

# MATRIX SUBSEA TEST CENTRE

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 m<sup>2</sup> 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 (450 bar) to Ø1.6 X 6.4 m pressurised up to 520 bar. The chambers are filled and pressurised with environment-friendly fluid (water+glycol) to simulate subsea immersion. Fully instrumented and capable of recording pressure, buoyancy loss and temperature changes over time, the chamber's environmental conditions are regulated from inside a single control room.

Designed with spare penetrations to facilitate functional testing of customer equipment, chambers are orientated vertically to facilitate loading and unloading via our 40-tonne crane, with larger chambers mounted underground for safety and environment stability.

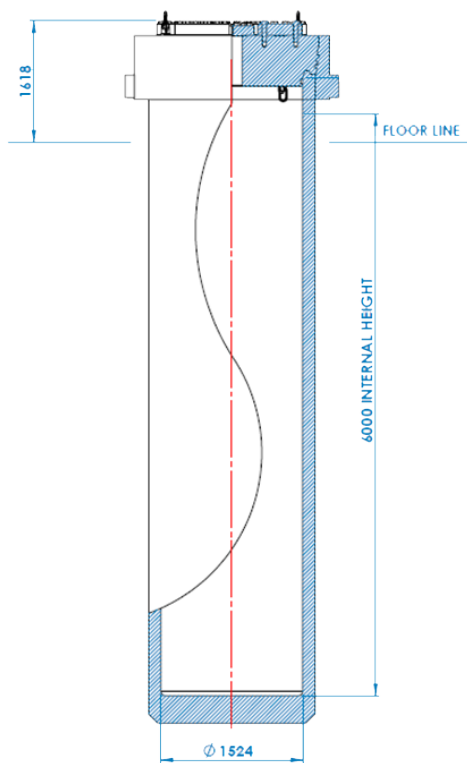
### THE MATRIX DEEPWATER HYPERBARIC COMMON USER FACILITY

Comprised of an Equipment Under Test (EUT) frame, our Kraken chamber system with interchangeable flanges, and a clean room, the facility provides comprehensive testing and compliance verification of subsea equipment right here in Australia, reducing lead times and carbon emissions. For more details, refer to the Matrix Deepwater Hyperbaric Common User Facility leaflet.

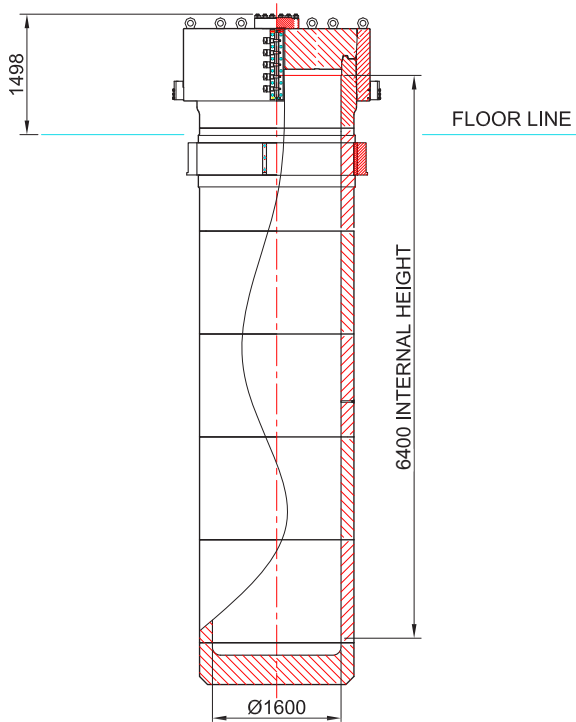
| CHAMBER       | INTERNAL DIAMETER<br>mm [in] | INTERNAL LENGTH<br>mm [in] | MAXIMUM OPERATING PRESSURE<br>bar [psi] | SIMULATED OCEAN DEPTH<br>m [ft] | OPERATIONAL TEMPERATURE<br>°C [°F] | Data recorded                           |
|---------------|------------------------------|----------------------------|-----------------------------------------|---------------------------------|------------------------------------|-----------------------------------------|
| <b>Kraken</b> | 1,524 [60]                   | 6,000 [236]                | 340 [4,930]                             | 3,380 [11,090]                  | Ambient                            | Load<br>Pressure<br>Temperature<br>Time |
| <b>L2</b>     | 1,600 [63]                   | 6,400 [252]                | 520 [7,540]                             | 5,173 [16,972]                  | 4 [39] to Ambient                  |                                         |
| <b>S2</b>     | 350 [13]                     | 1,280 [50]                 | 480 [6,961]                             | 4,775 [15,666]                  | Ambient to 50 [140]                |                                         |
| <b>S3</b>     | 350 [13]                     | 1,280 [50]                 | 480 [6,961]                             | 4,775 [15,666]                  | Ambient to 50 [140]                |                                         |
| <b>S4</b>     | 350 [13]                     | 1,280 [50]                 | 480 [6,961]                             | 4,775 [15,666]                  | Ambient to 50 [140]                |                                         |

## HYPERBARIC CHAMBER DIMENSIONS



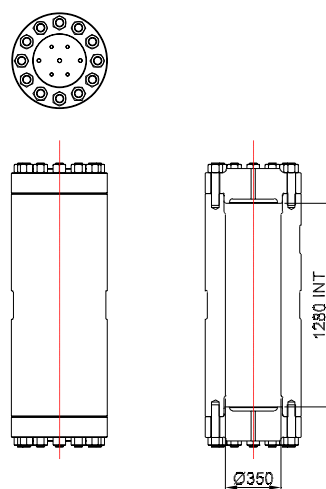


**L1: 1,524 x 6,000 mm, 340 bar**

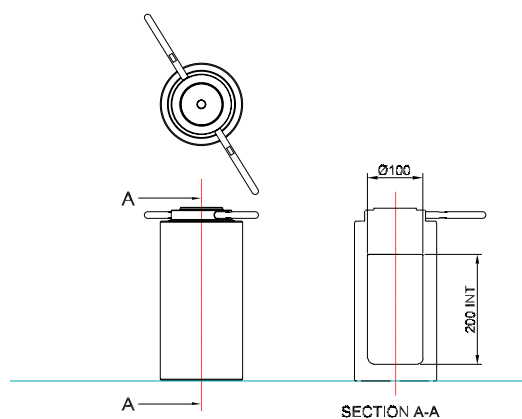


**L2: 1,600 x 6,400 mm, 520 bar**

**S2 to S4: 350 x 1,280 mm, 480 bar**



**For Lab and R & D purposes**





## 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 products to be tested to relevant internal, client and international standards before release.

Standard internal tests include:

- Universal testing machine – for compression and tensile properties
- Differential scanning calorimeter (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**



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