ANSYS AIM - Forces in Permanent Magnets

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Problem Specification

This problem is intended to address the questions of force calculations as well as modeling of permanent magnets in asymmetric and three dimensional geometries.The spool is made out of brass, the coil is made out of copper and the magnet is made of NdFe30 (Neodymium Iron). In this demonstration, two cases will be considered and the force between the magnet and the coil will be determined.
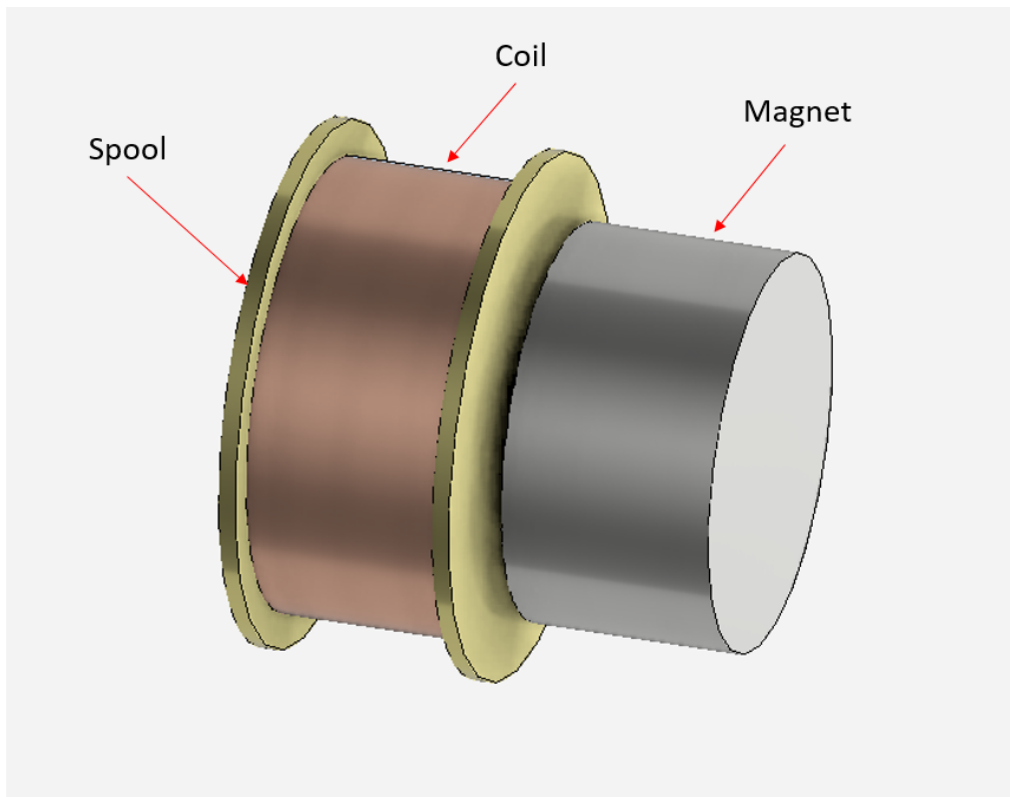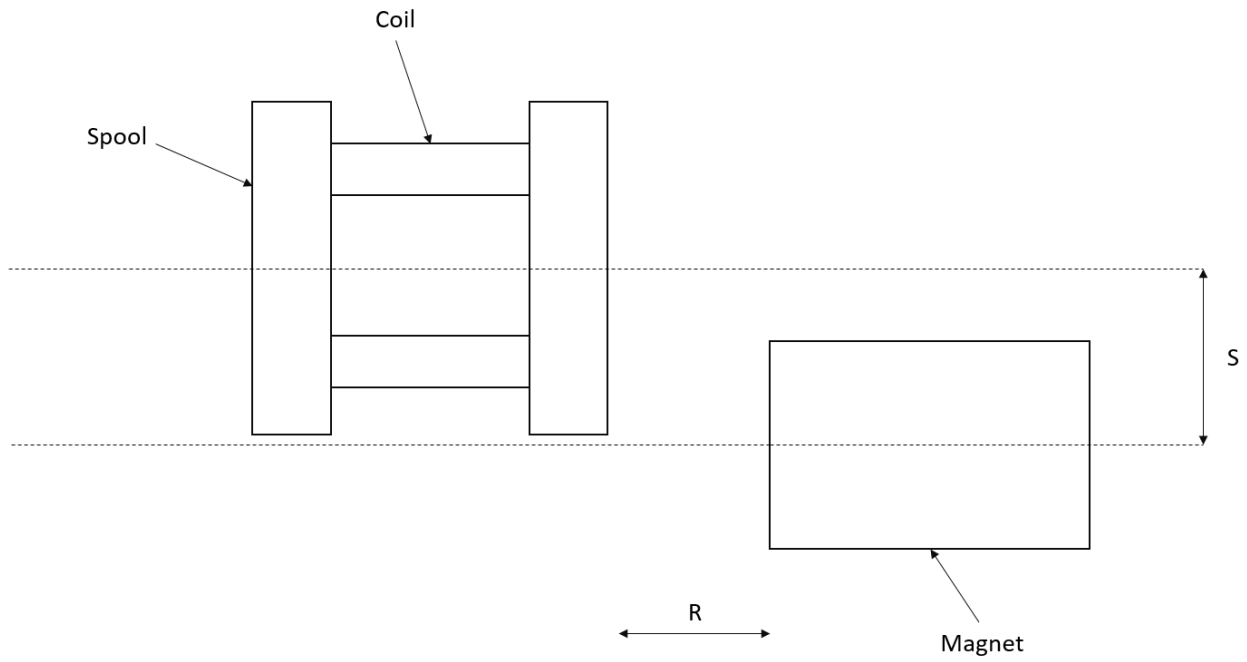
$f = f(i,R,s)$

where

f = force between magnet and coil i = current, R = horizontal displacement s = vertical displacement

In case one, both $s = 0$ and $R = 0.254mm$ are held constant. Therefore, $f = f(i)$

In case two, $s = 0mm$ and $i = 50mA$ are kept constant. Therefore $f = f(R)$

In the first case, the current will vary from from 0-100mA in 10mA intervals. In case two, the axial displacement will vary from 0.0-.5mm in 0.05mm intervals.

Go to Step 1: Pre-Analysis & Start-Up

Go to all ANSYS AIM Learning Modules