Victus™ Manifold

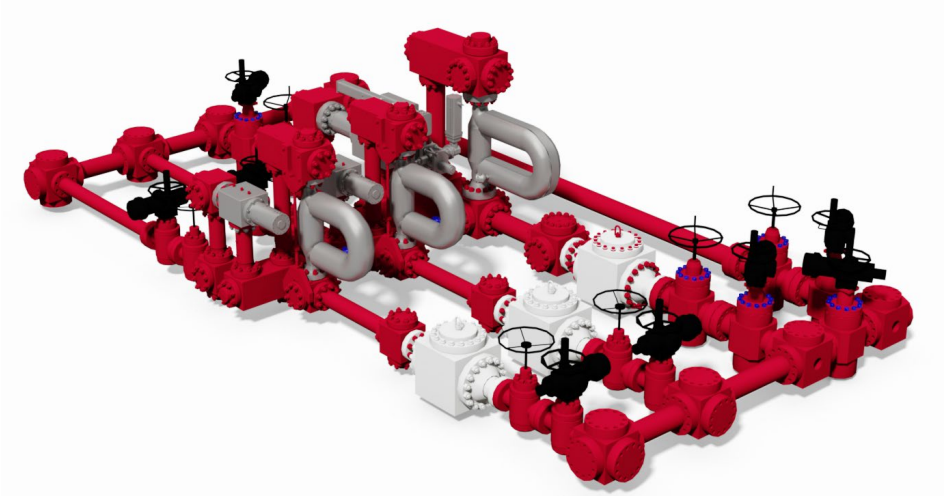
Offers a customizable design, including between one and four legs, to detect, control, and circulate out influxes

Applications

- Applying constant bottomhole pressure as a method for managed pressure drilling (MPD)
- Identifying and mitigating common drilling problems
- Automatically detecting and controlling kicks and losses
- Performing dynamic formation-integrity tests (FIT) and leak-off tests (LOT) without the need to stop circulation or shut in the well
- Executing pressurized mud-cap drilling in wells with total losses.

Features and Benefits

- Manifold offers customization to operational and customer needs.
- Up to four choke legs increase redundancy and enable continued drilling.
- Coriolis flowmeter installed upstream of the choke facilitates measuring the flow of mud returns with high gas.
- Flowmeter for each upstream choke leg enables continued operation.
- Remote operation via an intelligent control system enables swapping chokes legs if plugging occurs and functioning electric or hydraulic valves.
- Design improvements reduce the loss of frictional pressure in the entire system.



The Weatherford Victus manifold is a fourth-generation design based on decades of performing and operating. The above manifold shows one possible customization that features three legs, each with its own respective choke and flowmeter. The manifold also includes integrated junk catchers and a gut line.

Manifold Description

A key component of Weatherford Victus intelligent MPD, the Victus manifold enhances safety, minimizes nonproductive time, and increases drilling efficiency in land, shallow-water, or deepwater operations. Its small, modular design fits any rig-floor footprint and offers customization to well, rig, and operator needs.

The manifold offers the option of one to four legs to increase redundancy. Each leg includes a choke and a Coriolis flowmeter. If plugging or other issues occur, drilling can continue by swapping choke legs. The standard design includes a flowmeter placed upstream of the choke leg, which makes critical flow measurement possible. Placing the flowmeter downstream of the choke leg is an option.

The manifold works in conjunction with an intelligent control system that uses an advanced hydraulic model. In this way, the manifold maintains the appropriate annular pressure profile in real time during drilling. If the system detects and indicates an influx, it is capable of closing the chokes to increase the surface backpressure. This rapid, automated response can minimize the size of the influx circulated out. If the system detects a loss, it is capable of opening the chokes to reduce surface backpressure, which can help to minimize formation damage and maintain wellbore integrity.

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Specifications

Size	4 in.	6 in.
System type	MPD or mass balance	MPD or mass balance
Pressure, manifold piping	5,000 psi (34.5 MPa)	5,000 psi (34.5 MPa)
Flanges size and rating	API 6A 4-1/16 in. (103 mm) 5M	API 6A 7-1/16 in. (103 mm) 5M
Temperature rating	–20° 250°F (–29 to 121°C)	–20° 250°F (–29 to 121°C)
Material class	Class EE-NL NACE MR-0175	Class EE-NL NACE MR-0175
Design code	API 6A, PSL-3, PR-2	API 6A, PSL-3, PR-1
Flowmeter (placed in front of the choke)		
Pressure	2,855 psi (19.8 MPa) @ 250°F (121°C)	2,320 psi (16.0 MPa) @ 250°F (121°C)
Inlet/outlet connections	ANSI/ASME B16.5, 4-in. Class 1500#	ANSI/ASME B16.5, 6-in. Class 1500#
Maximum flow rate	2,400 gal/min (9,085 L/min)	6,000 gal/min (22,712 L/min)
Minimum flow rate	15 gal/min (56.8 L/min)	15 gal/min (56.8 L/min)
Chokes		
Pressure	5,000 psi (34.5 MPa)	5,000 psi (34.5 MPa)
Inlet and outlet connections	API 6A 4-1/16 in. (103 mm) 5M	API 6A 7-1/16 in. (179 mm) 5M
Maximum flow rate*	800 gal/min (3,028 L/min) per unit	1,815 gal/min (6,871 L/min) per unit
Actuation	Electric or hydraulic motor	Electric or hydraulic motor
Material and NDE	Class EE-NL, PSL 3, NACE MR-0175	Class EE-NL, PSL 3, NACE MR-0175
Gut Line Valve (optional)		
Gate valve, manual	API 6A, PR-2	API 6A, PR-1
Size	4-1/16 in. (103 mm) to 7-1/16 in. (179 mm)	7-1/16 in. (179 mm)
Pressure	5,000 psi (34.5 MPa)	5,000 psi (34.5 MPa)
Material and NDE	Class EE-NL, PSL 3, NACE MR-0175	Class EE-NL, PSL 3, NACE MR-0175
Isolation Valves (optional)		
Gate valve, manual	API 6A, PR-2	API 6A, PR-1
Size	4-1/16 in. (103 mm) to 5-1/8 in. (179 mm)	7-1/16 in. (179 mm)
Pressure	5,000 psi (34.5 MPa)	5,000 psi (34.5 MPa)
Material and NDE	Class EE-NL, PSL 3, NACE MR-0175	Class EE-NL, PSL 3, NACE MR-0175

* The maximum flow rate depends on mud weight and backpressure.

Options

- Manifold enables customization by choosing between various options:
  - one, two, three, or four legs
  - 4- or 6-in. choke sizes
  - electric, hydraulic, or manual isolation valves
  - integrated junk catchers
  - gut line valves
- Flowmeter can be placed downstream of the choke as an option. The downstrean flowmeter may be equipped to handle high pressures as an additional option.
- Integrated junk catcher option reduces the manifold footprint and manual handling.

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