

Developing the Main Landing Gear

Memories of the TSR.2 years takes us all back a long way. For me it was to my four years as a junior design draughtsman at Weybridge devoted to the detail design and through to manufacture, build and proving of the Main Landing Gear. It was fertile ground for a beginner, bringing together as it did, prime structure, exotic materials, oleo shock absorber, mechanisms, locks, hydraulics, wheels, tyres, brakes, electric fans and w.h.y..

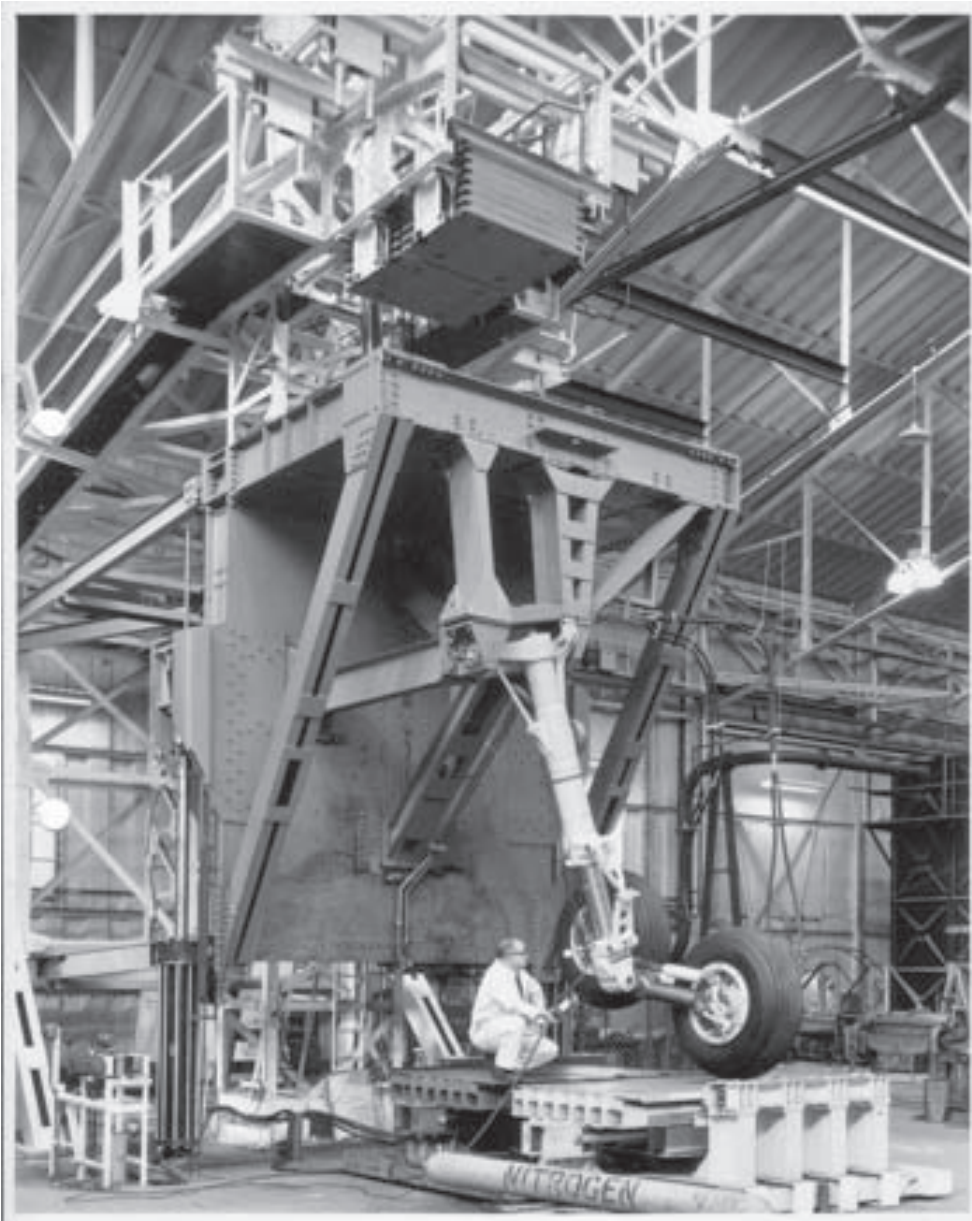
Design on TSR.2 Main Gear was headed by Stan Heath within George Aylesbury's landing gear design group with about four of us designers. Stan was a transferee from Supermarine and so I was constantly told how Joe Smith (one time Chief Designer there) would have organised the Type 571.

At my level in the D O, contact with Warton was limited to redirecting mail delivered to Stan but intended for B O Heath. The main outside contact came to be with Electro-Hydraulics at Warrington as the landing gear manufacturing sub-contractor. The old axiom in design for production was "if you can draw it they can make it" and EH proved themselves in that respect with a bit of liaison and support (ah the joys of Warrington).

The geometry of the landing gear was complex in order to stow the leg and huge low-pressure tyres in the space available. All the main components were primary structure so design proceeded only with the collaborative blessing of the Stress Office (Bill Jones in particular). When the main oleo leg was first fitted to the fuselage it was discovered that there was a foul between the pintle and the outer support beam preventing the leg to retract. I seemed to be the only designer about at the time so was summoned to solve the problem.

Fortunately, however, Henry Gardner (Weybridge Technical Director?) was quickly on the scene and with the vision of long experience I supposed, marked with a pencil where the offending metal should be removed. And so it was and the Stress Office dutifully blessed the amendment in due course.

Early in the design process a small model of the main landing gear was tested in a wind tunnel at Weybridge to determine the natural attitude of the bogie when lowered into the slipstream. This indicated the bogie self rotating to a front-wheel-up position and so the bogie assembly was designed accordingly.



Alas, reality proved otherwise resulting in the tip-toe horror when the undercarriage was first raised and lowered in flight. An urgent solution was devised.

Landing gear performance had been tested on the drop test rig (*pictured opposite, left*) constructed at Weybridge. The proof tests with maximum descent velocity and wheels spinning back at landing speed were quite fearsome to see with the massive gear shaking like a jelly on impact. But it worked.

With the basic design coming to fruition in late-1964, my thoughts of a career led me to make a move to a new landing gear group at Hawker Siddeley Dynamics at Hatfield. There, the main focus was on a landing gear for the AW.681. Six months later of course that project was cancelled along with TSR.2 and the Hawker P1154. The end of an era.

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