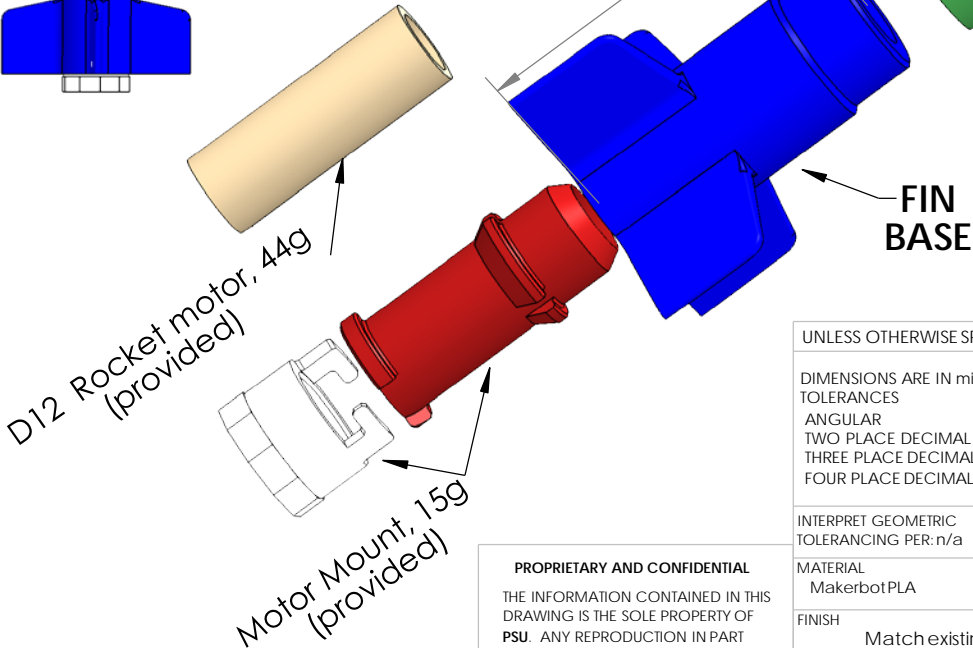
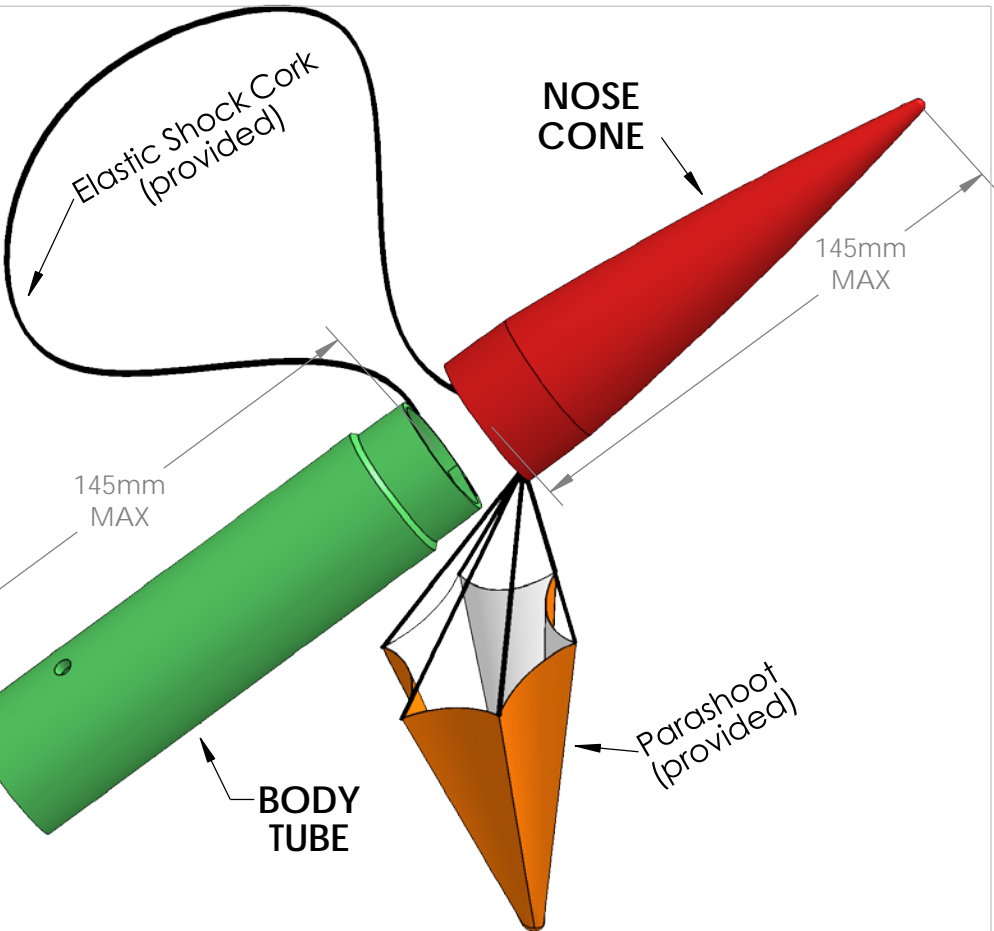
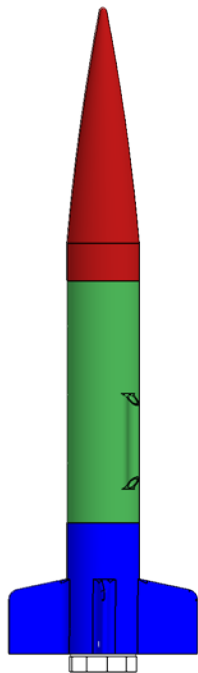


Density, Makerbot PLA = 1gram/cc

NOSE CONE + BODY TUBE + FIN BASE < 201gram

Wall Thickness Anywhere >1mm



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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Component ID		
DIMENSIONS ARE IN millimeters		DRAWN	RGB	TITLE:		
TOLERANCES		CHECKED		FD 4.3 Assembly		
ANGULAR ±0.01 °		ENG APPR.				
TWO PLACE DECIMAL ±0.01		MFG APPR.				
THREE PLACE DECIMAL ±0.001						
FOUR PLACE DECIMAL ±0.0005						
INTERPRET GEOMETRIC TOLERANCING PER: n/a		Q.A.				
MATERIAL Makerbot PLA		COMMENTS:		SIZE	DWG. NO.	REV
FINISH Match existing				A		
DO NOT SCALE DRAWING						

Use Open Rocket Data file given. Edit as follows.

File Edit Tools Help

Rocket design Motors & Configuration Flight simulations

Rocket

Edit dimensions and Mass Override of each component

- Nose cone: Edit dims and Override Mass
- Stability Needs to be > 1 . Add clay ballast here.
- Body Tube: Edit dims & Override Mass
- Fin Base: Edit dims & Override Mass
- Motor Mount (given, do not edit)
- Fins: Edit dims & Override Mass

Move up

Move down

Edit

New stage

Delete

Add new component

Body components and fin sets



Nose cone



Body tube



Transition



Trapezoidal



Elliptical



Freeform



Tube fins



Launch lug

Inner component



Motor



Centering ring



Engine

View Type: Side view

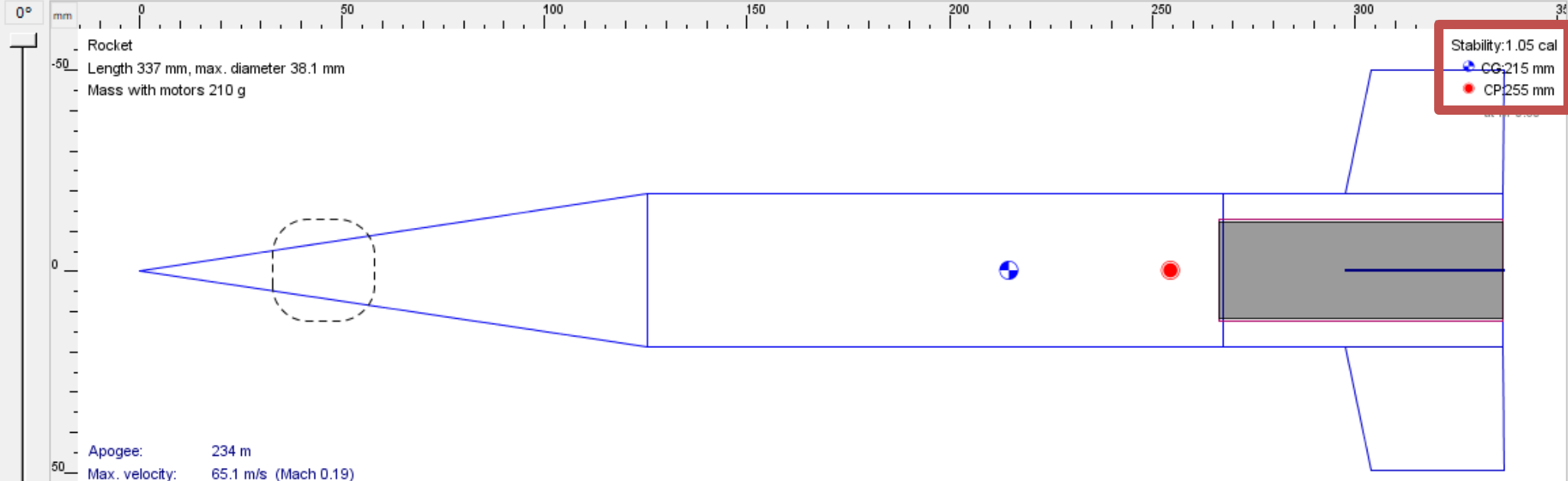


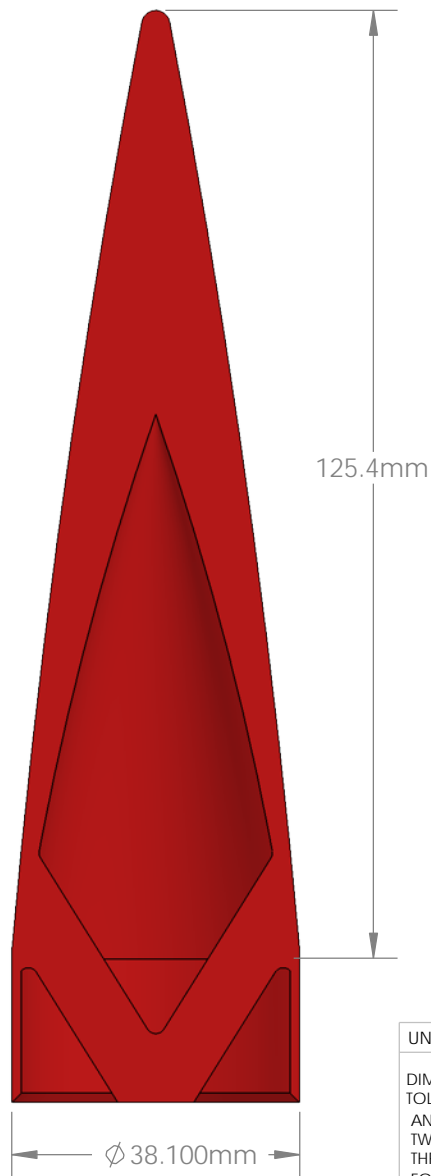
Fit (78.9%)



Stage 1

Flight configuration: [D12-0]





Mass Properties

FD 4.3 Nose.SLDPRT

Options...

Override Mass Properties... Recalculate

☐ Include hidden bodies/components

☐ Create Center of Mass feature

☐ Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of FD 4.3 Nose
Configuration: Default
Coordinate system: -- default --

Density = 0.71 grams per cubic centimeter

Mass (user-overridden) = 28.00 grams

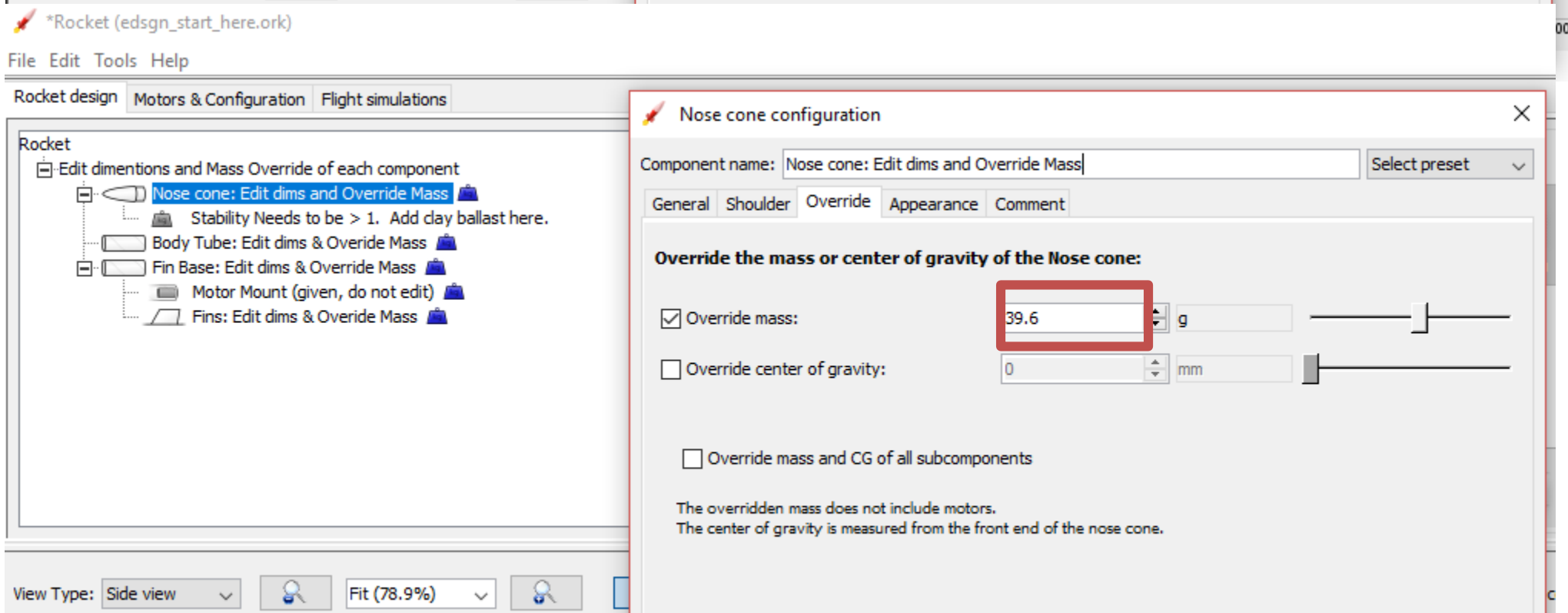
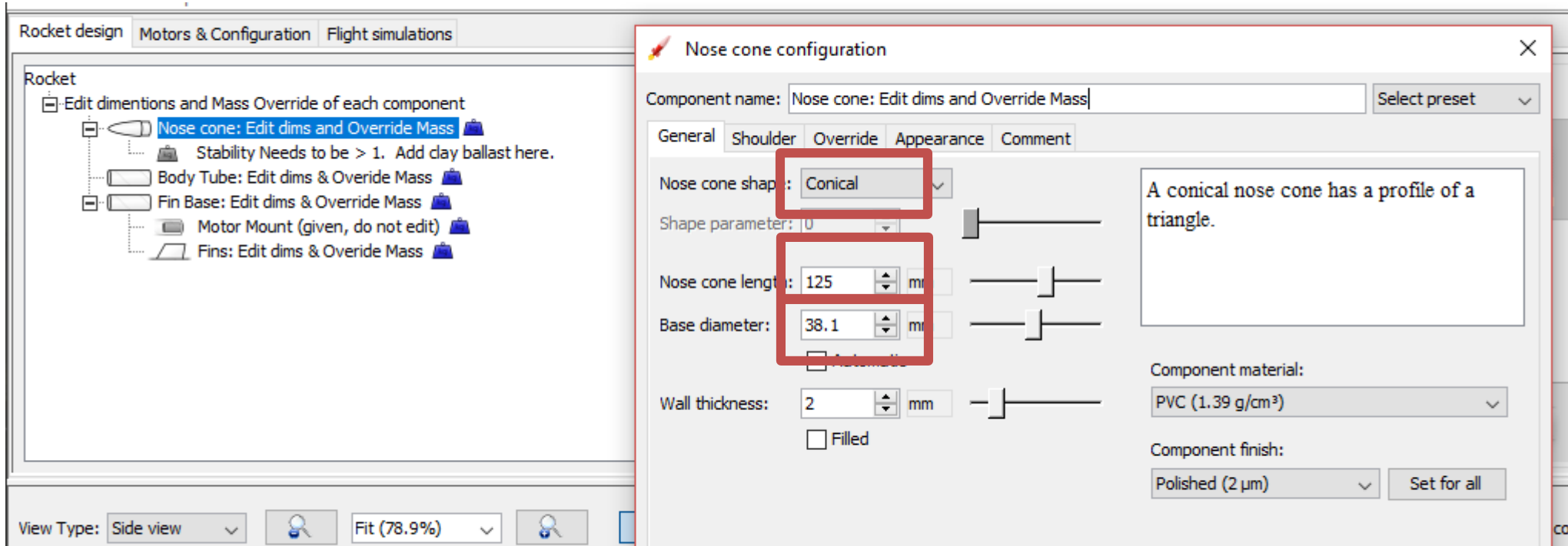
Volume = 39.62 cubic centimeters

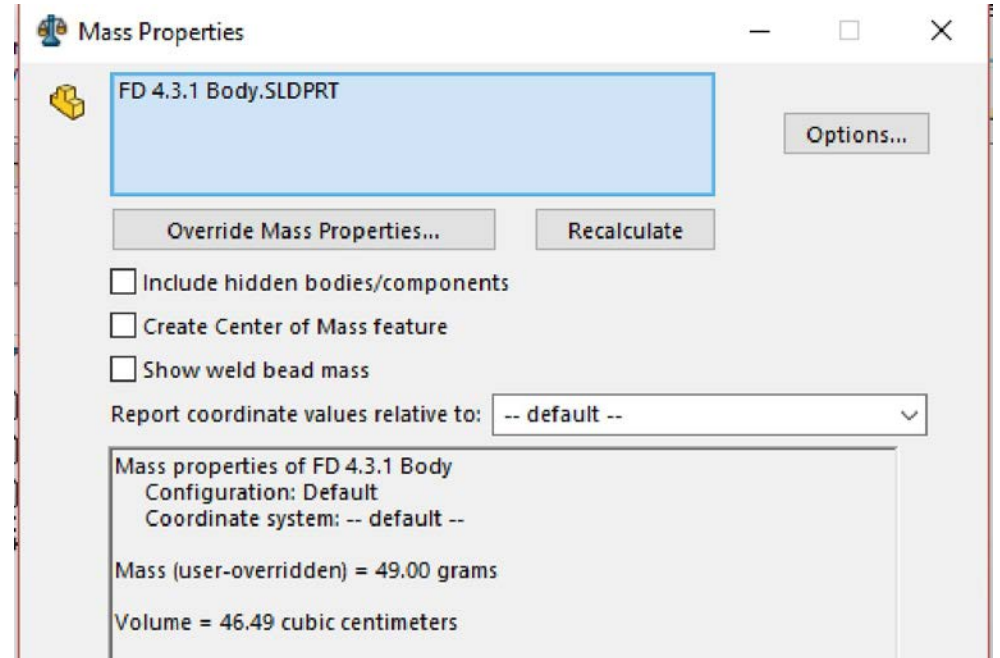
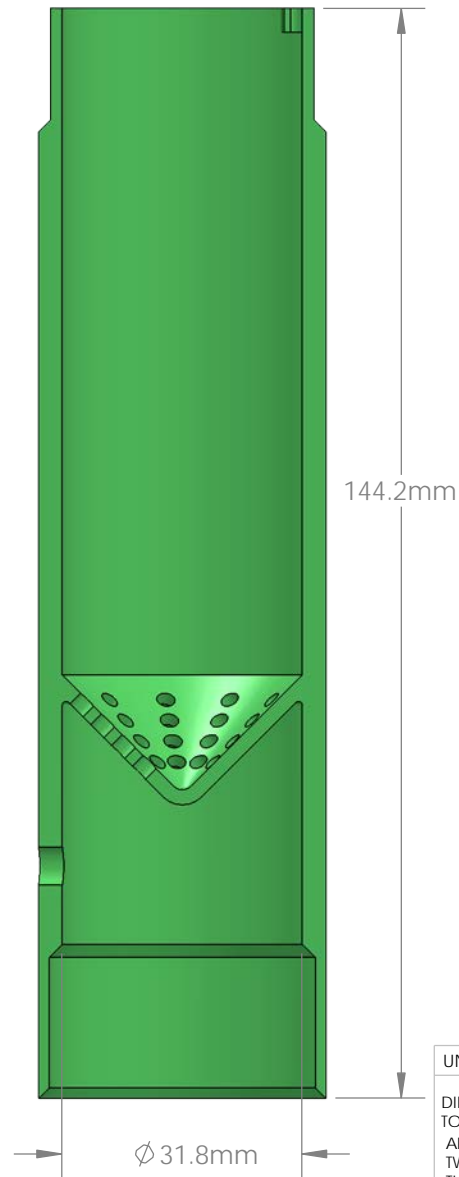
Length = 125.4 mm
OD = 38.1mm
Volume = Override Mass = 39.62g

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PERMISSION OF BI IS PROHIBITED.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Nose	
DIMENSIONS ARE IN millimeters		DRAWN	RGB	10/1/2017	FD 4.3 Assembly
TOLERANCES		CHECKED			
ANGULAR ±0.01°		ENG APPR.			
TWO PLACE DECIMAL ±0.01		MFG APPR.			
THREE PLACE DECIMAL ±0.001					<div>SIZE</div> <div>DWG. NO.</div> <div>REV</div>
FOUR PLACE DECIMAL ±0.0005					
INTERPRET GEOMETRIC TOLERANCING PER: n/a		Q.A.			
MATERIAL MakerbotPLA		COMMENTS:			
FINISH Match existing					
DO NOT SCALE DRAWING					

Enter Nose Cone Data From SolidWorks



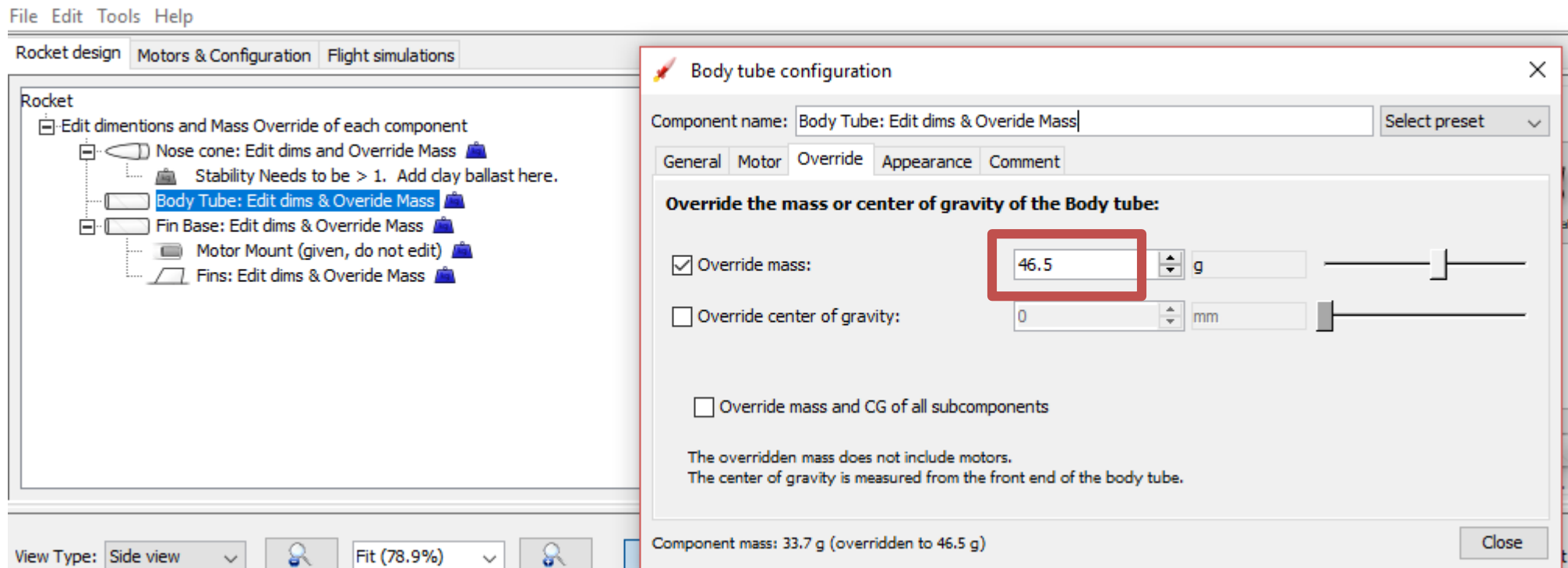
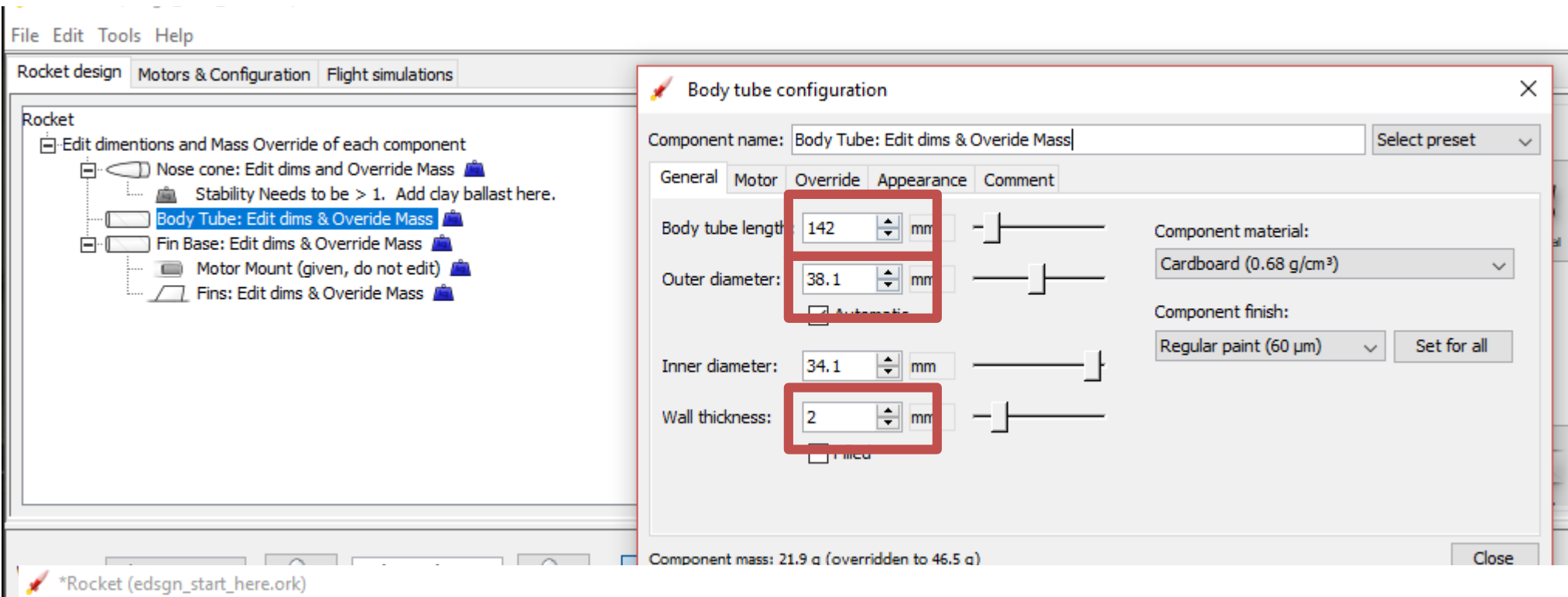


Length = 144.2 mm
 OD = 38.1mm
 Volume = Override Mass = 46.5g

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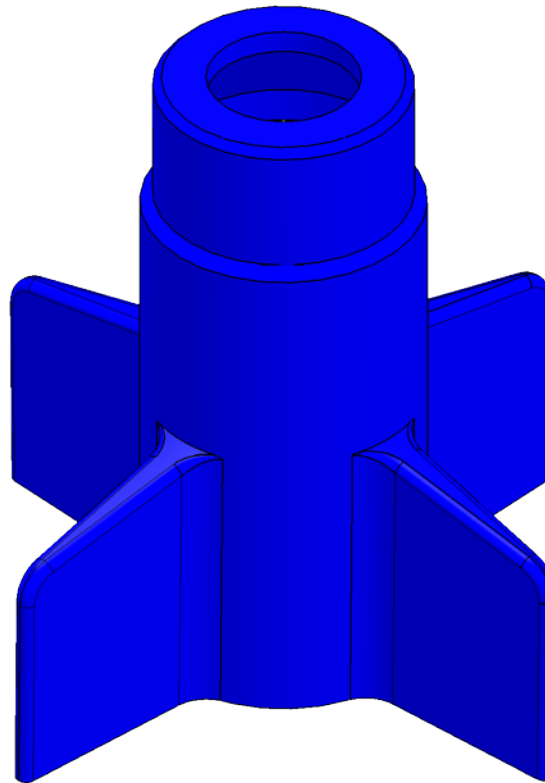
UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Body	
DIMENSIONS ARE IN millimeters		DRAWN	RGB	10/1/2017	FD 4.3 Assembly
TOLERANCES		CHECKED			
ANGULAR $\pm 0.01^\circ$		ENG APPR.			
TWO PLACE DECIMAL ± 0.01		MFG APPR.			
THREE PLACE DECIMAL ± 0.001					SIZE A DWG. NO. REV
FOUR PLACE DECIMAL ± 0.0005					
INTERPRET GEOMETRIC TOLERANCING PER: n/a		Q.A.			
MATERIAL MakerbotPLA		COMMENTS:			
FINISH Match existing					
DO NOT SCALE DRAWING					

Enter Body Tube Data From SolidWorks



Need to determine mass of fins and fin base separately.

Use Multibody to split fins off Fin Base



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	DIMENSIONS ARE IN millimeters		DRAWN		RGB		10/1/2017		FD 4.3 Assembly		
	TOLERANCES		CHECKED								
	ANGULAR ±0.01 °		ENG APPR.								
	TWO PLACE DECIMAL ±0.01		MFG APPR.								
	THREE PLACE DECIMAL ±0.001		Q.A.								
	FOUR PLACE DECIMAL ±0.0005		COMMENTS:								
	INTERPRET GEOMETRIC TOLERANCING PER: n/a										
	MATERIAL MakerbotPLA										
	FINISH Matchexisting										
DO NOT SCALE DRAWING											

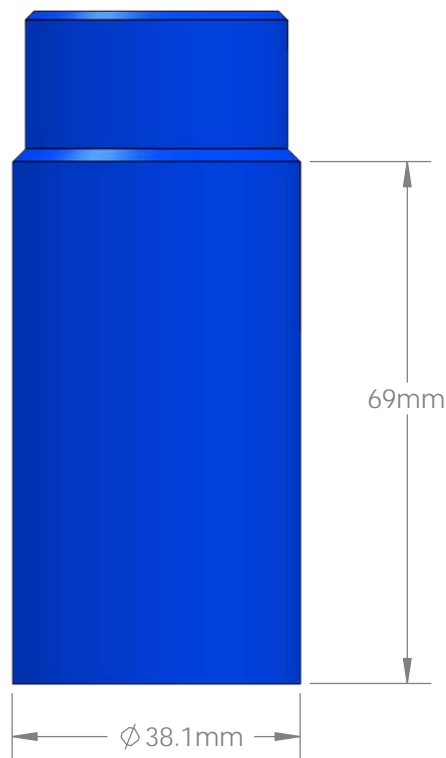
5

4

3

2

1



Mass Properties

FD 4.3 Base.SLDPRT

Options...

Override Mass Properties...

Recalculate

☐ Include hidden bodies/components
☐ Create Center of Mass feature
☐ Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of FD 4.3 Base
Configuration: Fins removed
Coordinate system: -- default --

Density = 1.02 grams per cubic centimeter
Mass = 20.18 grams
Volume = 19.78 cubic centimeters

Length = 69 mm
OD = 38.1mm
Volume = Override Mass = 20.2g

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	DIMENSIONS ARE IN millimeters			DRAWN			RGB						10/1/2017	
	TOLERANCES			CHECKED						FD 4.3 Assembly				
	ANGULAR ±0.01 °			ENG APPR.										
	TWO PLACE DECIMAL ±0.01			MFG APPR.										
	THREE PLACE DECIMAL ±0.001													
	FOUR PLACE DECIMAL ±0.0005			Q.A.										
	INTERPRET GEOMETRIC TOLERANCING PER: n/a			COMMENTS:										
	MATERIAL MakerbotPLA													
	FINISH Matchexisting													
DO NOT SCALE DRAWING														
						SIZE			DWG. NO.			REV		
						A								

4

3

2

1

Enter Fin Base (w/o Fins) Data From SolidWorks

*Rocket (edsgn_start_here.ork)

File Edit Tools Help

Rocket design Motors & Configuration Flight simulations

Rocket

Edit dimensions and Mass Override of each component

- Nose cone: Edit dims and Override Mass
- Stability Needs to be > 1 . Add clay ballast here.
- Body Tube: Edit dims & Override Mass
- Fin Base: Edit dims & Override Mass
- Motor Mount (given, do not edit)
- Fins: Edit dims & Override Mass

Body tube configuration

Component name: Fin Base: Edit dims & Override Mass

Select preset

General Motor Override Appearance Comment

Body tube length: 69 mm

Outer diameter: 38.1 mm

☒ Automatic

Inner diameter: 34.1 mm

Wall thickness: 2 mm

☐ Filled

Component material:

PVC (1.39 g/cm³)

Component finish:

Polished (2 μ m)

Set for all

Component mass: 21.8 g (overridden to 20.2 g)

Close

*Rocket (edsgn_start_here.ork)

File Edit Tools Help

Rocket design Motors & Configuration Flight simulations

Rocket

Edit dimensions and Mass Override of each component

- Nose cone: Edit dims and Override Mass
- Stability Needs to be > 1 . Add clay ballast here.
- Body Tube: Edit dims & Override Mass
- Fin Base: Edit dims & Override Mass
- Motor Mount (given, do not edit)
- Fins: Edit dims & Override Mass

Body tube configuration

Component name: Fin Base: Edit dims & Override Mass

Select preset

General Motor Override Appearance Comment

Override the mass or center of gravity of the Body tube:

☒ Override mass:

20.2

g

☐ Override center of gravity:

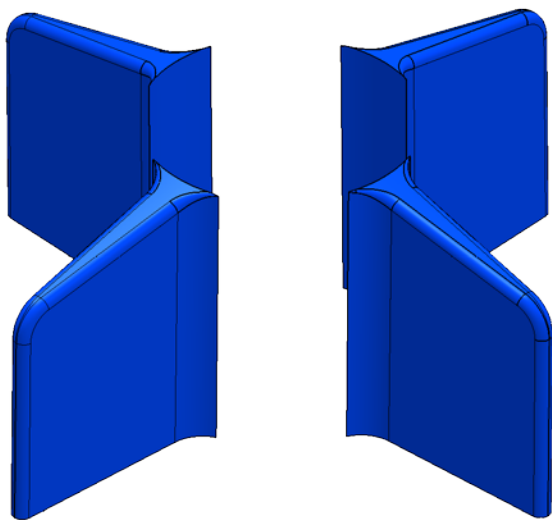
0

mm

☐ Override mass and CG of all subcomponents

The overridden mass does not include motors.

The center of gravity is measured from the front end of the body tube.



Mass Properties

FD 4.3 Base.SLDPRT

Override Mass Properties... Recalculate

☐ Include hidden bodies/components

☐ Create Center of Mass feature

☐ Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of FD 4.3 Base
 Configuration: Fins
 Coordinate system: -- default --

Density = 1.02 grams per cubic centimeter

Mass = 20.62 grams

Volume = 20.21 cubic centimeters

Volume = Override Mass = 20.2g

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	DIMENSIONS ARE IN millimeters			DRAWN		RGB		10/1/2017		FD 4.3 Assembly				
	TOLERANCES			CHECKED										
	ANGULAR ±0.01			ENG APPR.										
	TWO PLACE DECIMAL ±0.01			MFG APPR.										
	THREE PLACE DECIMAL 0.001													
	FOUR PLACE DECIMAL ±0.0005													
	INTERPRET GEOMETRIC TOLERANCING PER: n/a			Q.A.										
	MATERIAL Makerbot PLA			COMMENTS:					SIZE		DWG. NO.		REV	
	FINISH Match existing								A					
DO NOT SCALE DRAWING														

Enter Fin Base (only Fins) Data From SolidWorks

File Edit Tools Help

Rocket design Motors & Configuration Flight simulations

Rocket

Edit dimensions and Mass Override of each component

- Nose cone: Edit dims and Override Mass
- Stability Needs to be > 1. Add clay ballast here.
- Body Tube: Edit dims & Override Mass
- Fin Base: Edit dims & Override Mass
- Motor Mount (given, do not edit)
- Fins: Edit dims & Override Mass

View Type: Side view

Fit (78.9%)

0°

mm

0

50

Rocket

Length 337 mm, max. diameter 38.1 mm

Mass with motors 210 g

*Rocket (edsgn_start_here.ork)

Trapezoidal fin set configuration

Component name: Fins: Edit dims & Override Mass

General Fin tabs Override Appearance Comment

Number of fins: 4

Fin rotation: 0°

Fin cant: 0.5°

Root chord: 38.9 mm

Tip chord: 33 mm

Height: 30.5 mm

Sweep length: 6.48 mm

Sweep angle: 12°

Position relative to: Bottom of the parent component

plus 0 mm

Fin cross section: Airfoil

Thickness: 3.12 mm

Component material:

PVC (1.39 g/cm³)

Component finish:

Regular paint (60 µm)

Set for all

Root Fillets

Fillet radius: 0 mm

Fillet material:

Cardboard (0.68 g/cm³)

freeform

Close

File Edit Tools Help

Rocket design Motors & Configuration Flight simulations

Rocket

Edit dimensions and Mass Override of each component

- Nose cone: Edit dims and Override Mass
- Stability Needs to be > 1. Add clay ballast here.
- Body Tube: Edit dims & Override Mass
- Fin Base: Edit dims & Override Mass
- Motor Mount (given, do not edit)
- Fins: Edit dims & Override Mass

Trapezoidal fin set configuration

Component name: Fins: Edit dims & Override Mass

General Fin tabs Override Appearance Comment

Override the mass or center of gravity of the Trapezoidal fin set:

☒ Override mass:

20.2 g

☐ Override center of gravity:

0 mm

Enter Nose Cone Ballast for STABILITY >1.0

rocket (easyr_start_project)

File Edit Tools Help

Rocket design Motors & Configuration Flight simulations

Rocket

- Edit dimensions and Mass Override of each component
 - Nose cone: Edit dims and Override Mass
 - Stability Needs to be > 1. Add clay ballast here.
 - Body Tube: Edit dims & Override Mass
 - Fin Base: Edit dims & Override Mass
 - Motor Mount (given, do not edit)
 - Fins: Edit dims & Override Mass

View Type: Side view

Fit (78.9%)

0° mm 0 50 100 150 200 250 300 350

Unspecified configuration

Component name: Stability Needs to be > 1. Add clay ballast here.

General Radial position Override Appearance Comment

Mass type: Unspecified

Mass: 20 g

Approximate density: 1.63 g/cm³

Length: 25 mm

Diameter: 25 mm

Position relative to: Top of the parent component

plus 33 mm

Component mass: 20 g

Rocket

Length 337 mm, max. diameter 38.1 mm

Mass with motors 210 g

Stability: 1.05 cal

CG: 215 mm

CP: 255 mm

Apogee: 234 m

Max. velocity: 65.1 m/s (Mach 0.19)