

API 6A PRODUCTS BROCHURE



MARKCO MACHINE SERVICES



ABOUT US

Markco Machine Services is (**MARKCO**) s a business unit of Mann Flow Controls, Inc (MFC) group of companies based in Houston, Texas. MFC is a manufacturer of high quality valves and flow control products such as ball valves, check valves, gate valves, globe valves, plug valves and specialty valves. MARKCO is focused on manufacturing wellhead equipment and X-mas trees used in the oil & gas drilling production. MARKCO products are manufactured to API6A specifications. These products are manufactured at an approved manufacturing facility approved by MFC/MARKCO. Our group is dedicated to manufacture our products of the highest quality in accordance with customers' satisfaction, competitively priced and delivered on time.

WELLHEADS

A wellhead is the component at the surface of an oil or gas well that provides the structural and pressure-containing interface for the drilling and production equipment.

The primary purpose of a wellhead is to provide the suspension point and pressure seals for the casing strings that run from the bottom of the hole sections to the surface pressure control equipment. wellhead or mudline wellhead.



While drilling the oil well, surface pressure control is provided by a blowout preventer (BOP). If the pressure is not contained during drilling operations by the column of drilling fluid, casings, wellhead, and BOP, a well blowout could occur. When the well has been drilled, it is completed to provide an interface with the reservoir rock and a tubular conduit for the well fluids. The surface pressure control is provided by a Christmas tree, which is installed on top of the wellhead, with isolation valves and choke equipment to control the flow of well fluids during production.

Wellheads are typically welded onto the first string of casing, which has been cemented in place during drilling operations, to form an integral structure of the well. In exploration wells that are later abandoned, the wellhead may be recovered for refurbishment and re-use.

Offshore, where a wellhead is located on the production platform it is called a surface wellhead, and if located beneath the water then it is referred to as a sub-sea wellhead or mudline wellhead.

OUR PRODUCTS

- WELLHEAD EQUIPMENT & CHRISTMAS TREE
- CASING ASSEMBLY
- CONNECTION TYPES BETWEEN CASING HEAD & SURFACE CASING
- SURFACE CASING
- CASING HEAD BODY
- CASING SPOOL BODY
- CASING HANGER
- WELLHEAD & CHRISTMAS TREE
- CASING HEAD TOOL
- TUBING HEAD BODY TYPES
- TUBING HEAD BODY
- CASING SECONDARY SEAL RING
- TUBING HANGER
- MULTIBOWL WELLHEAD
- WELLHEAD TOOLS
- DUAL COMPLETION WELLHEAD
- UNIHEAD
- HIGH PRESSURE OIL & GAS WELLHEAD AND AUTOMATIC SAFETY CONTROL SYSTEM
- PCP WELLHEAD
- FULL BORE SERIES GATE VALVES
- AVAILABLE GATE VALVE TYPES
- EXPANDING GATE VALVE TYPES
- SURFACE SAFETY VALVES
- VALVE WITH BALL SCREW
- VALVE WITH GEARBOX
- ADJUSTABLE CHOKE VALVES
- POSITIVE CHOKE VALVES AND CHECK VALVES
- SPECIALTY VALVES
- DRILLING CHOKES
- CHOKE MANIFOLD
- CHOKE AND KILL MANIFOLDS
- COMBINATION MANIFOLD
- MUD MANIFOLD
- MUD-GAS SEPARATOR

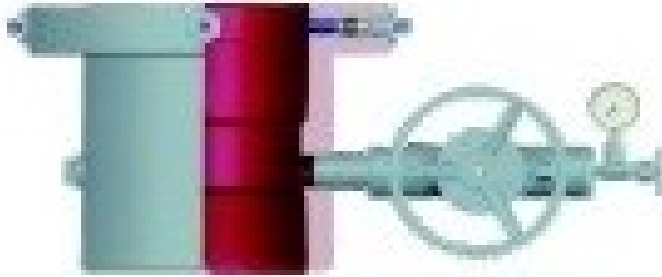
WELLHEAD EQUIPMENT & CHRISTMAS TREE



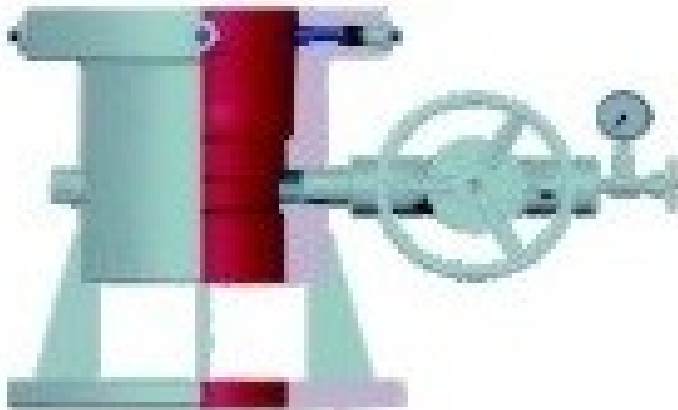
Fix wellhead, connects wellhead casing string, seal to control the angle of the casing, suspends tubing, controls wellhead pressure and adjusts flow rate, induces oil into outlet pipeline, shuts off oil well when necessary and applies to acid fracturing, water injection and testing services.

- ◆ Consist of casing head, tubing head, and Christmas tree
- ◆ Applies to all kinds of casing, tubing programs and connection types
- ◆ Features reliable running, simple and convenient operating and repairing
- ◆ Can be equiped with (pneumatic) hydraulic safety valve
- ◆ Working pressure: 2,000 PSI - 20,000PSI
- ◆ Working medium: oil, natural gas, mud, H₂S, CO₂
- ◆ Working temperature: 46° C - 121° C (Class LU)
- ◆ Material class: AA, BB CC, DD, EE, FF, HH
- ◆ Specification level: PSL1-4
- ◆ Performance level: PR1-2

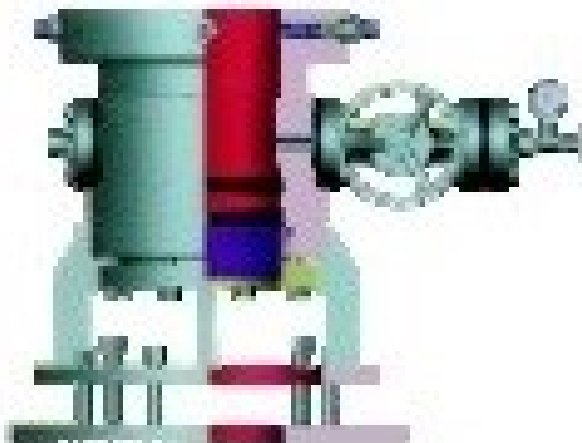
CONNECTION TYPES BETWEEN CASING HEAD AND SURFACE CASINGS



- ✦ **Threaded bottom connection**
All types of casing thread, connect surface casing pup joint



- ✦ **Welded bottom connection**
Weld casing head and surface casing on the spot, applies to most specifications of casings

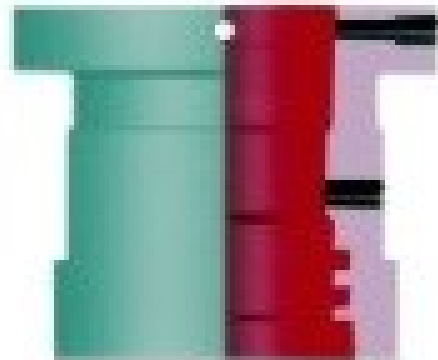


- ✦ **Slip bottom connection**
Tighten the locking bolt to slip clamp surface casing, designed with your choice of casing seal ring. The connection is firm and the seal is reliable

CASING HEAD BODY



➤ 2 – 20 inch Casing Size



➤ To All Current API Dimensions

▪ Custom sizes available

CASING SPOOL BODY



➤ 2 – 21-1/4 inch Spool Size



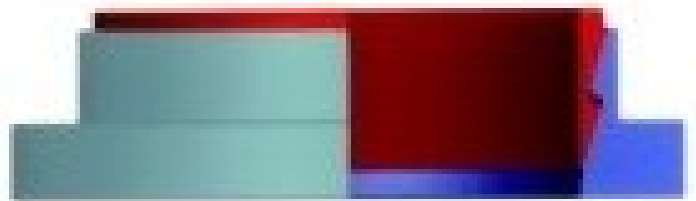
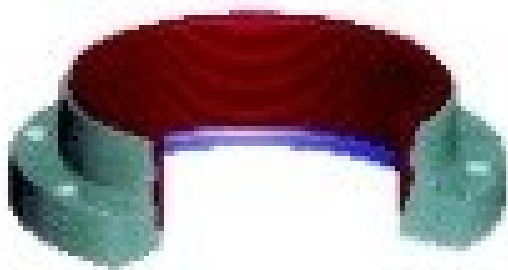
➤ To All Current API Dimensions

▪ Custom sizes available

CASING HANGER

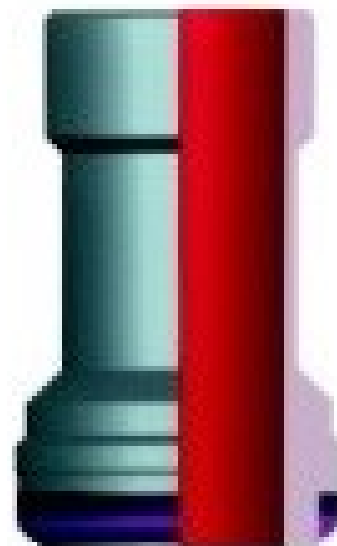
◆ WD Type Hanger

- Consist of slip, slip bowl, etc
- Used for connecting casing head and surface casing through slip tighten casing with help of external force
- Applicable to standard casing heads of bottom connection



◆ Mandrel Type casing Hanger

- Consist of hanger body, rubber seal ring, and retainer, etc
- Applicable to standard casing heads and casing spool, which is easy operation and reliable seal



CASING HANGER

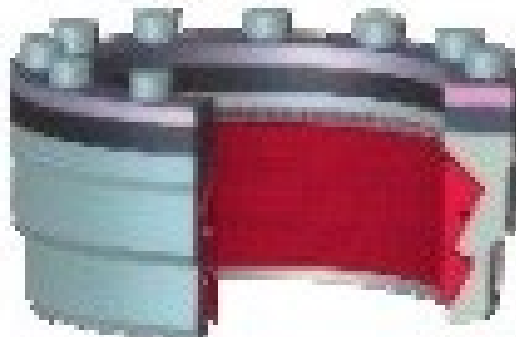
▶ **W Type Hanger**

- Consists of slip, slip bowl, support base and sealing member
- Equipment is automatically energized with casing weight
- Mating surface of slip and slip body designed with double limited position and one taper to lock casing easily and avoid destroying casing
- Comparable to standard casing heads and casing spools



▶ **WE Type Hanger**

- Consists of slip, slip bowl, support base and sealing member
- Equipment is automatically energized with casing weight
- Mating surface of slip and slip body designed with double limited position and one taper to lock casing easily and avoid destroying casing
- Comparable to standard casing heads and casing spools

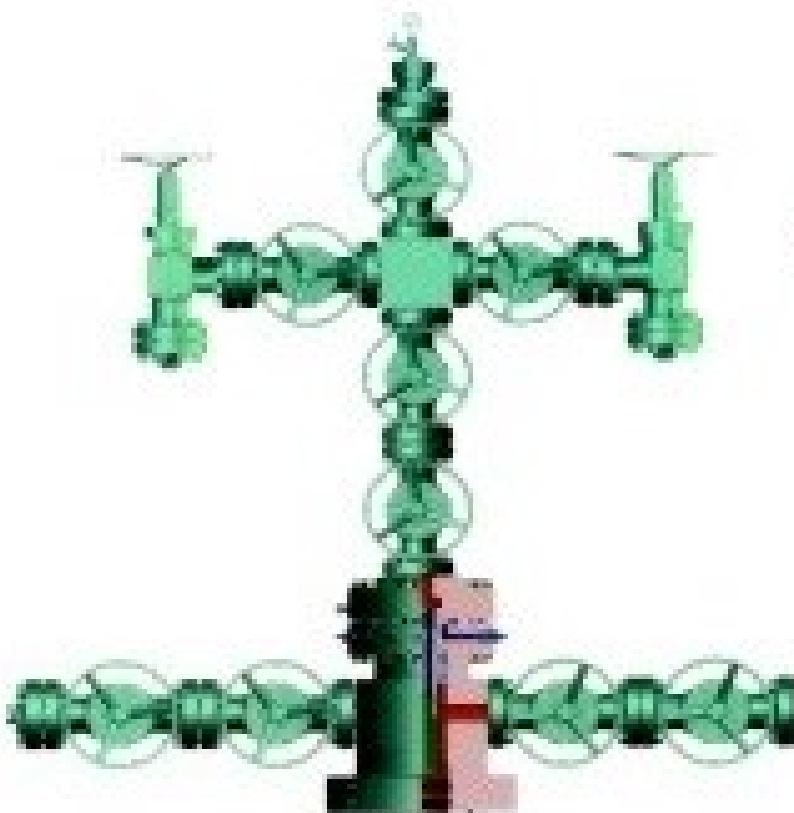


WELLHEAD & CHRISTMAS TREE

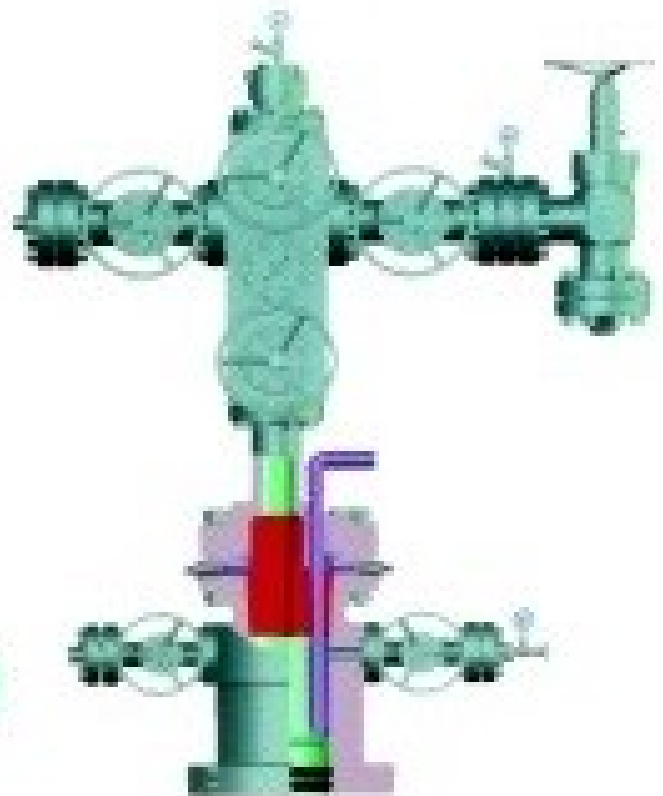
✦ Conventional Christmas Tree

✦ Block Christmas Tree

Assembly of Tubing Head
& Christmas Tree



✦ Con.
Tubing Head,
Conventional Christmas Tree



✦ BK.
Tubing Head,
Block Christmas Tree

CASING HEAD TOOL

✦ W Type Hanger

Wear bushing is used to prevent cavity sealing surface from damage during drilling. Installed and removed by running & retrieving tool



✦ Running / Retrieving Tool

Used for running / retrieving wear bushing

✦ Test Plug

- The test plug is set on the shoulder of casing head (or casing spool) to test seal performance of BOP, drilling spool and casing head (or casing spool) through drill pipe
- Meet, the requirements of casing head (or casing spool) of different specification, through replacing the external test Plug

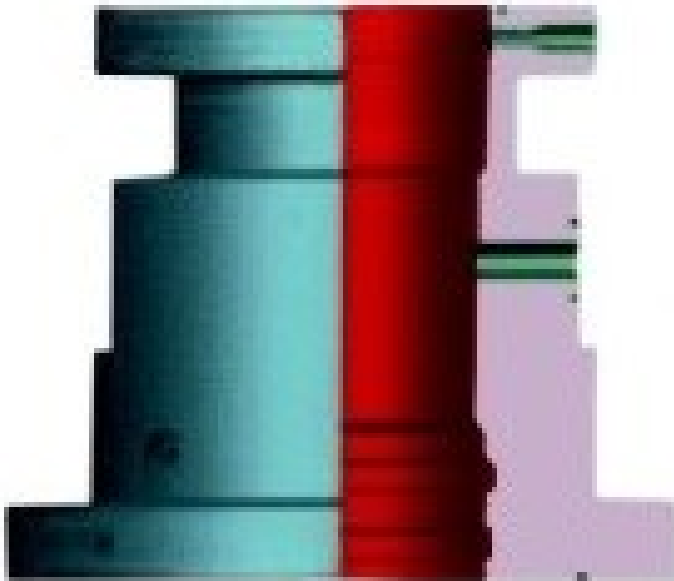


✦ Multifunction Test Plug

Can be used as running/retrieving tool for wear bushing as well as a test plug

TUBING HEAD BODY TYPES

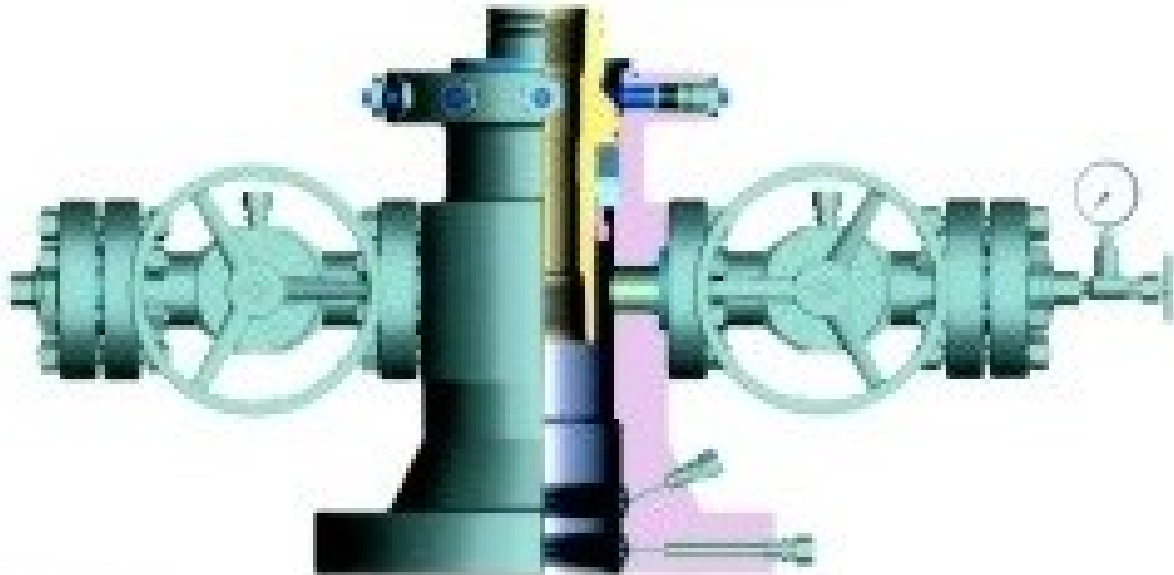
◆ Type - A



◆ Type - B

All API current sizes available. Custom sizes upon request.

TUBING HEAD BODY



- ◆ **Tubing Head**
 - ◆ Tubing head designed with versatile straight-bore, can be installed in tubing hanger with different specifications
- ◆ **Straight-bore Design**
 - ◆ 45° shoulder designed with high load capacity
- ◆ **Straight-bore Design**
 - ◆ Threaded flange side outlet
- ◆ **Lock Down Screw Assembly**
 - ◆ Standardized design lock down screw assembly
 - ◆ Lock wear bushing, tighten tubing hanger
- ◆ **Secondary Seal**
 - ◆ Designed with secondary seal mechanism at bottom, the casing head can be cut on site to fit the height of the sealing device to be installed to fit the height of sealing device through cutting casing on the spot
- ◆ **Lock Down Screw Assembly**
 - ◆ Rubber seal or metal-to-metal seal
 - ◆ Tubing hanger and top flange can be fed through with a cable, or penetrated with power mandrel penetrator
 - ◆ Tubing hanger and top flange may connect multiple joints to control pipeline

CASING SECONDARY SEAL RING

◆ Various types of secondary seals

- BT and P type are injection secondary seals, FS and Y type are non-injection secondary seals
- Y type is a one way seal, others are two way seals
- Max Pressure for FS & Y type: 20,000PSI
- Seal rings good for extended use in oil, natural gas, and mud service.

◆ BT type secondary seal



◆ FS type secondary seal



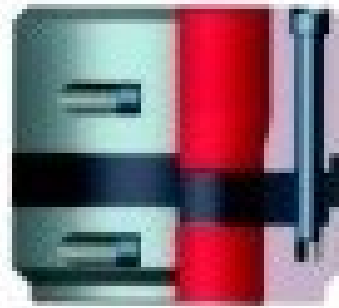
◆ P type secondary seal



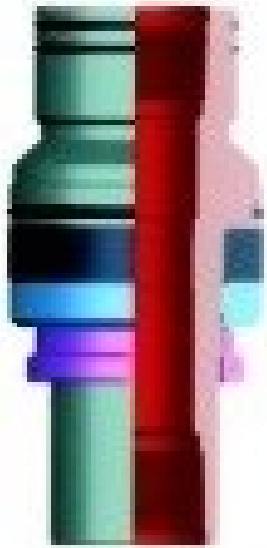
◆ Y type secondary seal



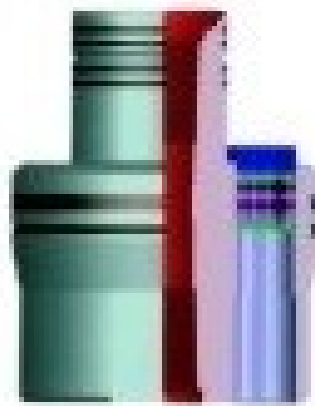
TUBING HANGER



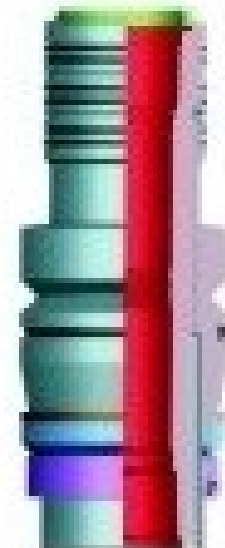
✦ Wrap Round Tubing Hanger



✦ Rubber Seal Tubing Hanger



✦ Cable Seal Tubing Hanger



✦ Metal-to-metal Seal Tubing Hanger

- Taper type and straight type
- Metal-to-metal seal and non-metal seal
- With non-capitalized pressure valve thread
- Locating mechanism
- Various cable penetrator channels, controls pipeline channel subsurface safety valve, chemical reagent injection channel and capillary channel
- The upper and lower threads to API tubing specification, unless client request other

CASING SECONDARY SEAL RING

◆ Various types of secondary seals

- BT and P type are injection secondary seals, FS and Y type are non-injection secondary seals
- Y type is a one way seal, others are two way seals
- Max Pressure for FS & Y type: 20,000PSI
- Seal rings good for extended use in oil, natural gas, and mud service.

◆ BT type secondary seal



◆ FS type secondary seal



◆ P type secondary seal



◆ Y type secondary seal



WELLHEAD TOOLS

- Back pressure valves are used to seal pressure in well in order to repair or replace master valve of Christmas tree
- Back pressure valve R/R tool is used for installing or retrieving back pressure valve while under pressure
- VR plug is used to close casing pressure in order to repair or replace inside valve tubing head (or casing head)
- VR plug R/R is used for installing or retrieving VR plug while under pressure
- High pressure injection gun is primarily used for the injection of secondary seal and valve, which is also used for pressure testing

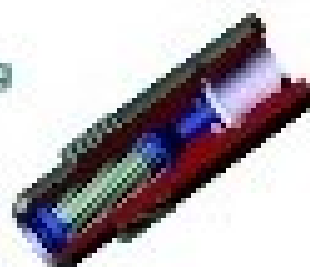


• Back pressure valve R/R tool

• Back pressure valve



• VR plug



• High pressure injection gun



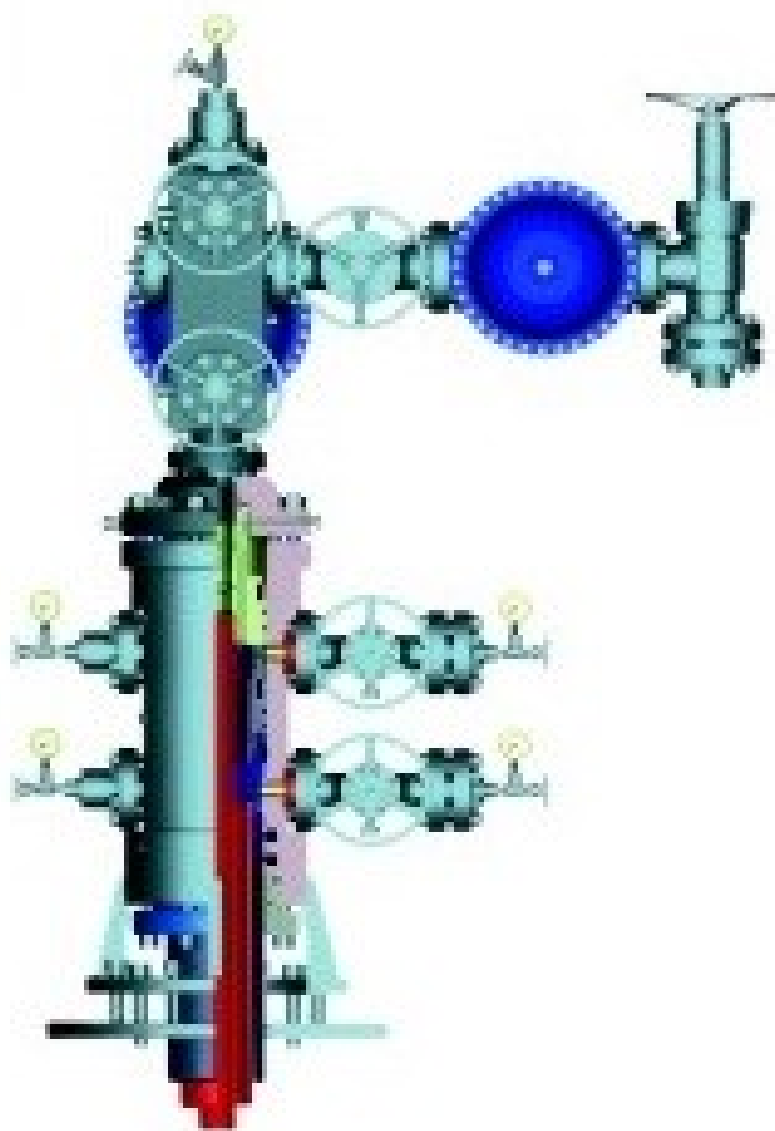
• VR plug R/R tool



DUAL COMPLETION WELLHEAD

- Pneumatic or hydraulic safety valve available
- Design for assembling and disassembling dual tubing hanger quickly
- One well bore can exploit two different strata at the same time, and can operate separately
- Compact construction, convenient operation, reliable sealing
- Working pressure: 2000PSI -20000PSI
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° - 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2

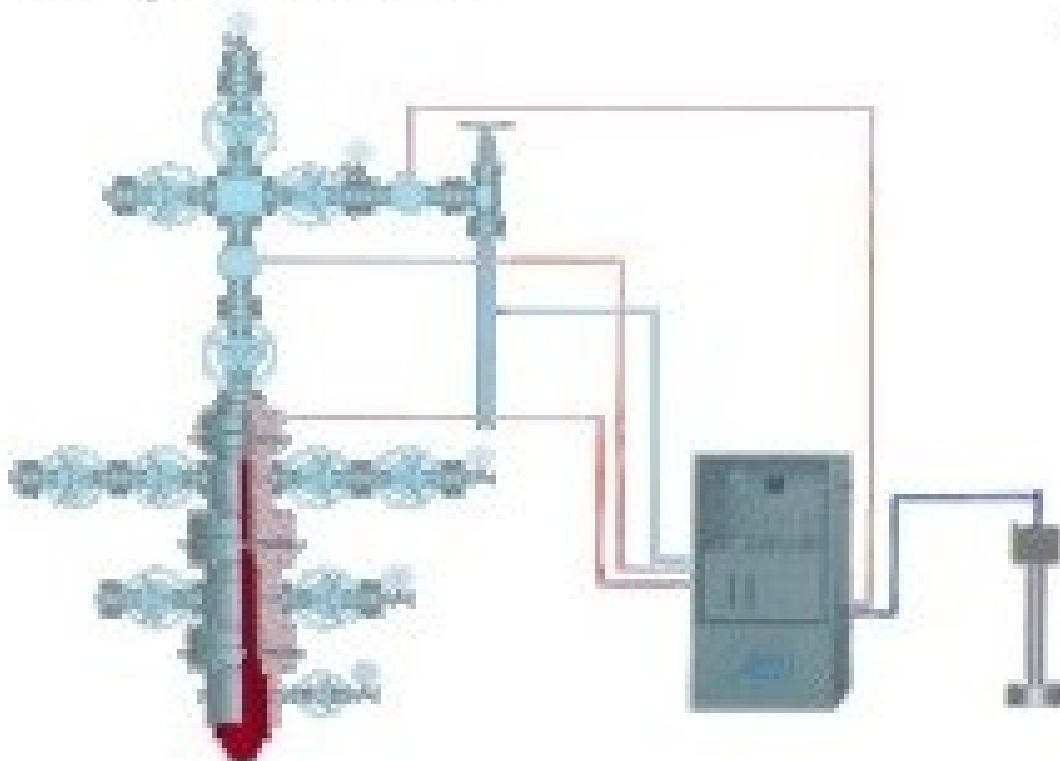




- Design casing head and tubing head integral to meet operation space
- No need to replace BOP during drilling
- Mandrel casing hanger designed with mud circle groove
- Equipped with emergency slip to avoid casing being locked during lowering of casing and mandrel
- The structure of hanging and sealing can avoid hanging casing and damaging sealing element during cement, and can repair and replace sealing element conveniently
- Elastic lock hanger automatically to provide reliable seal
- Applies to all kinds of casing and tubing programs
- Working pressure: 2000PSI ~20000PSI
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46°~ 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2

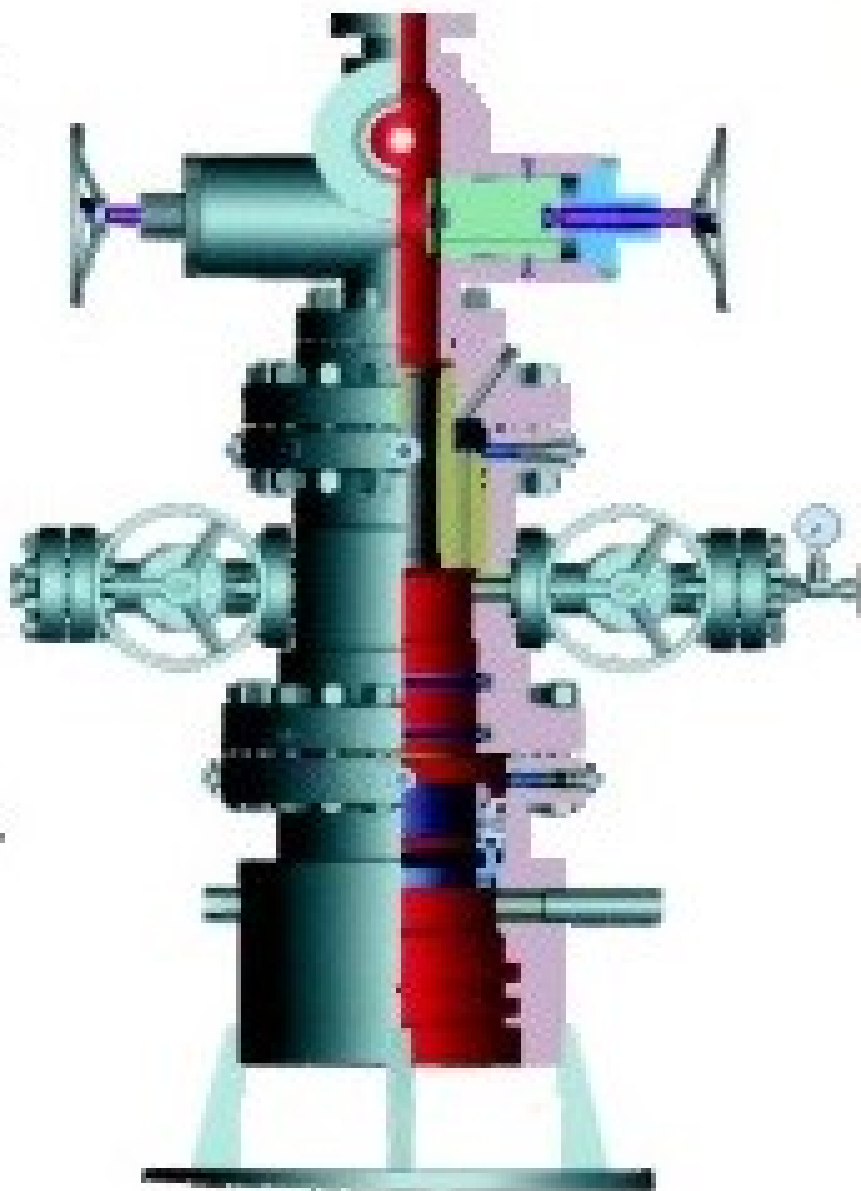
HIGH PRESSURE OIL & GAS WELLHEAD AND AUTOMATIC SAFETY CONTROL SYSTEM

- Surface safety valve and subsurface safety valve to achieve automatic safety control available
- Use various seal types, metal seal assembly keeps stability and reliability under high pressure, corrosion resistant and extreme condition
- Multifunction tubing hanger: Additional the function of hanging and sealing tubing, also interfaces to ESP cable penetrate, data cable penetrate chemical reagent and control pipeline of SCSV that meet the requirements of a variety operation conditions
- Automatic remote control
- Fireproof automatic safety control
- Pressure safety automatic control
- Working pressure: 2000PSI -20000PSI
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46°- 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



PCP WELLHEAD

- PCP wellhead to perform production practice run
- Preventer valve, top flange and cross to an integral to decrease height and size of installation and increase reliability of seal
- Working pressure: 2000PSI -20000PSI
- Working Medium: oil, natural gas, mud and gas containing H_2S , CO_2
- Working temperature: -46° – $121^{\circ}C$ (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



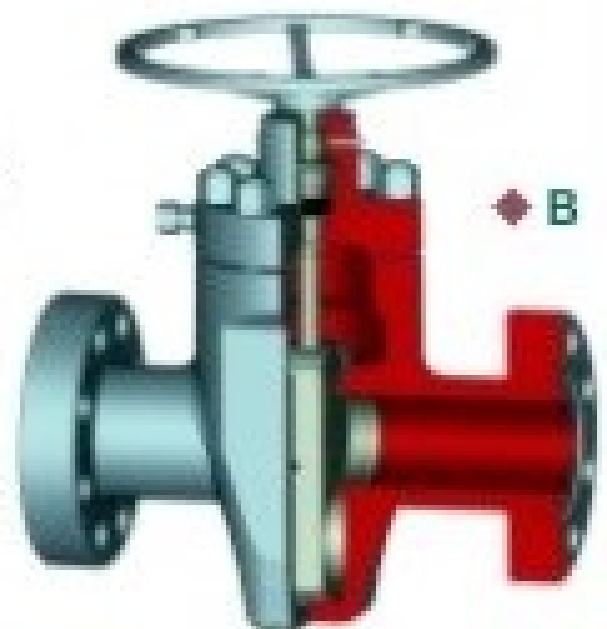
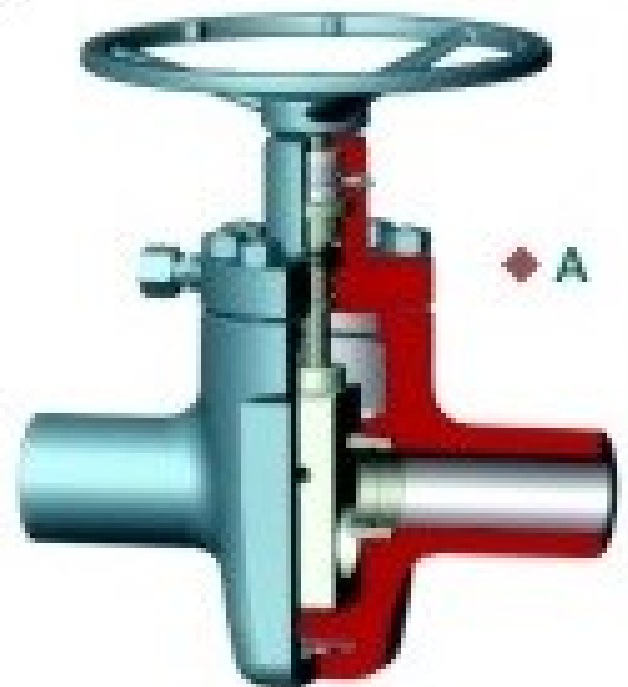
FULL BORE SERIES GATE VALVES

- Full bore design eliminates pressure drop and vortex, and eliminates washing water damage
- Special seal lowers torque
- Metal-to-metal seal is used between bonnet and body, gate and seat ring
- Metal-to-metal seal between gate and seat, surface is weld overlay with hard alloy corrosion resistance and washing resistance
- Retainer plate and fix seat ring insures good stability
- The stem is designed with back seal, can replace stem sealing under pressure
- One side of bonnet is designed with sealant injection in order supply sealant and improve seal and lubrication performance of gate and seat
- Can provide different pneumatic (hydraulic) actuators upon user's request
- Working pressure: 2000PSI ~20000PSI
- Nominal Bore: 1.13/16" ~9" (46mm ~ 230mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46°~ 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



AVAILABLE GATE VALVE TYPES

- Full bore design eliminates pressure drop and vortex, and eliminates washing water damage
- Metal-to-metal seal is used between bonnet and body, gate and seat, body and seat
- The surface of gate and seat is weld overlay with hard alloy, which is corrosion resistance and washing water resistance
- The bonnet and stem are designed with a back seal, can replace stem seal ring under pressure
- One side of bonnet is designed with sealant injection in order to supply sealant and improve seal and lubrication performance of gate and seat
- Can be used with various pneumatic (hydraulic) actuators upon user's requirement
- Working pressure: 2000PSI ~20000PSI
- Nominal Bore: 1.13/16" ~9" (46mm ~ 230mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° ~ 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



AVAILABLE GATE VALVE TYPES

- Full bore design eliminates pressure drop and vortex, and eliminates washing water damage
- Metal-to-metal seal is used between bonnet and body, gate and seat, seat and body
- The surface of gate and seat welding overlay with hard alloy, corrosion resistance and washing resistance
- The balanced stem reduces load of stem thread and bearing to decrease operating torque
- The bonnet and stem, designed with back seal, allows replacing stem sealing under pressure
- One side of bonnet is designed with sealant injection valve
- Rising stem structure indicates open and close of valve
- Complete with different pneumatic (hydraulic) actuators upon user's requirements
- Working pressure: 2000PSI ~20000PSI
- Nominal Bore: 1.13/16" ~9" (46mm ~ 230mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° ~ 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



• Manual Gate Valve



• Hydraulic Gate Valve

EXPANDING GATE VALVE TYPES

- Full bore design eliminates pressure drop and vortex, and eliminates washing water damage
- Gate uses expanding type structure
- Low torque operation during open and close
- Metal seal is used between bonnet and body
- Soft seal or metal seal is used between gate and seat
- Injection valve to improve seal performance
- Working pressure: 2000PSI –20000PSI
- Nominal Bore: 1.13/16" –9" (46mm – 230mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° – 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



◆ 2000PSI-5000PSI
Expanding Gate Valve



◆ 10000PSI
Expanding Gate Valve

SURFACE SAFETY VALVES

- Used for security on well site
- Hydraulic safety valve and pneumatic safety valve per driving source, heat sensitive and high pressure explosion-proof equipment
- Working pressure: 2000PSI -20000PSI
- Nominal Bore: 1.13/16" -7.1/16" (46mm - 180mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° - 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2
- Special sizes upon request



◆ Hydraulic Safety Valve



◆ Pneumatic Safety Valve

VALVE WITH BALL SCREW VALVE WITH GEARBOX

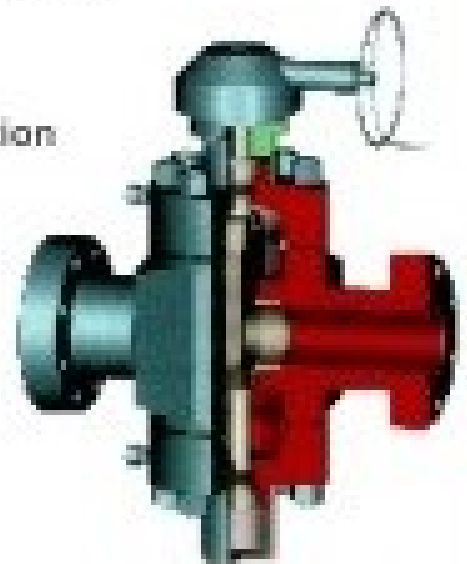
◆ Valve with Ball Screw

- Ball screw structure lowers operating time
- Gate valve design
- Stem structure is pressure balanced with switch indicator
- Applies to big bore high pressure system
- Working pressure: 2000PSI – 20000PS
- Nominal Bore: 1.13/16" – 9" (46mm – 230mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° – 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



◆ Valve with Gearbox

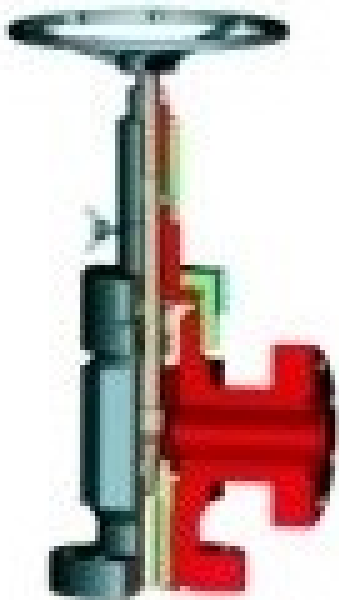
- Switch driving sector gear or worm gear, effectively lowering Operating time
- Gate valve design
- Stem structure is pressure balance with switch indication
- Applies to big bore high pressure systems
- Working pressure: 2000PSI – 20000PSI
- Nominal Bore: 1.13/16" – 9" (46mm – 230mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° – 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



ADJUSTABLE CHOKE VALVES

◆ Choke Valve needle type and external sleeve type are available for Christmas tree

- ① Needle and core of hard alloy, wear resistance, washing resistance and corrosion resistance
- ② The external sleeve choke valve has advantages of low switch torque, throttling and shutting fluid
- Working pressure: 2000PSI - 20000PSI
- Nominal Bore: 1.13/16" - 7.1/16" (46mm - 180mm)
- Working Medium: oil, natural gas, mud and gas
Containing H₂S, CO₂
- Working temperature: -46° - 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2



① Needle Choke Valve



② External Sleeve Choke Valve

POSITIVE CHOKE VALVE AND CHECK VALVES

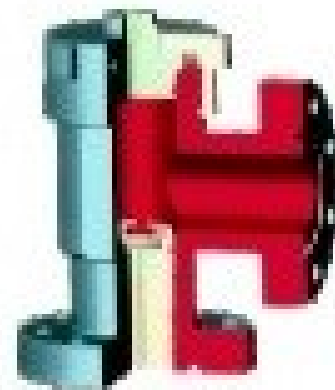
◆ Positive Choke Valve

Features:

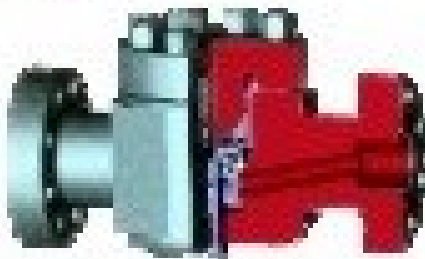
- Convertibility. AES positive chokes can be converted readily to adjustable chokes by replacement of the interchangeable bonnet and internals
- Hardened stems and seats to withstand erosive effects of highly abrasive materials
- Bonnet to body self protecting tapered metal to metal seals integrity
- Quick change connections for easy field maintenance
- Working pressure: 2000PSI ~20000PSI
- Nominal Bore: 1.13/16" ~7.1/16" (46mm ~ 180mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° ~ 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2

Applications:

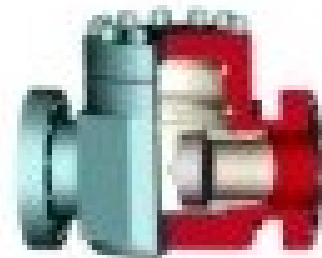
- Production systems: Christmas tree



◆ Check Valve



◆ Poppet Check Valve



◆ Swing Check Valve

- Working pressure: 2000PSI ~20000PSI
- Nominal Bore: 2.0/16" ~4.0/16" (52mm ~ 103mm)
- Working Medium: oil, natural gas, mud and gas containing H₂S, CO₂
- Working temperature: -46° ~ 121°C (Class LU)
- Material Class: AA, BB, CC, DD, EE, FF, HH
- Specification level: PSL 1-4
- Performance Requirement: PR1-2

SPECIALTY VALVE - GAS WELL HEAD EQUIPMENT (CAN BE REPLACED WITHOUT WELL KILLING)

◆ Production Introduction

- The equipment can be replaced while valve is under high pressure, which greatly reduces the operation risk and the cost of changing the valve and avoiding formation damage
- This technology is significant to safety, production is quite economical
- Technology can achieve gate valve replacement, making the equipment much simpler. The number of well head valves decreases. The equipment configuration can be adjusted according to consumers' needs
- This equipment is installed once, can meet the need of high pressure operation and acidizing before production also meets needs of gas production
- Production design and manufacture standard: API Spec 6A

◆ Market Benefits

Common gate valves should be replaced under well killing, under this condition, the operation cost is high and the formation can be damaged seriously. This product's application is significant to ensure the safe production, operation cost is reduced greatly

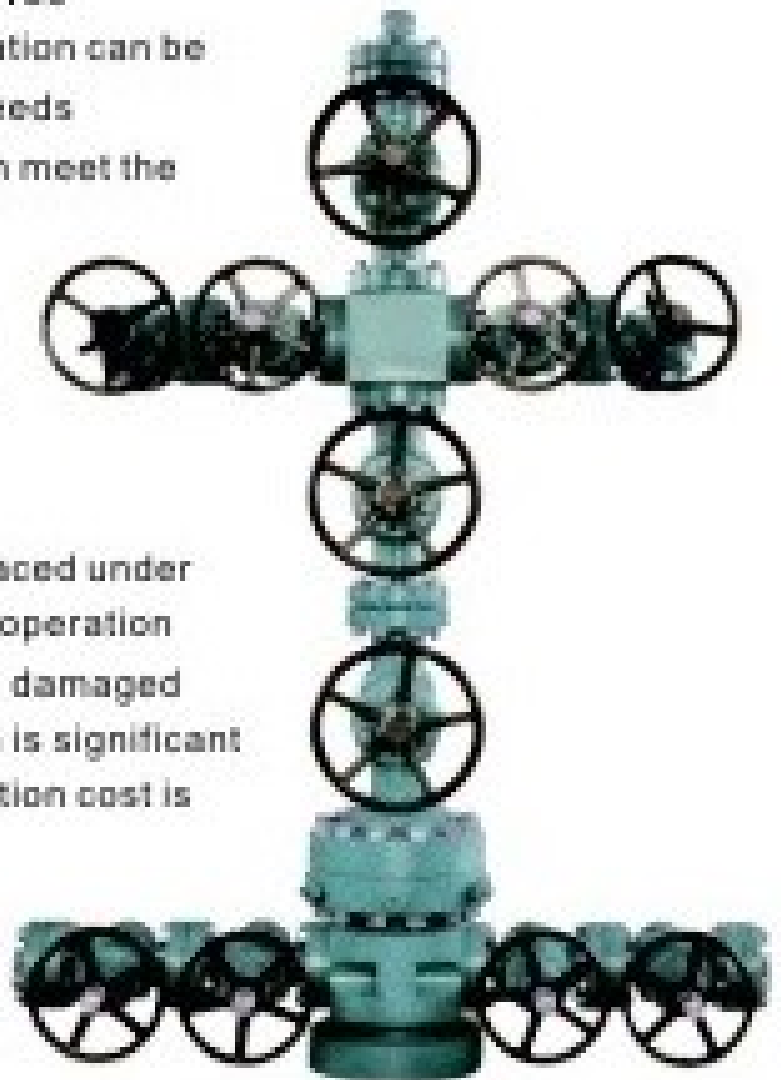
◆ Technical Scope

Rated Pressure: 70MPa, 105MPa

Production Specification: PSL3G

Material Level: DD, EE Operation

Temperature: -29°-82°C



DRILLING CHOKES

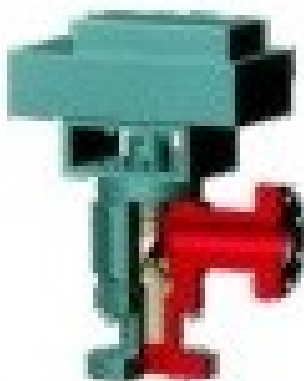
- The stem and core are made of hard alloy, for wear resistance and water wash resistance
- Easy flow adjust
- Applicable to choke manifold
- Working pressure: 2000PSI – 20000PSI
- Nominal Bore: 2.1/16" – 4.1/16" (46mm – 103mm)
- Working Medium: oil, natural gas, mud
- Working temperature: -46° – 121°C (Class LU)



◆ Manually Actuated Disc Choke



◆ Manually Actuated Cylindrical Gate Drilling Choke



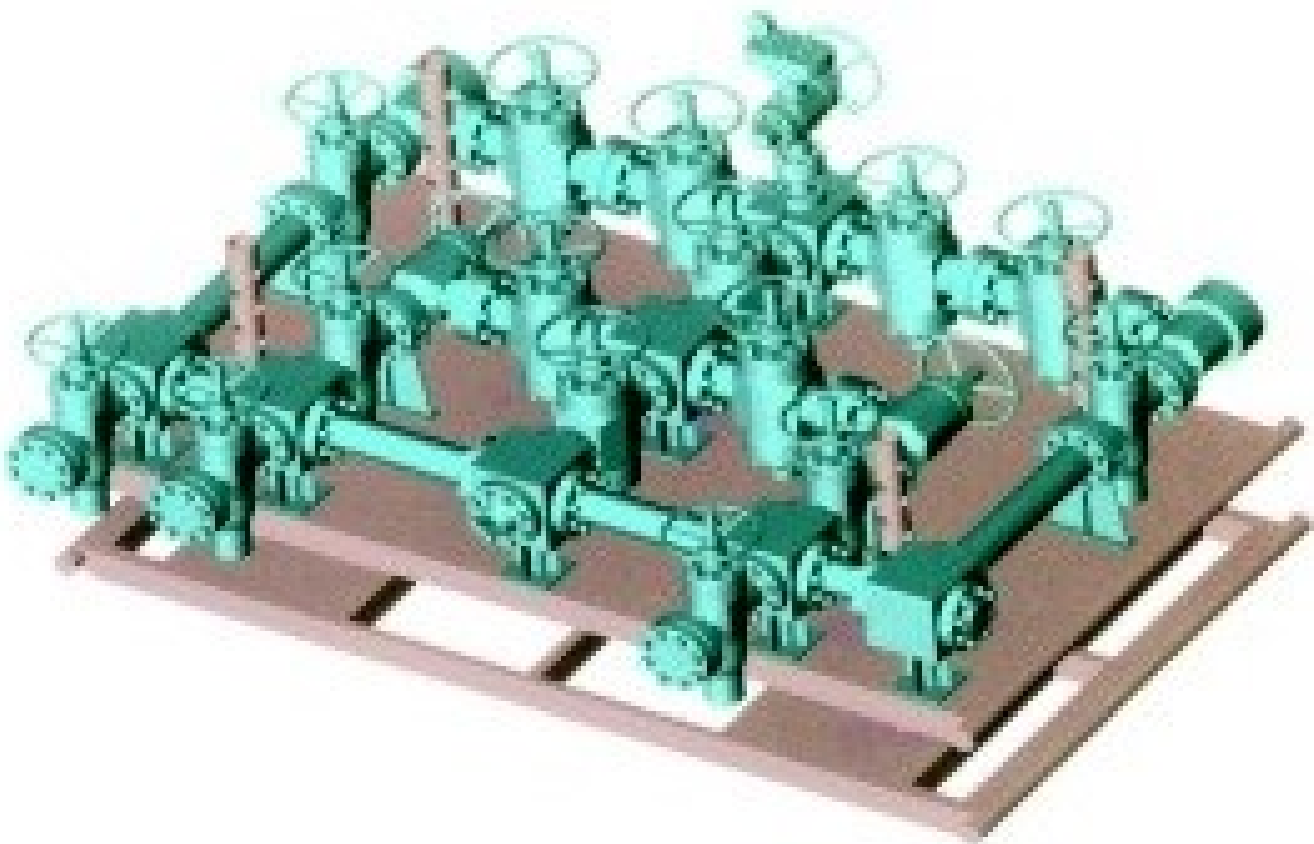
◆ Hydraulically Actuated Disc Choke



◆ Hydraulically Actuated Cylindrical Gate Drilling Choke

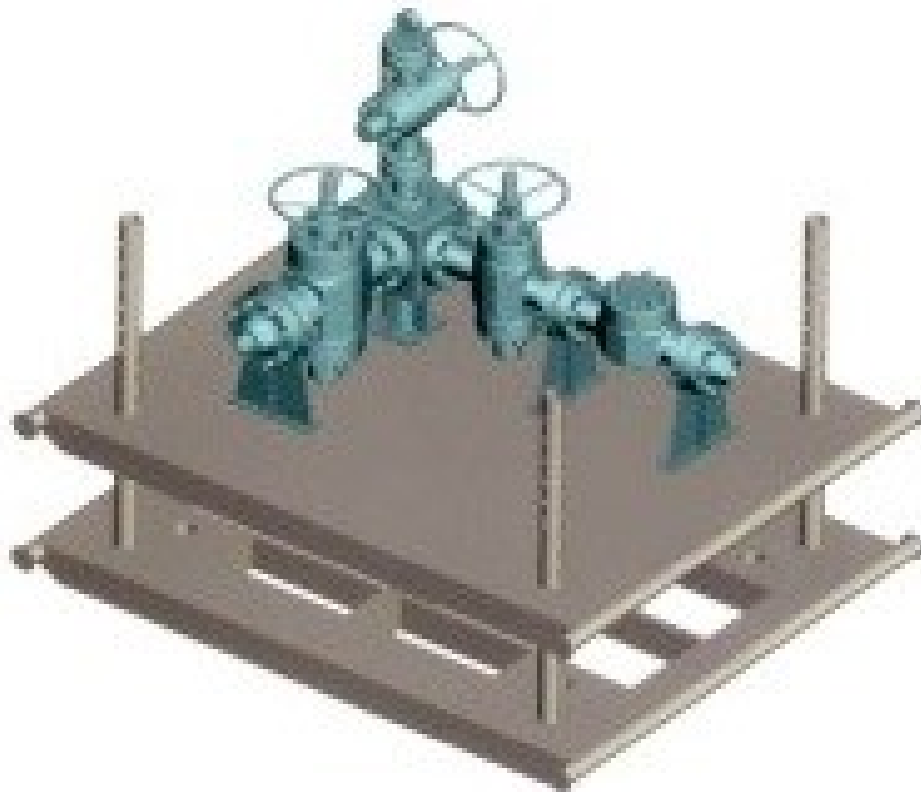
CHOKE MANIFOLD

- Choke manifold supports the hydraulic BOP for Controlling Well blow out and well pressure
- Well killing, replaces polluted slurry
- Controls wellhead pressure of casing and pipe, restoring mud to control pressure at well bottom to stop overflow
- Decrease well head pressure for "flexibility well shut off"
- Furnished with hydraulic actuation for remote control
- Working pressure: 2000PSI – 20000PSI
- Nominal Bore: 2. 1/16" –4. 1/16" (46mm – 103mm)
- Working Medium: oil, natural gas, mud
- Working temperature: -46° – 121°C (Class LU)



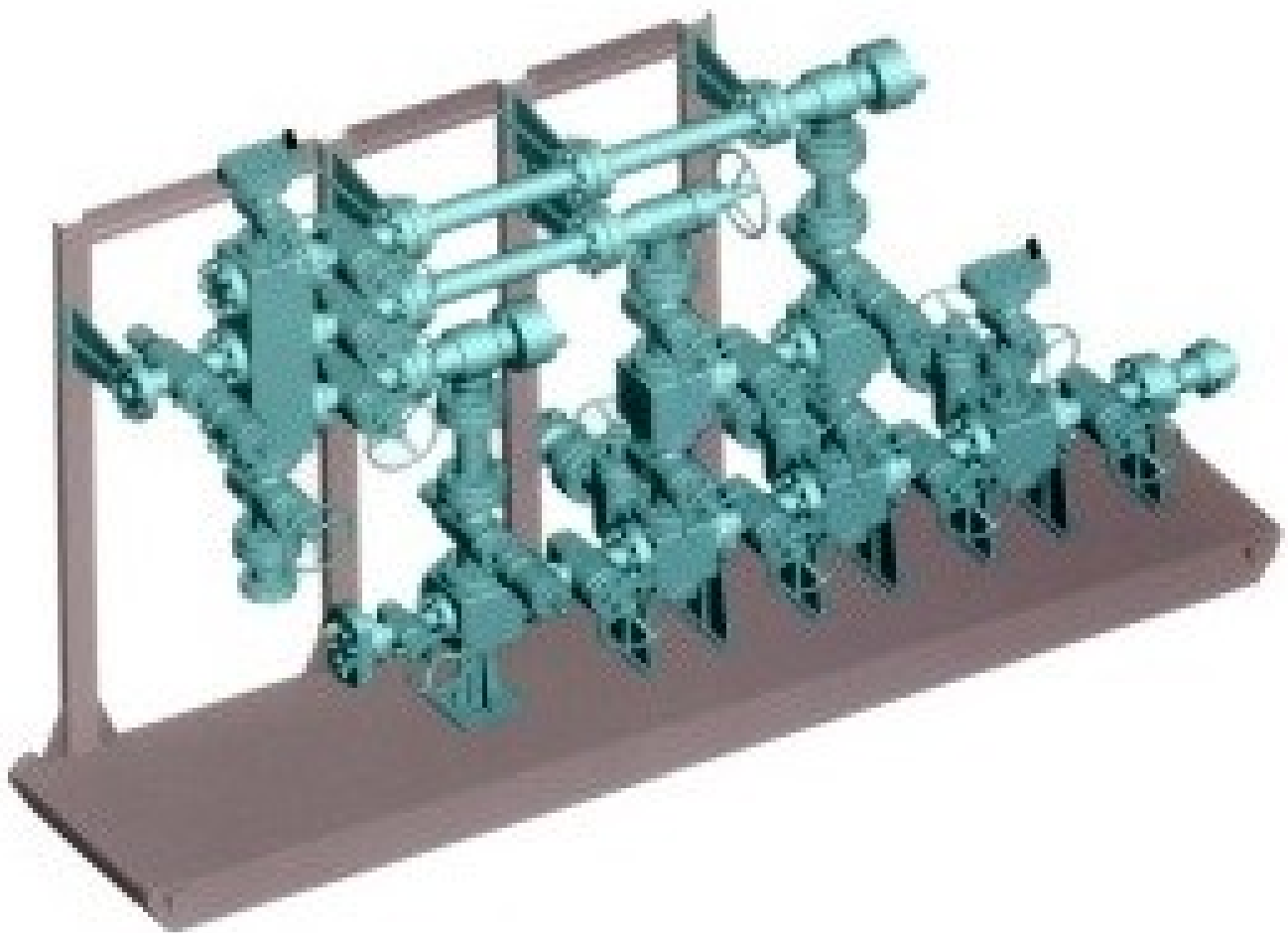
CHOKES AND KILL MANIFOLDS ARE DESIGNED AND MANUFACTURED TO CUSTOMERS REQUIREMENTS BY IES

- AES Gate valves (Manual & Actuated)
 - AES API Studded Crosses and Tees
 - AES Positive and Adjustable Choke Valves or customer specified alternative
 - Manual or Actuated Chokes
 - AES Adaptors, Flanges and Spools
 - AES Blinds, Crossovers and Fittings
 - AES Control systems or customer specified alternative
 - Manifolds fully hydrostatically tested and function tested prior to SHIPMENT
 - AES Instrument Blocks
- Standard Options
- API.6A, PSL 1,2,3 or 4
 - API.6A material classes AA, BB, CC, DD, EE, FF, HH
 - API.6A temperature ratings K through to X
 - Standard or H2S Service
 - Single or Double Isolation
 - 5,000, 10,000 or 15,000 psi 20,000 per API.6A
 - Gas testing to API.6A PSL3G
 - Skid mounted if required
 - With or Without walkway



COMBINATION MANIFOLD

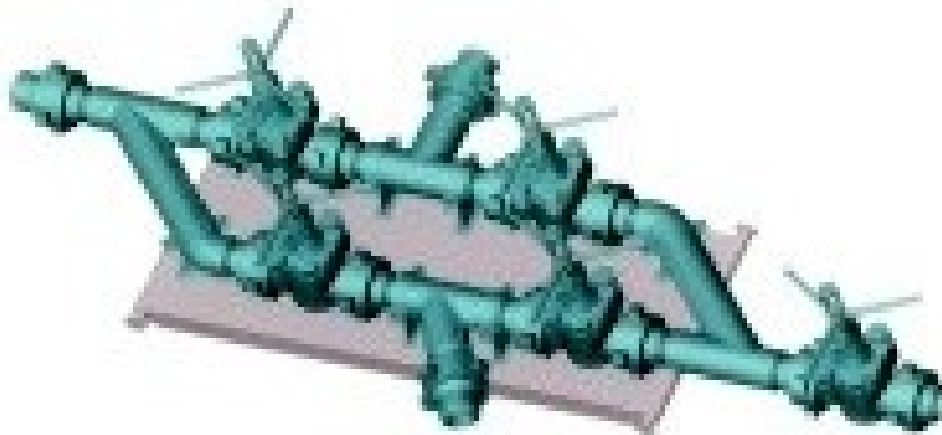
- Combines choke function with kill function of manifold to save platform space
- Working pressure: 2000PSI – 20000PSI
- Nominal Bore: 2. 1/16" – 4. 1/16" (48mm – 103mm)
- Working Medium: oil, natural gas, mud
- Working temperature: -46° – 121°C (Class LU)



MUD MANIFOLD MUD-GAS SEPARATOR

◆ Mud Manifold

- Mud manifold unites and divides mud during drilling, in order to have enough mud to get through top drive
- Working pressure: 2000PSI – 20000PSI
- Nominal Bore: 2.1/16" – 4.1/16" (46mm – 103mm)
- Working Medium: oil, natural gas, mud
- Working temperature: -46°- 121°C (Class LU)



◆ Mud-Gas Separator

- Completed with choke manifold
- Automatically separate gas and mud replaced from choke manifold, as well as reclaim mud on basis of settling principle
- Working Pressure: 0.7MPa
- Working Medium: oil, natural gas, mud



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