



Kana Energy Services, Inc.

API 6A WELLHEAD



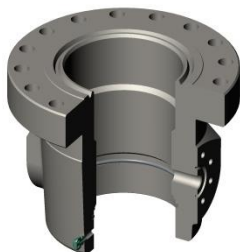
Your Oilfield Equipment Partners



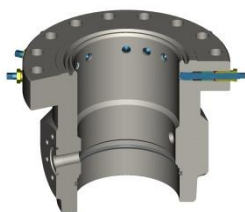
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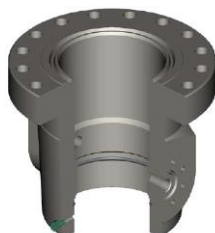
Casing Heads



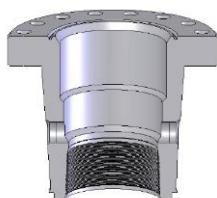
C22 CASING HEAD WITH
SOW BOTTOM AND O-RING



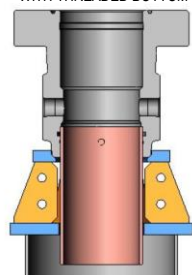
C22L CASING HEAD WITH
SOW BOTTOM AND O-RING



C29 CASING HEAD WITH
SOW BOTTOM AND O-RING



C22 CASING HEAD
WITH THREADED BOTTOM



C22 CASING HEAD WITH BASE PLATE

C-22, C-22-BP, C-22-L AND C-29

C-22 Casing Head incorporates a straight bore design type, with a 45° degree landing (load) shoulder.

C-22 Casing Head SOW (Slip-On-Weld)

Bottoms of heads options:

- Configured as a slip-on-weld (SOW)
- Configured as a slip-on-weld with a O-ring (SOW-O)

Top Flange Options:

- **C-22** - Standard API configuration
- **C-22-BP** Standard API configuration with two BP screws for securing bowl protectors in casing head bowl
- **C-22-L** Standard API configuration with multiple long hanger screws used to energize pack offs or retain automatic slip type or mandrel casing hangers.

Head Outlet Options:

- Threaded outlets
- Flanged padded outlets with studs
- Extended flange outlets

C-22 Casing Head with a threaded bottom connection available in several thread types:

- 8 round long casing thread (most common)
- Buttress thread
- Custom thread – customer specified

Thread connection in the head, female or male, made with a pup joint.

Base Plates for any bottom may be attached to the casing head with slip-on option or by welding,

Casing Heads



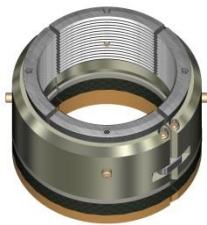
C21 Casing Hanger
with Type "H" Packoff

C-21 Casing Hanger and H Plate

C-21 slip type casing hanger - split, segmented, wrap-around casing hanger - used for shallow wells with light casing loads. Does not require an annulus seal prior to removing and cutting casing.

"H" pack off is designed to be installed after slips are landed and casing has been cut off and dressed.

- "H" pack off serves as primary seal when next head is installed.
- Allows testing performance between flanges
- Protects slips from test pressure
- NOT to be used in a casing head or casing spool with lockdown screws - lockdown screws interfere with the seal

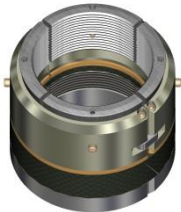


C22 HGR

C-22 Casing Hanger

C-22 Slip Casing Hanger - wraparound style

- Capable of supporting casing weight up to 50% of casing yield strength
- Automatic integral seal is energized by the casing weight



C29 HGR

C-29 Casing Hanger

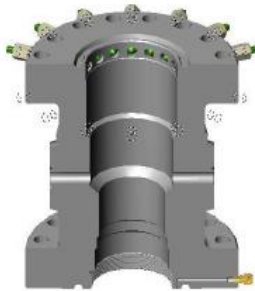
C-29 Slip Casing Hanger - wraparound style

- Capable of supporting casing weight up to 80% of casing yield strength
- Automatic integral seal is energized by casing weight

Casing Spools

C22 Casing Spools

C22 Casing Spools have a straight bore in the bowl with a 45 degree angle landing (load) shoulder.



C22L Casing Spool PE-HP
Secondary Bottom Prep

Top Flange Connection - Standard API with Options:

- C22BP – two lock screws for bowl protectors, or
- C22L – full set of multiple lock screws energizing pack offs on mandrel style hangers and tubing hangers

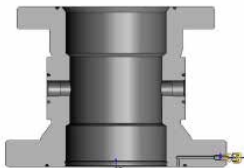
Bottom Flange Connection - Standard with two test fittings.

Specify Option Style to accommodate secondary seals:

- BG — PE seal: automatically energizes, no sealant injection needed
- HPE—HPE seal: automatically energizes, no sealant injection needed
- PP — Use for spools 10,000 PSI and above
 - One or two elastomer seal rings
 - Requires sealant injection

C29 Casing Spools

C29 Casing Spools have straight bore in the bowl with 45 degree angle landing (load) shoulder.



C22 Casing Spool
BG Secondary Bottom Prep

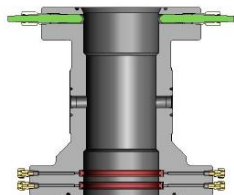
Top Flange Connection - Standard API with Options:

- C29BP – two lock screws for bowl protectors, or
- C29L – full set of multiple lock screws energizing pack offs on mandrel style hangers and tubing hangers

Bottom Flange Connection - Standard with two test fittings.

Specify Option Style to accommodate secondary seals:

- BG — PE seal: automatically energizes, no sealant injection needed
- HPE—HPE seal: automatically energizes, no sealant injection needed
- PP — Use for spools 10,000 PSI and above
 - One or two elastomer seal rings
 - Requires sealant injection



C22L Casing Spool
"PP" Secondary Bottom Prep

Bushings / Annulus Seals



PE SEAL ASSEMBLY

PE Seal Assemblies

The “PE” secondary seal bushing is commonly used in the “BG” bottom secondary preparation in the lower flange of a spool for a specific casing size.

The “PE” secondary seal assembly is held in place with a round retainer ring that mates with a groove in the lower portion of the “BG” secondary preparation.



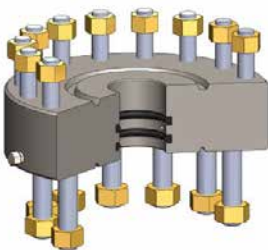
HPE SEAL ASSEMBLY

HPE High Pressure Annulus Seals

HPE secondary seal bushing is a commonly used in the HPE-BG bottom secondary preparation in the lower flange of a spool for a specific casing size.

The HPE secondary seal assembly lower plate has an external acme thread that mates with an internal acme thread in the lower portion of the HPE-BG secondary preparation of the spool holding the assembly in place.

This seal is a static interference type seal and is used in applications of 10,000 PSI and above.



CROSSOVER FLANGE WITH “F5” SEALS

Pack Off / Crossover Flanges

Crossover flange as defined by API 6A: a double or single studded flange with a restricted area sealing means and a top connection pressure rating above that of the lower connection.

Crossover flanges are installed between the top flange of a casing head or spool and the bottom flange of the next spool.

- Use to raise the pressure rating of the bottom flange on the upper spool to the next higher pressure rating
- Available in either flanged or double studded configurations with test ports for testing the flange connection and the seals.

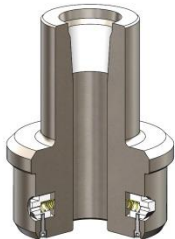
Wear Bushings and Tools



WEAR BUSHING

C22 and C29 Wear Bushings

Wear bushings are compatible with all C22 and C29 casing heads, spools and straight-bore tubing heads. Lockdown screws secure bushing in the bowl to protect against wear during drilling.



BP RR TOOL

Wear Bushing Running/Retrieving Tool

J-type tool runs on drill pipe, locking into a wear bushing with a quarter turn right / release with a quarter turn left. Wear bushing is retrieved with a straight pull after lockdown screws retracted.



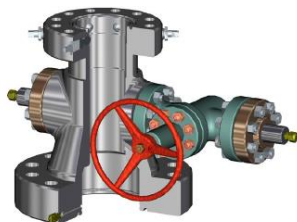
COMBO TP RT

Combination Wear Bushing Running Tool and Test Plug

Combination tool runs on drill pipe. Drill pipe can be suspended below the test plug, eliminating need for pipe removal.

- Pin up installs and retrieves wear bushings
- Pin down lands and seals in the head or spool bore for pressure testing a BOP stack or manifold connections
- External bushing changes for each nominal bore size

Tubing Spools



TUBING SPOOL ASSEMBLY

TCM

Tubing spools are can be configured for single or dual string tubing completions.

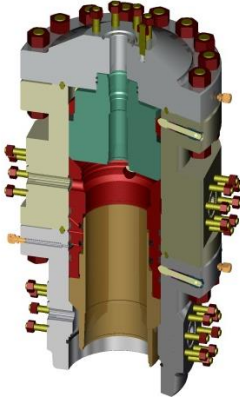
Tubing spools are installed after the last casing string to provide a seat and seal bore for the tubing hanger. When the well is completed, the tree will be installed on the tubing spool using a tubing spool adapter.

The tubing spool is usually installed immediately after the last casing string has been landed and the casing hanger pack off has been actuated.

Speed Heads

Speed Head

The speed head system is a simplified approach to drilling and completing multiple strings of casing in a single unitized housing combined with a time saving drill through design.



Speed Head Features:

- One nipple down - nipple up operation is eliminated
- Increased Safety
- Minimizes BOP and diverter handling
 - Less time working under suspended BOP's
- Components designed using field proven technology
- The split housing installs as a single unit allowing drilling up to two or more phases without removing BOP stack.
 - The upper section of the split housing can be removed from the lower section for emergency completion method requiring the casing to be cut above the slip casing hanger
 - The lower housing is available with threaded line pipe or studded flange outlets
- Straight bowl design with 45 degree shoulder for supporting hangers
- Simple pack off bushing design with elastomer seals and retained by lock down screws
- Intermediate casing string can be landed and the pack off bushing installed then externally tested for pressure integrity without removing the BOP stack.
- Elastomer seals
- Separate stage for each drilling operation
- Interfaces with standard API flanged wellhead completion equipment
- Completion methods:
 - Standard completion using fluted mandrel casing hanger with stub acme running threads
 - Emergency completion utilizing slip type casing hanger if necessary
- Fewer components than competitors systems
- Available up to 10,000 PSI WP
- No waiting for cement to set
- Adaptable to various casing sizes
- Reduced installation time lowering overall cost

Approximately 20+ hours of rig time saved using speed head system.

Tubing Hangers



TC1W TUBING HANGER

TC1W Tubing Hanger

TC1W is a split, wraparound pack off style hanger that allows tubing-string manipulation to displace fluid while maintaining complete control of the annulus pressure. All TC1W hangers require the tubing string to be suspended from a tubing suspension adapter or coupling adapter installed on top of the tubing spool the TC1W is landed in. The TC1W has a compression type seal which is actuated by lockdown screws.



TC1A-EN TUBING HANGER

TC1A-EN Tubing Hanger

TC1A-EN is a threaded tubing hanger that provides:

- An integral compression type pack off on the upper portion of the hanger body, actuated by lockdown screws,
- Extended neck with external seals that seal in mating preparation with the tubing spool adapter, and
- Back pressure valve preparation.



B02 HANGER COUPLING

B02 Hanger Coupling

Coupling adapters provide a means to suspend the tubing with a special coupling. An ACME thread is machined into the adapter's bottom flange bore and a mating ACME threaded coupling is installed in the adapter to suspend the tubing string.

The hanger coupling will be threaded internally with tubing threads bottom and top with a back pressure valve thread.



TC1A TUBING HANGER
WITHOUT BPV THREAD

TC1A Tubing Hanger

TC1A is a threaded tubing hanger with an integral compression type pack off on the upper portion of the hanger body which is actuated by lockdown screws. When a seal between the tubing hanger and tubing spool adapter is required a seal sleeve is used. The TC1A can be furnished with or without a back pressure valve preparation.

Tubing Spool Adapters



B02 ADAPTER

B02 Adapters

Flanged bottom connection with an internal acme thread to accept a hanger coupling with a mating external acme thread. The hanger coupling will be threaded internally with tubing threads bottom and top with a back pressure valve thread. The top connection is a studed flange connection.

This type of adapter is used with the TC1W style wrap around tubing hanger to seal the annulus between the tubing string and casing bore.



B1 ADAPTER

B1 Adapters

Flanged bottom connection with an internal tubing thread. The top connection is an external tubing thread to install a Christmas tree that is made up of internally threaded end gate valves.



B5 ADAPTER

B5 Adapters

Flanged bottom connection with internal tubing threads top and bottom.



A5P-EN ADAPTER

A5P EN Adapters

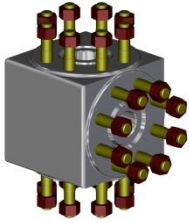
Flanged bottom connection with studed flange connection top – Has a seal bore to provide a sealing area for extended neck hangers with seals – Used typically to adapt two flanges of different working pressures.



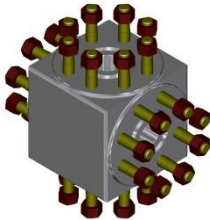
B2P Adapters

Flanged bottom connection with internal threaded bottom and studed top.

Tees and Crosses



STUDED TEE



STUDED CROSS

Studded Tees and Crosses

Tees and Crosses are straight forward products that are used to add wing sections on Christmas trees. They may be studded or flanged. They may also be used in manifolds to add equipment in a different direction.

The dimensional data is published in API 6A to control the design of the tee's and crosses.

Tree Caps



B15A TREE CAP

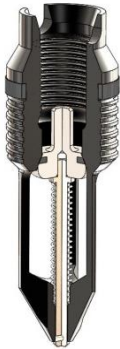


API 6A TREE CAP

B-15A and API 6A Tree Caps

Tree Caps provide quick access to the tubing bore for bottom hole testing, installing back pressure valves, and other operations.

Accessory Equipment



TYPE H BPV

Type H Back Pressure Valve and Two Way Check Valve

Conventional Wellhead Equipment uses the Type H Back Pressure Valve and tool. The BPV is a one-way check seal to seal tubing pressure up to 20,000 psi while BOP's are removed and the tree installed. It also permits fluid to be circulated down the tubing and prevents backflow.

Also available in two-way check design that is used to plug off the tubing string and test the Christmas Tree.



TYPE H TWO WAY CHECK VALVE



VR PLUG
API SHARP VEE THREAD

Valve Removal Plugs

All studded and flanged outlets on casing heads, casing spools and tubing spools are threaded to accept VR plugs. Use of a VR plug allows pressure isolation for removal, installation or repair of gate valves.



VR PLUG – HIGH PRESSURE
API 6 PITCH STUB ACME THREAD

Frac Service Valves



FRAC SERVICE VALVE

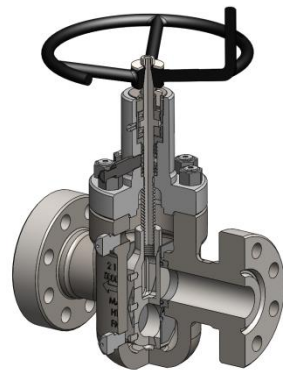
Frac Service Valves - BSO 7 1/16" 10,000-15,000 psi

Designed and manufactured for the rigors of fracking service.

Models FSVB-710 and FSVB-715

- Model FSVB-710 10,000 psi rating
- Model FSVB-715 15,000 psi rating
- Forged body and bonnets
- PSL-3, PR-2, EE Trim
- Low torque Ball Screw Operator, full cycle open to close, 18 turns
- Bi-directional, balanced stem
- Latest generation stems packing, made in the USA

API 6A Gate Valves



EXPANDING GATE VALVE

Expanding Gate or Slab Gate Valves

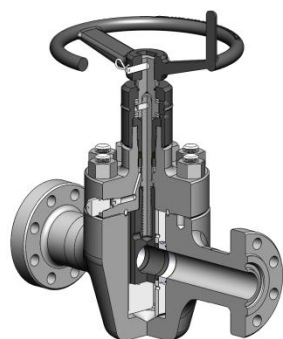
Valve bodies and bonnets - available Cast or Forged Steel

Threaded Valves

- 2000 - 5000 psi
- Size: 2 1/16" through 3 1/8"
- LP or EUE 8rd

Flanged Valves

- 2000 - 5000 psi
- Size: 2 1/16" through 7 1/16"
- Full-bore design prevents extra pressure drop and allows tools or debris to pass freely
- In-line seat replacement and maintenance



SLAB GATE VALVE

Forged Body Slab-gate Valves

Valve bodies and bonnets - Forged Steel

Flanged Valves

- 10,000-15,000 psi ratings
- Size: 1 13/16" through 7 1/16"
- Option: ball screw operated available on 7 1/16", 10-15,000 psi



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