

# M/D Totco™ Instrumentation Products



test 1



RigSense® 3.3 SR1

08 Nov 2016 14:36:23

Rig Activity

**Drilling**

Hole Depth

1419.50

Bit Position

1419.50

Slip Status

Invalid Invalid

EDR

Drill

Circulate

4 Charts

ROP Gas

Mud Motor

Notes

e-Wildcat

Messages

PVT

Directional

Well Control

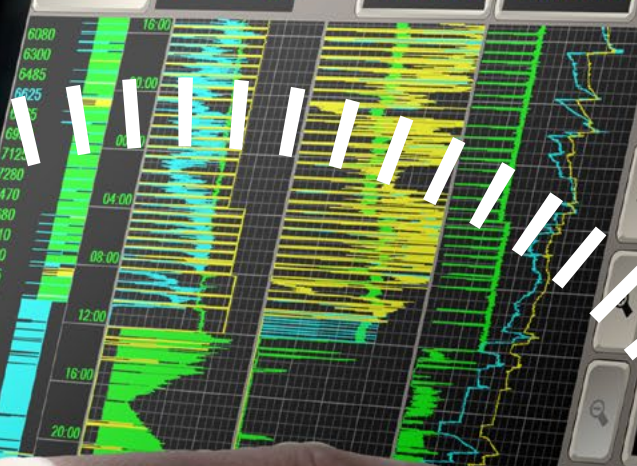
Alt. Views

Tour Sheet

Records

Seals

Seals



Top Drive RPM  
**81**  
RPM

Top Drive Torque  
**4000**  
ft-lbf

Mud Volume  
**287**  
bbl



Total Gas (GW)  
**73.81**  
%

Flow Out Percent

42

Gain Loss

35.0

Volume

287

Alarms (●)

Pipe Tally

## Hydraulic Indicators

### Anchor Type Weight Indicators

Accurate and reliable indications of hook load and weight on bit are essential to drillers for the efficient control of ROP and hole direction. The hydraulic deadline anchor type weight indicator is a standard of the industry, and NOV weight indicators set the standards for quality, accuracy, and reliability against which all others are judged.

NOV has weight indicator models designed to work in conjunction with all industry-standard deadline anchors using either tension or compression hydraulic load cells. Indicator systems are supplied as either portable box-mount instrument systems or panel-mounted as part of a driller's console.

Each system accurately senses tension in the deadline and uses this to indicate hook load and weight on bit. Many models have separate pointers for both hook load and weight on bit. In addition, integral circular hydraulic recorders are also offered on several models.

#### Type 200, AWE-Series

- For deadline loads to 200,000 lbs.
- 10, 12, 14 and 16 lines strung.
- E551 compression load cell.
- 16" dial indicator.

#### Type 150, AWE-Series

- For deadline loads to 150,000 lbs.
- 10, 12, 14 and 16 lines strung.
- E551 compression load cell.
- E551 compression load cell.
- 16" dial indicator.

#### Type 125, AWE-Series

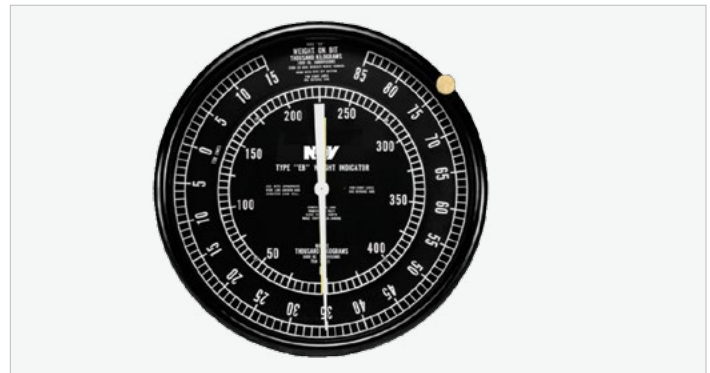
- For deadline loads to 125,000 lbs.
- 10, 12, 14 and 16 lines strung.
- E551 compression load cell.
- 16" dial indicator.

#### Type EB, AWE-Series

- For deadline loads to 100,000 lbs.
- 8, 10, 12 and 14 lines strung.
- E551 compression load cell or E80 Sensater® tension load cell.
- 16" dial indicator.

#### Type E, AWE-Series

- For deadline loads to 75,000 lbs.



Type EB Weight indicator

- 6, 8, 10 and 12 lines strung.
- E551 compression load cell or E80 Sensater® tension load cell.
- 16" dial indicator.

#### Standard features

- Unique friction-free diaphragm type hydraulic load cell withstands the toughest drilling and environmental conditions.
- Complete with high pressure hose assembly and disconnect fittings.
- Needle type dampers to eliminate hydraulic shock loads and extreme pointer oscillation during rough drilling or jarring operations.
- 4:1 vernier movement for sensitive bit weight indications Type EB Weight Indicator.

#### Type D, AW-Series

- For deadline loads to 50,000 lbs.
- 6, 8, 10 and 12 lines strung.
- E543 compression load cell or E80 Sensater tension load cell.
- 16" dial indicator.

#### Type FS, AWA-Series

- For deadline loads to 40,000 lbs.
- 4, 6, 8 and 10 lines strung.
- E542 compression load cell or E160A Sensater tension load cell.
- 12" dial indicator with actual bit weight pointer or 8 1/2" fluid filled indicator with target pointer for bit weight.

#### Type G, AWG-Series

- For deadline loads to 30,000 lbs.
- 4, 6 and 8 lines strung.
- E190A compression load cell.
- 12" dial indicator with target pointer.

## Hydraulic Indicators

### TRU-VUE Unitized Pressure Gauge

#### GM14-Series



*Available with optional API type 6BX 2 1/16" - 10 M flange for special applications.*

NOV has the only mud pressure gauge that can be read easily from 75 feet and more away.

- Rugged yet precise bourdon tube and movement indicator offers unmatched performance for standpipe and local pressure manifold applications.
- Valuable for blowout prevention and cementing, fracturing, acidizing and gravel packing trucks.
- Integral adjustable damper for eliminating pointer oscillations.
- Fluid filled case for movement lubrication and pointer dampening.



*2" male NPT threaded connection and gauge case flats for easy mounting.*

Designed for easy service on location with replaceable diaphragm cup and check valve for fluid loading.

#### **Standard capacities**

- 0-1000 psi
- 0-3000 psi
- 0-5000 psi
- 0-6000 psi
- 0-10,000 psi
- 0-15,000 psi
- Metric equivalents in kg/cm<sup>2</sup>, kPa, MPa and BAR units of measure

## Hydraulic Indicators

### Single Pointer Indicators

#### GM6A-Series, bracket mount

#### GM6AP-Series, panel mount

- Provides quick, accurate checks on mud pump operation; helps detect washed out drill pipe or bit nozzle problems.
- Indicator gauges can be mounted in the weight indicator box, driller's console or locally on the mud pump.
- Full 360° dial calibration for maximum pointer movement; shows the smallest pressure changes.
- Fluid filled gauge has large, easy-to-read 6" dial face and high pressure damper adjust.
- Rugged E17-152 Diaphragm Protector mounts with 2" NPT sub.
- Hose lengths to 50 feet are standard; longer lengths available in some pressure ranges.

#### Standard capacities

- 3,000, 5,000, 6,000, 10,000 and 15,000 psi
- 210, 350, 420, 700 and 1000 kg/cm<sup>2</sup>
- 10K, 21K, 42K, 70K, 80K KPa
- 21, 35, 42, 70, 100 MPa



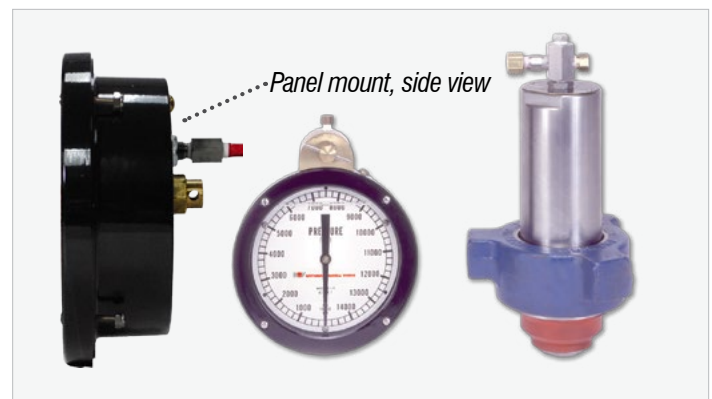
### Single Pointer Indicators with 1:1 GM1006A-Series, bracket mount

#### GM1007A-Series, panel mount

- Accurate reading up to 140 ft – twice the distance of other pressure systems.
- Separator features either weld-on or threaded female sub.
- Lower pressure limits apply to threaded type female thread or to sour gas applications.
- Special seals withstand either granular or acidic pressure conditions.
- Suitable for separation of pressurized gases including nitrogen and CO<sub>2</sub> in scouring applications.

#### Standard capacities

- 3,000, 5,000, 6,000, 10,000 and 15,000 psi
- 210, 350, 420, 700 and 1000 kg/cm<sup>2</sup>
- 210, 350, 420, 700, 1000 BAR



## Hydraulic Indicators

### Compound Pointer Indicators

*GM4-Series, bracket mount*

*GM4P-Series, panel mount*

- Used primarily for checking pump pressures on service trucks engaged in cementing, high-pressure hydraulic fracturing operations or acidizing operations involving stimulation of oil pay formations.
- Primary pointer makes one full 360° revolution to full-scale capacity.
- Secondary pointer offers 4:1 resolution for indicating small pressure changes, making four revolutions for full capacity of gauge.
- Rugged E17-152 Diaphragm Protector mounts with 2" National Pipe Thread sub.

### Standard capacities

- 4,000, 8,000, 12,000 and 16,000 psi
- 400 and 800 kg/cm<sup>2</sup>
- 40 and 80 MPa



## Hydraulic Systems & Sensors

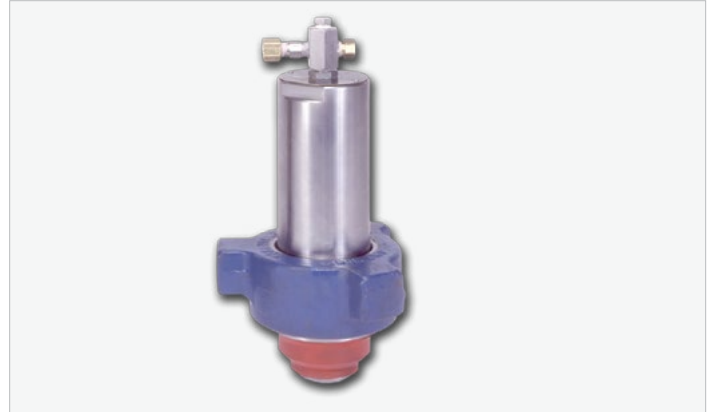
### Diaphragm Protector Hydraulic Pressure Transmitter E17-Series

Protects measuring or recording device from working fluid while transmitting a no-lag, linear pressure signal.

- Rugged workhorse sensor found in every corner of the world doing every conceivable pressure sensing job.
- Robust, time-proven design allows easy field repair and maintenance.
- Available in flanged, threaded and weld-on female sub configurations.
- Certified models are available.



### 1:1 Piston Separator Pressure Transmitter P10038A-Series



- One-to-one piston separates working fluid from gauge fluid, transmitting no-lag linear signal to gauge.
- Features temperature compensating device to assure true pressure readings for differences in ambient temperatures of to 100° F.
- Available in standard or H<sub>2</sub>S configurations and with either weld-on or threaded female sub.
- Simple design allows field overhaul and seal replacement.
- High fluid capacity compensates for hose expansion associated with extended high pressure runs, maintaining accuracy up to 140'.

## Hydraulic Systems & Sensors

### Pressure Deboster Systems



#### **DBS107A-Series, bracket mount**

#### **DBS112A-Series, panel mount**

- Systems use DB1004A deboster, proof tested to 22,500 psi, for working pressures to 15,000 psi.
- Systems use DB1006A deboster, proof tested to 30,000 psi, for working pressure to 20,000 psi.
- Actual pressure at specially calibrated gauge is only 25% of indicated value.
- Reduced output pressures allow longer hose lengths and operator distance from high pressure sources.

#### **Standard capacities**

- 10,000, 15,000 and 20,000 psi
- Equivalent values in kg/cm<sup>2</sup>, MPa, BAR

### Hydo-Mech Rotary Torque

#### **FA9-Series**

Providing reliable and sensitive relative rotary torque indication, the Hydro-Mech assembly is suitable for all mechanical rigs utilizing a chain-driven rotary table. The idler assembly is installed under the rotary drive chain, typically within the oil bath environment of the chain guard, where it senses changes in the tightness of the chain that indicate changes in torque.

- 6" fluid-filled indicator has dial-adjust mechanism to "zero out" drill string for monitoring "torque at the bit."
- Gauge dampener minimizes pointer oscillations caused by rough drilling and movements in the drill string.
- Helps determine hole conditions and torque patterns, giving the driller an indication of when to change bits.

By indicating stress on the drill pipe, the Hydro-Mech warns the driller of:

- Potential twist off's.
- Locked cones on the bit.
- Bit trouble.
- Gauge loss or out-of-gauge holes.
- Formation changes.

The Hydro-Mech is a self-contained assembly with a fluid filled gauge for long, trouble free service. The unit includes idler with 2 ft hose and gauge with 15 ft hose. The hoses are connected by a self-sealing coupling.

Idler wheels are available for 1.5" through 4.063" single chain and 1.5" through 3.125" double chain.

The Hydro-Mech is easily connected to any NOV drilling recorder where torque trends can be easily detected.



## Hydraulic Systems & Sensors

### Tong Line Pull Indicating System

**H6E-Series Universal Tong Line Pull Assembly is a necessity for maximum drill string life**

- Provides an accurate check on critical makeup or break-out torque for all tool joints, drill collars and drill string components.
- 6" fluid-filled indicator reads directly in line pull.
- Target pointer is set to a line pull value corresponding to the desired torque, taking into account tong handle length and place of load cell attachment.
- Models and capacities to work with all manual tongs.
- Permanent installation models for box or console include 25 ft hose assembly, portable installation models with 5 ft hose mount indicator and cylinder directly on tong handle
- Capacities to 25,000 pounds line pull with metric equivalents available.
- Some models offer combination dials.



**H6E-Series Tong Line Pull Indicator and Load Cell.**

### Tong Torque Indicating System

**H29-Series Tong Torque Assembly for all power tong applications**

- Each model designed and calibrated for a specific make and model of power tong.
- Both tension and compression hydraulic load cell assemblies are offered to accommodate any tong design.
- Assures uniform and proper makeup of the string by indicating precise torque applied to each joint when running pipe or casing with power tongs.
- Capacities to 120,000 ft-lbs or metric equivalents.
- Many models are available with dual scales for added versatility.
- Rugged yet simple load cell designs offer extended life and ease of service.





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