Reactor Ferrum Secundus

The Reactor Ferrum Secundus is the big brother to the Reactor Primus.
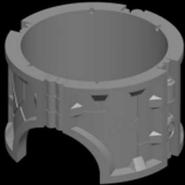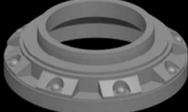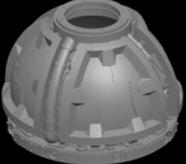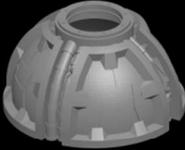
While it is colloquial called "Reactor" it is in truth a selection of standardised Building blocks to create a wide variety of applications from simple storage tank to steam heater or chemical plant up to plasma generators and all kind of machines in between.

The tiles allow you to build it in different configuration and sizes.

It shares some connection sizes and parts with his smaller brother the Reactor Primus

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Overview parts

	Sec Complete		Sec_Bottom		Sec_Middle
	Sec_Top		Pipe Adapter		
	Dome Complete		Dome Bottom		Dome_Top
	Short_Body Complete		Short_Body Bottom		Short_Body Top
	Tank_Body Complete		Tank_Body P1		Tank_Body P2
	Stand_V1		Stand_V2		Stand_V3
	Stand_40mm		Stand_V3 Bottom Plate		Stand_V3 Pipeline_Con V1
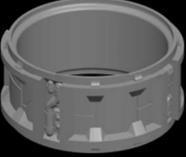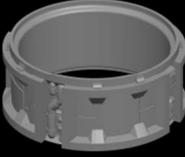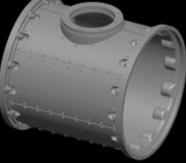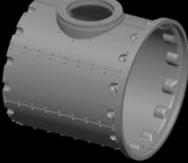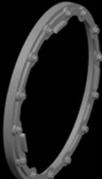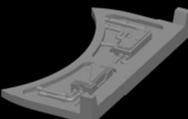
	Stand_V3 Pipeline_Con V2		Endcap 60x28		Endcap 60x40
	Endcap 60x(3x14)		Cap_14mm (for Endcap 3x14)		Plasma Side_V1
	Plasma Side_V2		Plasma		Connector Ring 60mm
	Adapter 60x40		Adapter 100x60		Cap_60mm
	Hatch 40mm		Bolted_Hatch 40mm V1		Bolted_Hatch 40mm V2
	Exhaust 28mm		Stack_3		Exhaust Pipe
	Exhaust Side Short 60mm		Exhaust Side 60mm		Exhaust Side Pin
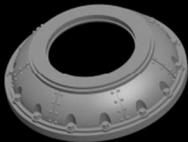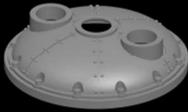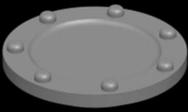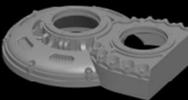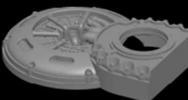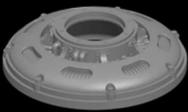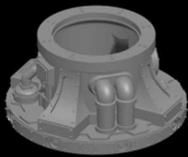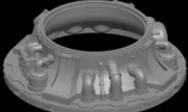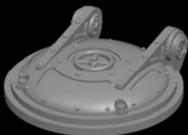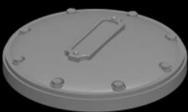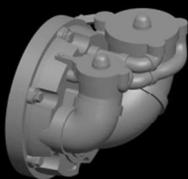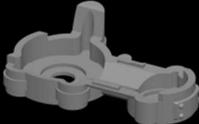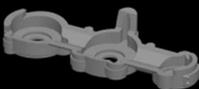
	Connector Pri_Sec_V2		Connector Pri_Sec_V2 P1		Connector Pri_Sec_V2 P2
	Connector Pri_Sec_V1		15_V1		Adapter Pipeline 45,75
	90d Standard		Spacer		Wellhead
	Small_SidePipe		Small_SidePipe P2		Small_SidePipe P3
	Small_Pipe Spacer		Small_SidePipe Connector_V1		Small_SidePipe Connector_V2
	Small_SidePipe Valve_Port		Leveling_Shim_ 1mm		
	Bit 1		Connector Peg 20mm		Connector Peg 30mm
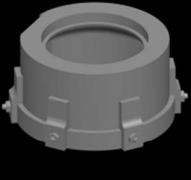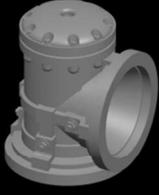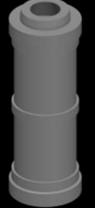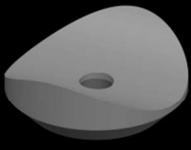
	ValveWheel		Hatch Cover 20mm		Magnet Inlet 8mm Ball
	Lid_V1		Lid_V2		Lid_V3
	Hatch 28mm		Grate		Bolted Hatch
	Stack_1		Stack_2		
	Exhaust		Exhaust 2		
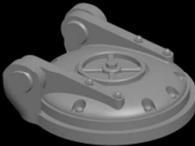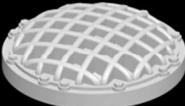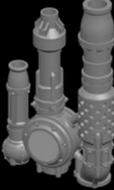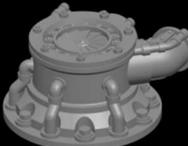
Size
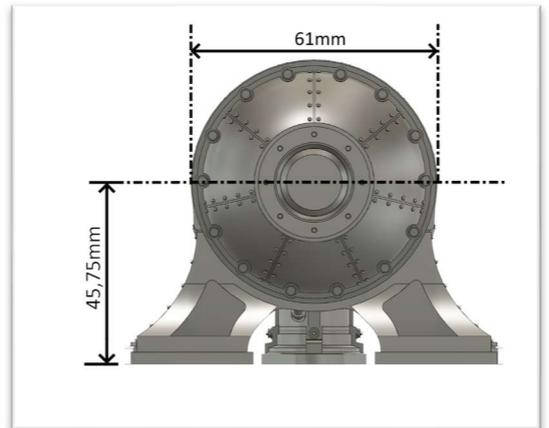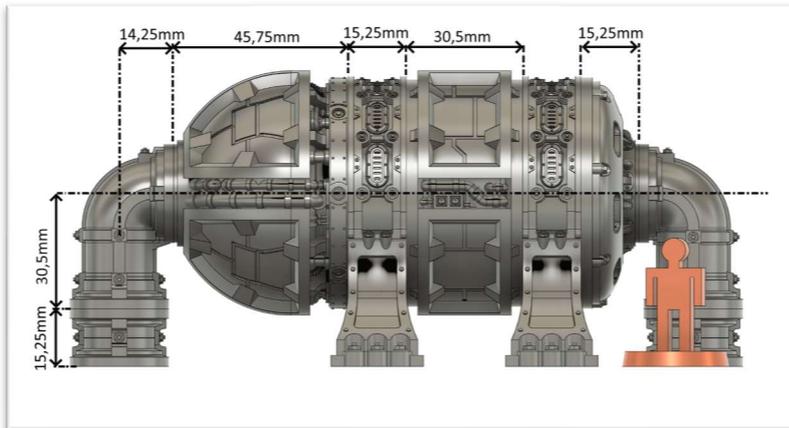
The Reactor stands lift the body to a height of 45,75mm and has a main diameter of 61mm
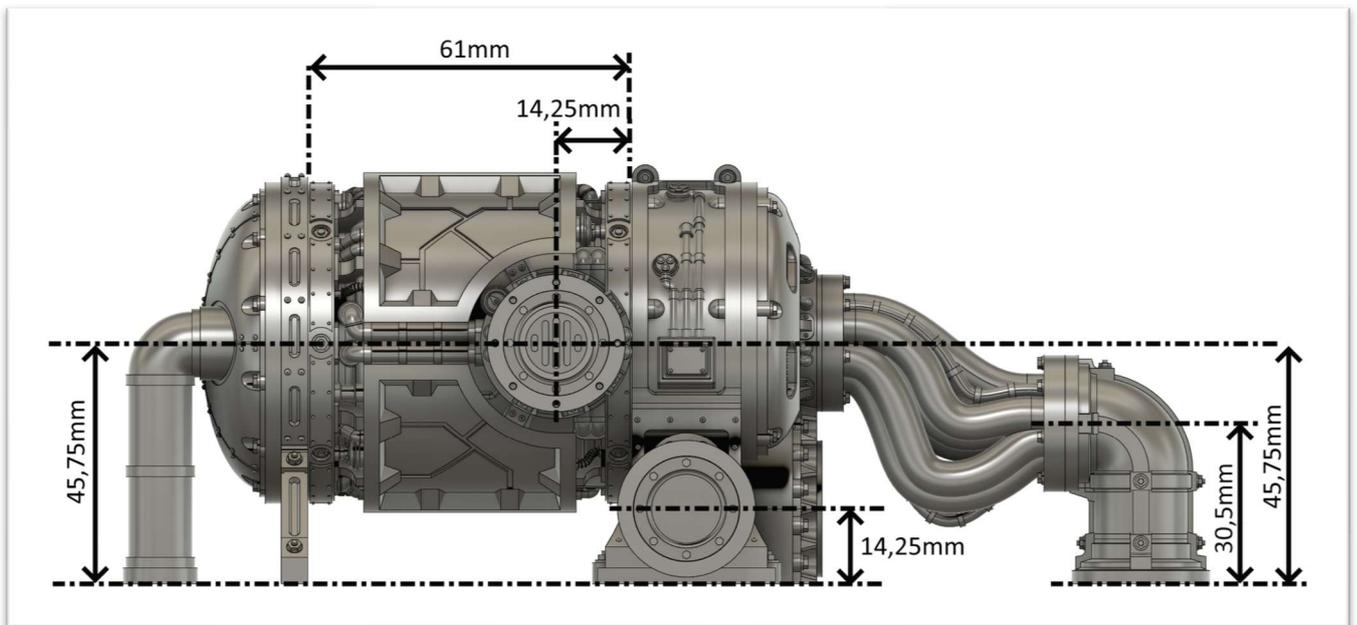
The Pipeline connections are made to work with the standard Pipeline.

In order to lower the connection to the correct level use the Adapter_pipeline_45,75 piece

Assembly

Body Secundus

I added a cut Version of the Reactor Body so the parts can be printed (nearly)without supports but needs to be assembled afterwards.

There are little guiding pegs to help align it in the correct direction.

I suggest printing the Sec_Top(red) and Sec_Middle(green) upside down.

Dome / Short_Body_30,5 / Tank_Body

The Dome , the Short_Body30,5 and the Tank Body are available to print in components as well.

The Tank_Body need supports on the side Port to print best.

Connector Pri_Sec_V2
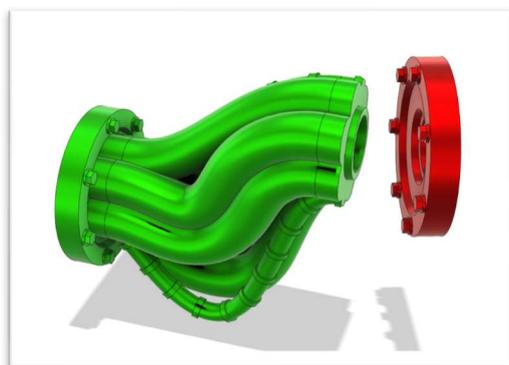
The Connector Pri_Sec_V2 is designed to either connect the Reactor Secundus(45,75mm) to the Reactor Primus(30,5mm) or like pictured above to make a stylish outport.

Connector Ring 60mm

The Connector Ring is used to align the Components and make sure to lock it in the correct angle to one another.

It is not necessary to use but makes assembly easier.

Exhaust 28mm
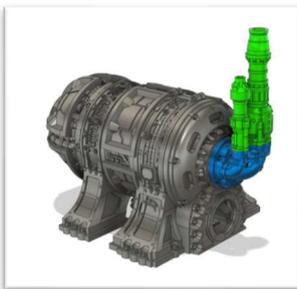
The Exhaust part fits on the 28mm Pipeline connection.

You can use the Connection_Peg_20mm(red) to help you guide it or alternatively you can embed a magnet in the middle.

Exhaust Pipe
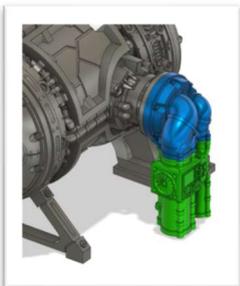
With the Exhaust_Pipe you can turn the Exhaust_28mm into a pipe detail.

Combined it is designed to connect to the 45,75mm connections.

Exhaust Stacks

The Stacks fit on either the Exhaust or Exhaust_2 and there are little guide holes and nubs to align them properly.

The Exhaust piece fits on the 40mm diameter side of the Reactor

The Exhaust_2 piece fits on a 26mm pipeline connection and points upwards.

Exhaust_Side_Short_60mm

The Exhaust_Side_Short is intended to go on the side of the Body_Short or the Sec_Body.

The pin(Red) helps to align the Stack_3.

The bigger version for the Stack_1 and Stack_2 works in a similar way.

Small_sidePipe
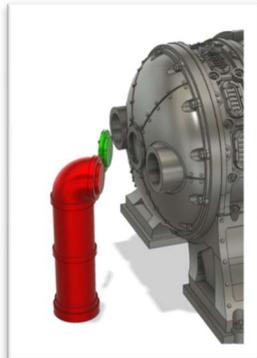
The Small_sidePipe(red) can be added to the Endcap_60x(3x14) or with the help of the small_pipe_connector(blue) to the side of the Reactor.

The Endcap_14mm(green) is designed to close the holes of the big Endcap or the small_pipe_connector(blue).

Alternatively you can use the Small_sidePipe(red) in combination with the Small_sidePipe_P2(purple) on top of a standing rector.

The Small_sidePipe_P3(yellow) allows to extend the pipe by 30,5mm.

You could also use the Straw Pipe Kit to make more individual pipes.
https://www.thingiverse.com/thing:6799099
https://cults3d.com/en/3d-model/game/straw-pipe-connectors-2

Stand_V3

The Stand_V3 allows you to create a standing Plasma Generator and it comes with a few addon pieces to make the piece more versatile.
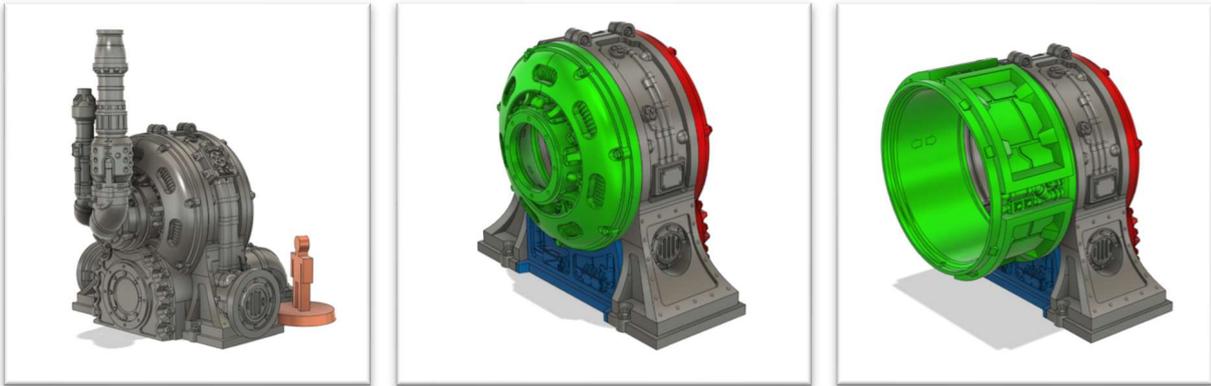
The Stand_V3_Bottom_Plate(blue) closes the gap in the bottom if you use a regular 60mm piece(green).

There are 2 specialized parts that fit the side. Plasma_side_V1 and Plasma_side_V2 (Red)

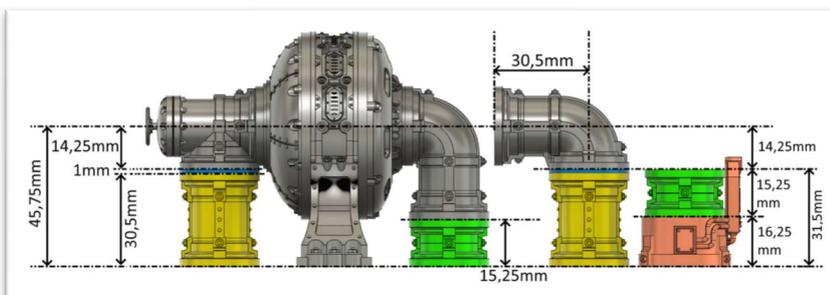The pipeline connections are designed to fit the regular 26mm pipeline.

To allow you to connect extra pipelines to the side there are two adapters available.

Stand_V3_Pipeline_Con_V1 (green)
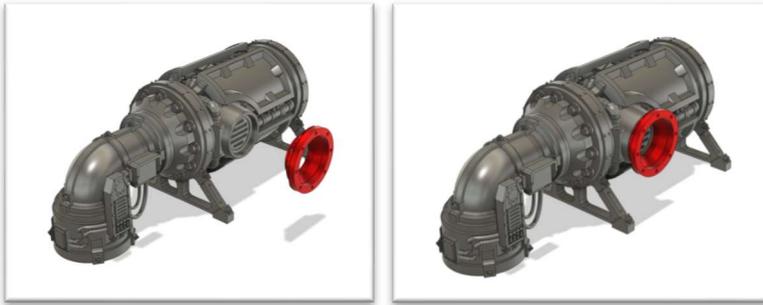Stand_V3_Pipeline_Con_V2 (red)

Pipeline Connection and Sizes

The diagram shows the different sizes and how you need to stack different components.

Note the Spacer_1mm(blue) that is sometimes needed.

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Pipe adapter

The pipe adapter ring has an inner diameter of 20mm and you can add either a Lid with a Magnet or use the 20mm peg to connect further pipeline elements.

Lid and Magnet Inlet

The Lid closes the open pipeline connection, you can add a Magnet behind it.

Spacer

The spacer has a flat surface at the side where the Bit_1 can be placed. The Spacer lifts the Wellhead or the 90d pipeline up to the Pipe connection on the Reactor

Connector Peg 20mm / 30mm

The connector Peg can be used to align pipeline connection and even allows to connect pipeline pieces with a friction fit.

The 30mm Peg works the same way for the bigger 40mm connections.