

**BL**

**BR**

**ML**

**MR**

**FL**

**FR**

1) upward motion analysis

|  |  |  |  |
| --- | --- | --- | --- |
|  | Back | Mid | Front |
| Right | - 0.01 \* time | - 0.01 \* time | - 0.01 \* time |
| Left | - 0.01 \* time | - 0.01 \* time | - 0.01 \* time |

2) downward motion analysis

|  |  |  |  |
| --- | --- | --- | --- |
|  | Back | Mid | Front |
| Right | 0.01 \* time | 0.01 \* time | 0.01 \* time |
| Left | 0.01 \* time | 0.01 \* time | 0.01 \* time |

3) Cosine motion

|  |  |  |  |
| --- | --- | --- | --- |
|  | Back | Mid | Front |
| Right | -50 \* COS(time) | -50 \* COS(time) | -50 \* COS(time) |
| Left | -50 \* COS(time) | -50 \* COS(time) | -50 \* COS(time) |

4) Sine motion

|  |  |  |  |
| --- | --- | --- | --- |
|  | Back | Mid | Front |
| Right | -50 \* SIN(time) | -50 \* SIN(time) | -50 \* SIN(time) |
| Left | -50 \* SIN(time) | -50 \* SIN(time) | -50 \* SIN(time) |

5) Front motion analysis:

|  |  |
| --- | --- |
| LbR | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115 |
| LbL | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115 |
| LfR | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115 |
| LfL | - SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115 |
| LMidr | -SQRT(25899.98+ (time - 53.286)\*\*2) +152.596115 |
| LMidL | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115 |

5’) Front motion analysis (color encoded):

|  |  |  |  |
| --- | --- | --- | --- |
|  | Back | Mid | Front |
| Right | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115 | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115 | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115 |
| Left | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115 | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115 | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115 |

6) Sideways motion analysis:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | B | M | F |
| R | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115 | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115 | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115 |
| L | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115 | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115 | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115 |
| 2 | B | M | F |
| R | -SQRT(25899.98 + (-time - 53.286)\*\*2) +152.596115 | -SQRT(27005.28342 + (-time + 41.64319426)\*\*2) +152.596115 | -SQRT(27005.28342 + (-time + 41.64319426)\*\*2) +152.596115 |
| L | -SQRT(28604.1361 + (-time + 11.64)\*\*2) +152.596115 | -SQRT(28604.1361 + (-time + 11.64)\*\*2) +152.596115 | -SQRT(25899.98 + (-time - 53.286)\*\*2) +152.596115 |
| Superposition | B | M | F |
| R | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115-SQRT(25899.98 + (-time - 53.286)\*\*2) +152.596115 | -SQRT(28604.1361 + (time + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (-time + 41.64319426)\*\*2) +152.596115 | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (-time + 41.64319426)\*\*2) +152.596115 |
| L | -SQRT(25899.98 + (time - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (-time + 11.64)\*\*2) +152.596115 | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (-time + 11.64)\*\*2) +152.596115 | -SQRT(27005.28342 + (time + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (-time - 53.286)\*\*2) +152.596115 |

7) circular motion analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Straight  Cos Motion | Back | Mid | Front |
| Right | -SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 | -SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 | -SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 |
| Left | -SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 | -SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 | -SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 |
| Sideways  SIN wave Motion | B | M | F |
| R | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115 -SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115 | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115 | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115 |
| L | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115 | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115 | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115 |
| Superposition  Circular Motion | B | M | F |
| R | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115 -SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 |
| L | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 |

8) Helical motion analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Superposition  Circular Motion | B | M | F |
| R | - 5 \*time | - 5 \*time | - 5 \*time |
| L | - 5 \*time | - 5 \*time | - 5 \*time |
| Superposition  Circular Motion | B | M | F |
| R | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115 -SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 |
| L | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 |
| Superposition  Helical Motion | B | M | F |
| R | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115 -SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 - 5 \*time | -SQRT(28604.1361 + ((0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 - 5\* time | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(27005.28342 + (-(0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 - 5 \* time |
| L | -SQRT(25899.98 + ((0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(27005.28342 + (50\*COS(time) + 41.64319426)\*\*2) +152.596115 - 5 \* time | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(28604.1361 + (-(0.5773502692 \* 50 \* SIN(time) ) + 11.64)\*\*2) +152.596115-SQRT(25899.98 + (50\*COS(time) - 53.286)\*\*2) +152.596115 - 5 \* time | -SQRT(27005.28342 + ((0.5773502692 \* 50 \* SIN(time) ) + 41.64319426)\*\*2) +152.596115-SQRT(25899.98 + (-(0.5773502692 \* 50 \* SIN(time) ) - 53.286)\*\*2) +152.596115-SQRT(28604.1361 + (50\*COS(time) + 11.64)\*\*2) +152.596115 - 5 \* time |