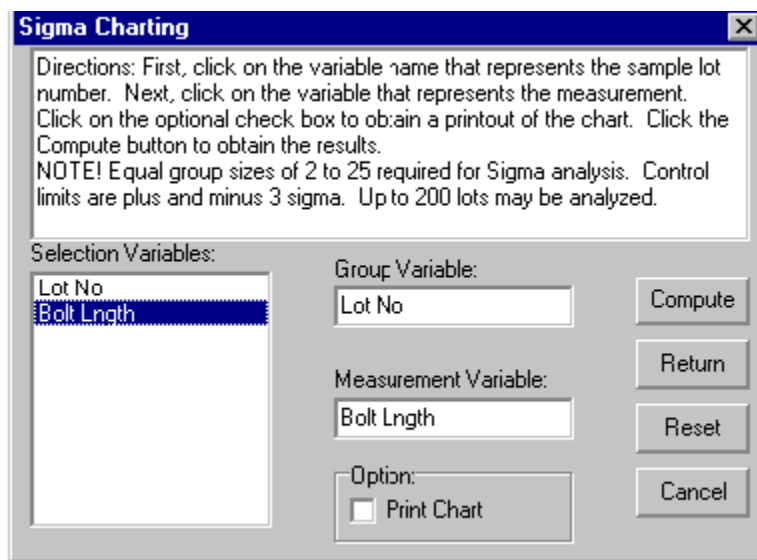


S Control Chart

The sample standard deviation, like the range, is also an indicator of how much values vary in a sample. While the range reflects the difference between largest and smallest values in a sample, the standard deviation reflects the square root of the average squared distance around the mean of the values. We desire to reduce this variability in our processes so as to produce products as similar to one another as is possible. The S control chart plot the standard deviations of our sample lots and allows us to see the impact of adjustments and improvements in our manufacturing processes.

Examine the boltsize.LAZ data with the S Control Chart. Shown below is the specification form for the analysis and the results obtained:



The image shows a 'Sigma Charting' dialog box with a blue title bar and a close button. It contains instructions: 'Directions: First, click on the variable name that represents the sample lot number. Next, click on the variable that represents the measurement. Click on the optional check box to obtain a printout of the chart. Click the Compute button to obtain the results. NOTE! Equal group sizes of 2 to 25 required for Sigma analysis. Control limits are plus and minus 3 sigma. Up to 200 lots may be analyzed.' Below the instructions is a 'Selection Variables:' section with a list box containing 'Lot No' and 'Bolt Length', where 'Bolt Length' is selected. To the right of the list box are input fields for 'Group Variable:' (containing 'Lot No') and 'Measurement Variable:' (containing 'Bolt Length'). Below these is an 'Option:' section with a checkbox for 'Print Chart'. On the far right are four buttons: 'Compute', 'Return', 'Reset', and 'Cancel'.

Figure 1 The SPC S Chart Specification Dialog

X Bar Chart Results

Group	Size	Mean	Std.Dev.
1	5	19.88	0.37
2	5	19.90	0.29
3	5	20.16	0.27
4	5	20.08	0.29
5	5	19.88	0.49
6	5	19.90	0.39
7	5	20.02	0.47
8	5	19.98	0.43

Grand Mean = 19.97, Std.Dev. = 0.359, Standard Error of Mean = 0.06

Mean Sigma = 0.37

Lower Control Limit = 0.000, Upper Control Limit = 0.779

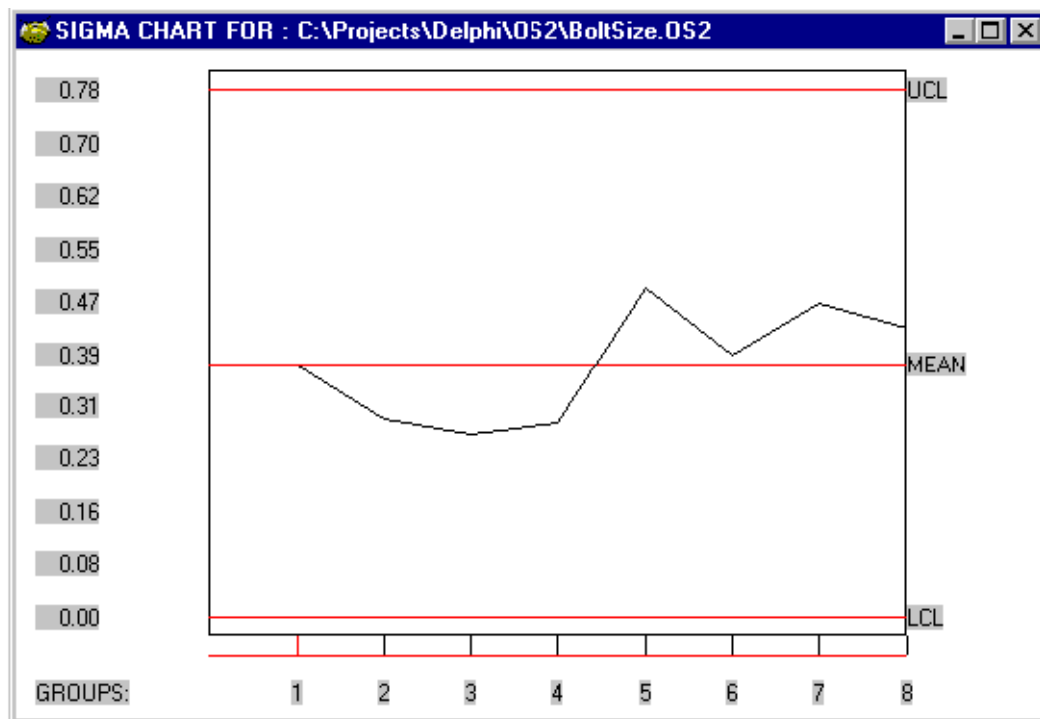


Figure 2 The SPC Sigma Chart