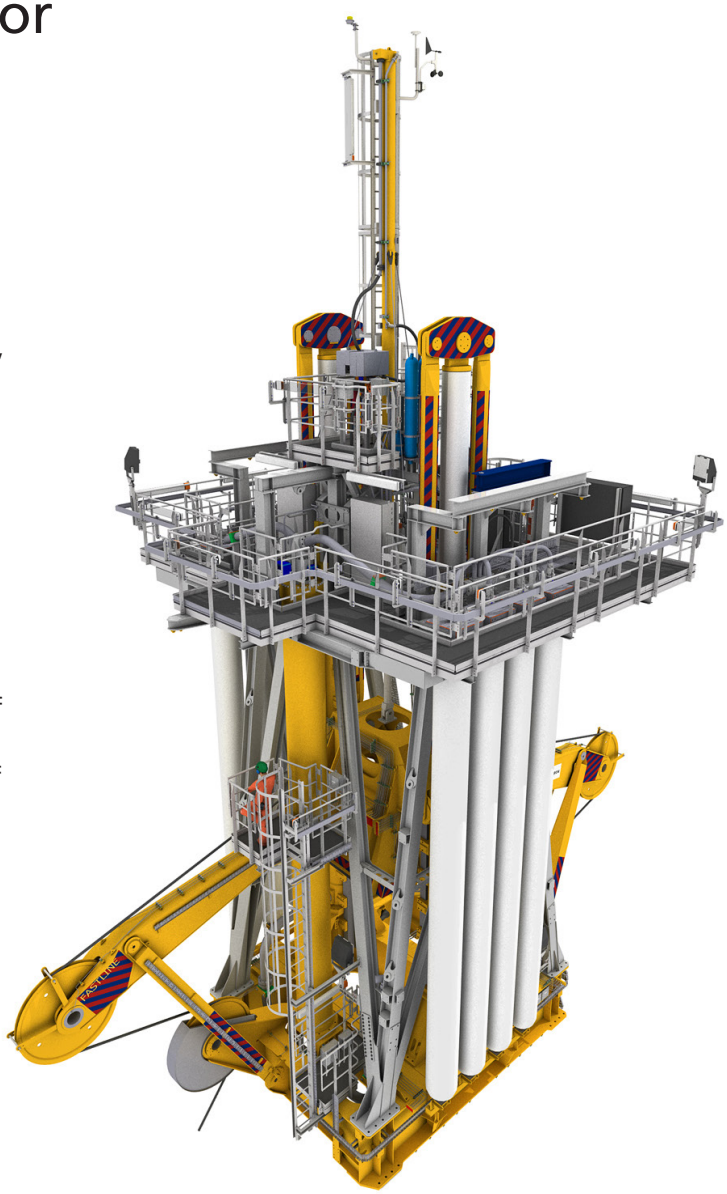
CAMERON

# Top Mounted Compensator

TMC-1000-25-2000

Cameron's top mounted compensator system (TMC) is used to compensate for the relative movement between the drilling vessel and seabed. Our range of motion compensation equipment for the drillstring and riser tensioners enables floaters to operate in some of the harshest environments. The compensator is highly accurate, with a 25 ft stroke and optional active cylinder, and is supplied with an accumulator, valve block skids, APVs, control system and optional air compressors.

Design and engineering of the TMC focuses on using proven technology, well thought out design and quality components to deliver a system that is robust, reliable, safe and easy to operate. For example, the top-mounting of the compensation system allows hook load variations to be addressed directly to the crown block, ensuring minimum weight on bit (WOB) fluctuations. The careful placement of the compensation cylinders allows all standard top drives to be lifted in between them, which means no reduction of lifting height of the traveling assembly.



## Main Features

- Top-mounting installation reduces WOB fluctuations
- Cylinder placement designed to allow standard top drives to be lifted in between
- Low weight of compensator module due to vertical forces
- Compensator can be locked in any position
- High-static force rating
- Unit ready for easy installation on top of the derrick at delivery
- Active heave compensator can easily be added
- Low-friction seals used in the cylinders and the accumulator
- Geometry of the rocker arms in combination with how the wire is reeved over the guide sheaves reduces the effect of compression/decompression of the air volume due to cylinder movements

## Safety Features

- Flow shut-off valve protects the system against uncontrolled movement if a drillstring failure occurs
- Position measuring system for the crown block
- Only hard piping between the main components, i.e. no flexible hoses
- Customized PLC software provides simple and natural operator controls from a single point

CAMERON

| Technical Specifications | SI | Imperial (US) |
|---|---|---|
| Compensator capacity | 454 tonnes | 1000 kips |
| Static capacity | 908 tonnes | 2000 kips |
| Stroke | 7.62 m | 25 ft |
| Number of cylinders | 2 | |
| Maximum compensator speed | 1.25 m/sec | 4.1 ft/sec |
| Wire sheave diameter | 1.829 m | 72″ |
| Wire rope diameter | 51 mm | 2″ |
| Hydraulic fluid type | Water Glycol based | |
| Maximum fluid pressure | 207 bar | 3000 psi |
| Maximum pressure in working air pressure vessels | 207 bar | 3000 psi |
| Maximum pressure in standby air pressure vessels | 300 bar | 4350 psi |
| Area classification | Ex Zone 2 | |

| Scope of Supply | Options |
|---|---|
| One top mounted compensator module that includes the following main components: | Active heave compensator system |
| Steel structure with guide rails for the crown block and lifting lugs | High-pressure air compressors |
| Two vertical-mounted compensator cylinders | Water table including platforms and ladders |
| One common flow shut-off valve on the fluid side | Hydraulic fluid |
| One air/fluid piston accumulator | A complete set of working and standby air pressure vessels (each vessel fitted with manual operated ball valves and a pressure relief valve) |
| Two rocker arm assemblies including idler sheaves | |
| One crown block | |
| A set of pneumatic valves and pressure transmitters | |
| A compensator position measuring system | |
| A set of junction boxes | |
| One HPU equipped with compensator fluid reservoir, electric motor/pump unit, filters, valves, instrumentation for fluid level measurement, local gauges for pressure and fluid level, starter cabinet and junction boxes | |
| Control system including PLC and an operator panel located in the drilling control room | |
| Lifting slings for the main components | |
| Set of documentation | |

4601 Westway Park Blvd.
Houston, TX 77041
USA
Tel 1 281 606 6000

Andøyfaret 3
N-4623 Kristiansand S.
Norway
Tel 47 380 00 570