

No: 12/89

Ref: EW/G89/09/05

Category: 1c

**Aircraft Type and Registration:** Piper PA-34-200-2, G-BASM

**No & Type of Engines:** 2 Lycoming IO-360-C1E6 piston engines

**Year of Manufacture:** 1973

**Date and Time (UTC):** 14 September 1989 at 2045 hrs

**Location:** Southend Airport

**Type of Flight:** Continuation training

**Persons on Board:** Crew - 2 Passengers - None

**Injuries:** Crew - None Passengers - N/A

**Nature of Damage:** Damage to nose cone and nose landing gear doors

**Commander's Licence:** Commercial Pilot's Licence

**Commander's Age:** 60 years

**Commander's Total Flying Experience:** 8,809 hours (of which 350 were on type)

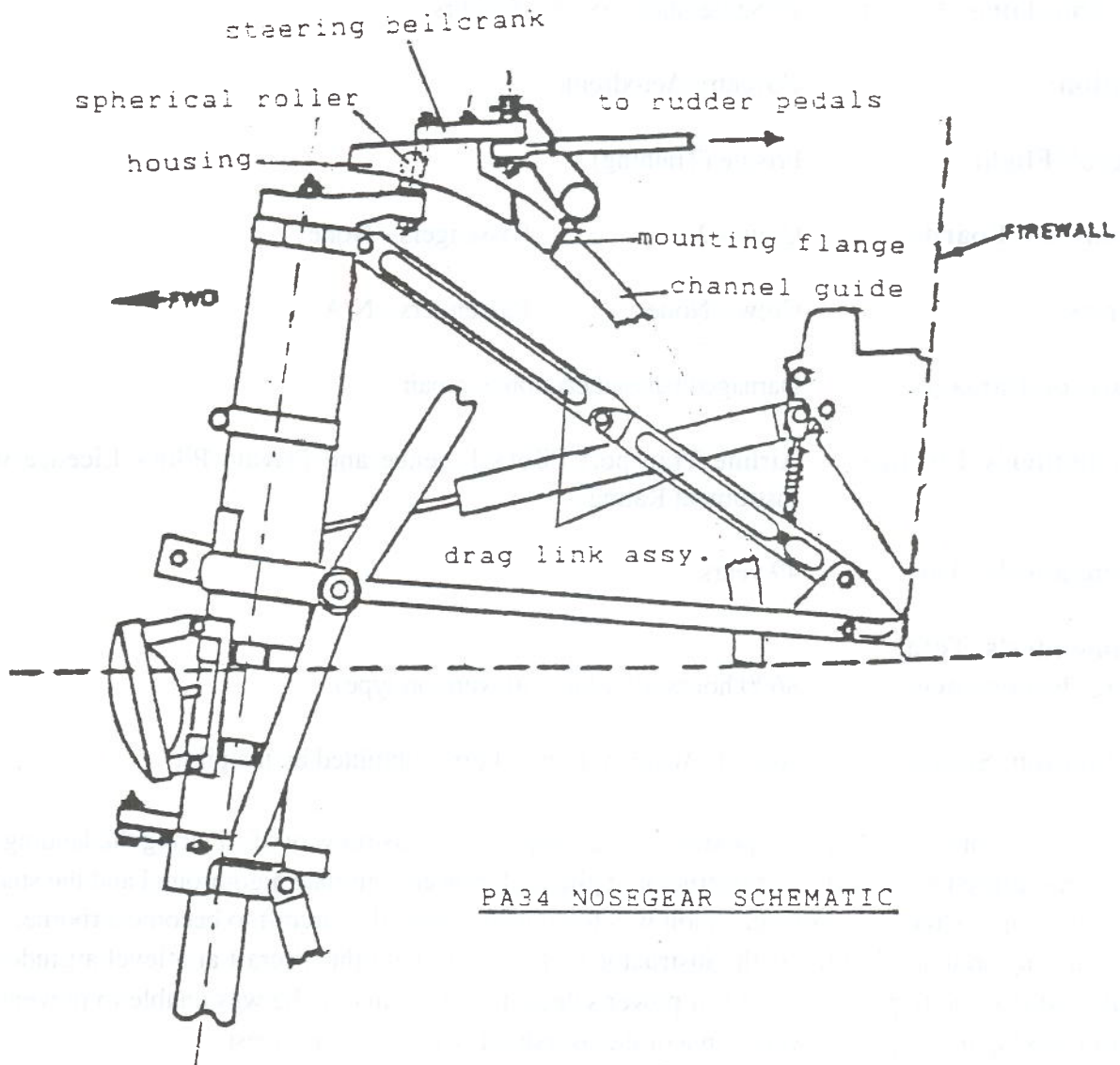
**Information Source:** Aircraft Accident Report Form submitted by the pilot and AAIB examination of aircraft

The aircraft was engaged on a training detail from RAF Wattisham when the nose landing gear green light failed to illuminate following a "down" selection of the landing gear. The emergency landing gear lowering system was operated, but without success. The commander then decided to divert to Southend where the airport emergency services were alerted. The aircraft made a normal touchdown on its main wheels but subsequently settled onto its nose. There was no fire. The crew, who were uninjured, were able to leave the aircraft via the normal exits.

Subsequent examination of the nose landing gear revealed that the spherical roller on the steering arm had not been running within the channel guide during the previous retraction cycle (see attached diagram). Nosewheel steering on this aircraft is effected by means of a housing, attached to the steering bellcrank, operating on the spherical roller. The housing (Piper Part No 95394-00) is fabricated from mild steel and its rear aperture is approximately the same section as, and positioned adjacent to, the top of the channel guide. Thus when the gear is retracted with deflected rudder (and hence nosewheel) the roller is fed into the channel guide in order to align the noseleg. It was apparent in this case that one of the welds had cracked allowing the sides of the housing to open out under the lateral pressures of the roller. The situation had eventually arisen where the rear of the housing had opened up sufficiently to allow the roller to miss the entrance to the channel, and to run instead along its right hand side. A

mounting flange, which attached the channel guide to a cross member, had clearly impeded the roller during the last retraction, and it was this that had caused the roller to jam at the next extension. This would have resulted in the nose leg remaining some 20° short of its locked down position, at which point the drag link assembly would not have over-centred.

It was evident that the crack in the housing had been present for some time. It is considered likely that it had resulted from a combination of heavy rudder pedal action (with the aircraft on the ground), nosewheel "shimmy", castoring forces and operation on rough ground.



PA34 NOSEGEAR SCHEMATIC