P-51 Mustang
Flight Simulation Data

Zielonka 2019

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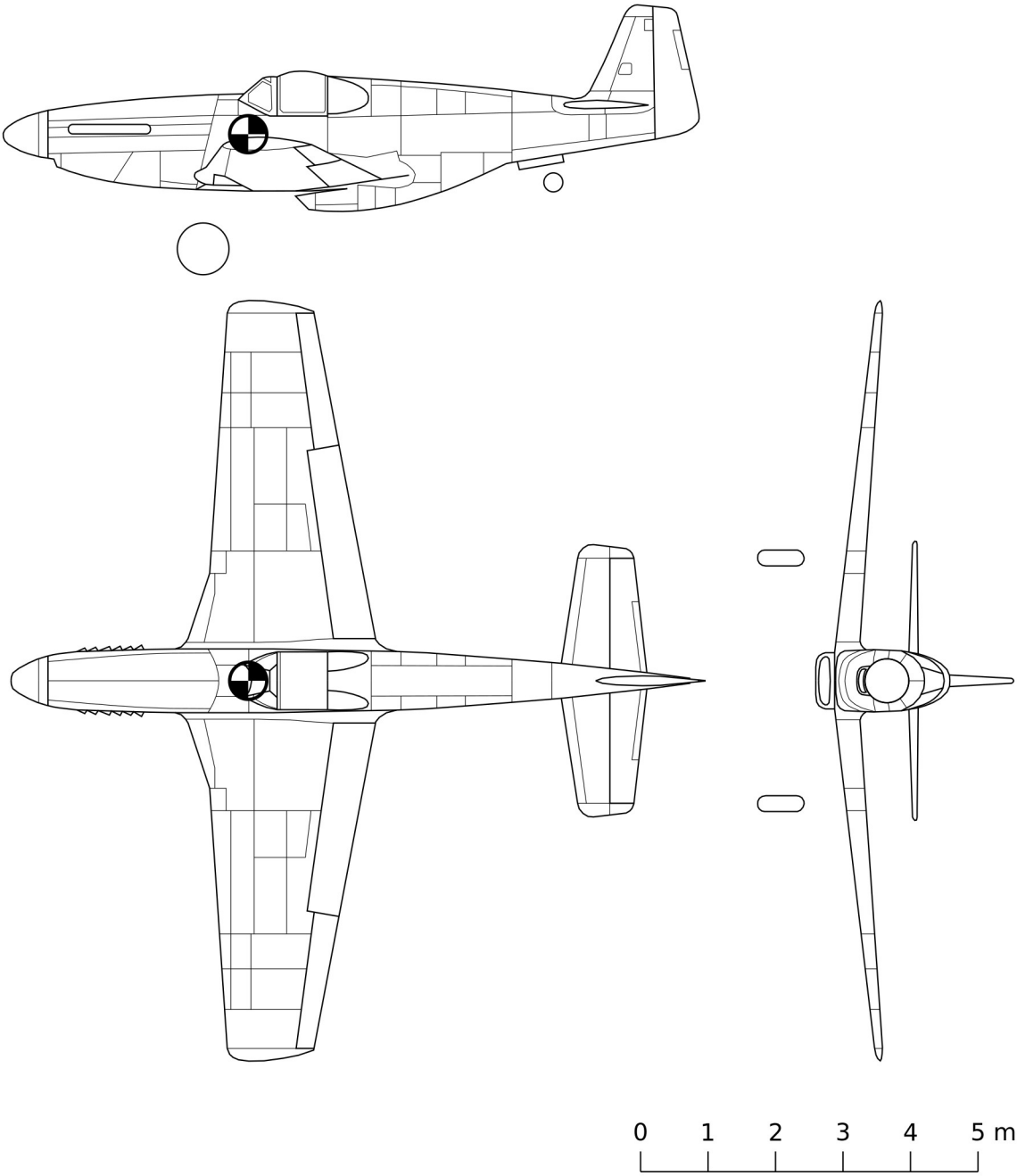

0
1
2
3
4
5 m

1. General Data

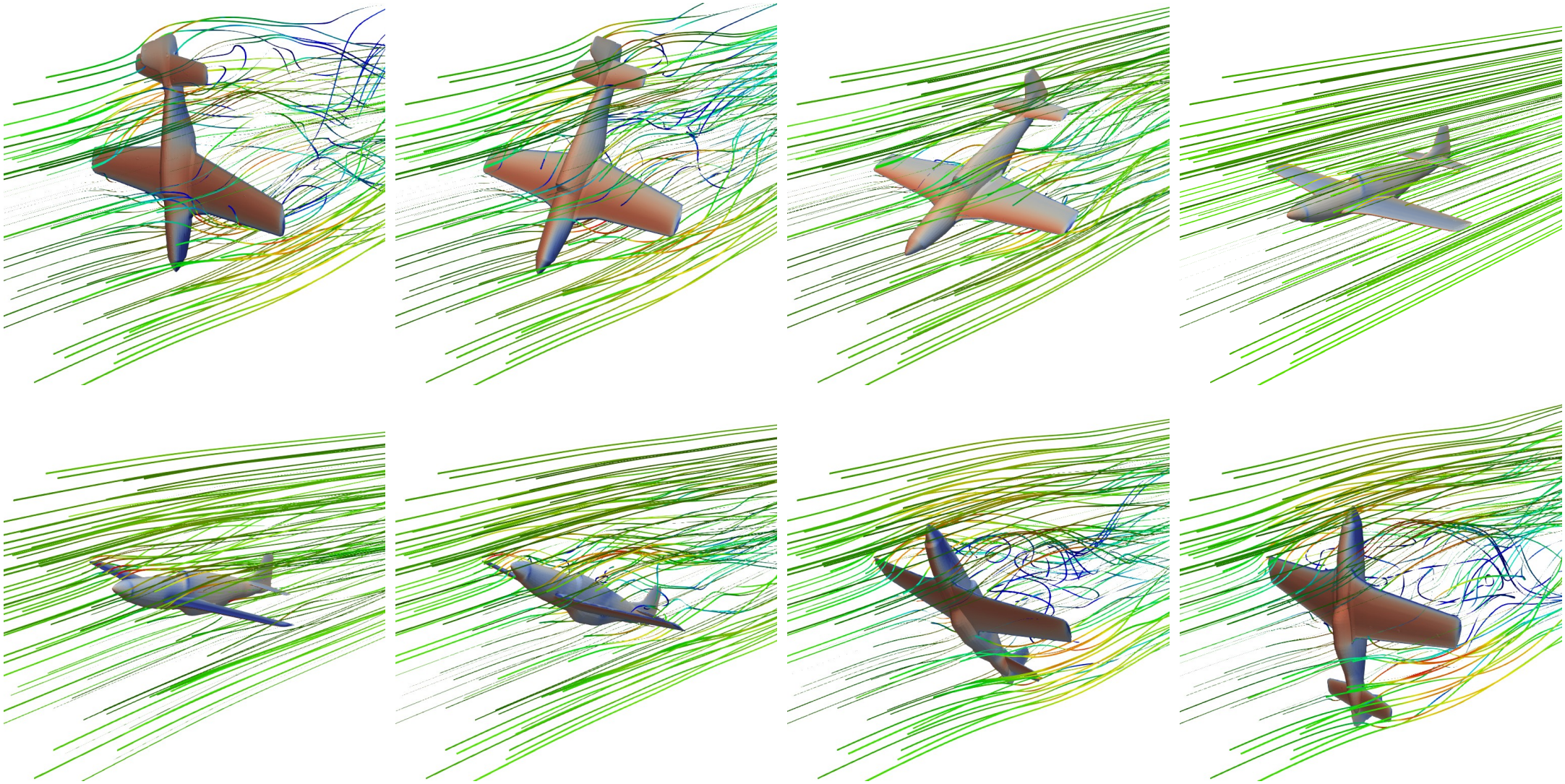
Parameter	Value	Reference
Length	9.83 m	[1]
Wingspan	11.28 m	[1]
Height	3.71 m	[1]
Wing area	22.3 m^2	[1]
Mean aerodynamic chord	2.02 m	[1]
Wing airfoil	NAA-NACA 45-100	[2]
Wing incidence	+1°	[1]
Horizontal tail area	3.81 m^2	[1]
Horizontal tail incidence	+2°	[1]
Vertical tail area	1.86 m^2	[1]
Ailerons area (total)	1.18 m^2	[1]
Ailerons deflection limit	±10, 12 or 15°	[1]
Ailerons trim tab deflection limit	±10°	[1]
Elevator area (including tabs)	1.21 m^2	[1]
Elevator trim tabs area	0.18 m^2	[1]
Elevator deflection limit	up 30°, down 20°	[1]
Elevator trim tab deflection limit	up 10°, down 25°	[1]
Rudder area (including tabs)	0.97 m^2	[1]
Rudder trim tabs area	0.07 m^2	[1]
Rudder deflection limit	±30°	[1]
Rudder trim tab deflection limit	±10°	[1]
Flaps area (total)	2.99 m^2	[1]
Flaps deflection limit	47°	[1]
Empty weight	3 311 kg	[3]
Loaded weight	4 540 kg	[4]
Internal fuel tanks capacity (wings)	696 l	[1]
Internal fuel tanks capacity (fuselage)	322 l	[1]
Engine model	Packard V-1650-3	[4]
Engine rated power (at 3 000 RPM) - take-off	1 111 kW	[5]
Engine displacement	27.02 l	[5]

Parameter	Value	Reference
Engine height	1.056 m	[5]
Engine width	0.762 m	[5]
Engine length	2.212 m	[5]
Engine weight	766 kg	[5]
Specific fuel consumption	274.9 g/(kW·h)	[5]
Engine gear ratio	0.479	[1], [5]
Propeller manufacturer	Hamilton Standard	[1]
Propeller hub model no.	24D50-65	[1]
Propeller blade model no.	J6523A-24	[1]
Propeller diameter	3.40 m	[1]
Minimum propeller pitch	23°	[1]
Maximum propeller pitch	65°	[1]
Supercharger low speed gear ratio	5.80	[5]
Supercharger high speed gear ratio	7.35	[5]
Supercharger boost	2.07 bar	[5]

2. Performance

Parameter	Value	Reference
Maximum speed (at 9 000 lb gross weight, 20 000 ft, war emergency power)	439 mph	[3]
Maximum speed (at 9 000 lb gross weight, 20 000 ft, maximum continuous power)	405 mph	[3]
Maximum climb rate (at 9 000 lb gross weight, 5 000 ft, war emergency power)	3 560 ft/min	[3]
Maximum climb rate (at 9 000 lb gross weight, 5 000 ft, maximum continuous power)	3 150 ft/min	[3]
Service ceiling	40 000 ft	[4]
Range (at 9 000 lb gross weight, at 10 000 ft, with 184 US gal fuel)	525 mi	[3]
Endurance (at 9 000 lb gross weight, at 10 000 ft, with 184 US gal fuel)	1.7 h	[3]

3. Aerodynamic Characteristics



4. Mass Data

Parameter	Value
Center of mass x-coordinate	-0.20 m
Center of mass y-coordinate	0.00 m
Center of mass z-coordinate	0.21 m
Moment of inertia I_x	11 022.1 kg·m^2
Moment of inertia I_y	15 381.0 kg·m^2
Moment of inertia I_z	24 934.2 kg·m^2
Cross product of inertia I_{xy}	0.0 kg·m^2
Cross product of inertia I_{xz}	-227.9 kg·m^2
Cross product of inertia I_{yz}	0.0 kg·m^2

Empty aircraft inertia tensor and center of mass coordinates

Structure group	**Weight [kg]**	**Coordinates [m]**			**First moment of mass [kg·m]**			**Moment of inertia [kg·m^2]**			**Moment of inertia (Body Axis System) [kg·m^2]**					
		x	y	z	S_X	S_Y	S_Z	$I_{x,0}$	$I_{y,0}$	$I_{z,0}$	I_x	I_y	I_z	I_{xy}	I_{xz}	I_{yz}

Structure groups breakdown

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