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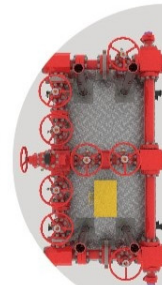
## WELL CONTROL EQUIPMENT

BOP STACK

CHOKE / KILL MANIFOLD

CLOSING UNIT

**BOP**



## ABOUT SHENKAI

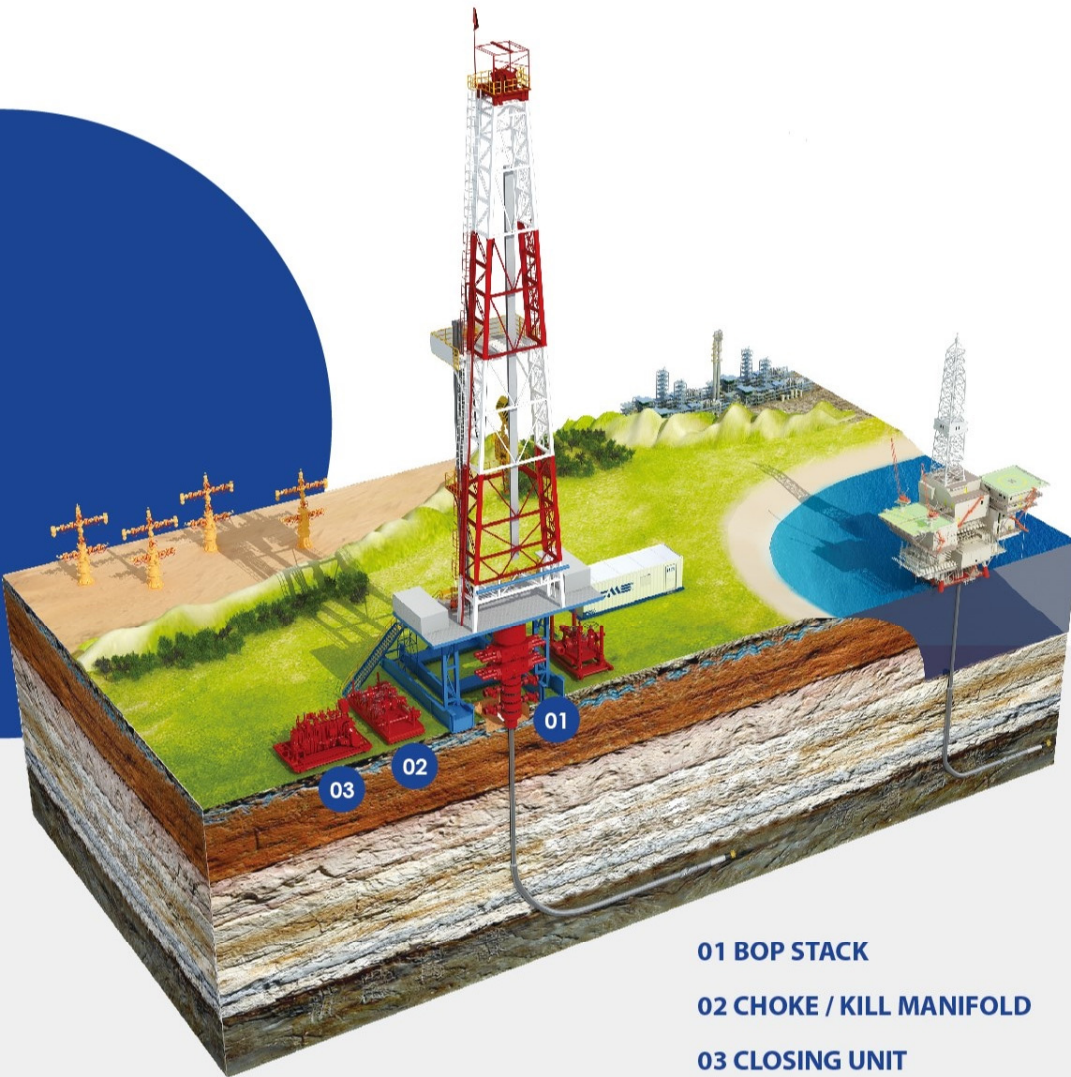
Shanghai SHENKAI Petroleum Equipment Co., Ltd is a wholly-owned subsidiary of SHANGHAI SHENKAI PETROLEUM & CHEMICAL EQUIPMENT CORPORATION LTD (Stock code: 002278), which is a listed company in China A stock market. Our head office is located in Pudong district Shanghai. SHENKAI is a high-tech enterprise which mainly focuses on R&D, manufacture and sale of petroleum drilling blowout preventer, closing unit, choke/kill manifold, wellhead Christmas tree, and wellhead control system. SHENKAI has the most completed well control equipment manufacturing lines in China and offers customers integrated solutions for the well control equipment needs.

Relying on the advantage of talent and technology in Shanghai and more than 50 years' technical and historical inheritance; aiming to be the world first-class and high-end manufacturing enterprise; taking responsibility for offering qualified products and services; Shenkai continues to research and develop large bore, high pressure, H<sub>2</sub>S resistant series well control and wellhead equipment, and offers safety guarantee for the development of high H<sub>2</sub>S, super high & low temperature, super depth well oilfield.

SHENKAI is running completed quality control systems, and has QHSE, ISO9001, APIQ1 quality certifications, and has acquired the use permission of API 6A, 16A, 16C, 16D, 17D and Russia custom union certificate.

Our products are widely used in Sinopec, CNPC and CNOOC (offshore platform) oilfields, and have been exported to various countries and regions in the Middle East, Russia, America, Africa, Canada, Australia, central Asia and Southeast Asia, etc.

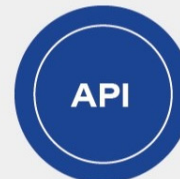
Obedience to the company spirit of "responsibility, pragmatic, innovation, win-win", on the basis of quality & technology, Shenkai focuses on the need from users, and continues to build enterprise core competitive ability and unremitting efforts for petroleum equipment technology development.



### 01 BOP STACK

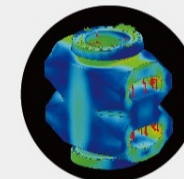
### 02 CHOKE / KILL MANIFOLD

### 03 CLOSING UNIT



### QUALITY MANAGEMENT SYSTEM

SHENKAI has completed quality management system and has API Q1, HSE system certification, we have completed quality control system for each step of the production to ensure reliable product quality. Shenkai has obtained API 16A (including ram rubber, packing element etc., ), API16C, API16D certificate. The closing unit acquires CE/ATEX certification.



### R & D CAPABILITY

SHENKAI has strong research and development strength, such as the finite element stress calculation and computer aided design, complete test method; develops numbers of new products of advanced international level and proprietary technology; owns numbers of innovation and utility patent technology.



### MACHINING CAPABILITY

With strong machining capability, equipped with CNC gantry machining center, large CNC floor-type boring and milling machine, large CNC vertical lathe, horizontal machining center, vertical machining center, gantry grinding machines and other hundreds of units ( dozens of high- end equipment ), and the imported world-leading welding equipment, can process a variety of surface of large and super large parts.

## BOP STACK

Can supply completed high-tech BOP series: high H<sub>2</sub>S resistant, shear under pressure, ultrahigh pressure gas seal, etc.

- High H<sub>2</sub>S resistant BOP suitable to be used with high H<sub>2</sub>S content working condition
- Shear ram BOP can shear and seal high performance drill pipe at the same time under well pressure reliably
- Ultrahigh pressure gas seal BOP can meet 105MPa ultrahigh pressure reliable gas seal requirement, suitable to be used for high pressure gas field

### RAM BOP (API FULL SERIES)

Working pressure MPa (psi)	Bore size (inch)								
	18 (7 1/16)	23 (9)	28 (11)	35 (13 5/8)	43 (16 3/4)	48 (18 3/4)	53 (20 3/4)	54 (21 1/4)	68 (26 3/4)
140(20000)			√						
105(15000)	√	√	√	√					
70(10000)	√	√	√	√		√		√	
35(5000)	√	√	√	√	√	√		√	
21(3000)	√	√	√	√	√		√		√
14(2000)								√	

Note: Can manufacture customized non-standard product

### ANNULAR BOP (API FULL SERIES)

Working pressure MPa (psi)	Bore size (inch)									
	18 (7 1/16)	23 (9)	28 (11)	35 (13 5/8)	43 (16 3/4)	48 (18 3/4)	53 (20 3/4)	54 (21 1/4)	75 (29 1/2)	76 (30)
105(15000)			√							
70(10000)	√	√	√	√		√				
35(5000)	√	√	√	√	√			√		
21(3000)	√	√	√	√	√		√			
14(2000)								√		
7(1000)										√
3.5(500)									√	

Note: Can manufacture customized non-standard product





# Drilling Well Control

Intelligent and integrated well control facilities for special and complex working conditions

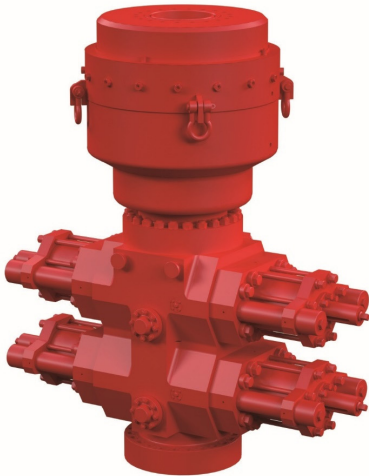
## 54-70 Large bore size High-pressure BOP Stack

Manufacturing Standards:API 16A、GB/T 20174

Product Applicability: For high-yield oil and gas fields and superdeep well operations under high formation pressure that require drilling wellbore with large drift diameter, corresponding large-diameter and ultra-high-pressure BOPs shall be equipped.

Product Features

- High level shearing capacity: Single cylinders have extremely high shearing capacity, and can directly cut off 5 7/8", 23.4lb/ft, S-135-grade high-performance drill pipes and achieve reliable sealing performance at a rated working pressure of 70MPa after the cutting
- Ram hang-on capacity: It can ensure sealing at the rated working pressure while hanging the drilling tool, and the hanging weight can reach up to 600000lbs (272t)
- Side door and cylinder structure: The simple structural design reduces the labor intensity and difficulty in ram replacement
- Surface treatment: Different parts are subject to corresponding advanced surface treatment to improve their anti-corrosion and the reliability of the BOP
- Can realize the gas sealing



Application Cases:High-pressure oil and gas fields in Xinjiang and Southwest of China, as well as in Pakistan and other regions

21 1/4"

Bore size

10000psi

Rated working pressure

177°C

Max temperature level

Technical Parameters	
Nominal diameter	539.45mm (21 1/4")
Rated working pressure: ram preventer	ram preventer 69MPa (10000psi) annular preventer 34.5MPa (5000psi)
Hydrostatic test pressure of the body	ram preventer 103.5MPa (15000psi) annular preventer 51.75MPa (7500psi)
Rated working pressure of hydraulic control system	20.7MPa (3000psi)
Recommended operating pressure	10.5MPa (1500psi)
Temperature level	Max 350°F (177°C)
Sulfur resistance level	NACE MR0175



# Drilling Well Control

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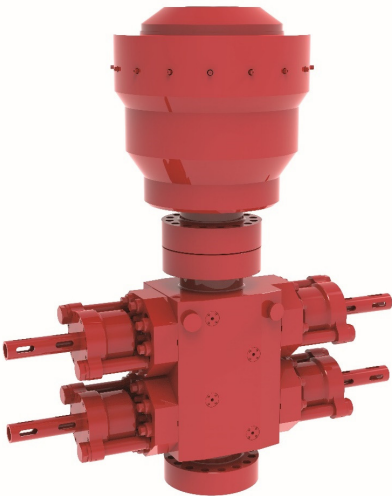
## 20000PSI Ultra-high-pressure BOP Stack

### Manufacturing Standards: API 16A, GB/T 20174

Product Applicability: Deep, Ultra-deep wells are mined with high formation pressure, should use ultra-high pressure BOP stack to ensure well control safety

#### Product Features

- The floating sealing structure is adopted between the intermediate flange and the shell, which ensures stable sealing performance and reduces the tightening torque of the side door bolts
- The ram is replaced by taking out from the side, and reducing the overall height of the BOP stack, which easier to replace the ram
- Fewer parts improve the reliability of the product, simplify after-sales maintenance procedures, reduce maintenance costs, and also make the product simple and beautiful
- The shell, intermediate flange, hydraulic cylinder, piston rod, cylinder sleeve, and ram shaft are subject to corresponding advanced surface treatment to improve the anti-corrosion of the parts and the reliability of the BOP
- FH228-105/140 annular preventer is mainly composed of shell, piston, bonnet and other main parts. The bonnet is connected with the shell by jaw chunk, the packing element is taper type, and the sealing parts are exchangeable with imported products



Application Cases:XIN JIANG, SOUTHWEST high pressure oil field, Russia high pressure oil field

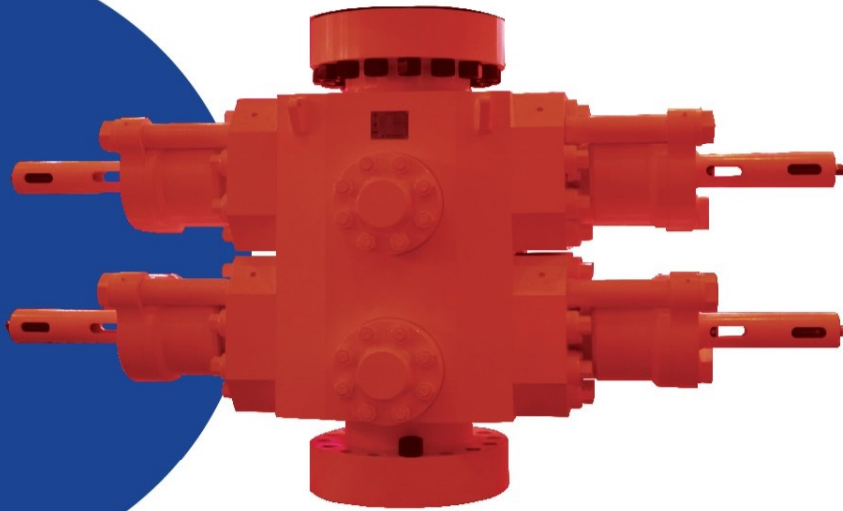
**20000psi**  
Ultra high pressure

**177°C**  
Highest temperature level

**PR1 PR2**  
Performance level

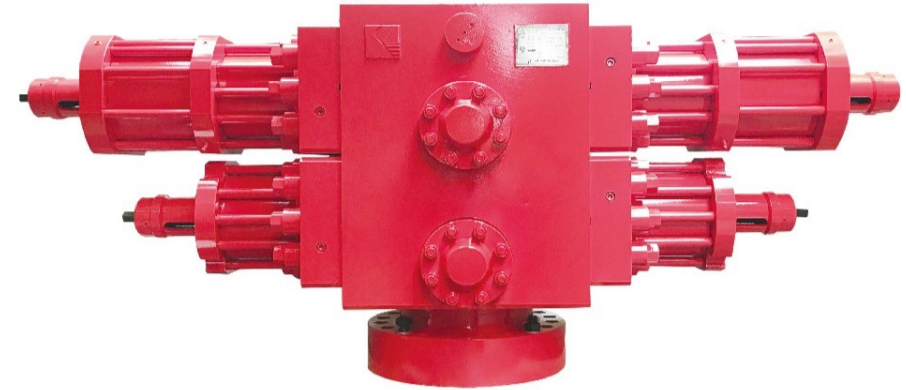
#### Technical Parameters

Nominal diameter	279.4mm (11")
Rated working pressure	ram preventer 138MPa (20000psi) annular preventer 103.5MPa (15000psi)
The pressure of hydrostatic proof test	ram preventer 207MPa (30000psi) annular preventer 155.25MPa (22500psi)
Rated working pressure of hydraulic control system	20.7Mpa (3000psi)
Recommended operating pressure	10.5Mpa (1500psi)
Temperature grade	Ram BOP max 350°F (177°C) Annular BOP max 250°F (121°C)
Sulfur resistance standard	NACE MR0175
Performance level	PR1、PR2



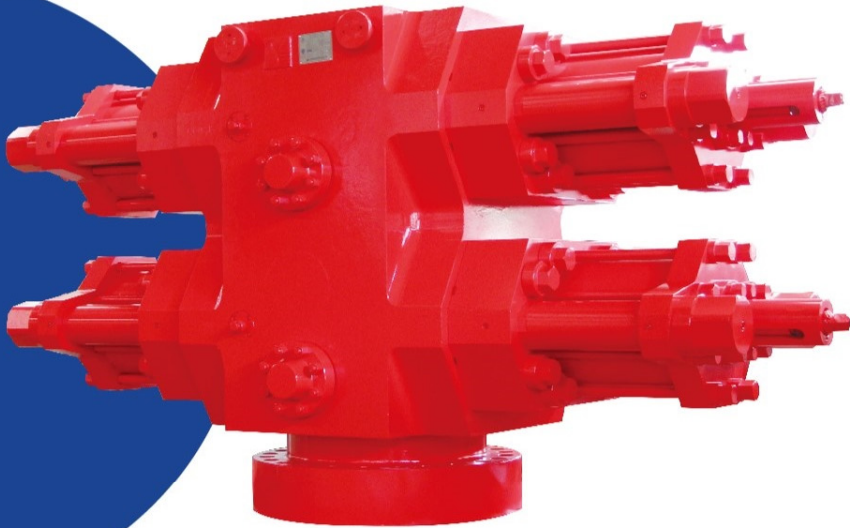
## 2FZ28-140 (11"-20000psi ) U TYPE RAM BOP

- Ram BOP rating pressure 140MPa (20000psi)
- Advance sealing structure, can fulfill reliable sealing under ultrahigh pressure
- Simple and reliable bonnet cylinder assembly structure, less volume and weight
- Hydraulic open method for bonnet cylinder assembly, quick and easy ram assy replacement



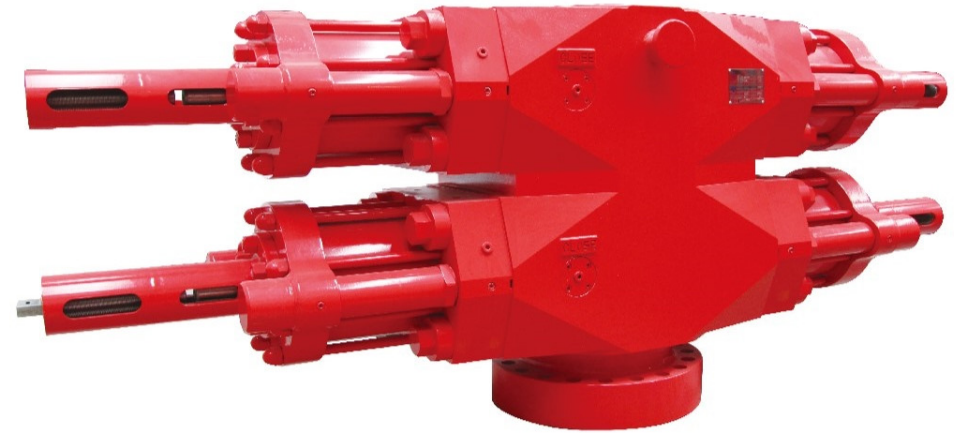
## 2FZ35-105 (13 5/8"-15000psi ) (HIGH H<sub>2</sub>S RESISTANT, GAS SEALING SHEAR UNDER PRESSURE)

- Can shear S-135 level high performance DP with thick wall and high impact energy
- Can shear and seal under rating well pressure at the same time
- Shear ram sheared multiple times (higher than API standard)
- Appropriate surface treatment for key parts, excellent corrosion and wear resistant performance
- Can realize gas seal for 105MPa ultrahigh pressure, suitable for high pressure gas field development
- Ensure the reliability and long life of non-metal sealing parts



## 2FZ54-70 (21 1/4"-10000psi ) U/S TYPE RAM BOP

- Typical BOP Type of large bore and high pressure
- Have large shear and seal strength without tandem booster
- Hydraulic bonnet open method, replace ram assy simply
- Can be equipped with large range variable bore ram, the variable range can reach above 2"



## 2FZ35-105 (13 5/8"-15000psi ) U/S TYPE H<sub>2</sub>S RESISTANT RAM BOP

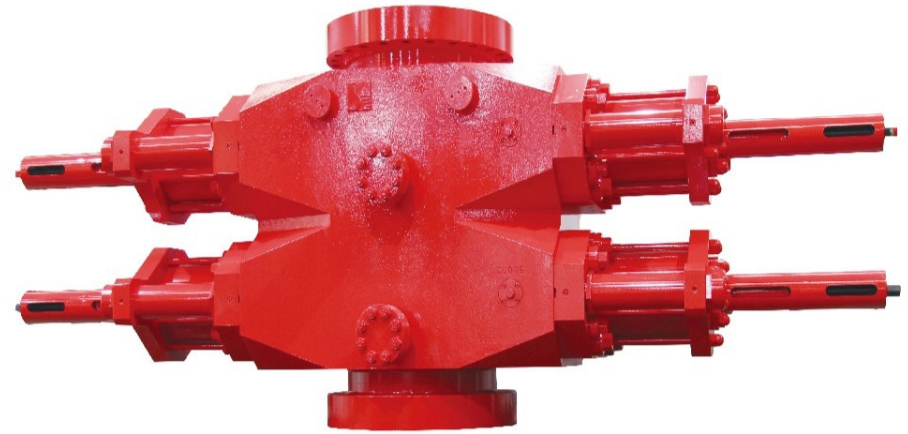
- Suitable for high H<sub>2</sub>S content onshore and offshore platforms or areas where BOPs should meet special H<sub>2</sub>S-resistance requirement
- The inner surface in direct contact with well liquid is overlaid with alloy metal to meet the requirement for high H<sub>2</sub>S content environment
- The key non-metal sealing parts such as packing element and bonnet seal which contact well liquid directly adopt special material, suitable for high H<sub>2</sub>S content area
- Overlaid with imported facility, inspected and supervised by a completely to ensure the product quality





## **2FZ35-105 (13 5/8"-15000psi ) S TYPE HIGH PRESSURE GAS SEALING BOP**

- Improved sealing structure, can achieve reliable sealing under steady high pressure
- Gas seal complies with relevant standards
- Key seal parts adopt appropriate surface treatment, have better corrosion resistance
- The technology can be applied to the blowout preventer in service



## **2FZ68-21 (26 3/4"-3000psi ) U/S TYPE RAM BOP**

- Belong to large bore size BOP series
- Optimized structure, compact in size
- Key sealing parts use special surface treatment, have high corrosion resistance
- Can be equipped with tandem booster to fulfill shear function



## **FHZ28-105/140 (11"-15000/20000psi) ANNULAR BOP**

- The rating pressure is 105MPa (15000psi)
- Can be equipped with 140MPa (20000psi) ram BOP
- Taper type packing element with rich rubber and good sealing performance
- Advanced claw type connection, easy to disassemble
- Reliable surface treatment for key parts, high corrosion resistance



## **FHZ54-35/70 (21 1/4"-5000/10000psi ) ANNULAR BOP**

- Taper type piston which needs less push strength
- Bonnet friction surface features wearing plate, easy to replace and protect the bonnet
- Bonnet features observation hole to check the piston movement, can continuously compare the piston stroke to monitor the packing element lifetime



## S SERIES LOW TEMPERATURE ANNULAR BOP

- Suitable for extremely cold areas such as Northwest, Xin Jiang and Russia
- BOP Stack steam aided heat preservation to keep inner seal parts in good performance
- BOP internal pipeline prevents damage, no additional equipment needed except steam inlet device, easy to use
- Inner steam heat transfers evenly, good thermal radiation performance
- Good explosion-proof effect, can satisfy the onsite explosion protection requirement



## FFZ75-3.5 (29 1/2"-500psi) DIVERTER FFZ76-07 (30"-1000psi) DIVERTER

- The design and manufacture accordance to API 16A, and the flange standard accordance to ASME B16.47 standard
- The top and bottom connection of 29 1/2"-500psi diverter is class 300 B16/A NPS30 R95
- The top and bottom connection of 30"-1000psi diverter is class 600 B16/A NPS30 R95
- Adopt appropriate surface treatment for key seal parts, can fulfill the operating requirement of high corrosion circumstance
- The closing time of diverter less than 45s  
(Note: should be equipped with SHENKAI closing unit)



# Drilling Well Control

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## 29 1/2" 500psi and 30" 1000psi Diverter Products

### Reference standards: API 16A、GB/T 20174

Product Applicability: It is mainly used for shallow gas control in surface borehole. The diverter system is a control device that guides the fluid from the well to a place have safe distance, and its purpose is to reduce the wellhead back pressure. It is also called the diversion system.

#### Product Features

- The design and manufacture of the diverter comply with API 16A, and the flange specifications meet the requirements of Large Diameter Steel Flanges (ASME B16.47)
- The upper and lower connection specifications for 29 1/2"-500psi Diverter is class 300 B16/A NPS30 R95
- The upper and lower connection specifications for 30"-1000psi Diverter is class 600 B16/A NPS30 R95
- Appropriate surface treatment methods are adopted for key sealing parts, which can meet the requirements for using in highly corrosive environments
- Diverter should closed within 45s (Note: Need applicable closing unit to control)



Appropriate surface treatment methods are adopted for key sealing parts, which can meet the requirements for using in highly corrosive environments.

30"

Bore Size

1000psi

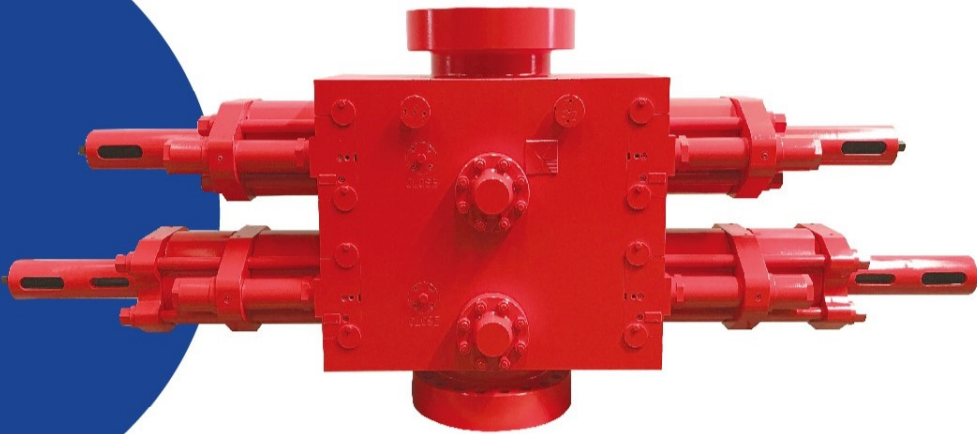
Rated Working Pressure

NACE MR0175

Sulfur resistance level

#### Technical parameter

Bore Size	749.3mm (29 1/2"), 762mm (30")
Rated Working Pressure	3.45MPa (500psi), 6.9MPa (1000psi)
Metal material temperature level	T-20/250
Sulfur resistance level	符合NACE MR0175
Temperature Level	Highest 250°F (121°C)



## 2FZ35-70 (13 5/8"-10000psi ) U TYPE RAM BOP WITHOUT BONNET BOLT

- Without bolt connection between body and bonnet, using special locking block instead, quick bonnet opening and ram assy replacement
- Significantly decrease the labor strength to replace ram on site
- Equipped with tandem booster assy, can shear high impact energy DP or shear the DP under pressure
- Hydraulic drive to open the bonnet, easy to operate and reliable
- The whole BOP features high corrosion resistance



## COILED TUBING SERIES BOP STACK

- Suitable for coiled tubing operation, effectively prevent the blowout accident, and ensure safety operation
- Typical coiled tubing well control device including the bop and stuffing box
- Stuffing box using side door open form, simple and easy to replace the rubber core even in coil tubing operation
- Adopt dual cylinder structure, use well pressure to seal, long usage life and less control pressure
- Equipped with blind ram, shear ram, slip ram and pipe ram
- Slips ram using removable structure design, unique tooth profile design can reduce the harm for coil tubing

## CHOKE AND KILL MANIFOLD

The manifold designed by Shenkai is able to realize the circulation, choke and kill of drilling fluid and mud during operation. The standpipe and casing pressure can be adjusted in real time. It can achieve balanced or underbalanced drilling operations. It can be used in corrosive media such as hydrogen sulfide and carbon dioxide. The material level can reach HH-NL, the pressure level can reach 20000psi, the performance level can reach PR2, and the manufacturing level can reach PSL4. The manifold can be guaranteed to the maximum safety extent.

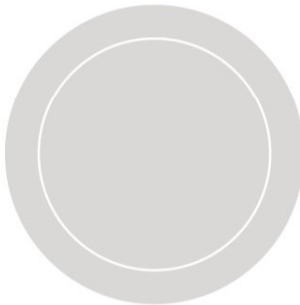
- Suitable for metal seal structure in high pressure and corrosion resistant harsh environment
- Low operating torque, switch easily, provides higher reliability and operability
- Remote operation by hydraulic choke valve, realize automatic safe control



### CHOKE AND KILL MANIFOLD (API FULL SERIES)

Working Pressure MPa (psi)	Bore Size (inch)							
	46 (1 13/16)	52 (2 1/16)	65 (2 9/16)	78 (3 1/16)	80 (3 1/8)	103 (4 1/16)	130 (5 1/8)	180 (7 1/16)
140(20000)	√	√	√	√		√		√
105(15000)	√	√	√	√		√	√	√
70(10000)	√	√	√	√		√	√	√
35(5000)		√	√		√	√	√	√
21(3000)		√	√		√	√	√	√
14(2000)		√	√		√	√	√	√

Note: Can manufacture customized non-standard product

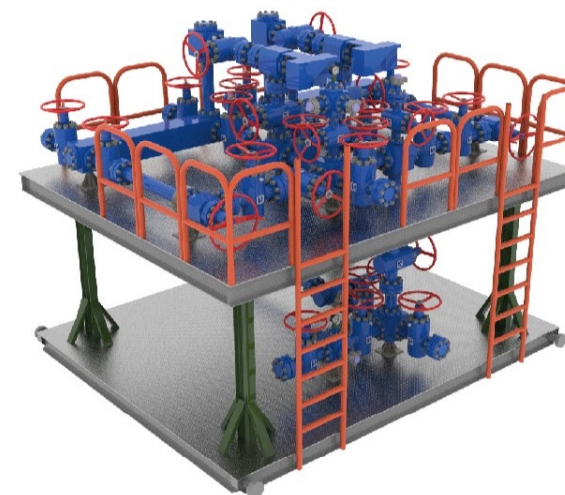






## INTEGRATED MANIFOLD

- The integrated structure greatly reduces the leakage point and increases the seal reliability
- Maintain long-term stability, reliability and long service life
- Reduced installation height and size, each valve can be installed independently
- With the monitor of drilling pressure and flow function



## COMBINED MANIFOLD

- With dual functions of well choking and killing, concentrated valves easy to operate
- Smaller footprint, save platform space, easy to installation and maintenance
- Unique skid mounting structure design ensures good self-balancing ability
- Equipped with hydraulic choke valve, remote operation allowed



## ADJUSTABLE MANIFOLD

- Adjustable height design with wide range, reduce labor strength greatly
- Select material according to special site condition, fully fulfill the strength and corrosion resistance requirements
- Can equipped with cover and heating equipment to be used for -60°C lowest temperature area
- Union connection for the pipe and hoses, easy to assemble and maintenance



## REMOTE CONTROL PANEL

- Remote control open and close of hydraulic choke valve
- Display standpipe pressure, casing pressure and choke valve open on control panel
- The standpipe pressure and casing pressure adopt liquid signal sensor, which has high sensing accuracy, stable data and good shock-proof performance
- The valve position sensor adopts the gas signal sensor, fast response speed, high precision and stable data

# Drilling Well Control

Intelligent and integrated well control facilities for special and complex working conditions

## Electronic Choke Manifold Control Panel

### Reference Standards: API 16C, SY/T5323

Product Applicability: It is equipped with a hydraulic choke manifold for remote control oil and gas well pressure to ensure drilling safety.

#### Product Features

- The product is totally electric control, which is safe and reliable, with higher efficiency. Compare to tradition air control type, electrical one have higher requirements for air source pressure, cleanliness, water content and temperature
- Digital display is adopted, which clearly displays the working status of the system
- Electric pumps can be started and stopped automatically
- It is equipped with high-precision (0.5 level) electronic displacement sensors, and no air source is needed on site
- Electrical components are designed to meet the explosion-proof requirements



Application Cases:Southwest China, Pan-Russian region

-18~60°C

Environment Temperature

4MPa

Rated output oil pressure

35/70/105MPa

Sensor casing pressure range

#### Technical Parameters

Environment Temperature	-18~60°C
Rated output oil pressure	4MPa
Sensor casing pressure range	35/70/105MPa
Motor rated power	1.5kw



## BOP CONTROL SYSTEM

The design and manufacture are strictly apply to SY/T5053.2 and API Spec 16D < Specification for control system of well head control equipment and distribution equipment>, Can be customized according to the special requirements of customers, using a variety of explosion-proof technology, can meet the European CE/ATEX certification standards.

- Advanced Profibus and PLC control technology to simplify the operation automatically
- Strong applicability, applied in a variety of harsh conditions (high and low temperature, offshore) stably
- Equip with external hydraulic source and nitrogen backup system source, ensure normal operation under unexpected circumstances
- Equip with backup power supply, the control unit can work normally for more than 120 minutes in case of sudden power failure, ensuring continuous and safe operation
- Cable or fiber connection between main control panel and auxiliary driller' s panel, The distance can be over 200 meters and fast response speed
- Optional PN-T remote console automatic recording module can provide data traceability for remote console operation
- Compatible with our own drilling instruments, can realize integrated monitoring function

## PNEUMATIC TYPE BOP CONTROL SYSTEM CONFIGURATION AND PARAMETER TABLE

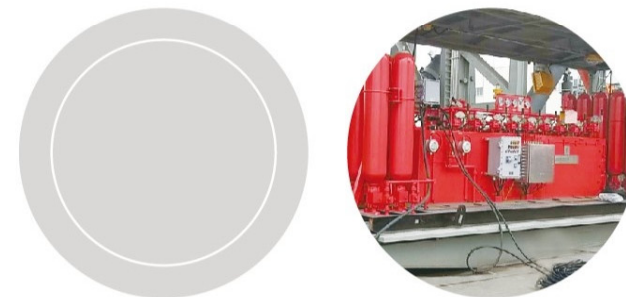
Standard Model	The range of controlled units	Accumulator Stack		Pump System Displacement		Alarm Device	Auxiliary Remote Control Panel
		Total Volume (L)	Arrange ment	Triplex Pump (mL/r)	Pneumatic Pump (mL/pump)		
FKQ3840-X	10~17	80×48	Side /Back arrangement	80×4	120×8	Standard Configuration	Standard Configuration
FKQ3200-X	10~17	80×40	Side /Back arrangement	80×3	120×6	Standard Configuration	Standard Configuration
FKQ1920-X	7~14	80×24	Side /Back arrangement	80×2	120×4	Standard Configuration	Standard Configuration
FKQ1600-X	7~14	80×20	Side /Back arrangement	80×2	120×4	Standard Configuration	Standard Configuration
FKQ1440-X	7~14	60×24	Side /Back arrangement	80×2	120×3	Standard Configuration	Standard Configuration
FKQ1280-X	7~14	80×16	Side /Back arrangement	80×2	120×3	Standard Configuration	Standard Configuration
FKQ1200-X	6~14	60×20	Side /Back arrangement	80×2	120×3	Standard Configuration	Standard Configuration
FKQ960-X	6~14	60×16	Side /Back arrangement	80×2	120×2	Standard Configuration	Standard Configuration
FKQ800-X	4~10	40×20	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKQ720-X	4~10	60×12	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKQ 640-X	4~10	40×16	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKQ 480-X	4~10	40×12	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKQ 320-X	2~10	40×8	Side /Back arrangement	60	120	Optional Configuration	Optional Configuration

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## ELECTRIC TYPE BOP CONTROL SYSTEM CONFIGURATION AND PARAMETER TABLE

Standard model	The range of controlled units	Accumulator stack		Pump system displacement		Alarm device	Auxiliary remote control panel
		Total volume (L)	Arrange ment	Triplex pump (mL/r)	Pneumatic pump (mL/pump)		
FKDQ1920-X	8~19	80×24	Side /Back arrangement	80×2	120×4	Standard Configuration	Standard Configuration
FKDQ1600-X	8~19	80×20	Side /Back arrangement	80×2	120×4	Standard Configuration	Standard Configuration
FKDQ1440-X	7~17	60×24	Side /Back arrangement	80×2	120×3	Standard Configuration	Standard Configuration
FKDQ1280-X	7~17	80×16	Side /Back arrangement	80×2	120×3	Standard Configuration	Standard Configuration
FKDQ1200-X	6~14	60×20	Side /Back arrangement	80×2	120×3	Standard Configuration	Standard Configuration
FKDQ960-X	6~14	60×16	Side /Back arrangement	80×2	120×2	Standard Configuration	Standard Configuration
FKDQ800-X	4~10	40×20	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKDQ720-X	4~10	60×12	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKDQ 640-X	4~10	40×16	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKDQ 480-X	4~10	40×12	Side /Back arrangement	80	120	Optional Configuration	Optional Configuration
FKDQ 320-X	2~10	40×8	Side /Back arrangement	60	120	Optional Configuration	Optional Configuration



# Drilling Well Control

Intelligent and integrated well control facilities for special and complex working conditions

## Electrically Controlled Surface BOP Control System

Reference Standards: API 16D, SY/T5053.2

Product Applicability: temperature range: -20~60°C; widely used in high-temperature, extremely low temperature and sandy, high-salt and humid, and other onshore and offshore environments

Product Features

- Advanced profibus technology and PLC technology are applied
- It is equipped with UPS to ensure normal operation of the control part for 2 hours in case of power failure at the well site
- Driller communication distance is  $\geq 200$  meters and the response efficiency is 200 ms
- Mechanical and electrical dual fail-safes are set to prevent misoperation
- Visual touch screen is provided for driller, and UI development can be customized
- With the datalog function, it can save the operation records of the device within 60 days
- It has one-key emergency shut-in function



Application Cases:Kuwait, Iraq, Oman, etc. in the Middle East, Southwest China, Xinjiang, Northeast China, North America, South America, etc., Azerbaijan, etc. around the Caspian Sea

21MPa

System rated pressure

31.5MPa

Maximum system working pressure

200ms

Reaction efficiency

Technical Parameters	
System rated pressure	21MPa (3000psi)
Maximum system working pressure	31.5MPa (4550psi)
System pressure regulation range	0~14MPa (0~2000psi)
Power supply	380V~660V/50/60Hz
Reaction efficiency	200ms
Explosion-proof certification	CNEx/ATFX/IFCFx
CCS	CCS/DNV

# Drilling Well Control

Intelligent and integrated well control facilities for special and complex working conditions

## Well Control Data Monitoring System

Product Applicability: It is applicable to centralized monitoring of all devices within the area under administration

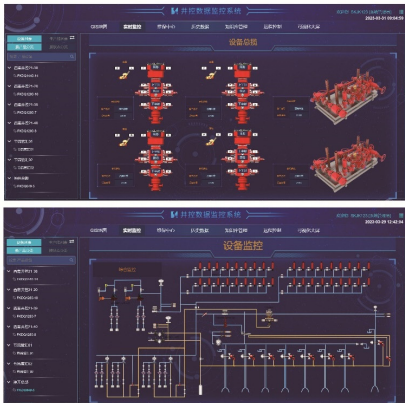
### Product Features

- With IoT technology and cloud-based data platforms, it can provide more comprehensive and intuitive well control equipment status monitoring services at well sites, achieving intelligent operation and management of equipment. It analyzes well site data for early warning and guides site equipment maintenance to prevent danger.

- The system can analyze well site data for early warning and guides site equipment maintenance to prevent danger.

- Management personnel and on-site personnel can view the status of all devices within the area under administration in real time through the mobile terminal APP anytime and anywhere.

- It adopts centralized network management to optimize various processes, operating parameters and management flows.



Application Cases: Southwest China

**Windows**  
Hardware platform

**Android、iOS**  
Mobile terminal

**≤300ms**  
Communication efficiency

Technical Parameters	
Hardware platform	Windows
Mobile terminal	Android, iOS
Communication efficiency	≤300ms
Communication connector	TCP/IP, RS485 serial port
Data release	4G network, wired LAN



FRAC STACK CLOSING UNIT

FEATURES OF FRAC STACK CLOSING UNITS

Duplicable power source from diesel engine driven hydraulic pump or pneumatic pump for reliable operations under emergency conditions.

Separate unloading ball valves installed at the bottom of accumulator bottles, and connected to manifold through unions which helps for easy maintenance.

Adapts quick coupling joints for hoses for quick connections.

Flexibility offers more stable working performance even under extrem working condition.

Special design and manufacturing can be provided upon request.

4 Bottles
2-1" Selector Valves
Diesel /Electrical Engine
11 Gal
Diesel Engine Power: 7.5KW
Duplex Pump

4 ~ 16 Bottles
3 ~ 8-1" Selector Valves
Diesel Engine
11 ~ 20 Gal/ Bottle

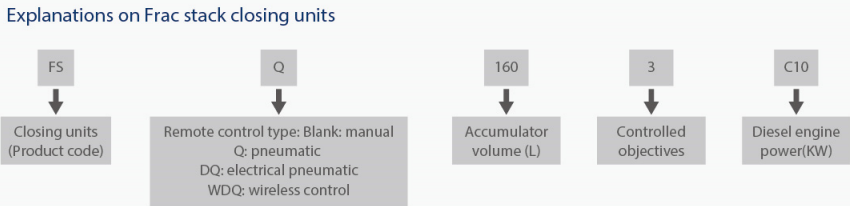
20 Bottles
7-1" Selector Valves
Diesel /Electrical Engine
20 Gal
Diesel Engine Power: 15KW
Duplex Pump



CLOSING UNIT

CONTROL SYSTEM

FRAC STACK CLOSING UNIT



Parameters

Model	Objectives	Accumulators			Model	Objectives	Accumulators		
		Total volume (L)	Available volume (L)	Install method			Total volume (L)	Available volume (L)	Install method
FKWDQ1280-10	10	80x16	640	Side /Back	FKQ1600-14	14	80x20	800	Side /Back
FKWDQ800-7	7	40x20	400		FKQ1600-12	12	80x20	800	
FKDQ1920-13	13	80x24	960		FKQ1600-10	10	80x20	800	
FKDQ1600-14	14	80x24	800		FKQ1440-14	14	60x24	720	
FKDQ1600-12	12	80x20	800		FKQ1280-10	10	80x16	640	
FKDQ1600-10	10	80x20	800		FKQ1280-9	9	80x16	640	
FKDQ1600-9	9	80x20	800		FKQ1280-8	8	80x16	640	
FKDQ1600-8	8	80x20	800		FKQ1280-7	7	80x16	640	
FKDQ1440-14	14	60x24	720		FKQ1200-9	9	60x20	600	
FKDQ1440-10	10	60x24	720		FKQ1200-8	8	60x20	600	
FKDQ1280-10	10	80x16	640		FKQ960-8	8	60x16	480	
FKDQ1280-9	9	80x16	640		FKQ960-7	7	60x16	480	
FKDQ1280-8	8	80x16	640		FKQ800-7	7	40x20	400	
FKDQ1280-7	7	80x16	640		FKQ800-6	6	40x20	400	
FKDQ1200-9	9	60x20	600		FKQ720-7	7	60x12	360	
FKDQ1200-8	8	60x20	600		FKQ720-6	6	60x12	360	
FKDQ960-8	8	60x16	480		FK640-6	6	40x16	320	
FKDQ960-7	7	60x16	480		FK640-5	5	40x16	320	
FKDQ800-8	8	40x20	400		FK480-5	5	40x12	240	
FKDQ800-7	7	40x20	400						
FKDQ800-6	6	40x20	400						
FKDQ720-7	7	60x12	360						
FKDQ720-6	6	60x12	360						

CLOSING UNIT

CONTROL SYSTEM





## FKQ3200-12 LIGHT-INDICATING TYPE CONTROL SYSTEM

The whole system adopts inductive sensor control technology, and each BOP switch status can realize real-time synchronization between two remote control panels.

- More accurate and faster response speed: relative air circuit signal shows the rotary valve position; the electrical signal transmission speed is faster. Field staffs are able to know the equipment status faster and more accurately, which avoids the inconsistency of the traditional remote control valve position switch status
- Better stability: electrical signals avoid mechanical errors, solving the problem of signal failure caused by the internal block of the gas bundle during the transmission of the gas signal
- Better cost effective compared with electric control system, it has the same position display function and response speed



## FKDQ ELECTRIC CONTROL SYSTEM

- Advanced fieldbus technology and PLC control technology, simple operation and automation
- The whole system is equipped with backup power supply, which can operate normally for 120 minutes in case of power failure in field, ensuring continuous and safe field operation
- Strong adaptability, can operate stably under a variety of harsh working conditions
- Operation indication and anti-error function in the driller's panel, easy and reliable operation
- Optional PN-T automatic recording module provides data traceability for remote console operation process
- Compatible with our own drilling instruments, can realize integrated monitoring function
- The whole equipment certified by API, IEC and ATEX



## FKWDQ ELECTRIC CONTROL TYPE CONTROL SYSTEM (WIRELESS REMOTE CONTROL)

- Advanced wireless remote control technology, the control distance can reach hundreds of meters, short control lag time, not affected by the ambient temperature. This system overcomes the shortcoming of fixed point operation control, and improves the safety and convenience of drilling operation
- Hand-held terminal operation can realize the function of remote shut-down in emergency, and improve the safety of the BOP switch control and the reliability of the emergency treatment when blowout occurs
- The whole system equip with backup power supply, which can operate normally for 120 minutes in case of power failure in field, ensuring continuous and safe field operation
- Operation indication and anti-error function in the driller's panel, easy and reliable operation
- Optional PN-T automatic recording module provides data traceability for remote console operation process
- Compatible with our own drilling instruments, can realize integrated monitoring function
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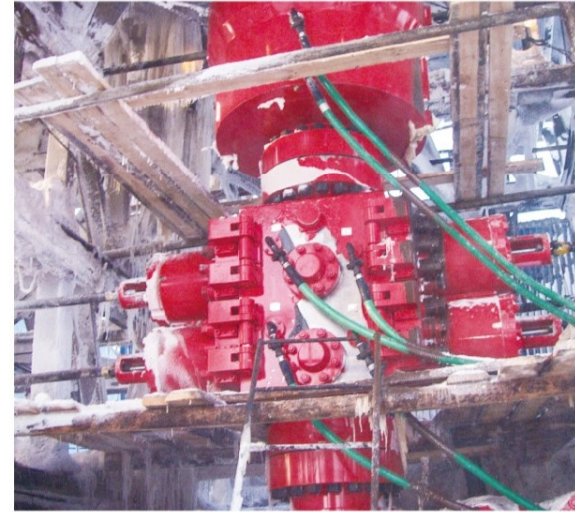
## RAPID CHARGING SYSTEM

- The system customized for pressure test for well control products such as BOP and manifold, and the pressurization speed can reach more than 5 times of the conventional pressure test system
- Internal integration volume is small and automatically reversable, can also achieve continuous pressurize
- With manual and automatic pressure test function, data computer storage, and no data loss in case of power loss
- Windows operating interface, easy operation and with clear picture
- Customized according to customer requirements (including operation room, monitor equipment, etc)



## SALES & APPLICATIONS

Our products are widely used in Sinopec, CNPC and CNOOC (offshore platform) oilfields, and have been exported to various countries and regions in the Middle East, Russia, America, Africa, Canada, Australia, central Asia and Southeast Asia, etc.



### F35-70 BOP STACK

Used in Russia under extremely low temperature below -35°C



### F35-105 BOP STACK

Used in Sichuan gas field with H<sub>2</sub>S content (Depth more than 8400m)

### F35-105 BOP STACK

Used in Middle East; good performance in high temperature and windy desert condition



## FKQ INTELLIGENT ALARM TYPE CONTROL SYSTEM

Used in Saudi in high  
temperature and sandy field,  
more than 50°C temperature



## FKDQ ELECTRIC CONTROL SYSTEM

Used in Kuwait desert field,  
the environment  
temperature reach 55°C



## FKDQ ELECTRIC CONTROL SYSTEM

Used in Kazakhstan offshore field,  
the temperature reached -35°C  
and in salt fog and humidity  
environment



## JG-105 HIGH H<sub>2</sub>S RESISTANT CHOKE MANIFOLD

High pressure, high H<sub>2</sub>S resistant  
choke manifold, used in  
Kazakhstan, the pressure level  
is 15000psi, the H<sub>2</sub>S resistant  
level is HH-NL

