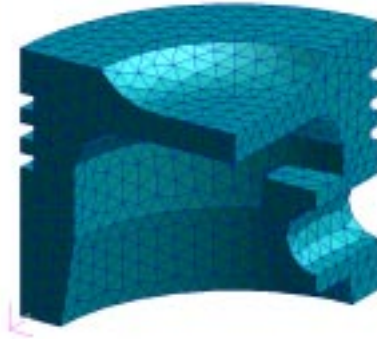


---

**LESSON 4**

---

## *Importing an ACIS Geometry Model*



### Objectives:

- Import geometry from an ACIS file.
- View import logfile.
- Tetmesh the imported solid.

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**LESSON 4**

## *Importing an ACIS Geometry Model*

---

### Model Description:

In this exercise you import geometry from an existing ACIS model.  
After importation, you will mesh the model.

### Suggested Exercise Steps:

- Create a new database and name it **acis.db**. The approximate maximum dimension for this model is 10 units. Use MSC/NASTRAN as the analysis code.
- Import the ACIS file named **qtrpist.sat**.
- Check the import log file to confirm successful solid import.
- Tetmesh the solid using a GEL of 0.3.

## Exercise Procedure:

1. Create a new database and name it **acis.db**. The approximate maximum dimension for this model is 10 units. Use MSC/NASTRAN as the analysis code.

## File/New Database...

New Database Name

## New Model Preference

Tolerance  Based on Model

Maximum Model Dimension

Analysis Code:

Analysis Type

2. Import the ACIS file **qtrpist.sat**.

## File/Import

Object:

Source:

Click on **ACIS Options**. The Import Options dialogue box will then appear.

## ACIS Options

Click on the **Scale Factor** button to invoke the Scale Factor form. In this form you can enter the model units used in the original ACIS model file. Parasolid assumes model units to be in meters and has an overall model size limit of a 500 meter cube. It can be important to specify the original model units particularly if the original model is a large model in mm, so that the model can be scaled to meters before conversion.

## Scale Factor...

Model Units Used to Define Scale Factor:  Millimeters

Scale Factor

The model units of the original ACIS geometry file can be set to millimeter or inches or a custom value. For example, if the model units are millimeters, then the scale factor of .001 will be applied. If custom model units is selected, then the scale factor to convert the model units to meters (the assumed Parasolid units) is entered in the Scale Factor box.

The various toggle switches under **Import Options** are defined below:

**PATRAN Sew** - If ON, the Sheet Bodies will be sewn together using PATRAN Sewing software

**Verify Boundary** - Similar to Verify/Surface/Boundary command in MSC/PATRAN.

**Equivalence Edge Vertices** - If ON, topological vertices will be equivalenced during import.

**Read Scale from file** - If ON, the model scale factor is read from the input ACIS (sat) file.

**Check Input Model** - If ON, ACIS body checks are performed *prior* to conversion to Parasolid.

**Heal Model** - If ON, healing is performed on the Parasolid model *after* conversion from ACIS.

**Edge/Face Cleanup** - If ON, cleans imperfections in the ACIS input model such as sliver faces, *prior* to conversion.

**Parasolid Checking** - If ON, stringent Parasolid continuity checks are performed *during* conversion.

The model that we will import is a solid body, so we can select just Solid Body under Entity Types or keep the filters selected for both **Sheet Body** and **Solid Body** selected. Leave the defaults below only.

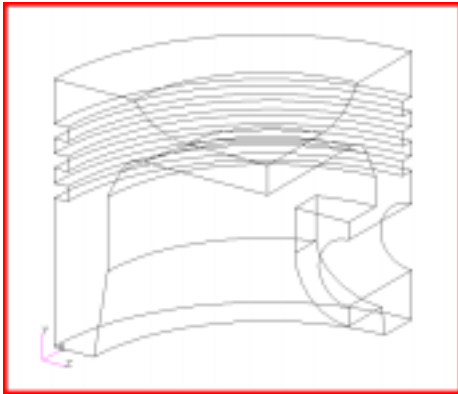
 Check Input Model Heal Model Edge/Face Cleanup

The **ACIS Import Summary** will appear when MSCPATRAN has completed the importation procedure. Review this information, then click on the **OK** button to close the form.

Change the view to **isometric 2**.



Your viewport should appear as follows:



3. Use a text editor to view the logfile for the ACIS import **qtrpist.log**. It should read as follows:

```
Parasolid-Acis Converter Log File
-----
*****
Start of conversion summary for model 1
*****
Pre-processing Summary
-----
```

```
Cleaner results :
Input valid : No cleaning performed
```

## Entity Conversion

```
-----
```

```
Topology : 200 total entities
```

```
Bodies : 1
Shells : 1
Faces : 30
Loops : 30
Edges : 83
Vertices : 55
```

```
Geometry : 168 total geometries
```

```
Surfaces : 30
Planes : 16
Cylinders : 10
Cones : 2
Spheres : 0
Tori : 2
Bsplines : 0
Sweep : 0
Spun : 0
Offset : 0
Blend : 0
Approximate : 0
Spl Convert : 0
Curves : 83
Lines : 53
Circles : 28
Ellipses : 0
Bsplines : 0
Approximate : 2
Points : 55
```

## Attributes :

```
Attributes converted : 0
Attributes skipped : 0
```

```
Conversion percentage : 100
```

## Post-Processing Summary

```
-----
```

## Tolerant geometries :

```
Edges healed : 2
Vertices healed : 0
Edges unhealed : 0
Vertices unhealed : 0
```

```
Parasolid model is valid
Passes successfully through body checker
```

=====  
 End of conversion summary for model 1  
 =====

4. Mesh the imported ACIS solid..

◆ **Finite Elements**

Action:   
 Object:   
 Method:   
 Global Edge Length:   
 Mesher:  Tetmesh  
 Element Topology:   
 Input List:

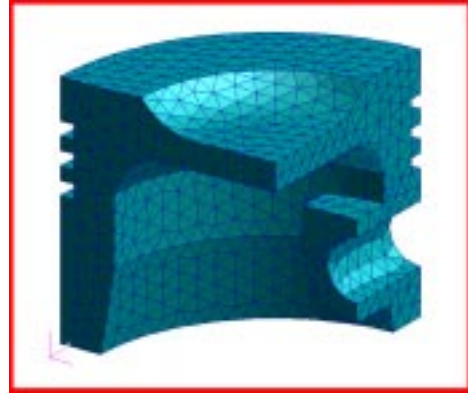
Go to **Display/Plot/Erase** and turn off the geometry..

**Display/Plot/Erase**

Posted Entities/Geometry:

Click on the **Smooth Shaded** icon.

Your model will appear as follows:



To complete this exercise, close the database.