

PROGAUGE TECHNOLOGIES, INC.

Modular AWT Well Selection Manifold



The **PROGAUGE** well test manifold is a complete piping package for the management of well produced fluids. The manifold incorporates individual well leadlines, isolation valves, automated well selection valving, group collection line, and supports. Typical manifold systems also incorporate distribution piping and isolation valves for steam and well service water distribution. This allows complete service flexibility for all wells from the AWT site. Distribution of common services from the manifold greatly lowers overall piping capital costs.

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ProGauge Automatic Well Test Manifold is US and International patent pending,
ProGauge is the worldwide licensee of Splitigator technology,
Splitigator is a registered trademark of Texaco Development Company,
ProGauge Manifold Brochure 030206*

Features

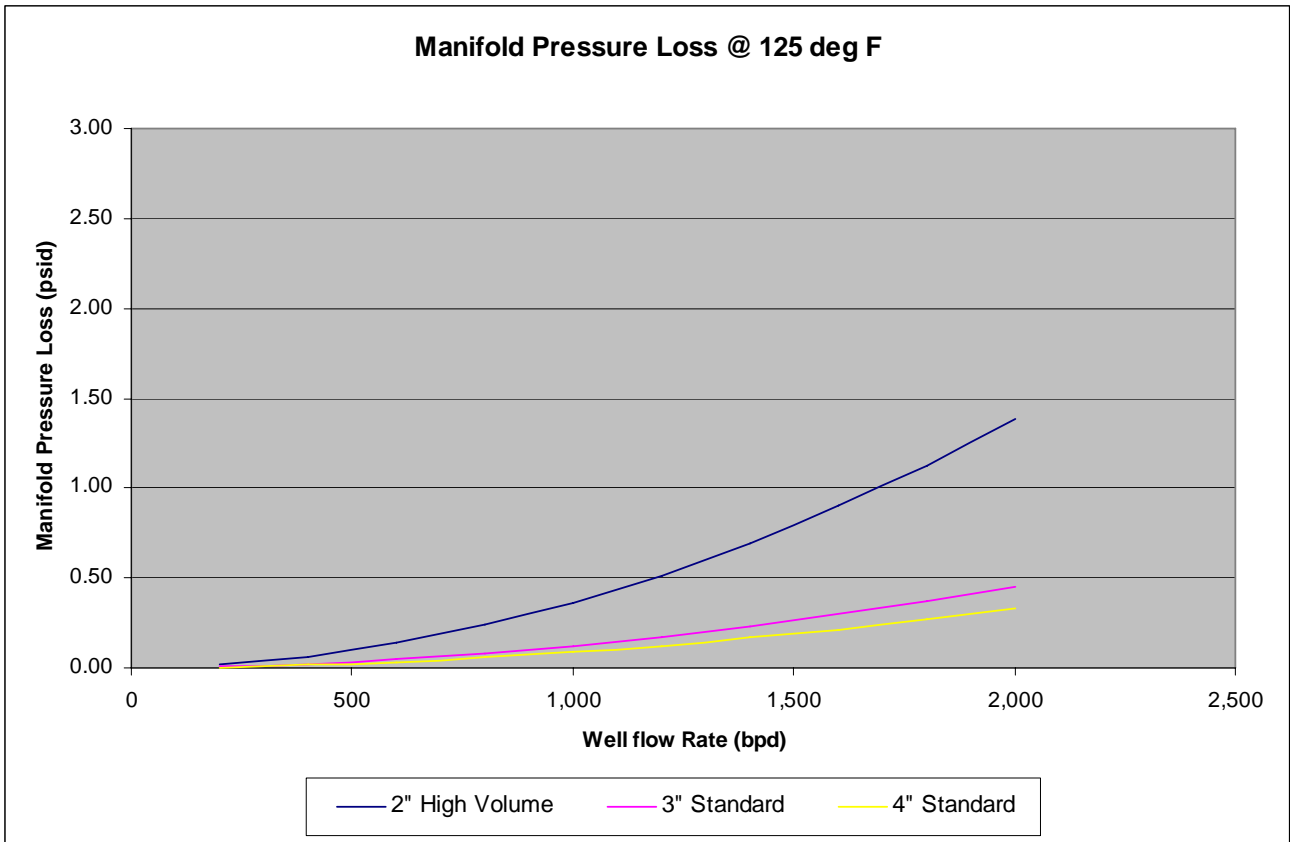
- **Completely Modular Design**
Packaged in complete 8 or 10-well module increments that mate together for any size required. Uniform manufacture assures ease of future expansion.
- **All Manifold Equipment Is Fully Integrated**
Manifolds are manufactured complete with all piping, valves, coatings, supports, walkways, insulation, conduit, and cabling.
- **Compact and Space Efficient Design**
Typical 2 inch, 10 well manifold module is 7-1/2 ft long by 5-1/2 ft tall by 15 ft wide including steam and well service water distribution headers. For a complete 40 well header, the total size is 30 ft long by 15 ft wide.
- **Flexibility Of Leadline Installation**
Symmetrical manifold layout allows well leadline to be installed from either or both sides of the manifold.
- **Flexibility In Distribution Of Common Services**
Manifolds are typically configured with steam and well service water distribution headers. Manifold is designed for 4-way isolation of steam header and connection to AWT SpliTigator™ for complete measurement and control of steam stimulations.
- **Ergonomic Design**
All valves and control elements are placed between waist and shoulder level – no bending or stooping required for operation or maintenance.
- **Completely Shop Fabricated**
Allows repeatability and precision of fit and interchangeability of components. Completely pretested and ready to install. No field construction required. Lowest total cost.
- **Rapid Installation**
Manifold incorporates integral support design that installs in either rectangular concrete footings or on user's foundation. Precision manifold tolerances and elegant design allows a 50 well manifold system to be installed in 1 day. Manifolds also include rugged outdoor electrical cable with connector that merely plugs into jack in control panel.
- **Highest Quality Components**
The manifold system incorporates center-guided check valves, for thermal EOR service ANSI 600 components, schedule 80 piping, epoxy powder coatings, Class 800 gate valves, and high performance ball valve seats. Manifold is rated for high pressure steam service and very reliable.
- **Electrical Automatic Valve Actuation**
Electrical valve actuation provides simplified installation, increased reliability, and lowest cost. Valves and actuators have been tested to over 200,000 cycles. Innovative design allows disassembly of actuator without removal of the valves from the piping. No pneumatic compression, conditioning, and distribution equipment required.
- **Solid Design and Proven Performance In Severe California Heavy Oil Thermal Service**
Over 100 manifolds in daily operation. Components have shown high reliability. High performance valve seat material has demonstrated extreme resistance to high solids production fluid.

System Components and Specifications

All piping is of welded construction, which conform to ASME piping code B31.3 (normal service). All equipment is integrated into a single concentrated package.

- complete electrically actuated well test manifold module system
- all steam and well service water distribution, leadline, and test line piping is schedule 80 and components are rated for at least ANSI 600.
- group line piping is schedule 80 and components are ANSI 300.
- 1" calcium silicate insulation with aluminum cladding on all piping carrying steam
- includes all isolation valves. ANSI 600 full size ball valves for isolation of leadline to test and group lines for thermal service. ANSI 300 rated for larger non-thermal manifolds. These ball isolation valves also provide isolation of automated well selector valves for service. Class 800 gate valves on steam and well service water distribution headers and isolation of leadline from actuated selector valve.
- center guided check valves on each leadline before the selector valve and between the well service water distribution and the leadline.
- catalyzed epoxy paint on all non-insulated exposed piping
- dual-opposed ball selector valves with electrical actuation. For thermal EOR service, ANSI 600 rated with carbon steel bodies, stainless steel trim, and high performance seats. Mounting brackets will allow disassembly of actuator independent to valving. ANSI 300 rated for non-thermal applications.
- support structure that allows manifold to be anchored in concrete footings or user's foundation.
- personnel walkways are 14 gauge Grip-Strut
- all interconnection conduit and wire on manifold. Also, 60 feet of rugged hazardous area rated armored cable that includes plug connector for mating to control panel is included and integrated. Cable is rated for tray, exposed, or direct burial installation. All equipment is rated for Class I, Division I hazardous area service.
- actuation power for motorized selector valves in 120VAC, 5 amps. Individual selector valve command signals can be ordered as either 120VAC or 24VDC @ 5 watts. Valve position feedback signals can be ordered as either 120VAC or 24VDC.
- quality assurance testing includes total functional testing of actuated valves, hydrostatic pressure testing, and radiographic testing of welds.
- 2" 10-well manifold with steam/service water headers, size - 17 ft wide x 7-1/2 ft long x 6 ft high (typ), weight - 3400 lbs approx.
- 2" manifold w/o steam/service water headers, size - 13 ft wide x 7-1/2 ft long x 6 ft high (typ), weight - 2200 lbs approx.

Total Pressure Losses For Various Manifolds

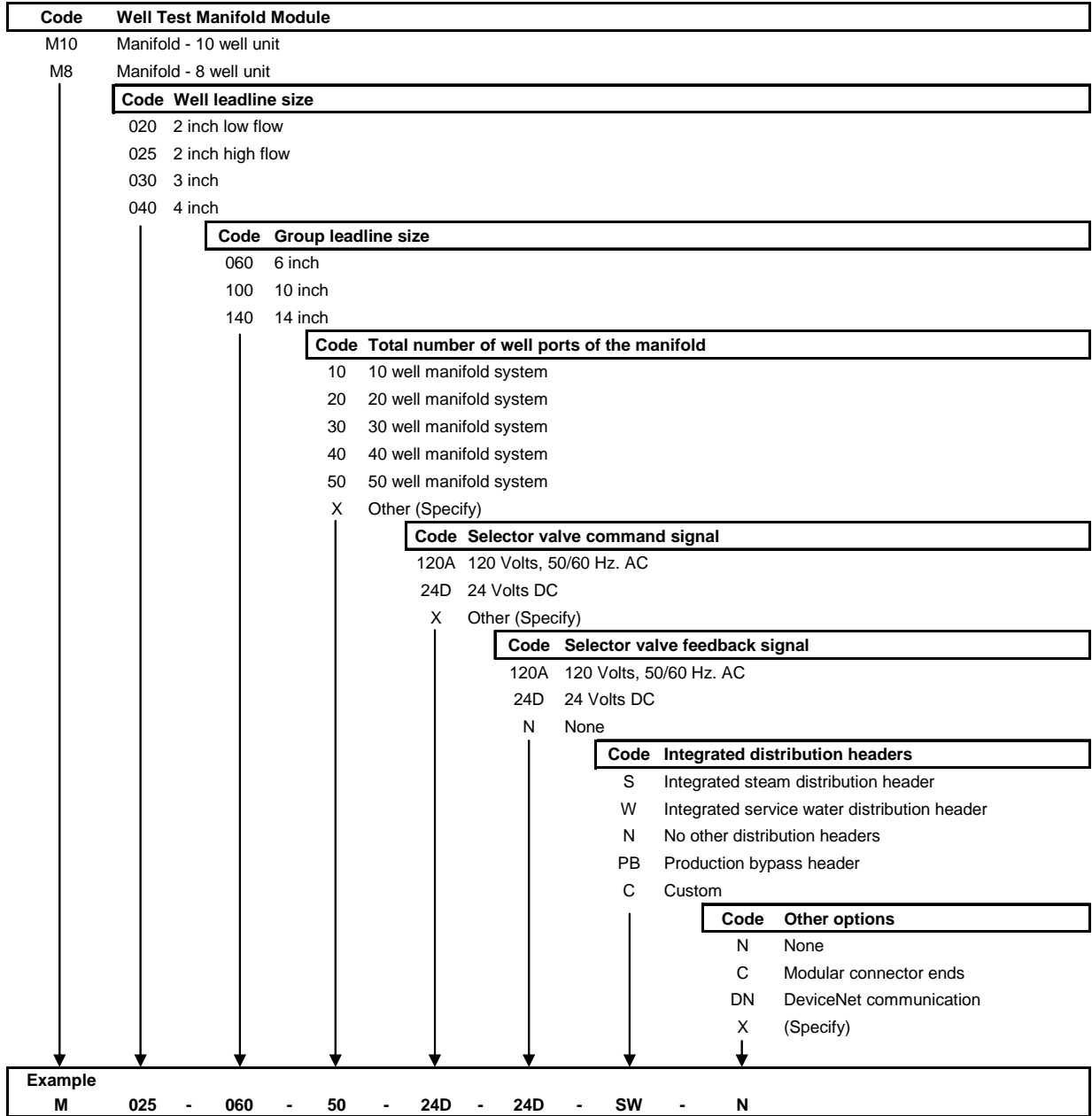


Options

The above describes the characteristics of the basic manifold system. Additional features and enhancements can be initially requested, added by ProGauge Technologies, Inc. or by the customer after installation. Some typical options are:

- complete AWT system including ProGauge well test unit, and
- SpliTigator™ unit for the measurement and control of steam stimulations
- vertical leadline corridor racks and cladding
- production flowback control manifold

PROGAUGE Well Test Manifold Ordering Information



Center Section Of Low Volume Manifold



End View Of Low Volume Manifold



Complete AWT Sites



Contact

PROGAUGE is manufactured by ProGauge Technologies,

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