### SSB ENGINEERS PVT. LTD.

Component

4475\_480\_053\_DES001

Characterisitc

PR-2

Operator

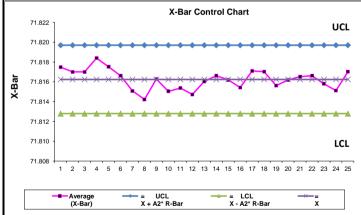
### **Statistical Process Control**

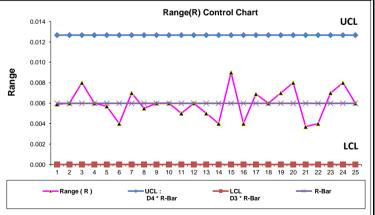
For Sub-group size n = 5

Doc. No. - F/09/04 Issue No. - 01, 01.04.2023 Rev. no. - 00

Sample Size - 125

| Specification       | ons        | 71.800 | -71.830 | LSL         | 71.800 | USL         | 71.83              | A <sub>2</sub>         | 0.5                                 | 577    | D <sub>3</sub>     | (                 | 0     |  |
|---------------------|------------|--------|---------|-------------|--------|-------------|--------------------|------------------------|-------------------------------------|--------|--------------------|-------------------|-------|--|
| Total Tolera        | ance ( T ) | 0.0    | 030     | Section     | BORE   | Machine No. | 52                 | d <sub>2</sub>         | 2.3                                 | 326    | D <sub>4</sub>     |                   | 2.114 |  |
| Measuring           | Instrument | А      | PG      | Least Count | 0.001  | Date        | 07.09.2023         | x                      | 71.                                 | 816    | R-Bar              | 0.0               | 006   |  |
| Sr.No. /<br>Set No. | 1          | 2      | 3       | 4           | 5      | Range (R)   | Average<br>(X-Bar) | = UCL<br>X + A2* R-Bar | = LCL<br>X - A <sub>2</sub> * R-Bar | =<br>X | UCL:<br>D4 * R-Bar | LCL<br>D3 * R-Bar | R-Bar |  |
| 1                   | 71.819     | 71.821 | 71.815  | 71.817      | 71.815 | 0.006       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 2                   | 71.818     | 71.816 | 71.814  | 71.817      | 71.820 | 0.006       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 3                   | 71.821     | 71.815 | 71.818  | 71.813      | 71.818 | 0.008       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 4                   | 71.820     | 71.818 | 71.815  | 71.821      | 71.818 | 0.006       | 71.818             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 5                   | 71.815     | 71.820 | 71.821  | 71.815      | 71.816 | 0.006       | 71.818             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 6                   | 71.816     | 71.815 | 71.819  | 71.815      | 71.818 | 0.004       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 7                   | 71.819     | 71.815 | 71.814  | 71.812      | 71.815 | 0.007       | 71.815             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 8                   | 71.810     | 71.816 | 71.815  | 71.816      | 71.815 | 0.005       | 71.814             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 9                   | 71.815     | 71.815 | 71.815  | 71.815      | 71.821 | 0.006       | 71.816             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 10                  | 71.812     | 71.815 | 71.815  | 71.818      | 71.815 | 0.006       | 71.815             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 11                  | 71.815     | 71.813 | 71.818  | 71.815      | 71.815 | 0.005       | 71.815             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 12                  | 71.815     | 71.812 | 71.818  | 71.813      | 71.815 | 0.006       | 71.815             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 13                  | 71.815     | 71.815 | 71.820  | 71.815      | 71.815 | 0.005       | 71.816             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 14                  | 71.816     | 71.815 | 71.819  | 71.815      | 71.818 | 0.004       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 15                  | 71.818     | 71.820 | 71.815  | 71.811      | 71.817 | 0.009       | 71.816             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 16                  | 71.815     | 71.818 | 71.815  | 71.815      | 71.814 | 0.004       | 71.815             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 17                  | 71.815     | 71.818 | 71.815  | 71.815      | 71.822 | 0.007       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 18                  | 71.816     | 71.815 | 71.821  | 71.815      | 71.818 | 0.006       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 19                  | 71.815     | 71.820 | 71.815  | 71.815      | 71.813 | 0.007       | 71.816             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 20                  | 71.811     | 71.819 | 71.818  | 71.817      | 71.816 | 0.008       | 71.816             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 21                  | 71.815     | 71.819 | 71.816  | 71.815      | 71.817 | 0.004       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 22                  | 71.816     | 71.815 | 71.819  | 71.815      | 71.818 | 0.004       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 23                  | 71.819     | 71.812 | 71.815  | 71.816      | 71.817 | 0.007       | 71.816             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 24                  | 71.811     | 71.816 | 71.815  | 71.819      | 71.815 | 0.008       | 71.815             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |
| 25                  | 71.816     | 71.815 | 71.821  | 71.815      | 71.818 | 0.006       | 71.817             | 71.820                 | 71.813                              | 71.816 | 0.013              | 0                 | 0.006 |  |





| Sigma ( s = R-Bar/d2))                                       | 0.003  | Process not in statistical control,If:                                      |             |                                                    |                                   |  |  |
|--------------------------------------------------------------|--------|-----------------------------------------------------------------------------|-------------|----------------------------------------------------|-----------------------------------|--|--|
| PROCESS CAPABILITY INDEX (AVERAGE) (Cp) = (T) / (6*R-Bar/d2) | 1.942  | a) Points out of control limit b) Seven consequtive points on one side of t |             |                                                    | n one side of the average         |  |  |
| Cpu ((USL-X)/(3*s))                                          | 1.7815 | c) 7 points in row continuously increasing or d                             | lecreasing  | ecreasing d) Points very close to control limits & |                                   |  |  |
| Cpl $((\overline{X}-LSL)/(3*s))$                             | 2.1030 | Akshat Jain                                                                 | Sonu Jangid |                                                    | Chandan Jangid                    |  |  |
| CpK (Min. (Cpu , Cpl))                                       | 1.7815 | Date - 08.09.2023<br>CHECKED BY :                                           |             | Date - 08.09.2023<br>VERIFIED BY :                 | Date - 08.09.2024<br>APPROVED BY: |  |  |

# ENGINEERS PVT. LTD. Component 4475\_480\_053\_DES001

### **Statistical Process Control**

RAJU

For Sub-group size n = 5

Characterisitc

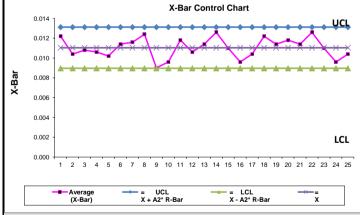
PR-1

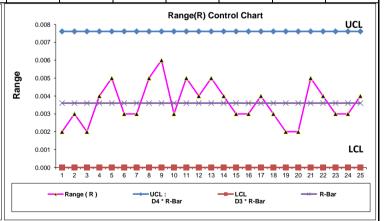
Operator

Doc. No. - F/09/04 Issue No. - 01, 01.04.2023 Rev. no. - 00

Sample Size - 125

| Specification       | cifications 0.0 |       | 0.00-0.020 |             | 0.000  | USL         | 0.02               | A <sub>2</sub>         | 0.577                               |        | D <sub>3</sub>      | (                 | 0     |  |
|---------------------|-----------------|-------|------------|-------------|--------|-------------|--------------------|------------------------|-------------------------------------|--------|---------------------|-------------------|-------|--|
| Total Toler         | ance ( T )      | 0.0   | 020        | Section     | RUNOUT | Machine No. | 52                 | d <sub>2</sub>         | 2.326 D <sub>4</sub>                |        | D <sub>4</sub>      | 2.114             |       |  |
| Measuring           | Instrument      | T.M   | 1+B.C      | Least Count | 0.001  | Date        | 07.09.2023         | x                      | 0.0                                 | )11    | R-Bar               | 0.004             |       |  |
| Sr.No. /<br>Set No. | 1               | 2     | 3          | 4           | 5      | Range (R)   | Average<br>(X-Bar) | = UCL<br>X + A2* R-Bar | = LCL<br>X - A <sub>2</sub> * R-Bar | =<br>X | UCL :<br>D4 * R-Bar | LCL<br>D3 * R-Bar | R-Bar |  |
| 1                   | 0.013           | 0.011 | 0.011      | 0.013       | 0.013  | 0.002       | 0.012              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 2                   | 0.010           | 0.012 | 0.011      | 0.010       | 0.009  | 0.003       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 3                   | 0.011           | 0.010 | 0.012      | 0.011       | 0.010  | 0.002       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 4                   | 0.009           | 0.012 | 0.010      | 0.009       | 0.013  | 0.004       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 5                   | 0.011           | 0.007 | 0.010      | 0.012       | 0.011  | 0.005       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 6                   | 0.011           | 0.013 | 0.012      | 0.011       | 0.010  | 0.003       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 7                   | 0.012           | 0.011 | 0.010      | 0.012       | 0.013  | 0.003       | 0.012              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 8                   | 0.015           | 0.014 | 0.010      | 0.012       | 0.011  | 0.005       | 0.012              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 9                   | 0.011           | 0.010 | 0.008      | 0.011       | 0.005  | 0.006       | 0.009              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 10                  | 0.008           | 0.010 | 0.011      | 0.008       | 0.011  | 0.003       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 11                  | 0.013           | 0.012 | 0.008      | 0.013       | 0.013  | 0.005       | 0.012              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 12                  | 0.009           | 0.013 | 0.013      | 0.009       | 0.009  | 0.004       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 13                  | 0.010           | 0.011 | 0.015      | 0.010       | 0.011  | 0.005       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 14                  | 0.013           | 0.011 | 0.011      | 0.013       | 0.015  | 0.004       | 0.013              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 15                  | 0.011           | 0.013 | 0.010      | 0.011       | 0.010  | 0.003       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 16                  | 0.010           | 0.008 | 0.011      | 0.010       | 0.009  | 0.003       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 17                  | 0.012           | 0.008 | 0.011      | 0.012       | 0.009  | 0.004       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 18                  | 0.012           | 0.011 | 0.012      | 0.012       | 0.014  | 0.003       | 0.012              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 19                  | 0.011           | 0.013 | 0.011      | 0.011       | 0.011  | 0.002       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 20                  | 0.011           | 0.012 | 0.013      | 0.011       | 0.012  | 0.002       | 0.012              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 21                  | 0.010           | 0.011 | 0.015      | 0.010       | 0.011  | 0.005       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 22                  | 0.013           | 0.011 | 0.011      | 0.013       | 0.015  | 0.004       | 0.013              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 23                  | 0.011           | 0.013 | 0.010      | 0.011       | 0.010  | 0.003       | 0.011              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 24                  | 0.010           | 0.008 | 0.011      | 0.010       | 0.009  | 0.003       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
| 25                  | 0.012           | 0.008 | 0.011      | 0.012       | 0.009  | 0.004       | 0.010              | 0.013                  | 0.009                               | 0.011  | 0.008               | 0                 | 0.004 |  |
|                     |                 |       |            |             |        |             |                    |                        |                                     |        |                     |                   |       |  |





| Sigma ( s = R-Bar/d2))                                       | 0.002  | Process not in statistical control,If:          |                                                  |  |                                   |  |  |
|--------------------------------------------------------------|--------|-------------------------------------------------|--------------------------------------------------|--|-----------------------------------|--|--|
| PROCESS CAPABILITY INDEX (AVERAGE) (Cp) = (T) / (6*R-Bar/d2) | 2.154  | a) Points out of control limit                  | b) Seven consequtive points on one side of the a |  |                                   |  |  |
| Cpu ((USL-X)/(3*s))                                          | 1.9297 | c) 7 points in row continuously increasing or c | ecreasing d) Points very close to control lin    |  | limits & Average                  |  |  |
| Cpl ((X-LSL)/(3*s))                                          | 2.3777 | Akshat Jain                                     | Sonu Jangid                                      |  | Chandan Jangid                    |  |  |
| CpK (Min. (Cpu , Cpl))                                       | 1.9297 | Date - 08.09.2023<br>CHECKED BY :               | Date - 08.09.2023<br>VERIFIED BY :               |  | Date - 08.09.2024<br>APPROVED BY: |  |  |

## ENGINEERS PVT. LTD. Component 4475\_480\_053\_DES001

### **Statistical Process Control**

RAJU

For Sub-group size n = 5

Characterisitc

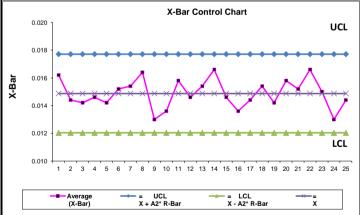
AIC-2

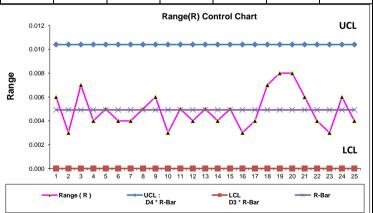
Operator

Doc. No. - F/09/04 Issue No. - 01, 01.04.2023 Rev. no. - 00

Sample Size - 125

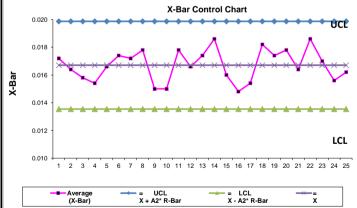
| Specification       | ons        | 0.00- | 0.030 | LSL         | 0.000  | USL         | 0.03               | A <sub>2</sub>         | 0.5                                 | 77     | D <sub>3</sub>      | (                 | 0     |  |
|---------------------|------------|-------|-------|-------------|--------|-------------|--------------------|------------------------|-------------------------------------|--------|---------------------|-------------------|-------|--|
| Total Tolera        | ance ( T ) | 0.0   | 030   | Section     | RUNOUT | Machine No. | 52                 | d <sub>2</sub>         | 2.3                                 | 26     | D <sub>4</sub>      |                   | 2.114 |  |
| Measuring           | Instrument | T.M   | +B.C  | Least Count | 0.001  | Date        | 02.04.2024         | x                      | 0.0                                 | 15     | R-Bar               | 0.0               | 005   |  |
| Sr.No. /<br>Set No. | 1          | 2     | 3     | 4           | 5      | Range (R)   | Average<br>(X-Bar) | = UCL<br>X + A2* R-Bar | = LCL<br>X - A <sub>2</sub> * R-Bar | =<br>X | UCL :<br>D4 * R-Bar | LCL<br>D3 * R-Bar | R-Bar |  |
| 1                   | 0.017      | 0.015 | 0.013 | 0.017       | 0.019  | 0.006       | 0.016              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 2                   | 0.014      | 0.016 | 0.015 | 0.014       | 0.013  | 0.003       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 3                   | 0.015      | 0.010 | 0.017 | 0.015       | 0.014  | 0.007       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 4                   | 0.013      | 0.016 | 0.014 | 0.013       | 0.017  | 0.004       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 5                   | 0.015      | 0.011 | 0.014 | 0.016       | 0.015  | 0.005       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 6                   | 0.015      | 0.017 | 0.016 | 0.015       | 0.013  | 0.004       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 7                   | 0.016      | 0.015 | 0.013 | 0.016       | 0.017  | 0.004       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 8                   | 0.019      | 0.018 | 0.014 | 0.016       | 0.015  | 0.005       | 0.016              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 9                   | 0.015      | 0.014 | 0.012 | 0.015       | 0.009  | 0.006       | 0.013              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 10                  | 0.012      | 0.014 | 0.015 | 0.012       | 0.015  | 0.003       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 11                  | 0.017      | 0.016 | 0.012 | 0.017       | 0.017  | 0.005       | 0.016              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 12                  | 0.013      | 0.017 | 0.017 | 0.013       | 0.013  | 0.004       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 13                  | 0.014      | 0.015 | 0.019 | 0.014       | 0.015  | 0.005       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 14                  | 0.017      | 0.015 | 0.015 | 0.017       | 0.019  | 0.004       | 0.017              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 15                  | 0.015      | 0.017 | 0.014 | 0.015       | 0.012  | 0.005       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 16                  | 0.014      | 0.012 | 0.015 | 0.014       | 0.013  | 0.003       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 17                  | 0.016      | 0.012 | 0.015 | 0.016       | 0.013  | 0.004       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 18                  | 0.016      | 0.011 | 0.016 | 0.016       | 0.018  | 0.007       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 19                  | 0.015      | 0.017 | 0.015 | 0.015       | 0.009  | 0.008       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 20                  | 0.012      | 0.016 | 0.020 | 0.015       | 0.016  | 0.008       | 0.016              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 21                  | 0.014      | 0.015 | 0.019 | 0.013       | 0.015  | 0.006       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 22                  | 0.017      | 0.015 | 0.015 | 0.017       | 0.019  | 0.004       | 0.017              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 23                  | 0.015      | 0.017 | 0.014 | 0.015       | 0.014  | 0.003       | 0.015              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 24                  | 0.014      | 0.009 | 0.015 | 0.014       | 0.013  | 0.006       | 0.013              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |
| 25                  | 0.016      | 0.012 | 0.015 | 0.016       | 0.013  | 0.004       | 0.014              | 0.018                  | 0.012                               | 0.015  | 0.010               | 0                 | 0.005 |  |

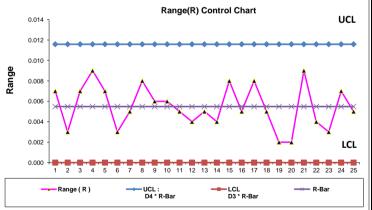




| Sigma ( s = R-Bar/d2))                                       | 0.002  | Process not in statistical control,If:                                        |             |                                    |                                   |  |  |
|--------------------------------------------------------------|--------|-------------------------------------------------------------------------------|-------------|------------------------------------|-----------------------------------|--|--|
| PROCESS CAPABILITY INDEX (AVERAGE) (Cp) = (T) / (6*R-Bar/d2) | 2.364  | a) Points out of control limit b) Seven consequtive points on one side of the |             |                                    | n one side of the average         |  |  |
| Cpu ((USL-X)/(3*s))                                          | 2.3840 | c) 7 points in row continuously increasing or d                               | lecreasing  | d) Points very close to control    | limits & Average                  |  |  |
| Cpl $((\overline{X}-LSL)/(3*s))$                             | 2.3436 | Akshat Jain                                                                   | Sonu Jangid |                                    | Chandan Jangid                    |  |  |
| CpK (Min. (Cpu , Cpl))                                       | 2.3436 | Date - 08.09.2023<br>CHECKED BY :                                             |             | Date - 08.09.2023<br>VERIFIED BY : | Date - 08.09.2024<br>APPROVED BY: |  |  |

#### Doc. No. - F/09/04 SSB **Statistical Process Control** Issue No. - 01, 01.04.2023 Rev. no. - 00 4475 480 053 DES001 Sample Size - 125 For Sub-group size n = 5 Characterisitc AIC-3 Operator RAILI Specifications 0.00-0.04 LSL 0.000 USL 0.04 A<sub>2</sub> 0.577 D<sub>3</sub> 0 2.114 Total Tolerance ( T ) 0.040 ection RUNOUT Machine No 52 2.326 $D_{A}$ T.M+B.C 02 04 2024 0.017 0.005 Measuring Instrument Least Count 0.001 Date х R-Bar UCL LCL UCL: Average 1 2 3 4 5 Range (R) R-Bar X + A2\* R-Ba X - A<sub>2</sub>\* R-Bai D3 \* R-Bar Set No. (X-Bar) D4 \* R-Bar 1 0.019 0.017 0.012 0.019 0.019 0.007 0.017 0.020 0.014 0.017 0.012 0 0.005 0.016 0.018 0.017 0.016 0.015 0.003 0.016 0.020 0.014 0.017 0 3 0.017 0.011 0.018 0.017 0.016 0.007 0.016 0.020 0.017 0.012 0 0.005 0.014 4 0.015 0.018 0.010 0.015 0.019 0.009 0.015 0.020 0.014 0.017 0.012 0 0.005 5 0.013 0.017 0.016 0.020 0.017 0.007 0.017 0.020 0.014 0.017 0.012 0 0.005 0.017 0.019 0.018 0.017 0.016 0.017 0.020 0.014 0.017 0.012 0 0.005 6 0.003 7 0.018 0.017 0.014 0.018 0.019 0.005 0.017 0.020 0.014 0.017 0.012 0 0.005 8 0.021 0.020 0.013 0.018 0.017 0.008 0.018 0.020 0.014 0.017 0.012 0 0.005 9 0.017 0.016 0.014 0.017 0.011 0.006 0.015 0.020 0.014 0.017 0.012 0 0.005 0.016 0.017 0.014 0.017 0 10 0.011 0.006 0.015 0.020 0.014 0.017 0.012 0.005 11 0.019 0.018 0.014 0.019 0.019 0.005 0.018 0.014 0.017 0.012 0 0.005 0.020 12 0.015 0.015 0 0.019 0.019 0.015 0.004 0.017 0.020 0.014 0.017 0.012 0.005 13 0.016 0.017 0.021 0.016 0.017 0.005 0.017 0.020 0.014 0.017 0.012 0 0.005 14 0.019 0.017 0.017 0.019 0.021 0.004 0.019 0.020 0.014 0.017 0.012 0 0.005 15 0.017 0.019 0.017 0.016 0.012 0 0.005 0.011 0.008 0.016 0.020 0.014 0.017 16 0.016 0.014 0.017 0.012 0.015 0.005 0.015 0.020 0.014 0.017 0.012 0 0.005 17 0.018 0.014 0.017 0.018 0.010 0.008 0.015 0.020 0.014 0.017 0.012 0 0.005 18 0.018 0.016 0.018 0.018 0.021 0.005 0.018 0.020 0.014 0.017 0.012 0 0.005 19 0.019 0.017 0.017 0.017 0.017 0.002 0.017 0.020 0.014 0.017 0.012 0 0.005 20 0.017 0.018 0.019 0.017 0.018 0.018 0.020 0.014 0.017 0.012 0 0.005 0.002 21 0.016 0.012 0.021 0.016 0.017 0.009 0.016 0.020 0.014 0.017 0.012 0 0.005 22 0.017 0.019 0.021 0.014 0.012 0 0.019 0.017 0.004 0.019 0.020 0.017 0.005 23 0.019 0.017 0.016 0.017 0.016 0.003 0.017 0.014 0.012 0 0.005 0.020 0.017 24 0.016 0.011 0.017 0.016 0.018 0 0.007 0.016 0.020 0.014 0.017 0.012 0.005 25 0 0.018 0.013 0.017 0.018 0.015 0.005 0.016 0.020 0.014 0.017 0.012 0.005 X-Bar Control Chart Range(R) Control Chart UCL 0.014 0.012 0.018 0.010 Range 0.016 0.008





| Sigma ( s = R-Bar/d2))                                       | 0.002  | Process not in statistical control, If:                                       |             |                                    |                                   |  |  |
|--------------------------------------------------------------|--------|-------------------------------------------------------------------------------|-------------|------------------------------------|-----------------------------------|--|--|
| PROCESS CAPABILITY INDEX (AVERAGE) (Cp) = (T) / (6*R-Bar/d2) | 2.830  | a) Points out of control limit b) Seven consequtive points on one side of the |             |                                    | one side of the average           |  |  |
| Cpu ((USL-X)/(3*s))                                          | 3.2960 | c) 7 points in row continuously increasing or d                               | lecreasing  | imits & Average                    |                                   |  |  |
| Cpl ((X-LSL)/(3*s))                                          | 2.3634 | Akshat Jain                                                                   | Sonu Jangid |                                    | Chandan Jangid                    |  |  |
| CpK (Min. (Cpu , Cpl))                                       | 2.3634 | Date - 08.09.2023<br>CHECKED BY :                                             | [           | Pate - 08.09.2023<br>VERIFIED BY : | Date - 08.09.2024<br>APPROVED BY: |  |  |