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Welcome to Hangar Studios 713 Ryan Navion B Manual!
This is my 2nd project for the Navions and I hope you enjoy flying the Model B. This aircraft was developed with the love of Navions in mind. It has a sportier look and feel with a new age design in every aspect of the plane. I took an old vintage aircraft and made it new and now available for Microsoft Flight Simulator 2020.

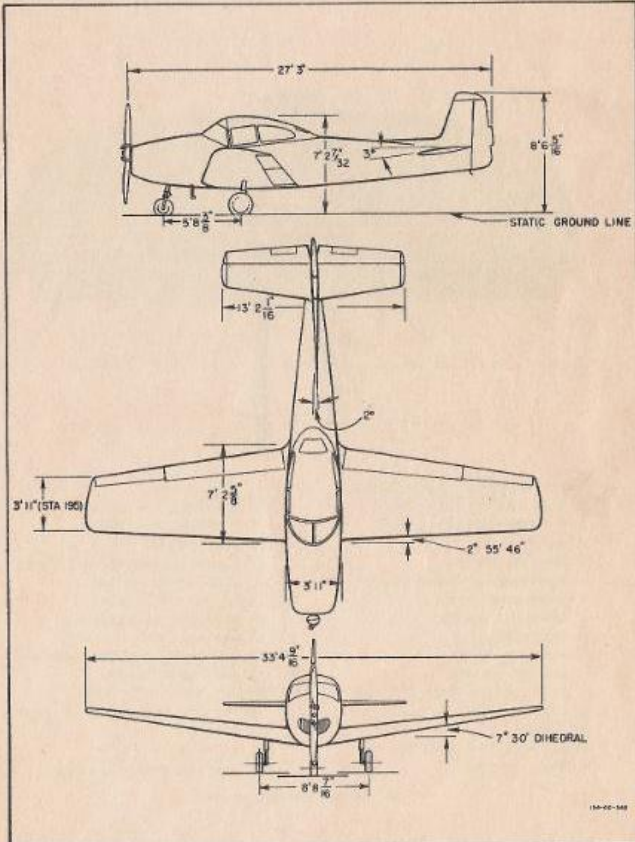
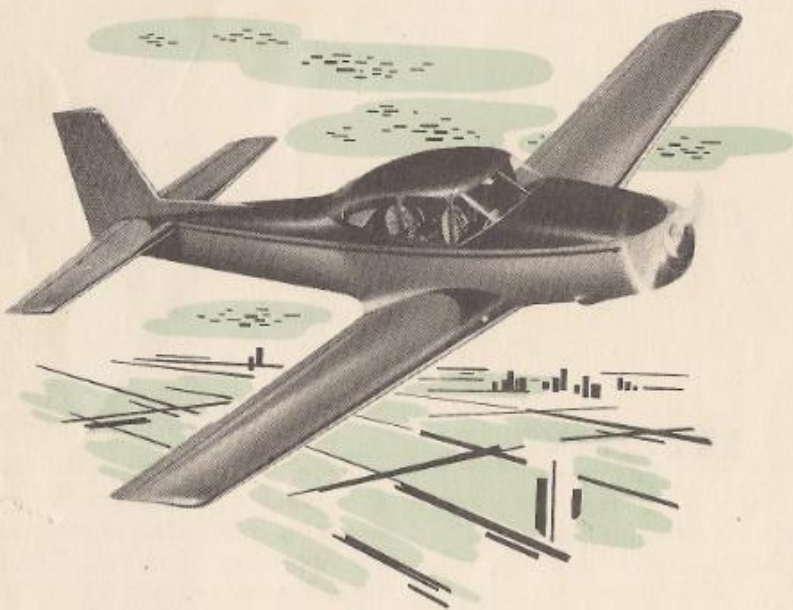
I have developed this plane from the ground up, modeled to one of today's newest upgrades for the aircraft. All new kit modifications, with a fine design and more powerful Continental IO-520 6 cylinder 260 HP engine. It is also known as the Ryan Navion Super 260.

In this manual I have included some important information for navigating through the entire plane and all of its bells and whistles. I have also included a tablet that functions as a one stop shop for all of the clickables and animations to truly indulge in the simulating experience. Some of the features I have also included are a full checklist taken directly from a real Navion owner/pilot and incorporated it directly into the immersion with camera views to direct you through the checklist and pre-flight inspections. It has 16 categories and 128 checklist items from pre-flight all the way through shut down and securing.

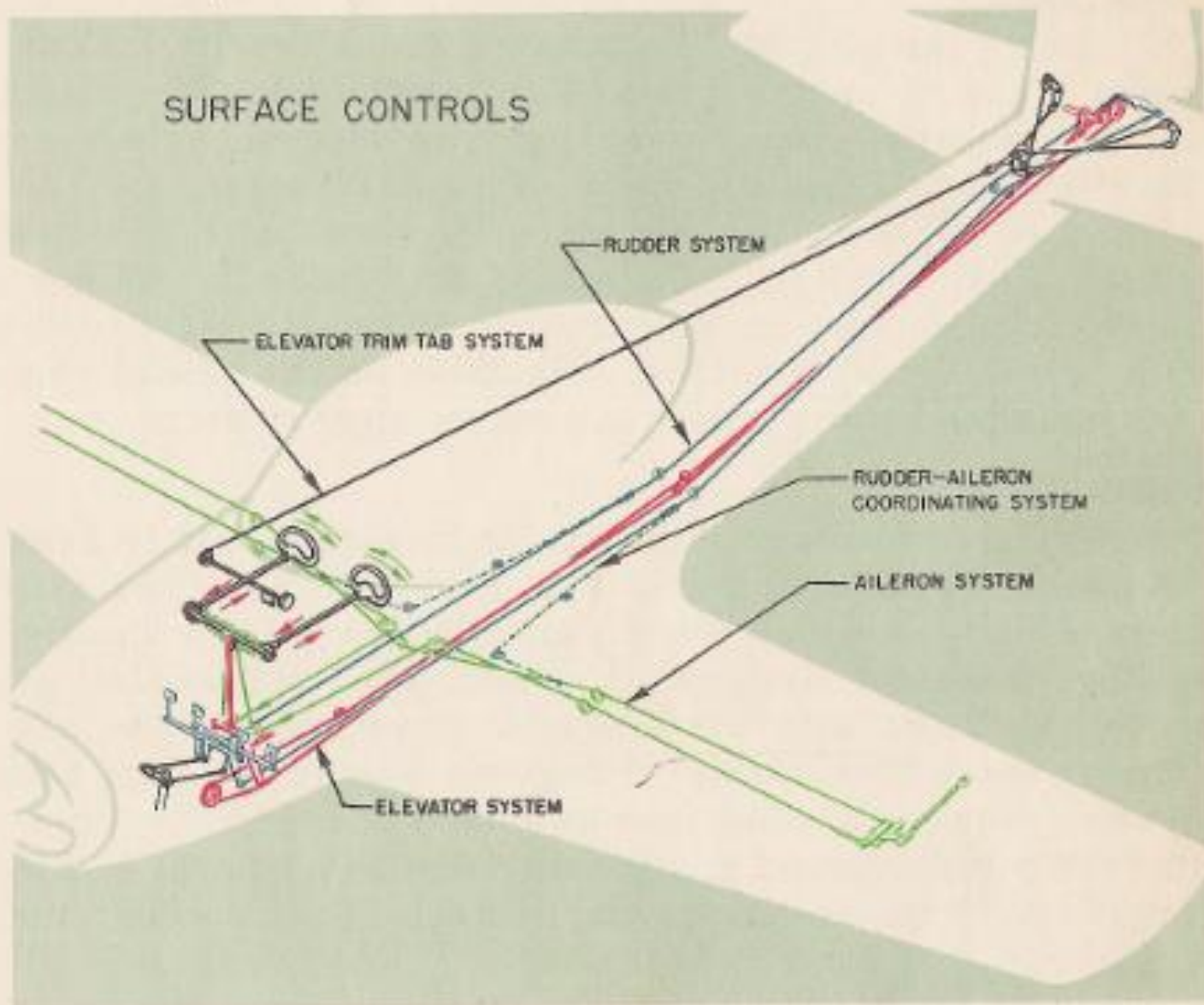
If you are familiar with my previous aircraft the Camair 480 Twin Navion, this is the next step up in the "realism" of owning a Navion. From having an aircraft modeled and textured all the way down to the flight dynamics with exact precision to the computational fluid dynamics (CFD) and flight behaviors.

I hope you truly enjoy flying this aircraft that is a part of aviation history.

B4Gunner



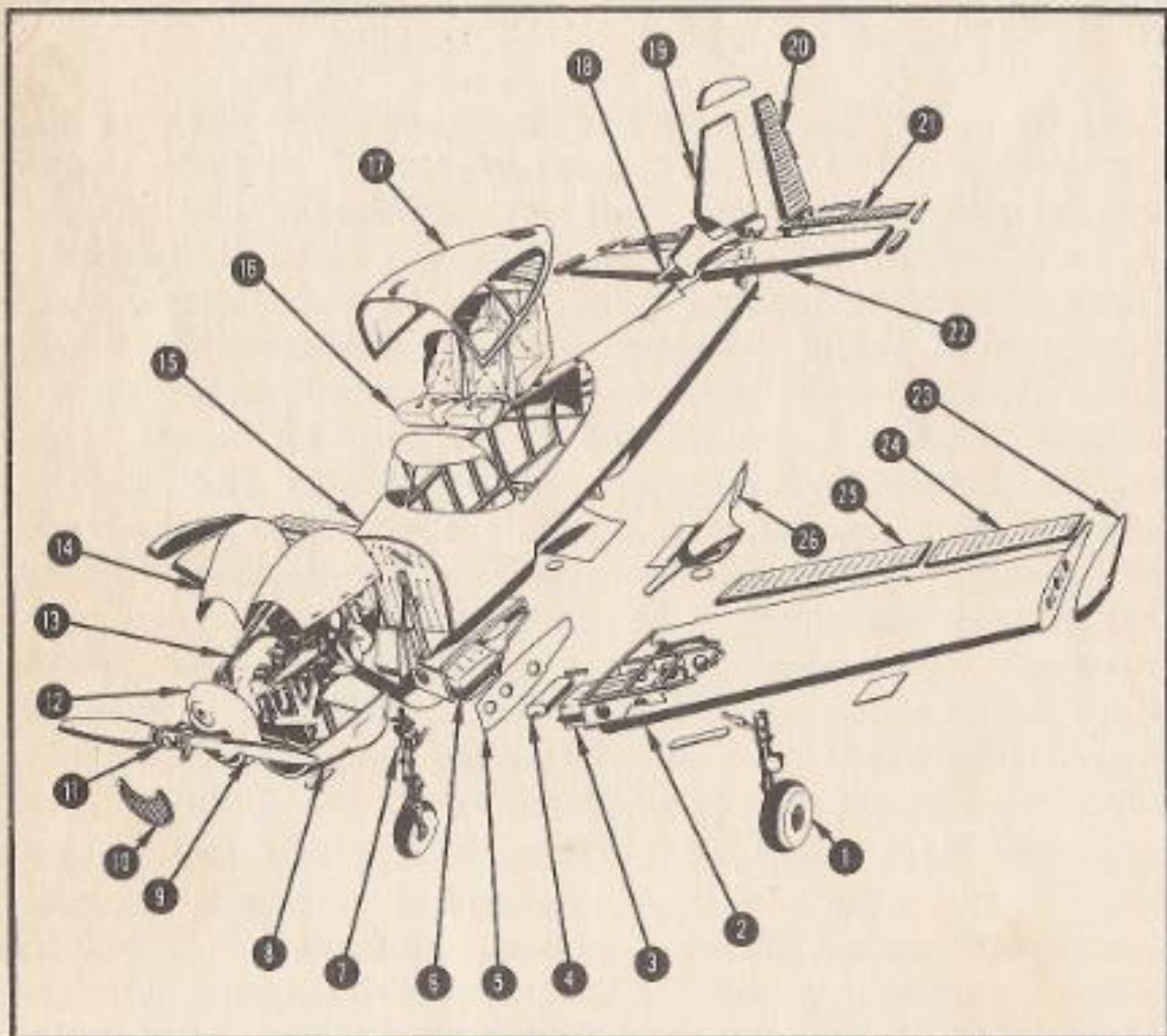
SURFACE CONTROLS





Your Airplane . . .

Your Ryan Navion is a low-wing, four-place, dual-control airplane powered by a single air-cooled engine. Clean aerodynamic design and structural sturdiness are evident in the all-metal, semi-monocoque construction. Retractable faired-in tricycle landing gear, steerable nose wheel, wing flaps, cabin sliding canopy, engine exhaust mufflers and cabin heater combination, and smartly upholstered interior, combine features reminiscent of military efficiency with modern private flying requirements of luxury and convenience. Safety and ease of control in all flight maneuvers are ensured by the inherent stability and balance of control forces characteristic of the airplane. High power, performance, and speed are supplied by the reliable power plant and variable pitch propeller installation. Years of engineering experience and advanced manufacturing technique have produced these qualities in the Navion. This book has been compiled to describe the airplane and to provide the owner with a convenient reference manual containing recommended operating methods. A separate manual, containing the CAA Approved Operating Limitations only, is also supplied and must be kept in the airplane at all times.



— KEY —

- | | | |
|-------------------------|---------------------------|-----------------------------|
| 1 Main Landing Gear | 9 Propeller | 19 Vertical Stabilizer |
| 2 Left Wing | 10 Nose Cowl Grill | 20 Rudder |
| 3 20-Gallon Fuel Tank | 11 Propeller Hub | 21 Elevator |
| 4 Accumulator Fuel Tank | 12 Nose Cowl | 22 Horizontal Stabilizer |
| 5 Center Rib | 13 Engine and Accessories | 23 Wing Tip |
| 6 20-Gallon Fuel Tank | 14 Engine Cowl | 24 Aileron |
| 7 Nose Landing Gear | 15 Fuselage | 25 Wing Flap |
| 8 Engine Mount | 16 Front and Rear Seats | 26 Wing-to-Fuselage Fillets |
| | 17 Sliding Canopy | |
| | 18 Empennage Fillets | |

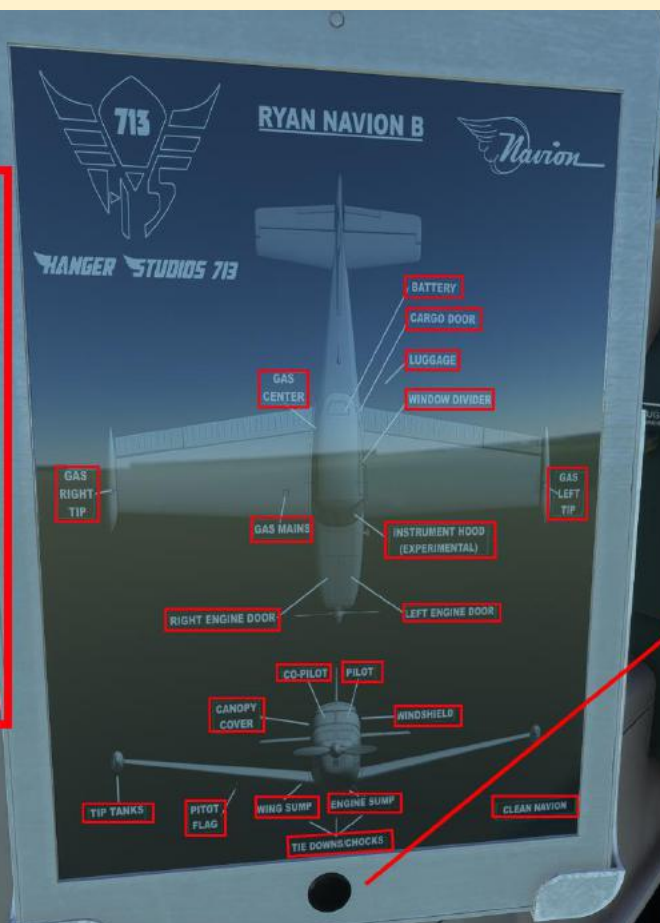
Tablet functions and location

ALL CLICKABLES
HAVE RESTRICTIONS
WEIGHT/ENGINE ON/
SPEED(5 KNOTS)

TO STOW/CLOSE/
VISIBILITY

EXCEPTION - CANOPY

THE NAVION B WILL
AUTOMATICALLY
MOVE ANIMATIONS
BEFORE FLIGHT
TO CORRECT POSITION



Use the black button
to scroll through the
menu pages. 1st page
is off, 2nd Page is
clickables menu, 3rd
page is checklist screen
Either grab the button &
use a down motion or
using a mouse, the scroll
wheel will cycle the pages



PANEL



KBWT
JPLA
CLR ENT
GPS
NAV 10000
PUSH CRSR
FPL PROC
00 PRESSURE ALT FL 012
5 6 7 8 9
4,000 FT
ARM BARO
REV ALT
DN
ADF
STBY/TIMER
NAV PAX RADIO



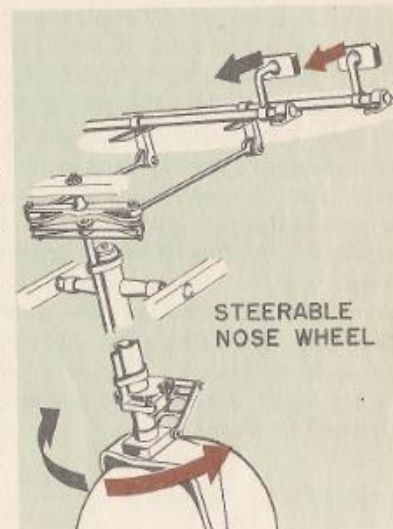


Gear Position Indicators
No pilot is proud of a belly landing—not even a good one. The Navion owner can be assured that his gear is “down and locked” for landing by checking the gear position indicators located at the left side of the control panel. Three green lights, one for each gear, give a constant visual indication of the condition of the gear. Each light illuminates when its respective gear is down and locked. One red light on the panel illuminates when the gear is in any position other than down and locked, or up and locked. The green indicator lights can be dimmed by a rheostat switch located below them. (The switch also controls brilliancy of the hydraulic power light.) Spare lamps for the



Steerable Nose Wheel

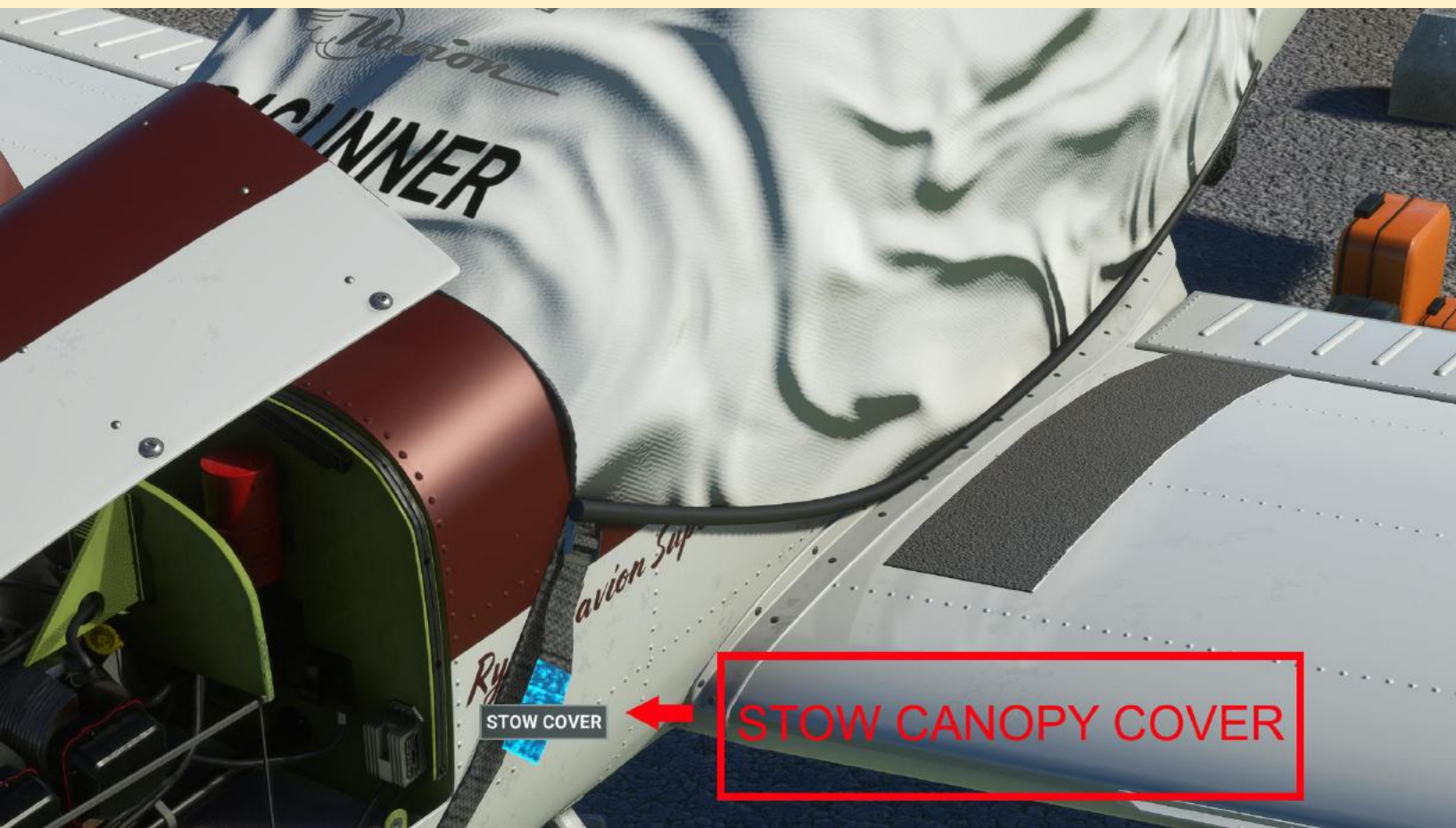
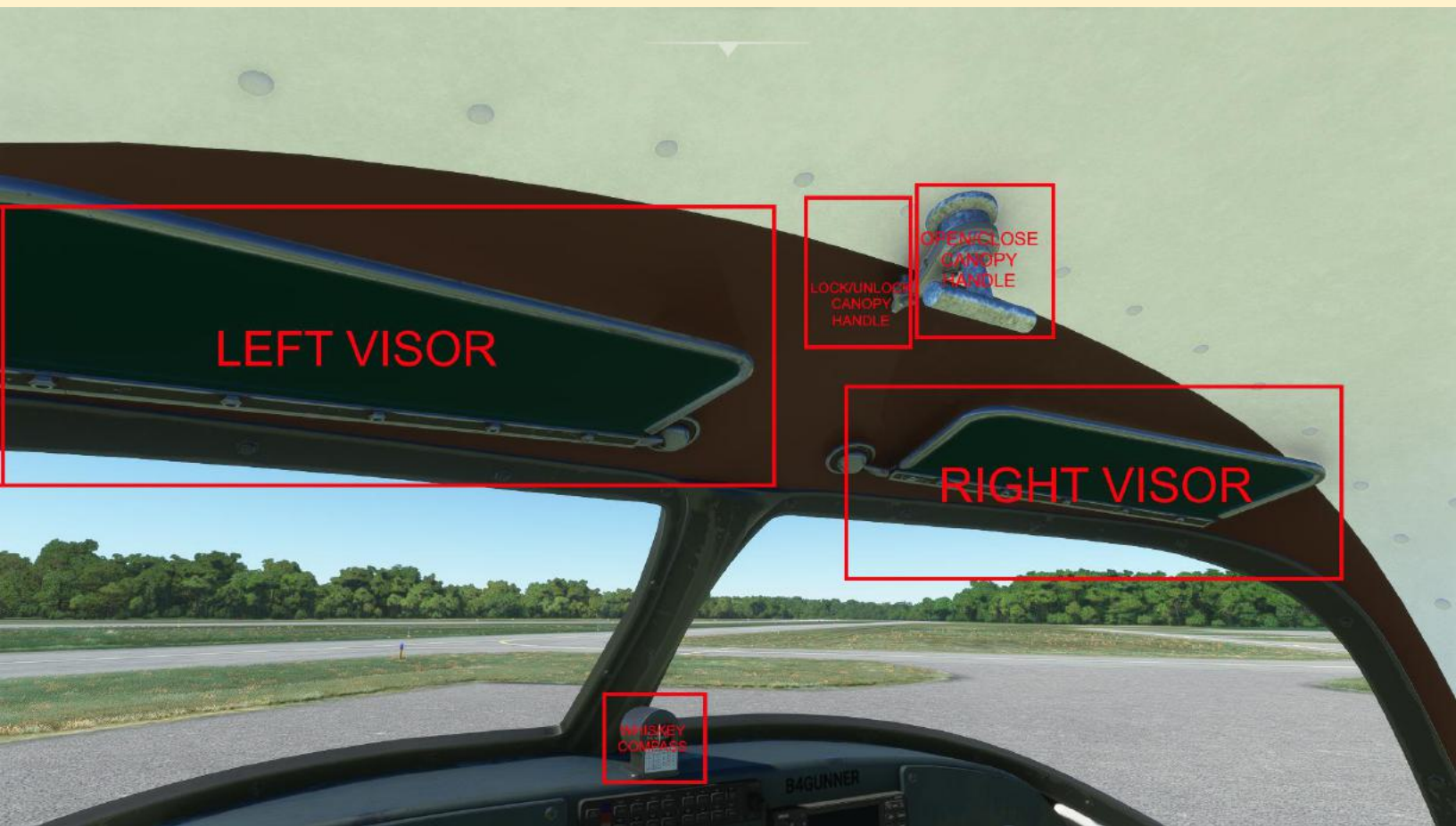
A steering mechanism on the nose wheel, directly connected to the rudder pedals, makes taxiing the Navion as simple as driving an automobile. Turning the airplane to right or left is accomplished by pressure on right or left pedal—exactly as comparable pedal action in the air directs the airplane's flight. Full pedal depression turns the nose wheel approximately 20 degrees left or right of center. When pedal pressure is released, the wheel is automatically aligned by castering action.



Gear Assembly and Tires

To absorb the jar of heavy landings and rough ground handling, each gear assembly incorporates an air-oil shock strut having a 7-inch stroke. Incorporated with each strut are landing gear fairings which open and close automatically with gear operation. Type III tires and tubes are used on all wheels, the main gear uses size 7.00-8 and the nose gear size 6.00-6.

CLICKABLES



CANOPY LEVERS CONTROL

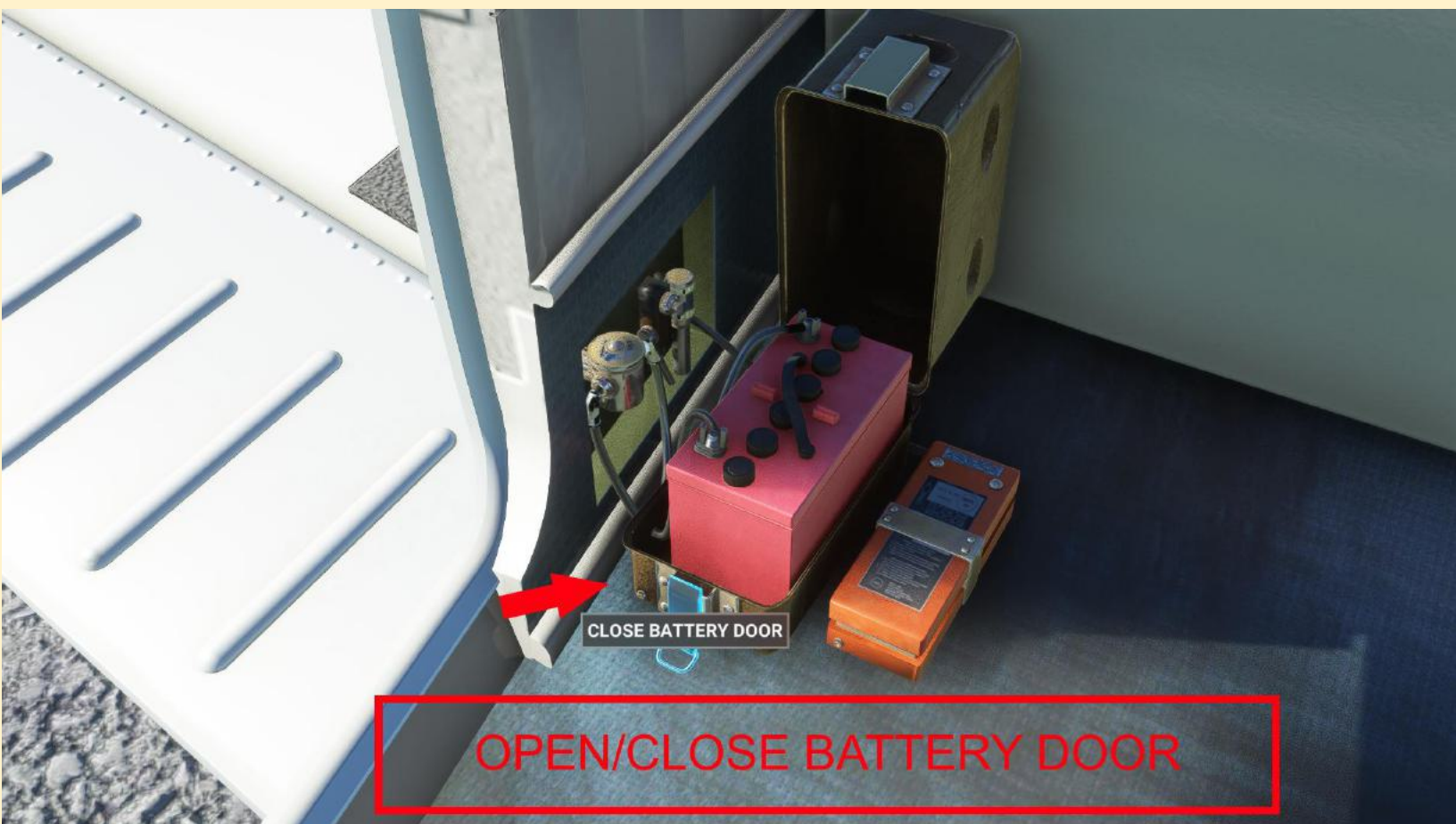
Click on this side of the handle after you unlock it. Then grab and hold the mouse click and drag it to the rear of the plane to open the canopy.

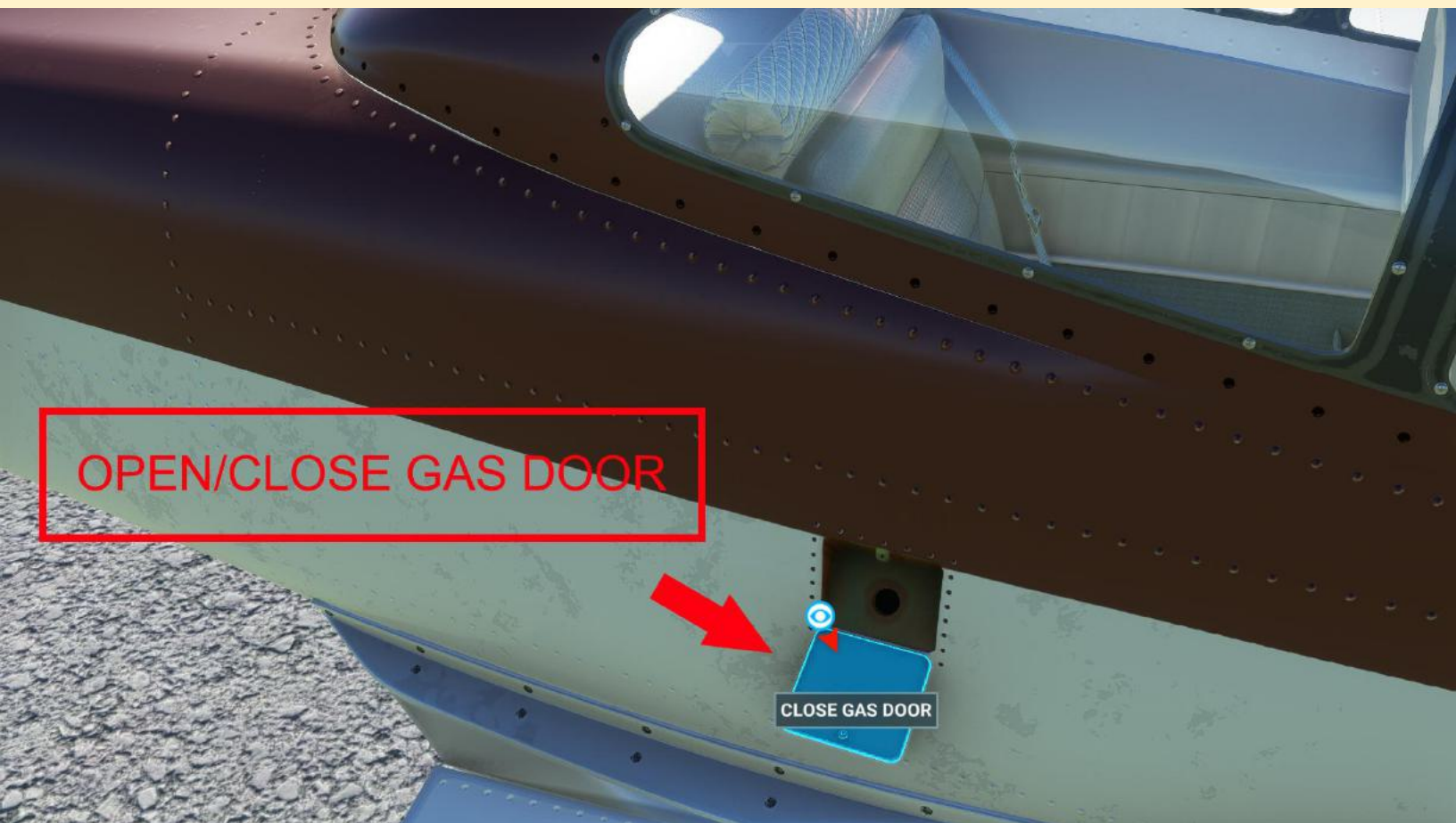
The Canopy will stop opening/closing when you release the mouse click at any position

Invisible click spot is connected to the lock. I had to make it in front of the actual handle because the handle blocks it. When you click the Lock it moves with the lock handle.



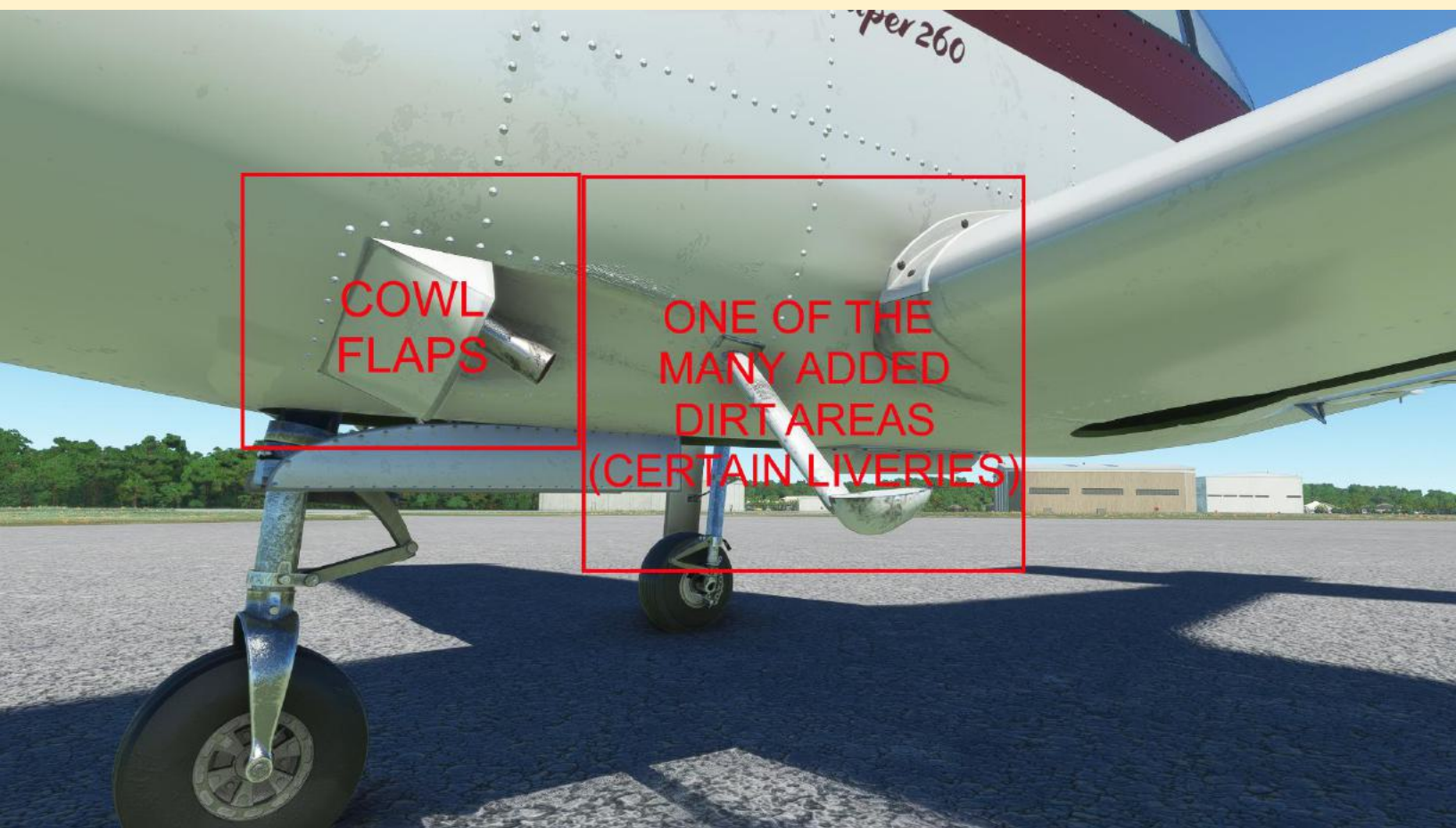














Experimental Instrument Hood



When being taught to fly in my youth, we had a helmet that limited the visibility to just the instruments. I added a version of that with this feature.

LIVERIES











3RD PARTY GPS UNITS PC ONLY

Both GPS units work native to the Navion Model B
With the GPS swap switch

PMS50 GTN750

<https://pms50.com/msfs/>



TDS SIM GTNXI

<https://tdssim.com/>



TIPS AND TRICKS

Here are a few tips to cover the basics

1. Interior cockpit view, the airspeed indicator is in M.P.H. keep that in mind when going to the exterior view as that gauge is in Knots
2. Use the reference speeds for takeoff, climb, cruise and landing
3. Multiple failures are available through the in sim Main menu screen and by also using the circuit breakers(All Function)
4. The checklist is your friend, following the checklist will ensure a safe and smooth flight.
5. I added an additional annunciator in the plane for those who like to live dangerously without fuel, less than 7 gallons and it will light up.
6. Make sure to check your payload, but with full fuel and pilots the Navion can still handle some more passengers and cargo
7. 4 liveries are taken directly from real Navions
8. You have to unlock the canopy before you can open it, it will close above 125 knots(143MPH) and try to stay closed. Once you close it in air it will remain locked, unless you use the override lever which the real Navion utilizes with a spring loaded set notch to keep it open and safe. Yes, you can fly with it open!
9. Most rear tires on newer Navions are smaller than the original
10. Make sure you close all the doors and put away the clickables I made it so they aren't flying around with you when left open/visible
11. There is an experimental "Hood" to teach yourself how to fly with the instruments only – This plane will literally land itself if properly managed with the autopilot and GPS units with throttle

REAL RYAN NAVION CHECKLIST



PREFLIGHT

REQUIRED DOCUMENTS	ARROW
MAGNETOS	OFF
MASTER SWITCH	OFF
HYDRAULIC	ON
LANDING GEAR	DOWN
FLAPS	UP
GUST LOCK	REMOVED
LEFT MAIN GEAR/TIRE/BRAKE	CHECK
LEFT WING TIEDOWN	CHECK
LEFT TIP TANK SUMP	DRAIN
LEFT STATIC PORT	CHECK
FUSELAGE/ANTENNAS	CHECK
STABILIZER/ELEVATOR/RUDDER	CHECK
RIGHT STATIC PORT	CHECK
AUX. FUEL LEVEL & CAP	CHECK
RIGHT FLAP AILERON	CHECK
RIGHT TIP TANK LEVEL/SUMP	DRAIN
PITOT TUBE	CHECK
STALL SWITCH	CHECK
RIGHT WING/TIEDOWN	CHECK
MAIN FUEL LEVEL & CAP	CHECK
MAIN FUEL SUMP	DRAIN
RIGHT MAIN GEAR/TIRE/BRAKE	CHECK
RIGHT ENGINE COMPARTMENT	CHECK
RIGHT COWL	SECURE
PROP/SPINNER	CHECK
AIR FILTER	CHECK
HYDRAULIC RESERVOIR	CHECK
ENGINE OIL	CHECK
LEFT ENGINE COMPARTMENT	CHECK
LEFT COWL	SECURE
NOSE GEAR ASSEMBLY /CHOCK	CHECK

CLIMB

COWL FLAPS	OPEN
LANDING GEAR	UP/LOCK
FLAPS	UP
PROP(2600 RPM/1 MINUTE)	2300 RPM
THROTTLE	FULL
LANDING LIGHTS	OFF
HYDRAULIC POWER	OFF
FUEL PUMP	OFF

CRUISE

COWL FLAPS	CLOSED
THROTTLE	SET
PROP	SET
MIXTURE	LEAN
TRIM	SET
ENGINE INSTRUMENTS	CHECK
DIRECTIONAL GYRO	SET

BEFORE LANDING

CARB HEAT	AS REQ'D
MIXTURE	RICH
PROP	FWD.
HYDRAULIC POWER	ON
LANDING LIGHTS	ON
LANDING GEAR	DOWN
FUEL PUMP	ON
AUTOPILOT	OFF
SEAT BELTS	SECURE
FLAPS	SET
CROSSWIND	CHECK

AFTER LANDING

CARB HEAT	OFF
FLAPS	UP
FUEL PUMP	OFF
MIXTURE	LEAN
COWL FLAPS	OPEN
PITOT HEAT	OFF
TRANSPONDER	STBY
ANTI-COLLISION LIGHTS	AS REQ'D
LANDING LIGHTS	AS REQ'D

ENGINE START

PREFLIGHT	COMPLETE
SEATS/SEATBELTS	SECURE
FUEL/TIP TANKS	OFF
FUEL/TIP TANKS	MAIN
BRAKES	SET
COWL FLAPS	OPEN
FUEL PUMP	ON
CARB HEAT	OFF
MIXTURE	RICH
PROP	FULL FWD.
THROTTLE	OPEN 1/8"
TRIM	SET
FLAPS	UP
LANDING GEAR	DOWN
HYDRAULIC POWER	ON
MAGNETOS	BOTH
MASTER SWITCH	ON
PROPELLER	CLEAR
STARTER/MAGNETOS	ENGAGE
THROTTLE	1000 RPM
OIL PRESSURE	CHECK
AMMETER	CHECK
FUEL PUMP	OFF
FUEL PRESSURE	CHECK

BEFORE TAXI

MIXTURE	RICH
AVIONICS MASTER	ON
RADIOS	ON/SET
NAVIGATION AIDS	SET
TRANSPONDER	STNDBY
ALTIMETER	SET
DIRECTIONAL GYRO	SET
MARKER RECEIVER	TEST
GPS/NAV CONTROL	TEST
NAV LIGHTS	CHECK
LANDING LIGHTS	AS REQ'D
PARKING BRAKE	RELEASE
BRAKES	TEST

TIE-DOWN

BRAKES	SET
THROTTLE	1000 RPM
AVIONICS MASTER	OFF
ELECTRICAL ITEMS	OFF
PROP	HIGH(OUT)
MIXTURE	IDLE CUT-OFF
MAGNETOS	OFF
BATTERY/ALTERNATOR	OFF
BRAKES	OFF
MIXTURE	NUETRAL
COWL FLAPS	CLOSED
VENTS	CLOSED
GUST LOCK	INSTALLED
CANOPY	LOCKED
COVER	INSTALLED
PITOT/STATIC/INTAKES	COVERED
WHEELS	CHOCKED
TIE DOWNS	SECURE
PROPELLER	CHECK

MAINTENANCE

TIRE PRESSURE

NOSE	30 PSI
MAINS	25 PSI

STRUTS

LOADED EXTENSION	1-1/2 INCH
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HYDRAULIC FLUID

TYPE	MIL-H-5606A/G
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ENGINE OIL

QUANTITY	10 QUARTS
MINIMUM	6 QUARTS

GREASE

AIRFRAME	AERO SHELL #8
HARTZELL PROP	AERO SHELL #5
PROPELLER A-38 BEARING	RHEOLUBE S74A

BEFORE TAKEOFF

PARKING BRAKE	SET
FUEL SELECTOR	MAIN
COWL FLAPS	OPEN
FUEL PUMP	ON
MIXTURE	RICH
HYDRAULIC POWER	ON
THROTTLE	1700 RPM
CARB. HEAT	CHECK
MAGNETOS	CHECK
ENGINE INSTRUMENTS	CHECK
AMMETER	CHECK
SUCTION GAUGE	CHECK
THROTTLE	2000 RPM
PROP	CYCLE 2X
THROTTLE	IDLE/1000
CIRCUIT BREAKERS	CHECK
TRIM TAB	SET
DIRECTIONAL GYRO	SET
PITOT HEAT	AS REQ'D
FLAPS	CYCLE/SET
FLIGHT CONTROLS	FREE
SEAT BELTS	SECURE
CANOPY	AS REQ'D
TRANSPONDER	ALT
ANTI-COLLISION LIGHTS	ON
LANDING LIGHTS	ON
AUTOPILOT	OFF
CROSSWIND	CHECK
PARKING BRAKE	RELEASE

AIRSPEEDS (MPH/KNOTS)

BEST ANGLE(Vx)	70/61
BEST GLIDE	80/70
BEST RATE(Vy)	95/82
GEAR EXTENSION(Vlo)	100/87
FLAP EXTENSION(Vfe)	100/87
DESIGN MANUEVERING(Va)	124/108
MAX. STRUCTURAL CRUISE(Vno)	160/139
NEVER EXCEED(Vnc)	190/165

EMERGENCY

GEAR EXTENSION

HYDRAULIC POWER	OFF
EMERGENCY GEAR HANDLE	DOWN
HYDRAULIC POWER(GEAR DOWN)	ON

ENGINE POWER LOSS

ESTABLISH BEST GLIDE	80 MPH
FUEL SELECTOR	ON
CARB. HEAT	ON
MIXTURE	RICH
MAGNETOS	BOTH
FUEL PUMP	ON

POWER OFF LANDING

MIXTURE	IDLE CUT-OFF
MAGNETOS	OFF
FUEL SELECTOR	OFF
MASTER SWITCH	OFF
HYDRAULIC POWER	OFF
HYDRAULIC CUT-OFF	ON
SEAT BELTS	SECURE
CANOPY	UNLOCK

ELECTRICAL FIRE

CABIN HEAT/DEFROSTER	OPEN
MASTER SWITCH	OFF

ENGINE FIRE

CABIN HEAT/DEFROSTER	CLOSED
FUEL SELECTOR	OFF
MIXTURE	IDLE CUT-OFF
THROTTLE	CLOSED
FUEL PUMP	OFF
HYDRAULIC POWER	OFF
HYDRAULIC CUT-OFF	ON

ELECTRICAL FAILURE

ALTERNATOR SWITCH	OFF
LOAD SHEDDING	CHECK
CIRCUIT BREAKERS	RESET
ALTERNATOR SWITCH	ON
POWER NOT RESTORED	ALT. OFF

CREDITS AND REFERENCES

I'd like to thank my family and all of those
Along the way to help me in the
Development of the Navions including
The following:

Chad Hawthorne -Navion Owner/Pilot
Leo Langston -Navion Owner/Pilot
Gawin Grimm -Tester/Content Creator
Fast Cows Production -Developer
Mtn. Fly Simulations -Developer
Bagolu -Developer
& many testers and the FS2 Discord
developers throughout the
development of the Navion model B.

Without the community this wouldn't be
possible.

Thanks!

Hangar Studios 713

Website - <https://www.hangarstudios713.com>

Discord - <https://discord.gg/NZmgEQVbGY>

YouTube - https://www.youtube.com/channel/UC5_Oqi6gAsvbdqLBEr9w0FQ