PRECISION FLIGHT CONTROLS

GTX MAX PIPER

Qualification and Approval Guide (QAG)

Advanced Aviation Training Device

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03-10-2024
Version 1.0

GTX MAX PIPER

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FAA APPROVED QAG
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for Robert Reckert
Manager, Air Transportation Division

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 GTX MAX PIPER 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 oversite.

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 configurations 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 model GTX MAX PIPER is based on the dimensions and layout of a production single and multi-engine airplane. This trainer closely represents the overall functionality, performance, and instrumentation for the airplane. 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 GTX MAX PIPER represents both Piper Archer and Seminole airplanes.

The GTX MAX PIPER 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.

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Aviation Training Device (ATD) Description and Pictures

Standard Enclosure Configuration (with optional 3-4 DOF Motion)

Shown with Optional Instructor's Cab and 3-4 DOF Motion

Shown with Optional Extended Cab and Optional 6DOF Motion

Optional 6DOF Motion Base

Aviation Training Device (ATD) Description and Pictures

GTX MAX Piper Seminole

PFC1000 PFD, MFD, Audio Panel
and Standby Instrument

GTX MAX PIPER Flight Deck Shown in Seminole Configuration

Flight Deck Includes: Dual Control Loading Yokes, Dual Control Loading Rudder Pedals, Intercom, Master Start Panel, Lights Panel, Pitot Heat, Navigation Lights, Center Console, Parking Brake, Hobbs Meter, Digital Clock/Timer, Circuit Breaker Panels, PFC 1000 PFD, and MFD. Multi-Engine Throttle, Fuel Tank Selectors, Hobbs Meter, ELT and USB Ports.

Note: All Panels are interchangeable with the Archer Panels

Aviation Training Device (ATD) Description and Pictures

Seminole Master Start Panel/Landing Gear

Seminole Circuit Breaker and Intercom

Seminole Battery Master and Lights Panel

Aviation Training Device (ATD) Description and Pictures

4-Way Intercom
(Seminole and Archer)

ELT Panel/Hobbs Meter Panel (Seminole)

Piper Seminole Center Console

Elevator Trim

Rudder Trim

Aileron Trim

Fuel Selectors

Flaps Lever

Seminole Throttle Quadrant

Seminole Fuel Selector Panel

Seminole Alt Air / Cowl Flaps Panel

Aviation Training Device (ATD) Description and Pictures

GTX MAX PIPER Flight Deck (Shown in Archer Configuration)

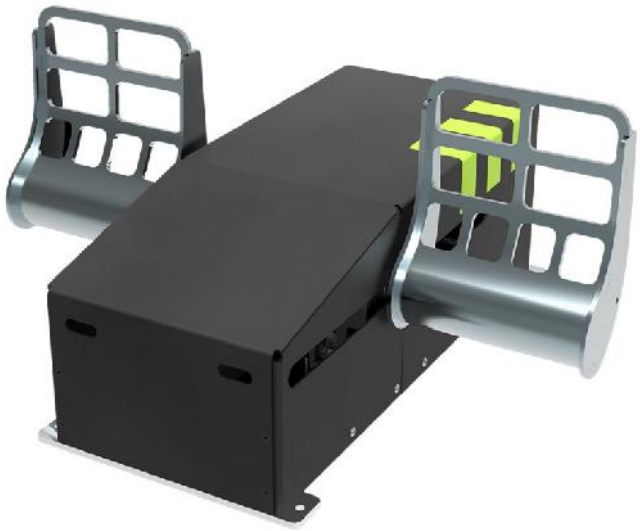
Flight Deck Includes: Dual Control Loading Yokes, Dual Control Loading Rudder Pedals, Intercom, Master Start Panel, Lights Panel, Pitot Heat, Navigation Lights, Center Console, Parking Brake, Hobbs Meter, Digital Clock/Timer, Circuit Breaker Panels, PFC 1000 PFD, and MFD. Overhead Panel (Archer), Fuel Selector, Single Throttle, Hobbs Meter, ELT and USB Ports.

Note: All Panels are interchangeable with the Seminole Panels

Control Yokes

Dual Linked
Piper Yokes are Equipped with PTT, Elevator Trim, A/P Disconnect and CWS Switches
With Control Loading

Rudder Pedals



Dual Linked, Control Loading
Rudder Pedals with Toe Brakes

Aviation Training Device (ATD) Description and Pictures (Software)

Seminole G1000 MFD

Archer G1000 MFD

Aviation Training Device (ATD) Description and Pictures (Avionics)

Standby Instrument
Archer and Seminole

1347 Audio Panel
Archer and Seminole

Computer Description

Tower Cases or Rack System
Intel Z790 Chipset and 14h Gen Intel® Core™ Processor
64GB (2 x 32GB) DDR5 6000MHz RAM
1200W – 1650W Power Supply
Windows 10/11 LTSC Operating System
Deep Freeze Software
X-Plane Professional
10/100/1000 Ethernet Adapter
2 Gig TB NVMe or SDD
NVIDIA RTX 4080 Txi
NVIDIA RTX 4070

Seats

Fwd/Aft Movement (on seat track system)
Fwd/Aft Tilt
Vertical Adjustment and
Adjustable Arm Rest(s)
Seats are Secured to Seat Track System

Aviation Training Device (ATD) Description and Pictures

Piper Archer Instrument Panel

Piper Archer PFC1000 PFD, MFD, Audio Panel and Standby Instrument

Note: G1000 Clock/Timer is Integrated into the G1000 Displays (Standard Feature)
For flight planning purposes, timers, trip statistics, and a scheduler feature are provided on the AUX - Utility Page.

Archer Circuit Breaker Panel

Piper Archer Panels

1) Parking Brake

2) Rudder Trim

3) Fuel Tank Selector

4) Overhead Panel Switches

- Engine Start
- Battery Master
- Alternator
- Fuel Pump
- Magneto Switches
- Landing Light

5) Pitot Heat

1

2

3

4

5

Aviation Training Device (ATD) Description and Pictures

6) Throttle Quadrant

7) ELT / HOBBS Panel

6

Piper Archer Throttle Quadrant

8

8) Piper Archer Center Console
Flaps Lever
Elevator Trim
Aileron Trim

7

Aviation Training Device (ATD) Description and Pictures

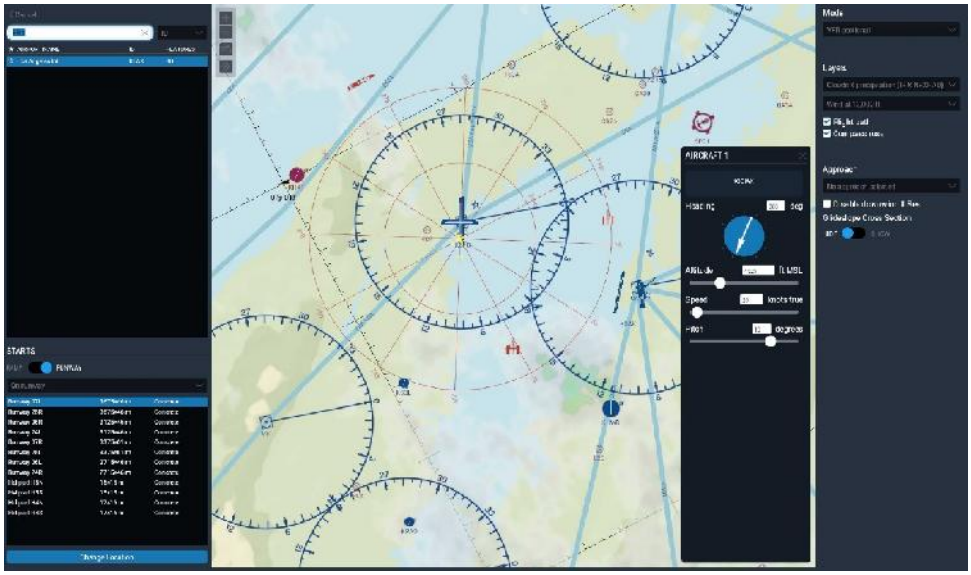
Clock/ Timer (Optional, If Installed)

Hobbs Meter

The Flight Deck can be equipped with (optional) three cameras to allow an observer or flight instructor to view operations in the flight deck from the IOS station.

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

Standard Configuraton Instructor's Station
Monitor, Keyboard and Mouse

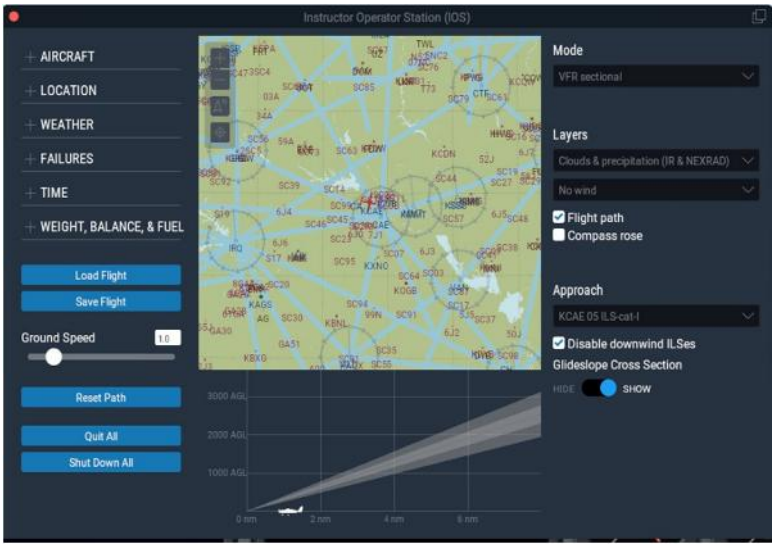


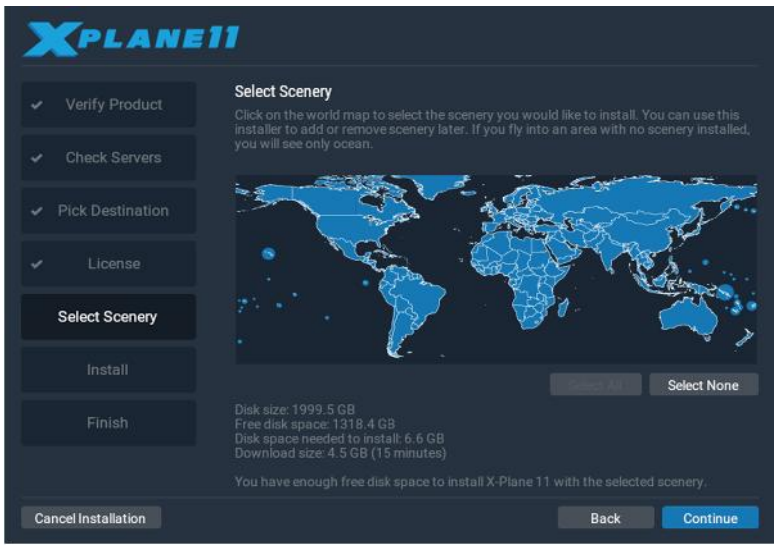
Typical Moving Map

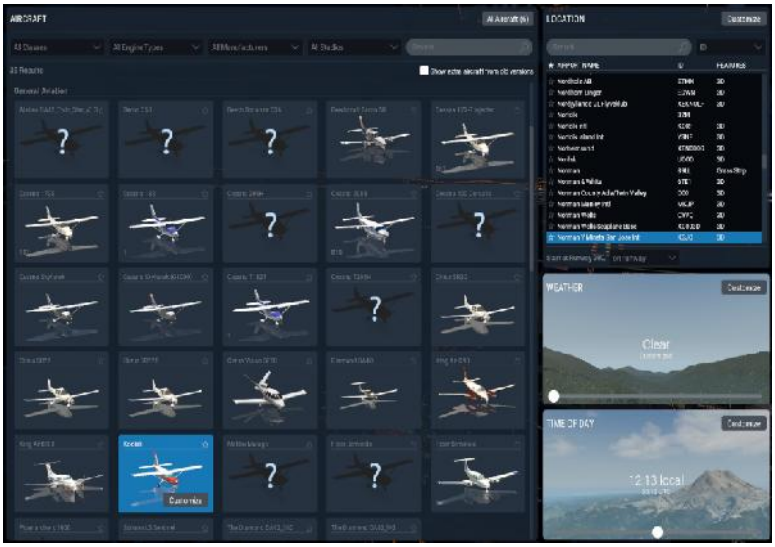
Moving Map Includes:

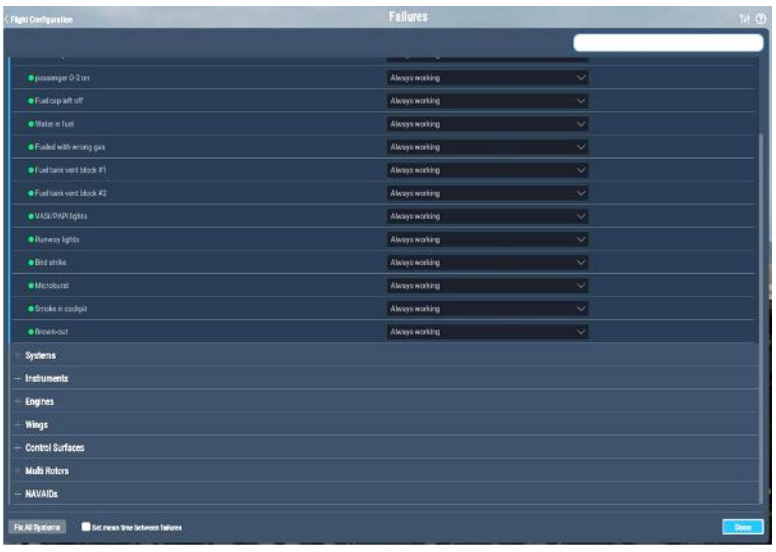
Airways
Terrain (Worldwide Data)
Airports (Worldwide Data)
VORs (Worldwide Data)
IlS (Worldwide Data)
Glide Path Display
Airspeed
Direction
Altitude
Instruments
Re-Positioning
Weather
Radio Frequencies
Airport Information
Compass Rose/DME/VOR
Fixes
Set To Airport
3 and 10 Mile Final Approach
Map Positioning
Traffic
Weather
Failures
Pause
Freeze
Record and Playback
Weight and Balance
Fuel Shift
Vertical and Lateral Tracking

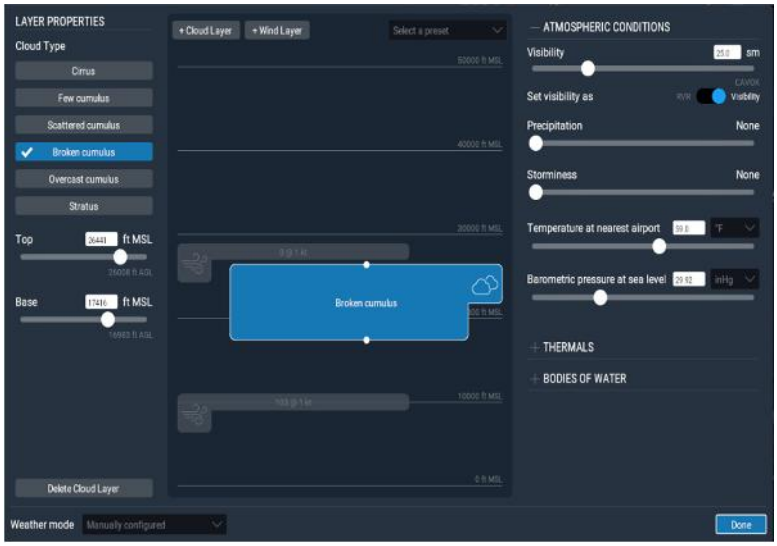
Aviation Training Device ATD Description and Pictures Instructor's Station (IOS)











Note: The Above Pages Are Generic to The Instructor's Station

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	GTX MAX Piper	1.0	Steel and Aluminum Construction
2	Control Yokes	PFC	Piper Style	1.0	Control Yokes, Elevator, A/P Disconnect, CWS, Push to Talk Switches with Control Loading
3	Rudder Pedals	PFC/ Brunner	PFCBrunner	HD	Proportional Toe Braking with Control loading
4	G1000 Panels	PFC or Garmin	Garmin PFD/MFD or PFC PFD /MFD Audio Panel	1.0	Garmin G1000 or Simulated Replica G1000 Avionics Suite
5	Master Circuit Breaker Panels	PFC PFC	PFCMCBP PFCMCBP-S	1.0 1.0	Archer Circuit Breaker Panel Seminole Circuit Breaker Panel
6	G1000 **(Software)**	Garmin	G1000	GT	Garmin G1000
7	Core simulation **(Software)**	Laminar Research	X-Plane Professional	Version 11 or Higher	Visual and Navigational Database
8	Ancillary Panels	PFC	N/A	1.0	Type Specific Panels Per Aircraft Model
9	Standby Instrument	PFC	PFCSTBY-I	1.0	Computer Generated Standby Instrument
10	TO/GA Switches	PFC	N/A	1.0	Throttle Mounted
11	Digital Clock/Stopwatch	Garmin	Garmin	N/A	Digital Clock/Stopwatch Software/Internal
12	Throttle Quadrants	Piper Style	3 and 6 Lever	1.0	Throttle Quadrants
13	Nav Data (worldwide)	Jeppesen Garmin or DAFIF	N/A	N/A	Can Be Updated On a 28 Day Cycle
14	3 -4 DOF Motion Base	D-BOX	4500	N/A	(Optional) 3-4 DOF Motion Base
15	6 DOF Motion Base	CKAS	6 DOF Motion	N/A	(Optional) 6 DOF Motion Base
16	Visual System (external)	Five 43” HD Monitors	Samsung or Equivalent	N/A	Five 43” HD LCD Monitors
17	Seating (Pilot and Co-Pilots)	PFC	PS/CS	N/A	Fully Adjustable, Tilt, Fwd, Aft and Vertical Movement Attached to Floor
18	Overhead Panel (Archer Only)	PFC	PPFCOHP	N/A	Engine Start, Battery, Alternator Magnetos, Fuel Pump Landing Lights, Emergency Battery Overhead Speakers
19	4 way intercom	PFC	SIGTRONIC	N/A	Pilot, Co-Pilot, & Instructor
20	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 and braking

Item	Component	MFG	Model	Version	Details
21	Elevator / Pitch Trim	PFC	PELV	1.0	Electric and Manual Controls
22	Rudder Trim	PFC	RDR Trim	1.0	Rudder Trim Controls Seminole Only
23	Aileron Trim	PFC	AIL Trim	1.0	Aileron Trim Controls
24	Single Fuel Tank Selector Archer	PFC	FTS	1.0	Fuel Tank Selector Controls
25	Dual Fuel Tank Selector Seminole	PFC	DFTS	1.0	Fuel Tank Selector Controls
26	Anti-Ice	PFC	ATIS	1.0	Anti-Ice Switch
27	Pitot Heat	PFC	PHS	1.0	Pitot Heat Switch
28	Computers	PFC	PFC	N/A	Custom High Performance Computer Rack System
29	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 (end-route and approach)
30	Magnetic Compass	PFC	PFC	PFC DC	Integral to STBY Instrument
31	Operating System	Microsoft	Windows LTSC	10/11	Main Operating System
32	Autopilot	PFC	PFCGMCAP	1.0	Integrated with PFD/MFD
33	Camera System	Swann or Equivalent	N/A	N/A	(Optional) Video Cameras located inside the flight deck

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 GTX MAX PIPER airplane ATD.

Basic ATD Requirements

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

The Precision Flight Controls GTX MAX PIPER 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 GTX MAX PIPER 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 GTX MAX PIPER 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 GTX MAX PIPER 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 GTX MAX PIPER 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 indicato**r (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 ±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 replicate 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.

• F**uel 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 GTX MAX PIPER 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 GTX MAX PIPER 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.

Advanced ATD Requirements

All configurations**,** as noted in AC 61-136B, Appendix C meet the following *additional* AATD design criteria.

(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) 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) 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 aircraft configuration, including anadjustable height and an adjustable forward and aft seat position.

(10) Rudder pedals secured to the cockpit floor structure, or that can be physicallysecured 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.) by using either a keyboard or mouse.

(13) 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 **GTX MAX PIPER** 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

Available airplane configurations showing “instrument panel” pictures for Piper Aircraft shown here. The Components List identifies any optional displays, controls, or avionics equipment**.**

Piper Archer

Piper Seminole

Airplane Performance Table

Aircraft Model	Vso	Vs	Vx	Vy	Vglide	Vne	Vmca	KTAS at Cruise at 75% power setting	Rate of climb (fpm) at best rate (Vie), at full power or as recommended	Single Engine Climb rate (at Vyse)	
PA28-181	44	50	64	78	112	160	N/A	120	SL 725	SL	N/A
							6,000 feet→	125	320		N/A
PA44	58	62	82	88	135	202	63	153	1325	SL	220
							6,000 feet→	161	800		-45

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 GTX MAX PIPER Visual system has five integrated 4k monitors that provide 225° degree (wide) x 45° (vertical) view capability.

Procedures and Tasks Test Checklist

Maneuvers and Tasks	Yes/No/NA
a) Pretakeoff	
1) Engine start	**Yes**
2) Taxi and brake operation	**Yes**
b) Takeoff	
1) AIRPLANE Takeoff	
i) Run-up and powerplant checks	**Yes**
ii) Acceleration characteristics	**Yes**
iii) Nosewheel and rudder steering	**Yes**
iv) Effect of crosswind	**Yes**
v) Instrument	**Yes**
vi) Landing gear, wing flap operation	**Yes**
2) HELICOPTER Takeoff	
i) Powerplant checks	**NA**
ii) From hover	**NA**
iii) From ground	**NA**

Maneuvers and Tasks	Yes/No/NA
iv) Vertical	**NA**
v) Running	**NA**
c) In-Flight Operation	
1) AIRPLANE In-Flight Operation	
i) Climb	**Yes**
(a) Normal and max. performance	**Yes**
(b) One-engine-inoperative procedures (multiengine)	**Yes**
ii) Cruise	**Yes**
(a) Performance characteristics (speed vs. power)	**Yes**
(b) Normal and steep turns	**Yes**
(c) Approach to stalls (i.e., stall warning), stalls, and recovery. Execute from takeoff, cruise, and approach and landing configurations.	**Yes**

Procedures and Tasks Test Checklist

(d) In-flight engine shutdown (multiengine)	**Yes**
(e) Fuel selector function	**Yes**
(f) In-flight engine start	**Yes**
iii) Approach	**Yes**
(a) Normal (with and without flaps) (check gear warning, if applicable)	**Yes**
(b) Best glide no power	**Yes**
iv) Landings	**Yes**
2) HELICOPTER In-Flight Operation	
i) Hovering and air taxi	**NA**
(a) Forward	**NA**
(b) Rearward	**NA**
(c) Sideward	**NA**
(d) Turns	**NA**
ii) Climb	**NA**
iii) Cruise	**NA**
(a) Performance characteristics (speed vs. power)	**NA**

Procedures and Tasks Test Checklist

Maneuvers and Tasks	Yes/No/NA
(b) Turns	**NA**
(i) Recovery	**NA**
(ii) Skidding	**NA**
(iii) Slipping	**NA**
(iv) Steep turns	**NA**
(c) In-flight engine shutdown and start (multiengine)	**NA**
(d) Descents	**NA**
(e) Straight in and 180º autorotation	**NA**
(f) Landings	**NA**
d) Instrument Approaches	
1) Nonprecision	
i) GPS and LPV	**Yes**

ii) GPS-WAAS (optional)	**Yes**
iii) All engines operating	**Yes**
iv) One or more engines inoperative	**Yes**
v) Approach procedures (VOR, VOR/DME, LOC procedures on an ILS, LDA, RNAV (RDP) or RNAV (GPS) to LNAV, LNAV/VNAV or LPV)	**Yes**
2) Precision	
i) ILS	**Yes**
ii) GLS (optional)	**Yes**
iii) Effects of crosswind	**Yes**
iv) With engine inoperative (multiengine)	**Yes**
v) Missed approach	**Yes**
(a) Normal	**Yes**
(b) With engine(s) inoperative (multiengine)	**Yes**
e) Surface Operations	
1) AIRPLANE Surface Operations (Post Landing)	
i) Approach and landing roll	**Yes**
ii) Braking operation	**Yes**

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Procedures and Tasks Test Checklist

Maneuvers and Tasks	Yes/No/NA
iii) Reverse thrust operation, if applicable	**N/A**
2) HELICOPTER Surface Operations	
i) Landings	**N/A**
ii) Landing area operations	**N/A**
f) HELICOPTER Emergency Operations	
1) Power failure at hover	**N/A**
2) Power failure at altitude	**N/A**
3) System and equipment malfunctions	**N/A**
4) Settling with power (optional)	**N/A**
5) Low rotor RPM recovery (optional)	**N/A**
6) Antitorque system failure	**N/A**
7) Dynamic rollover (optional)	**N/A**
g) Any Flight Phase	
1) Aircraft and Powerplant Systems	**Yes**
i) Electrical, mechanical, or hydraulic	**Yes**
ii) Flaps (airplane)	**Yes**
iii) Fuel selector and oil temp/pressure	**Yes**
iv) Landing gear (if applicable)	**Yes**
2) Flight Management and Guidance Systems	**Yes**
i) Autopilot (if standard equipment)	**Yes**
ii) Flight director (AATD only)/system displays (if installed)	**Yes**
iii) Navigation systems	**Yes**
iv) Stall warning systems avoidance (airplane)	**Yes**
v) Multi-function displays (if applicable)	**Yes**
3) Airborne Procedures	**Yes**
i) Holding	**Yes**
ii) Uncoordinated turns – slipping and skidding demo	**Yes**

Procedures and Tasks Test Checklist

Maneuvers and Tasks	Yes/No/NA
iii) Configuration and power changes and resulting pitch changes	**Yes**
iv) Compass turns and appropriate errors (if installed)	**Yes**
4) Engine Shutdown and Parking	**Yes**
i) Systems operation	**Yes**
ii) Parking brake operation (if installed) (airplane)	**Yes**
h) Can simulate engine failure, including failures due to simulated loss of oil pressure or fuel starvation.	**Yes**
i) Can simulate the following equipment or system failures:	
1) Alternator or generator failure.	**Yes**
2) Vacuum pump/pressure failure and the associated flight instrument failures.	**Yes**
3) Gyroscopic flight instrument failures.	**Yes**
4) Pitot/static system malfunction and the associated flight instrument failures.	**Yes**
5) Electronic flight deck display malfunctions.	**Yes**
6) Landing gear (if retractable) or flap malfunctions.	**Yes**
j) Independent Instructor Station Requirements (AATD Only)	
1) Displays published airways and holding patterns.	**Yes**
2) Displays aircraft position and track.	**Yes**
3) Displays aircraft altitude and speed.	**Yes**
4) Displays NAVAIDs and airports.	**Yes**
5) Can record and replay aircraft 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.

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