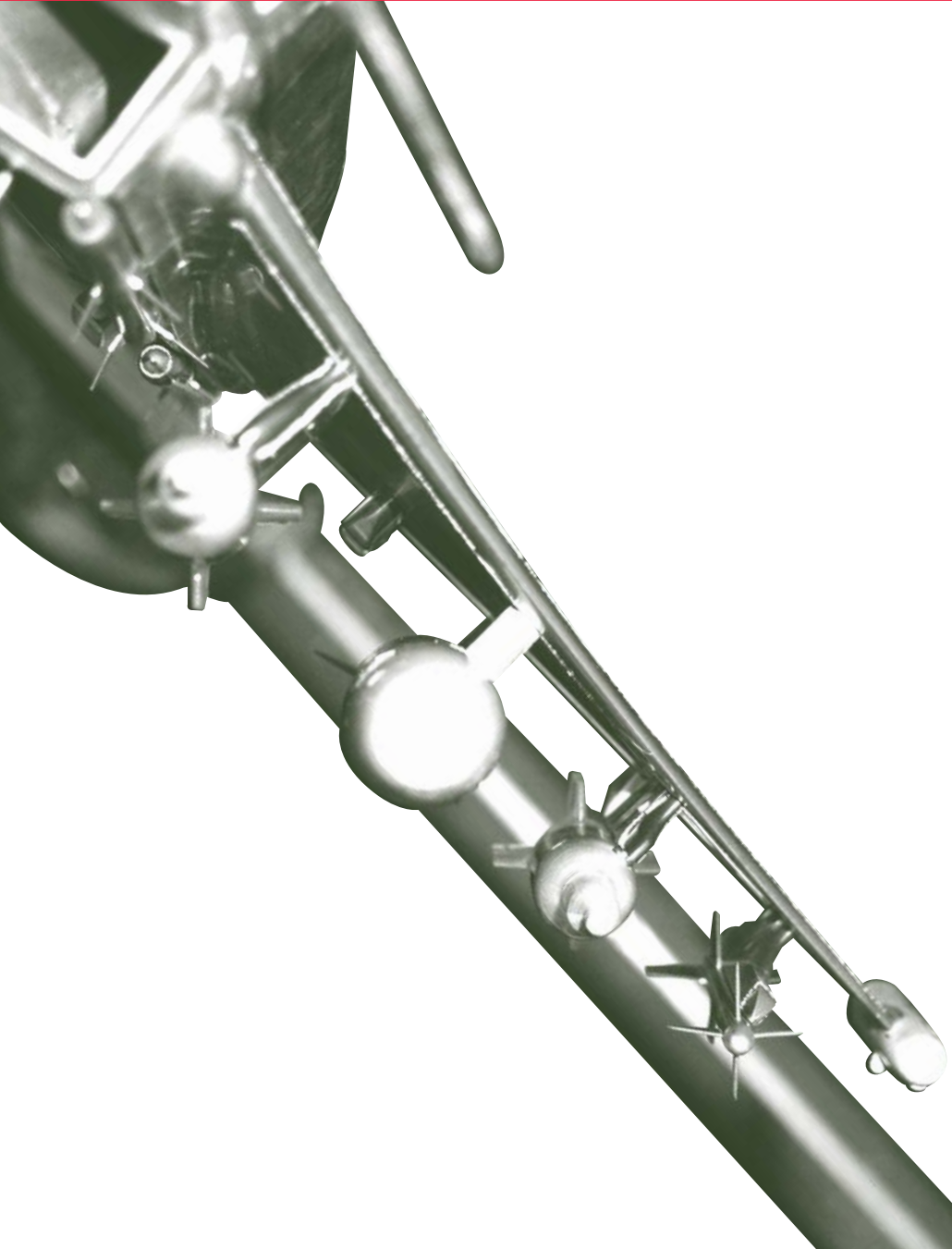


Aerodynamic Test 1.2m High Speed Wind Tunnel



Introduction

The 1.2m High Speed Wind Tunnel (HSWT) is an intermittent Trisonic blowdown type, operating from a storage pressure of 4,200 kPa and exhausting to atmosphere.

The tunnel is capable of variable Reynold's number testing over a Mach number range 0.4 to 3.8.

The tunnel has been utilised extensively to support Typhoon development, including specialised intake, afterbody and live store tests.

The facility also has the capability to simultaneously pitch and roll missile models, delivering high levels of productivity.



Aerodynamic Test

1.2m High Speed Wind Tunnel

1.2m High Speed Wind Tunnel

Performance

| | | | | | | |
|----------------------|---|---------|---------|---------|---------|---------|
| Speed range | Subsonic/Transonic Mach 0.40 to 1.14 Supersonic Mach 1.40 to 3.80. | | | | | |
| Run time | Up to 30 seconds. | | | | | |
| Temperature | Ambient (passive heat store mass). | | | | | |
| | M | 0.4 | 0.9 | 2.0 | 3.8 | |
| Total pressure range | Pt | 1.4-3.3 | 1.4-4.7 | 2.1-5.5 | 5.7-9.7 | bar |
| Reynolds no. range | Re/m | 13-29 | 20-70 | 22-71 | 45-52 | million |

Working Sections – tandem

| | |
|------------|---|
| Transonic | 1.22m x 1.22m, perforated walls 22% open area, Mach number control by 2nd throat and Mach flap. |
| Supersonic | 1.22m x 1.22m, solid walls, Mach number control by flexible plates in nozzle (top and bottom). |

Model Support

| | |
|---------------|---|
| Sting Mounted | 30° alpha traverse range at up to $\pm 15^\circ$ beta offset. |
| Floor Mounted | 50° alpha traverse range. |

Special Rigs

| | |
|----------------|---|
| Rolling sting | Unique simultaneously rolling and pitching missile test technique. |
| Intake flow | Static, dynamic pressures, distortion, flow angles. |
| Afterbody drag | Measurements up to Mach 2, full-scale jet pressure ratios. Mass flow rates up to 2kg/s. |

Test Support

In house wind tunnel design and manufacture capability.

Data Acquisition

The facility contains a flexible data acquisition system that can accommodate a wide variety of sensors.

Compact pressure scanning hardware is also available that can provide over 1000 pressure measurements.

Data Processing

In house software support.

Outputs

| | |
|--------------------|---|
| Data | Networked user friendly plotting software. |
| Flow visualisation | Shadowgraph, schlieren, video, and fluorescent oilflow. |



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