Shock Tube Test Facility

CAPABILITY SHEET · A SHOCK TUBE MAKES A PRESSURE STEP YOU CAN CALCULATE. · A DRIVER, A SCORED DIAP

THE ONE IDEA

PRINCIPLE	A shock tube makes a pressure step you can calculate.
WHY IT MATTERS	The speed of the shock fixes the jump in pressure by the ordinary gas laws, and the speed is timed between sensors a known distance apart, so the step is calculated and not measured by the sensor under test.

THE FACILITY

DRIVER AND DRIVEN	A driver at a high pressure and a long driven section at a low pressure, joined at a diaphragm station, with the tube made straight, smooth and sealed.
DIAPHRAGM	A scored diaphragm that opens in petals, evenly and the same way every shot, in a station that clamps it flat and changes it quickly.
GAS AND VACUUM	A driver gas system, a driven gas system and a vacuum system, brought to their levels in a set filling order, with a purge and a vent path.
SENSORS AND TIMING	Side-wall sensors at known distances that time the shock, an end-wall sensor that takes the step, and a fast acquisition chassis that records them.

THE METHOD

ORDER	Duty, tube and diaphragm, gas and vacuum, release, sensors and timing, build and prove. The diaphragm and the filling order are the two that a quick job skips.
LIMITS	Pressures, speeds, times and lengths come from the customer's duty, and are not printed here.

CONFIGURATIONS

CALIBRATION	A calibration shock tube: a compact tube with an end-wall sensor port and a row of timing sensors.
RESEARCH	A research shock tube: a longer driven section with extra ports, a window and a sampling port.
TEST SECTION	A shock tube with a test section: the tube opens through a nozzle for a short run of fast flow.

STANDARDS & SCOPE

REFERENCE	Public reference: ISA-37.16.01, a guide to the dynamic calibration of pressure transducers.
SCOPE BOUNDARY	It is the shock tube test facility: not a mechanical shock machine, not a wind tunnel and not a pressure regulation system.
STATUS	Neometrix engineers shock tube test facilities to order, and no delivered shock tube test facility is claimed.

DEFENCE PROGRAMMES DESK

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