Tail Drive Test Rig

CAPABILITY SHEET · THE CORNER TAKES MORE THAN TORQUE. · A BEDPLATE, A DRIVE, A TORQUE LOOP, AN OUT

THE ONE IDEA

PRINCIPLE	The corner takes more than torque.
WHY IT MATTERS	A bevel pair pushes its gears apart as the torque rises, and the tail rotor pulls and bends the output shaft out at its end, so the near bearing carries more than the load itself.

THE RIG

BEDPLATE AND DRIVE	A stiff bedplate that keeps the shafts in line under load, a drive motor with a speed stage, and torquemeters in the shafts.
LOOP	A torque loop that puts the corner back with a second gearbox, angle drives or belt drives, so the drive pays only the losses.
OUTPUT LOADER	Actuators that put the thrust and the bending of the tail rotor on the output shaft with the torque, and a stand-in for the tail shaft.
OIL AND TRIPS	Oil, temperature, vibration and chips watched, with trips that work apart from the controller, and guards with interlocks.

THE METHOD

ORDER	Duty, bedplate and drive, loop and corner, output loading, oil and trips, build and prove. The output loading and the trips are the two that a quick job skips.
LIMITS	Torques, speeds, powers, forces and sizes come from the customer's duty, and are not printed here.

CONFIGURATIONS

INTERMEDIATE	An intermediate gearbox rig: a loop with the same angle put back, and a stand-in shaft on each side.
TAIL	A tail gearbox rig: a right-angle corner put back, and an output loader for thrust and bending.
COMBINED	A combined tail drive rig: both gearboxes and the shaft between, in one loop.

STANDARDS & SCOPE

REFERENCE	Public reference: 14 CFR 29.923, for the endurance tests of rotor drive systems.
SCOPE BOUNDARY	It is the tail drive test rig: not a main gearbox rig, not a gearbox test bench and not a rotor dynamics rig.
STATUS	Neometrix engineers helicopter tail and intermediate gearbox test rigs to order, and no delivered helicopter tail and intermediate gearbox test rig is claimed.

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