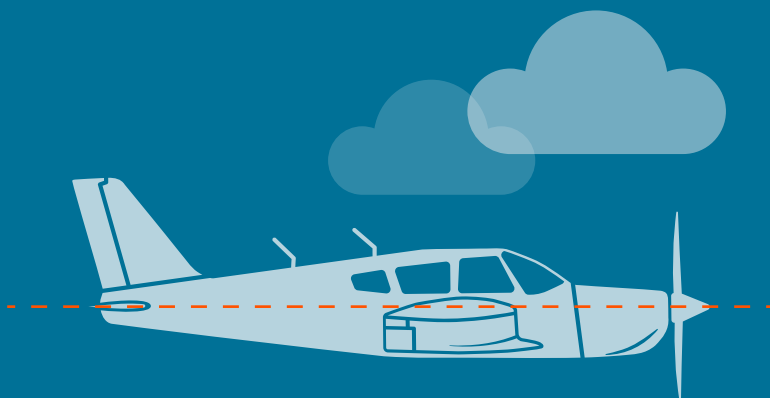


October 2026



AUTOPILOTS & ELECTRIC TRIM



CAP 3274

Your safety sense leaflet for: **Autopilots and electric trim**

This Safety Sense Leaflet (SSL) highlights key issues with the use of autopilot and electric trim systems in General Aviation (GA) aircraft, including the checking of correct system function and handling abnormal events such as a 'trim runaway'.

Effective use of electric trim and an autopilot can reduce pilot workload and increase safety. However, these aircraft features do bring additional risks that must be managed appropriately.

There is a diverse range of equipment installed across the GA fleet, so it is important that you undertake appropriate differences training or familiarisation applicable to the system in your aircraft. The appropriate knowledge and competencies are detailed in the leaflet, as well as occurrence reporting requirements.

Introduction

Electric trim systems and autopilots are increasingly common in GA aircraft. They are designed to reduce pilot workload, enhance safety, and improve situational awareness for both VFR (Visual Flight Rules) and IFR (Instrument Flight Rules) flying.

The electric trim function and/or autopilot are normally integrated into other aircraft systems, such as flight controls, instruments, avionics and pitot-static. Appropriate inspection, maintenance, and pilot training are therefore required to ensure safe operation.

There is considerable variation in the design and capability of autopilot and electric trim systems across the GA fleet, with systems often having fewer layers of protection from malfunction than those found in transport-category aircraft. This makes early detection of faults, and a prompt pilot response, particularly important.

Electric trim

The benefit of an electric trim system is that it allows you to alter the trim position of the elevator control surface quickly and accurately, normally via a switch mounted on the control column. An electric motor moves the trimming surface, avoiding the need to move the trim control manually – particularly useful when one hand is intended to be on the throttle or power lever. It is possible for the rudder and ailerons to be equipped with electric trim, although in most GA aircraft it is only fitted to the elevator control.



Autopilots

Autopilots installed in GA aircraft range from simple 'wing levellers' to multimode digital systems with features normally found in larger aircraft. Use of an autopilot can improve safety, particularly in reducing workload and allowing for more focus on navigation or lookout during flight. However, you must monitor the autopilot to ensure it is maintaining the intended flightpath, intervening if required.

Most GA autopilots with an 'altitude hold' function are installed in conjunction with an electric pitch trim system, enabling the autopilot to move the trim surface without pilot input. This allows control loads on the autopilot servos to be reduced and ensures that when the autopilot is disconnected, the pilot is not presented with excessive control forces or changes in aircraft attitude. However, an autopilot malfunction may cause control difficulties, particularly in pitch.

Training

You are required to receive differences training or conduct familiarisation, appropriate to the aircraft and systems installed. Differences training requires theoretical knowledge instruction and training in an aircraft or appropriate training device, delivered by an appropriately qualified instructor.

Familiarisation requires the acquisition of additional knowledge relevant to the new type or variant. This may be achieved with the assistance of an instructor, another pilot experienced on type, or by self-study. Familiarisation is only sufficient where differences training is not required. Refer to [AMC1 FCL 725\(a\)](#), [GM2 FCL 710](#) and Chapter 2 of Part 2 of Schedule 8 of the [ANO 2016](#).

For all training or familiarisation, reference should be made to the relevant Aircraft Flight Manual (AFM) or Pilot Operating Handbook (POH). Details would normally be found in the chapters for normal procedures, emergency procedures and system description. If installed as additional or optional equipment, the electric trim or autopilot should have an associated AFM/POH supplement.

Differences training or familiarisation should cover:

Electric trim

- > Pre-flight checks
- > Normal operation
- > Identification of system failures
- > Handling a trim runaway
- > Maintaining control of the aircraft

For the trim runaway scenario, you should know the most effective way to disable the system, for example pulling the appropriate circuit breaker.

Autopilots

- > Pre-flight checks
- > Correct engagement and disengagement
- > Flightpath management in different modes
- > Identification of system failures
- > Maintaining control of the aircraft

Autopilots in GA aircraft vary considerably in capability and reliability. Always monitor the flightpath and ensure you understand which modes are engaged – most autopilots do not include any stall protection function. Where the autopilot is installed in conjunction with an electric trim system, understand how the systems are connected.

You could also practice trim runaway and autopilot abnormal procedures during your biennial refresher training flight with an instructor.



Case study

A pilot and one passenger departed from their home airfield and flew to a small, unlicensed strip. During this flight, the pilot noticed repeated autopilot trim warnings. Each time the warning appeared, the manual trim wheel became locked, but the pilot was able to correct the issue using the electric trim switch, which also disengaged the autopilot. The pilot also observed that the autopilot's altitude-hold function was performing less accurately than usual.

After leaving the unlicensed strip, they continued to a larger airport to refuel without any handling difficulties. The pilot believed the aircraft would have been trimmed slightly nose-up on landing due to the fuel load. After refuelling, he taxied toward the departure runway, pausing twice to complete pre-takeoff checks and to wait for another aircraft on final approach.

Once cleared, the pilot lined up and began the takeoff roll. The early part of the takeoff appeared normal. At around 70 knots, the pilot attempted to rotate but found the control column immovable, as though pitch control was being restricted. With runway remaining, the pilot chose to reject the takeoff.

At an estimated 100 knots, he closed the throttle — at which point the aircraft unexpectedly lifted off and climbed to roughly 20 feet.

Once airborne, the pilot could not maintain a nose-up attitude, and the aircraft descended rapidly, striking the runway nose-first. Witnesses reported multiple bounces before the nose landing gear failed, causing the aircraft to settle on its nose structure. Despite braking and steering inputs, the aircraft veered to the right during the deceleration. At about 40 knots it left the paved surface, the damaged nose gear dug into soft ground, and the aircraft overturned.

The investigation identified an intermittent fault with the autopilot system which might have contributed to the elevator trim moving towards the nose-down position. This would have likely been undetectable by the pilot unless he was looking at the trim wheel as it moved. The investigation could not determine why the autopilot might have been engaged for the takeoff roll. It highlighted the need for the predeparture checks as well as the need for differences training/familiarisation.



Risk management

Pre-flight checks

- > Review Aircraft Flight Manual (AFM)/ Pilot Operating Handbook (POH) paying particular attention to the autopilot and trim limitations and emergency procedures. In some cases, there can be several ways to disengage the trim system.
- > Vital actions should be committed to memory and capable of being carried out rapidly in an emergency. The location of any relevant circuit breaker should be known and quickly identifiable.
- > Coloured caps or similar visual aids may assist in identifying relevant circuit breakers. These should only be fitted in accordance with manufacturer instructions and maintenance requirements.
- > As systems may vary between specific aircraft, you should ensure that you review any specific supplement within the AFM/POH that contains information on the autopilot/trim system fitted to that particular aircraft and all procedures concerned.
- > Confirm autopilot/trim disconnect and trim system serviceability and operation during pre-flight checks (on both control yokes if fitted). This may also include any pitch trim warning light and the servo override clutches.
- > No autopilot or electric trim system should be utilised if there is any doubt of the equipment's serviceability.
- > Prior to takeoff, check that the electric trim motor moves the trim wheel and trim position indicator through the full range of movement. If possible, verify that the trim position indicator is synchronised with actual trim position.



What is a trim runaway?

A significant risk associated with electric trim is that in the event of a malfunction, a rapid and uncommanded movement of the trim surface may occur – known as a 'trim runaway'. This may result in extreme changes to aircraft attitude and associated loss of control, recovery from which may not be possible. Both faults with the trim system or autopilot may cause a trim runaway scenario. It is also possible for trim faults to be more subtle, presenting you with an undesired trim position at a potentially critical phase of flight.

Immediate actions to take in the event of a trim runaway

- > Disconnect autopilot/trim system immediately using the control column switch or panel control to stop the unintended input.
- > If the disconnect switch fails to cut the electrical power to the autopilot/trim system, immediately follow the relevant trim emergency procedure detailed in the AFM/POH, which on some aircraft types may include pulling relevant circuit breaker(s).
- > Manually retrim and stabilise the flightpath before troubleshooting, using any applicable checklist from the AFM/POH.

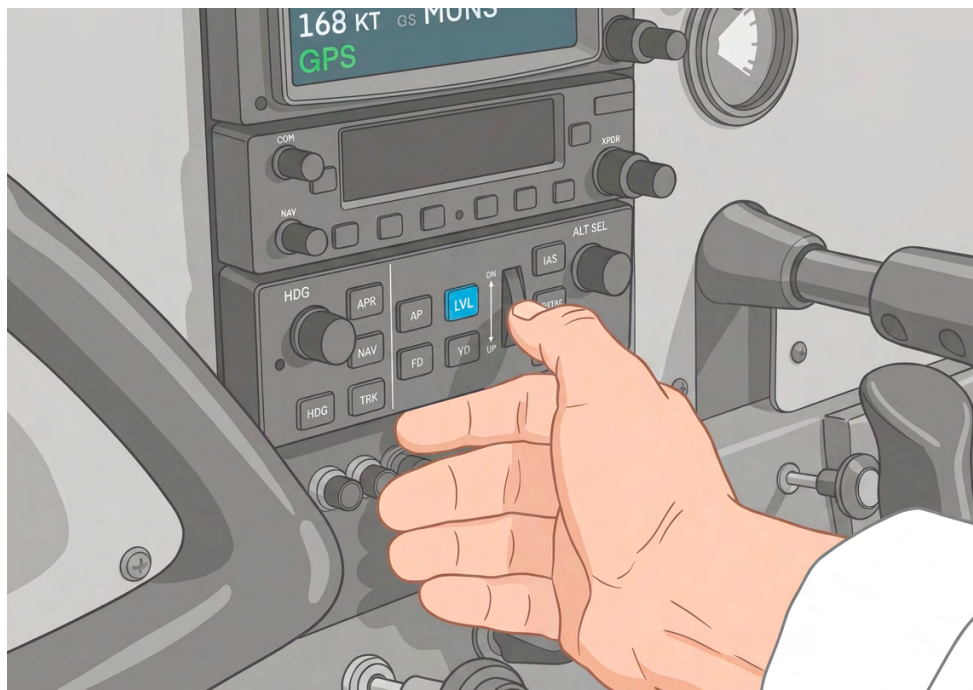
In-flight

- > Maintain active monitoring when autopilot is engaged, especially during climb and descent.
- > Autopilots often have multiple modes (e.g. heading, NAV and approach). Understanding all modes is key to preventing unexpected flightpath deviations.
- > Be alert to signs of malfunction, including unexpected pitch changes, heavy control forces, continuous trim wheel movement, or uncommanded trim motor activation. Consider a trim runaway scenario.
- > Be prepared for an autopilot disconnect scenario at any time, using cues such as aural alerts and annunciators, and be ready to manually fly the aircraft. Common causes include turbulence, electrical issues, and trim malfunctions.

Airworthiness

Owners, operators, and organisations managing GA aircraft fitted with autopilot or electric pitch trim systems should ensure:

- > The autopilot system configuration complies with manufacturer data and the AFM/POH.
- > The Aircraft Maintenance Programme includes required servicing and functional checks.
- > All defects are rectified or properly deferred in accordance with regulations.
- > Unserviceable systems are deactivated or removed in accordance with manufacturer guidance.



Case study

A Cessna 182 was cruising at FL100 over a mountainous area with the autopilot engaged in altitude hold and navigation modes. The pilot noticed a rapid loss of airspeed, accompanied by an increase in pitch as the autopilot maintained the assigned altitude.

As the speed decreased through 80 kts, the pilot disconnected the autopilot and lowered the nose, concerned that the aircraft would otherwise stall. A positive push forward on the control column was

necessary since the autopilot had already applied significant nose up trim. All engine indications remained normal.

Suspecting that the aircraft had entered descending air caused by 'mountain wave' activity, the pilot reported to ATC that they could not maintain altitude. A lower level and alternative routing away from terrain was then requested, and the remainder of the flight proceeded normally.



Reporting

Pilots should submit a Mandatory Occurrence Report (MOR) for any autopilot or trim malfunction.

They should also ensure they report any defects found to a maintenance organisation for further investigation.

Further information can be found in our [Occurrence reporting for General Aviation SSL](#).



Guidance material

More guidance on trim runaway/autopilot can be found on our [trim runaway webpage](#) and should be used in conjunction with this SSL.