

Autopilot Selection Guide

Choosing the right autopilot for your aircraft

The most important thing we build is trust



SINGLE AXIS AUTOPILOTS
Control roll with a variety of models designed to fit virtually any panel



PRIMARY TWO AXIS AUTOPILOTS
Control roll and pitch with numerous models that fit virtually any panel



FULL FUNCTION TWO AXIS AUTOPILOTS
Maximum capability and performance in an autopilot



UPGRADE KITS & OPTIONAL EQUIPMENT
Full integration with Cobham autopilot solutions and your existing avionics



Cobham Avionics

Autopilot Selection Guide

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How to use this selection guide

1. The information which follows will introduce you to the Cobham autopilot product line allowing you to choose the autopilot system which is best for you and your aircraft.
2. Review the autopilot systems for the features and functions you want.
3. Review the specific differences between the autopilots which fit your functional requirements, including the packaging variations which impact your instrument panel requirements.
4. Once you have selected an autopilot, the next step is to contact an authorized Cobham Avionics, Integrated Systems autopilot dealer to get a quotation for an installed price which will include the installation kit.

Rate-based vs. attitude-based autopilots

In General Aviation singles, light twins, and turboprops, rate systems have a number of significant advantages over attitude systems that rely on artificial horizons for roll and pitch reference.

Safety. The electric turn coordinator rate gyro does not depend upon the aircraft vacuum system or attitude gyro. If either the vacuum system or attitude gyro fails, or its performance is degraded, the turn coordinator and the autopilot are completely unaffected. A rate gyro will not tumble due to unusual attitudes. For this reason, pilots are instructed to use the turn & bank or turn coordinator instrument to level the wings during recoveries from an unusual attitude.

Reliability. Rate gyros are inherently very reliable. A Cobham autopilot turn coordinator rotor spins at about 1/3rd the speed of the rotor in an attitude gyro and therefore has a much longer MTBF, over 8000 hrs. Reliability is not always measured by total failure. Attitude gyros often suffer performance degradation over a period of time due to bearing wear. Bearing wear in an attitude gyro causes precession which is reflected in the performance of the autopilot. Rate gyros continue to function with worn bearings to a high level of performance until the spin motor fails. The Cobham pitch axis rate sensor, an accelerometer, has an MTBF of greater than 20,000 hrs.

Performance. Because they do not tumble, rate gyros will function in any attitude and are not damaged or worn excessively by unusual attitudes. In addition, since a consistent turn rate requires a lower bank angle at lower airspeeds, rate autopilots often provide better aircraft turn control at low airspeed.

The Cobham autopilot building block design philosophy

All Cobham autopilot systems use hardware, servos, and sensors common throughout the product line. This commonality gives the aircraft owner significant advantages in serviceability, reliability, and overall cost. It is also the foundation of the Cobham Avionics, Integrated Systems Upgrade/Trade-In program that gives an autopilot buyer the option of buying a system today and upgrading it to a system with more features and functions later.

The Cobham autopilot packaging philosophy (how they fit in the instrument panel)

Cobham Avionics, Integrated Systems is the industry leader in General Aviation autopilots. We have become the leader because we work very hard responding to the needs of the aircraft owner. In all aircraft, old or new, the panel space required for the autopilot is a consideration in an avionics upgrade. That's precisely the reason we offer systems with similar features and functionality in more than one configuration. As you study this Selection Guide you'll be able to choose the autopilot features and functions you want in the configuration that best meets your panel layout requirements.

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Installation of Cobham autopilots

Autopilots are unique in aviation electronics since proper installation requires the expertise of both an electronics technician and an airframe mechanic. The systems must be integrated into the avionics package as well as with the primary flight controls of the airplane.

For these reasons, trained Cobham Avionics, Integrated Systems Authorized Dealers must install Cobham autopilots. The Cobham Avionics, Integrated Systems Warranty is valid only if this policy is followed. The only exception to this is installation in an experimental airplane.

Glossary of Terms

3-Axis Autopilot. This phrase is often misused in talking about autopilot capabilities. Some use it to mean “roll, heading hold, and altitude hold.” Since the first two functions are both roll axis functions and altitude hold is a pitch function, most autopilots are 2 axis systems. A Cobham 3-axis autopilot will control the flight of the aircraft in roll, pitch and yaw. (This definition is not intended to address the autopilot requirements in FAR 135.105(c)1)

Control Wheel Steering. A feature found only on the System Fifty Five X. This feature allows the pilot to interrupt the autopilot flight by pressing and holding a CWS switch on the control wheel and then manually placing the aircraft in a specific rate of turn and vertical speed. Release of the button reengages the autopilot to the rate of turn and vertical speed set by the pilot.

Course Deviation Warning. An annunciation given to alert the pilot that there is significant deviation in the course tracking. This is especially valuable during approach tracking.

Dual Mode Intercept. This function allows the pilot to follow the ATC controller’s instruction “fly heading 060” until intercepting the localizer, then cleared for the approach.” By simultaneously pressing both the “HDG” and the “NAV” buttons with both annunciations lighting up, the autopilot will fly the “HDG” bug until the “NAV” needle begins to center. At that time the “HDG” Annunciator will extinguish and the autopilot will complete the intercept and track. Intercept angles other than the standard 45° are selectable. Dual mode intercept is also available in “REV” navigation mode.

Gain. The variable signal strength from the autopilot computer to the servos for different autopilot functions. We use a higher gain, and therefore more authority over the servos, during the more aggressive localizer tracking than the gain used when flying “NAV” enroute.

GPSS by Cobham. The GPS Steering function is optional for all Cobham autopilots and dramatically improves enroute and approach GPS navigation tracking. Normal NAV tracking uses heading data and course deviation shown as OBS or HSI needle deflection. GPSS by Cobham

flies the roll steering commands output by many of the newer GPS Navigators. Theoretically, the GPS computer always knows where it is located and, based on the flight plan programmed by the pilot, where it is going. The GPS computer processes this information into right and left steering commands. These are sent to the autopilot that flies the airplane in response to the commands, navigating the GPS course very accurately. Currently, some GPS navigators have roll steering capability for enroute flight and limited approach transition procedures. As GPS database inventories grow to include full approach procedures, the GPSS by Cobham will be ready to fly them.

Tracker vs. Coupler. Cobham autopilots have trackers or couplers. The essential difference is the ability to calculate and fly the intercept of an enroute or approach navigation signal. A tracker does not have the ability to fly an intercept. In order to operate a tracker the pilot must hand fly the airplane, or use the heading bug on the DG, to a point on the navigation course where the CDI indication is centered and the aircraft is flying in the direction of the navigation course. At that point the tracker can be engaged to track the course. In the systems equipped with couplers which require a heading system, the autopilot will calculate the intercept angle, then fly the aircraft to execute the intercept turn, couple and fly the navigation course.

Features and Functions Matrix


s = standard
o = optional

	System Twenty	System Thirty	System Thirty ALT	System Forty	System Fifty	System Fifty Five X	System Sixty-One	System Sixty-Two	System Sixty-Five	System Sixty PSS
Roll features and functions										
Turn Coordinator				s	s	s	s	s	s	
Turn Coordinator / Roll Computer	s	s								
Turn Command Knob	s	s		s	s					
Heading Select and Hold (requires heading system)	s	s		s	s	s	s	s	s	
Navigation / Approach Tracker (track only)	s	s		s	s					
Navigation / Approach Coupler (intercept and track)						s	s	s	s	
Backcourse Mode				s	s	s	s	s	s	
Dual Mode Intercept HDG / NAV						s	s	s	s	
Course Deviation / NAV Flag Warning						s	s	s	s	
Navigation / Approach Gain Select	s	s		s	s					
Navigation / Approach Gain Automatic						s	s	s	s	
GPSS	o	o		o	o	s	o	o	o	
Pitch features and functions										
Altitude Hold		s	s		s	s		s	s	s
Altitude Trim						s		s	s	s
Trim Annunciation		s	s		s	s		s	s	s
Vertical Speed Command						s		s	s	s
Digital Vertical Speed Command						s				
Glideslope Coupler						s		s	s	s
Altitude Selector / Alerter						o		o	o	o
Manual Electric Trim (where STC'd)	o	o	o	o	o	o	o	o	o	o
Automatic Electric Trim (where STC'd)						o		o	s	o
Other features and functions										
Turn Coordinator / Mode Selector	s	s								
3 ATI Panel Mounted Mode Selector				s	s		s	s		
Radio Stack Mounted Mode Selector / Computer						s				
Pedestal Mount Mode Selector									s	
Control Wheel Mode Select	o	o	o		o					
Control Wheel Steering						s				
Remote Computer		s	s				s	s	s	s
Remote Annunciator						o			s	
Yaw Damper (where STC'd)	o	o	o	o	o	o	o	o	o	o

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Single Axis Autopilots – Roll

NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>System Twenty</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator / Roll Axis Computer • Turn Command in "ST" Stabilizer Mode • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Low and High Gain VOR/LOC/GPS Tracking <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Control Wheel Mode Selection • Manual Electric Trim • GPSS Converter 	5.1	2.3
	<p>System Forty</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator • 3 ATI Panel Mounted • Turn Command in "STB" Stabilizer Mode • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • VOR/LOC/REV/GPS Tracking <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Manual Electric Trim • GPSS Converter 	7.1	3.2
	<p>System Sixty-One</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator • 3 ATI Panel Mounted Programmer - Remote Computer • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Course Intercept Capability <ul style="list-style-type: none"> • NAV Mode • Dual Mode - HDG/NAV • VOR/LOC/REV/GPS Coupling with 3 Gain Levels • VOR/LOC/REV/GPS Course Deviation and NAV Flag Warning <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Manual Electric Trim • GPSS Converter 	13.2	6.0

Single Axis Autopilots – Pitch | Yaw Damper

NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>System Thirty ALT</p> <ul style="list-style-type: none"> • Stand Alone or Add On to Existing Roll Axis Autopilot • Panel Mounted Selector Switch - Remote Computer • Altitude Hold Only • Pitch Trim Annunciation <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Control Wheel Engage / Disengage • Manual Electric Trim 	4.0	1.8
	<p>System Sixty PSS</p> <ul style="list-style-type: none"> • Pitch Stabilization System • Stand Alone or Add On to Existing Roll Axis Autopilot • Panel Mounted Programmer - Remote Computer • Altitude Hold with Altitude Trim • GS Coupling • Vertical Speed Command • Pitch Trim Annunciation <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Automatic Electric Pitch Trim • Altitude Selector/Alerter 	7.3	3.3
	<p>Yaw Damper</p> <ul style="list-style-type: none"> • Panel Mounted ON / OFF Switch • Rudder Trim Control • Remote Mounted Sensor / Amplifier • Automatic ON / OFF Mode Integrated with Roll & Pitch Autopilot 	3.8	1.7

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Primary Two Axis Autopilots – Roll & Pitch

NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>System Thirty</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator / Roll Axis Computer • Remote Pitch Axis Computer • Turn Command in "ST" Stabilizer Mode • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Altitude Hold with Remote Engage / Disengage Switch • Low and High Gain VOR/LOC/GPS Tracking • Pitch Trim Annunciation <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Control Wheel Mode Selection • Manual Electric Trim • GPSS Converter 	9.1	4.1
	<p>System Fifty</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator • 3 ATI Panel Mounted • Turn Command in "STB" Stabilizer Mode • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Altitude Hold • VOR/LOC/REV/GPS Tracking • Pitch Trim Annunciation <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Control Wheel Altitude Engage / Disengage • Manual Electric Trim • GPSS Converter 	10.0	4.5

Full Function Two Axis Autopilots – Roll & Pitch


NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>System Fifty Five X</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator • Avionics Stack Mounted • Control Wheel Steering • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Altitude Hold with Altitude Trim • Course Intercept Capability <ul style="list-style-type: none"> • NAV Mode • Dual Mode - HDG/NAV or HDG/APR • VOR/LOC/GS/REV/GPS Coupling with 3 Gain Levels • VOR/LOC/GS/REV/GPS Course Deviation and NAV Flag Warning • Digital Vertical Speed Command • Pitch Trim Annunciation • GPSS Mode • Flight Director Compatible <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Remote Mode Annunciator • Automatic Electric Pitch Trim • Altitude Selector/Alerter 	14.2	6.5

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Full Function Two Axis Autopilots – Roll & Pitch

NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>System Sixty-Two</p> <ul style="list-style-type: none"> • Lighted 3" Turn Coordinator • 3 ATI Panel Mounted Programmer • Remote Roll and Pitch Computers • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Altitude Hold with Altitude Trim • Course Intercept Capability <ul style="list-style-type: none"> • NAV Mode • Dual Mode - HDG/NAV or HDG/APR • VOR/LOC/GS/REV/GPS Coupling with 3 Gain Levels • VOR/LOC/GS/REV/GPS Course Deviation and NAV Flag Warning • Vertical Speed Command • Pitch Trim Annunciation • Flight Director Compatible <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Automatic Electric Pitch Trim • Altitude Selector/Alerter • GPSS Converter 	15.8	7.2

Full Function Two Axis Autopilots – Roll & Pitch


NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>System Sixty-Five</p> <ul style="list-style-type: none"> • Lighted 3” Turn Coordinator • Pedestal or Panel Mounted Programmer • Remote Roll and Pitch Computers • Panel Mounted Remote Annunciator • HDG Preselect & Hold (HDG SYSTEM NOT INCLUDED) • Altitude Hold with Altitude Trim • Course Intercept Capability <ul style="list-style-type: none"> • NAV Mode • Dual Mode - HDG/NAV or HDG/APR • VOR/LOC/GS/REV/GPS Coupling with 3 Gain Levels • VOR/LOC/GS/REV/GPS Course Deviation and NAV Flag Warning • Vertical Speed Command • Pitch Trim Annunciation • Automatic Pitch Trim • Flight Director Compatible <p>AVAILABLE OPTIONS</p> <ul style="list-style-type: none"> • Altitude Selector/Alerter • GPSS Converter 	19.5	8.9

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GPSS Converter & Autopilot Upgrade Kits

NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>GPSS Converter ST-901 GPSS Converter Available to convert all Cobham roll axis autopilots without integral GPSS to GPS Steering. Converts the heading channel of the autopilot to the GPSS Channel for roll steering capability. (REQUIRES A GPS NAVIGATOR WITH COMPATIBLE ROLL STEERING SIGNALS)</p>	0.3	0.14
Mod Kit Thirty	Contains all necessary components, hardware, and cables to upgrade a single axis System Twenty to a two-axis System Thirty.		
Mod Kit Fifty	Contains all necessary components, hardware, and cables to upgrade a single axis System Forty to a two-axis System Fifty. Includes factory upgrade of System Forty programmer.		
Mod Kit Sixty-One	Contains all necessary components, hardware, and cables to upgrade a System Sixty PSS to a two-axis System Sixty-Two. Includes factory exchange of programmer at no charge.		
Mod Kit Sixty-Two	Contains all necessary components, hardware, and cables to upgrade a single axis System Sixty-One to a two-axis System Sixty-Two. Includes factory upgrade of System Sixty-One programmer.		
Mod Kit Autotrim	Contains all necessary components, hardware, and cables to upgrade a Manual Electric Trim System to Autotrim. Autotrim upgrades are only available for System Fifty Five X, Sixty-Two, and Sixty PSS autopilots. NOTE: Autotrim is not STC'd on all aircraft models.		

Optional Equipment

NOTES: *Weight shown is the total of system major components. The weight of installation hardware and wiring harness are not included. System images not to scale.
 **This system requires an operating transponder & encoding altimeter or blind encoder.

UNIT	FEATURES AND FUNCTIONS	WEIGHT*	
		pounds	kilograms
	<p>SA-200 Altitude Pre-Selector (LCD) System Available on select models of System Fifty Five X autopilots. Contact Customer Support for compatibility information. Includes Altitude Pre-Selector and encoding altimeter indicator.</p>	3.2	1.5
	<p>ST-360 Altitude Selector/Alerter (LCD) System ** Available on System Fifty Five X, Sixty-Two, Sixty PSS, and Sixty-Five.</p>		
	<p>ST-670 Single Cue FD Interface For use with the System Sixty-Two & System Sixty-Five when interfaced with one of the following FD:</p> <ul style="list-style-type: none"> • P/N 01180 - King KI 256 or EFIS 40/50 • P/N 01180-1 - Collins 329B-7R 	1.3	0.6
	<p>Automatic Electric Trim Available where approved for System Fifty Five X, Sixty-Two and Sixty PSS. (Check STC listings).</p>		
	<p>Manual Electric Trim Available where approved for System Twenty, Thirty, Forty, Fifty, Sixty-One, Sixty-Two, and Sixty PSS. Also available without autopilot. (Check STC listings).</p>		
	<p>ST-500 HDG/CRS AC to DC CONVERTER</p>		
	<p>ST-645 Remote LCD Annunciator for System Fifty Five X</p> <ul style="list-style-type: none"> • P/N 01188 Non FD (Optional) • P/N 01188-1 Required with ST-361 Cobham FD • P/N 01188-2 Required with King KI 256 FD 		

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A guide to purchasing your Cobham autopilot

STEP ONE: Identifying installer, defining need and making a selection.

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Have you identified an authorized dealer for purchase and installation of your autopilot? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you requested references of recent installations by this dealer? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you visited with recent customers about their experience with the dealer? |
| <input type="checkbox"/> | <input type="checkbox"/> | Has your selected dealer inspected your aircraft? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you and the dealer discussed your normal flight profile? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you defined what functions you expect from your autopilot? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you and the dealer determined which products are FAA / STC approved for your aircraft? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you and the dealer discussed the functionality of each autopilot system? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you and the dealer discussed the functionality of available options for each system? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you and the dealer considered your panel layout and space constraints? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you and the dealer discussed the interface requirements of the autopilot and options to your current or proposed avionics and flight instruments? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you made a selection from the STC approved autopilots and options? |

STEP TWO: Preparing for the installation.

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Have you received a quote for the purchase and installation? |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you discussed any scheduling issues and notified the dealer of any potential schedule issues? i.e. Business trips which must be completed. |
| <input type="checkbox"/> | <input type="checkbox"/> | Have you planned / budgeted for installation delays or equipment interface issues? |
| <input type="checkbox"/> | <input type="checkbox"/> | If the dealer identified any previous STC modifications which might affect the autopilot installation or autopilot performance, has it been resolved? |
| <input type="checkbox"/> | <input type="checkbox"/> | Has your aircraft been mechanically inspected to verify control system rigging, cable tensions, control system friction, static system integrity, etc? |

When all the answers are "Yes" you're ready. Congratulations!

STEP THREE: Placing your order with your selected dealer.

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Have you called your dealer and placed an order for your new Cobham autopilot? |

**If you need assistance with answers to any of these questions feel free to contact us at:
Cobham Avionics, Integrated Systems Customer Support: (800) 872-7832 or (817) 215-7600**

Our STC Directory and Dealer List is on our website: www.cobham.com/avionics



¹ Cobham is the industry leader in General Aviation autopilots. We have become the leader because we work very hard responding to the needs of the aircraft owner. In all aircraft, old or new, the panel space required for the autopilot is a consideration in an avionics upgrade. That's precisely the reason we offer systems with similar features and functionality in more than one configuration.



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