

Force Calibration Machines, Consultancy, Design, Manufacture

Whether you are looking to upgrade an existing laboratory or build a new one, NPL can help you develop a world-class capability in force measurement.

NPL is the UK's national standards laboratory; responsible for disseminating measurement to industry at the highest level, across a broad base of technical disciplines. Our force facilities are recognised as some of the best in the world, consistently achieving high levels of international agreement in comparison exercises. They were designed and built, and continue to be improved, by our own team of experienced measurement specialists.

Consultancy, Design, and Manufacturing Services

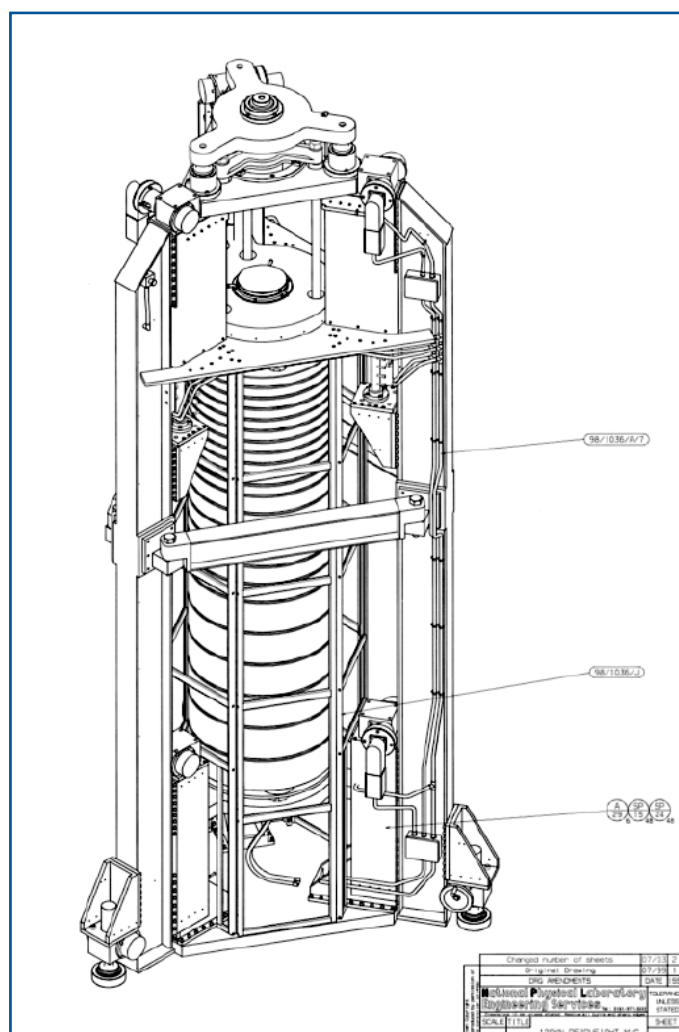
We offer bespoke services to an international customer base including:-

- Consultancy and advice to develop or improve the performance of existing equipment
- Equipment/facility design
- Manufacture, installation, and commissioning of calibration facilities/laboratories
- Problem solving – to overcome challenges involving deadweight, hydraulic and lever amplification, and reference transducer machines

Engineering & Design Capability

Our customers benefit from an infrastructure built to meet the demanding requirements of a leading national measurement institute:-

- Engineering design office - with CAD system and staffed by qualified engineers
- Engineering workshop – staffed by skilled craftsmen and technicians, with a wide range of facilities for milling, turning, EDM die sinking, wire eroding, grinding, and metal lapping
- NPL's multidisciplinary scientific and technical base, with experience in all areas of measurement



Schematic design drawing of the NPL 120 kN deadweight machine

Track Record

In addition to developing our own facilities, NPL's force team have been providing commercial services to an international base of customers for over 60 years:

The UK's national force standards

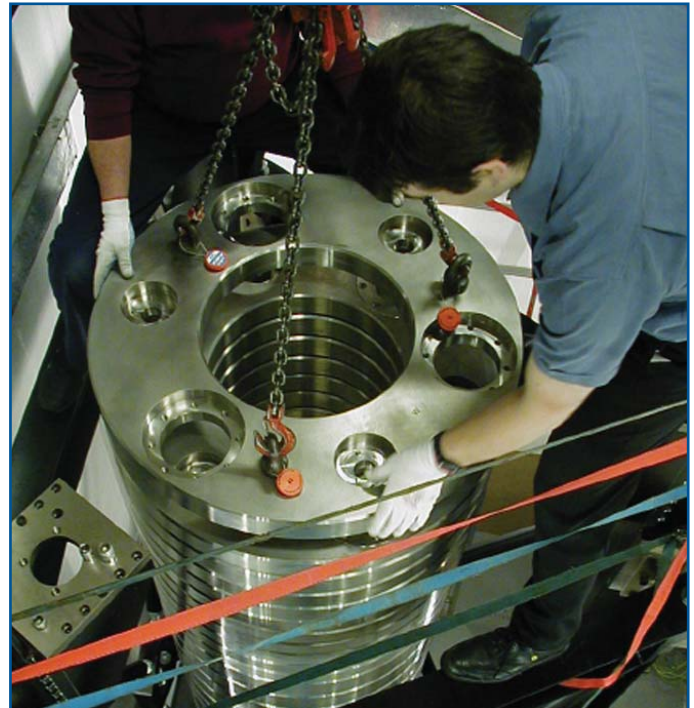
Maintaining a leading role in force measurement at the highest level means NPL is continually assessing and developing its force facilities. NPL has designed and built 2.5 kN, 20 kN, and 120 kN deadweight machines and was involved in the design and contract manufacture of its 1.2 MN deadweight machine. These machines form the backbone of the UK's national force standards. The machines involve a number of innovative design features.

National Weights and Measures Laboratory (NWML)

NPL has a relationship with both industry and calibration laboratories spanning many years. This led to NWML, the UK's legal metrology laboratory, placing an order on NPL for the design, manufacture, and supply of a deadweight force standard machine. The deadweight machine has a 1 tonne capacity and four interchangeable weight stacks for use in an environmental chamber working between $-10\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$.

Hong Kong Government

NPL supplied and commissioned a complete force calibration laboratory, including 5 kN and 60 kN deadweight force standard machines, with 600 kN and 3 MN hydraulic amplification force standard machines linked to the 60 kN deadweight machine.



Construction of the NPL - designed 120 kN deadweight force standard machine

Benefits of using NPL

- Professional staff with years of expertise in all areas of force measurement
- Direct traceability to the UK's standards for mass, length, and time
- A knowledge of the application of precision engineering principles on a large scale
- Well-equipped engineering workshop and design office
- Track record in design and manufacture of force machines
- International reputation

For further information or to discuss your requirements, please contact us.

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