headlights: do the Y-perm from any side.

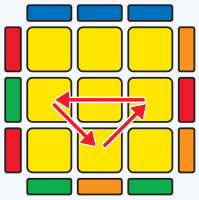
Y-PERM p.19

HEADLIGHTS ON ALL 4 SIDES

The corners are already in place: go straight to STEP 2.

How to look: check each side for two corners of the same colour (headlights). Headlights on one side only = adjacent swap (T). On none = diagonal swap (Y).

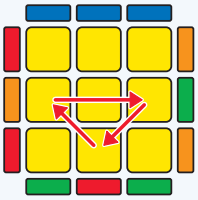
STEP 2 EDGES · THE FOUR CASES EDGES ONLY



Ua Ua-PERM p.5

M2 U M U2 M' U M2

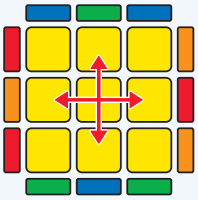
Full bar at the back; the other three edges cycle to the left.



Ub Ub-PERM p.6

M2 U' M U2 M' U' M2

Full bar at the back; the other three edges cycle to the right.

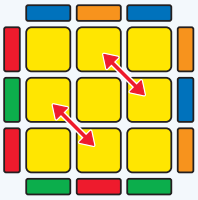


H H-PERM p.7

M2 U M2 U2

M2 U M2

No bar: each edge swaps with the opposite one.



Z Z-PERM p.8

M' U M2 U M2

U M' U2 M2 U'

No bar: each edge swaps with its neighbour.

If all four edges are already in place, just turn U until the cube is solved (AUF). Once you've mastered these six, learn the 21: one algorithm per case, no second look.

INDEX

BY WHAT MOVES · 1/1

EDGES ONLY 4

The corners are already in place: only edges move.



Ua **Ua-PERM** p.5

3 EDGES · COUNTER-CLOCKWISE

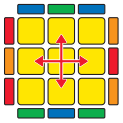
M2 U M U2 M' U M2



Ub **Ub-PERM** p.6

3 EDGES · CLOCKWISE

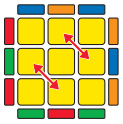
M2 U' M U2 M' U' M2



H **H-PERM** p.7

SWAPS OPPOSITE EDGES

M2 U M2 U2 M2 U M2



Z **Z-PERM** p.8

SWAPS ADJACENT EDGES

M' U M2 U M2 U M' U2 M2 U'

CORNERS ONLY 3

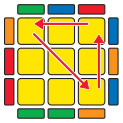
The edges are already in place: only corners move.



Aa **Aa-PERM** p.9

3 CORNERS · CLOCKWISE

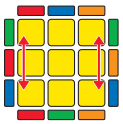
x R' U R' D2 R U' R' D2 R2 x'



Ab **Ab-PERM** p.10

3 CORNERS · COUNTER-CLOCKWISE

x R2 D2 R U R' D2 R U' R x'



E **E-PERM** p.11

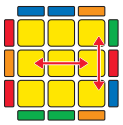
SWAPS 2 PAIRS OF CORNERS

x' L' U L D' L' U' L D

L' U' L D' L' U L D x

ADJACENT SWAP 6

Two neighbouring corners swap: one side has headlights.

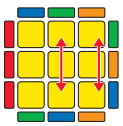


T **T-PERM** p.12

SWAPS 2 CORNERS + 2 EDGES

R U R' U' R' F R2

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

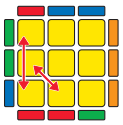


F **F-PERM** p.13

2 CORNERS + 2 OPPOSITE EDGES

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

R2 U' R' U' R U R' U R



Ja **Ja-PERM** p.14

3-BAR · 2 CORNERS + 2 EDGES

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

L F' L2 U L U

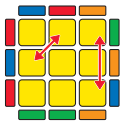


Jb **Jb-PERM** p.15

3-BAR · 2 CORNERS + 2 EDGES

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

R' F R2 U' R' U'

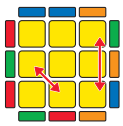


Ra **Ra-PERM** p.16

HEADLIGHTS · 2 CORNERS + 2 EDGES

R U' R' U' R U R D

R' U' R D' R' U2 R' U'



Rb **Rb-PERM** p.17

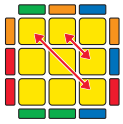
HEADLIGHTS · 2 CORNERS + 2 EDGES

R2 F R U R U' R'

F' R U2 R' U2 R U

DIAGONAL SWAP 4

Two opposite corners swap: no side has headlights.

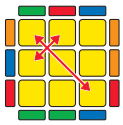


V **V-PERM** p.18

DIAGONAL + 2 ADJACENT EDGES

R' U R' U' y R' F' R2

U' R' U R' F R F y'



Y **Y-PERM** p.19

DIAGONAL + 2 ADJACENT EDGES

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

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



Na **Na-PERM** p.20

DIAGONAL SWAP · CORNERS + EDGES

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

R' F R2 U' R' U2 R U' R'



Nb **Nb-PERM** p.21

DIAGONAL SWAP · CORNERS + EDGES

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

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

Gs 4

Three corners and three edges cycle, with a 1x2 block travelling together.



Ga **Ga-PERM** p.22

3 CORNERS + 3 EDGES

R2 U R' U R' U' R U'

R2 U' D R' U R D' U



Gb **Gb-PERM** p.23

3 CORNERS + 3 EDGES

R' U' R U D' R2 U

R' U R U' R U' R2 D U'



Gc **Gc-PERM** p.24

3 CORNERS + 3 EDGES

R2 U' R U' R U R' U

R2 U D' R U' R' D U'



Gd **Gd-PERM** p.25

3 CORNERS + 3 EDGES

R U R' U' D R2 U'

R U' R' U R' U R2 D' U

PLL CASE Ua

EDGES ONLY · 1 OF 4

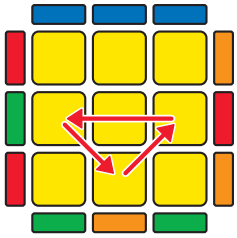
Video on YouTube
scan the QR
levelcero.com · drawings

Ua-PERM

3 EDGES · COUNTER-CLOCKWISE



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



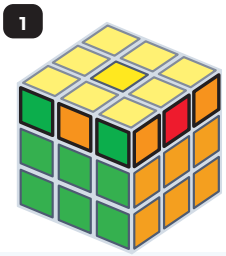
ALG M2 U M U2 M' U M2

CASE



3 EDGES · COUNTER-CLOCKWISE

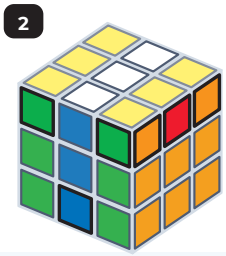
1



M2 

MIDDLE SLICE · HALF TURN

2



U 

TOP LAYER · LEFT

3



M 

MIDDLE SLICE · DOWN

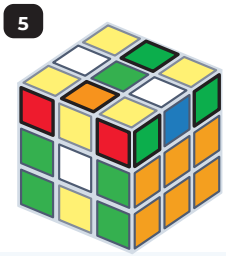
4



U2 

TOP LAYER · HALF TURN

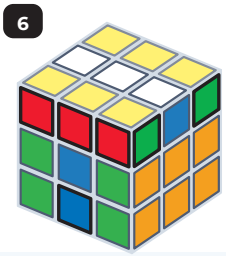
5



M' 

MIDDLE SLICE · UP

6



U 

TOP LAYER · LEFT

7



M2 

MIDDLE SLICE · HALF TURN

END



SOLVED

CUBE SOLVED

PLL CASE Ub

EDGES ONLY · 2 OF 4

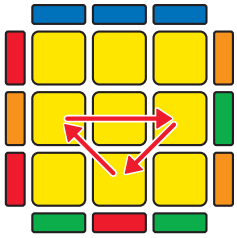
Video on YouTube
scan the QR
levelcero.com · drawings

Ub-PERM

3 EDGES · CLOCKWISE



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



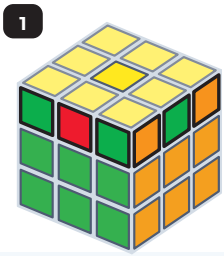
ALG M2 U' M U2 M' U' M2

CASE



3 EDGES · CLOCKWISE

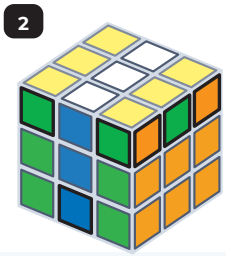
1



M2 

MIDDLE SLICE · HALF TURN

2



U' 

TOP LAYER · RIGHT

3



M 

MIDDLE SLICE · DOWN

4



U2 

TOP LAYER · HALF TURN

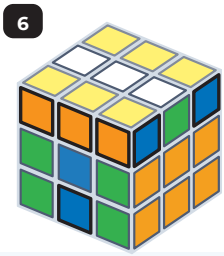
5



M' 

MIDDLE SLICE · UP

6



U' 

TOP LAYER · RIGHT

7



M2 

MIDDLE SLICE · HALF TURN

END



SOLVED

CUBE SOLVED

PLL CASE H

EDGES ONLY · 3 OF 4

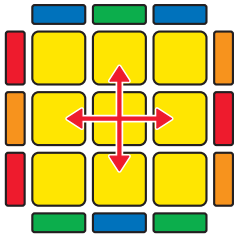
Video on YouTube
scan the QR
levelcero.com · drawings

H-PERM

SWAPS OPPOSITE EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



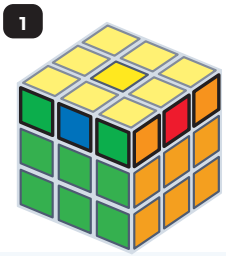
ALG M2 · U · M2 · U2 · M2 · U · M2

CASE



SWAPS OPPOSITE EDGES

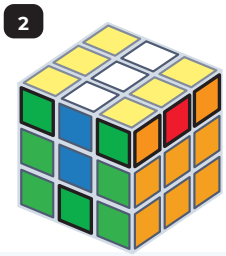
1



M2 

MIDDLE SLICE · HALF TURN

2



U 

TOP LAYER · LEFT

3



M2 

MIDDLE SLICE · HALF TURN

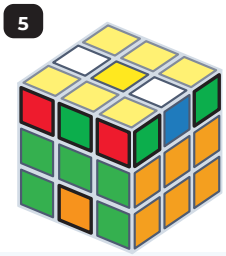
4



U2 

TOP LAYER · HALF TURN

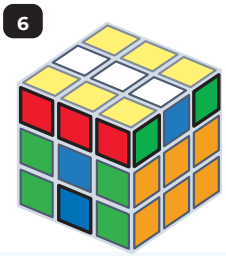
5



M2 

MIDDLE SLICE · HALF TURN

6



U 

TOP LAYER · LEFT

7



M2 

MIDDLE SLICE · HALF TURN

END



SOLVED

CUBE SOLVED

PLL CASE Z

EDGES ONLY · 4 OF 4

Video on YouTube
scan the QR
levelcero.com · drawings

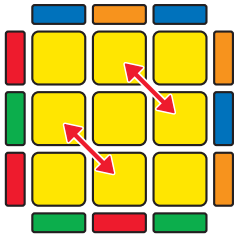
LEVEL 0

Z-PERM

SWAPS ADJACENT EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



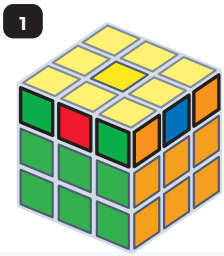
ALG M' U M2 U M2 U M' U2 M2 U'

CASE



SWAPS ADJACENT EDGES

1

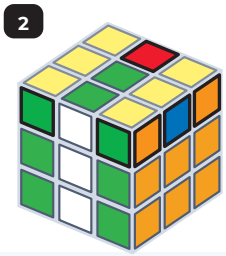


M'



MIDDLE SLICE · UP

2



U



TOP LAYER · LEFT

3



M2



MIDDLE SLICE · HALF TURN

4



U



TOP LAYER · LEFT

5

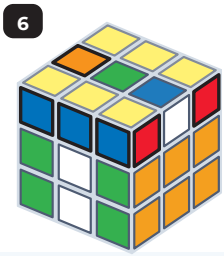


M2



MIDDLE SLICE · HALF TURN

6



U



TOP LAYER · LEFT

7

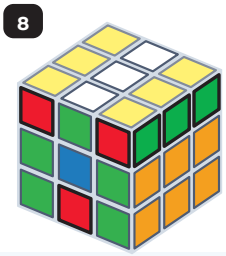


M'



MIDDLE SLICE · UP

8



U2



TOP LAYER · HALF TURN

9

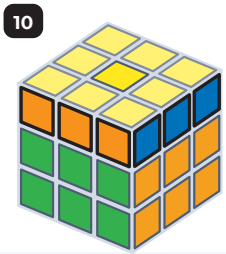


M2



MIDDLE SLICE · HALF TURN

10

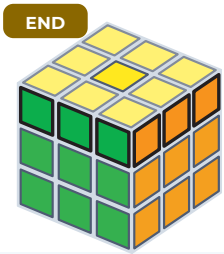


U'



TOP LAYER · RIGHT

END



SOLVED

CUBE SOLVED

PLL CASE Aa

CORNERS ONLY · 1 OF 3

Video on YouTube
scan the QR
levelcero.com · drawings

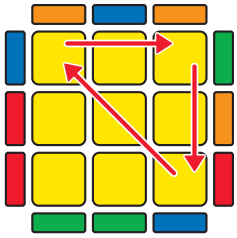
LEVEL 0

Aa-PERM

3 CORNERS · CLOCKWISE



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



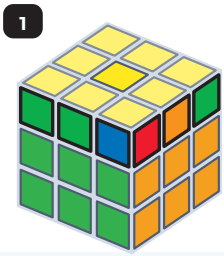
ALG x R' U R' D2 (R U' R') D2 R2 x'

CASE



3 CORNERS · CLOCKWISE

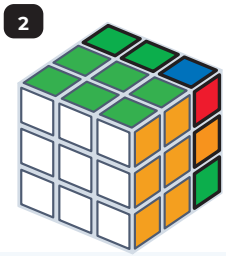
1



x 

WHOLE CUBE · UP

2



R' 

RIGHT LAYER · DOWN

3



U 

TOP LAYER · LEFT

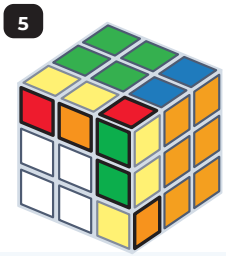
4



R' 

RIGHT LAYER · DOWN

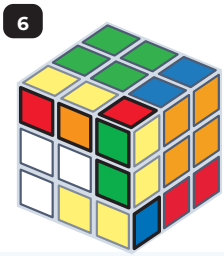
5



D2 

BOTTOM LAYER · HALF TURN

6



R 

RIGHT LAYER · UP

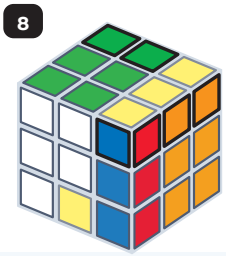
7



U' 

TOP LAYER · RIGHT

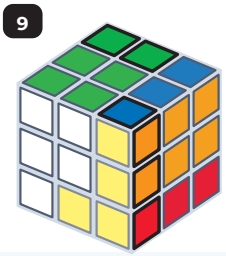
8



R' 

RIGHT LAYER · DOWN

9



D2 

BOTTOM LAYER · HALF TURN

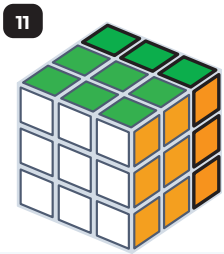
10



R2 

RIGHT LAYER · HALF TURN

11



x' 

WHOLE CUBE · DOWN

END



SOLVED

CUBE SOLVED

PLL CASE Ab

CORNERS ONLY · 2 OF 3

Video on YouTube
scan the QR
levelcero.com · drawings

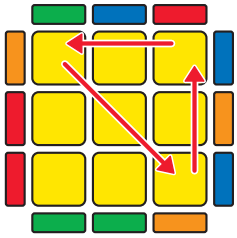
LEVEL 0

Ab-PERM

3 CORNERS · COUNTER-CLOCKWISE



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



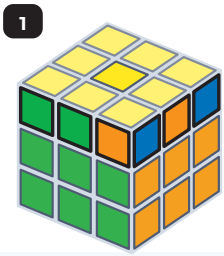
ALG x R2 D2 (R U R') D2 R U' R x'

CASE



3 CORNERS · COUNTER-CLOCKWISE

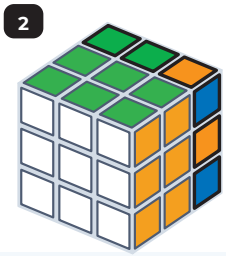
1



x 

WHOLE CUBE · UP

2



R2 

RIGHT LAYER · HALF TURN

3



D2 

BOTTOM LAYER · HALF TURN

4



R 

RIGHT LAYER · UP

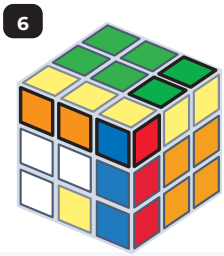
5



U 

TOP LAYER · LEFT

6



R' 

RIGHT LAYER · DOWN

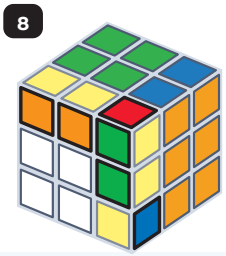
7



D2 

BOTTOM LAYER · HALF TURN

8



R 

RIGHT LAYER · UP

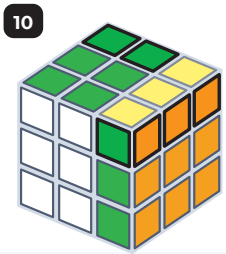
9



U' 

TOP LAYER · RIGHT

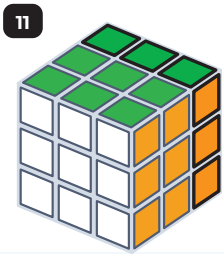
10



R 

RIGHT LAYER · UP

11



x' 

WHOLE CUBE · DOWN

END



SOLVED

CUBE SOLVED

PLL CASE E

CORNERS ONLY · 3 OF 3

Video on YouTube
scan the QR
levelcero.com · drawings

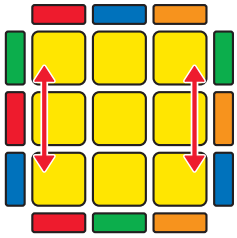
LEVEL 0

E-PERM

SWAPS 2 PAIRS OF CORNERS



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

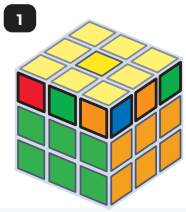
x' (L' U L) D' (L' U' L) D
(L' U' L) D' (L' U L) D x

CASE



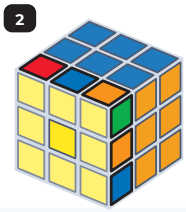
SWAPS 2 PAIRS OF CORNERS

1



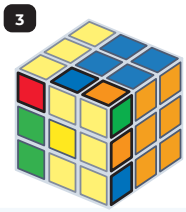
x' — WHOLE CUBE · DOWN

2



L' — LEFT LAYER · UP

3



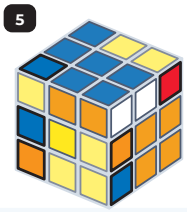
U — TOP LAYER · LEFT

4



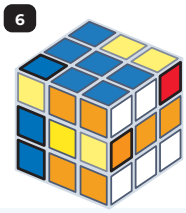
L — LEFT LAYER · DOWN

5



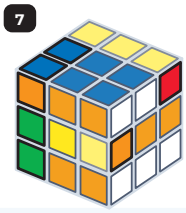
D' — BOTTOM LAYER · LEFT

6



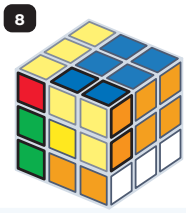
L' — LEFT LAYER · UP

7



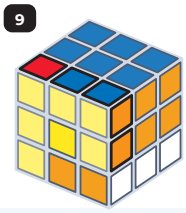
U' — TOP LAYER · RIGHT

8



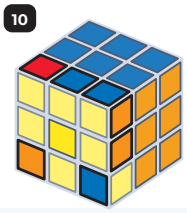
L — LEFT LAYER · DOWN

9



D — BOTTOM LAYER · RIGHT

10



L' — LEFT LAYER · UP

11



U' — TOP LAYER · RIGHT

12



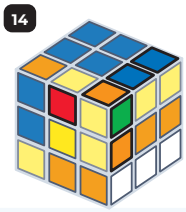
L — LEFT LAYER · DOWN

13



D' — BOTTOM LAYER · LEFT

14



L' — LEFT LAYER · UP

15



U — TOP LAYER · LEFT

16



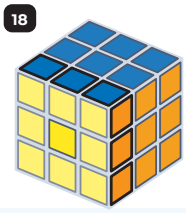
L — LEFT LAYER · DOWN

17



D — BOTTOM LAYER · RIGHT

18



x — WHOLE CUBE · UP

END



SOLVED

CUBE SOLVED

PLL CASE T

ADJACENT SWAP · 1 OF 6

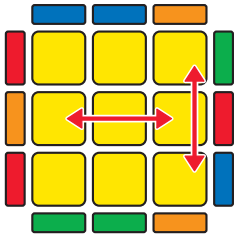
Video on YouTube
scan the QR
levelcero.com · drawings

LEVEL 0

T-PERM

SWAPS 2 CORNERS + 2 EDGES

HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

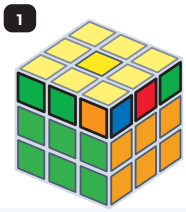
(R U R' U') R' F R2
U' (R' U' R) U R' F'

CASE



SWAPS 2 CORNERS + 2 EDGES

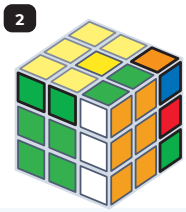
1



R 

RIGHT LAYER · UP

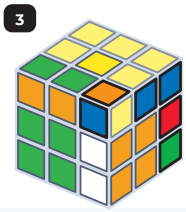
2



U 

TOP LAYER · LEFT

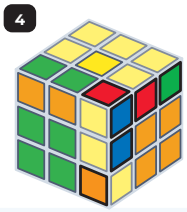
3



R' 

RIGHT LAYER · DOWN

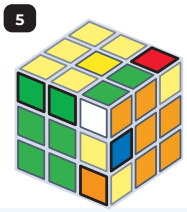
4



U' 

TOP LAYER · RIGHT

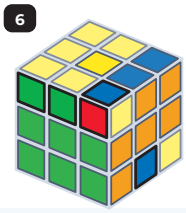
5



R' 

RIGHT LAYER · DOWN

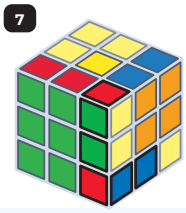
6



F 

FRONT · CLOCKWISE

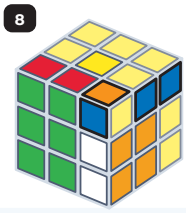
7



R2 

RIGHT LAYER · HALF TURN

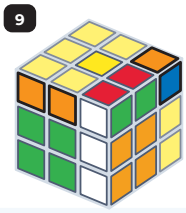
8



U' 

TOP LAYER · RIGHT

9



R' 

RIGHT LAYER · DOWN

10



U' 

TOP LAYER · RIGHT

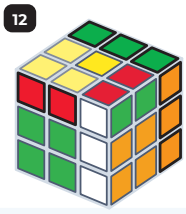
11



R 

RIGHT LAYER · UP

12



U 

TOP LAYER · LEFT

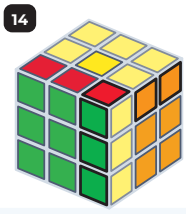
13



R' 

RIGHT LAYER · DOWN

14



F' 

FRONT · COUNTER-CLOCKWISE

END



SOLVED

CUBE SOLVED

PLL CASE F

ADJACENT SWAP · 2 OF 6

Video on YouTube
scan the QR
levelcero.com · drawings

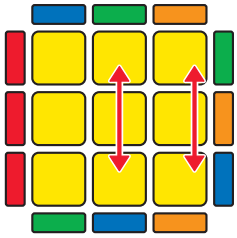
LEVEL 0

F-PERM

2 CORNERS + 2 OPPOSITE EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

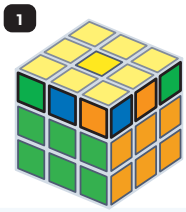
R' U' F' (R U R' U') R' F
R2 U' (R' U' R) U (R' U R)

CASE



2 CORNERS + 2 OPPOSITE EDGES

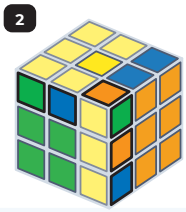
1



R' 

RIGHT LAYER · DOWN

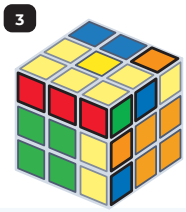
2



U' 

TOP LAYER · RIGHT

3



F' 

FRONT · COUNTER-CLOCKWISE

4



R 

RIGHT LAYER · UP

5



U 

TOP LAYER · LEFT

6



R' 

RIGHT LAYER · DOWN

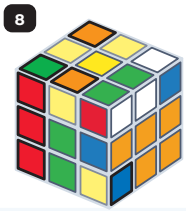
7



U' 

TOP LAYER · RIGHT

8



R' 

RIGHT LAYER · DOWN

9



F 

FRONT · CLOCKWISE

10



R2 

RIGHT LAYER · HALF TURN

11



U' 

TOP LAYER · RIGHT

12



R' 

RIGHT LAYER · DOWN

13



U' 

TOP LAYER · RIGHT

14



R 

RIGHT LAYER · UP

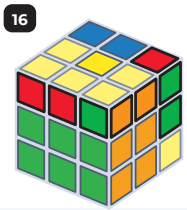
15



U 

TOP LAYER · LEFT

16



R' 

RIGHT LAYER · DOWN

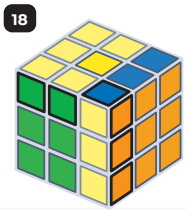
17



U 

TOP LAYER · LEFT

18



R 

RIGHT LAYER · UP

END



SOLVED

CUBE SOLVED

PLL CASE Ja

ADJACENT SWAP · 3 OF 6

Video on YouTube
scan the QR
levelcero.com · drawings

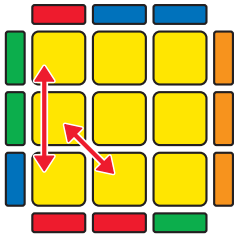
LEVEL 0

Ja-PERM

3-BAR · 2 CORNERS + 2 EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

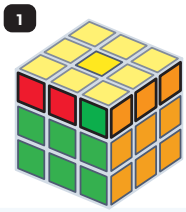
(L' U' L) F (L' U' L U)
L F' L2 U L U

CASE



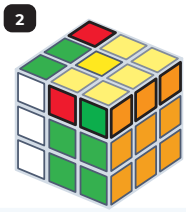
3-BAR · 2 CORNERS + 2 EDGES

1



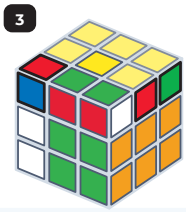
L' — LEFT LAYER · UP

2



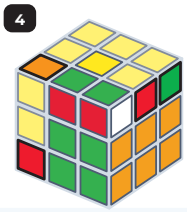
U' — TOP LAYER · RIGHT

3



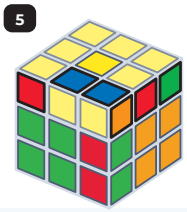
L — LEFT LAYER · DOWN

4



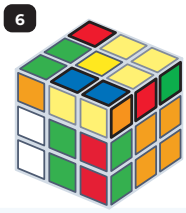
F — FRONT · CLOCKWISE

5



L' — LEFT LAYER · UP

6



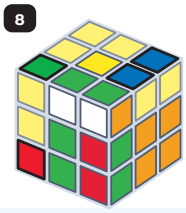
U' — TOP LAYER · RIGHT

7



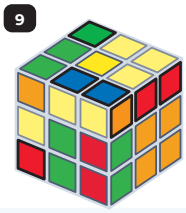
L — LEFT LAYER · DOWN

8



U — TOP LAYER · LEFT

9



L — LEFT LAYER · DOWN

10



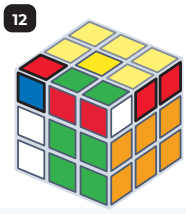
F' — FRONT · COUNTER-CLOCKWISE

11



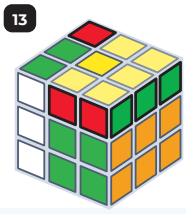
L2 — LEFT LAYER · HALF TURN

12



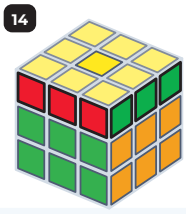
U — TOP LAYER · LEFT

13



L — LEFT LAYER · DOWN

14



U — TOP LAYER · LEFT

END



SOLVED
CUBE SOLVED

PLL CASE Jb

ADJACENT SWAP · 4 OF 6

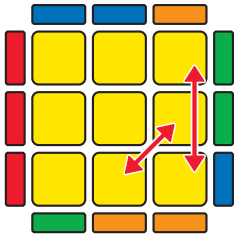
Video on YouTube
scan the QR
levelcero.com · drawings

LEVEL 0

Jb-PERM

3-BAR · 2 CORNERS + 2 EDGES

HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

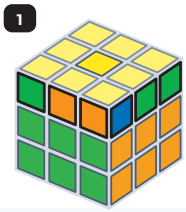
(R U R') F' (R U R' U')
R' F R2 U' R' U'

CASE



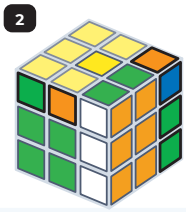
3-BAR · 2 CORNERS + 2 EDGES

1



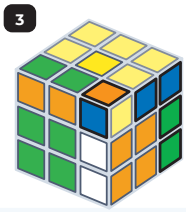
R — RIGHT LAYER · UP

2



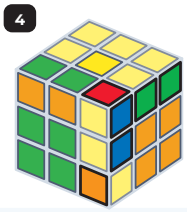
U — TOP LAYER · LEFT

3



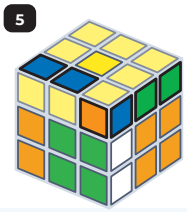
R' — RIGHT LAYER · DOWN

4



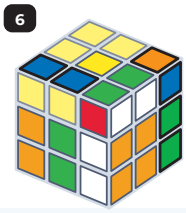
F' — FRONT · COUNTER-CLOCKWISE

5



R — RIGHT LAYER · UP

6



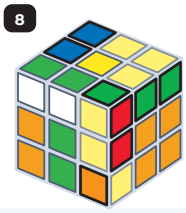
U — TOP LAYER · LEFT

7



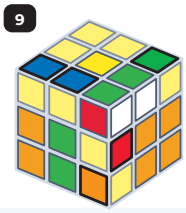
R' — RIGHT LAYER · DOWN

8



U' — TOP LAYER · RIGHT

9



R' — RIGHT LAYER · DOWN

10



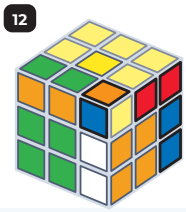
F — FRONT · CLOCKWISE

11



R2 — RIGHT LAYER · HALF TURN

12



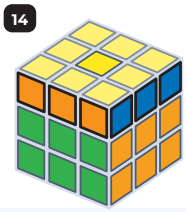
U' — TOP LAYER · RIGHT

13



R' — RIGHT LAYER · DOWN

14



U' — TOP LAYER · RIGHT

END



SOLVED

CUBE SOLVED

PLL CASE Ra

Video on YouTube
scan the QR
levelcero.com · drawings

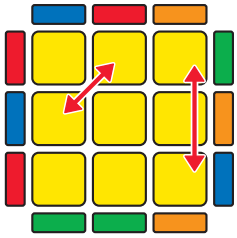
LEVEL 0

Ra-PERM

HEADLIGHTS · 2 CORNERS + 2 EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

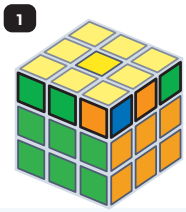
R U' R' U' R U R D
R' U' R D' R' U2 R' U'

CASE



HEADLIGHTS · 2 CORNERS + 2 EDGES

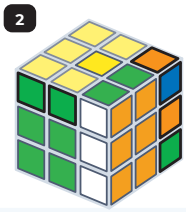
1



R

RIGHT LAYER · UP

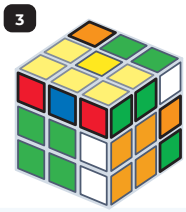
2



U'

TOP LAYER · RIGHT

3



R'

RIGHT LAYER · DOWN

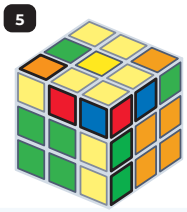
4



U'

TOP LAYER · RIGHT

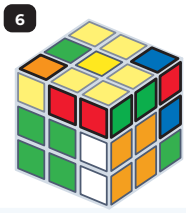
5



R

RIGHT LAYER · UP

6



U

TOP LAYER · LEFT

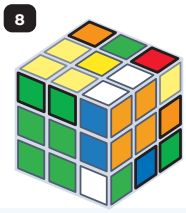
7



R

RIGHT LAYER · UP

8



D

BOTTOM LAYER · RIGHT

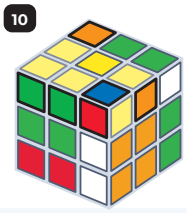
9



R'

RIGHT LAYER · DOWN

10



U'

TOP LAYER · RIGHT

11



R

RIGHT LAYER · UP

12



D'

BOTTOM LAYER · LEFT

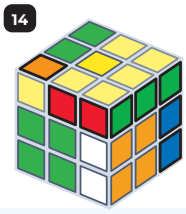
13



R'

RIGHT LAYER · DOWN

14



U2

TOP LAYER · HALF TURN

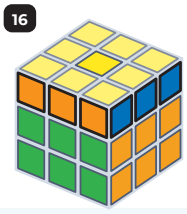
15



R'

RIGHT LAYER · DOWN

16



U'

TOP LAYER · RIGHT

END



SOLVED

CUBE SOLVED

PLL CASE Rb

ADJACENT SWAP · 6 OF 6

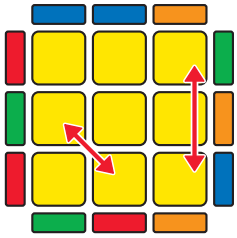
Video on YouTube
scan the QR
levelcero.com · drawings

LEVEL 0

Rb-PERM

HEADLIGHTS · 2 CORNERS + 2 EDGES

HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

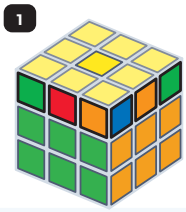
R2 F R U (R U' R') F' (R U2 R') U2 R U

CASE



HEADLIGHTS · 2 CORNERS + 2 EDGES

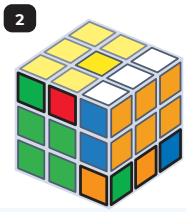
1



R2

RIGHT LAYER · HALF TURN

2



F

FRONT · CLOCKWISE

3



R

RIGHT LAYER · UP

4



U

TOP LAYER · LEFT

5



R

RIGHT LAYER · UP

6



U'

TOP LAYER · RIGHT

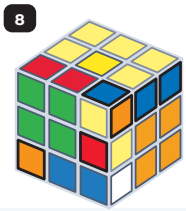
7



R'

RIGHT LAYER · DOWN

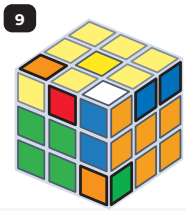
8



F'

FRONT · COUNTER-CLOCKWISE

9



R

RIGHT LAYER · UP

10



U2

TOP LAYER · HALF TURN

11



R'

RIGHT LAYER · DOWN

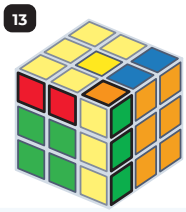
12



U2

TOP LAYER · HALF TURN

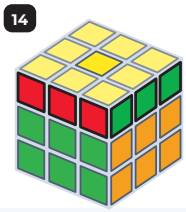
13



R

RIGHT LAYER · UP

14



U

TOP LAYER · LEFT

END



SOLVED

CUBE SOLVED

PLL CASE V

DIAGONAL SWAP · 1 OF 4

Video on YouTube
scan the QR
levelcero.com · drawings

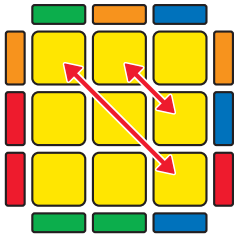
LEVEL 0

V-PERM

DIAGONAL + 2 ADJACENT EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

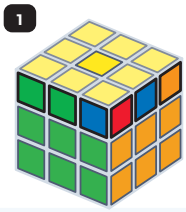
R' U R' U' y R' F' R2
U' R' U R' F R F y'

CASE



DIAGONAL + 2 ADJACENT EDGES

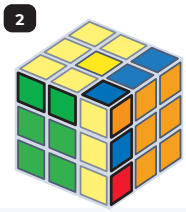
1



R' 

RIGHT LAYER · DOWN

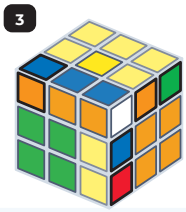
2



U 

TOP LAYER · LEFT

3



R' 

RIGHT LAYER · DOWN

4



U' 

TOP LAYER · RIGHT

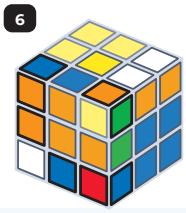
5



y 

WHOLE CUBE · LEFT

6



R' 

RIGHT LAYER · DOWN

7



F' 

FRONT · COUNTER-CLOCKWISE

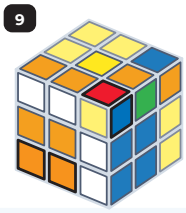
8



R2 

RIGHT LAYER · HALF TURN

9



U' 

TOP LAYER · RIGHT

10



R' 

RIGHT LAYER · DOWN

11



U 

TOP LAYER · LEFT

12



R' 

RIGHT LAYER · DOWN

13



F 

FRONT · CLOCKWISE

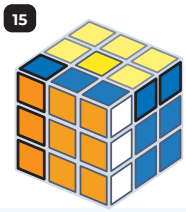
14



R 

RIGHT LAYER · UP

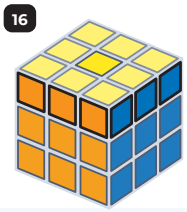
15



F 

FRONT · CLOCKWISE

16



y' 

WHOLE CUBE · RIGHT

END



SOLVED

CUBE SOLVED

PLL CASE Y

DIAGONAL SWAP · 2 OF 4

Video on YouTube
scan the QR
levelcero.com · drawings

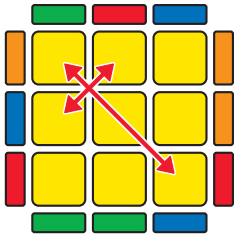
LEVEL 0

Y-PERM

DIAGONAL + 2 ADJACENT EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

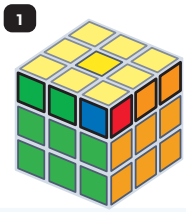
F (R U' R') U' (R U R') F'
(R U R' U') (R' F R F')

CASE



DIAGONAL + 2 ADJACENT EDGES

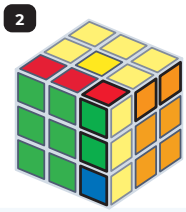
1



F 

FRONT · CLOCKWISE

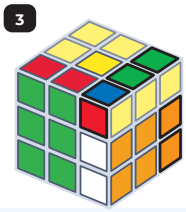
2



R 

RIGHT LAYER · UP

3



U' 

TOP LAYER · RIGHT

4



R' 

RIGHT LAYER · DOWN

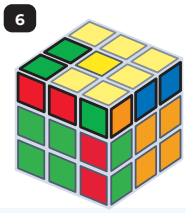
5



U' 

TOP LAYER · RIGHT

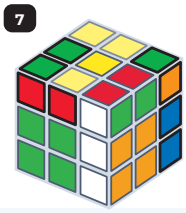
6



R 

RIGHT LAYER · UP

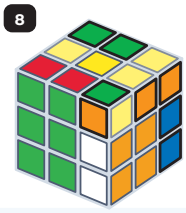
7



U 

TOP LAYER · LEFT

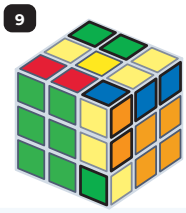
8



R' 

RIGHT LAYER · DOWN

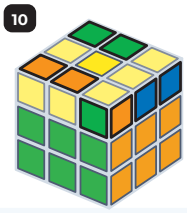
9



F' 

FRONT · COUNTER-CLOCKWISE

10



R 

RIGHT LAYER · UP

11



U 

TOP LAYER · LEFT

12



R' 

RIGHT LAYER · DOWN

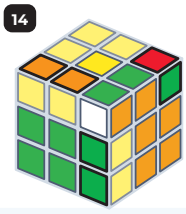
13



U' 

TOP LAYER · RIGHT

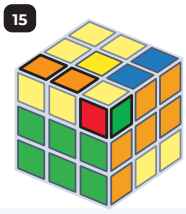
14



R' 

RIGHT LAYER · DOWN

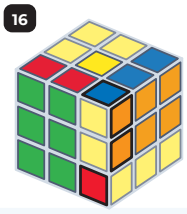
15



F 

FRONT · CLOCKWISE

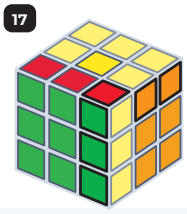
16



R 

RIGHT LAYER · UP

17



F' 

FRONT · COUNTER-CLOCKWISE

END



SOLVED

CUBE SOLVED

PLL CASE Na

DIAGONAL SWAP · 3 OF 4

Video on YouTube
scan the QR
levelcero.com · drawings

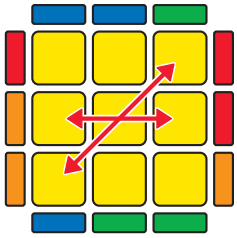
LEVEL 0

Na-PERM

DIAGONAL SWAP · CORNERS + EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

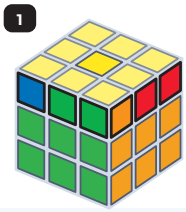
(R U R') U (R U R') F' (R U R' U')
(R' F R2 U') (R' U2 R) U' R'

CASE



DIAGONAL SWAP · CORNERS + EDGES

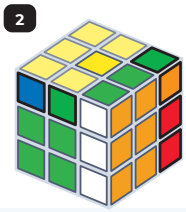
1



R

RIGHT LAYER · UP

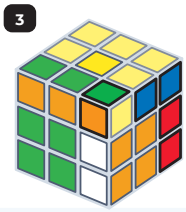
2



U

TOP LAYER · LEFT

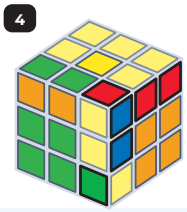
3



R'

RIGHT LAYER · DOWN

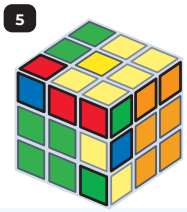
4



U

TOP LAYER · LEFT

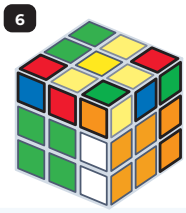
5



R

RIGHT LAYER · UP

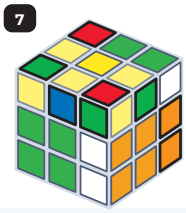
6



U

TOP LAYER · LEFT

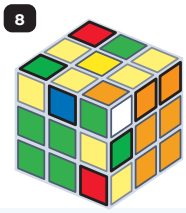
7



R'

RIGHT LAYER · DOWN

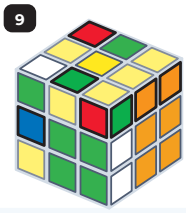
8



F'

FRONT · COUNTER-CLOCKWISE

9



R

RIGHT LAYER · UP

10



U

TOP LAYER · LEFT

11



R'

RIGHT LAYER · DOWN

12



U'

TOP LAYER · RIGHT

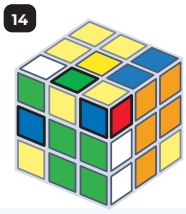
13



R'

RIGHT LAYER · DOWN

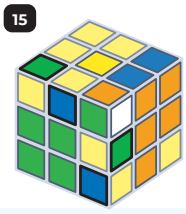
14



F

FRONT · CLOCKWISE

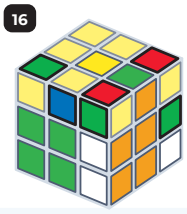
15



R2

RIGHT LAYER · HALF TURN

16



U'

TOP LAYER · RIGHT

17



R'

RIGHT LAYER · DOWN

18



U2

TOP LAYER · HALF TURN

19



R

RIGHT LAYER · UP

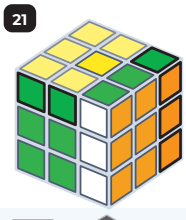
20



U'

TOP LAYER · RIGHT

21



R'

RIGHT LAYER · DOWN

END



SOLVED

CUBE SOLVED

PLL CASE Nb

DIAGONAL SWAP · 4 OF 4

Video on YouTube
scan the QR
levelcero.com · drawings

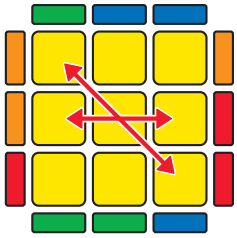
LEVEL 0

Nb-PERM

DIAGONAL SWAP · CORNERS + EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

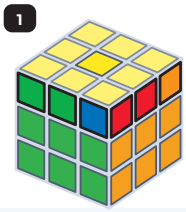
R' U R U' R' F' U' F
R U R' F R' F' R U' R

CASE



DIAGONAL SWAP · CORNERS + EDGES

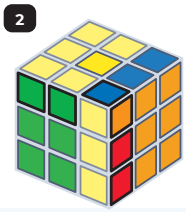
1



R' 

RIGHT LAYER · DOWN

2



U 

TOP LAYER · LEFT

3



R 

RIGHT LAYER · UP

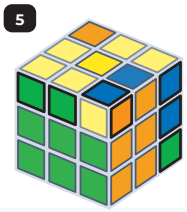
4



U' 

TOP LAYER · RIGHT

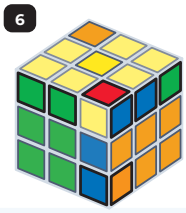
5



R' 

RIGHT LAYER · DOWN

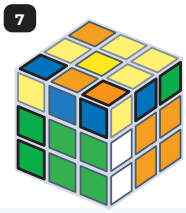
6



F' 

FRONT · COUNTER-CLOCKWISE

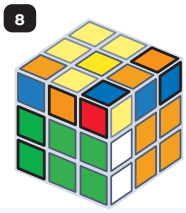
7



U' 

TOP LAYER · RIGHT

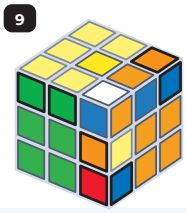
8



F 

FRONT · CLOCKWISE

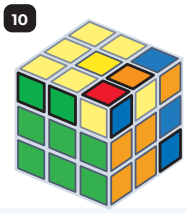
9



R 

RIGHT LAYER · UP

10



U 

TOP LAYER · LEFT

11



R' 

RIGHT LAYER · DOWN

12



F 

FRONT · CLOCKWISE

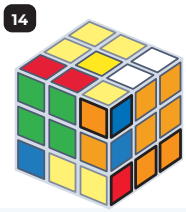
13



R' 

RIGHT LAYER · DOWN

14



F' 

FRONT · COUNTER-CLOCKWISE

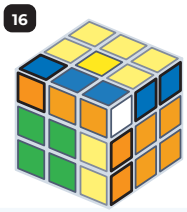
15



R 

RIGHT LAYER · UP

16



U' 

TOP LAYER · RIGHT

17



R 

RIGHT LAYER · UP

END



SOLVED

CUBE SOLVED

PLL CASE Ga

Video on YouTube
scan the QR
levelcero.com · drawings

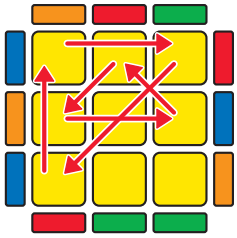
LEVEL 0

Ga-PERM

3 CORNERS + 3 EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

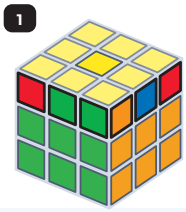
R2 U R' U (R' U' R) U'
R2 U' D (R' U R) D' U

CASE



3 CORNERS + 3 EDGES

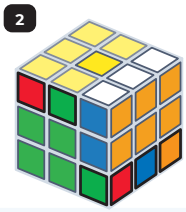
1



R2

RIGHT LAYER · HALF TURN

2



U

TOP LAYER · LEFT

3



R'

RIGHT LAYER · DOWN

4



U

TOP LAYER · LEFT

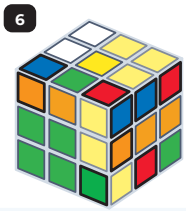
5



R'

RIGHT LAYER · DOWN

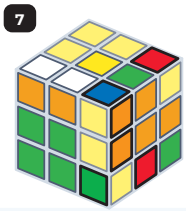
6



U'

TOP LAYER · RIGHT

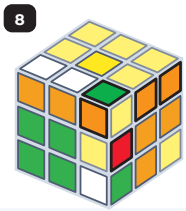
7



R

RIGHT LAYER · UP

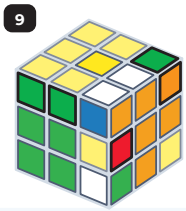
8



U'

TOP LAYER · RIGHT

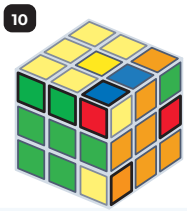
9



R2

RIGHT LAYER · HALF TURN

10



U'

TOP LAYER · RIGHT

11



D

BOTTOM LAYER · RIGHT

12



R'

RIGHT LAYER · DOWN

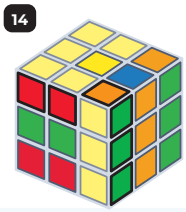
13



U

TOP LAYER · LEFT

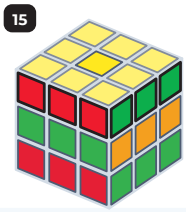
14



R

RIGHT LAYER · UP

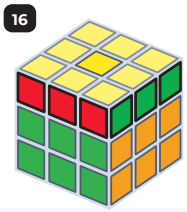
15



D'

BOTTOM LAYER · LEFT

16



U

TOP LAYER · LEFT

END



SOLVED

CUBE SOLVED

PLL CASE Gb

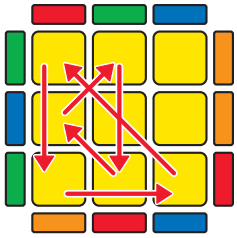
Gs · 2 OF 4

Video on YouTube
scan the QR
levelcero.com · drawings

Gb-PERM

3 CORNERS + 3 EDGES

HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

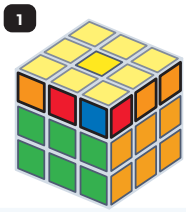
(R' U' R) U D' R2 U
(R' U R) U' R U' R2 D U'

CASE



3 CORNERS + 3 EDGES

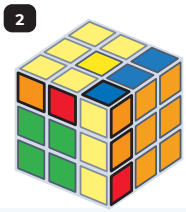
1



R'

RIGHT LAYER · DOWN

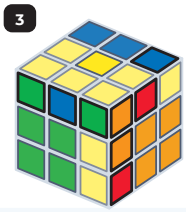
2



U'

TOP LAYER · RIGHT

3



R

RIGHT LAYER · UP

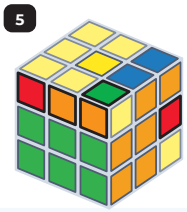
4



U

TOP LAYER · LEFT

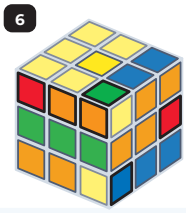
5



D'

BOTTOM LAYER · LEFT

6



R2

RIGHT LAYER · HALF TURN

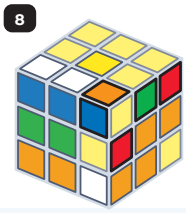
7



U

TOP LAYER · LEFT

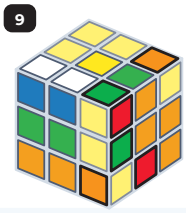
8



R'

RIGHT LAYER · DOWN

9



U

TOP LAYER · LEFT

10



R

RIGHT LAYER · UP

11



U'

TOP LAYER · RIGHT

12



R

RIGHT LAYER · UP

13



U'

TOP LAYER · RIGHT

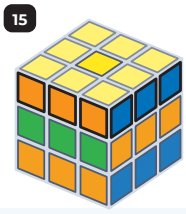
14



R2

RIGHT LAYER · HALF TURN

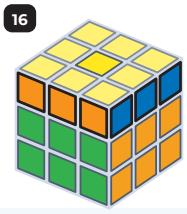
15



D

BOTTOM LAYER · RIGHT

16



U'

TOP LAYER · RIGHT

END



SOLVED

CUBE SOLVED

PLL CASE Gc

Gs · 3 OF 4

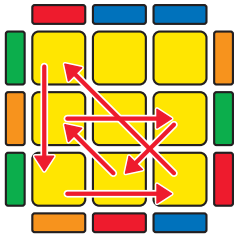
Video on YouTube
scan the QR
levelcero.com · drawings

Gc-PERM

3 CORNERS + 3 EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

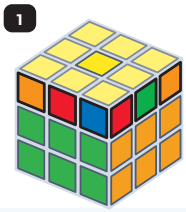
R2 U' R U' (R U R') U

R2 U D' (R U' R') D U'



CASE

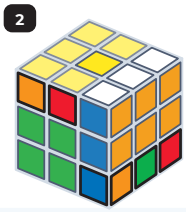
3 CORNERS + 3 EDGES



1

R2

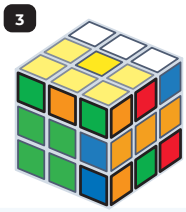
RIGHT LAYER · HALF TURN



2

U'

TOP LAYER · RIGHT



3

R

RIGHT LAYER · UP



4

U'

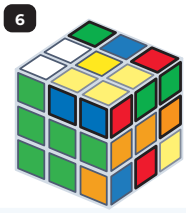
TOP LAYER · RIGHT



5

R

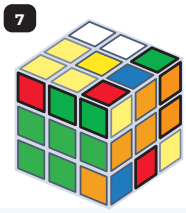
RIGHT LAYER · UP



6

U

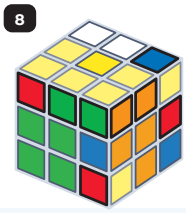
TOP LAYER · LEFT



7

R'

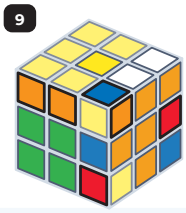
RIGHT LAYER · DOWN



8

U

TOP LAYER · LEFT



9

R2

RIGHT LAYER · HALF TURN



10

U

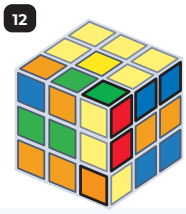
TOP LAYER · LEFT



11

D'

BOTTOM LAYER · LEFT



12

R

RIGHT LAYER · UP



13

U'

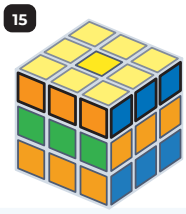
TOP LAYER · RIGHT



14

R'

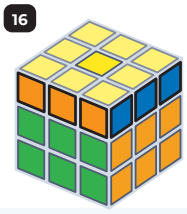
RIGHT LAYER · DOWN



15

D

BOTTOM LAYER · RIGHT



16

U'

TOP LAYER · RIGHT



END

SOLVED

CUBE SOLVED

PLL CASE Gd

Gs · 4 OF 4

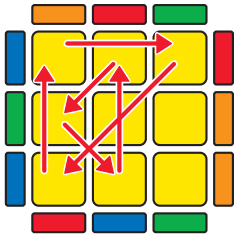
Video on YouTube
scan the QR
levelcero.com · drawings

Gd-PERM

3 CORNERS + 3 EDGES



HOLD IT (example colours)
- yellow on top
- green: facing you
- orange on the right



ALG

R U R' U' D R2 U'

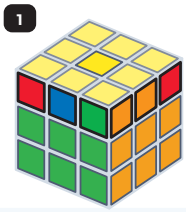
R U' R' U R' U R2 D' U

CASE



3 CORNERS + 3 EDGES

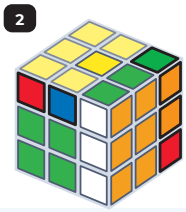
1



R

RIGHT LAYER · UP

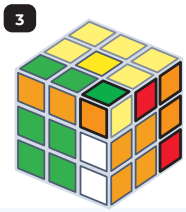
2



U

TOP LAYER · LEFT

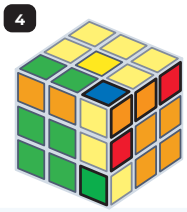
3



R'

RIGHT LAYER · DOWN

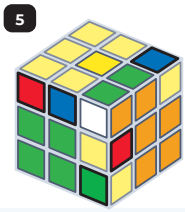
4



U'

TOP LAYER · RIGHT

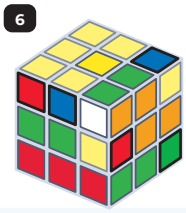
5



D

BOTTOM LAYER · RIGHT

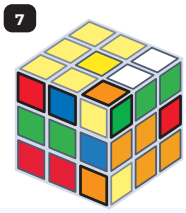
6



R2

RIGHT LAYER · HALF TURN

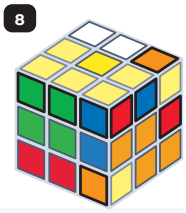
7



U'

TOP LAYER · RIGHT

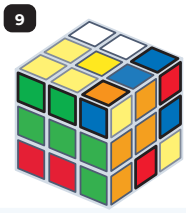
8



R

RIGHT LAYER · UP

9



U'

TOP LAYER · RIGHT

10



R'

RIGHT LAYER · DOWN

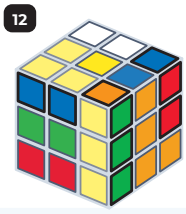
11



U

TOP LAYER · LEFT

12



R'

RIGHT LAYER · DOWN

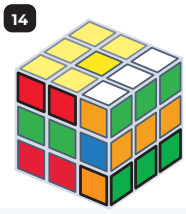
13



U

TOP LAYER · LEFT

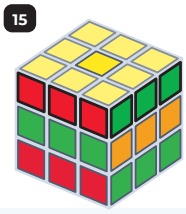
14



R2

RIGHT LAYER · HALF TURN

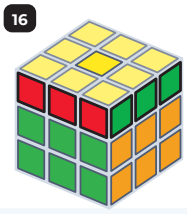
15



D'

BOTTOM LAYER · LEFT

16



U

TOP LAYER · LEFT

END



SOLVED

CUBE SOLVED