

Beyer-Hardwick Edge Algorithms

Hello and welcome to Daniel's and Chris' page about our jointly created blind solving method. The method was created by Daniel Beyer and Chris Hardwick to be used as an advanced method for solving any sized cube blindfolded. This page is under construction, so please bear with us as we add more material to this website.

This particular page is about solving edges using the Beyer-Hardwick method. The goal is to use an optimal length, supercube safe algorithm for all 3-cycles starting from a fixed buffer piece. You perform sticker cycles, and will thus solve the position and orientation of any given edge at the same time. The goal is to have a prepared algorithm for every possible cycle, reducing the thinking time during solving. Other pages will be devoted to how to figure out which type of algorithm to use given a certain cycle. This is based on the case name for each algorithm. If you are interested to learn the method, please continue to check back for further pages explaining how to use the case names of each algorithm below.

The following are all algorithms necessary to use the Beyer-Hardwick method for edges. Please bear in mind that there are often multiple algorithms you could use for a certain case. The case name is more important for each algorithm than the given algorithm. In later pages to follow you will see how to use the case name for a certain cycle to construct the correct algorithm when solving. We include at least one algorithm for each case merely for completeness. In cases where there are more than one algorithm listed the following notes must be made:

- Algorithms followed by two asterisks are optimal length for supercube safe solving. They will not affect any other unsolved pieces on any sized cube.
- Algorithms followed by one asterisk are non-optimal length, supercube safe algorithms. These tend to be easier to execute than the optimal version.
- Algorithms not followed by any asterisk are not necessarily supercube safe, and not necessarily optimal (STM or WTM) for 3x3x3 solving.

NOTE: It is very important to note that Daniel and I have taken special care to optimize the supercube safe edge algorithms for use of BH on any odd sized cube. In doing so we have optimized in another metric called WTM or Wide Turn Metric. WTM is the same as STM or Slice Turn Metric only it includes the possibility of turning double layers on 3x3x3 and multiple adjacent layers in the larger cubes. Lower case letters are used in this page for double layer turns. For example the turn **r** is done as **R M'** simultaneously.

For those learning this method it is important to know that no special care has been taken to optimize these algorithms for use on the 3x3x3. This may mean that the given algorithm(s) is/are not optimal in STM for 3x3x3 edges; this is a possible improvement to the BH method that we will explore at a later date. Anyone interested in optimizing the 3x3x3 cases is certainly welcome to do so, and please contact us if you would like us to update this page with your results (with due credit given). The easiest or more trivial 3x3x3 cases have been listed in addition to the optimal BH algorithm.

Many thanks to [Lucas Garron](#) for coding this page to show an applet for each algorithm. If you would like a printable version of this page [click here](#).

Cycle	Algorithm (optimal length)	Case Name
(UR UB UL)	B' L' E L U2 L' E' L U2 B (10 STM) M2 U' M' U2 M U2 M' U2 M U' M2 (11 STM)* M2 U M' U2 M U M2 (7 STM)	Setup into Drop and Catch Setup into SP9 SP7 for 3x3

(UR UB UF)	<u>F' R' E R U R' E' R U' F</u> (10 STM)** <u>y' M2 U' M' U2 M U2 M' U2 M U' M2 y</u> (11 STM)* <u>y' M2 U M' U2 M U M2 y</u> (7 STM)	Setup into Drop and Catch Setup into SP9 SP7 for 3x3
(UR UB FU)	<u>M F R' F' M' F R F'</u> (8 STM)**	Toss Up
(UR UB FL)	<u>R E2 R' U R E2 R' U'</u> (8 STM)** <u>U' B E' B' U B E B'</u> (8 STM)**	Drop and Catch Drop and Catch
(UR UB FR)	<u>U' B' E B U B' E' B</u> (8 STM)** <u>F' M F R' F' M' F R</u> (8 STM)**	Drop and Catch Drop and Catch
(UR UB FD)	<u>S D S' U S D' S' U'</u> (8 STM)**	Drop and Catch
(UR UB RF)	<u>U' B E2 B' U B E2 B'</u> (8 STM)**	Drop and Catch
(UR UB RB)	<u>U F' E2 F U F' E2 F U2</u> (9 STM)** <u>U2 L' E L U L' E' L U</u> (9 STM)**	B9 B9
(UR UB RD)	<u>U' M' D M U M' D' M</u> (8 STM)** <u>R E R' U R E' R' U'</u> (8 STM)**	Drop and Catch Direct Insert
(UR UB BR)	<u>U F E' F' U F E F' U2</u> (9 STM)** <u>U2 L E2 L' U L E2 L' U</u> (9 STM)**	B9 B9
(UR UB BL)	<u>R' E2 R U R' E2 R U'</u> (8 STM)**	Drop and Catch
(UR UB BD)	<u>U' B E B' U B E' B'</u> (8 STM)** <u>M' B R B' M B R' B'</u> (8 STM)**	Direct Insert Toss Up
(UR UB LU)	<u>L' B L S' L' B' L S</u> (8 STM)**	Toss Up
(UR UB LB)	<u>B L S' L' B' L S L'</u> (8 STM)** <u>R E' R' U R E R' U'</u> (8 STM)**	Drop and Catch Drop and Catch
(UR UB LF)	<u>U' B' E2 B U B' E2 B</u> (8 STM)** <u>R' E R U R' E' R U'</u> (8 STM)**	Drop and Catch Drop and Catch
(UR UB LD)	<u>U' M' D' M U M' D M</u> (8 STM)**	Drop and Catch
(UR UB DF)	<u>M2 D R2 D' M2 D R2 D'</u> (8 STM)**	Toss Up
(UR UB DL)	<u>D' B2 D S2 D' B2 D S2</u> (8 STM)** <u>R2 D' M U2 M' D2 M U2 M' D' R2</u> (11 STM)*	Toss Up Setup into B9

(UR UB DR)	<u>D' M2 D R2 D' M2 D R2</u> (8 STM)**	Drop and Catch
(UR UB DB)	<u>B2 D S2 D' B2 D S2 D'</u> (8 STM)** <u>D2 M2 D R2 D' M2 D R2 D</u> (9 STM)*	Drop and Catch B9
(UR UL UB)	<u>B R E' R' U2 R E R' U2 B'</u> (10 STM)** <u>M2 U M' U2 M U2 M' U2 M U M2</u> (11 STM)*	Setup into Drop and Catch Setup into SP9
(UR UL UF)	<u>F' R' E R U2 R' E' R U2 F</u> (10 STM)** <u>F U2 L E' L' U2 L E L' F'</u> (10 STM)**	Setup into Drop and Catch Setup into Drop and Catch
(UR UL FU)	<u>R' F R' S2 R F' R' S2 R2</u> (9 STM)**	A9
(UR UL FL)	<u>R E2 R' U2 R E2 R' U2</u> (8 STM)** <u>S R2 S' L' S R2 S' L</u> (8 STM)**	Drop and Catch Direct Insert
(UR UL FR)	<u>U2 L' E2 L U2 L' E2 L</u> (8 STM)** <u>R S' L2 S R' S' L2 S</u> (8 STM)**	Drop and Catch Direct Insert
(UR UL FD)	<u>S D S' U2 S D' S' U2</u> (8 STM)** <u>L2 S2 L' F L S2 L' F' L'</u> (9 STM)*	Drop and Catch A9
(UR UL RF)	<u>U2 L E' L' U2 L E L'</u> (8 STM)**	Drop and Catch
(UR UL RB)	<u>U2 L' E L U2 L' E' L</u> (8 STM)**	Drop and Catch
(UR UL RD)	<u>R' E' R U2 R' E R U2</u> (8 STM)**	Direct Insert
(UR UL BU)	<u>R B' R S2 R' B R S2 R2</u> (9 STM)** <u>L2 S2 L B L' S2 L B' L</u> (9 STM)**	A9 A9
(UR UL BR)	<u>U2 L E2 L' U2 L E2 L'</u> (8 STM)** <u>R' S' L2 S R' S' L2 S</u> (8 STM)**	Drop and Catch Direct Insert
(UR UL BL)	<u>R' E2 R U2 R' E2 R U2</u> (8 STM)** <u>S R2 S' L S R2 S' L'</u> (8 STM)**	Drop and Catch Direct Insert
(UR UL BD)	<u>S D' S' U2 S D S' U2</u> (8 STM)** <u>R B R S2 R' B' R S2 R2</u> (9 STM)*	Drop and Catch A9
(UR UL LB)	<u>R E' R' U2 R E R' U2</u> (8 STM)**	Drop and Catch
(UR UL LF)	<u>R' E R U2 R' E' R U2</u> (8 STM)**	Drop and Catch
(UR UL LD)	<u>U2 L E L' U2 L E' L'</u> (8 STM)**	Direct Insert

(UR UL DF)	<u>U M' U2 M U2 M' U2 M U</u> (9 STM)** <u>U M D2 M' U2 M D2 M' U</u> (9 STM)**	SP9 B9
(UR UL DL)	<u>y' U2 M' U2 M U2 M' U2 M y</u> (8 STM)** <u>y' M' U2 M U2 y</u> (4 STM)	Slice-Plane Half Slice-Plane for 3x3
(UR UL DR)	<u>y M' U2 M U2 M' U2 M U2 y'</u> (8 STM)** <u>y U2 M' U2 M y'</u> (4 STM)	Slice-Plane Half Slice-Plane for 3x3
(UR UL DB)	<u>U' M U2 M' U2 M U2 M' U'</u> (9 STM)** <u>U M U2 M' U</u> (5 STM)	SP9 SP5 for 3x3
(UR UF UB)	<u>F' U R' E R U' R' E' R F</u> (10 STM)**	Setup into Drop and Catch
(UR UF UL)	<u>F L E' L' U2 L E L' U2 F'</u> (10 STM)** <u>M2 U' M U2 M' U2 M U2 M' U' M2</u> (11 STM)*	Setup into Drop and Catch Setup into SP9
(UR UF FL)	<u>R E2 R' U' R E2 R' U</u> (8 STM)**	Drop and Catch
(UR UF FR)	<u>U2 L' E2 L U' L' E2 L U'</u> (9 STM)** <u>R2 B M' B' R' B M B' R'</u> (9 STM)**	B9 B9
(UR UF FD)	<u>U F E F' U' F E' F'</u> (8 STM)** <u>S D S' U' S D' S' U</u> (8 STM)**	Direct Insert Drop and Catch
(UR UF RF)	<u>U2 L E' L' U' L E L' U'</u> (9 STM)** <u>F' L' S' L F' L' S L F2</u> (9 STM)**	B9 B9
(UR UF RB)	<u>U F' E2 F U' F' E2 F</u> (8 STM)**	Drop and Catch
(UR UF RD)	<u>R' E' R U' R' E R U</u> (8 STM)**	Direct Insert
(UR UF BU)	<u>M' B' R B M B' R' B</u> (8 STM)**	Toss Up
(UR UF BR)	<u>U F E' F' U' F E F'</u> (8 STM)**	Drop and Catch
(UR UF BL)	<u>R' E2 R U' R' E2 R U</u> (8 STM)**	Drop and Catch
(UR UF BD)	<u>S D' S U' S D S' U</u> (8 STM)** <u>B2 M' B' R B M B' R' B'</u> (9 STM)*	Drop and Catch A9
(UR UF LU)	<u>L F' L' S' L F L' S</u> (8 STM)**	Toss Up
(UR UF LB)	<u>R E' R' U' R E R' U</u> (8 STM)**	Drop and Catch
(UR UF LF)	<u>R' E R U' R' E' R U</u> (8 STM)**	Drop and Catch

(UR UF LD)	<u>U M D M' U' M D' M'</u> (8 STM)**	Drop and Catch
(UR UF DF)	<u>U M D2 M' U M D2 M'</u> (8 STM)**	Direct Insert
(UR UF DL)	<u>D F2 D' S2 D F2 D' S2</u> (8 STM)** <u>D' M2 D' R2 D M2 D' R2 D2</u> (9 STM)*	Toss Up A9
(UR UF DR)	<u>D M2 D' R2 D M2 D' R2</u> (8 STM)** <u>S D2 S' U' S D2 S' U</u> (8 STM)**	Drop and Catch Direct Insert
(UR UF DB)	<u>D' R2 D M2 D' R2 D M2</u> (8 STM)**	Drop and Catch
(UR FU UB)	<u>F R' F' M F R F' M'</u> (8 STM)**	Toss Up
(UR FU UL)	<u>R2 S2 R F R' S2 R F' R</u> (9 STM)**	A9
(UR FU FL)	<u>F' L S2 L' F L S2 L'</u> (8 STM)**	Drop and Catch
(UR FU FR)	<u>R B' M2 B R B' M2 B R2</u> (9 STM)**	B9
(UR FU FD)	<u>F2 D S D' F2 D S' D'</u> (8 STM)**	Drop and Catch
(UR FU RF)	<u>F U' M2 U R U' M2 U R' F'</u> (10 STM)**	Setup into Toss Up
(UR FU RB)	<u>B F R' F' M F R F' M' B'</u> (10 STM)**	Setup into Toss Up
(UR FU RD)	<u>D' F2 D S D' F2 D S'</u> (8 STM)**	Toss Up
(UR FU BU)	<u>B2 M2 B R B' M2 B R' B</u> (9 STM)**	A9
(UR FU BR)	<u>B' M2 B R B' M2 B R'</u> (8 STM)**	Drop and Catch
(UR FU BL)	<u>L2 F' L S2 L' F L S2 L</u> (9 STM)**	A9
(UR FU BD)	<u>F R' F' M2 F R F' M2</u> (8 STM)** <u>D2 F2 D S D' F2 D S' D</u> (9 STM)*	Toss Up A9
(UR FU LU)	<u>S R' F R S' R' F' R</u> (8 STM)**	Toss Up
(UR FU LB)	<u>r E' R' U R E R' U' M</u> (9 WTM)** <u>F' L' U2 L E L' U2 L E' F</u> (10 STM)*	Wide setup into Drop and Catch Setup into Toss Up
(UR FU LF)	<u>M' R' E R U R' E' R U' M</u> (10 STM)**	Setup into Drop and Catch
(UR FU LD)	<u>D F2 D S D' F2 D S' D2</u> (9 STM)**	A9

(UR FU DF)	<u>F R' F' M' F R F' M</u> (8 STM)**	Toss Up
(UR FU DL)	<u>S2 R' F R S2 R'F' R</u> (8 STM)** <u>D M D R2 D' M' D R2 D2</u> (9 STM)*	Toss Up A9
(UR FU DR)	<u>D' M D R2 D' M' D R2</u> (8 STM)**	Drop and Catch
(UR FU DB)	<u>D2 M D R2 D' M' D R2 D</u> (9 STM)**	A9
(UR FL UB)	<u>U R E2 R' U' R E2 R'</u> (8 STM)**	Drop and Catch
(UR FL UL)	<u>U2 R E2 R' U2 R E2 R'</u> (8 STM)**	Drop and Catch
(UR FL UF)	<u>U' R E2 R' U R E2 R'</u> (8 STM)**	Drop and Catch
(UR FL FU)	<u>L S2 L' F' L S2 L' F</u> (8 STM)**	Drop and Catch
(UR FL FR)	<u>E' L2 E R' E' L2 E R</u> (8 STM)**	Direct Insert
(UR FL FD)	<u>L S2 L' F L S2 L' F'</u> (8 STM)**	Drop and Catch
(UR FL RF)	<u>L' U2 L E' L' U2 L E</u> (8 STM)**	Toss Up
(UR FL RB)	<u>L' U2 L' E L U2 L' E' L2</u> (9 STM)**	A9
(UR FL RD)	<u>S' R' F2 R S R' F2 R</u> (8 STM)**	Toss Up
(UR FL BU)	<u>F2 R' F M2 F' R F M2 F</u> (9 STM)**	A9
(UR FL BR)	<u>L' U2 L E2 L' U2 L E2</u> (8 STM)**	Toss Up
(UR FL BL)	<u>L' S' L2 S L2 S' L2 S L'</u> (9 STM)** <u>z y U' M' U2 M U2 M' U2 M U' y' z'</u> (9 STM)**	SP9 SP9
(UR FL BD)	<u>U' M U' L' U M' U' L U2</u> (9 STM)**	A9
(UR FL LU)	<u>S R' F2 R S' R' F2 R</u> (8 STM)**	Toss Up
(UR FL LB)	<u>L' U2 L E L' U2 L E'</u> (8 STM)**	Toss Up
(UR FL LD)	<u>E2 R E L E' R' E L' E</u> (9 STM)**	A9
(UR FL DF)	<u>U' M2 U' L' U M2 U' L U2</u> (9 STM)**	A9
(UR FL DL)	<u>S2 R' F2 R S2 R' F2 R</u> (8 STM)**	Toss Up
(UR FL DR)	<u>R E R2 E' R2 E R2 E' R</u> (9 STM)** <u>L' y M' U2 M U2 M' U2 M U2 y' L</u> (10 STM)*	SP9 Setup into Slice-Plane

(UR FL DB)	<u>U M2 U L' U' M2 U L U2</u> (9 STM)**	A9
(UR FR UB)	<u>R' F' M F R F' M' F</u> (8 STM)**	Drop and Catch
(UR FR UL)	<u>L' E2 L U2 L' E2 L U2</u> (8 STM)**	Drop and Catch
(UR FR UF)	<u>U L' E2 L U L' E2 L U2</u> (9 STM)**	B9
(UR FR FU)	<u>R B' M2 B R B' M2 B R2</u> (9 STM)**	B9
(UR FR FL)	<u>F2 L S2 L' F2 L S2 L'</u> (8 STM)** <u>L2 E2 L U2 L' E2 L U2 L</u> (9 STM)*	Drop and Catch A9
(UR FR FD)	<u>U M' U' R U M U' R'</u> (8 STM)**	Drop and Catch
(UR FR RB)	<u>E B U' B' E' B U B'</u> (8 STM)** <u>E' F U F' E' F U' F' E2</u> (9 STM)*	Toss Up B9
(UR FR RD)	<u>D' F D S D' F' D S'</u> (8 STM)**	Toss Up
(UR FR BU)	<u>R' F M2 F' R F M2 F'</u> (8 STM)**	Drop and Catch
(UR FR BR)	<u>U R2 B M' B' R2 B M B' U'</u> (10 STM)**	Setup into Drop and Catch
(UR FR BL)	<u>E2 L U2 L' E2 L U2 L'</u> (8 STM)**	Toss Up
(UR FR BD)	<u>U' M U R U' M' U R'</u> (8 STM)**	Drop and Catch
(UR FR LU)	<u>R' E' L E R E' L' E</u> (8 STM)**	Drop and Catch
(UR FR LB)	<u>S' L S R S' L' S R'</u> (8 STM)** <u>B2 E B U' B' E' B U B</u> (9 STM)*	Drop and Catch A9
(UR FR LF)	<u>E' F U F' E F U' F'</u> (8 STM)**	Toss Up
(UR FR LD)	<u>R' E' L' E R E' L E</u> (8 STM)**	Drop and Catch
(UR FR DF)	<u>U' M2 U R U' M2 U R'</u> (8 STM)**	Drop and Catch
(UR FR DL)	<u>L' F2 L S2 L' F2 L S2</u> (8 STM)** <u>L E2 L U2 L' E2 L U2 L2</u> (9 STM)*	Toss Up A9
(UR FR DR)	<u>F R2 U M' U' R2 U M U' F'</u> (10 STM)**	Setup into Drop and Catch
(UR FR DB)	<u>U M2 U' R U M2 U' R'</u> (8 STM)**	Drop and Catch

(UR FD UB)	<u>U S D S' U' S D' S'</u> (8 STM) ^{**} <u>F' R' F' M F R F' M' F2</u> (9 STM)*	Drop and Catch A9
(UR FD UL)	<u>S' D' S U2 S' D S U2</u> (8 STM) ^{**}	Drop and Catch
(UR FD UF)	<u>F E F' U F E' F' U'</u> (8 STM) ^{**}	Direct Insert
(UR FD FU)	<u>D S D' F2 D S' D' F2</u> (8 STM) ^{**}	Drop and Catch
(UR FD FL)	<u>F L S2 L' F' L S2 L'</u> (8 STM) ^{**} <u>U2 L' U' M' U L U' M U'</u> (9 STM)*	Drop and Catch A9
(UR FD FR)	<u>R U M' U' R' U M U'</u> (8 STM) ^{**}	Drop and Catch
(UR FD RF)	<u>u U L' U' M' U L U' M u'</u> (10 WTM) ^{**} <u>D S' U F' U' S U F' U' D'</u> (10 STM)**	Wide setup into Toss Up Setup into Toss Up
(UR FD RB)	<u>E' R U M' U' R' U M u'</u> (9 WTM) ^{**} <u>F' E B U' B' E' B U B' F</u> (10 STM)*	Wide A9 Setup into Toss Up
(UR FD RD)	<u>M' U M D' M' U' M D</u> (8 STM) ^{**}	Toss Up
(UR FD BU)	<u>M2 B' R B M2 B' R' B</u> (8 STM) ^{**}	Toss Up
(UR FD BR)	<u>R' U M' U' R U M U'</u> (8 STM) ^{**}	Drop and Catch
(UR FD BL)	<u>U2 L U' M' U L' U' M U'</u> (9 STM) ^{**}	A9
(UR FD BD)	<u>M' U M D2 M' U M D2</u> (8 STM) ^{**}	Toss Up
(UR FD LU)	<u>S R' F' R S' R' F R</u> (8 STM) ^{**}	Toss Up
(UR FD LB)	<u>r E' R' U' R E R' U M</u> (9 WTM) ^{**} <u>E' R' U M' U' R U M U' E</u> (10 STM)*	Wide A9 Setup into Drop and Catch
(UR FD LF)	<u>d S D' F D S' D' F' E'</u> (9 WTM) ^{**} <u>u U L U' M' U L' U' M u'</u> (10 WTM)* <u>M' R' E R U' R' E' R U M</u> (10 STM)*	Wide A9 Wide setup into Toss Up Setup into Drop and Catch
(UR FD LD)	<u>M' U M D M' U' M D'</u> (8 STM) ^{**}	Toss Up
(UR FD DL)	<u>S2 R' F' R S2 R' F R</u> (8 STM) ^{**} <u>U2 L2 U' M' U L2 U' M U'</u> (9 STM)*	Toss Up A9
(UR FD DR)	<u>R2 U M' U' R2 U M U'</u> (8 STM) ^{**}	Drop and Catch
(UR FD DB)	<u>M D' R2 D M' D' R2 D</u> (8 STM) ^{**}	Toss Up

(UR RF UB)	<u>B E2 B' U' B E2 B' U</u> (8 STM)** <u>U' L E' L' U' L E L' U2</u> (9 STM)*	Drop and Catch B9
(UR RF UL)	<u>L E' L' U2 L E L' U2</u> (8 STM)**	Drop and Catch
(UR RF UF)	<u>U L E' L' U L E L' U2</u> (9 STM)**	B9
(UR RF FU)	<u>F' R E2 R' U' R E2 R' U F</u> (10 STM)**	Setup into Drop and Catch
(UR RF FL)	<u>F' U F E F' U' F E'</u> (8 STM)**	Toss Up
(UR RF FD)	<u>D S' U F' U' S U F U' D'</u> (10 STM)** <u>u M' U L' U' M U L U' u'</u> (10 WTM)**	Setup into Toss Up Wide setup into Toss Up
(UR RF RB)	<u>F' U F' E2 F U' F' E2 F2</u> (9 STM)**	A9
(UR RF RD)	<u>S' U F' U' S U F U'</u> (8 STM)**	Toss Up
(UR RF BU)	<u>f F' L F M F' L' F M' f</u> (10 WTM)** <u>f U2 M' U' R2 U M U' R2 U' f</u> (10 WTM)** <u>S F' M F R F' M' F R' S'</u> (10 STM)**	Wide setup into Toss Up Wide setup into Drop and Catch Setup into Drop and Catch
(UR RF BR)	<u>F' U F E' F' U' F E</u> (8 STM)**	Toss Up
(UR RF BL)	<u>L2 E' L' U2 L E L' U2 L'</u> (9 STM)**	A9
(UR RF BD)	<u>S R F M' F' R' F M f</u> (9 WTM)** <u>F D R2 D' M' D R2 D' M F'</u> (10 STM)*	Wide A9 Setup into Toss Up
(UR RF LU)	<u>S U F' U' S' U F U'</u> (8 STM)**	Toss Up
(UR RF LB)	<u>F' U F E2 F' U' F E2</u> (8 STM)**	Toss Up
(UR RF LF)	<u>F2 L' S' L F2 L' S L</u> (8 STM)**	Drop and Catch
(UR RF LD)	<u>L' F2 L' S' L F2 L' S L2</u> (9 STM)**	A9
(UR RF DF)	<u>F D' S2 D F' D' S2 D</u> (8 STM)**	Drop and Catch
(UR RF DL)	<u>D F D' S2 D F' D' S2</u> (8 STM)**	Toss Up
(UR RF DR)	<u>U2 S2 U' F' U S2 U' F U'</u> (9 STM)**	A9
(UR RF DB)	<u>D2 F D' S2 D F' D' S2 D'</u> (9 STM)** <u>u M2 U L' U' M2 U L U' u'</u> (10 WTM)*	A9 Wide Setup into Toss Up

(UR RB UB)	<u>U' L' E L U' L' E' L U2</u> (9 STM)**	B9
(UR RB UL)	<u>L' E L U2 L' E' L U2</u> (8 STM)**	Drop and Catch
(UR RB UF)	<u>F' E2 F U F' E2 F U'</u> (8 STM)**	Drop and Catch
(UR RB FU)	<u>b B L' B' M' B L B' M b'</u> (10 WTM)** <u>b' U2 M U R2 U' M' U R2 U b</u> (10 WTM)** <u>S B M' B' R' B M B' R S'</u> (10 STM)**	Wide setup into Toss Up Wide setup into Drop and Catch Setup into Drop and Catch
(UR RB FL)	<u>L2 E L U2 L' E' L U2 L</u> (9 STM)**	A9
(UR RB FR)	<u>B U' B E B U B E'</u> (8 STM)**	Toss Up
(UR RB FD)	<u>u M' U' R U M U' R' E</u> (9 WTM)** <u>F' B U' B' E B U B' E' F</u> (10 STM)*	Wide A9 Setup into Toss Up
(UR RB RF)	<u>F2 E2 F U F' E2 F U' F</u> (9 STM)**	A9
(UR RB RD)	<u>S' U' B U S U' B' U</u> (8 STM)**	Toss Up
(UR RB BU)	<u>E' R' F M2 F' R F M2 F' E</u> (10 STM)**	Setup into Drop and Catch
(UR RB BL)	<u>E L U2 L' E' L U2 L'</u> (8 STM)**	Toss Up
(UR RB BD)	<u>D' S' U' B U S U' B' U D</u> (10 STM)** <u>u' M U' L U M' U' L' U u</u> (10 WTM)**	Setup into Toss Up Wide setup into Toss Up
(UR RB LU)	<u>S' U' B U S' U' B' U</u> (8 STM)**	Toss Up
(UR RB LB)	<u>B2 L S' L' B2 L S L'</u> (8 STM)**	Drop and Catch
(UR RB LF)	<u>E2 F U F' E2 F U' F'</u> (8 STM)**	Toss Up
(UR RB LD)	<u>L B2 L S' L' B2 L S L2</u> (9 STM)**	A9
(UR RB DF)	<u>D2 B' D S2 D' B D S2 D</u> (9 STM)** <u>u' M2 U' L U M2 U' L' U u</u> (10 WTM)*	A9 Wide setup into Toss Up
(UR RB DL)	<u>D' B' D S2 D' B D S2</u> (8 STM)**	Toss Up
(UR RB DR)	<u>D B' D S2 D' B D S2 D2</u> (9 STM)** <u>B' R2 U M2 U' R2 U M2 U' B</u> (10 STM)*	A9 Setup into Drop and Catch

(UR RB DB)	<u>B' D S2 D' B D S2 D'</u> (8 STM)**	Drop and Catch
(UR RD UB)	<u>M' D M U' M' D' M U</u> (8 STM)** <u>U R' E' R U' R' E R</u> (8 STM)**	Drop and Catch Direct Insert
(UR RD UL)	<u>U2 R' E' R U2 R' E R</u> (8 STM)**	Direct Insert
(UR RD UF)	<u>M D' M' U M D M' U'</u> (8 STM)**	Drop and Catch
(UR RD FU)	<u>S D' F2 D S' D' F2 D</u> (8 STM)** <u>M2 D M U' M' D' M U M</u> (9 STM)*	A9
(UR RD FL)	<u>R' F2 R S' R' F2 R S</u> (8 STM)**	Toss Up
(UR RD FR)	<u>S D' F D S' D' F' D</u> (8 STM)**	Toss Up
(UR RD FD)	<u>D' M' U M D M' U' M</u> (8 STM)**	Toss Up
(UR RD RF)	<u>U F' U' S' U F U' S</u> (8 STM)**	Toss Up
(UR RD RB)	<u>U' B U S' U' B' U S</u> (8 STM)**	Toss Up
(UR RD BU)	<u>R B' R' S' R B R' S</u> (8 STM)**	Toss Up
(UR RD BR)	<u>S D B' D' S' D B D'</u> (8 STM)**	Toss Up
(UR RD BL)	<u>R B2 R' S' R B2 R' S</u> (8 STM)**	Toss Up
(UR RD BD)	<u>D M U' M' D' M U M'</u> (8 STM)**	Toss Up
(UR RD LU)	<u>U2 R2 U M U' R2 U M' U</u> (9 STM)** <u>R' E R' U2 R E' R' U2 R2</u> (9 STM)**	A9 A9
(UR RD LB)	<u>U' B' U S' U' B U S</u> (8 STM)** <u>S R' B2 R S' R' B2 R</u> (8 STM)**	Toss Up Toss Up
(UR RD LF)	<u>U F U' S' U F' U' S</u> (8 STM)**	Toss Up
(UR RD LD)	<u>R' E R D2 R' E' R D2</u> (8 STM)**	Direct Insert
(UR RD DF)	<u>U F2 U' S' U F2 U' S</u> (8 STM)**	Toss Up

(UR RD DL)	<u>D' M D' R2 D M' D' R2 D2</u> (9 STM)**	A9
(UR RD DB)	<u>U' B2 U S' U' B2 U S</u> (8 STM)**	Toss Up
(UR BU UL)	<u>L' B L' S2 L B' L' S2 L2</u> (9 STM)**	A9
(UR BU UF)	<u>B' R B M' B' R' B M</u> (8 STM)**	Toss Up
(UR BU FU)	<u>B' R B' M2 B R' B' M2 B2</u> (9 STM)**	A9
(UR BU FL)	<u>L2 B L' S2 L B' L' S2 L'</u> (9 STM)**	A9
(UR BU FR)	<u>F M2 F' R' F M2 F' R</u> (8 STM)**	Drop and Catch
(UR BU FD)	<u>B' R B M2 B' R' B M2</u> (8 STM)**	Toss Up
(UR BU RF)	<u>S F' M F R F' M' F R' S'</u> (10 STM)** <u>f M F' L F M' F' L' F f</u> (10 WTM)** <u>f U2 M' U' R2 U M U' R2 U' f</u> (11 STM)*	Setup into Drop and Catch Wide setup into Toss Up Wide setup into A9
(UR BU RB)	<u>U R B' M2 B R' B' M2 B U'</u> (10 STM)**	Setup into Drop and Catch
(UR BU RD)	<u>D B2 D' S D B2 D' S'</u> (8 STM)**	Toss Up
(UR BU BR)	<u>R2 F M2 F' R F M2 F' R</u> (9 STM)**	B9
(UR BU BL)	<u>B L' S2 L B' L' S2 L</u> (8 STM)**	Drop and Catch
(UR BU BD)	<u>B2 D' S D B2 D' S' D</u> (8 STM)**	Drop and Catch
(UR BU LU)	<u>S R B' R' S' R B R'</u> (8 STM)**	Toss Up
(UR BU LB)	<u>R L U' L' E L U L' E' R'</u> (10 STM)** <u>1L F' L' S' L F L' S' 1</u> (10 WTM)**	Setup into Toss Up Wide setup into Toss Up
(UR BU LF)	<u>r' E R U' R' E' R U M'</u> (9 WTM)** <u>M R' E R U' R' E' R U M'</u> (10 STM)*	Wide A9 Setup into Drop and Catch
(UR BU LD)	<u>M U M D M' U' M D' M2</u> (9 STM)**	A9

(UR BU DF)	<u>B' R B' M B R' B' M' B2</u> (9 STM)**	A9
(UR BU DL)	<u>L B L' S2 L B' L' S2</u> (8 STM)**	Toss Up
(UR BU DR)	<u>D M' D' R2 D M D' R2</u> (8 STM)**	Drop and Catch
(UR BU DB)	<u>M' D' R2 D M D' R2 D</u> (8 STM)**	Toss Up
(UR BR UB)	<u>U2 F E' F' U' F E F' U'</u> (9 STM)**	B9
(UR BR UL)	<u>L E2 L' U2 L E2 L' U2</u> (8 STM)**	Drop and Catch
(UR BR UF)	<u>F E' F' U F E F' U'</u> (8 STM)**	Drop and Catch
(UR BR FU)	<u>R B' M2 B R' B' M2 B</u> (8 STM)**	Drop and Catch
(UR BR FL)	<u>E2 L' U2 L E2 L' U2 L</u> (8 STM)**	Toss Up
(UR BR FR)	<u>U' R2 F' M F R2 F' M' F U</u> (10 STM)** <u>S2 R' S' R2 S R' S2</u> (7 STM)	Setup into Drop and Catch SP7 for 3x3
(UR BR FD)	<u>U M' U' R' U M U' R</u> (8 STM)**	Drop and Catch
(UR BR RF)	<u>E' F' U F E F' U' F</u> (8 STM)**	Toss Up
(UR BR RD)	<u>D B' D' S D B D' S'</u> (8 STM)**	Toss Up
(UR BR BU)	<u>R' F M2 F' R' F M2 F' R2</u> (9 STM)**	B9
(UR BR BL)	<u>R E L2 E' R' E L2 E'</u> (8 STM)**	Direct Insert
(UR BR BD)	<u>U' M U R' U' M' U R</u> (8 STM)**	Drop and Catch
(UR BR LU)	<u>U' M' U R' U' M U R</u> (8 STM)**	Direct Insert
(UR BR LB)	<u>R B M B' R' B M' B'</u> (8 STM)**	Direct Insert
(UR BR LF)	<u>S' L' S R' S' L S R</u> (8 STM)** <u>F2 E' F' U F E F' U F'</u> (9 STM)*	Drop and Catch A9
(UR BR LD)	<u>R E L E' R' E L' E'</u> (8 STM)**	Drop and Catch

(UR BR DF)	<u>U' M2 U R' U' M2 U R</u> (8 STM)**	Drop and Catch
(UR BR DL)	<u>L B2 L' S2 L B2 L' S2</u> (8 STM)** <u>L' E2 L' U2 L E2 L' U2 L2</u> (9 STM)*	Toss Up A9
(UR BR DR)	<u>D' U' M2 U R' U' M2 U R D</u> (10 STM)**	Setup into Drop and Catch
(UR BR DB)	<u>U M2 U' R' U M2 U' R</u> (8 STM)**	Drop and Catch
(UR BL UB)	<u>U R' E2 R U' R' E2 R</u> (8 STM)**	Drop and Catch
(UR BL UL)	<u>U2 R' E2 R U2 R' E2 R</u> (8 STM)**	Drop and Catch
(UR BL UF)	<u>U' R' E2 R U R' E2 R</u> (8 STM)**	Drop and Catch
(UR BL FU)	<u>L' S2 L' F' L S2 L' F L2</u> (9 STM)**	A9
(UR BL FL)	<u>L S' L2 S L2 S' L2 S L</u> (9 STM)** <u>L' y' M' U2 M U2 M' U2 M U2 y L</u> (10 STM)*	SP9 Setup into Slice-Plane
(UR BL FR)	<u>L U2 L' E2 L U2 L' E2</u> (8 STM)**	Toss Up
(UR BL FD)	<u>U M' U L U' M U L' U2</u> (9 STM)** <u>L' S2 L' F L S2 L' F' L2</u> (9 STM)**	A9 A9
(UR BL RF)	<u>F2 E F U F' E' F U' F</u> (9 STM)**	A9
(UR BL RB)	<u>L U2 L' E L U2 L' E'</u> (8 STM)**	Toss Up
(UR BL RD)	<u>S' R B2 R' S R B2 R'</u> (8 STM)**	Toss Up
(UR BL BU)	<u>L' S2 L B L' S2 L B'</u> (8 STM)**	Drop and Catch
(UR BL BR)	<u>L' S2 L B2 L' S2 L B2</u> (8 STM)**	Drop and Catch
(UR BL BD)	<u>L' S2 L B' L' S2 L B</u> (8 STM)**	Drop and Catch
(UR BL LU)	<u>S R B2 R' S' R B2 R'</u> (8 STM)**	Toss Up
(UR BL LF)	<u>L U2 L' E' L U2 L' E</u> (8 STM)**	Toss Up
(UR BL LD)	<u>E2 R' E' L' E R E' L E'</u> (9 STM)** <u>R2 S' R' B2 R S R' B2 R'</u> (9 STM)**	A9 A9
(UR BL DF)	<u>U' M2 U' L U M2 U' L' U2</u> (9 STM)**	A9

(UR BL DL)	<u>S2 R B2 R' S2 R B2 R'</u> (8 STM)**	Toss Up
(UR BL DR)	<u>R' E' R2 E R2 E' R2 E R'</u> (9 STM)** <u>L y M' U2 M U2 M' U2 M U2 y' L'</u> (10 STM)*	SP9 Setup into Slice-Plane
(UR BL DB)	<u>U M2 U L U' M2 U L' U2</u> (9 STM)**	A9
(UR BD UB)	<u>B' E' B U' B' E B U</u> (8 STM)**	Direct Insert
(UR BD UL)	<u>S' D S U2 S' D' S U2</u> (8 STM)**	Drop and Catch
(UR BD UF)	<u>U' S D' S' U S D S'</u> (8 STM)** <u>B R B M' B' R' B M B2</u> (9 STM)*	Drop and Catch A9
(UR BD FU)	<u>M2 F R' F' M2 F R F'</u> (8 STM)**	Toss Up
(UR BD FL)	<u>U2 L' U M U' L U M' U</u> (9 STM)**	A9
(UR BD FR)	<u>F' M2 F R' F' M2 F R</u> (8 STM)**	Drop and Catch
(UR BD FD)	<u>D2 M' U M D2 M' U' M</u> (8 STM)**	Toss Up
(UR BD RF)	<u>f M' F' R F M F' R' S'</u> (9 WTM)** <u>u' U R' U' M U R U' M' u</u> (10 STM)* <u>S F M' F' R F M F' R' S'</u> (10 STM)*	Wide A9 Wide setup into Toss Up Setup into Drop and Catch
(UR BD RB)	<u>u' U' L U M U' L' U M' u</u> (10 WTM)** <u>D' U' B U S' U' B' U S D</u> (10 STM)**	Wide setup into Toss Up Setup into Toss Up
(UR BD RD)	<u>M U' M' D M U M' D'</u> (8 STM)**	Toss Up
(UR BD BU)	<u>D' S D B2 D' S' D B2</u> (8 STM)**	Drop and Catch
(UR BD BR)	<u>R' U' M U R U' M' U</u> (8 STM)**	Drop and Catch
(UR BD BL)	<u>B' L' S2 L B L' S2 L</u> (8 STM)** <u>U2 L U M U' L' U M' U</u> (9 STM)*	Drop and Catch A9
(UR BD LU)	<u>S R B R' S' R B' R'</u> (8 STM)**	Toss Up
	<u>d' S D B' D' S' D B E</u> (9 WTM)**	Wide A9

(UR BD LB)	<u>u' U' L' U M U' L U M' u</u> (10 WTM)* <u>M R E' R' U R E R' U' M'</u> (10 STM)*	Wide setup into Toss Up Setup into Drop and Catch
(UR BD LF)	<u>r' E R U R' E' R U' M'</u> (9 WTM)** <u>E R U' M U R' U' M' U E'</u> (10 STM)*	Wide A9 Setup into Drop and Catch
(UR BD LD)	<u>M U' M' D' M U M' D</u> (8 STM)**	Toss Up
(UR BD DF)	<u>M' D R2 D' M D R2 D'</u> (8 STM)**	Toss Up
(UR BD DL)	<u>S2 R B R' S2 R B' R'</u> (8 STM)** <u>U2 L2 U M U' L2 U M' U</u> (9 STM)*	Toss Up A9
(UR BD DR)	<u>R2 U' M U R2 U' M' U</u> (8 STM)**	Drop and Catch
(UR LU UB)	<u>S' L' B L S L' B' L</u> (8 STM)**	Toss Up
(UR LU UF)	<u>S' L F' L' S L F L'</u> (8 STM)**	Toss Up
(UR LU FU)	<u>R' F R S R' F' R S'</u> (8 STM)**	Toss Up
(UR LU FL)	<u>R' F2 R S R' F2 R S'</u> (8 STM)**	Toss Up
(UR LU FR)	<u>S' U' F' U S U' F U</u> (8 STM)** <u>F R' F' R S R' F R f</u> (9 WTM)*	Toss Up Wide A9
(UR LU FD)	<u>R' F' R S R' F R S'</u> (8 STM)**	Toss Up
(UR LU RF)	<u>S' L F2 L' S L F2 L'</u> (8 STM)** <u>U M' U R U' M U R' U2</u> (9 STM)*	Toss Up A9
(UR LU RB)	<u>S' L' B2 L S L' B2 L</u> (8 STM)** <u>U M' U R' U' M U R U2</u> (9 STM)*	Toss Up A9
(UR LU RD)	<u>U M' U R2 U' M U R2 U2</u> (9 STM)**	A9
(UR LU BU)	<u>R B' R' S R B R' S'</u> (8 STM)**	Toss Up
(UR LU BR)	<u>R' U' M' U R U' M U</u> (8 STM)**	Direct Insert
(UR LU BL)	<u>R B2 R' S R B2 R' S'</u> (8 STM)**	Toss Up
(UR LU BD)	<u>R B R' S R B' R' S'</u> (8 STM)**	Toss Up

(UR LU LB)	<u>U M' U' L U M U' L'</u> (8 STM)**	Direct Insert
(UR LU LF)	<u>U M' U' L' U M U' L</u> (8 STM)**	Direct Insert
(UR LU LD)	<u>U M' U' L2 U M U' L2</u> (8 STM)**	Direct Insert
(UR LU DF)	<u>S' L F L' S L F' L'</u> (8 STM)**	Toss Up
(UR LU DL)	<u>L' E L' U2 L E' L' U2 L2</u> (9 STM)**	A9
(UR LU DR)	<u>R2 U' M' U R2 U' M U</u> (8 STM)**	Direct Insert
(UR LU DB)	<u>S' L' B' L S L' B L</u> (8 STM)**	Toss Up
(UR LB UB)	<u>U R E' R' U' R E R'</u> (8 STM)**	Drop and Catch
(UR LB UL)	<u>U2 R E' R' U2 R E R'</u> (8 STM)**	Drop and Catch
(UR LB UF)	<u>U' R E' R' U R E R'</u> (8 STM)**	Drop and Catch
(UR LB FU)	<u>M' U R E' R' U' R E r'</u> (9 WTM)** <u>M' U R E' R' U' R E R' M</u> (10 STM)*	Wide A9 Setup into Drop and Catch
(UR LB FL)	<u>E L' U2 L E' L' U2 L</u> (8 STM)**	Toss Up
(UR LB FR)	<u>R S' L S R' S' L' S</u> (8 STM)** <u>B' U' B' E B U B' E' B2</u> (9 STM)*	Drop and Catch A9
(UR LB FD)	<u>M' U' R E' R' U R E r'</u> (9 WTM)** <u>u M' U' R' U M U' R U u'</u> (10 WTM)* <u>M' U' R E' R' U R E R' M</u> (10 STM)*	Wide A9 Wide setup into Toss Up Setup into Drop and Catch
(UR LB RF)	<u>E2 F' U F E2 F' U' F</u> (8 STM)**	Toss Up
(UR LB RB)	<u>L S' L' B2 L S L' B2</u> (8 STM)**	Drop and Catch
(UR LB RD)	<u>R' B2 R S R' B2 R S'</u> (8 STM)**	Toss Up
(UR LB BU)	<u>R E L U' L' E' L U L' R'</u> (10 STM)**	Setup into Toss Up
(UR LB BR)	<u>B' M' B R B' M B R'</u> (8 STM)**	Direct Insert
(UR LB BD)	<u>E' B' D' S D B D' S' d</u> (9 WTM)** <u>E' U' M U R' U' M' U R E</u> (10 STM)*	Wide A9 Setup into Drop and Catch

(UR LB LU)	<u>L U M' U' L' U M U</u> (8 STM)**	Direct Insert
(UR LB LF)	<u>E' R E L2 E' R' E L2</u> (8 STM)**	Drop and Catch
(UR LB LD)	<u>E' R E L E' R' E L'</u> (8 STM)**	Drop and Catch
(UR LB DF)	<u>F' E2 F' U F E2 F' U' F2</u> (9 STM)** <u>u' M2 U' L' U M2 U' L U u</u> (10 STM)*	A9 Wide setup into Toss Up
(UR LB DL)	<u>S2 U' B' U S2 U' B U</u> (8 STM)**	Toss Up
(UR LB DR)	<u>R2 S' L S R2 S' L' S</u> (8 STM)**	Drop and Catch
(UR LB DB)	<u>L S' L' B' L S L' B</u> (8 STM)** <u>u M2 U' R' U M2 U' R U u'</u> (10 STM)*	Drop and Catch Wide setup into Toss Up
(UR LF UB)	<u>U R' E R U' R' E' R</u> (8 STM)**	Drop and Catch
(UR LF UL)	<u>U2 R' E R U2 R' E' R</u> (8 STM)**	Drop and Catch
(UR LF UF)	<u>U' R' E R U R' E' R</u> (8 STM)**	Drop and Catch
(UR LF FU)	<u>R' E' L' U L E L' U' L R</u> (10 STM)**	Setup into Toss Up
(UR LF FR)	<u>F M F' R' F M' F' R</u> (8 STM)**	Direct Insert
(UR LF FD)	<u>E F D S D' F' D S' d</u> (9 WTM)** <u>E U M' U' R U M U' R' E'</u> (10 STM)*	Wide A9 Setup into Drop and Catch
(UR LF RF)	<u>L' S' L B2 L' S L F2</u> (8 STM)**	Drop and Catch
(UR LF RB)	<u>E2 B U' B' E2 B U B'</u> (8 STM)**	Toss Up
(UR LF RD)	<u>R F2 R' S R F2 R' S'</u> (8 STM)**	Toss Up
(UR LF BU)	<u>M U' R' E R U R' E' r</u> (9 WTM)** <u>M U' R' E R U R' E' R M'</u> (10 STM)*	Wide A9 Setup into Drop and Catch
(UR LF BR)	<u>R' S' L' S R S' L S</u> (8 STM)** <u>F U F E' F' U' F E F2</u> (9 STM)*	Drop and Catch A9
(UR LF BL)	<u>E' L U2 L' E L U2 L'</u> (8 STM)**	Toss Up
(UR LF BD)	<u>M U R' E R U' R' E' r</u> (9 WTM)** <u>u' M U R U' M' U R' U' u</u> (10 WTM)* <u>M U R' E R U' R' E' R M'</u> (10 STM)*	Wide A9 Wide setup into Toss Up

(UR LF LU)	<u>L' U' M U L U' M' U'</u> (8 STM)**	Direct Insert
(UR LF LB)	<u>E R' E' L2 E R E' L2</u> (8 STM)**	Drop and Catch
(UR LF LD)	<u>E R' E' L' E R E' L</u> (8 STM)**	Drop and Catch
(UR LF DF)	<u>L' S' L F L' S L F'</u> (8 STM)** <u>u' M2 U R U' M2 U R' U' u'</u> (10 STM)*	Drop and Catch Wide setup into Toss Up
(UR LF DL)	<u>S2 U F U' S2 U F' U'</u> (8 STM)**	Toss Up
(UR LF DR)	<u>R2 S' L' S R2 S' L S</u> (8 STM)**	Drop and Catch
(UR LF DB)	<u>B E2 B U' B' E2 B U B2</u> (9 STM)** <u>u M2 U L U' M2 U L' U' u'</u> (10 STM)*	A9 Wide setup into Toss Up
(UR LD UB)	<u>M' D' M U' M' D M U</u> (8 STM)**	Drop and Catch
(UR LD UL)	<u>L E L' U2 L E' L' U2</u> (8 STM)**	Direct Insert
(UR LD UF)	<u>M D M' U M D' M' U'</u> (8 STM)**	Drop and Catch
(UR LD FU)	<u>R' F R' S' R F' R' S R2</u> (9 STM)**	A9
(UR LD FL)	<u>R' F2 R' S' R F2 R' S R2</u> (9 STM)**	A9
(UR LD FR)	<u>E' L' E R' E' L E R</u> (8 STM)**	Drop and Catch
(UR LD FD)	<u>D M' U M D' M' U' M</u> (8 STM)**	Toss Up
(UR LD RF)	<u>U F' U S U' F U S' U2</u> (9 STM)** <u>d R' U M' U' R U M U' d'</u> (10 STM)*	A9 Wide setup into Drop and Catch
(UR LD RB)	<u>U' B U' S U B' U' S' U2</u> (9 STM)** <u>d' R U' M U R' U' M' U d</u> (10 STM)*	A9 Wide setup into Drop and Catch
(UR LD RD)	<u>D2 R' E R D2 R' E' R</u> (8 STM)** <u>D M' U M D2 M' U' M D</u> (9 STM)*	Direct Insert B9
(UR LD BU)	<u>R B' R S' R' B R S R2</u> (9 STM)**	A9
(UR LD BR)	<u>E L E' R E L' E' R'</u> (8 STM)**	Drop and Catch

(UR LD BL)	<u>R B2 R S' R' B2 R S R2</u> (9 STM) **	A9
(UR LD BD)	<u>D' M U' M' D M U M'</u> (8 STM) **	Toss Up
(UR LD LU)	<u>L2 U M' U' L2 U M U'</u> (8 STM) **	Direct Insert
(UR LD LB)	<u>L E' R E L' E' R' E'</u> (8 STM) **	Drop and Catch
(UR LD LF)	<u>L' E R' E' L E R E'</u> (8 STM) **	Drop and Catch
(UR LD DF)	<u>M D' M U' M' D M U M2</u> (9 STM) **	A9
(UR LD DR)	<u>D' M' D R2 D' M D R2</u> (8 STM) **	Direct Insert
(UR LD DB)	<u>M' D M' U M D' M' U' M2</u> (9 STM) **	A9
(UR DF UB)	<u>D R2 D' M2 D R2 D' M2</u> (8 STM) **	Toss Up
(UR DF UL)	<u>U' M' U2 M U2 M' U2 M U'</u> (9 STM) ** <u>U M' U2 M U</u> (5 STM)	SP9 SP5 for 3x3
(UR DF UF)	<u>D' S2 D F2 D' S2 D F2</u> (8 STM) **	Drop and Catch
(UR DF FU)	<u>F2 U F E F' U' F E' F</u> (9 STM) **	A9
(UR DF FL)	<u>U2 L' U M2 U' L U M2 U</u> (9 STM) **	A9
(UR DF FR)	<u>R U' M2 U R' U' M2 U</u> (8 STM) **	Drop and Catch
(UR DF RF)	<u>E R' U' M2 U R U' M2 u</u> (9 WTM) ** <u>E R' U' M2 U R U' M2 U E'</u> (10 STM) *	Wide A9 Setup into Drop and Catch
(UR DF RB)	<u>D' S2 D' B' D S2 D' B D2</u> (9 STM) ** <u>u' U' L U M2 U' L' U M2 u</u> (10 WTM) *	A9 Wide setup into Toss Up
(UR DF RD)	<u>M2 U' M' D M U M' D' M'</u> (9 STM) **	A9
(UR DF BU)	<u>B2 M B R B' M' B R' B</u> (9 STM) **	A9
(UR DF BR)	<u>R' U' M2 U R U' M2 U</u> (8 STM) **	Drop and Catch
(UR DF BL)	<u>R' E2 R' D R E2 R D' R2</u> (9 STM) **	A9
(UR DF BD)	<u>D R2 D' M' D R2 D' M</u> (8 STM) **	Toss Up
(UR DF LU)	<u>L F L' S' L F' L' S</u> (8 STM) **	Toss Up

(UR DF LB)	<u>D' S2 D' B D S2 D' B' D2</u> (9 STM)** <u>u' U' L' U M2 U' L U M2 u</u> (10 STM)*	A9 Wide setup into Toss Up
(UR DF LF)	<u>F L' S' L F' L' S L</u> (8 STM)**	Drop and Catch
(UR DF LD)	<u>M2 U' M' D' M U M' D M'</u> (9 STM)**	A9
(UR DF DL)	<u>S2 U F2 U' S2 U F2 U'</u> (8 STM)**	Toss Up
(UR DF DR)	<u>R2 U' M2 U R2 U' M2 U</u> (8 STM)**	Toss Up
(UR DF DB)	<u>D S' U2 S D2 S' U2 S D</u> (9 STM)** <u>U M' U2 M D2 M' U2 M D2 U'</u> (10 STM)*	B9 Setup into Direct Insert
(UR DL UB)	<u>S2 D' B2 D S2 D' B2 D</u> (8 STM)**	Toss Up
(UR DL UL)	<u>S U2 S' U2 S U2 S' U2</u> (8 STM)** <u>y' M' U2 M U2 M' U2 M U2 y</u> (8 STM)** <u>U2 S U2 S'</u> (4 STM) <u>y' U2 M' U2 M y</u> (4 STM)	Slice-Plane Slice-Plane Half Slice-Plane for 3x3 Half Slice-Plane for 3x3
(UR DL UF)	<u>S2 D F2 D' S2 D F2 D'</u> (8 STM)**	Toss Up
(UR DL FU)	<u>R' F R S2 R' F' R S2</u> (8 STM)**	Toss Up
(UR DL FL)	<u>R' F2 R S2 R' F2 R S2</u> (8 STM)**	Toss Up
(UR DL FR)	<u>S2 L' F2 L S2 L' F2 L</u> (8 STM)**	Toss Up
(UR DL FD)	<u>R' F' R S2 R' F R S2</u> (8 STM)**	Toss Up
(UR DL RF)	<u>U F' U' S2 U F U' S2</u> (8 STM)** <u>L2 U2 L E' L' U2 L E L</u> (9 STM)*	Toss Up A9
(UR DL RB)	<u>U' B U S2 U' B' U S2</u> (8 STM)** <u>L2 U2 L' E L U2 L' E' L'</u> (9 STM)*	Toss Up A9
(UR DL RD)	<u>D2 R2 D' M' D R2 D' M D'</u> (9 STM)** <u>R E R D2 R' E' R D2 R2</u> (9 STM)**	A9 A9
(UR DL BU)	<u>R B' R' S2 R B R' S2</u> (8 STM)**	Toss Up
(UR DL BR)	<u>S2 L B2 L' S2 L B2 L'</u> (8 STM)**	Toss Up
(UR DL BL)	<u>R B2 R' S2 R B2 R' S2</u> (8 STM)**	Toss Up

(UR DL BD)	<u>R B R' S2 R B' R' S2</u> (8 STM)**	Toss Up
(UR DL LU)	<u>L2 U2 L E L' U2 L E' L</u> (9 STM)**	A9
(UR DL LB)	<u>U' B' U S2 'U B U S2</u> (8 STM)**	Toss Up
(UR DL LF)	<u>U F U' S2 U F' U' S2</u> (8 STM)**	Toss Up
(UR DL DF)	<u>U F2 U' S2 U F2 U' S2</u> (8 STM)** <u>U' M2 U' L2 U M2 U' L2 U2</u> (9 STM)*	Toss Up A9
(UR DL DR)	<u>S' R2 S R2 S' R2 S R2</u> (8 STM)** <u>y D2 M' U2 M D2 M' U2 M y'</u> (8 STM)** <u>R2 S' R2 S</u> (4 STM)	Slice-Plane Slice Plane Half Slice-Plane for 3x3
(UR DL DB)	<u>U' B2 U S2 U' B2 U S2</u> (8 STM)**	Toss Up
(UR DR UB)	<u>R2 D' M2 D R2 D' M2 D</u> (8 STM)**	Drop abd Catcg
(UR DR UL)	<u>U2 S' U2 S U2 S' U2 S</u> (8 STM)** <u>y U2 M' U2 M U2 M' U2 M y'</u> (8 STM)** <u>R2 S R2 S'</u> (4 STM) <u>y M' U2 M U2 y'</u> (4 STM)	Slice-Plane Slice Plane Half Slice-Plane for 3x3 Half Slice-Plane for 3x3
(UR DR UF)	<u>R2 D M2 D' R2 D M2 D'</u> (8 STM)**	Drop and Catch
(UR DR FU)	<u>R2 D' M D R2 D' M' D</u> (8 STM)**	Drop and Catch
(UR DR FL)	<u>R' E R2 E' R2 E R2 E' R'</u> (9 STM)** <u>L' y U2 M' U2 M U2 M' U2 M y' L</u> (10 STM)*	SP9 Setup into Slice-Plane
(UR DR FR)	<u>F U M' U' R2 U M U' R2 F'</u> (10 STM)**	Setup into Drop and Catch
(UR DR FD)	<u>U M' U' R2 U M U' R2</u> (8 STM)**	Drop and Catch
(UR DR RF)	<u>U F' U S2 U' F U S2 U2</u> (9 STM)**	A9
(UR DR RB)	<u>U' B U' S2 U B' U' S2 U2</u> (9 STM)**	A9
(UR DR BU)	<u>R2 D M' D' R2 D M D'</u> (8 STM)**	Drop and Catch
(UR DR BR)	<u>B' U' M U R2 U' M' U R2 B</u> (10 STM)**	Setup into Drop and Catch

(UR DR BL)	<u>R E' R2 E R2 E' R2 E R</u> (9 STM) ^{**} <u>L y U2 M' U2 M U2 M' U2 M y L'</u> (10 STM)*	SP9 Setup into Slice-Plane
(UR DR BD)	<u>U' M U R2 U' M' U R2</u> (8 STM) ^{**}	Drop and Catch
(UR DR LU)	<u>U' M' U R2 U' M U R2</u> (8 STM) ^{**}	Direct Insert
(UR DR LB)	<u>S' L S R2 S' L' S R2</u> (8 STM) ^{**}	Drop and Catch
(UR DR LF)	<u>S' L' S R2 S' L S R2</u> (8 STM) ^{**}	Drop and Catch
(UR DR LD)	<u>R2 D' M' D R2 D' M D</u> (8 STM) ^{**}	Direct Insert
(UR DR DF)	<u>U' M2 U R2 U' M2 U R2</u> (8 STM) ^{**}	Drop and Catch
(UR DR DL)	<u>S' U2 S D2 S' U2 S D2</u> (8 STM) ^{**} <u>y M' U2 M D2 M' U2 M D2 y'</u> (8 STM) ^{**} <u>S' R2 S R2</u> (4 STM) <u>y x M' U2 M U2 x' y'</u> (4 STM)	Slice-Plane Slice Plane Half Slice-Plane for 3x3 Half Slice-Plane for 3x3
(UR DR DB)	<u>U M2 U' R2 U M2 U' R2</u> (8 STM) ^{**}	Drop and Catch
(UR DB UB)	<u>D S2 D' B2 D S2 D' B2</u> (8 STM) ^{**}	Drop and Catch
(UR DB UL)	<u>U M U2 M' U2 M U2 M' U</u> (9 STM) ^{**}	SP9
(UR DB UF)	<u>D' R2 D M2 D' R2 D M2</u> (8 STM) ^{**}	Toss Up
(UR DB FU)	<u>F2 M' F' R' F M F' R F'</u> (9 STM) ^{**}	A9
(UR DB FL)	<u>U2 L' U' M2 U L U' M2 U'</u> (8 STM) ^{**}	A9
(UR DB FR)	<u>R U M2 U' R' U M2 U'</u> (8 STM) ^{**}	Drop and Catch
(UR DB FD)	<u>D' R2 D M D' R2 D M'</u> (8 STM) ^{**}	Toss Up
(UR DB RF)	<u>D S2 D F D' S2 D F' D2</u> (9 STM) ^{**}	A9
(UR DB RB)	<u>D S2 D' B' D S2 D' B</u> (8 STM) ^{**}	Drop and Catch
(UR DB RD)	<u>R' B R S R' B' R S'</u> (8 STM) ^{**}	Toss Up

(UR DB BU)	<u>D' R2 D M' D' R2 D M</u> (8 STM)**	Toss Up
(UR DB BR)	<u>R' U M2 U' R U M2 U'</u> (8 STM)**	Drop and Catch
(UR DB BL)	<u>U2 L U' M2 U L' U' M2 U'</u> (9 STM)**	A9
(UR DB LU)	<u>L' B' L S' L' B L S</u> (8 STM)**	Toss Up
(UR DB LB)	<u>B' L S' L' B L S L'</u> (8 STM)**	Drop and Catch
(UR DB LF)	<u>D S2 D F' D' S2 D F D2</u> (9 STM)**	A9
(UR DB LD)	<u>M2 U M D M' U' M D' M</u> (9 STM)**	A9
(UR DB DF)	<u>D' S D2 S' D2 S D2 S' D'</u> (9 STM)**	SP9
(UR DB DL)	<u>S2 U' B2 U S2 U' B2 U</u> (8 STM)**	Toss Up
(UR DB DR)	<u>R2 U M2 U' R2 U M2 U'</u> (8 STM)**	Drop and Catch

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