

iDrawings

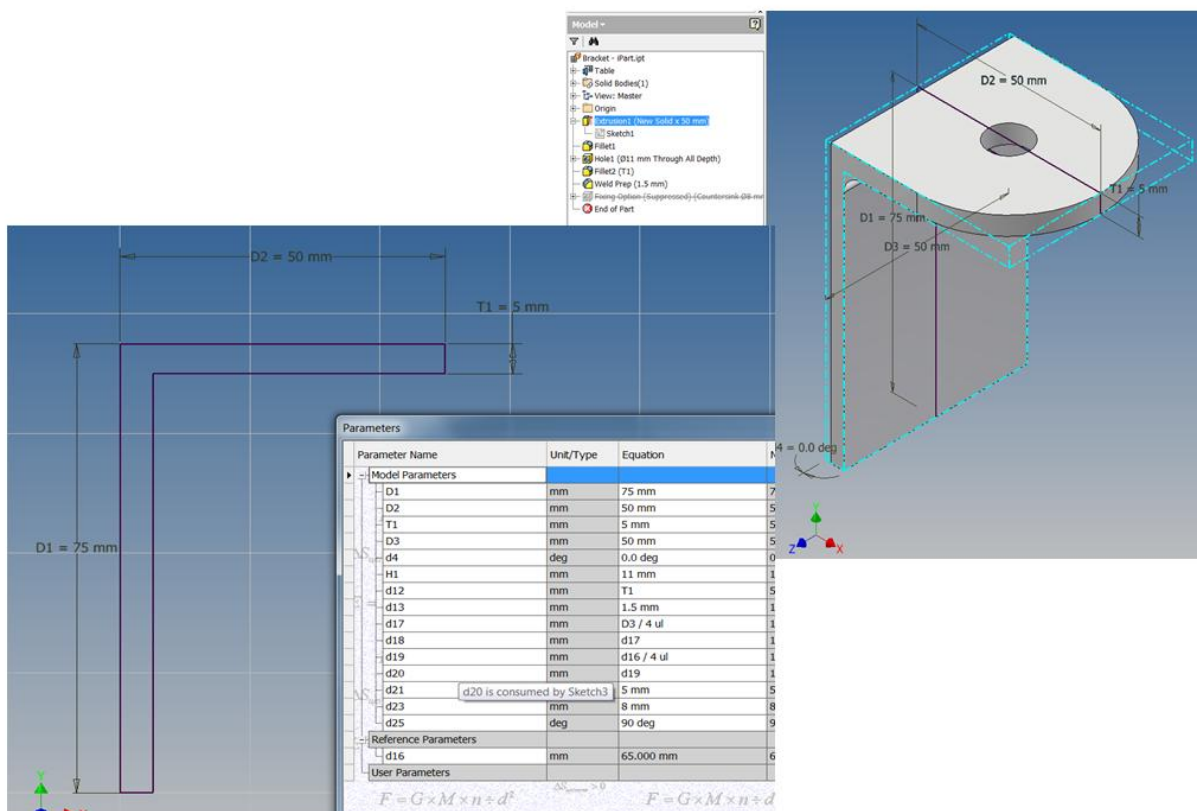
Inventor

Creating generic-style Inventor drawings for iParts and iAssemblies Generic 2D Drawings for iParts.

It is a common need in engineering to create a 'generic-style' 2D drawings based on a 'data-sheet' style format containing tables of varying sizes and features.

This first example looks at creating a 2D detail drawing based on an Inventor iPart.

The iPart itself contains dimensional parameters to control both the 2D sketch geometry and 3D model features

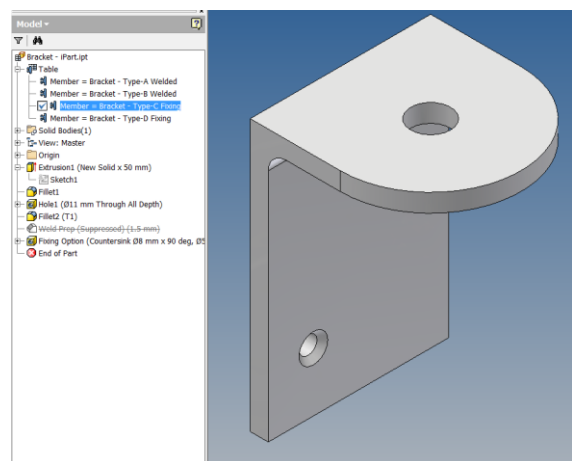
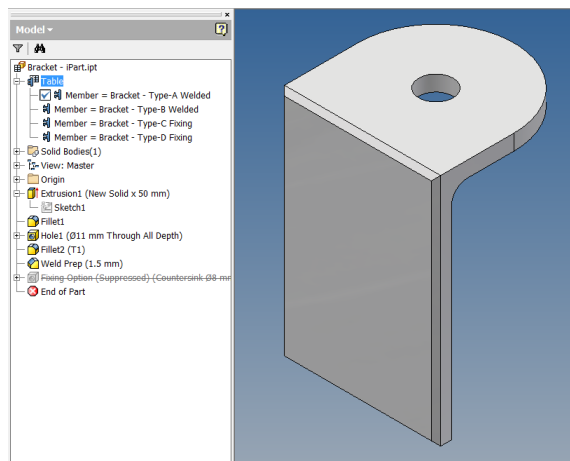


The model also includes two suppressible features, namely a chamfer for a weld-prep version or a pair of countersunk holes for a fixing option.

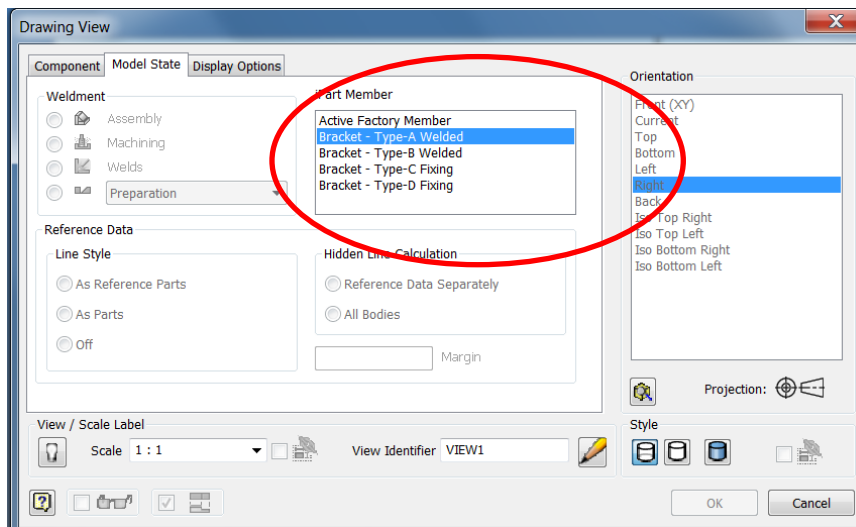
The iPart table contains 4 variants with 2 size options for the welded example and 2 for the fixing option.

The screenshot shows the iPart Author interface for a part named 'Bracket - iPart.ipt'. The left pane shows a tree view of features: Extrusion1 (with parameters x- D1 [75 mm], x- D2 [50 mm], x- D3 [50 mm], x- T1 [5 mm], x- d4 [0.0 deg]), Fillet1, Hole1, Fillet2, Weld Prep, Fixing Option, and Other. The right pane shows a list of parameters with key icons: D1, D2, T1, D3, and H1. Below the panes is a table with columns: Member, Part Number, D1, D2, T1, D3, Weld Prep, Fixing Option, and H1.

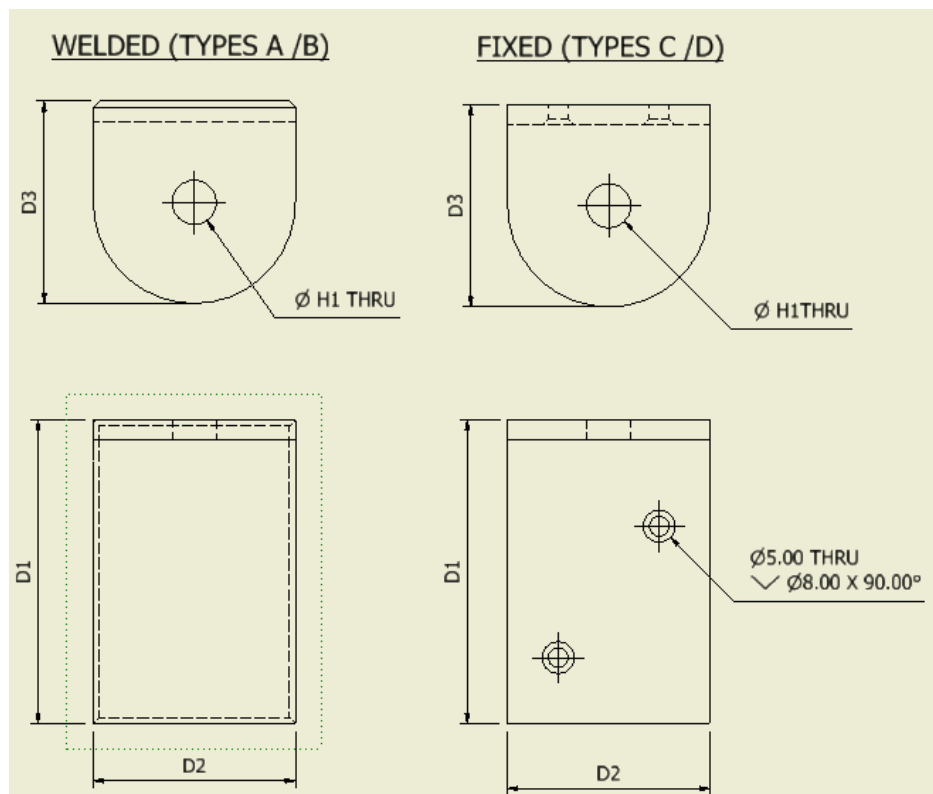
	Member	Part Number	D1	D2	T1	D3	Weld Prep	Fixing Option	H1
1	Bracket - Type-A Welded	BTA-W1	75 mm	50 mm	5 mm	50 mm	Compute	Suppress	11 mm
2	Bracket - Type-B Welded	BTA-W2	100 mm	75mm	6 mm	75 mm	Compute	Suppress	15mm
3	Bracket - Type-C Fixing	BTA-F1	75 mm	50 mm	5 mm	50 mm	Suppress	Compute	11 mm
4	Bracket - Type-D Fixing	BTA-F2	75 mm	75mm	6 mm	75 mm	Suppress	Compute	15mm



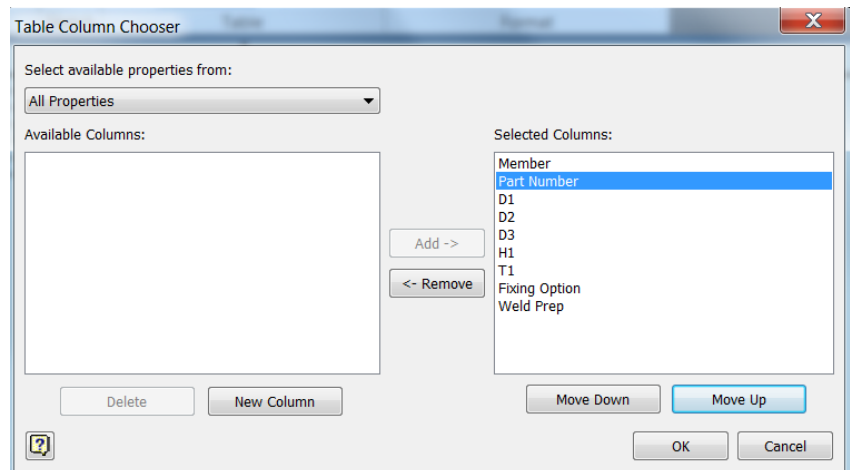
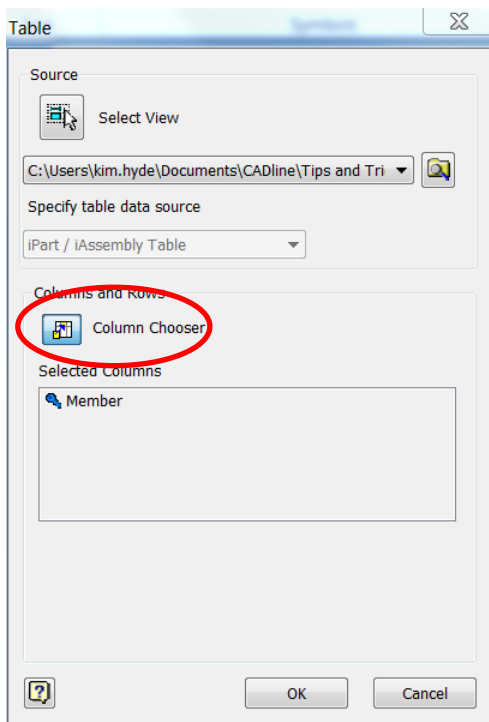
The creation of the 2D 'iDrawing' requires 3 simple steps, the first for the creation of the views the user can select the particular variant required from the iPart Member list available on the *Model State* tab.



A suitable combination of views with view-labels can be arranged as required.



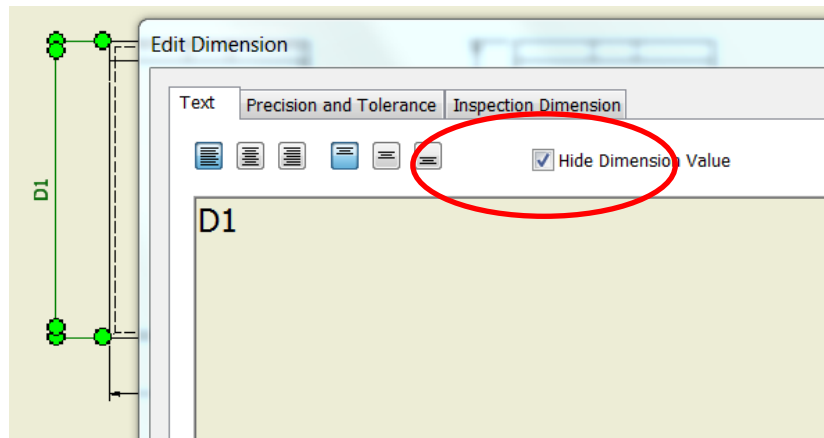
The second step is to add a table that contains the iPart variant information. Choose to add a 'General' table from the table section via the *Annotate Ribbon*. This will automatically recognise the iPart data and allow the user to choose and arrange the required columns as necessary.



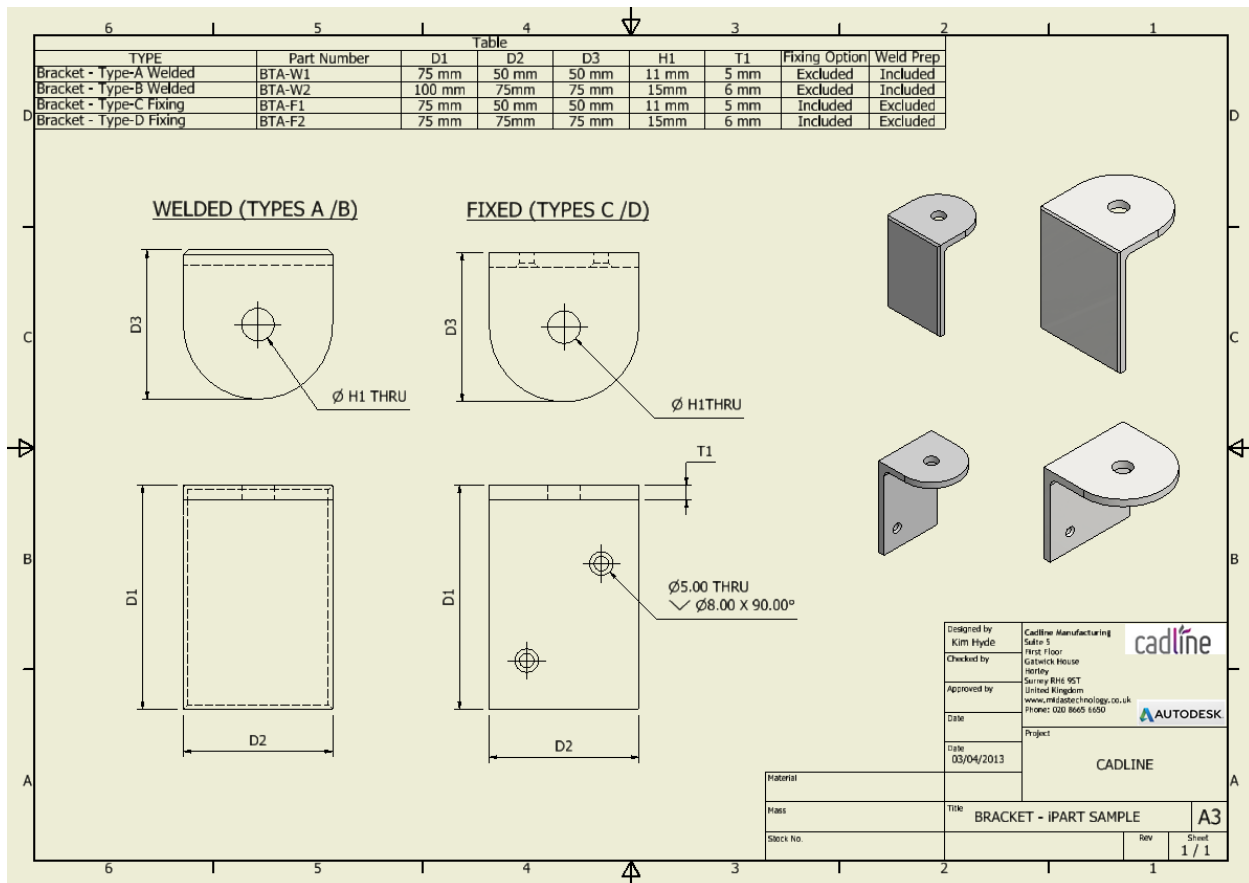
In this example the part list has been edited to replace the iPart references for 'Compute' and 'Suppress' with *Included* and *Excluded*.

	6	5	4			3	2		
	TYPE	Part Number	D1	D2	D3	H1	T1	Fixing Option	Weld Prep
	Bracket - Type-A Welded	BTA-W1	75 mm	50 mm	50 mm	11 mm	5 mm	Excluded	Included
	Bracket - Type-B Welded	BTA-W2	100 mm	75mm	75 mm	15mm	6 mm	Excluded	Included
	Bracket - Type-C Fixing	BTA-F1	75 mm	50 mm	50 mm	11 mm	5 mm	Included	Excluded
D	Bracket - Type-D Fixing	BTA-F2	75 mm	75mm	75 mm	15mm	6 mm	Included	Excluded

The last step is to add then modify simple dimension annotations by editing the dimensions and first selecting the box *Hide Dimension Value*, then adding value that represents the corresponding generic iPart reference.



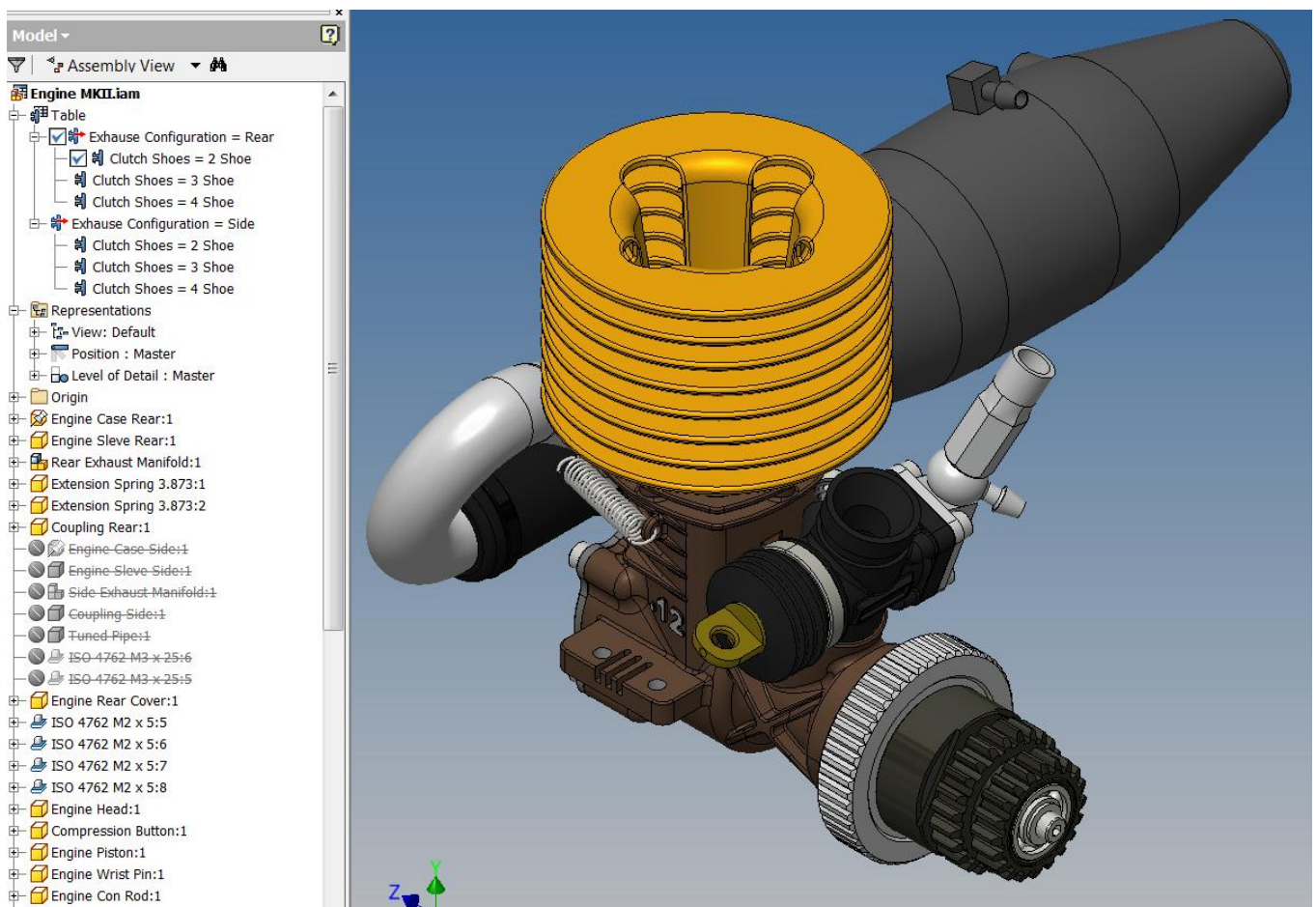
(The resultant image for the finished iDrawing for the Bracket iPart)



Generic 2D Drawings for iAssemblies

The creation of iDrawings for iAssemblies has a different purpose than that when creating a detail drawing for an iPart, a drawing for the iAssembly concerns the display of assembly configuration variants and the related BOM information.

For this example an iAssembly represents a small 2-stroke engine similar to those used for radio controlled model cars. The table involves 2 `keys`, the first controls a side or rear-mounted exhaust configuration, the second controls 3 clutch variants. Various components are either suppressed or un-suppressed depending on the variant selected with the BOM dynamically updating for each.



(Extract from the BOM accessed from the .iam for the configuration for a rear-exhaust using a 2-shoe clutch)

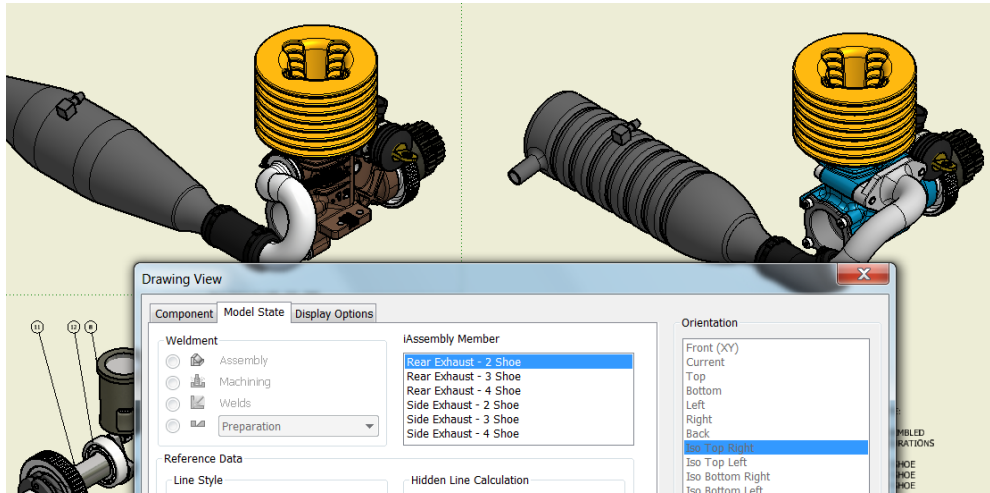
Item	Part Number	BOM Structure	Unit	QTY (Rear Exhaust - 2 Shoe)	Description
1	ISO 4762 - M2.5 x 12	Purchased	Each	4	Hexagon Socket Head Cap Screw
2	ADSK-1103037	Normal	Each	0	COUPLING - SIDE
3	ADSK-1103044	Normal	Each	1	ENGINE HEAD
4	ADSK-1103035	Normal	Each	1	COMPRESSION BUTTON
5	ADSK-1103049	Normal	Each	1	WRIST PIN
6	ADSK-1103045	Normal	Each	1	PISTON
7	ADSK-1103042	Normal	Each	1	CONNECTING ROD
8	ADSK-1103047	Normal	Each	1	ENGINE SLEEVE - REAR
9	ISO 4762 - M2 x 5	Purchased	Each	8	Hexagon Socket Head Cap Screw
10	ADSK-1103046	Normal	Each	1	ENGINE COVER - REAR
11	ADSK-1103043	Normal	Each	1	CRANKSHAFT
12	DIN 625 SKF - SKF 61800	Purchased	Each	1	Single row ball bearings
18	ISO 4762 - M2 x 8	Purchased	Each	2	Hexagon Socket Head Cap Screw
19	ADSK-1103030	Normal	Each	2	CLUTCH SHOE
20	ISO 7089 - 2.5 - 140 HV	Purchased	Each	1	Plain washers - Normal series - Product grade A
22	ADSK-1103053	Normal	Each	1	TAPER NUT
21	ADSK-1103054	Normal	Each	1	THRUST WASHER
28	ADSK-1103029	Normal	Each	1	CLUTCH NUT
108	ADSK-1103031	Normal	Each	0	CLUTCH SHOE
109	ISO 4762 - M3 x 25	Purchased	Each	0	Hexagon Socket Head Cap Screw
110	ADSK-1103048	Normal	Each	0	ENGINE SLEEVE - SIDE
111	ADSK-1103061	Normal	Each	0	EXHAUST PIPE - SIDE
112	ADSK-1103032	Normal	Each	0	CLUTCH SHOE
113	ADSK-1103041	Normal	Each	0	ENGINE CASE - SIDE

The controlling table lists the component inclusion or exclusions for each variant.

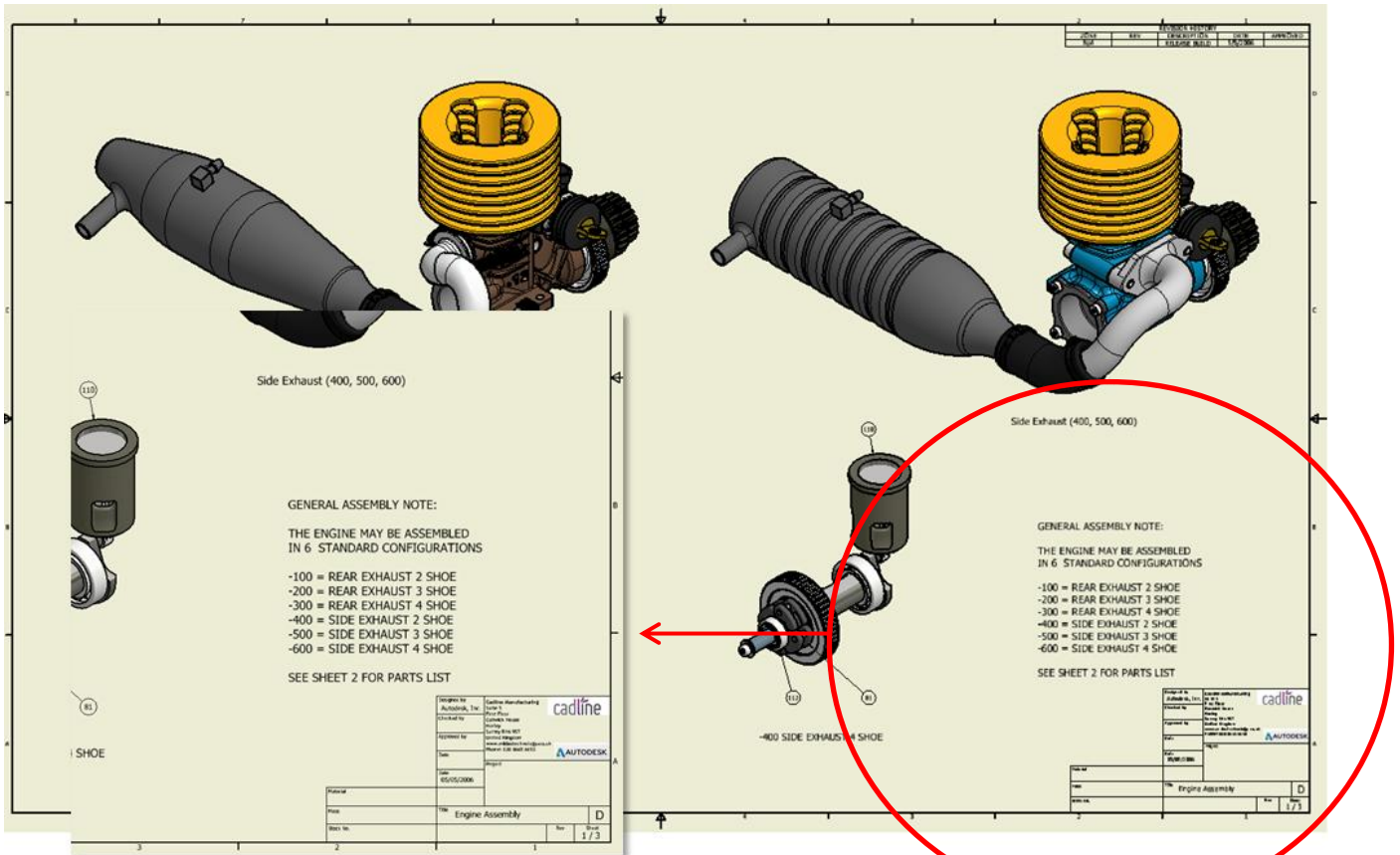
Member	Part Number	Engine Case Rear:1: Include/Exclude	Engine Case Side:1: Include/Exclude	Engine Sleeve Rear:1: Include/Exclude	Engine Sleeve Side:1: Include/Exclude	Clutch Shoes	Exhaust Configuration	Flywheel:1: Table Replace	Rear Exhaust Manifold:1: Include/Exclude	Extension Spring 3.873:1: Include/Exclude	Extension Spring 3.873:2: Include/Exclude	Side Exhaust Manifold:1: Include/Exclude	Clutch Side:1: Include/Exclude
2 Shoe						Rear	Rear	2 Flywheel Assembly	Include	Include	Include	Exclude	Exc
3 Shoe						Rear	Rear	3 Flywheel Assembly	Include	Include	Include	Exclude	Exc
4 Shoe						Rear	Rear	4 Flywheel Assembly	Include	Include	Include	Exclude	Exc
2 Shoe						Side	Side	2 Flywheel Assembly	Exclude	Exclude	Exclude	Include	Incl
3 Shoe						Side	Side	3 Flywheel Assembly	Exclude	Exclude	Exclude	Include	Incl
4 Shoe						Side	Side	4 Flywheel Assembly	Exclude	Exclude	Exclude	Include	Incl

Member	Part Number	Engine Case Rear:1: Include/Exclude	Engine Case Side:1: Include/Exclude	Engine Sleeve Rear:1: Include/Exclude	Engine Sleeve Side:1: Include/Exclude	Clutch Shoes	Exhaust Configuration	Flywheel:1: Table Replace	Rear Exhaust Manifold:1: Include/Exclude	Extension Spring 1.873:1: Include/Exclude	Extension Spring 1.873:2: Include/Exclude	Side Exhaust Manifold:1: Include/Exclude	Clutch Side:1: Include/Exclude	Clutch Rear:1: Include/Exclude	Tuned Pipe:1: Include/Exclude	Tuned Pipe:2:1: Include/Exclude	ISO 4762 M3 x 25:4: Include/Exclude	ISO 4762 M3 x 25:3: Include/Exclude	Import Pattern:2: Include/Exclude	
1	Rear Exhaust - 2 Shoe	Engine-200R	Include	Exclude	Include	Exclude	2 Shoe	Rear	2 Flywheel Assembly	Include	Include	Exclude	Exclude	Include	Exclude	Exclude	Include	Exclude	Include	Exclude
2	Rear Exhaust - 3 Shoe	Engine-300R	Include	Exclude	Include	Exclude	3 Shoe	Rear	3 Flywheel Assembly	Include	Include	Exclude	Exclude	Include	Exclude	Exclude	Include	Exclude	Include	Exclude
3	Rear Exhaust - 4 Shoe	Engine-400R	Include	Exclude	Include	Exclude	4 Shoe	Rear	4 Flywheel Assembly	Include	Include	Exclude	Exclude	Include	Exclude	Exclude	Include	Exclude	Include	Exclude
4	Side Exhaust - 2 Shoe	Engine-200S	Exclude	Include	Exclude	Include	2 Shoe	Side	2 Flywheel Assembly	Exclude	Exclude	Include	Include	Exclude	Include	Exclude	Include	Include	Exclude	Include
5	Side Exhaust - 3 Shoe	Engine-300S	Exclude	Include	Exclude	Include	3 Shoe	Side	3 Flywheel Assembly	Exclude	Exclude	Include	Include	Exclude	Include	Exclude	Include	Include	Exclude	Include
6	Side Exhaust - 4 Shoe	Engine-400S	Exclude	Include	Exclude	Include	4 Shoe	Side	4 Flywheel Assembly	Exclude	Exclude	Include	Include	Exclude	Include	Exclude	Include	Include	Exclude	Include

When creating the drawing, views can be selected from the configuration variants from the *Model State* tab.



Text can be added to describe variants:



Parts list can be produced to reflect the BOM for each variant:

Rear Exhaust - 2 Shoe Parts List				Side Exhaust - 4 Shoe Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	ISO 4762 - M2.5 x 12	Hexagon Socket Head Cap Screw	1	4	ISO 4762 - M2.5 x 12	Hexagon Socket Head Cap Screw
3	1	ADSK-1103044	ENGINE HEAD	2	1	ADSK-1103037	COUPLING - SIDE
4	1	ADSK-1103035	COMPRESSION BUTTON	3	1	ADSK-1103044	ENGINE HEAD
5	1	ADSK-1103049	WRIST PIN	4	1	ADSK-1103035	COMPRESSION BUTTON
6	1	ADSK-1103045	PISTON	5	1	ADSK-1103049	WRIST PIN
7	1	ADSK-1103042	CONNECTING ROD	6	1	ADSK-1103045	PISTON
8	1	ADSK-1103047	ENGINE SLEEVE - REAR	7	1	ADSK-1103042	CONNECTING ROD
9	8	ISO 4762 - M2 x 5	Hexagon Socket Head Cap Screw	9	8	ISO 4762 - M2 x 5	Hexagon Socket Head Cap Screw
10	1	ADSK-1103046	ENGINE COVER - REAR	10	1	ADSK-1103046	ENGINE COVER - REAR
11	1	ADSK-1103043	CRANKSHAFT	11	1	ADSK-1103043	CRANKSHAFT
12	1	DIN 625 SKF - SKF 61800	Single row ball bearings	12	1	DIN 625 SKF - SKF 61800	Single row ball bearings
18	2	ISO 4762 - M2 x 8	Hexagon Socket Head Cap Screw	18	2	ISO 4762 - M2 x 8	Hexagon Socket Head Cap Screw
19	2	ADSK-1103030	CLUTCH SHOE	20	1	ISO 7089 - 2.5 - 140 HV	Plain washers - Normal series - Product grade A
20	1	ISO 7089 - 2.5 - 140 HV	Plain washers - Normal series - Product grade A	22	1	ADSK-1103053	TAPER NUT
22	1	ADSK-1103053	TAPER NUT	21	1	ADSK-1103054	THRUST WASHER
21	1	ADSK-1103054	THRUST WASHER	28	1	ADSK-1103029	CLUTCH NUT
28	1	ADSK-1103029	CLUTCH NUT	109	2	ISO 4762 - M3 x 25	Hexagon Socket Head Cap Screw
101	2	ADSK-1103038	METAL TIE	110	1	ADSK-1103048	ENGINE SLEEVE - SIDE
102	1	%3% - SKF 618/8	Single row ball bearings	111	1	ADSK-1103061	EXHAUST PIPE - SIDE
103	1	ADSK-1103040	ENGINE CASE - REAR	112	4	ADSK-1103032	CLUTCH SHOE
105	2	ADSK-1103057	UHAN #3.873-ESX	113	1	ADSK-1103041	ENGINE CASE - SIDE
106	1	ADSK-1103036	COUPLING - REAR	114	1	ADSK-1103006	ENGINE EXHAUST - SIDE
13	1	ADSK-1103060	HIGH SPEED NEEDLE	101	2	ADSK-1103038	METAL TIE
23	1	ADSK - 1103071	2 SHOE FLYWHEEL	102	1	%3% - SKF 618/8	Single row ball bearings
25	1	ADSK-1103026	24 TOOTH CLUTCH GEAR	13	1	ADSK-1103060	HIGH SPEED NEEDLE
27	1	ADSK-1103028	24 TOOTH CLUTCH GEAR	25	1	ADSK-1103026	24 TOOTH CLUTCH GEAR
24	1	ADSK-1103027	20 TOOTH CLUTCH GEAR	27	1	ADSK-1103028	24 TOOTH CLUTCH GEAR
26	2	%3% - SKF 618/5	Single row ball bearings	24	1	ADSK-1103027	20 TOOTH CLUTCH GEAR
70	1	ADSK-1103059	EXHAUST MANIFOLD	26	2	%3% - SKF 618/5	Single row ball bearings
71	1	ADSK-1103058	EXHAUST SEAL	16	1	ADSK-1103024	CARB HOUSING
16	1	ADSK-1103024	CARB HOUSING	17	1	ADSK-1103022	UHAN SPRING #334-2
17	1	ADSK-1103022	UHAN SPRING #334-2	15	1	ADSK-1103018	INTAKE BODY
15	1	ADSK-1103018	INTAKE BODY	31	1	ADSK-1103021	SLIDE
31	1	ADSK-1103021	SLIDE	14	1	ADSK-1103017	AIR INTAKE
14	1	ADSK-1103017	AIR INTAKE	30	1	ADSK-1103020	DUST BOOT
30	1	ADSK-1103020	DUST BOOT	29	1	ADSK-1103023	METAL TIE
29	1	ADSK-1103023	METAL TIE	81	1	ADSK - 1103073	4 SHOE FLYWHEEL
80	1	ADSK-1103070	MUFFLER				

... And finally, the variant part lists also work well for drawings showing exploded views:

