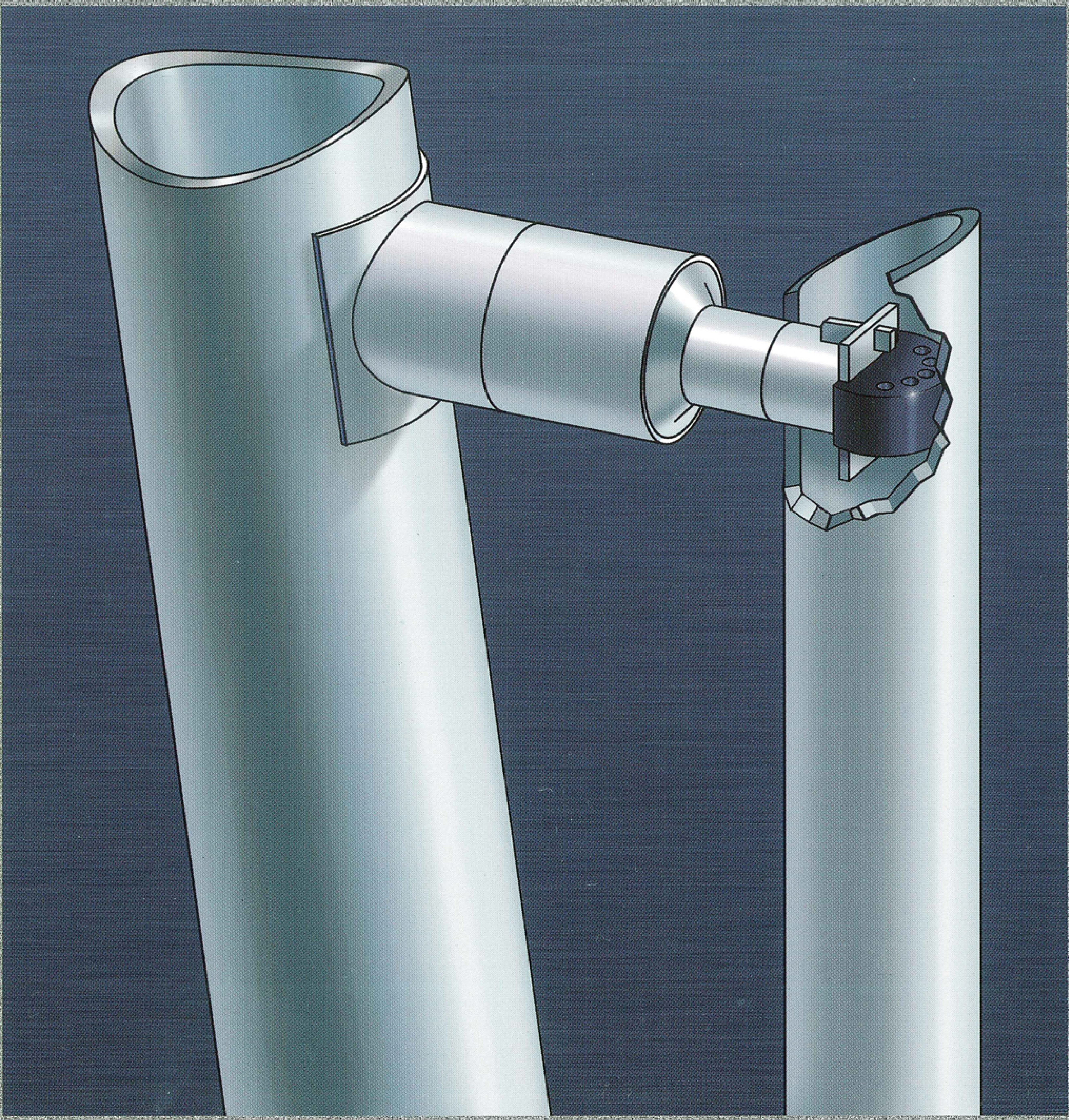
Oil States MCS



Platform Fendering Systems
For Offshore Structure Protection

Oil States MCS Platform Fendering Systems minimize structural damage from offshore vessels

Fixed offshore platforms utilize fendering systems for protection against damage from waterborne traffic. Vessel berthing areas should be capable of protecting the platform members from damage by absorbing impact energies.

Elastomer Deflection

Oil States MCS (OSMCS) fendering products are elastomeric by design and primarily function to protect offshore structures against structural damage caused by vessel impact. Because OSMCS fendering products are elastomeric, the greatest energy absorption occurs as a result of the deflection of the fender and/or internal stress/strain relationships of the elastomer material.

Features of Oil States MCS Fendering System

- Elastomeric units usually operate in axial shear and/or radial compression.
- OSMCS fendering products are extremely resistant to compressive loads.
- Fendering units are capable of storing large amounts of energy in comparison to steel and/or wooden fendering systems.

Energy absorption capacities of elastomeric fendering systems can be varied by elastomer compound selection, fendering geometry and the number of fendering units and types.

A Variety of Fendering Products

OSMCS offers numerous fendering components including Load Cells, "D" Bumpers and Rub Strips.

The Load Cell is essentially a tubular bushing mount loaded along the longitudinal axis. The assembly is comprised of elastomer molded in the annulus of two concentric, steel cylinders. The Load Cell performs as both a spring/shock absorber and motion damper by storing energy in the elastomer annulus of the unit – up to 375 tons (340 tonnes) of applied axial load and axial deflections of up to 18 inches (48 mm).

Significantly, all OSMCS fendering systems are engineered, manufactured and tested by Oil States MCS, recognized around the world as leaders in elastomer technology.

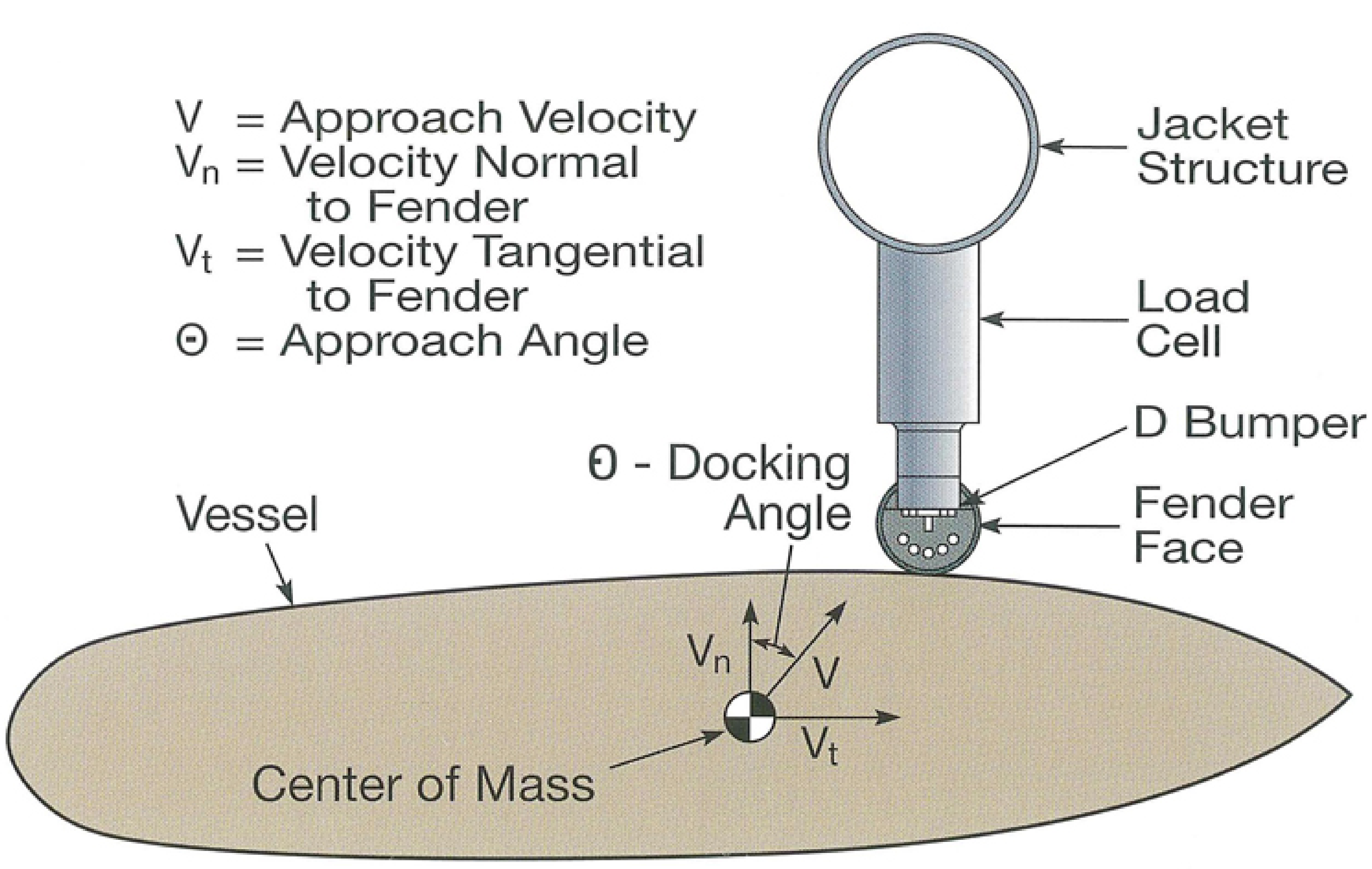
Fendering System Considerations

The area to be protected should be evaluated based on the vertical extents of the collision zone. Impact loads should also be considered with regard to classifications, including operational and accidental. The impact loads should also take into account berthing vessel contact orientation. Typically, axially imposed loads and corresponding displacements are specified for the Load Cells. However, energy absorption and corresponding axial displacement requirements may also be specified.

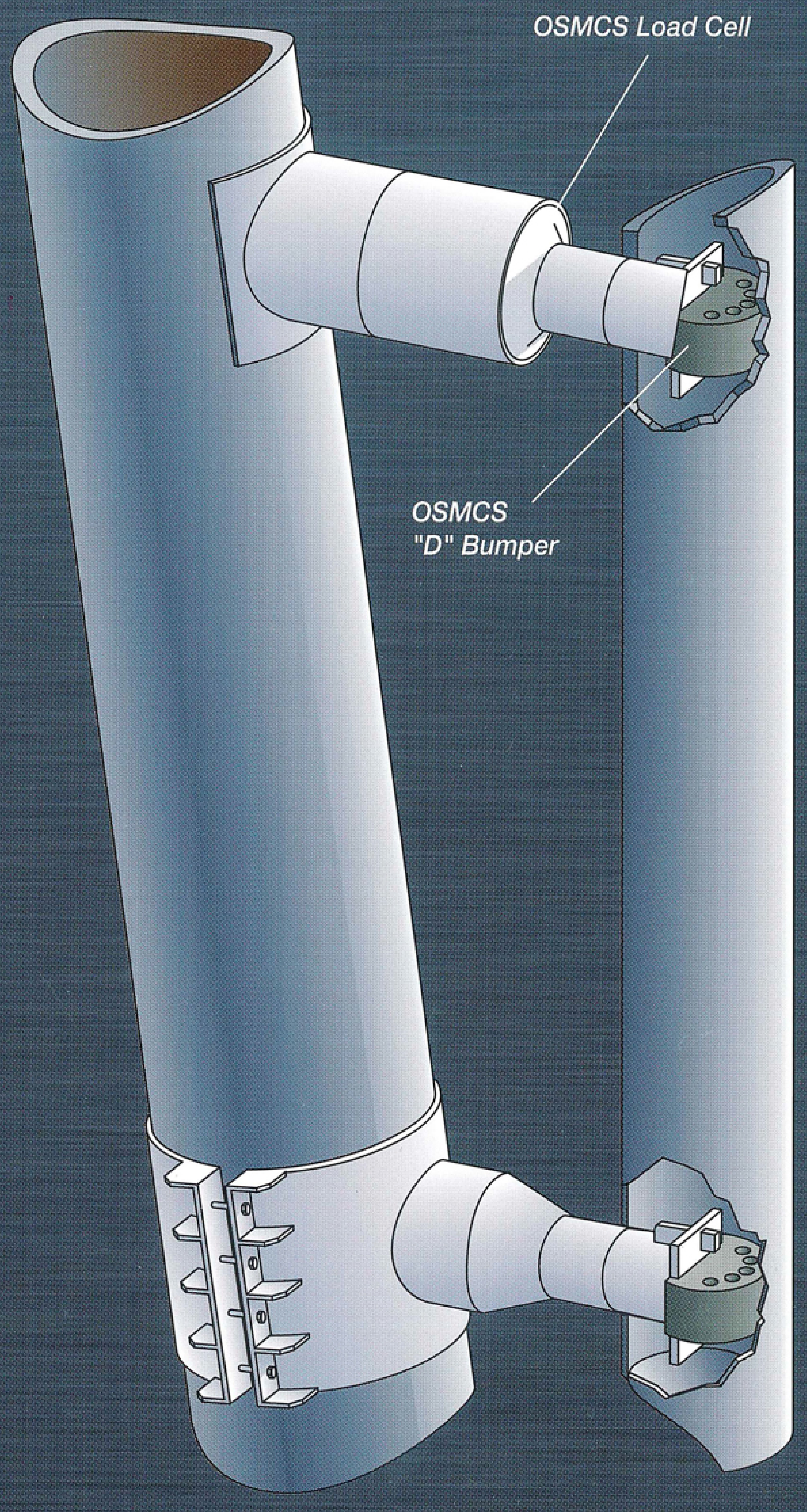
A Load Cell can work in tandem with a "D" Bumper– a series mounted, spring-mass damper system found at the top and bottom of the fender face that absorbs about 40-50% of the applied action. In most applications, vessel berthing forces are dissipated through more than one Load Cell in a fender assembly. Consequently, multiple load paths increase the available energy absorption for a particular fender system design.

Corrosion effects on the critical energy absorbing components are limited due to the nature of the elastomer compound. Natural Rubber (NR) is the most common elastomer employed in Load Cells and "D" Bumpers, and offers excellent impact strength, very good resilience, tensile strength, abrasion resistance, and flexibility at low temperatures.

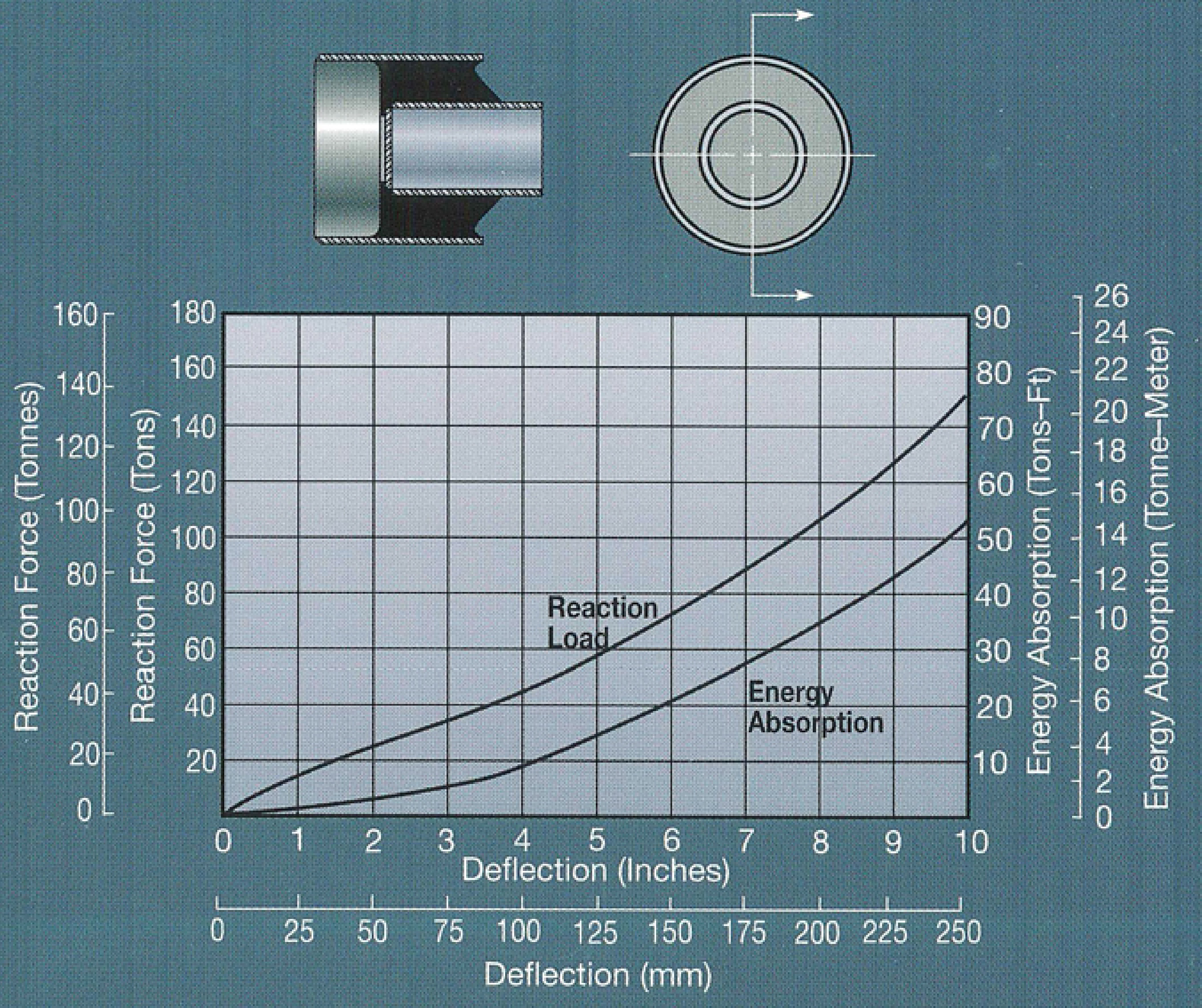
Load Cells are routinely tested at the OSMCS facilities to verify form and function. Normally this testing involves loading the Load Cell in axial compression to the specified maximum operation deflection. At this deflection, the axial load is measured and compared to the requirements of the product specification. Usually, measurement and elastomer compounding uncertainties account for an axial load error of ±20% at the maximum operating displacement. Angular load and displacement tests may also be specified.



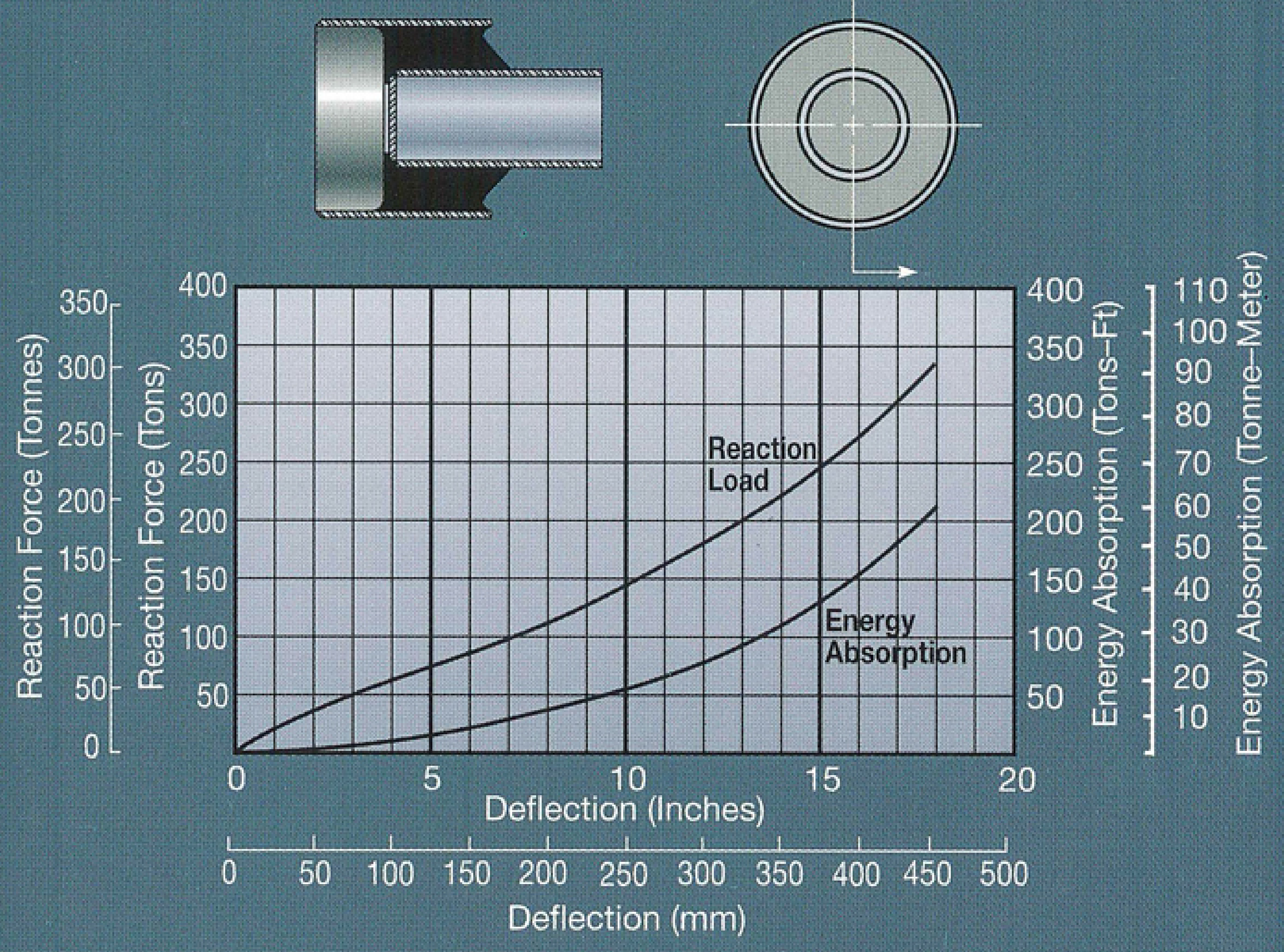
Oil States MCS Platform Fendering System



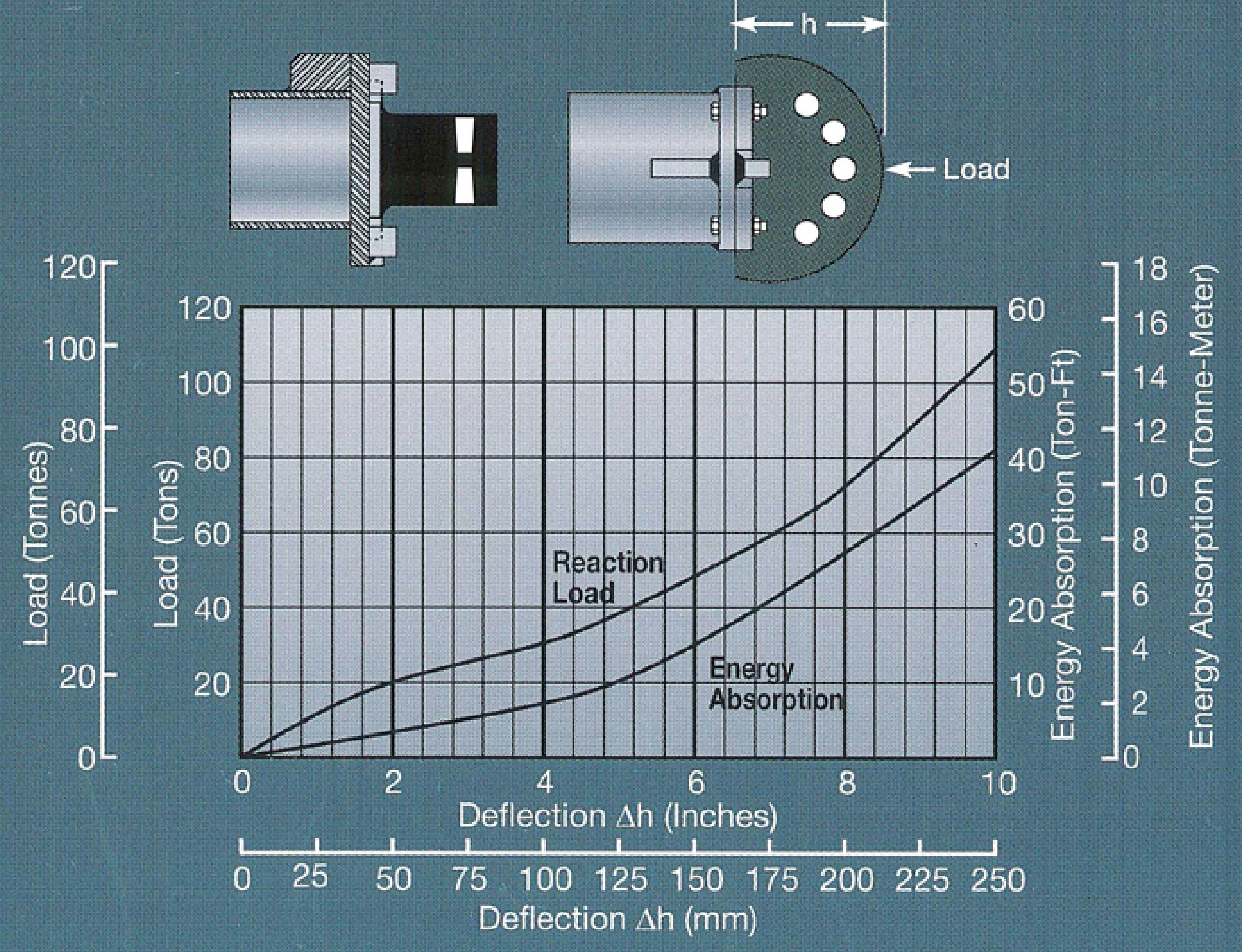
18 x 30 Load Cell



18 x 36 Load Cell



"D" Bumper



Offshore Structure Products and Services from Oil States MCS

Leveling Systems for Jackets and Templates
Temporary Pile Grippers
Hydra-Lok® Pile-Swaging for Structural Connections
Platform Grouting Equipment and Services
Elastomeric Pile Plugs and Leg Closures
Abrasive Water-Jet and Diamond-Wire Cutting
Seawater Caisson Repair Systems
Remote-Operated Pile Handling Tools
Platform Fendering Systems
Concrete Mats for Pipeline Protection and Separation

Oil States

Oil States MCS

5819 Almeda Genoa
Houston, Texas 77048
USA
Ph +1 713 445 2210
Fx +1 713 445 2500

PO Box 920
Amelia, Louisiana 70340
USA
Ph +1 504 631 3601
Fx +1 504 631 0115

Bouthwood Road, Sowerby Woods
Barrow-in-Furness, Cumbria LA14 4HB
England
Ph +44 (0) 1229 825 080
Fx +44 (0) 1229 839 791

PO Box 18192
London EC2A 4WB
England
Ph +44 (0) 20 7739 3338
Fx +44 (0) 20 7613 5177

Blackness Road, Altens Industrial Estate
Aberdeen AB12 3LH
Scotland
Ph +44 (0) 1224 877249
Fx +44 (0) 1224 897851

Loyang Offshore Supply Base, Box No 5179
SOPS Boulevards (Loyang Crescent)
Singapore 508988
Ph +65 545 4055
Fx +65 545 7693

E-mail osmcs@oilstates.com
www.oilstates.com

2M 8/99 GJ