# DUAL\_AXES.M

Adds a unit converted second axis to either y or x, or both. The second converted axis is placed opposed or on the same side as the main one. Axes are linked and can be panned and returned to home/restored without issues. See examples below to see how each type performs.

NOTE: Title must be fed and called by the function. If no title is desired, feed a blank ([]) or empty string (''). Do not call a title if using this function.

## SYNTAX

dual\_axes(gca,pTitle,pType,conv,name[,conv2,name2])

### INPUTS

gca this must be in, current figure axis information

pTitle Figure title. DO NOT CALL TITLE OUTSIDE OF THIS!

pType 'x','y', or 'xy' for opposed to main axes; 'xs','ys', or 'xys' for same side as main axes;

conv Conversion factor from unit on plot to the one you want

name New unit label

[conv2] Y-axis conversion factor when 'xy' or 'xys' is selected

[name2] Y-axis label when 'xy' or 'xys' is selected

### OUTPUTS

None

## USE

You must call this function AFTER all figure modifiers (i.e: legends, limits, labels, etc.) EXCEPT title. This function calls the title, if no title is desired, enter a blank (i.e.: [])

1. ‘x’ or ‘xs’: X-axis

dual\_axes(gca,[],'x',1/.7457,'Power [hp]')

1. ‘y’ or ‘ys’: Y-axis

dual\_axes(gca,[],'y',0.0016,'SFC [lb/hp-hr]')

1. ‘xy’ or ‘xys’: Both Axes

dual\_axes(gca,[],'xy',1/.7457,'Power [hp]',0.0016,'SFC [lb/hp-hr]')

## EXAMPLES

### ‘xy’ Type

Graphical user interface

Description automatically generated

%both axes, opposed

figure;

x=0:0.1:10;

y=rand(size(x));

plot(x,y,'-');

grid minor

legend('Data');

xlabel('X Units 1');

ylabel('Y Units 1');

dual\_axes(gca,'Random Plot, Opposed Dual Axes',...

'xy',20,'X Unit 2',400,'Y Unit 2');

### ‘xys’ Type

Graphical user interface

Description automatically generated

%both axes, same

figure;

x=0:0.1:10;

y=rand(size(x));

plot(x,y,'-');

grid minor

legend('Data');

xlabel('X Units 1');

ylabel('Y Units 1');

dual\_axes(gca,'Random Plot, Same Dual Axes',...

'xys',20,'X Unit 2',400,'Y Unit 2');

### ‘x’ Type

Graphical user interface

Description automatically generated

%x axis, opposed

figure;

x=0:0.1:10;

y=rand(size(x));

plot(x,y,'-');

grid minor

legend('Data');

xlabel('X Units 1');

ylabel('Y Units 1');

dual\_axes(gca,'Random Plot, Opposed X-Axis Only',...

'x',20,'X Unit 2');

### ‘xs’ Type

Graphical user interface

Description automatically generated

%x axis, same

figure;

x=0:0.1:10;

y=rand(size(x));

plot(x,y,'-');

grid minor

legend('Data');

xlabel('X Units 1');

ylabel('Y Units 1');

dual\_axes(gca,'Random Plot, Same X-Axis Only',...

'xs',20,'X Unit 2');

### ‘y’ Type

Chart

Description automatically generated

%y axis, opposed

figure;

x=0:0.1:10;

y=rand(size(x));

plot(x,y,'-');

grid minor

legend('Data');

xlabel('X Units 1');

ylabel('Y Units 1');

dual\_axes(gca,'Random Plot, Opposed Y-Axis Only',...

'y',400,'Y Unit 2');

### ‘ys’ Type

Chart, bar chart

Description automatically generated

%y axis, same

figure;

x=0:0.1:10;

y=rand(size(x));

plot(x,y,'-');

grid minor

legend('Data');

xlabel('X Units 1');

ylabel('Y Units 1');

dual\_axes(gca,'Random Plot, Same Y-Axis Only',...

'ys',400,'Y Unit 2');