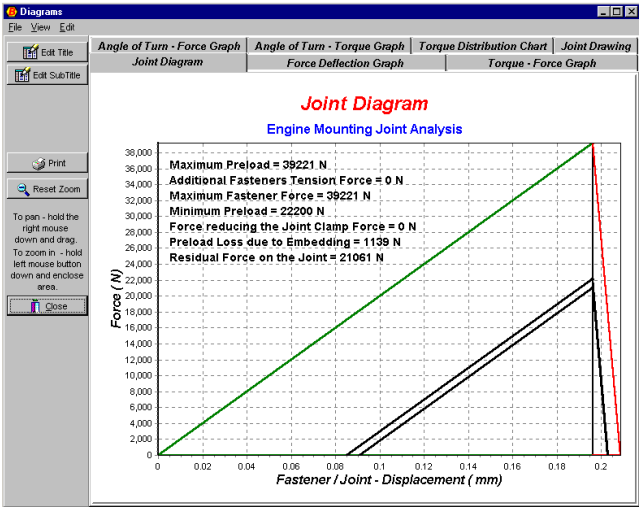
BOLTCALC®

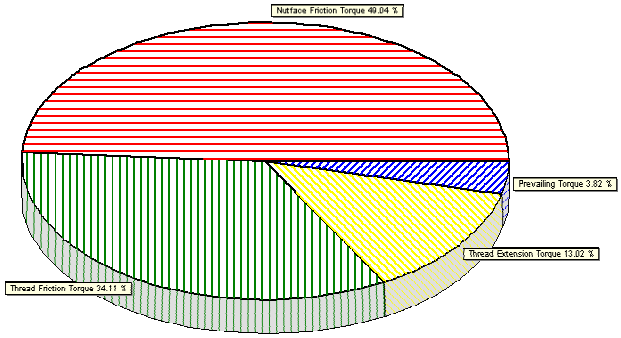
Analysis of concentrically and shear loaded bolted joints.

BOLTCALC is a specialised computer program for use under the Microsoft Windows operating systems (Windows 7 and above) and will determine whether or not a bolted joint will successfully sustain the forces acting it. If the joint is being designed it can estimate the size of bolt required for the application. Once the bolt size has been estimated, or details of an existing joint have been entered, detailed calculations can be performed.

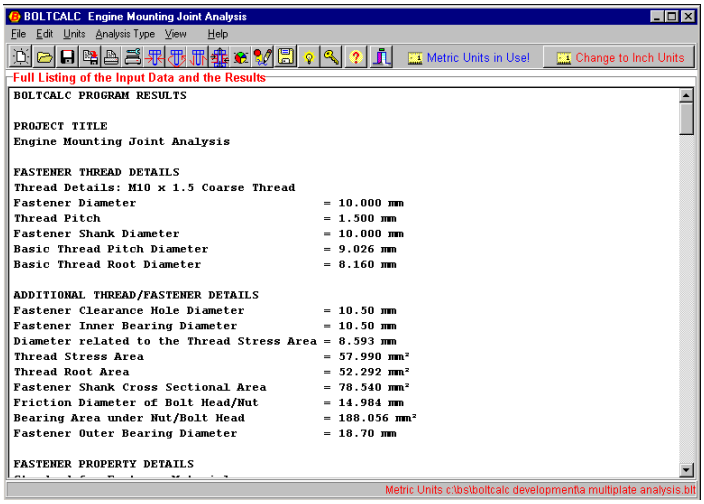


If a joint is being designed the program can estimate the size of bolt required for the application. Once the bolt size has been estimated, or details of an existing joint have been entered, detailed calculations can be performed. The calculations will determine whether or not the bolt will fail by:

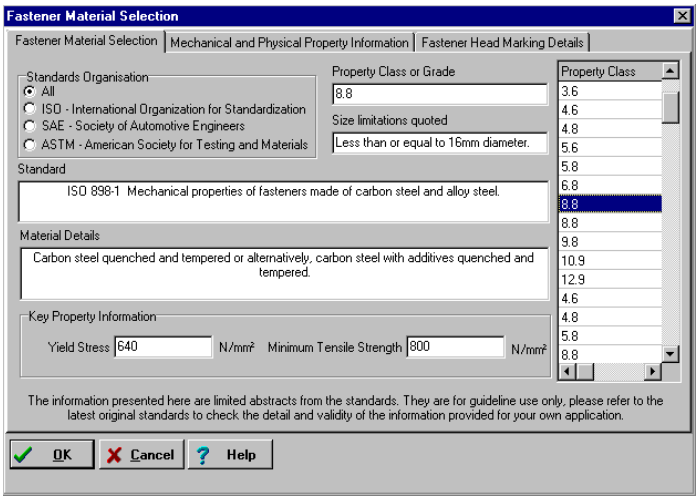
- the joint not being clamped together sufficiently,
- direct overload of the bolt,
- fatigue failure,
- excessive bearing stress,
- either the internal or external thread shearing.



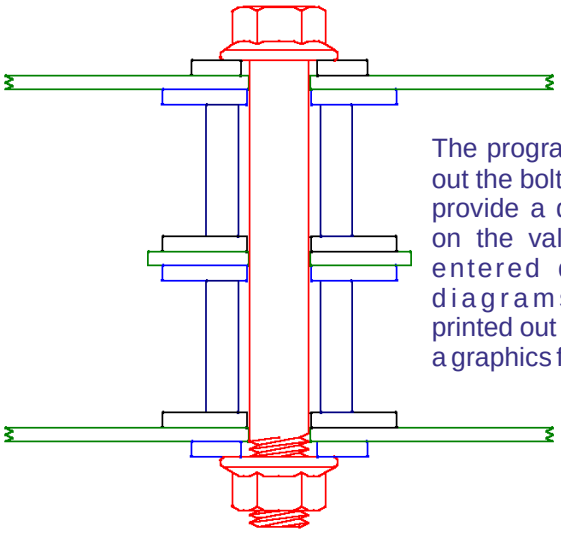
A range of output options are available for the results, including the production of a joint diagram, torque distribution diagrams, torque/angle of turn graphs and force-deflection graphs.



The program is designed for easy of use. For example, selecting a particular strength grade of bolt will allow the program to refer to all the material's relevant properties without calling upon the user to type them into the program.



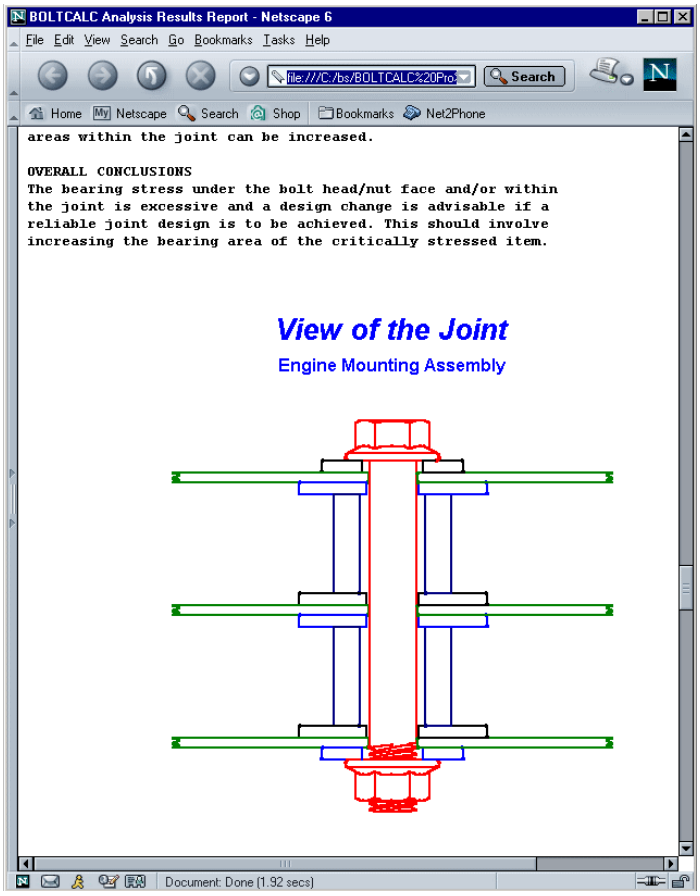
The program accesses extensive databases on thread sizes, bolt material properties, thread and head friction coefficients and torque tables. The program works in both metric and inch based units and associated thread and bolt material data.

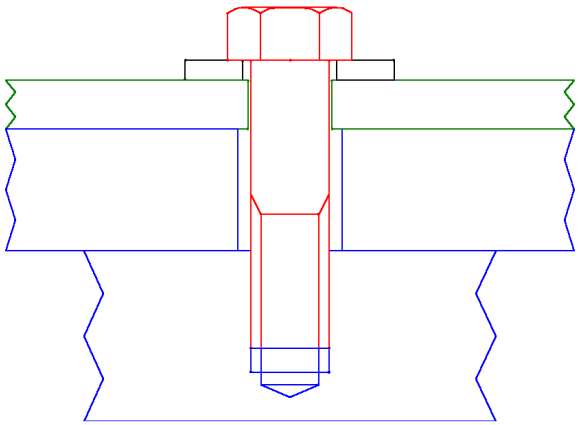


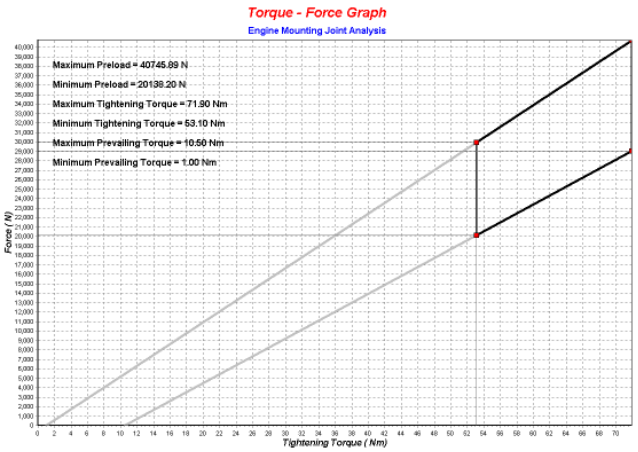
The program will draw out the bolt and joint to provide a quick check on the validity of the entered data. The diagrams can be printed out or saved as a graphics file.

BOLT CALC problems ulated

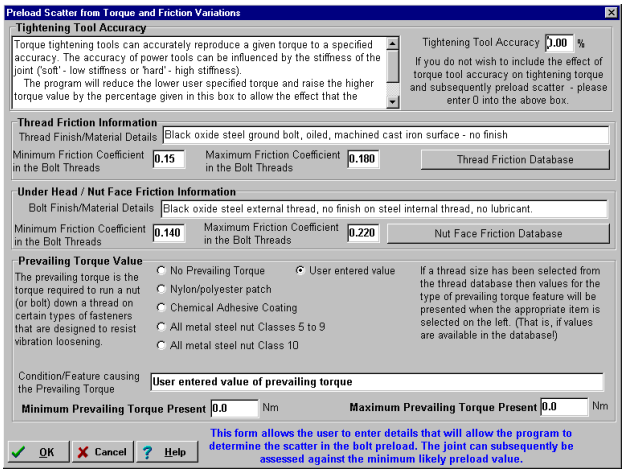
The results and graphs can be viewed and printed from within the program or alternatively all the results can be output as html and image files and then automatically loaded into a web browser as shown below.







The program includes extensive databases of friction values (anticipated maximum and minimum values derived from test results). The program can use this data to establish the likely scatter in the bolt preload to allow the analysis to be completed on the basis of minimum preload values rather than the mean or maximum.



Besides a full joint analysis, the program will complete separately:

- A torque analysis that will determine the what the appropriate torque value to apply to a threaded fastener.
- A thread stripping analysis that will establish if thread shear is likely.

BOLT SCIENCE

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There is a demo program available for BOLTCALC from our website.

Bolt Science provides analytical solutions to bolting problems.