



PRECISION FLIGHT CONTROLS MODULAR FLIGHT DECK

Qualification and Approval Guide (QAG)



Advanced Aviation Training Device

Mike Altman, CEO

Precision Flight Controls, Inc.

2747 Mercantile Drive, Ste 100 Rancho Cordova, CA 95742

December 9, 2021

Version 1.1

MODULAR FLIGHT DECK

Table of Contents

Log of Revisions	3
List of Effective Pages	3
Compliance Statement	5
Aviation Training Device ATD Description and Pictures	7
Instructor's Station	33
Hardware and Software Components List	35
Design Criteria List	37
Available Airplane Configurations.....	46
A/C Performance Table.....	69
Visual System Description and Configurations	72
ATD Functions and Maneuvers	73

Log of Revisions			
Revision Number	Date	Page Numbers	Initials
Reissued	01-23-2017	ALL	MA
1.1	12-09-2021	ALL	MA

List of Effective Pages

This listing contains all current pages, with effective dates, of the Qualification and Approval Guide. It should be used after posting changes to ensure the manual is complete and up-to-date.

<u>Page</u>	<u>Status</u>	<u>Date</u>	<u>Page</u>	<u>Status</u>	<u>Date</u>
1	1.1	12-9-2021	2	1.1	12-9-2021
3	1.1	12-9-2021	4	1.1	12-9-2021
5	1.1	12-9-2021	6	1.1	12-9-2021
7	1.1	12-9-2021	8	1.1	12-9-2021
9	1.1	12-9-2021	10	1.1	12-9-2021
11	1.1	12-9-2021	12	1.1	12-9-2021
13	1.1 Added PFC 750/650 Avionics	12-9-2021	14	1.1	12-9-2021
15	1.1 Added Garmin 750/650 Avionics	12-9-2021	16	1.1	12-9-2021
17	1.1	12-9-2021	18	1.1	12-9-2021
19	1.1	12-9-2021	20	1.1	12-9-2021
21	1.1 Added Master Starter Panels	12-9-2021	22	1.1	12-9-2021
23	1.1	12-9-2021	24	1.1	12-9-2021

<u>Page</u>	<u>Status</u>	<u>Date</u>	<u>Page</u>	<u>Status</u>	<u>Date</u>
25	1.1	12-9-2021	26	1.1	12-9-2021
27	1.1	12-9-2021	28	1.1	12-9-2021
29	1.1	12-9-2021	30	1.1	12-9-2021
31	1.1	12-9-2021	32	1.1	12-9-2021
33	1.1	12-9-2021	34	1.1	12-9-2021
35	1.1	12-9-2021	36	1.1	12-9-2021
37	1.1	12-9-2021	38	1.1	12-9-2021
39	1.1	12-9-2021	40	1.1	12-9-2021
41	1.1	12-9-2021	42	1.1	12-9-2021
43	1.1	12-9-2021	44	1.1	12-9-2021
45	1.1	12-9-2021	46	1.1	12-9-2021
47	1.1	12-9-2021	48	1.1	12-9-2021
49	1.1	12-9-2021	50	1.1	12-9-2021
51	1.1	12-9-2021	52	1.1	12-9-2021
53	1.1	12-9-2021	54	1.1	12-9-2021
55	1.1	12-9-2021	56	1.1	12-9-2021
57	1.1	12-9-2021	58	1.1	12-9-2021
59	1.1	12-9-2021	60	1.1	12-9-2021
61	1.1	12-9-2021	62	1.1	12-9-2021
63	1.1	12-9-2021	64	1.1	12-9-2021
65	1.1	12-9-2021	66	1.1	12-9-2021
67	1.1	12-9-2021	68	1.1	12-9-2021
69	1.1	12-9-2021	70	1.1	12-9-2021
71	1.1	12-9-2021	72	1.1	12-9-2021
73	1.1	12-9-2021	74	1.1	12-9-2021
75	1.1	12-9-2021	76	1.1	12-9-2021
77	1.1	12-9-2021	FAA APPROVED QAG Signature and Date		

Compliance Statement

This Qualification and Approval Guide (QAG) provides a detailed description of all the required components, features, functions, and capabilities for the Precision Flight Controls Modular Flight Deck aviation training device. This includes any Optional airplane configurations with quality color pictures and diagrams. This QAG is provided by Precision Flight Controls to clearly describe and verify the required functionality of this aviation training device platform confirming its suitability for airman training and experience. The information as described in advisory circular AC 61-136B, FAA Approval of Aviation Training Devices (ATD) and their use for training and experience is provided within this document. This includes listing all of the required qualifying items, functions, and capabilities. A valid FAA Letter of Authorization (LOA) specifying the credit allowances must accompany the training device when utilized for satisfying airman training or experience requirements specified in 14 CFR §61 or 141. Additionally, FAA Order 8900.1 Volume 11 Chapter 10 Section 1 provides guidance to aviation safety inspectors facilitating ATD evaluations, approvals and oversight.

Precision Flight Controls provides a detailed operations manual with each aviation training device model produced. This includes how to properly start, operate, and shut down each trainer. This also includes how to operate and maintain the trainer as originally designed and tested. Precision Flight Controls will ensure that the operator of this training device is familiar and proficient with all the features and capabilities of this trainer, and how to correct any malfunctions that may occur.

The operator of these aviation training devices is expected to become proficient in its operation before using it to satisfy any pilot experience requirements specified in the code of federal regulations. This includes maintaining its condition and functionality. This ATD must be maintained to its original performance and functionality, as demonstrated during the original FAA functional evaluation. This device cannot be used to log pilot time unless all the components of the trainer are in normal working order.

Only the airplane configuration approved for this model can be utilized when satisfying FAA experience or training requirements. Any additions, changes, or modifications to this model, or the associated configurations, must be evaluated and approved in writing by the General Aviation and Commercial Division. This does not prohibit software updates that do not otherwise change the appearance of the systems operation. Operators who use these trainers to satisfy FAA pilot training or experience requirements specified in part 61 or 141 are obligated to allow FAA inspection ensuring acceptable function and compliance. Any questions concerning FAA approval or use of ATDs should be directed to the General Aviation and Commercial Division.

Aviation Training Device ATD Description and Pictures

The Precision Flight Controls Modular Flight Deck is based on the dimensions and layout of a category and class production general aviation airplanes. This trainer closely represents the overall functionality, performance, and instrumentation for SEL and MEL aircraft. The platform consists of a flight console, enclosure, instrument panel, avionics panel, rudder pedals and associated flight and instrument controls. A combination of hardware and software components are assembled and functionally checked by Precision Flight Controls. All hardware components are designed and installed so the flight deck has the appearance and feel of an actual airplane.

The Modular Flight Deck model provides a realistic flight deck design, avionics interface, and reliable hardware/software performance. This platform provides an effective training environment for students and pilots in training. This includes the ability to accomplish scenario based flight training activities, instrument procedures and experience, pilot proficiency evaluations, simulated equipment failure, emergency procedures, and facilitates increased pilot competency.

Examples: Airplane Single and Multi Engine Land, representing Beechcraft, Cessna, Diamond, Piper, Kodiak and Mooney.”

THIS AREA INTENTIONALLY LEFT BLANK

Aviation Training Device (ATD) Description and Pictures



Standard Configuration (SEL)

Main Instrument Panel includes: Intercom, SEL and MEL Master Start Panels, Lights Panel, Fuel Boost Pump Panel, Pitot Heat, Prop Sync, Warn Horn Silence, Landing Gear Panel with Position Lights, Interchangeable SEL and MEL Throttle Quadrants, Flaps Switch, Parking Brake, Hobbs Meter, Digital Clock/Timer, Circuit Breaker Panel, Instrument Controls, DME Selector, Avionics and USB Ports.



Standard Configuration (MEL)

Aviation Training Device (ATD) Description and Pictures



Optional PFC 1000 or Garmin G1000 Configuration (MEL Shown)



Optional Configuration Showing Pilot's and Co-Pilot's PFC 1000 Bezels with Standby Instruments
Each Bezel is Integrated with Audio Panels and Autopilots

Aviation Training Device (ATD) Description and Pictures



Optional Turboprop Configuration

THIS AREA INTENTIONALLY LEFT BLANK

Aviation Training Device (ATD) Description and Pictures



Standard Configuration



Standard Enclosure Shown with Optional 3 DOF Motion

Aviation Training Device (ATD) Description and Pictures



Shown with Optional Instructor's Cab and 3 DOF Motion



Modular Flight Deck Shown with Optional Extended Cab and Optional 6DOF Motion

Aviation Training Device (ATD) Description and Pictures

Avionics (Standard)



<p>Standard Avionics Include:</p> <ul style="list-style-type: none"> Annunciator Panel Master Caution Fire Suppression Altitude Pre-Select Audio Panel Autopilot DME Transponder ADF PFC 530w PFC 430w (or) Garmin's 530w or 430w 	<p>Note:</p> <p>Fire Suppression System is only functional with aircraft that support it</p>	<p>Standard Avionics Configuration</p> <ul style="list-style-type: none"> ≠ Altitude Pre- Select (Modeled after Bendix King's KAS 297B) ≠ PFC Marker Beacon/ Audio Panel (Modeled after Garmin's GMA 350) PFC 530w (Modeled after Garmin's GNS 530w) PFC430w (Modeled after Garmin's GNS 430w) ≠ Autopilot (Modeled after Bendix King's KAP 150) ≠ ADF (Modeled after Bendix King's KR87) ≠ Transponder (Modeled after Bendix King's KT76A) <p>Note: NAV/COMS are built into the PFC 530w and PFC 430w</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Aviation Training Device (ATD) Description and Pictures

Avionics (Optional)



<p>Optional Avionics Include:</p> <p>PFC 750 PFC 650 (or) Garmin's 750 650</p>	<p>Note:</p> <p>Fire Suppression System is only functional with aircraft that support it</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------

Aviation Training Device (ATD) Description and Pictures

Avionics



Annunciator Panel



Standard PFC530w



Standard PFC430w

Aviation Training Device ATD Description and Pictures

Avionics



Optional PFC750 and or PFC650 or Both

Optional OEM Garmin Avionics

GARMIN G1000 (OEM) PFD, MFD AND AUDIO PANEL



Optional Garmin G1000 Suite

Aviation Training Device ATD Description and Pictures

Optional Garmin Avionics



Optional Garmin 430 w



Optional Garmin 530w



Optional Garmin 750 and or 650 or Both

Aviation Training Device ATD Description and Pictures

Avionics



Standard Instrument Screen with Remote Instrument Controls (AKA RIC) (Remote Instrument Controls are Located on Both Sides of the Instrument Screen)



Close up of Altitude-Pre Select, Marker Beacons and Audio Panel

Aviation Training Device (ATD) Description and Pictures



Optional Single Engine Instrument Bezel



Optional Piper Seminole Instrument Bezel

Aviation Training Device (ATD) Description and Pictures



Optional Turboprop Pilot's Instrument Bezel



Optional Turboprop Co-Pilot's Instrument Bezel

Aviation Training Device (ATD) Description and Pictures

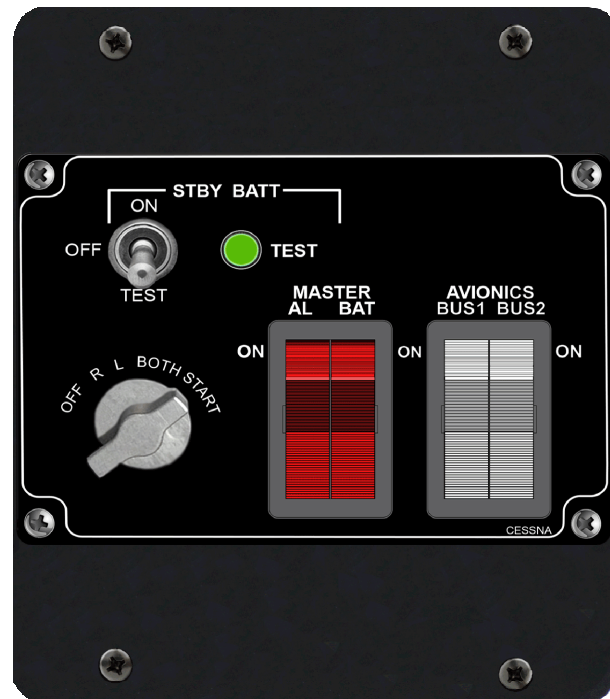


PFC1000 or Garmin G1000 Instrument Bezel

Master Start Panels



Single Engine (Standard)



Cessna 172 (Optional)

Aviation Training Device (ATD) Description and Pictures



Multi-Engine (Standard)



Cessna Caravan (Optional)

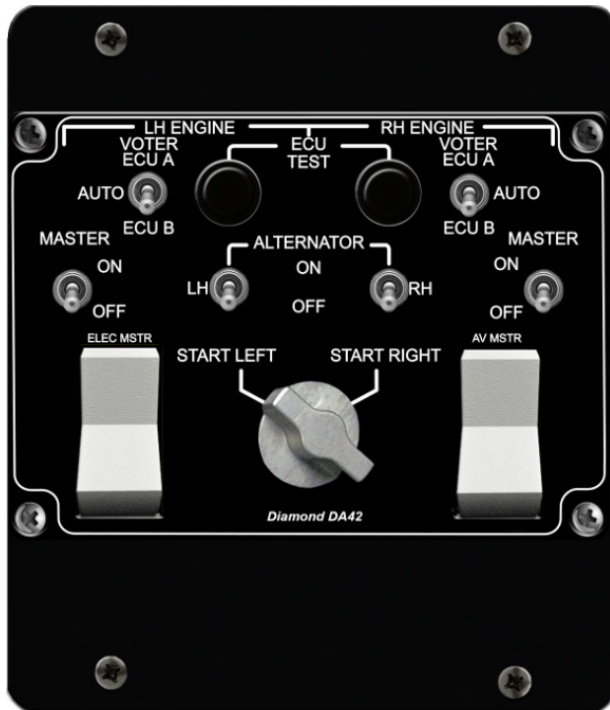


PC-12 (Optional)

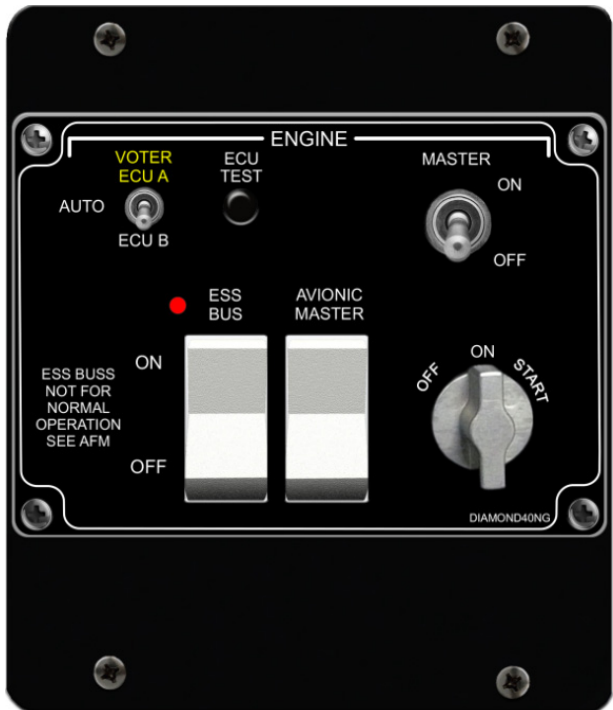


Kodiak (Optional)

Aviation Training Device (ATD) Description and Pictures



Diamond DA42 (Optional)

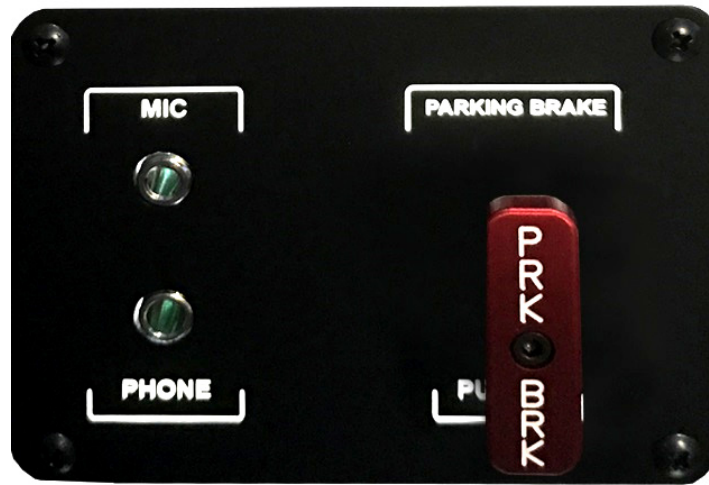


Diamond DA40 (Optional)



Turboprop (Kingair) (Optional)

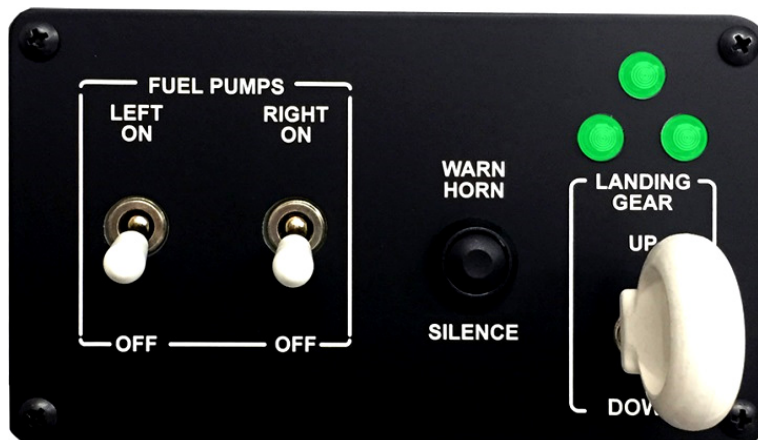
Aviation Training Device (ATD) Description and Pictures



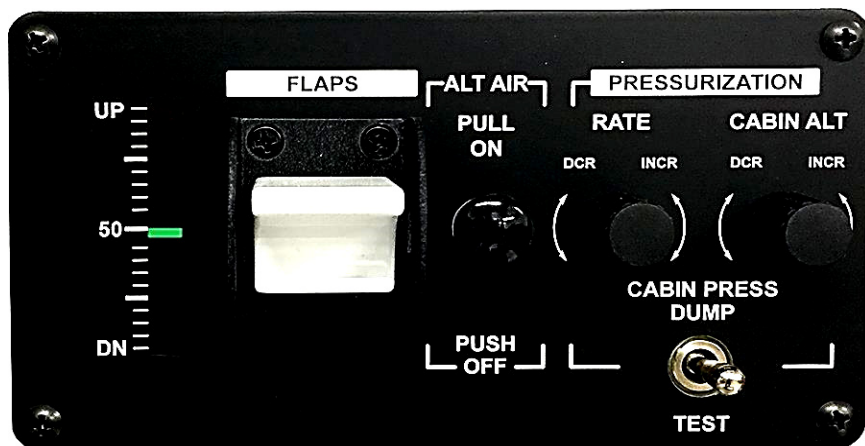
Intercom and Parking Brake Panel (Standard)



Prop-De-Ice, Pitot Heat and Lights Panel (Standard)



Fuel Boost Pumps, Warning Horn Silence and Landing Gear with Position Lights (Standard)



Flaps and Pressurization Panel and Alt Air (Standard)



Circuit Breaker and IOS Panel (Standard)

Circuit Breakers Can Be Manually Pulled or Controlled by the Instructor's Station For Failing Components or Systems

Aviation Training Device (ATD) Description and Pictures



Center Console

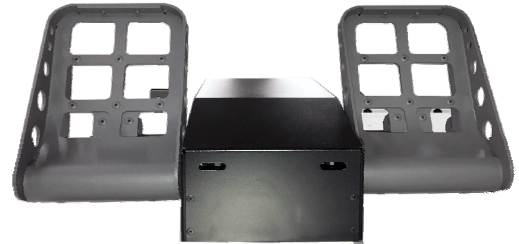
- Elevator Trim
- Aileron Trim
- Rudder Trim
- Cowl Flaps
- Post Lamps
- Fuel Tank Selectors
- Emergency Gear Extension

Aviation Training Device (ATD) Description and Pictures

Rudder Pedals

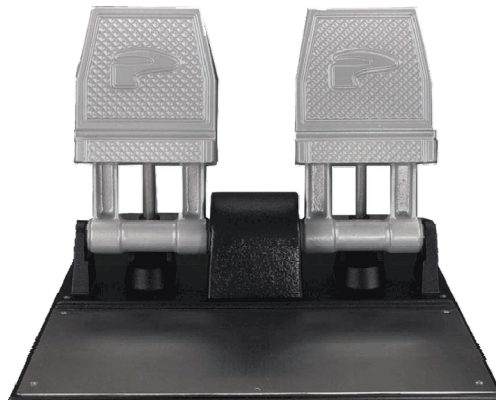


Standard Rudder Pedal



Standard Enhanced Rudder Pedal

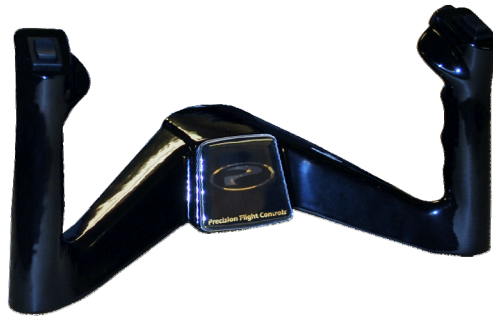
Three Rudder Pedals Styles Are Available
Standard and Enhanced with Proportional Toe Braking



Optional Pro-Pedals

Aviation Training Device ATD Description and Pictures

Control Yokes



Mooney Yoke



Beech Yoke



Cessna Yoke

Each Yoke is Equipped with PTT, Elevator Trim, A/P Disconnect and CWS Switches

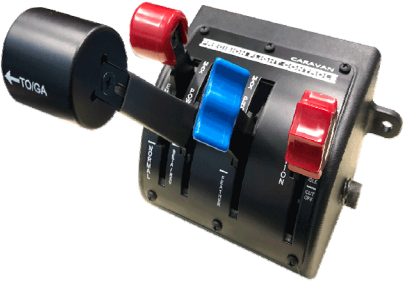


Aviation Training Device (ATD) Description and Pictures

Interchangeable Throttle Quadrants	Used With	Options
 <p data-bbox="441 493 743 525">Throttle, Prop and Mixture</p>	<p data-bbox="995 138 1218 243">MEL (Standard) Beechcraft Baron Beechcraft Duchess</p> <p data-bbox="995 294 1122 394">Cessna 414 Cessna 421 Cessna 310</p> <p data-bbox="995 430 1166 531">Piper Seminole Piper Seneca Piper Navajo</p>	<p data-bbox="1304 138 1393 210">TO/GA Button</p>
 <p data-bbox="441 892 743 924">Throttle, Prop and Mixture</p>	<p data-bbox="995 577 1218 751">SEL (Standard) Beechcraft Bonanza Cessna 206 Cessna 210 Cessna Corvalis</p> <p data-bbox="995 802 1239 873">Piper Arrow Piper Malibu Mirage</p>	<p data-bbox="1304 577 1393 648">TO/GA Button</p>
 <p data-bbox="474 1245 708 1276">Throttle and Mixture</p>	<p data-bbox="995 961 1170 1102">SEL (Optional) Diamond DA20 Piper Archer Piper Warrior</p>	
 <p data-bbox="414 1638 771 1669">Carb Heat, Throttle and Mixture</p>	<p data-bbox="995 1316 1182 1388">SEL Carbureted (Optional)</p>	
<p data-bbox="354 1791 831 1822">Interchangeable Throttle Quadrants</p>	<p data-bbox="1063 1791 1203 1822">Used With</p>	<p data-bbox="1304 1791 1409 1822">Options</p>

 <p style="text-align: center;">Throttle</p>	<p>Diamond DA42 (Optional)</p>	<p>TO/GA Button</p>
 <p style="text-align: center;">Prop, Throttle and Mixture</p>	<p>MEL (Optional) Beechcraft Travelair</p>	
 <p style="text-align: center;">Throttle, Prop and Mixture</p>	<p>Vernier SEL (Optional)</p> <p>Cessna 182 Cessna 210 Cessna 206</p> <p>Mooney</p>	
 <p style="text-align: center;">Carb Heat, Throttle and Mixture</p>	<p>Vernier SEL Carbureted (Optional)</p> <p>Cessna 152 Cessna 172</p>	

Interchangeable Throttle Quadrants	Used With	Options
 <p data-bbox="418 590 748 667">Throttles with Reversers Prop and Condition</p>	<p data-bbox="846 138 1127 302">Turboprop (Optional) Kingair B200 C90</p>	<p data-bbox="1146 138 1281 210">TO/GA Button</p>
 <p data-bbox="443 1171 724 1289">Manual Override, Power with Reverser Condition</p>	<p data-bbox="846 707 1127 827">Turboprop (Optional) Kodiak PC-12</p>	<p data-bbox="1146 707 1281 779">TO/GA Button</p>

Interchangeable Throttle Quadrants	Used With	Options
 <p data-bbox="425 562 743 682"> Manual Override Throttle with Reverser Propeller and Condition </p>	<p data-bbox="847 163 1125 235"> Turboprop (Optional) Cessna Caravan </p>	<p data-bbox="1148 163 1237 235"> TO/GA Button </p>

THIS AREA INTENTIONALLY LEFT BLANK

Seating



Seats have Fwd/Aft Tilt Movements, Up and Down Movement and are secured to the floor Seat Track System

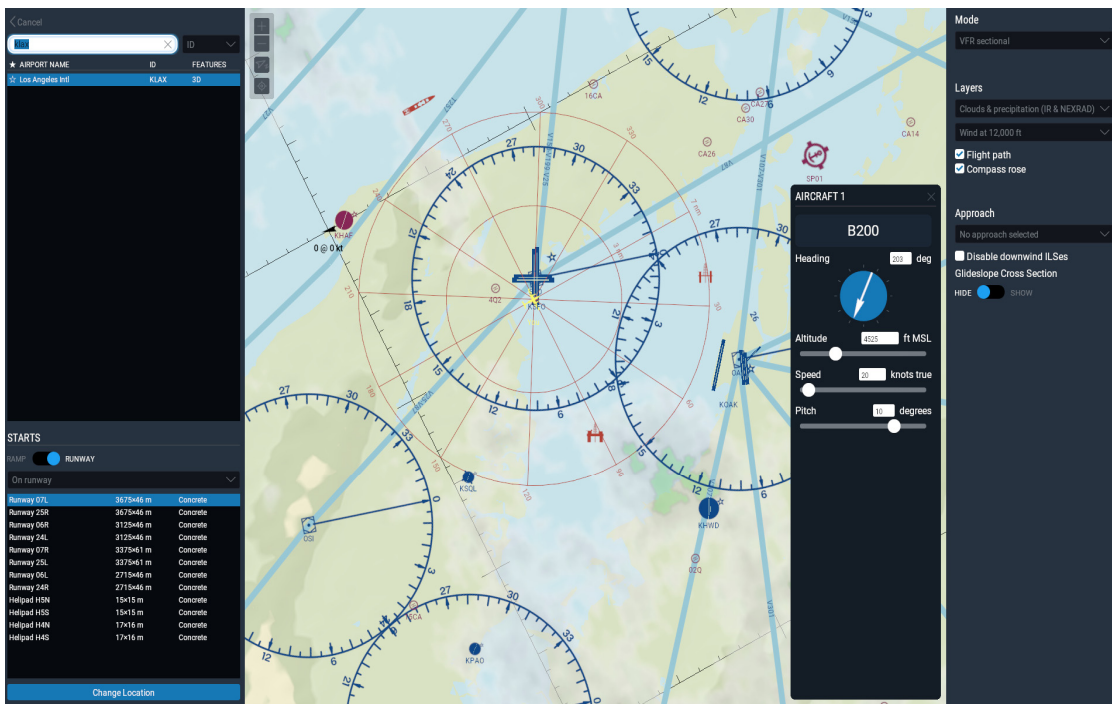
THIS AREA INTENTIONALLY LEFT BLANK

Aviation Training Device ATD Description and Pictures

Instructor's Station (IOS)



Standard Configuration Instructor's Station
Monitor, Keyboard and Mouse



A "Bird's Eye View" showing airports, nav aids, vor radials, high and low navigational tracking, traffic and compass

Aviation Training Device ATD Description and Pictures Instructor's Station (IOS)

WEIGHT, BALANCE, & FUEL

Show Units In: Imperial Metric

Center of Gravity: Default

Payload Weight: 150.0 lbs

Total Fuel Weight: 143.0 lbs

Fuel Tank 1 (Left): 71.5 lbs

Fuel Tank 2 (Right): 71.5 lbs

2014 lbs
TOTAL WEIGHT

1721 lbs EMPTY WEIGHT 2558 lbs MAX WEIGHT

02:58:48
FLIGHT TIME
NORMAL CRUISE

Restore Defaults Done

Instructor Operator Station (IOS)

- AIRCRAFT
- LOCATION
- WEATHER
- FAILURES
- TIME
- WEIGHT, BALANCE, & FUEL

Load Flight
Save Flight

Ground Speed: 1.0

Reset Path
Quit All
Shut Down All

Mode: VFR sectional

Layers: Clouds & precipitation (IR & NEXRAD)
No wind
 Flight path
 Compass rose

Approach: KCAE 05 ILS-cat-I
 Disable downwind ILSes
Glideslope Cross Section
HIDE SHOW

XPLANE 11

Verify Product
Check Servers
Pick Destination
License
Select Scenery
Install
Finish

Select Scenery
Click on the world map to select the scenery you would like to install. You can use this installer to add or remove scenery later. If you fly into an area with no scenery installed, you will see only ocean.

Disk size: 1999.5 GB
Free disk space: 1318.4 GB
Disk space needed to install: 6.6 GB
Download size: 4.5 GB (15 minutes)

You have enough free disk space to install X-Plane 11 with the selected scenery.

Cancel Installation Back Continue

Flight Configuration

AIRCRAFT: All Classes, All Engine Types, All Manufacturers, All Studies

19 Results: Boeing 737-800, Boeing 747-100, Boeing 747-400, MD-82, etc.

LOCATION: Search, Airport Name, ICAO, Features

WEATHER: Clear

TIME OF DAY: 11:49 local, 11:49 UTC

Start Flight

Failures

passenger O-2 on	Always working
Fuel cap left off	Always working
Water in fuel	Always working
Fueled with wrong gas	Always working
Fuel tank vent block #1	Always working
Fuel tank vent block #2	Always working
VAS/PAPI lights	Always working
Runway lights	Always working
Bird strike	Always working
Microburst	Always working
Smoke in cockpit	Always working
Brown-out	Always working

Systems, Instruments, Engines, Wings, Control Surfaces, Multi Rotors, NAVAIDs

FX-AS Systems Set mean time between failures

Done

LAYER PROPERTIES

Cloud Type: Cirrus, Few cumulus, Scattered cumulus, **Broken cumulus**, Overcast cumulus, Stratus

Top: 2641 ft MSL
Base: 1742 ft MSL

ATMOSPHERIC CONDITIONS: Visibility 2.5 sm, Precipitation None, Storminess None, Temperature at nearest airport 59.6 °F, Barometric pressure at sea level 29.92 inHg

THERMALS, BODIES OF WATER

Weather mode: Manually configured

Done

Hardware and Software Components List

Detailed equipment list with description of hardware *and* software components installed or available.

Item	Component	MFG	Model	Version	Details
1	Cockpit Enclosure	PFC	Modular Flight Deck	Ver 1 or Higher	Steel and Aluminum construction
2	Control Yoke(s)	PFC	Beech, Mooney or Cessna	Ver 1 or Higher	Cast aluminum control yokes, elevator, A/P disconnect, CWS, push to talk
3	Rudder Pedals with Toe Brakes	PFC	PFC	Ver 1 or Higher	Cast Aluminum/Steel construction hydraulic dampening or dynamic control loading
4	Digital Avionics	PFC	PFC DAVI (Digital Avionics)	Ver 1 or Higher	Avionics Suite: Alt Pre-Select, Audio Panel, Marker Beacon, PFC 530w PFC 430w GPS, Transponder, ADF and Autopilot
5	G1000 Panels	PFC	PFC1000 1040 and or 1044 PFD and MFD with 1347 Audio Panel	Ver 1 or Higher	Optional Simulated PFC1000 MFD/PFD and Audio Panels
6	G1000 Panels	Garmin	Garmin 1040 and 1044 PFD and MFD with 1347 Audio Panel	N/A	Optional OEM Garmin G1000 PFD, MFD and Audio Panels
7	GPSW 530w or 430w	OEM Garmin	OEM Garmin's GNS 430w/530w	Ver 1 or Higher	Optional Garmin's GPS Avionics
8	750/650 Avionics	PFC or OEM Garmin	750/650 or Garmin 750/650	Ver 1 or Higher	Optional Garmin GTN 750/650 or Optional PFC 750/650
9	530w	PFC	530w	Ver 1 or Higher	Standard PFC 530w
10	430w	PFC	PFC430w	Ver 1 or Higher	Standard PFC 430w
11	G1000 (Software)	Garmin	G1000	GT	Optional Garmin G1000 Software integrated with PFC1000 panels
12	GPSW 530w and 430w (Software)	Reality XP	RXP 530/430	Ver 1 or Higher	Standard RXP 530w/430w Software integrated with PFC530w and PFC430w panels
13	750/650 (Software)	Reality XP	RXP 750/650	Ver 1 or Higher	Optional G750/650 Software Integrated with PFC 750/650 panels
14	Core simulation (Software)	Laminar Research	X-Plane Professional	Version 8.0 or Higher	Visual and Navigational Database
15	Instrument Bezels	PFC	PFC SEL PFC MEL PFC-Turboprop	SInstBzl MInstBzl TInstBzl	Optional Flight Instrument bezels with integrated encoders

Item	Component	MFG	Model	Version	Details
16	Navdata (worldwide)	Jeppesen Garmin or DAFIF	N/A	N/A	Can Be Updated On a 28 Day Cycle
17	Instrument Controls Remote Instrument Controls (RIC)	PFC	RIC	N/A	Standard Digital Encoders For: RMI, OBS, HDG, CRS, ALT, BARO, A/S, DG, Radar Altimeter, Attitude Reference and Buttons for RMI and DG Source Selection
18	TO/GA Switches	PFC	N/A	1.0	Yoke or Panel Mounted
19	Digital Clock/Stopwatch	Davtron	MA77 or MA800	N/A	Digital Clock/Stopwatch
20	Pilots, Co-Pilots Instrument Panels	PFC	PFCIP	N/A	Hi-Resolution Instrument Panels
21	Throttle quadrants	PFC	PFCTQ	Ver 1 or Higher	Vernier or Lever Type
22	3 DOF Motion Base	D-BOX	4500	N/A	3 DOF Motion Base
23	6 DOF Motion Bases	CKAS Brunner	6 DOF Motion Bases	Ver 1 or Higher	6 DOF Motion Base
24	Visual System (external)	Five 40" HD Monitors	Visio, Samsung or Equivalent	N/A	Five 40" HD LCD Monitors
25	Seating (Pilot and Co-Pilots)	PFC	FCS-ADJBASE-TRCKS	N/A	Full adjustable, tilt, fwd, aft and vertical movement attached to floor system
26	Overhead light panel	Map Lights Inc.	N/A	N/A	Dual articulating LED lights on/off controls
27	Post lamp panel lighting	PFC	PFC	N/A	Adjustable Panel Lighting
28	4 way intercom	PFC	N/A	N/A	Pilot, Co-Pilot, & instructor
29	Speaker system(s) internal sounds and external sounds	PFC	Logitech or Equivalent	N/A	Cockpit sounds, ATC, ATIS, MKR beacon, Morse code external Sounds, engine, flaps, landing gear, runway, braking
30	Computers Rack System	PFC	PFC	1.1	Custom High Performance Computers
31	Instrument Procedures Data Base	Jeppesen ,Garmin or DAFIF	N/A	N/A	Provides for FAA published instrument navigation procedures, data base per 14 CFR 97 (en-route and approach)
32	Hobbs Meter	DACTON	Mini	102033	Hour Meter
33	Magnetic Compass	PFC	PFC	PFC DC	Displayed on Visual Screen or Above Glarshield
34	Operating System	Microsoft	Windows	7-10	Main Operating System
35	Operating System	Linux	Ubuntu	14-22	Used for Visuals

Design Criteria List

The following section provides a detailed “word for word” listing and design criteria of each of the required items, functions, and capabilities listed in AC 61-136B, (See Appendix B for BATD and Appendix C for AATD items “if applicable”) and the operational performance (as applicable) for each of the functions described for the Modular Flight Deck airplane ATD.

Basic ATD Requirements

All configurations for this model meet all AC 61-136, Appendix B requirements.

The Precision Flight Controls MODULAR FLIGHT DECK model meets the following Control Input requirements.

(1) The airplane physical flight and associated control systems are recognizable as to their function and how they are manipulated solely from their appearance. These physical flight control systems do not use interfaces such as a keyboard, mouse, or gaming joystick to control the airplane in simulated flight.

(2) Virtual controls are those controls used to set up certain aspects of the simulation (such as selecting the airplane configuration, location, weather conditions, etc.) and otherwise program, effect, or pause the training device. These controls are part of the instructor station or independent computer interface.

(3) Except for the initial setup, a keyboard or mouse is not used to set or position any feature of the ATD flight controls for the maneuvers or training tasks to be accomplished. See the control requirements listed below as applicable to the airplane model represented. The pilot is able to operate the controls in the same manner as it would be in the actual airplane. This includes the landing gear, wing flaps, cowl flaps, carburetor heat, mixture, propeller, and throttle controls appropriate to the airplane model represented.

(4) The physical arrangement, appearance, and operation of controls, instruments, and switches closely models the airplane represented. This trainer recreates the appearance, arrangement, operation, and function of realistically placed physical switches and other required controls representative of an airplane instrument panel that includes the following:

- Master/battery;
- Magnetos for each engine (as applicable);
- Alternators or generators for each engine;
- Auxiliary power unit (APU) (if applicable);
- Fuel boost pumps/prime boost pumps for each engine;
- Avionics master;
- Pitot heat; and
- Rotating beacon/strobe, navigation, taxi, and landing lights.

(5) Only the software evaluated by the FAA is available for use on this computer system. Note: This does not prohibit software updates that do not otherwise change the appearance of the systems operation.

The Precision Flight Controls MODULAR FLIGHT DECK model meets the following additional airplane physical flight and airplane systems controls:

(1) A **self-centering displacement yoke or control stick** that allows continuous adjustment of pitch and bank.

(2) **Self-centering rudder pedals** that allow continuous adjustment of yaw and corresponding reaction in heading and roll.

(3) **Throttle or power control(s)** that allows continuous movement from idle to full-power settings and corresponding changes in pitch and yaw, as applicable.

(4) **Mixture/condition, propeller, and throttle/power control(s)** as applicable to the make and model of airplane represented.

(5) Controls for the following items, as applicable to the category and class of airplane represented:

- Wing flaps,
- Pitch trim,
- Communication and navigation radios,
- Clock or timer,
- Gear handle (if applicable),
- Transponder,
- Altimeter,
- Carburetor heat (if applicable), and
- Cowl flaps (if applicable).

The Precision Flight Controls MODULAR FLIGHT DECK model meets the following Control Input Functionality and Response Criteria:

(1) Time from control input to recognizable system response is without delay and does not appear to lag in any way. Precision Flight Controls verifies that the MODULAR FLIGHT DECK meets this performance requirement.

(2) The control inputs are tested by the computer software at each session startup, and displayed as a confirmation message of normal operation or a warning message if the transport delay time or any design parameter is out of tolerance. It is not possible to continue the training session unless the problem is resolved, and all components are functioning properly. This test considers all the items listed in the display and control requirements.

The MODULAR FLIGHT DECK model meets the following Display Requirements:

(1) The following instruments and indicators are replicated and properly located in the instrument panel, as appropriate to the airplane represented:

- Flight instruments are in a standard configuration, represented as traditional “round dial” flight instruments, or as an electronic primary flight instrument display (PFD) and multi-function display (MFD) with reversionary and back-up flight instruments.
- A sensitive **altimeter** with incremental markings each 20 feet or less, operable throughout the normal operating range for the make and model of airplane represented.
- A **magnetic direction indicator**
- A **heading indicator** with incremental markings each 5 degrees or less, displayed on a 360 degree circle. Arc segments of less than 360 degrees are selectively displayed as applicable to the M/M of airplane represented.
- An **airspeed indicator** with incremental markings as shown for the M/M airplane represented; airspeed markings of less than 20 knots need not be displayed.
- A **vertical speed indicator** (VSI) with incremental markings each 100 feet per minute (fpm) for both climb and descent, for the first 1,000 fpm of climb and descent, and at each 500 fpm climb and descent for the remainder of a minimum $\pm 2,000$ fpm total display, or as applicable to the M/M of airplane represented.
- A **gyroscopic rate-of-turn indicator** or equivalent with appropriate markings for a rate of 3 degrees per second turn for left and right turns. If a turn and bank indicator is used, the 3 degrees per second rate index must be inside of the maximum deflection of the indicator.
- A **slip and skid indicator** with coordination information displayed in the conventional inclinometer format where a coordinated flight condition is indicated with the ball in the center position. A split image triangle indication or as appropriate for a PFD configuration is used.
- An **attitude indicator** with incremental markings each 5 degrees of pitch or less, from 20 degree pitch up to 40 degree pitch down or as applicable to M/M of airplane represented. Bank angles are identified at “wings level” and at 10, 20, 30, and 60 degrees of bank (with an Optional additional identification at 45 degrees) in left and right banks.
- **Engine instruments** as applicable to the M/M of airplane represented, providing markings for the normal ranges including the minimum and maximum limits.
- A **suction gauge** or instrument pressure gauge, if applicable, with a display appropriate to the airplane represented.
- A **flap setting indicator** that displays the current flap setting. Setting indications should be typical of that found in an actual airplane.

- A **pitch trim indicator** with a display that shows zero trim and appropriate indices of airplane nose down and nose up trim, as would be found in the actual airplane.
- **Communication radio(s)** with a full range of selectable frequencies displaying the radio frequency in use.
- **Navigation radio(s)** with a full range of selectable frequencies displaying the frequency in use and capable of replicating both precision and nonprecision instruments, including approach procedures (each with an aural identification feature), and a marker beacon receiver. Examples include, an instrument landing system (ILS), non-directional radio beacon (NDB), Global Positioning System (GPS), Localizer (LOC) or very high frequency omni-directional range (VOR). Graduated markings as indicated below are present on each course deviation indicator (CDI) as applicable. The markings include:
 - One-half dot or less for course/glideslope (GS) deviation (i.e., VOR, LOC, or ILS), and
 - Five degrees or less for bearing deviation for automatic direction finder (ADF) and radio magnetic indicator (RMI), if installed.
 - If equipped with a Primary Flight Display (PFD) and/or Multifunction Flight Display (MFD), the flight and navigation information and guidance replicates the avionics manufactures same scales and navigation information presentation.
- A **clock** with incremental markings for each minute and second, or a timer with a display of minutes and seconds.
- A **transponder** that displays the current transponder code.
- **Fuel quantity indicator(s)** that displays the fuel remaining, either in analog or digital format, as appropriate for the make and model of airplane represented.

(2) All instrument displays listed above are visible during all flight operations. All of the displays provide an image of the instrument that is clear and:

- (a) Does not appear to be out of focus or illegible
- (b) Does not appear to “jump” or “step” during operation.
- (c) Does not appear with distracting jagged lines or edges.
- (d) Does not appear to lag relative to the action and use of the flight controls.

(3) Control inputs are properly reflected by the flight instruments in real time and without a perceived delay in action. Display updates or actions show all changes (within the total range of the replicated instrument) that are equal to or greater than the following values:

- (a) Airspeed indicator: change of 5 knots.
- (b) Attitude indicator: change of 2 degrees in pitch and bank.

- (c) Altimeter: change of 10 feet.
- (d) Turn and bank: change of ¼ standard rate turn.
- (e) Heading indicator: change of 2 degrees.
- (f) Vertical speed indicator (VSI): change of 100 fpm.
- (g) Tachometer: change of 25 rpm or 2 percent of turbine speed.
- (h) VOR/ILS: change of 1 degree for VOR or ¼ of 1 degree for ILS.
- (i) ADF: change of 2 degrees.
- (j) GPS: change as appropriate for the model of GPS based navigator represented.
- (k) Clock or timer: change of 1 second.

Note: Airplane configurations with PFD and/or MFD displays are representative of those avionics systems and the associated instrument display information.

(4) Flight Displays reflect proper dynamic behavior of the airplane represented. Examples: a VSI reading of 500 fpm reflects a corresponding movement in altitude, and an increase in power reflects an increase in the rpm indication or power indicator.

The MODULAR FLIGHT DECK model meets the following Flight Dynamics requirements:

- (1)** Flight dynamics are comparable to the way the airplane represented performs and handles.
- (2)** Airplane performance parameters (such as maximum speed, cruise speed, stall speed, and maximum climb rate) are comparable to the airplane represented. A performance table is provided for each airplane configuration for sea level and 5,000 feet, to verify the appropriate performance. (or 6,000 feet can be used. 25,000 feet will be used for turboprop or turbojet altitude performance)
- (3)** Airplane vertical lift component changes as a function of bank comparable to the way the airplane represented performs and handles.
- (4)** Changes in flap setting, slat setting, or gear position is accompanied by the appropriate changes in flight dynamics comparable to the way the make and model of airplane represented performs and handles.
- (5)** The presence and intensity of wind and turbulence is reflected in the handling and performance qualities of the simulated airplane and is comparable to the way the airplane represented performs and handles.

The MODULAR FLIGHT DECK model meets the following Instructional Management Requirements:

- (1)** The instructor is able to pause the system at any time during the training simulation for the purpose of administering instruction or procedural recommendations.

(2) If a training session begins with the “airplane in the air” and ready for the performance of a particular procedural task, the instructor can manipulate the following system parameters independently of the simulation:

- Airplane geographic location,
- Airplane heading,
- Airplane airspeed,
- Airplane altitude, and
- Wind direction, speed, and turbulence.

(3) The **system is capable of recording** both a horizontal and vertical track of airplane movement for the entire training session for later playback and review.

(4) The instructor can disable any of the instruments prior to or during a training session and is able to simulate failure of any of the instruments without stopping or freezing the simulation to affect the failure. This includes simulated engine failures and the following airplane systems failures: alternator or generator, vacuum or pressure pump, pitot static, electronic flight displays, or landing gear or flaps, as appropriate.

(5) This ATD has an available **navigational database** that is local (within 25NM) to the training facility location. All navigational data is based on **procedures as published per 14 CFR part 97**. This device uses Jeppesen or Garmin’s NavData to support the instrument approach and navigation capabilities.

THIS AREA INTENTIONALLY LEFT BLANK

Advanced ATD Requirements

All configurations, as noted in AC 61-136, Appendix C meet the following *additional* AATD design criteria. The MODULAR FLIGHT DECK model has the following additional AATD features and components.

- (1) A realistic shrouded (enclosed) or unshrouded (open) flight deck design with a singular and uniform instrument panel design representing a specific model airplane flight deck.
- (2) Cockpit knobs, system controls, switches, and/or switch panels in realistic sizes and design appropriate to each intended function, in the proper position and distance from the pilot's seated position, and representative of the category and class of airplane being represented.
- (3) Primary flight and navigation instruments are appropriately sized and properly arranged that exhibit neither stepping nor excessive transport delay.
- (4) A **digital avionics** panel.
- (5) A Global Positioning System (**GPS**) **navigator** with moving map display.
- (6) A **Two-axis autopilot** is installed, and, as appropriate, a flight director (FD). (If standard equipment)
- (7) **Pitch trim** (manual or electric pitch trim) is available permitting indicator movement either electrically or analog in an acceptable trim ratio.
- (8) Has An **independent visual system**, panel, or screen that provides realistic cues in both day and night VFR and IFR meteorological conditions to enhance a pilot's visual orientation in the vicinity of an airport including:
 - Adjustable visibility parameters; and
 - Adjustable ceiling parameters.
- (9) A fixed pilot seat appropriate to the airplane configuration, including an adjustable height and an adjustable forward and aft seat position. The pilot should be oriented so that the pilot's line of sight is at approximately at the same height of the top edge of the instrument panel.
- (10) **Rudder pedals** secured to the cockpit floor structure or to the floor beneath the device in proper relation to cockpit orientation.
- (11) A **push-to-talk switch** on the control yoke.

(12) A separate instructor station permitting effective interaction without interrupting the flight in overseeing the pilot's horizontal and vertical flight profiles in real time and space. This includes the ability to:

- (a) Oversee tracks along published airways, holding entries and patterns, and Localizer (LOC) and glideslope (GS) alignment/deviation (or other approaches with a horizontal and vertical track).
- (b) Function as air traffic control in providing vectors, etc., change the weather conditions, ceilings, visibilities, wind speed and direction, create light/moderate/ or severe turbulence, and icing conditions.
- (c) Invoke failures in navigation and instruments, radio receivers, landing gear and flaps, engine power (partial and total), and other airplane systems (pitot static, electric, vacuum pump, etc).
- (d) The presence and intensity of wind and turbulence is reflected in the handling and performance qualities of the simulated airplane and is comparable to the way the airplane represented performs and handles.

The MODULAR FLIGHT DECK model meets the following Instructional Management Requirements:

(1) The instructor is able to pause the system at any time during the training simulation for the purpose of administering instruction or procedural recommendations.

(2) If a training session begins with the "airplane in the air" and ready for the performance of a particular procedural task, the instructor can manipulate the following system parameters independently of the simulation:

- Airplane geographic location,
- Airplane heading,
- Airplane airspeed,
- Airplane altitude, and
- Wind direction, speed, and turbulence.

(3) The **system is capable of recording** both a horizontal and vertical track of airplane movement for the entire training session for later playback and review.

(4) The instructor can disable any of the instruments prior to or during a training session and is able to simulate failure of any of the instruments without stopping or freezing the simulation to affect the failure. This includes simulated engine failures and the following airplane systems failures: alternator or generator, vacuum or pressure pump, pitot static, electronic flight displays, or landing gear or flaps, as appropriate.

(5) This ATD has an available **navigational database** that is local (within 25NM) to the training facility location. All navigational data is based on **procedures as published per 14 CFR part 97**. This device uses Jeppesen, Garmin or Dafif database to support the instrument approach and navigation capabilities.

Available Airplane Configurations (G1000)

Available airplane configurations showing "instrument panel" pictures for each airplane shown here. The Components List identifies any optional displays, controls, or avionics equipment.

The image shows the Garmin G1000 instrument panel for a Beechcraft G36. The primary display is a Primary Flight Display (PFD) with a horizon line, airspeed indicator (2560 knots), altimeter (2500 feet), and heading indicator (232 degrees). A secondary display shows engine parameters like RPM (110), oil pressure (100), and oil temperature (84). A third display shows a map with the aircraft's position. The right side of the panel features a vertical scale for fuel quantity and a fuel gauge. The bottom of the panel displays various system status indicators and a 'References' table with glide speeds (Vx: 110kt, Vy: 84kt, Vy: 100kt) and a timer set to 00:00:00. The Garmin logo and 'BEECH' branding are visible on the right side.

Beechcraft G36

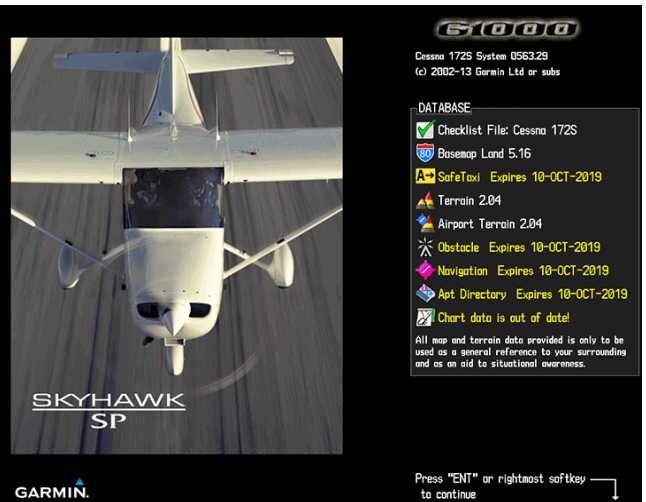
The image shows the Garmin G1000 instrument panel for a Beechcraft G58. The PFD displays an airspeed of 2660 knots and an altitude of 2600 feet. The heading indicator shows 232 degrees. The engine display shows RPM (115), oil pressure (105), and oil temperature (92). The map display shows the aircraft's position relative to a track. The right side of the panel includes a fuel gauge and a 'References' table with glide speeds (Vx: 115kt, Vy: 92kt, Vy: 105kt) and a timer set to 00:00:00. The Garmin logo and 'BEECH' branding are visible on the right side.

Beechcraft G58

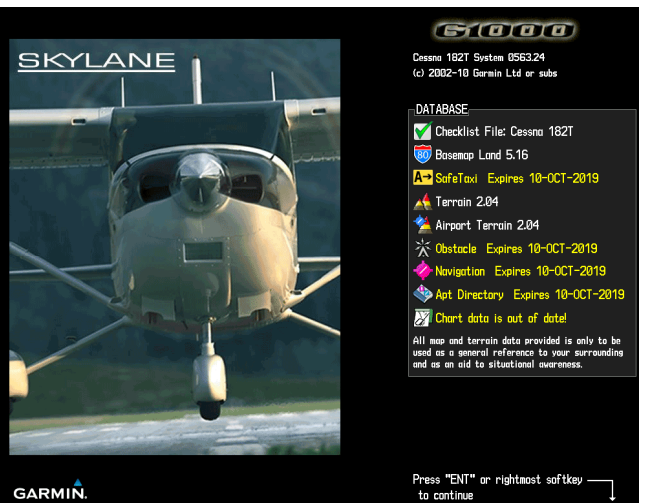
The image shows the Garmin G1000 instrument panel for a Cessna 172R. The PFD displays an airspeed of 2560 knots and an altitude of 2500 feet. The heading indicator shows 231 degrees. The engine display shows RPM (79), oil pressure (65), and oil temperature (60). The map display shows the aircraft's position. The right side of the panel includes a fuel gauge and a 'References' table with glide speeds (Vx: 55kt, Vy: 58kt, Vx: 60kt, Vy: 79kt) and a timer set to 00:00:00. The Garmin logo and 'SKYHAWK' branding are visible on the right side.

Cessna 172R

Available Airplane Configurations (G1000)



Cessna 172S



Cessna 182T



Cessna T182T

Available Airplane Configurations (G1000)

NAV1 108.00 ↔ 117.95
NAV2 108.00 117.95

DIS NH BRG 136.975 ↔ 118.000 COM1
136.975 118.000 COM2

2800
2700
2600
2500
2400
2300
23.92 IN

89
80
69
55
TAS 11KT
HOG UP

STANDBY
UNRESTRICTED

HOG 360°
232°
DTK 360°

2180
2560
2300

REFERENCES
TIMER 00:00:00 UP START?
GLIDE 80KT ON
Wx 55KT ON
Vx 63KT ON
Vy 89KT ON
MINIMUMS OFF FT

XPDR 1200 ON R LCL 17:04:29

OAT 1°C INSET PFD CDI ADF/DME XPDR IDENT THR/REF NRST ALERTS

G1000
Cessna T206H System 0563.24
(c) 2002-10 Garmin Ltd or subs

DATABASE
 Checklist File: Cessna T206H
 BaseMap Land 5.16
 SafeTaxi Expires 10-OCT-2019
 Terrain 2.04
 Airport Terrain 2.04
 Obstacle Expires 10-OCT-2019
 Navigation Expires 10-OCT-2019
 Apt Directory Expires 10-OCT-2019
 Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.

STATIONAIR TC

GARMIN

Press "ENT" or rightmost softkey to continue

Cessna T206H

NAV1 108.00 ↔ 117.95
NAV2 108.00 117.95

DIS NH BRG 136.975 ↔ 118.000 COM1
136.975 118.000 COM2

2800
2700
2600
2500
2400
2300
23.92 IN

86
75
70
56
TAS 11KT
HOG UP

STANDBY
UNRESTRICTED

HOG 360°
232°
DTK 360°

2180
2560
2300

REFERENCES
TIMER 00:00:00 UP START?
GLIDE 75KT ON
Wx 58KT ON
Vx 78KT ON
Vy 88KT ON
MINIMUMS OFF FT

XPDR 1200 ON R LCL 17:02:21

OAT 1°C INSET PFD CDI ADF/DME XPDR IDENT THR/REF NRST ALERTS

G1000
Cessna 206H System 0563.24
(c) 2002-10 Garmin Ltd or subs

DATABASE
 Checklist File: Cessna 206H
 BaseMap Land 5.16
 SafeTaxi Expires 10-OCT-2019
 Terrain 2.04
 Airport Terrain 2.04
 Obstacle Expires 10-OCT-2019
 Navigation Expires 10-OCT-2019
 Apt Directory Expires 10-OCT-2019
 Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.

STATIONAIR

GARMIN

Press "ENT" or rightmost softkey to continue

Cessna 206H

NAV1 108.00 ↔ 117.95
NAV2 108.00 117.95

DIS NH BRG 136.975 ↔ 118.000 COM1
136.975 118.000 COM2

2800
2700
2600
2500
2400
2300
23.92 IN

110
108
80
TAS 11KT
NORTH UP
LFE: N/A

HOG 360°
231°
CRS 360°

2180
2560
2300

REFERENCES
TIMER 00:00:00 UP START?
GLIDE 108KT ON
Wx 80KT ON
Vy 110KT ON
MINIMUMS OFF FT

XPDR 1200 ON R LCL 17:06:27

OAT 1°C ISA -9°C INSET PFD CDI ADF/DME XPDR IDENT THR/REF NRST ALERTS

G1000
Cessna 400 System 0534.15
(c) 2002-09 Garmin Ltd or subs

DATABASE
 Checklist File: N/A
 BaseMap Land 5.16
 SafeTaxi Expires 10-OCT-2019
 Terrain 2.04
 Airport Terrain 2.04
 Obstacle Expires 10-OCT-2019
 Navigation Expires 10-OCT-2019
 Apt Directory Expires 10-OCT-2019
 Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.

CESSNA CORVALIS TT

GARMIN

Press "ENT" or rightmost softkey to continue

Corvalis 400

Available Airplane Configurations (G1000)

The image shows the Garmin G1000 cockpit display for a Diamond DA40. The primary flight display (PFD) features a central attitude indicator showing a heading of 232 degrees and a pitch of approximately 5 degrees. The airspeed indicator (ASI) shows a current speed of 256 knots and a maximum speed of 292 knots. The altimeter displays 2560 feet. The engine instrument display (EID) shows various engine parameters including RPM (73, 66, 64, 59), oil pressure (73), and oil temperature (66). The navigation display (ND) shows a map with the aircraft's position and various navigation aids. The status bar at the bottom includes fields for INSET, PFD, CDI, ADF/DME, XPDR, IDENT, THR/REF, NRST, and ALERTS.

DA40 Diamond Star
with Electronic Stability and Protection, ESP™

GARMIN.

G1000
Diamond DA 40 System 0321.2F
(c) 2002-10 Garmin Ltd or subs

DATABASE

- Checklist File: Diamond DA40-180 G10
- BaseMap Land 5.16
- SafeTaxi Expires 10-OCT-2019
- Terrain 2.04
- Airport Terrain 2.04
- Obstacle Expires 10-OCT-2019
- Navigation Expires 10-OCT-2019
- Apt Directory Expires 10-OCT-2019
- Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.

PILOT PROFILE
DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue

Diamond DA40

The image shows the Garmin G1000 cockpit display for a Diamond DA42. The PFD shows a heading of 232 degrees and a pitch of approximately 5 degrees. The ASI shows a current speed of 256 knots and a maximum speed of 292 knots. The altimeter displays 2560 feet. The EID shows engine parameters including RPM (108, 152, 90, 85, 80, 70, 0, 0, 0, 0) and oil pressure (108). The ND shows a map with the aircraft's position and various navigation aids. The status bar at the bottom includes fields for INSET, PFD, CDI, ADF/DME, XPDR, IDENT, THR/REF, NRST, and ALERTS.

DA42NG

GARMIN.

G1000
Diamond DA42NG System EN05.07
(c) 2002-10 Garmin Ltd or subs

DATABASE

- Checklist File: N/A
- BaseMap Land 5.16
- SafeTaxi Expires 10-OCT-2019
- Terrain 2.04
- Airport Terrain 2.04
- Obstacle Expires 10-OCT-2019
- Navigation Expires 10-OCT-2019
- Apt Directory Expires 10-OCT-2019
- Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.

PILOT PROFILE
DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue

Diamond DA42

The image shows the Garmin G1000 cockpit display for a Piper PA-46 Malibu Matrix. The PFD shows a heading of 232 degrees and a pitch of approximately 5 degrees. The ASI shows a current speed of 256 knots and a maximum speed of 292 knots. The altimeter displays 2560 feet. The EID shows engine parameters including RPM (110, 81, 80) and oil pressure (110). The ND shows a map with the aircraft's position and various navigation aids. The status bar at the bottom includes fields for INSET, SENSOR, PFD, CDI, ADF/DME, XPDR, IDENT, THR/REF, NRST, and MSG.

Piper PA-46R-350T Matrix System 0720.10
(c) 2002-09 Garmin Ltd or subs

G1000

DATABASE

- Checklist File: N/A
- BaseMap Land 5.16
- SafeTaxi Expires 10-OCT-2019
- Terrain 2.04
- Airport Terrain 2.04
- Obstacle Expires 10-OCT-2019
- Navigation Expires 10-OCT-2019
- Apt Directory Expires 10-OCT-2019
- Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.

PILOT PROFILE
DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue

Piper PA-46 Malibu Matrix

Available Airplane Configurations (G1000)



61000

PA-28-181 System 151802
(c) 2002-13 Garmin Ltd or subs

DATABASE

- Checklist File: N/A
- BaseMap Land 5.16
- SafeTaxi Expires 10-OCT-2019
- Terrain 2.04
- Airport Terrain 2.04
- Obstacle Expires 10-OCT-2019
- Navigation Expires 10-OCT-2019
- Apt Directory Expires 10-OCT-2019
- Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surroundings and as an aid to situational awareness.

PILOT PROFILE

DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue

Piper PA-28



61000

PA-44-180 System 178321
(c) 2002-13 Garmin Ltd or subs

DATABASE

- Checklist File: N/A
- BaseMap Land 5.16
- SafeTaxi Expires 10-OCT-2019
- Terrain 2.04
- Airport Terrain 2.04
- Obstacle Expires 10-OCT-2019
- Navigation Expires 10-OCT-2019
- Apt Directory Expires 10-OCT-2019
- Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surroundings and as an aid to situational awareness.

PILOT PROFILE

DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue

Piper PA-34 Seminole



61000

PA-34-220T System 198100
(c) 2002-13 Garmin Ltd or subs

DATABASE

- Checklist File: N/A
- BaseMap Land 5.16
- SafeTaxi Expires 10-OCT-2019
- Terrain 2.04
- Airport Terrain 2.04
- Obstacle Expires 10-OCT-2019
- Navigation Expires 10-OCT-2019
- Apt Directory Expires 10-OCT-2019
- Chart data is out of date!

All map and terrain data provided is only to be used as a general reference to your surroundings and as an aid to situational awareness.

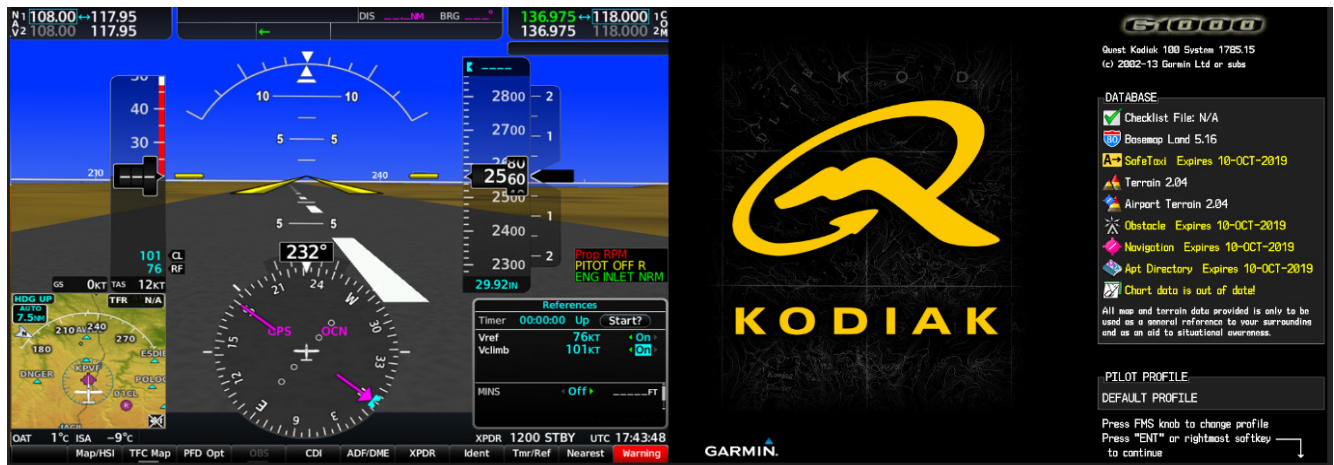
PILOT PROFILE

DEFAULT PROFILE

Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue

Piper PA-44 Seneca

Available Airplane Configurations (G1000 TurboPROP)



Modular Flight Deck 12-09-2021

Available Airplane Configurations (Analog)



Beech A36 Bonanza



Beechcraft A36TC Bonanza

Available Airplane Configurations (Analog)



Beechcraft B55



Beechcraft 76 Duchess

Available Airplane Configurations (Analog)



Beechcraft 58 Baron



Beechcraft 58TC Baron

Available Airplane Configurations (Analog)



Beechcraft 95 Travel Air



Cessna 152

Available Airplane Configurations (Analog)



Cessna 172P



Cessna 172S

Available Airplane Configurations (Analog)



Cessna 172R



Cessna 182T

Available Airplane Configurations (Analog)



Cessna T182T



Cessna R182

Available Airplane Configurations (Analog)



Cessna TR182



Cessna 206H

Available Airplane Configurations (Analog)



Cessna 210M



Cessna 310R

Available Airplane Configurations (Analog)



Cessna 414A



Cessna 421C

Available Airplane Configurations (Analog)



Diamond DA20



Mooney M20J

Available Airplane Configurations (Analog)



Piper PA28 Warrior II



Piper PA28 Arrow III

Available Airplane Configurations (Analog)



Piper PA28RT Arrow IV



Piper PA28 Archer III

Available Airplane Configurations (Analog)



Piper PA46 Malibu



Piper PA34 Seneca I

Available Airplane Configurations (Analog)



Piper PA34 Seneca V



Piper PA44 Seminole

Available Airplane Configurations (Analog)



Piper PA31 Navajo Chieftan



Beechcraft C90

Available Airplane Configurations (Analog)



Beechcraft B200



Cessna Caravan 208

Available Airplane Configurations (Analog)



Pilatus PC12

THIS AREA INTENTIONALLY LEFT BLANK

A/C Performance Table

Performance References for Validation

NOTE: Standard atmosphere and gross weight is used for performance.

Airplane performance table for sea level *and* 6,000 feet and 12,000 feet for Turbo-Charged and 18,000 feet for Turboprop

#	Manufacturer	Model Number	Acft Type	Vso	Vs1	Vx Best Angle	Vy Best Rate	Vglide	Va	Vne Never Exceed	Vmca Minimum Control Speed	KTAS at Cruise @ 75% Power Setting	Rate of climb (fpm) at best rate (Vy), at full power or as recommended	Single Engine Climb Rate (at Vyse)	
1	Beechcraft	A36	SEL	61	68	78	96	110	140	204	N/A	SL 159	1200	N/A	
												6000 -----ft	167	650	N/A
2	Beechcraft	A36TC	SEL	61	68	77	100	105	141	206	N/A	SL 160	1000	N/A	
												12000 -----ft	180	650	N/A
3	Beechcraft	B55	MEL	69	75	84	107	120	157	224	78	SL 176	1750	400	
												6000 -----ft	188	1100	60
4	Beechcraft	76	MEL	60	70	71	85	95	157	194	65	SL 152	1300	220	
												6000 -----ft	166	850	50
5	Beechcraft	58	MEL	75	84	92	105	122	156	223	84	SL 188	1700	380	
												6000 -----ft	202	1250	180
6	Beechcraft	58TC	MEL	78	84	91	96	120	169	235	80	SL 184	1475	460	
												12000 -----ft	216	1200	120
7	Beechcraft	95	MEL	67	75	73	95	103	139	208	71	SL 154	1005	200	
												6000 -----ft	149	705	-10
8	Cessna	152	SEL	31	36	55	67	60	104	149	N/A	SL 101	715	N/A	
												6000 -----ft	105	465	N/A
9	Cessna	172P	SEL	46	51	60	76	65	99	158	N/A	SL 123	700	N/A	
												6000 -----ft	118	388	N/A
10	Cessna	172S	SEL	48	51	62	74	68	105	163	N/A	SL 114	730	N/A	
												6000 -----ft	121	550	N/A
11	Cessna	172R	SEL	47	51	60	79	68	99	163	N/A	SL 110	740	N/A	
												6000 -----ft	115	460	N/A
12	Cessna	182T	SEL	49	54	65	80	76	110	175	N/A	SL 150	924	N/A	
												6000 -----ft	146	660	N/A
13	Cessna	T182T	SEL	49	54	64	84	75	110	175	N/A	SL 139	1040	N/A	
												12000 -----ft	148	855	N/A
14	Cessna	R182	SEL	50	54	64	88	80	112	182	N/A	SL 160	1150	N/A	
												6000 -----ft	152	690	N/A
15	Cessna	TR182	SEL	50	54	75	90	83	112	178	N/A	SL 152	1040	N/A	
												12000 -----ft	165	965	N/A
16	Cessna	206H	SEL	47	59	69	89	80	125	182	N/A	SL 135	1150	N/A	
												6000 -----ft	145	955	N/A
17	Cessna	210M	SEL	50	64	79	96	85	119	199	N/A	SL 164	860	N/A	
												6000 -----ft	170	615	N/A

A/C Performance Table

#	Manufacturer	Model Number	Acft Type	Vso	Vs1	Vx Best Angle	Vy Best Rate	Vglide	Va	Vne Never Exceed	Ymca Minimum Control Speed	KTAS at Cruise @ 75% Power Setting	Rate of climb (fpm) at best rate (Vy), at full power or as recommended	Single Engine Climb Rate (at Vyse)
18	Cessna	310R	MEL	75	84	86	107	96	147	223	75	182	1540	330
											6000 -----ft	187	1150	101
19	Cessna	414A	MEL	71	81	85	112	107	145	237	79	SL 175	1500	250
											6000 -----ft	180	980	150
20	Cessna	421C	MEL	77	86	88	111	109	151	238	80	SL 185	1210	270
											6000 -----ft	195	1120	150
21	Diamond	DA20	SEL	36	44	60	75	73	106	164	N/A	SL 122	750	N/A
											6000 -----ft	126	560	N/A
22	Mooney	M20J	SEL	55	62	77	88	91	120	198	N/A	SL 158	1000	N/A
											21	167	720	N/A
23	Piper Warrior II	PA28	SEL	44	50	79	63	73	111	160	N/A	SL 112	700	N/A
											6000 -----ft	121	450	N/A
24	Piper Arrow III	PA28	SEL	45	50	78	90	79	118	183	N/A	SL 140	950	N/A
											6000 -----ft	145	500	N/A
25	Piper Arrow IV	PA28RT	SEL	61	66	79	97	79	124	193	N/A	SL 151	950	N/A
											12000 -----ft	158	550	N/A
26	Piper Archer III	PA28	SEL	45	50	64	76	76	113	154	N/A	SL 120	680	N/A
											6000 -----ft	125	400	N/A
27	Piper Malibu	PA46	SEL	69	79	81	110	90	133	200	N/A	SL 165	1200	N/A
											12000 -----ft	188	1000	N/A
28	Piper Seneca I	PA34	MEL	60	67	78	91	105	127	189	70	SL 150	1360	180
											6000 -----ft	168	950	-40
29	Piper Seneca V	PA34	MEL	61	67	83	88	105	139	204	66	SL 180	1460	253
											6000 -----ft	195	750	172
30	Piper Seminole	PA44	MEL	58	62	82	88	104	135	202	63	SL 153	1350	220
											6000 -----ft	163	800	-50
31	Piper Navajo Cheftan	PA31	MEL	75	80	90	94	97	159	236	80	SL 175	1390	150
											6000 -----ft	185	1000	130

THIS AREA INTENTIONALLY LEFT BLANK

A/C Performance Table

#	Manufacturer	Model Number	Acft Type	Vso	Vs1	Vx Best Angle	Vy Best Rate	Vglide	Va	Vne Never Exceed	Vmca Minimum Control Speed	KTAS at Cruise @ 75% Power Setting	Rate of climb (fpm) at best rate (Vy), at full power or as recommended	Single Engine Climb Rate (at Vyse)	
G1000 ACFT															
1	Beechcraft Bonanza	G36	SEL	60	68	84	100	110	139	205	N/A	SL 165	1230	N/A	
												6000 -----ft	175	920	N/A
2	Beechcraft Baron	G58	MEL	74	82	92	105	115	156	223	84	SL 188	1800	380	
												6000 -----ft	202	1250	105
3	Cessna	172R	SEL	47	51	60	79	65	99	163	N/A	SL 110	740	N/A	
												6000 -----ft	119	465	N/A
4	Cessna	172S	SEL	48	51	62	74	68	105	163	N/A	SL 114	730	N/A	
												6000 -----ft	121	550	N/A
5	Cessna	182T	SEL	45	50	65	80	76	110	170	N/A	SL 135	1040	N/A	
												6000 -----ft	145	945	N/A
6	Cessna	T182T	SEL	49	54	64	84	75	110	175	N/A	SL 139	1050	N/A	
												12000 -----ft	149	820	N/A
7	Cessna	T206H	SEL	47	59	69	89	80	125	182	N/A	SL 145	1060	N/A	
												12000 -----ft	153	830	N/A
8	Cessna	206H	SEL	47	59	70	86	75	125	182	N/A	SL 135	1150	N/A	
												6000 -----ft	145	955	N/A
9	Cessna Corvalis	400	SEL	58	68	80	110	108	148	235	N/A	SL 164	1300	N/A	
												12000 -----ft	190	900	N/A
10	Diamond	DA40	SEL	42	47	64	66	73	108	178	88	SL 133	830	N/A	
												6000 -----ft	138	350	140
11	Diamond	DA42	MEL	58	62	82	90	85	126	196	76	SL 153	1170	220	
												6000 -----ft	162	980	150
12	Piper Matrix	PA46	SEL	58	69	81	110	90	133	200	N/A	SL 160	1300	N/A	
												12000 -----ft	185	1000	N/A
13	Piper Archer III	PA28	SEL	45	50	64	76	76	113	154	N/A	SL 120	680	N/A	
												6000 -----ft	125	400	N/A
14	Piper Seneca V	PA34	MEL	61	67	81	88	105	139	204	66	SL 180	1460	253	
												6000 -----ft	195	750	172
15	Piper Seminole	PA44	MEL	58	62	82	88	104	135	202	63	SL 153	1350	220	
												6000 -----ft	163	800	-50
16	Kodiak	100	SEL	46	61	99	101	97	144	180	N/A	SL 154	1338	N/A	
												18000 -----ft	170	366	N/A
17	Beechcraft	C90	MEL	78	88	100	108	125	161	226	90	SL 214	2100	660	
												18000 -----ft	244	1200	120
18	Beechcraft	B200	MEL	75	99	110	125	135	181	259	86	SL 245	2450	740	
												18000 -----ft	277	1700	250
19	Cessna Caravan	208	SEL	50	63	77	107	99	148	175	N/A	SL 162	1000	N/A	
												18000 -----ft	171	650	N/A

Visual System Description and Configurations

The integrated Visual System provides realistic cues in both day and night VFR and IFR meteorological conditions to enhance a pilot's visual orientation in the vicinity of an airport, to include the ability to adjust the visibility and ceiling conditions permitting the simulation of various meteorological weather conditions.

The Modular Flight Deck Visual system has five integrated 4k monitors that provide 225° degree (wide) x 45° (vertical) view capability.



ATD Functions and Maneuvers

AIRPLANE ATD FUNCTION VERIFICATION CHECKLIST

Functions and Maneuvers	Yes, No, or N/A
a. Pre-Takeoff	
(1) Engine start	Yes
(2) Taxi and brake operation	Yes
b. Takeoff	
(1) Run-up and powerplant checks	Yes
(2) Acceleration characteristics	Yes
(3) Nose wheel and rudder steering	Yes
(4) Effect of crosswind	Yes
(5) Instrument	Yes
(6) Flap operation	Yes
(7) Landing gear operation (if retractable)	Yes
c. In-Flight Operations	
(1) Climb	
(i) Normal and max. performance	Yes
(ii) One engine inoperative procedures (Multiengine only)	Yes
(2) Cruise	
(i) Correct performance characteristics (speed vs. power)	Yes
(ii) Normal and steep turns	Yes
(iii) Approach to stalls, (i.e. stall warning), stalls. Execute from takeoff, cruise, and approach and landing configurations.	Yes

(vi) In flight engine shutdown (multi-engine only)	Yes
(v) In flight engine start (multi-engine only)	Yes
(vi) Fuel selector function	Yes
(3) Approach	
(i) Normal (with & without flaps) Check gear horn warning if applicable	Yes
(ii) Single engine approach and landing (multi-engine)	Yes
(iii) Best glide no power	Yes
(iv) Landings	Yes
d. Instrument Approaches	
(1) Nonprecision	
(i) GPS and LPV	Yes
(ii) GPS - WAAS (Optional)	Yes
(iii) All engines operating	Yes
(iv) One engine inoperative (Multi-engine only)	Yes
(v) Approach procedures (VOR, VOR/DME, LOC procedures on an ILS, LDA, RNAV (RNP) or RNAV (GPS) to LNAV, LNAV/VNAV or LPV)	Yes
Functions and Maneuvers	Yes, No, or N/A
(2) Precision	
(i) ILS	Yes
(ii) GLS (Optional)	No
(iii) Effects of Crosswind	Yes
(iv) One Engine Inoperative (Multi-engine only)	Yes
(v) Missed Approach	Yes

(A) Normal	Yes
(B) With One Engine inoperative (Multi-engine only)	Yes
e. Surface Operations (Post Landing)	
(1) Approach and landing roll	Yes
(2) Braking operation	Yes
(3) Reverse thrust operation, if applicable	Yes
f. Any Flight Phase	
(1) Airplane and Power Plant Systems	
(i) Electrical, mechanical, or hydraulic	Yes
(ii) Flaps	Yes
(iii) Fuel selector and oil temp/pressure	Yes
(iv) Landing gear (if applicable)	Yes
(2) Flight Management and Guidance Systems	
(i) Two axis auto pilot (if standard equipment)	Yes
(ii) Flight director (AATD only) and system displays (if installed)	Yes
(iii) Navigation systems and Optional display configurations	Yes
(iv) Stall warning systems avoidance	Yes
(v) Multi-function displays (PFD/MFD) if applicable	Yes
(3) Airborne Procedures	
(i) Holding	Yes
(ii) Uncoordinated turns – slipping and skidding demo	Yes
(iii) Configuration and power changes and resulting pitch changes	Yes

(iv) Compass turns and appropriate errors (if installed)	Yes
(4) Simulated Turbulence in Flight (light, moderate, severe)	Yes
(5) Parking and Engine Shutdown	
(i) Systems operation	Yes
(ii) Parking brake operation (if installed)	Yes
g. Can simulate engine failure, including failures due to simulated loss of oil pressure or fuel starvation.	Yes
h. Can simulate the following equipment or system failures:	
(1) Alternator or generator failure.	Yes
(2) Vacuum pump/pressure failure and associated flight instrument failures.	Yes
(3) Gyroscopic flight instrument failures.	Yes
(4) Pitot/static system malfunction and associated flight instrument failures.	Yes
(5) Electronic flight deck display malfunctions.	Yes
(6) Landing gear (if retractable) or flap malfunctions	Yes
i. Independent Instructor Station Requirements (AATD only)	
(1) Displays published airways and holding patterns.	Yes
(2) Displays airplane position and track.	Yes
(3) Displays airplane altitude and speed.	Yes
(4) Displays NAVAIDs and airports.	Yes
(5) Can record and replay airplane ground track history for entire training session.	Yes
(6) Can invoke instrument or equipment failures.	Yes

During the initial start of the trainer, the computer component “self-check” program verifies that all the features of the trainer are in working order. It is not possible to continue the training session unless the problem is resolved, and all the components are functioning properly.

During the initial start-up the ATD has the following **Screen Statement** is displayed on the instructor station or visual display before the trainer is used for training.

“All the flight instruments required for visual and instrument flight rules listed in part 91.205 must be functional at the start of the simulated flight session. Temporary instrument or equipment failures are permitted when practicing emergency procedures. If this simulated flight session will be used for instrument experience or currency requirements, the visual component must be configured to Instrument Meteorological Conditions [IMC] during the simulated flight session, including execution of instrument approaches from the final approach fix until reaching Decision Height [DH], Decision Altitude [DA], or Minimum Decent Altitude [MDA] as appropriate.”

Notice: Any changes or modifications to this training device that have not been reviewed, evaluated, and approved in writing by General Aviation and Commercial Division will terminate FAA approval.