

MATRIX TEST FACILITY

ASSURED PERFORMANCE



LIGHTER · STRONGER · SMARTER

HYPERBARIC TESTING

Matrix's hyperbaric test facilities are a key component of our production process, and have been so for over 10 years. Operating within Matrix's ISO 9001 system and other international standards, such as those prescribed by the American Petroleum Institute, the facility uses state of the art control algorithms and software logging tools to ensure precise control and high quality test data results.

Matrix's standard tests include:

- Uplift determination
- Water ingress
- Instrumented buoyancy loss
- Hyperbaric compression and creep
- Hyperbaric collapse
- Bulk modulus
- Buckle arrestment performance
- Subsea controls testing
- Valve testing
- Variable temperature testing

The facilities are supported by a 40-tonne crane that also services 300 m² of working space with heavy vehicle access. Consequently, large structures can be easily carried

directly to the workspace, unloaded, instrumented and loaded for testing in the same undercover area.

The Matrix facility is licensed to carry out hyperbaric testing up to 5,200 metres sea water.

**LARGEST
HYPERBARIC
CHAMBER IN
THE SOUTHERN
HEMISPHERE**

HYPERBARIC CHAMBERS

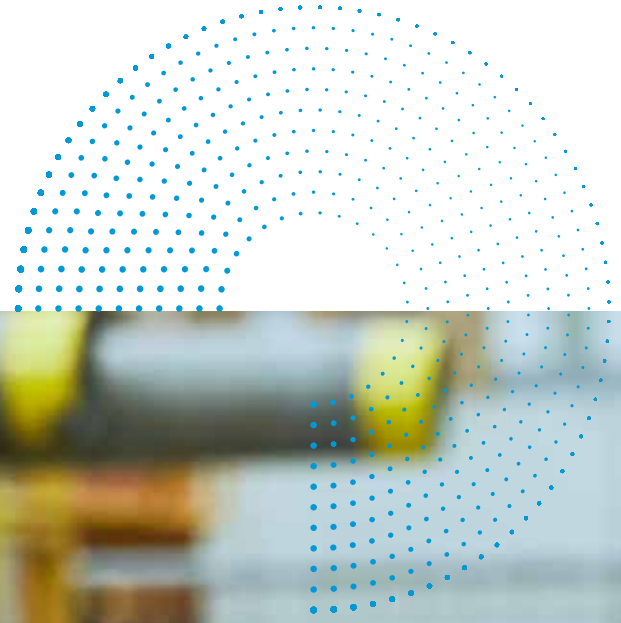
Matrix operates a suite of 11 hyperbaric chambers in a variety of sizes, with internal dimensions ranging from Ø0.1 X 0.2 m (max 45MPa) to Ø1.6 X 6.4m pressurised up to 52 MPa . The chambers are fully instrumented and capable of recording pressure, buoyancy loss and temperature changes over time.

The chambers have been designed with spare penetrations to facilitate functional testing of client-supplied equipment, such as cameras in chambers S2, S3, S4 and S5, during the pressure test. All chambers are orientated vertically to facilitate loading and unloading via our 40-tonne crane, with larger chambers mounted underground for safety and environment stability.

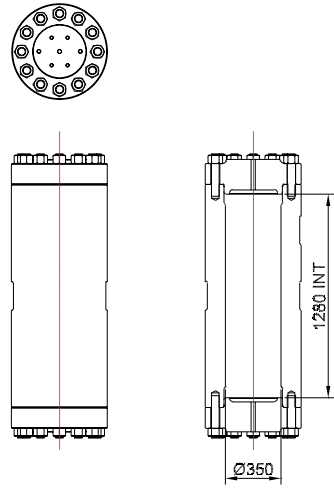
CHAMBER	INTERNAL DIAMETER mm [in]	INTERNAL LENGTH mm [in]	MAXIMUM OPERATING PRESSURE Mpa [psi]	SIMULATED OCEAN DEPTH m [ft]	OPERATIONAL TEMPERATURE °C [°F]	Data recorded
L1	1524 [60]	6000 [236]	34 [4930]	3380 [11090]	Ambient	Load Pressure Temperature Time
L2	1600 [63]	6400 [252]	52 [7540]	5173 [1690]	4 [39] to Ambient	
S1	446 [17]	1235 [48]	10 [1450]	3380 [11090]	Ambient to 50 [140]	
S2	350 [13]	1280 [50]	48 [6961]	4775 [15666]	Ambient to 50 [140]	
S3	350 [13]	1280 [50]	48 [6961]	4775 [15666]	Ambient to 50 [140]	
S4	350 [13]	1280 [50]	48 [6961]	4775 [15666]	Ambient to 50 [140]	
S5	350 [13]	1280 [50]	48 [6961]	4775 [15666]	Ambient to 50 [140]	
S6	100 [4]	200 [8]	45 [6527]	4477 [14688]	23 ± 1 [73 ± 2]	Pressure Time
S7	100 [4]	200 [8]	45 [6527]	4477 [14688]	23 ± 1 [73 ± 2]	
S8	100 [4]	200 [8]	45 [6527]	4477 [14688]	23 ± 1 [73 ± 2]	
S9	100 [4]	200 [8]	69 [9863]	6864 [22520]	23 ± 1 [73 ± 2]	



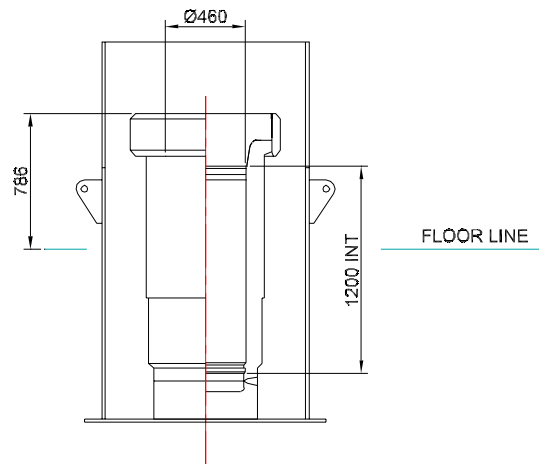
HYPERBARIC CHAMBER DIMENSIONS



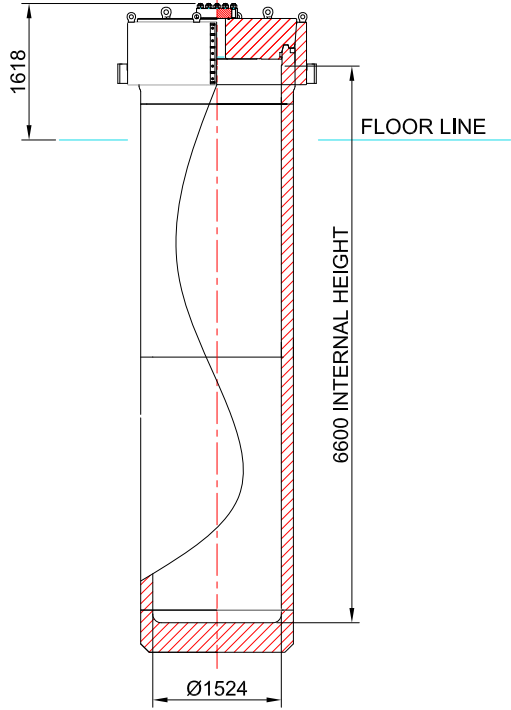
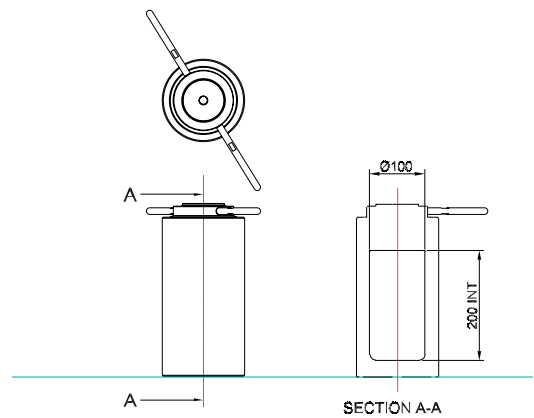
S2 to S5: 350 x 1280 mm, 48 MPa



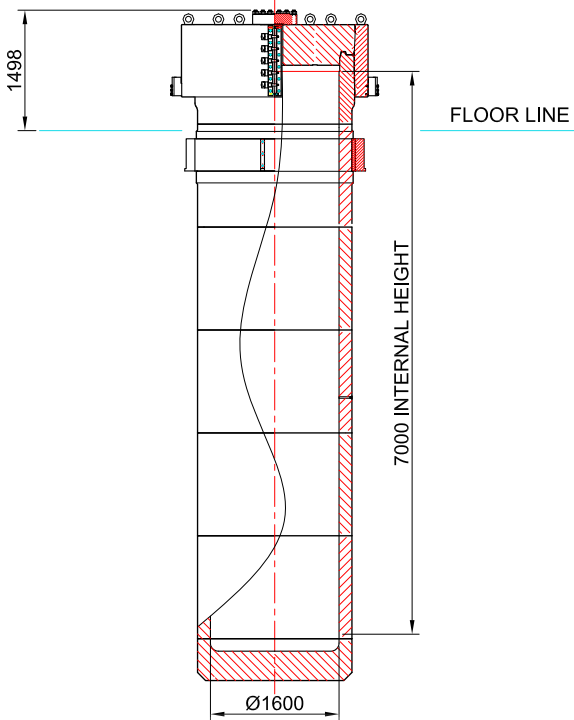
S1: 446 x 1235 mm, 10 MPa



S6 to S9: 100 x 200 mm, 45/69 MPa



L1: 1524 x 6000 mm, 34 MPa



L2: 1600 x 6400 mm, 52 MPa



ADDITIONAL TEST SERVICES

BUOYANCY VERIFICATION TANK

- Product weight in water and air
- ROV submersion and functionality
- Submersion and gas leakage
- Underwater NDT inspection
- Flotation
- Riser testing
- Abandonment and cutting tool trials

MECHANICAL TESTING

- Axial and lateral slip loads
- Static loading and 3-point bend
- Compression, shear and tensile testing
- Dropped weight and swing arm impact testing
- Lifting point/insert load testing
- Paint adhesion testing
- Function and fit-up

LABORATORY AND MATERIAL TESTING

At Matrix, we invest heavily in research and development (R&D) to continually advance our offerings and embrace new opportunities. Many of our products are registered under international patents to protect intellectual property and demonstrate our culture of innovation.

Matrix's head office boasts a large R&D facility run by scientists and material engineers from a broad spectrum of high performing industry disciplines. A range of on-site testing facilities allows raw materials or finished proeducts to be tested to relevant internal, client and international standards before release.

Standard internal tests include:

- Universal testing machines – for compression and tensile properties
- Differential scanning calorimeters (DSC) – to determine reaction energies and glass transition temperatures of polymers
- Thermo gravimetric analysis (TGA) – for determining decomposition temperatures and inorganic (fibre) content of composite plastics
- Pycnometer – for determination of true density of solids (macrospheres)
- Viscometer – for testing viscosity of liquids
- Thermostatic water baths – for determination of long-term behaviours of polymer materials (creep, seawater resistance)



MATRIX **DELIVERING** **TO THE WORLD**



LIGHTER • STRONGER • SMARTER

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