HeliSAS®

Autopilot and Stability Augmentation System
for helicopters

COBHAM

The most important thing we build is trust

REDUCE PILOT WORKLOAD

When autopilot mode is engaged, other cockpit duties can be performed hands-free

CONFIDENT COMMAND

Autopilot can be commanded to maintain heading and altitude or navigation course and altitude

AUTO RECOVERY

Automatically recover to a neutral attitude simply by releasing the cyclic

LIGHT HELICOPTERS

Designed and priced specifically for light-to-medium helicopters

Cobham Avionics

HeliSAS®
Lightweight, easy to install, affordable, expandable

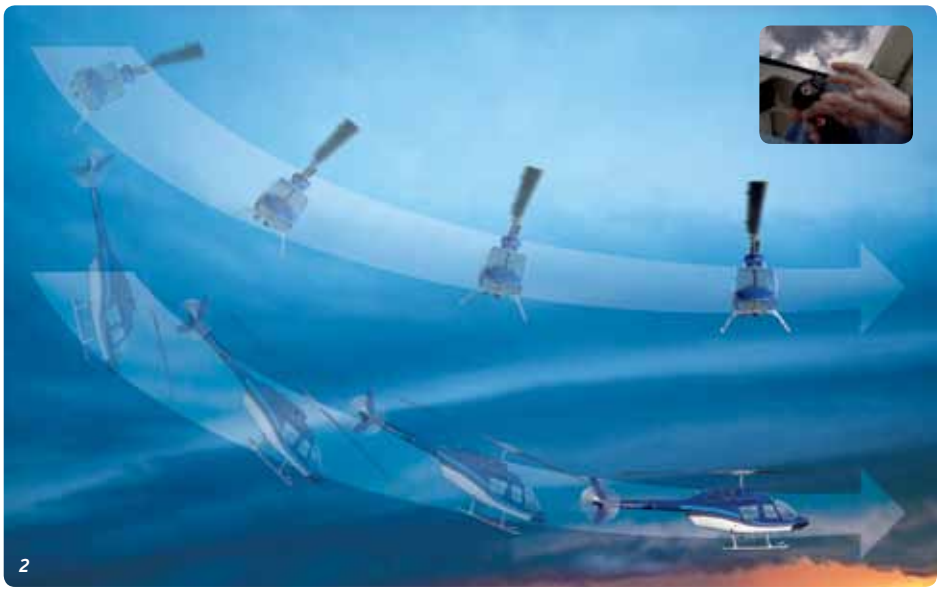
1 Until now, autopilots were practical only in military or large commercial helicopters. But, at a far lighter weight and priced affordably, the HeliSAS® provides unparalleled safety and pilot workload reduction through enhanced stability for lighter helicopters. The HeliSAS makes hands-off operations, autopilot procedures and automatic attitude recovery possible.

HeliSAS

The designers of the HeliSAS® Autopilot and Stability Augmentation System have a long history of research and development of flight control systems for civilian and military helicopters. Now Cobham makes the tremendous safety and workload reduction advantages of stability augmentation—once reserved for military and transport category helicopters—available for a wide range of rotorcraft models.

The HeliSAS stability augmentation system is designed to be engaged at all times—"SAS on" before takeoff and "SAS off" after landing—to provide unmatched stability and ease of handling. It dramatically reduces pilot workload while providing precise control during all modes of flight, regardless of wind conditions or shifts in weight

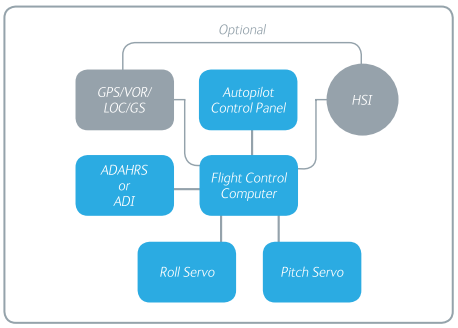
The attitude stabilization and force feel features enhance handling characteristics and mitigate inadvertent cyclic control inputs that could result in dangerous attitudes. The pilot may override the HeliSAS at any time with manual cyclic inputs. In cases where a pilot may lose visual reference due to limited visibility conditions, releasing the cyclic causes the helicopter to automatically return to a near-level attitude. With the HeliSAS Autopilot and Stability Augmentation System, Cobham sets a new standard in helicopter safety.



2 The HeliSAS will automatically recover to a neutral attitude when the cyclic is released.

3 *In situations like whiteouts or brownouts where a pilot may lose visual reference, the HeliSAS is invaluable in maintaining correct attitude.*

4 *The roll trim limits are +5° to -5° and the pitch trim limits are +11° and -6°. This ensures that the pilot cannot inadvertently trim into an unusual attitude.*



Stability Autopilot + Augmentation System

The HeliSAS Autopilot and Stability Augmentation System provides a number of workload reduction and safety enhancements:

- **Significant stability improvement.** Pilots with no helicopter experience have successfully hovered a HeliSAS-equipped helicopter with very little practice.
- **Automatic recovery to near-level flight.** If the helicopter is inadvertently flown to an extreme attitude, releasing the cyclic when the HeliSAS is engaged will automatically return the helicopter to a near-level attitude (roll trim limits are +5° to -5° and pitch trim limits are +11° and -6°).

The autopilot system provides many of the functions found in very heavy, expensive helicopter autopilots, but at a fraction of the cost and weight. The following descriptions* refer to the control panel pictured below:

- **SAS.** This is the system engagement button. SAS provides attitude stabilization at all speeds.
- **HDG.** Selects the desired heading the pilot wants to fly. If a Horizontal Situation Indicator (HSI) is installed, HeliSAS will fly to and maintain the heading selected by the heading bug. If there is no HSI, the HDG function will maintain the existing GPS track.
- **NAV.** The active GPS, VOR, or Localizer course will be automatically intercepted and tracked when NAV is engaged. VOR and Localizer coupling require an HSI. GPS does not.
- **BC.** HeliSAS will intercept and fly a back course localizer approach (requires an HSI).
- **ALT.** Maintains the existing altitude for an indefinite period.
- **VRT.** Vertical navigation allows automatic flying of ILS glide slope or GPS VNAV if a WAAS-enabled GPS is installed. Both functions require an HSI.

6 *The HeliSAS autopilot integrates with the graphic Flight Management System of the Cobham EFIS. Autopilot functionality includes:*

- *Altitude*
- *Heading hold*
- *Track GPS course*
- *Track VOR*
- *Track ILS*
- *Backcourse localizer*
- *VNAV approach with WAAS-capable GPS*
- *VNAV enroute with Cobham EFIS*

5 *The HeliSAS® control panel is pictured here at its actual size of just 5.75" x 0.75". The unit weighs 0.48 pounds. NOTE: All functions can be used in flight at airspeeds above 44 knots.*

Cobham HeliSAS® Autopilot and Stability Augmentation System

System Overview

- System consists of only seven primary components:

1. Digital Flight Control Computer
2. HeliSAS Control Panel
3. Attitude Gyro or ADAHRS
4. Pitch Servo
5. Roll Servo
6. Cyclic Control Buttons
7. Installation Kit

1. Digital Flight Control Computer

- Functions as SAS computer
- Provides attitude hold function

2. HeliSAS Control Panel

- Installed with full autopilot, provides the functions of:
  - HDG: Heading Select and hold
  - ALT: Altitude hold
  - NAV:
    1. VOR intercept and tracking
    2. Localizer intercept and tracking
    3. GPS intercept and tracking
    4. BC: Localizer backcourse tracking
  - VRT:
    1. Glide slope intercept and tracking
    2. VNAV

3. Attitude Gyro or Air Data / Attitude and Heading Reference System (ADAHRS)

- Attitude gyro is panel-mounted
- Cobham ADAHRS is installed with integrated system (display and HeliSAS)

4. Pitch Servo

- Controls aircraft rotation about its lateral axis
- Provides cyclic stick anchoring (position holding) with "SAS On"
- Provides artificial force gradient and re-centering when cyclic is displaced from anchor point

5. Roll Servo

- Controls aircraft rotation about its longitudinal axis
- Provides cyclic stick anchoring (position holding) with "SAS On"
- Provides artificial force gradient and re-centering when cyclic is displaced from anchor point

6. Cyclic Control Buttons

- Existing cyclic control can be used in most cases
- A trim button is required
- An autopilot / SAS release/engage button is required

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