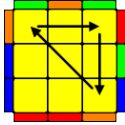
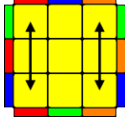


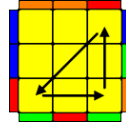
## Corners Only



**Aa**, probability= $\frac{1}{18}$   
 $I' (U' R') D2 (R' U' R') D2 R2$   
**(x')**  $(R' D' R') U2 (R D' R') U2 R2$

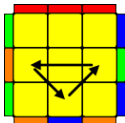


**E**, probability= $\frac{1}{36}$   
**(x')**  $[(R' U' R') D (R U R') D'] [(R U R') D (R U' R') D']$

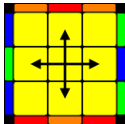


**Ab**, probability= $\frac{1}{18}$   
 $I (U' R) D2 (R' U R) D2 R2$   
**(y2) (x')**  $(L D' L) U2 (L' D L) U2 L2$

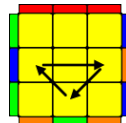
## Edges Only



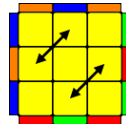
**Ua**, probability= $\frac{1}{18}$   
 $M2 U' (M U2 M') U' M2$   
 $F2 U (M' U2 M) U F2$



**H**, probability= $\frac{1}{72}$   
 $(M2 U M2) U2 (M2 U M2)$

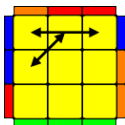


**Ub**, probability= $\frac{1}{18}$   
 $M2 U (M U2 M') U M2$   
 $F2 U' (M' U2 M) U' F2$

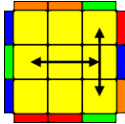


**Z**, probability= $\frac{1}{36}$   
 $M2 U M2 U (M' U2) (M2 U2) M' U2$   
**(y')**  $M' U (M2 U M2 U) M' U2 M2 U'$

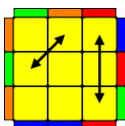
## Adjacent Corner Swap



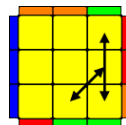
**Ja**, probability= $\frac{1}{18}$   
 $(R' U' L') U2 (R' U' R') U2 (L R) U'$   
**(y)** **(x)**  $R2 F R F' R U2 r' U r U2$   
 $(R D') VPerm (D R')$



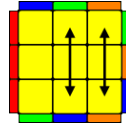
**T**, probability= $\frac{1}{18}$   
 $R U R' U' R' F R2 U' R' U' R U R' F'$   
 $R2 U R2 U' R2 U' D R2 U' R2 U R2 D'$



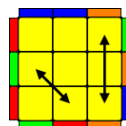
**Ra**, probability= $\frac{1}{18}$   
 $(R' U' R' U') (R U R D) (R' U' R D') R' U2 R'$



**Jb**, probability= $\frac{1}{18}$   
 $(R U R' F') [R U R' U' R' F R2 U' R' U']$

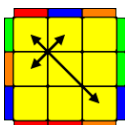


**F**, probability= $\frac{1}{18}$   
 $(R' U' F') [R U R' U' R' F R2 U' R' U' R U R' U] R$

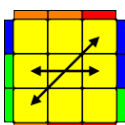


**Rb**, probability= $\frac{1}{18}$   
 $R2 F R (U R U' R') F' R U2 R' U2 R U$   
**(y')**  $R' U2 R U2 R' F (R U R' U') R' F' R2 U'$

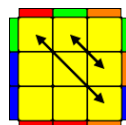
## Diagonal Corner Swap



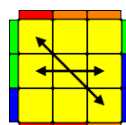
**Y**, probability= $\frac{1}{18}$   
 $F [(R' U' R' U') (R U R' F') (R U R' U') R' F R] F'$



**Na**, probability= $\frac{1}{72}$   
 $[r' D r U2] x5$   
 $(L D L' F') TPerm \text{ without } F (L D' L')$

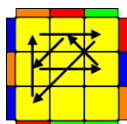


**V**, probability= $\frac{1}{18}$   
 $(R' U R' U') (y) R' F' R2 U' R' U R' F R F$



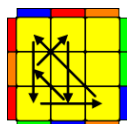
**Nb**, probability= $\frac{1}{72}$   
 $R' (U R' U' R') (F' U' F) (R U R' F) R' F' R U' R$

## G Permutations

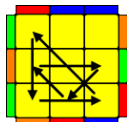


**Ga**, probability=1/18

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

$$(y') (R U R' U' R') U F (R U R U' R') F' U R' U^2 R$$


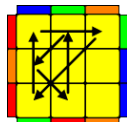
**Gb**, probability=1/18

$$R' U R (U D') \mathbf{R2} U (R' U R U') R U' R2 D$$
$$R' U' R (\mathbf{y}) R^2 u (R' U R U' R) u' R^2$$


**Gc**, probability=1/18

$$R^2 U' R U' (R U R' U) R^2 (U D') R U' R' D$$

(y) F2' D' L U' L U L' D F2 R U' R'



**Gd**, probability=1/18

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

$$\bar{L} U^2 L' U F' (L' U' L U L) F U (L' U' L' U L)$$