
	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

#### Hoja de control de cambios

Versión	Fecha	Cambios realizados en el documento
1	04-2021	Primera versión del documento, tomado de la ex PAM-EP-ECU-QAQC-20-ESP-005-00 ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

DOCUMENTO EN REVISIÓN

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## Índice


1	ANTECEDENTES.....	3
2	OBJETIVO.....	3
3	ALCANCE.....	3
4	DEFINICIONES.....	3
5	ESPECIFICACIONES .....	4
6	REFERENCIAS.....	12
7	FORMATOS.....	14
8	SSA.....	14
9	ANEXOS.....	14
10	ACTA DE APROBACIÓN.....	55

CLASIFICACIÓN: PÚBLICO

“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”

Formato: PCA.10.04.FO.02 (V05)

Página 2 de 55

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## 1 ANTECEDENTES

En noviembre 2019 el API “American Petroleum Institute” emite una actualización a “API SPECIFICATION 6A TWENTY-FIRST EDITION, NOVEMBER 2018 ERRATA 1, APRIL 2019” indicando que a partir de noviembre 2019 entraría en vigencia la nueva especificación “Specification for Wellhead and Tree Equipment.

## 2 OBJETIVO

Establecer los requerimientos técnicos y documentales mínimos, que deben cumplir los CABEZALES DE POZO Y ARBOLES DE NAVIDAD, a ser adquiridos por EP PETROECUADOR e instalados en sus respectivos campos.

## 3 ALCANCE


Esta especificación define los requerimientos mínimos para cabezales de pozo y árboles de navidad, incluye materiales, fabricación, soldadura, inspección, pintura y pruebas que deben aplicarse a los cabezales a instalar en todas las plataformas de EP PETROECUADOR. Se incluye también los requisitos técnicos para cabezales de algunos Consorcios que trabajan en los campos de EP PETROECUADOR, en función de los términos del vínculo contractual aplicable.

## 4 DEFINICIONES

**4.1. ITP (Inspection and Testing Plan):** Plan de inspección y pruebas.

**4.2. Tratamiento Térmico:** Es la operación de calentar y enfriar el acero en ciclos y temperaturas controladas, para modificar sus propiedades mecánicas y microestructura.

**4.3. API SPECIFICATION 6A TWENTY-FIRST EDITION, NOVEMBER 2018:** 3 Terms, Definitions, Abbreviated Terms, and Symbols

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## 5 ESPECIFICACIONES

### 5.1. REQUERIMIENTOS DE EP PETROECUADOR.

#### 5.1.1. DATA SHEET

Las hojas de datos para cabezales descritas en el anexo A (desde A1 hasta A12) se detallan cada uno de los elementos constituyentes del equipo así como el servicio, condiciones ácidas y recubrimientos necesarios. En caso de ser necesario elementos que requieran de diseño especial estos deben estar especificados tanto por EP PETROECUADOR como por el contratista. El uso de la hoja de datos es mandatorio antes de iniciar el proyecto.

En el caso de los cabezales suministrados por Consorcios que trabajan en los campos de EP PETROECUADOR bajo vínculo contractual, los requerimientos técnicos de cabezales deben estar cubiertos por esta Especificación. Si por condición contractual el cabezal tiene requisitos fuera de esta especificación, el Consorcio deberá elaborar su hoja de datos específica y hacerlo aprobar siguiendo los procesos requeridos por el respectivo contrato. En el anexo B se lista los requisitos técnicos para cabezales de Consorcios. La hoja de datos deberá ser referenciada en el Acta de Inicio de Servicios de cada consorcio.

**NOTA:** Un Consorcio es una empresa contratista con la que EP PETROECUADOR EP ha firmado un vínculo contractual denominado “Contrato para la Prestación de Servicios Específicos Integrados con Financiamiento de la Contratista”.

#### 5.1.2. APLICABILIDAD Y RENDIMIENTO.


Todos los equipos deben ser diseñados y fabricados acordó a los requerimientos de API 6 A sección 4, sección 5 y los requerimientos de la sección 14.

Como requerimiento mínimo los Cabezales de Pozo deberán considerar PR1.

#### 5.1.3. APLICABILIDAD Y RENDIMIENTO CONDICIONES DE SERVICIO.

##### 5.1.3.1. RANGOS DE PRESIÓN

Los equipos deben ser diseñados para operar en las presiones de trabajo de acuerdo a API 6A

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

#### 5.1.3.2. TEMPERATURA

El equipo debe ser diseñado para operar en el rango P-U establecido en API 6A, salvo una particularidad operativa.

#### 5.1.3.3. CLASES DE MATERIALES

Se deberá utilizar clase de material DD acorde NACE MR 0175 / ISO 15156 como requerimiento mínimo, salvo una particularidad operativa se deberá diseñar usando materiales con mayor resistencia a ambientes más corrosivos.

#### 5.1.3.4. NIVEL DE ESPECIFICACIÓN DEL PRODUCTO (PSL)

El requerimiento mínimo es PSL2 para cabezal productor de crudo, salvo una particularidad operativa que exija un nivel mayor de PSL se revisará el diseño con los requerimientos aplicables a la norma API 6A.

De requerirse un cabezal para producción de gas, se revisarán los requerimientos mínimos de PSL3.

### 5.1.4. REQUERIMIENTOS ESPECÍFICOS

#### 5.1.4.1. BRIDAS

Todas las bridas pertenecientes a los cuerpos de los cabezales deben cumplir con la geometría descrita en el anexo C (C1 y C2) y ser marcadas según el estándar de API 6A.


Las bridas de tipo Weld neck deben cumplir con los requerimientos indicados en "Standard Specification for Pipe, Valves & Fittings (Indicado en Anexo D) y adicionalmente su dureza superficial no debe ser mayor a 187 HBW.

Para detalles de configuraciones geométricas de las bridas de cuello soldable ver ANEXO C (C3).

**Nota:** No se aceptará bridas tipo Weld Neck que sean manufacturadas por el mismo fabricante de los cabezales. Todas las bridas deben ser de marcas aprobadas por EP PETROECUADOR.

#### 5.1.4.2. VÁLVULAS

Todos los fabricantes de válvulas (de los tipos: compuerta, globo, retención y mariposa), con excepción de las válvulas API 6D, deben aplicar la recomendación API RP 591: "PROCESS VALVE QUALIFICATION PROCEDURE.

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

Las válvulas a ser instaladas en cabezales de pozo deben cumplir con los siguientes requerimientos mínimos

TAMAÑO / PRESIÓN	PS L	PR	TRI M	TEM P. RATI NG	MONOGRAMADO API 6A
TODOS LOS RANGOS ESPECIFICADOS EN API 6A	2	1	EE	P-U	SI

Tabla 1. Requerimientos mínimos para válvulas de cabezales de pozo.

De requerir mejores requerimientos técnicos a los indicados deberán ser comunicados al personal de EP PETROECUADOR para su revisión y aprobación.


Para válvulas con sistema de actuador neumático ver Anexo F (F1 y F2).

#### 5.1.4.3. REQUERIMIENTOS PARA MATERIALES NO METÁLICOS

Todos los sellos de tipo elastómero que se usen en los equipos de cabezales de pozo deben cumplir con los requerimientos indicados en la norma ASTM D1418 para reconocer la base del polímero empleado y las normas ASTM D1414 y D471 para las pruebas correspondientes.

Se considera materiales no metálicos a aquellos cuya base genérica del polímero según ASTM D1418 sea:

HNBR — Acrilonitrilo butadiene Hidrogenado.

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

Test	#1 CR	#2 EVM	#3 EPDM	#4 NBR	#5 HNBR
<b>ORIGINAL PROPERTIES</b>					
Hardness, Shore A	73	79	74	61	69
Tensile strength, psi	2877	2863	2153	3208	3818
Stress @ 300 % strain	...	...	...	1200	...
Elongation at break, %	259 %	155 %	268 %	625 %	262 %
<b>IMMERSION – ASTM #1</b>					
Hardness, Shore A	66	72	47	59	67
Tensile strength, psi	2660	2741	1061	3504	4124
Stress @ 300 % strain	...	...	...	1580	4070
Elongation at break, %	235 %	156 %	133 %	576 %	307 %
Change in hardness, points	-7	-7	-27	-2	-2
Change in tensile strength, %	-7.54 %	-4.26 %	-50.72 %	9.23 %	8.01 %
Change in stress @ 300 %, %	...	...	...	...	...
Change in elongation @ break, %	-9.27 %	0.65 %	-50.37 %	-7.84 %	17.18 %
Change in weight, %	6.17 %	5.90 %	36.63 %	-1.01 %	-0.02 %
Change in volume, %	9.89 %	8.10 %	48.18 %	-0.64 %	0.29 %
<b>IMMERSION – IRM 901 (REPLACEMENT)</b>					
Hardness, Shore A	67	73	47	60	68
Tensile strength, psi	2512	2605	1600	3390	4174
Stress @ 300 % strain	...	...	...	1550	4160
Elongation at break, %	213 %	131 %	168 %	564 %	302 %
Change in hardness, points	-6	-6	-27	-1	-1
Change in tensile strength, %	12.69 %	-8.91 %	-25.69 %	5.67 %	9.32 %
Change in stress @ 300 %, %	...	...	...	...	...
Change in elongation @ break, %	17.76 %	-15.48 %	-37.31 %	-9.76 %	15.27 %
Change in weight, %	5.63 %	5.59 %	36.02 %	-1.20 %	-0.26 %
Change in volume, %	9.11 %	7.95 %	47.89 %	-0.82 %	0.40 %
<b>AGING CONDITIONS</b>					
	TIME	TEMP			
#2-EVM	70 h	125°C			
#3-EPDM	70 h	125°C			
#4-NBR	70 h	100°C			
#5-HNBR	70 h	150°C			

Tabla 2. Propiedades originales y bajo inmersión de aceite de elastómero HNBR

Fuente: ASTM D471 – 10, TABLE X3.1 ASTM Oil No. 1 Replacement Program

### Almacenaje y control de envejecimiento:

Los elastómeros a los que aplica esta especificación no deben exceder los 4 años de tiempo de almacenamiento:

Las siguientes son las condiciones mínimas requeridas de almacenamiento:


- Calor - Temperatura de almacenamiento entre +10° y +23°C. Las piezas no se deben almacenar cerca de fuentes de calor
- Humedad - La humedad y el vapor deben ser evitados. La humedad relativa óptima del aire debe ir desde 65% a 75%.
- Oxígeno - Los equipos que desprenden ozono tales como motores eléctricos, equipos electrónicos, instalaciones que desprenden

CLASIFICACIÓN: PÚBLICO

“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”

Formato: PCA.10.04.FO.02 (V05)

Página 7 de 55

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

chispas, luces halógenas, etc. no deben situarse en la zona de almacenaje.

- Luz - Se debe evitar la exposición directa a la luz solar. La iluminación artificial con rayos UVA es dañina ya que genera ozono. Lo ideal es que las piezas se almacenen en la oscuridad.
- Contacto - Durante el almacenamiento debe ponerse particular atención a que los elastómeros no entren en contacto con disolventes, combustibles, lubricantes (aceites y grasas), sustancias químicas, ácidos, etc.. Además, el contacto prolongado con latón, cobre y acero no inoxidable también es dañino.
- Limpieza - Si es necesario, las piezas deben ser limpiadas con agua y jabón, sin utilizar disolventes orgánicos como petróleo, benzol, turpentina, etc... y se debe poner cuidado en no utilizar objetos punzantes, cortantes o abrasivos.
- Otras precauciones - Es aconsejable no estirar, curvar o colgar los elastómeros y no someterlos a pesos permanentes. En caso de duda sobre las condiciones de una pieza que ha sido almacenada durante un largo periodo de tiempo, se puede comprobar el estado de la superficie estirándola suavemente. Si la superficie muestra signos de agrietamiento, no debe ser utilizada.

#### 5.1.4.4. ESPÁRRAGOS Y RING GASKETS.

Espárragos y tuercas deben cumplir con los requerimientos de API 20E acorde BSL1.

Descripción	REQUERIMIENTOS	
	Grado de Material	Recubrimiento
ESPARRAGOS	ASTM A193 B7	Fluorocarbonado azul
TUERCAS	ASTM A194 2H	Fluorocarbonado azul
RING GASKETS	AISI 316	N/A

Tabla 3. Requerimientos mínimos

#### 5.1.5. ESQUEMAS DE ENSAMBLE Y LISTADO DE PARTES

Los esquemas proporcionados deben ser clasificados de la siguiente manera:

Esquema general de ensamble del equipo debe tener cortes que permitan mostrar todos y cada uno de los elementos constituyentes del equipo, adicional debe indicar el lugar donde se coloca la placa de identificación.


CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 8 de 55



	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

Esquema de los sub ensambles de cada sección del cabezal, acorde el tipo de cabezal detallado.

En la parte lateral derecha debe cada esquema general de ensamble y sub ensambles describir todos los elementos según la tabla 4.

LISTADO DE PARTES				
ITEM	DESCRIPCION	CANTIDAD	MARCA	NUMERO DE PARTE

Tabla 4. Encabezado para planos de cabezales de pozo


#### 5.1.6. IDENTIFICACIÓN DE CABEZALES

La identificación de los equipos debe realizarse mediante las especificaciones de marcación según la edición vigente de API 6A, adicionalmente deben colocarse placas de acero inoxidable de espesor 1/16" y letra no menor a 1/8" con la siguiente información:

- Tag o denominación del equipo
  - El Tag del equipo debe seguir la siguiente secuencia:
  - Siglas del nombre del proveedor – rating del equipo (3k, 5k)
- Número de Orden de compra aprobada por EP PETROECUADOR y el año de la misma
- Numero de licencia API 6A
- Presión de trabajo del equipo y fecha de fabricación
- Rating de temperatura
- Clase de material
- PSL
- PR
- Tamaño nominal
- Nombre del fabricante
- Fecha de fabricación (mes/año)

#### 5.1.7. FABRICANTE DE CABEZALES

Debe poseer la licencia API 6A activa.

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

El fabricante del cabezal de pozo debe poseer dentro del alcance de su licencia API activa el PSL mínimo que se indica en esta especificación o el mínimo requerido para aplicaciones específicas en las operaciones.

### 5.1.8. MARCAS DE COMPONENTES DE CABEZAL

Las marcas de: Válvulas, Espárragos, Tuercas, Ring Gaskets, Actuadores Neumáticos, Weld Neck, Manómetros, etc., que deben ser usados en el Cabezal y Árbol de Navidad deben estar acorde al listado de marcas aprobadas por EP PETROECUADOR,

Si se requiere incluir nuevas marcas se debe cumplir con el proceso de homologación de bienes "Procedimiento para Homologación Técnica de Bienes"

## 5.2. DOCUMENTACION A SER ENTREGADA POR EL FABRICANTE DEL CABEZAL.

Los registros de inspecciones del cabezal deben cumplir con los requerimientos descritos en el

Manual del Vendedor de EP PETROECUADOR y los indicados a continuación:


### 5.2.1. INSPECCION

Los puntos de inspección serán todos los requeridos por la especificación API 6A para el nivel de especificación (PSL) con el que se fabricó el equipo.

#### 5.2.1.1. PLAN DE INSPECCIÓN Y PRUEBAS (ITP)

Para el registro de todos los puntos de inspección el proveedor elabora el plan de Inspección y Pruebas (ITP) descrito en el anexo E, que debe ser suscrito inmediatamente después de recibir la orden de compra aprobada por EP PETROECUADOR y el Contratista. Durante el proceso de construcción el cabezal debe ser liberado por el representante de EP PETROECUADOR.

- A continuación se citan algunos requerimientos generales, sin limitar a los requeridos por la especificación API 6A para PSL1,PSL2,PSL3 y PSL4:
  - Ensayos no destructivos superficiales y volumétricos
  - Ensayos mecánicos

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

- Inspección dimensional
- Trazabilidad
- Números de serie
- Reportes de prueba de materiales
- Pruebas de aceptación en fábrica (FAT)

Nota: De existir registros y certificados de ensayos realizados por el proveedor original del elemento deben ser adjuntados en la documentación entregada. Los formatos de los registros pueden pertenecer al sistema de calidad del contratista.

### 5.2.2. PROCEDIMIENTOS DE INSTALACION

Los procedimientos de instalación deben poseer información detallada de todos y cada uno de los trabajos necesarios, geometrías, acabados finales post maquinado, y herramientas a ser utilizadas durante el proceso de armado, perforación, completación, instalación y pruebas en campo de los equipos.


### 5.2.3. PROCEDIMIENTOS DE OPERACIÓN Y MANTENIMIENTO

- Los procedimientos de operación deben poseer instrucciones detalladas de todos y cada uno de los pasos a seguir para el correcto manipuleo de las válvulas del cabezal, para el control de flujo del fluido.
- Requisitos de mantenimiento, incluido intervalos recomendables de mantenimiento.
- Técnicas de operación adecuadas.
- Instrucciones de ensamble y desensamble.
- Diagramas de ensamble mostrando las partes individuales en una relación adecuada el uno con el otro.
- Instrucciones de reparación y precauciones, incluido un cuadro enlistando los posibles problemas, probables causas y reparaciones necesarias.

NOTA: El programa de mantenimiento del cabezal también debe incluir un listado de stock mínimo de repuestos para el lapso de 1 año, así también un listado con los contactos para realizar los trabajos y consultas necesarias por parte del personal de EP PETROECUADOR.

### 5.2.4. PINTURA Y RECUBRIMIENTOS

Todos los aspectos relacionados con la preparación de la superficie y aplicación de pintura en los elementos componentes de los cabezales: Casing head, Tubing head, Adapters, Christmas tree, válvulas y accesorios externos (espárragos, tuercas, Lock

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

screws), deben estar ajustados a los requisitos del documento “ESPECIFICACIÓN DE REVESTIMIENTOS”, vigente en las operaciones de EP PETROECUADOR.

Adicional a los requisitos para el proceso de preparación superficial y aplicación de recubrimiento, en la sección ANEXOS de esta Especificación de Revestimientos se encuentra detallados los sistemas de pintura aprobados para uso en EP PETROECUADOR. El grupo de pintura designado para cabezales de pozo y todos sus componentes es el SISTEMA No. 15, que cubre la aplicación para cabezales (y componentes) nuevos y aquellos sometidos a proceso de mantenimiento.

La prueba de Pull-Off debe realizarse al sistema de recubrimiento completo una vez que la última capa haya completado el curado de acuerdo a la hoja técnica el producto o según recomendaciones del fabricante. Para que la prueba sea satisfactoria, la presión mínima de desprendimiento debe cumplir con los valores indicados por el fabricante para los diferentes sistemas de pintura. Estos valores deben registrarse en el formato correspondiente.

Toda la superficie de las bridas y de los agujeros para los pernos, excepto las caras de las bridas, deben estar recubiertas con primer y con la capa intermedia antes del montaje. La capa final de la pintura debe aplicarse una vez que el sistema haya sido totalmente ensamblado y probado hidrostáticamente.

Debe existir un registro total de la preparación superficial, condiciones climáticas y pruebas de adherencia realizadas para cada aplicación de las distintas capas de los elementos del cabezal.


### 5.2.5. EMBALAJE DE EQUIPOS

Los equipos deben ser embalados en cajas de madera contrachapada con refuerzos internos que garanticen rigidez a la estructura de la caja e inmovilización y anclaje de los elementos que se encuentren en su interior. La caja debe ser colocada sobre pallets de dos entradas.

En las tapas laterales y superior debe colocarse como mínimo los siguientes datos del equipo:

- Nombre del fabricante
- Nombre del equipo al que pertenece el elemento que está en el interior de la caja.
- Nombre, dimensión nominal y rating del elemento que se encuentra en el interior de la caja
- Orden de Compra a la que pertenece el equipo.

Todos las sujeciones del equipo a la caja se las realizara mediante sunchos metálicos y pernos de anclaje tipo U, los sunchos de plástico no serán aceptados para el transporte y embalaje de los equipos.

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## 6 REFERENCIAS

### 6.1. AMERICAN PETROLEUM INSTITUTE (API)

- API Recommended Practice 5A3, Recommended Practice on Thread Compounds for Casing, Tubing, Line Pipe, and Drill Stem Elements
- API Specification 5B, Threading, Gauging, and Inspection of Casing, Tubing, and Line Pipe Threads
- API Specification 5CT, Casing and Tubing
- API Standard 6ACRA, Age-hardened Nickel-based Alloys for Oil and Gas Drilling and Production Equipment
- API Standard 6AV1, Validation of Safety and Shutdown Valves for Sandy Service
- API Standard 6X, Design Calculations for Pressure-containing Equipment
- API Recommended Practice 14F, Design, Installation, and Maintenance of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class 1, Division 1 and Division 2 Locations
- API Specification 16A, Specification for Drill-through Equipment
- API Specification 17D, Design and Operation of Subsea Production Systems—Subsea Wellhead and Tree Equipment
- API Specification 20A, Carbon Steel, Alloy Steel, Stainless Steel, and Nickel Base Alloy Castings for Use in the Petroleum and Natural Gas Industry
- API Specification 20E, Alloy and Carbon Steel Bolting for Use in the Petroleum and Natural Gas Industries
- API Specification 20F, Corrosion-resistant Bolting for Use in the Petroleum and Natural Gas Industries

### 6.2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)


- ASNT SNT-TC-1A 2, Personnel Qualification and Certification in Nondestructive Testing
- ASTM A193/A193M 3, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications
- ASTM A194/A194M, Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
- ASTM A320/A320M, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for Low-Temperature Service
- ASTM A370, Standard Test Methods and Definitions for Mechanical Testing of Steel Products
- ASTM A388/A388M, Standard Practice for Ultrasonic Examination of Steel Forgings
- ASTM A453/A453M, Standard Specification for High-Temperature Bolting Materials, with Expansion Coefficients Comparable to Austenitic Stainless Steels

CLASIFICACIÓN: PÚBLICO

“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”

Formato: PCA.10.04.FO.02 (V05)

Página 13 de 55

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

### 6.3. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

- ASME B1.5, Acme Screw Threads
- ASME B1.8, Stub Acme Screw Threads
- ASME B1.20.1, Pipe Threads, General Purpose (Inch)
- ASME Boiler and Pressure Vessel Code, Section V, Nondestructive Examination
- ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels
- ASME Boiler and Pressure Vessel Code:2004 with 2005 and 2006 addenda, Section VIII, Division 2, Alternative Rules
- ASME Boiler and Pressure Vessel Code, Section IX, Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators

## 7 FORMATOS

Todos los Centralizadores y Stop Collars se revisarán y validarán por medio del ITP y de acuerdo a lo estipulado en cada vínculo contractual.

## 8 SSA

### 8.1. Procedimiento de Manejo de Cambios MOC

## 9 ANEXOS

**ANEXO A:** DATA SHEET PARA CABEZALES DE EP PETROECUADOR

**ANEXO B:** ESPECIFICACIONES TÉCNICAS PARA CABEZALES DE CONSORCIOS QUE TRABAJAN BAJO RELACIÓN CONTRACTUAL CON EP PETROECUADOR

**ANEXO C:** ESPECIFICACIONES DIMENSIONALES PARA BRIDAS TIPO 6B

**ANEXO D:** EXTRACTO DE "STANDARD SPECIFICATION FOR PIPE, VALVES & FITTINGS"

**ANEXO E:** VÁLVULAS DE COMPUERTA CON SISTEMA DE ACTUADOR NEUMÁTICO.

**ANEXO F:** DIMENSIONES ESTANDAR PARA ESPARRAGOS Y RING GASKET SEGUN API 6A.

**ANEXO G:** PLAN DE INSPECCIÓN Y PRUEBAS ITP PARA CABEZALES DE POZO


**CLASIFICACIÓN: PÚBLICO**

*"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."*

Formato: PCA.10.04.FO.02 (V05)


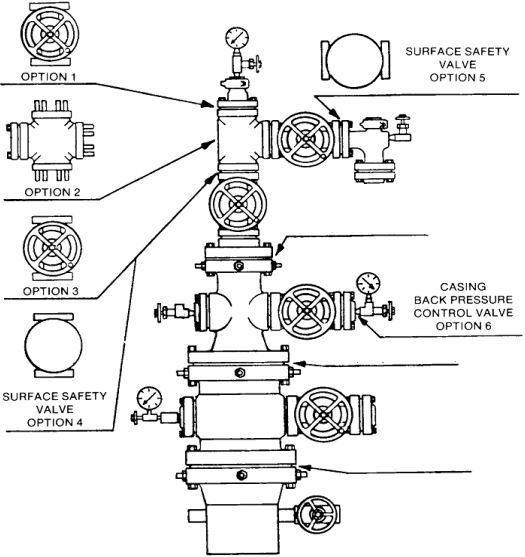
Página 14 de 55




	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01


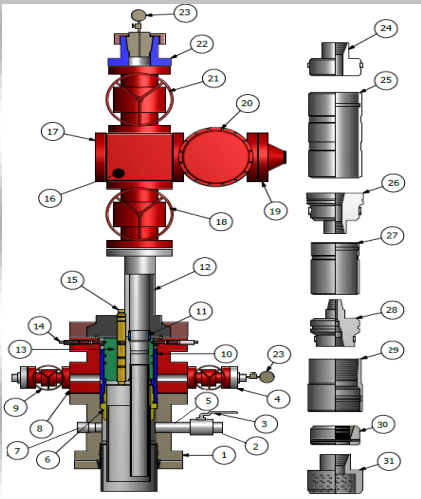
ANEXO A

A.1 DATA SHEET GENERAL PARA CABEZALES DE POZO


									
Title: WELL HEADS DATA SHEET				Código	Elaborado por: V.Yáñez	Revisado por: M.Carvajal / O. Calvache	Aprobado por: P.Luna/ F.Ramírez	Revisión: 3	
WELLHEADS DATA SHEET ( Hoja de Datos de Cabezales de Pozo )									
					PROJECT'S DATA				
					DATA'S ISSUE/ FECHA EMISION				
					DESIGNED BY/ DISEÑADOR POR V.Yáñez				
					DESCRIPTION/DESCRIPCION				
					Wellhead Multibowl System configuration: 20"x13-3/8"x 9-5/8"x3-1/2" OD , 5M PSI , PSL1, PR1, DD, P- U, API 6A Code				
DATA SHEET NUMBER					2011/000				
FIELD/ CAMPO					ALL EP PETROECUADOR FIELDS				
Notes:									
1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.									
2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet									
Notas									
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.									
2.- Todas las bridas y salidas de parragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
Minimun material requirements									
Material Class		Body, bonnet , end and outlet connections			Pressure-control parts, stems & mandrel hangers				
DD	Sour Service	Carbon or low- steel			Carbon or low- alloy steel				
EE	Sour Service	Carbon or low- steel			Stainless steel				
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS									
1	SPEC/ CODIGO		17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm				
2	EDITION/ EDICION		18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/ NO)	Ver Tabla # 8				
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO		19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/ NO)					
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION		20	SURFACE SAFETY VALVES ( Y/N ) / VALVULAS DE SEGURIDAD ( SI/ NO)					
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO		21	ACTUADOR TYPE (HIDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR					
6	SERVICE FLUID/ FLUIDO DE SERVICIO		22	ARTIFICIAL LIFT METHOD/ METODO DELEVANTAMIENTO ARTIFICIAL					
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S		23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO					
8	TYPE OF WELL ( PRODUCTION/ INJECTION ) / TIPO DE CABEZAL ( INYECCION/ PRODUCCION)		24	TYPE/ TIPO					
9	LOCATION/ LOCALIZACION		25	OTHER DATA / OTROS DATOS	BRANDS				
10	CUSTOMER/ CLIENTE		26	ALL BOLTS, STUD, FULL LEGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Ver Documento PAM-EC-02-DB-001, (DISCIPLINA "Completion & Perforation")				
11	COUNTRY/ PAIS		27	ALL RING GASKET API 6A, OCTOGONAL OR OVAL STAINLESS RING	Ver Documento PAM-EC-02-DB-001, (DISCIPLINA "Completion & Perforation")				
12	NACE MR 0175 APPLY (Y/N) / NACE MR 0175 (SI/ NO)		28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR				
13	TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELIGENTE)		29	ALL WELL NECK FLANGE RTJ, ASTM (A105), API 6A MONOGRAM / ANSI B16.5.	Ver Documento PAM-EC-02-DB-001, (DISCIPLINA "Completion & Perforation")				
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)		30	MANOMETERS / NEEDLE VALVE	Ver Documento PAM-EC-02-DB-001, (DISCIPLINA "Completion & Perforation")				
15			31	BALL VALVES	Ver Documento PAM-EC-02-DB-001, (DISCIPLINA "Completion & Perforation")				
16			32	GATE VALVES	Ver Documento PAM-EC-02-DB-001, (DISCIPLINA "Completion & Perforation")				
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

A.2. DATA SHEET PARA CABEZALES MULTITAZON DE PRODUCCION , RATING 5000 PSI

									
Title: WELL HEADS DATA SHEET		Código:	Elaborado por: V.Yáñez	Revisado por: M.Carvajal/ O. Calvache	Aprobado por: P.Luna/F.Ramírez	Revisión: 3			
WELLHEADS DATA SHEET - MULTIBOWL SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )									
				PROJECT'S DATA					
				DATA'S ISSUE/FECHA EMISION		22-09-2011			
				DESIGNED BY/ DISEÑADOR POR		V.Yáñez			
				DESCRIPTION/DESCRIPCION					
				Wellhead Multibowl System configuration: 20"x13-3/8"x 9-5/8"x 4-1/2" OD , 5M PSI , PSL1, PR1, DD, P-U, API 6A Code					
DATA SHEET NUMBER		2013/ 001							
FIELD/ CAMPO		ALLEP PETROECUADOR FIELDS							
Notes:									
1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.									
2.- All studded or flanged connections must include their studs, nut and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet									
Notas									
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.									
2.- Todas las bridas salidas esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
Material Class		Minimum material requirements							
		Body, bonnet , end and outlet connections				Pressure-control parts, stems & mandrel hangers			
AA	General Service	Carbon or low-st steel				Carbon or low-st steel			
BB	General Service	Carbon or low-st steel				Stainless steel			
DD	Sour Service	Carbon or low-st steel				Carbon or low-alloy steel			
EE	Sour Service	Carbon or low-st steel				Stainless steel			
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS									
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2		%/ ppm			
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N)/ RECUBRIMIENTO EXTERNO (SI/NO)		Ver Tabla # 8			
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N)/ RECUBRIMIENTO INTERNO (SI/NO)		N/A			
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N)/ VALVULAS DE SEGURIDAD ( SI/NO)		YES			
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/ PNEUMATIC) / TIPO DE ACTUADOR		PNEUMATIC			
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD / METODO DE LEVANTAMIENTO ARTIFICIAL		YES			
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO		YES			
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO		EFT MANDREL TYPES / THREE LEG TYPES			
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS		BRANDS			
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A		Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners			
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING		Wolar, Danloc, Flexitallic, Lamons, Carrara			
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418		GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE			
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE )	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM (A105), API 6A MONOGRAM/ ANSI B16.5.		Ulma, Mega Cofffer , Metalfar , WFI			
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE		Ashcroft , Wika, AGCO, KF, Swagelock			
15			31	BALL VALVES		AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM			
16			32	GATE VALVES		VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO			
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchor and range system with two Hydrogine Nitride Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated , Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2- 1/16" 5K , w/outlet 2 inch API 6A Monogram	2	2- 1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless Sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seat preparation body for 13-5/8" 3K flange bowl. W/BTC 9-5/8" Box thread bottom x Acme 2TPI Pin thread top , API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2TPI Pin	<15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded btm preparation , 13-5/8" 5K flange top preparation , with ten lock screws preparation and two studded outlet sof 2- 1/16" 5K with VR plug 11.5TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw . API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2- 1/16" 5K flange end, Full port slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 11" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal sleeve 4- 1/2" ID, SS Body w/ four Hydrogine Nitride O-ring Seals.	1	4- 1/16"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 5K floating and rotating flange btm preparation , 4- 1/16" 5K flange rotating thread top preparation , with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack' preparation ( according item 32) for protection of chemical injection tubing.	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 4- 1/2" EU thrd BOX top & bottom, BPV 4" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack' preparation ( according item 32) for protection of chemical injection tubing.	1	11"	4- 1/2" EU 8 RD & 4" BPV H type	N/A	AA	P-U	PSL1	PR1
14	Lock screw, 8TPI UN Thread with Hydrogine Nitride Seals Packing System	10	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connector preparation ( EFT Mandrel Types/ Three Leg types)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1
16	Cross with four studded outlets 4- 1/16" 5K , API 6A Monogram.	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 4- 1/16" 5K , API 6A Monogram.	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 4- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 4- 1/16" 5K, Sch 160, RTJ, ASTM (A105), ANSIB16.5. <b>No machined by the same wellhead constructor.</b>	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 4- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, reverse acting , Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
21	Gate Valve 4- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 4- 1/16" 5K bottom flange preparation , w/ 4- 1/2" EU Lifting thread , hammer nut & cone seal system , API 6A Monogram	1	4- 1/16"	4- 1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS, 4- 1/2" dial, 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieve tool, with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl, 4- 1/2" IF box Lifting thread preparation.	1	13-5/8"	4- 1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 11" Flange bowl, 4- 1/2" IF pin x 4- 1/2" IF box Lifting & runing thread preparation.	1	11"	4- 1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Running casing hanger tool W/BTC 9-5/8" Box thread top x Acme 2TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2TPI Pin	<15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8" , C22 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool, with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	In case you use Mandrel type system: Multipack system chemical injection tubing, W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case of other connector system type: Multipack system chemical injection tubing, W/ holes 3/8" LP LP thread preparation top & btm for injection lines	1	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1





PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.2b. DATA SHEET PARA CABEZALES MULTITAZON DE PRODUCCION , RATING 5000 PSI



Title:WELL HEADS DATA SHEET

Código:

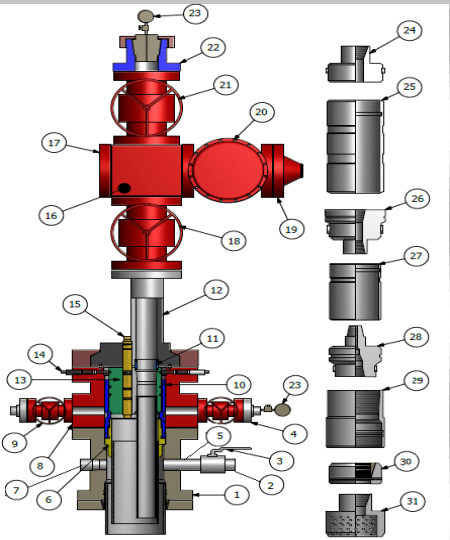
Elaborado por:V.Yáñez

Revisado por:M.Carvajal/ O.Calvache

Aprobado por:P.Luna/F.Ramírez

Revisión:3

WELLHEADS DATA SHEET - MULTIBOWL SYSTEM  
( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )



PROJECT'S DATA

DATA'S ISSUE/ FECHA EMISION22-09-2011

DESIGNED BY/ DISEÑADOR PORV.Yáñez

DESCRIPTION/ DESCRIPCION

Wellhead Multibowl System configuration:  
20"x13- 3/8"x 9-5/8"x3-1/2" OD , 5M PSI , PSL1, PR1, DD, P-U,  
API 6A Code

DATA SHEET NUMBER2013/ 002

FIELD/ CAMPOALL EP PETROECUADOR FIELDS

Notes:

1.- This wellhead can transform in injector, when the pressure of injection don't be over 5000 Psi.

2.- All studded or flanged connections must include their studs, nuts and ring gaskets according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet

Notas

1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.

2.- Todas las bridas y salidas esperragadas deben incluir sus espárragos con tuercas y ring gaskets según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos


Material Class		Minimum material requirements	
		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers
AA	General Service	Carbon or low- steel	Carbon or low- steel
BB	General Service	Carbon or low- steel	Stainless steel
DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel
EE	Sour Service	Carbon or low- steel	Stainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TÉCNICOS


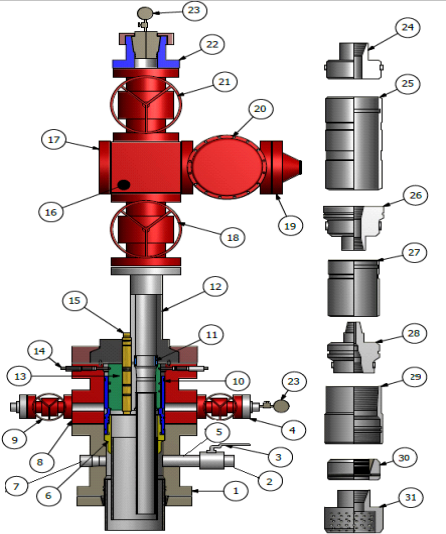
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD ( SI/NO)	YES
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUADOR TYPE (HYDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD / METODO DE LEVANTAMIENTO ARTIFICIAL	YES
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT MANDREL TYPES / THREE LEG TYPES
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A 193 GR B7 / ASTM A 194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B 16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit alloy, Lamons, Carrara
12	NACEM R 0175 APPLY (Y/N) / NACEM R 0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D 1414 & D 1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELLIGENTE )	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM (A 105), API 6A MONOGRAM / ANSI B 16.5.	Ulma, Mega Coffe r , Metalfar , WFI
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelock
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO


PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES

ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR 1
1	Casing Head, with 13- 3/8 inch Sliplock system ring and anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	≤26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem, threaded ends per API 6A , Full port / reduce port , lever operated. Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2- 1/ 16" 5K , w/ 1 outlet 2 inch API 6A Monogram	2	2- 1/ 16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless slip on each 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seal preparation body for 13-5/8" 3K flange bowl. W/ BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top, API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	≤15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin , with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded btm preparation , 13-5/8" 5K flange top preparation , with ten lock screws preparation and two studded outlet sof 2- 1/ 16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off / retainer lock screw . API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2- 1/ 16" 5K flange end. Full port slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2- 1/ 16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off / with external body preparation for 13-5/8" flange bowl & internal preparation for 1" flange bowl , all seals HNBR	1	1"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal sleeve 3- 1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.	1	3- 1/8"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 5K floating and rotating flange btm preparation , 3- 1/8" 5K flange rotating thread top preparation , with EFT preparation for three leg Connect or type or Mandrel connect or type ( according with PAM-EP- ECU-OPR-00-STD-002-01) , with multipack´ preparation ( according item 32) for protection of chemical injection tubing.	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 1" flange bowl & 2 HNBR automatic seals, w/ 3- 1/2" EU 1 thrd BOX top & bottom, BPV 3" H type preparation with EFT preparation for Three leg Connect or types or Mandrel connect or type ( according with PAM-EP- ECU-OPR-00-STD-002-01) , with multipack´ preparation ( according item 32) for protection of chemical injection tubing.	1	1"	3- 1/2" EU 8 RD & 3" BPV H Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connector preparation ( EFT Mandrel Types/ Three Leg types)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1
16	Cross with four studded outlets 3- 1/8" 5K , API 6A Monogram.	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 3- 1/8" 5K, API 6A Monogram.	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 3- 1/8" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 3- 1/8" 5K , Sch 160, RTJ , ASTM ( A 105), ANSI B 16.5. <b>No machined by the same wellhead constructor.</b>	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 3- 1/8" 5K flange end, Full port , slab gate , 5000# MAWP, reverse acting, Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
21	Gate Valve 3- 1/8" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 3- 1/8" 5K bottom flange preparation , w/ 3- 1/2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram	1	3- 1/8"	3- 1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS, 4- 1/2" dial, 0-5000 Psi Rating.	2	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off / retrieve tool, with 4- 1/2" IF box Lifting thread preparation	1	1"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl, 4- 1/2" IF box Lifting thread preparation.	1	13-5/8"	4- 1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 1" Flange bowl.	1	1"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 1" Flange bowl, 4- 1/2" IF pin x 4- 1/2" IF box Lifting & running thread preparation.	1	1"	4- 1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Running casing hanger tool W/ BTC 9-5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	≤15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8" , C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool, with 4- 1/2" IF box Lifting thread preparation	1	1"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	In case yo use Mandrel type system: Multipack system chemical injection tubing, W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case other connect or system type: Multipack system chemical injection tubing, W/ holes 3/8" LP thread preparation top & btm, for injection lines	1	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1


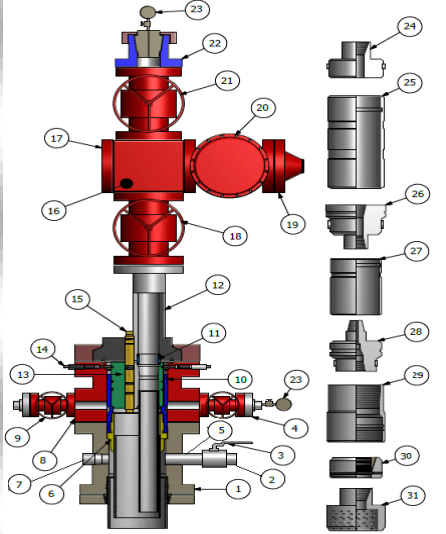
	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

A.2c. DATA SHEET PARA CABEZALES MULTITAZON DE PRODUCCION , RATING 5000 PSI


									
Title: WELL HEADS DATA SHEET		Código	Elaborado por: V.Yáñez	Revisado por: M.Carvajal/ O. Calvache	Aprobado por: P.Luna/F.Ramírez	Revisión: 3			
WELLHEADS DATA SHEET - MULTIBOWL SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )									
				PROJECT'S DATA					
				DATA'S ISSUE/FECHA EMISION		22-09-2011			
				DESIGNED BY/ DISEÑADOR POR		V.Yáñez			
				DESCRIPTION/DESCRIPCION					
				Wellhead Multibowl System configuration: 20"x13- 3/8" x 9-5/8" x 3-1/2" OD , 5M PSI , PSL1, PR1, DD, P-U, API 6A Code					
DATA SHEET NUMBER		2013 / 003							
FIELD/ CAMPO		ALLEP PETROECUADOR FIELDS							
Notes:									
1- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.									
2- All studded or flanged connections must include their studs, nut and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet									
Notas									
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.									
2.- Todas las bridas salidas esperragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
Material Class		Minimum material requirements							
		Body, bonnet , end and outlet connections				Pressure-control parts, stems & mandrel hangers			
AA	General Service	Carbon or low-steel				Carbon or low-steel			
BB	General Service	Carbon or low-steel				Stainless steel			
DD	Sour Service	Carbon or low-steel				Carbon or low-alloy steel			
EE	Sour Service	Carbon or low-steel				Stainless steel			
TECHNICAL REQUIREMENTS / REQUISITOS TÉCNICOS									
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2		%/ ppm			
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N)/ RECUBRIMIENTO EXTERNO (SI/NO)		Ver Tabla # 8			
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N)/ RECUBRIMIENTO INTERNO (SI/NO)		N/A			
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N)/ VALVULAS DE SEGURIDAD ( SI/NO)		YES			
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/NEUMATIC) / TIPO DE ACTUADOR		PNEUMATIC			
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD / METODO DE LEVANTAMIENTO ARTIFICIAL		YES			
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO		YES			
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO		EFT MANDREL TYPES / THREE LEG TYPES			
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS		BRANDS			
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A		Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners			
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING		Wolar, Danloc, Flexitallic, Lamons, Carrara			
12	NACE MR0175 APPLY (Y/N) / NACE MR0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418		GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE			
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE )	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM (A105), API 6A MONOGRAM/ ANSI B16.5.		Ulma, Mega Cofffer , Metalfar , WFI			
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE		Ashcroft , Wika, AGCO, KF, Swagelock			
15			31	BALL VALVES		AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM			
16			32	GATE VALVES		VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO			
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorange system with two Hydrogine Nitrlie Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	≤26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 3/16 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated , Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion Flange 2-1/16" 5K , w/outlet 2 inch API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seal preparation body for 13-5/8" 3K flange bowl. W/BTC 9-5/8" Box thread bottom x Acme 2TPI Pin thread top , API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2TPI Pin	≤15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin , with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded btm preparation , 13-5/8" 5K flange top preparation , with ten lock screws preparation and two studded outlet sof 2- 1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw . API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2-1/16" 5K flange end, Full port slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged body	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 1" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal sleeve 3-1/2" ID , SS Body w/ four Hydrogine Nitrlie O-ring Seals.	1	3-1/8"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 5K floating and rotating flange btm preparation , 3-1/8" 5K flange rotating thread top preparation , with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack' preparation ( according item 32) for protection of chemical injection tubing.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 3-1/2" EU thrd BOX top & bottom, BPV 3" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack' preparation ( according item 32) for protection of chemical injection tubing.	1	11"	3-1/2" EU 8 RD & 3" BPVH Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8TPI UN Thread with Hydrogine Nitrlie Seals Packing System	10	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connector preparation ( EFT Mandrel Types/ Three Leg types)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1
16	Cross with four studded outlets 3-1/8" 5K , API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 3-1/8" 5K , API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 3-1/8" 5K , Sch 160, RTJ , ASTM ( A105), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
21	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 3-1/8" 5K bottom flange preparation , w/ 3-1/2" EU Lifting thread , hammer nut & cone seal system , API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Psi Rating.	2	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieve tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4-1/2" IF box Lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 11" Flange bowl , 4-1/2" IF pin x 4-1/2" IF box Lifting & runing thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Runing casing hanger tool W/BTC 9-5/8" Box thread top x Acme 2TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2TPI Pin	≤15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8" , C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	In case you use Mandrel type system: Multi pack system chemical injection tubing , W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case other connector system type: Multi pack system chemical injection tubing , W/ holes 3/8" LP thread preparation top & btm , for injection lines	1	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

A.3. DATA SHEET PARA CABEZALES MULTITAZON DE PRODUCCION , RATING 3000 PSI

									
Title: WELL HEADS DATA SHEET		Código:	Elaborado por: V.Yáñez	Revisado por: M.Carvajal / O. Calvache	Aprobado por: P.Luna/F.Ramírez	Revisión: 3			
WELLHEADS DATA SHEET - MULTIBOWL SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )									
				PROJECT'S DATA					
				DATA'S ISSUE/FECHA EMISION		28-11-2011			
				DESIGNED BY/ DISEÑADOR POR		V.Yáñez			
				DESCRIPTION/DESCRIPCION					
				Wellhead Multibowl System configuration: 20"x13- 3/8"x 9-5/8"x4- 1/2" OD , 3M PSI , PSL1, PR1, DD, P-U, API 6A Code					
DATA SHEET NUMBER		2011/ 004							
FIELD/ CAMPO		ALL EP PETROECUADOR FIELDS							
Notes:									
1.- This wellhead can transform in injector , when the pressure of injection don't be over 3000 Psi.									
2.- All studied or flanged connections must include their studs, nuts and ring gaskets according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet									
Notas									
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 3000 Psi.									
2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gaskets según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
Material Class		Minimum material requirements							
		Body, bonnet , end and outlet connections				Pressure-control parts, stems & mandrel hangers			
AA	General Service	Carbon or low-st steel				Carbon or low-st steel			
BB	General Service	Carbon or low-st steel				Stainless steel			
DD	Sour Service	Carbon or low-st steel				Carbon or low-alloy steel			
EE	Sour Service	Carbon or low-st steel				Stainless steel			
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS									
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2		%/ ppm			
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N)/ RECUBRIMIENTO EXTERNO (SI/NO)		Ver Tabla # 8			
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	3000 PSI.	19	INTERNAL COATING (Y/N)/ RECUBRIMIENTO INTERNO (SI/NO)		N/A			
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N)/ VALVULAS DE SEGURIDAD ( SI/NO)		YES			
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUADOR TYPE (HYDRAULIC/ PNEUMATIC) / TIPO DE ACTUADOR		PNEUMATIC			
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL		YES			
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO		YES			
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO		EFT MANDREL TYPES / THREE LEG TYPES			
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA/ OTROS DATOS		BRANDS			
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A		Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners			
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING		Wolar, Danloc, Flexitallic, Lamons, Carrara			
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS , ACCORDING ASTM D1414 & D1418		GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE			
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELLIGENTE )	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM ( A105 ), API 6A MONOGRAM / ANSI B16.5.		Ulma, Mega Coffer , Metalfar , WFI			
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24, 25, 26, 27, 28, 29, 30, 31)	YES	30	MANOMETERS / NEEDLE VALVE		Ashcroft, Wika, AGCO, KF, Swagelock			
15			31	BALL VALVES		AOP, KF, Nibco, Nutron, Pbv., Quadrant, Velan, Warren, WKM			
16			32	GATE VALVES		VALVEWORKS / CAMERON / FMC / ARRAY / AXON / NOV / STREAMFLOW			
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13- 3/8 inch Sliplock system ring anchor and range system with two Hydrogine Nit rile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated . Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2- 1/16" 5K , w/ 1 outlet 2 inch API 6A Monogram	2	2- 1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seal preparation body for 13-5/8" 3K flange bowl . W/ BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top , API 6A Monogram .	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin , with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K threaded bottom preparation , 13-5/8" 3K flange top preparation , with eight lock screws preparation and two studded outlets of 2- 1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw . API 6A Monogram .	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2- 1/16" 5K flange end . Full port slab gate , 5000# MAWP, API 6A Monogram . With slab gate and metal-metal seal . Forged body	2	2- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 11" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal sleeve 4- 1/2" ID, SS Body w/ four Hydrogine Nit rile O-ring Seals.	1	4- 1/16"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 3K floating and rotating flange bottom preparation , 4- 1/16" 3K flange rotating thread top preparation , with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01 ) , with multipack preparation ( according item 32 ) for protection of chemical injection tubing.	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 4- 1/2" EU threaded BOX top & bottom, BPV 4" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01 ) , with multipack preparation ( according item 32 ) for protection of chemical injection tubing.	1	11"	4- 1/2" EU 8 RD & 4" BPV H Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nit rile Seals Packing System	8	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connector preparation ( EFT Mandrel Types/ Three Leg types)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1
16	Cross with four studded outlets 3- 1/8" 5K , API 6A Monogram .	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 4- 1/16" 3K , API 6A Monogram .	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 4- 1/16" 3K flange end , Full port , slab gate , 5000# MAWP, API 6A Monogram . With slab gate and metal-metal seal . Forged	1	4- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 4- 1/16" 3K , Sch 80, RTJ , ASTM ( A105 ), ANSI B16.5 . No machined by the same wellhead constructor .	1	4- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 4- 1/16" 3K flange end , Full port , slab gate , 3000# MAWP , reverse acting , Actuator pneumatic system and override manual system API 6A Monogram . With slab gate and metal-metal seal . Forged	1	4- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
21	Gate Valve 4- 1/16" 3K flange end , Full port , slab gate , 3000# MAWP, API 6A Monogram . With slab gate and metal-metal seal . Forged body	1	4- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 4- 1/16" 3K bottom flange preparation , w/ 4- 1/2" EU Lifting thread , hammer nut & cone seal system , API 6A Monogram	1	4- 1/16"	4- 1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS , 4- 1/2" dial , 0-5000 Psi Rating .	2	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieval tool , with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl .	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4- 1/2" IF box Lifting thread preparation .	1	13-5/8"	4- 1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 11" Flange bowl .	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 11" Flange bowl , 4- 1/2" IF pin x 4- 1/2" IF box Lifting & running thread preparation .	1	11"	4- 1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Running casing hanger tool W BTC 9-5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8" , C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool , with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	In case you use Mandrel type system: Multipack system chemical injection tubing , W/ 3 holes 3/8" LP thread preparation top & bottom for injection lines In case other connector system type: Multipack system chemical injection tubing , W/ holes 3/8" LP thread preparation top & bottom for injection lines	1	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1





PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.3b. DATA SHEET PARA CABEZALES MULTITAZON DE PRODUCCION , RATING 3000 PSI



Title:WELL HEADS DATA SHEET

Código

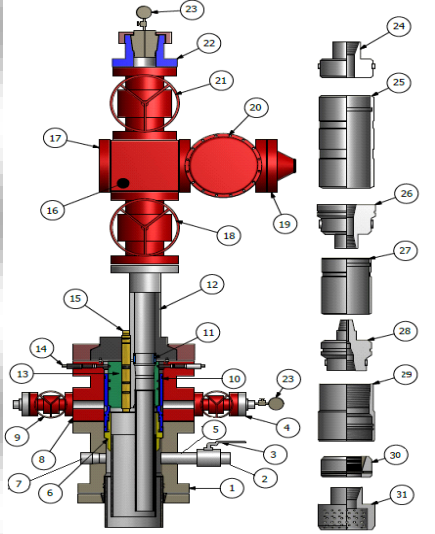
Elaborado por:V.Yáñez

Revisado por:M.Carvajal/ O. Calvache

Aprobado por:P.Luna/F.Ramírez

Revisión:3

WELLHEADS DATA SHEET - MULTIBOWL SYSTEM  
( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )



PROJECT'S DATA

DATA'S ISSUE/FECHA EMISION28-11-2011

DESIGNED BY/ DISEÑADOR PORV.Yáñez

DESCRIPTION/DESCRIPCION

Wellhead Multibowl System configuration:  
20"x13- 3/8"x 9- 5/8"x3- 1/2" OD , 3M PSI , PSL1, PR1, DD, P-U,  
API 6A Code

DATA SHEET NUMBER2011/ 005

FIELD/ CAMPOALL EP PETROECUADOR FIELDS

Notes:

1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.

2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet

Notas

1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.

2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gaskets según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos

Material Class		Minimum material requirements	
		Body, bonnet , end and outlet connections	Pressure- control parts, stems & mandrel hangers
AA	General Service	Carbon or low- steel	Carbon or low- steel
BB	General Service	Carbon or low- steel	Stainless steel
DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel
EE	Sour Service	Carbon or low- steel	Stainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS

1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N)/ RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	3000 PSI.	19	INTERNAL COATING (Y/N)/ RECUBRIMIENTO INTERNO (SI/NO)	N/A
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N)/ VALVULAS DE SEGURIDAD ( SI/NO)	YES
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUADOR TYPE (HYDRAULIC/ PNEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	YES
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT MANDREL TYPES / THREE LEG TYPES
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA/ OTROS DATOS	BRANDS
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A 193 GR B7 / ASTM A 194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B 16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara
12	NACEM R 0175 APPLY (Y/N) / NACEM R 0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D 1414 & D 1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELLIGENTE )	SINGLE	29	ALL WELL NECK FLANGERT J, ASTM ( A 105 ), API 6A MONOGRAM / ANSI B 16.5.	Ulma, Mega Coffler , Metalfar , WFI
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING , ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING , ETC ) ( 24, 25, 26, 27, 28, 29, 30, 31 )	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelock
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM
16			32	GATE VALVES	VALVEWORKS / CAMERON / FMC / ARRAY/ AXON / NOV/ STREAMFLOW

PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES


ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13- 3/8 inch Sliplock system ring anchor and orange system with two Hydrogine Nit rile Seals low casing seal preparation x 13- 5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlet with 2 inch API 6A LP threads, API 6A Monogram .	1	13- 5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 3/16 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated , Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2- 1/16" 5K , w/outlet 2 inch API 6A Monogram	2	2- 1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seal preparation body for 13- 5/8" 3K flange bowl. W/BTC 9- 5/8" Box thread bottom x Acme 2 TPI Pin thread top, API 6A Monogram.	1	9- 5/8"	9- 5/8" BTC Box Acme 2 TPI Pin	<45	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin , with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13- 5/8" 3K studded btm preparation , 13- 5/8" 3K flange top preparation , with eight lock screws preparation and two studded outlet of 2- 1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw. API 6A Monogram.	1	13- 5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2- 1/16" 5K flange end. Full port slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal- metal seal. Forged body	2	2- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13- 5/8" flange bowl & internal preparation for 11" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal sleeve 3- 1/2" ID, SS Body w/ four Hydrogine Nit rile O- ring Seals.	1	3- 1/8"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 13- 5/8" 3K floating and rotating flange btm preparation , 3- 1/8" 3K flange rotating thread top preparation , with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM- EP- ECU- OPR- 00- STD- 002- 01 ) , with multipack' preparation ( according item 32 ) for protection of chemical injection tubing.	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 3- 1/2" EU thrd BOX top & bottom, BPV 3" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM- EP- ECU- OPR- 00- STD- 002- 01 ) , with multipack' preparation ( according item 32 ) for protection of chemical injection tubing.	1	11"	3- 1/2" EU 8 RD & 3" BPV H Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nit rile Seals Packing System	8	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connector preparation ( EFT Mandrel Types/ Three Leg types)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1
16	Cross with four studded outlets 3- 1/8" 3K , API 6A Monogram.	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 3- 1/8" 3K , API 6A Monogram.	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 3- 1/8" 3K flange end. Full port , slab gate , 3000# MAWP, API 6A Monogram. With slab gate and metal- metal seal. Forged	1	3- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 3- 1/8" 3K , Sch 80, RTJ , ASTM ( A 105 ), ANSI B 16.5. <b>No machined by the same wellhead constructor .</b>	1	3- 1/8"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 3- 1/8" 3K flange end. Full port , slab gate , 3000# MAWP, 6A Monogram. With slab gate and metal- metal seal. Forged body	1	3- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
21	Gate Valve 3- 1/8" 3K flange end. Full port , slab gate , 3000# MAWP, API 6A Monogram. With slab gate and metal- metal seal. Forged body	1	3- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 3- 1/8" 3K bottom flange preparation , w/ 3- 1/2" EU Lifting thread , hammer nut & cone seal system, API 6A Monogram	1	3- 1/8"	3- 1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS , 4- 1/2" dial , 0- 5000 Psi Rating.	2	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieve tool , with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13- 5/8" Flange bowl.	1	13- 5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13- 5/8" Flange bowl , 4- 1/2" IF box Lifting thread preparation.	1	13- 5/8"	4- 1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 11" Flange bowl , 4- 1/2" IF pin x 4- 1/2" IF box Lifting & runing thread preparation.	1	11"	4- 1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Runing casing hanger tool W/BTC 9- 5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9- 5/8"	9- 5/8" BTC Box Acme 2 TPI Pin	<45	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13- 5/8" x 9- 5/8" , C21 bowl preparation	1	13- 5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool , with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	In case yo use Mandrel type system: Multipack system chemical injection tubing , W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case other connector system type: Multipack system chemical injection tubing , W/ holes 3/8" LP thread preparation top & btm , for injection lines	1	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1

CLASIFICACIÓN: PÚBLICO


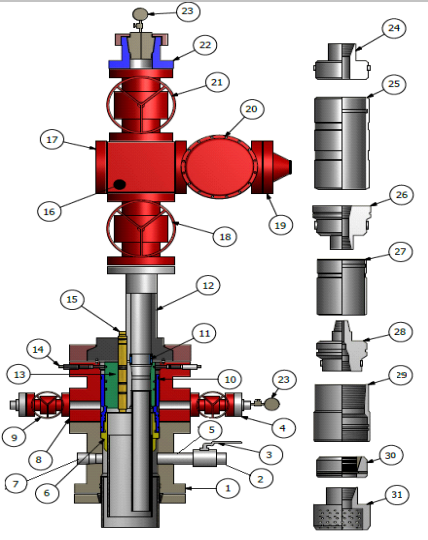
“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”


Formato: PCA.10.04.FO.02 (V05)

Página 20 de 55


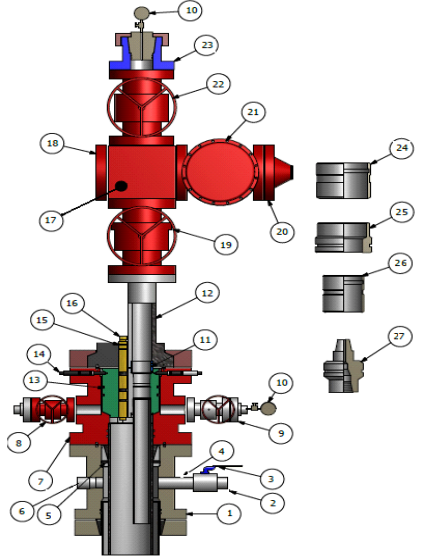
	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

A.3c. DATA SHEET PARA CABEZALES MULTITAZON DE PRODUCCION , RATING 3000 PSI

									
Title: WELL HEADS DATA SHEET			Código:	Elaborado por: O.Calvache	Revisado por: M.Carvajal / O. Calvache	Aprobado por: P.Luna/F.Ramirez	Revisión: 1		
WELLHEADS DATA SHEET - MULTIBOWL SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )									
					PROJECT'S DATA				
					DATA'S ISSUE/ FECHA EMISION		18-07-2015		
					DESIGNED BY/ DISEÑADOR POR		O.Calvache		
					DESCRIPTION/ DESCRIPCION				
					Wellhead Multibowl System configuration: 20"x13-3/8"x 9-5/8"x3-1/2" OD , 3M PSI , PSL1, PR1, DD, P-U, API 6A Code				
DATA SHEET NUMBER									
FIELD/ CAMPO			ALL EP PETROECUADOR FIELDS						
Notes:									
1.- This wellhead can't transform in injector , when the pressure of injection don't be over 3000 Psi.									
2.- All studded or flanged connections must include their studs, nut and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet									
Notas:									
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 3000 Psi.									
2.- Todas las bridas y salidas esperagadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
Material Class		Minimum material requirements							
		Body, bonnet , end and outlet connections				Pressure-control parts, stems & mandrel hangers			
AA	General Service	Carbon or low-st steel				Carbon or low- steel			
BB	General Service	Carbon or low- steel				Stainless steel			
DD	Sour Service	Carbon or low- steel				Carbon or low- alloy steel			
EE	Sour Service	Carbon or low- steel				Stainless steel			
TECHNICAL REQUIREMENTS / REQUISITOS TÉCNICOS									
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm				
2	EDITION/ EDICION	20TH EDITION	18	EXTERNAL COATING (Y/N)/ RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8				
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	3000 PSI.	19	INTERNAL COATING (Y/N)/ RECUBRIMIENTO INTERNO (SI/NO)	N/A				
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N)/ VALVULAS DE SEGURIDAD (SI/NO)	YES				
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	N/A				
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	YES				
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES				
8	TYPE OF WELL ( PRODUCTION/ INJECTION ) / TIPO DE CABEZAL ( INYECCION/ PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT MANDREL TYPES / THREE LEG TYPES				
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA/ OTROS DATOS	BRANDS				
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED , THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners				
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara				
12	NACE MR0175 APPLY (Y/N) / NACE MR0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE				
13	TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELLIGENTE )	SINGLE	29	ALL WELL NECK FLANGE RTJ , ASTM ( A105), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffer , Metal far , WFI				
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok				
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM				
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAVAL/ AXON/ NOV/ STREAMFLOW				
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Sealss casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screws and two outlets with 2 inch API 6A LP threads, API 6A Monogram.	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded and sper API 6A, Full port / Reduce Port, lever operated, Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2-9/16" 3K , w/ 1outlet 2 inch API 6A Monogram	2	2-9/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded end sper API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seat preparation body for 13-5/8" 3K flange bowl, W/ BTC 9-5/8" Box thread bottom x Acme 2TPI Pin thread top, API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2TPI Pin	<15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded btm preparation , 13-5/8" 3K flange top preparation , with eight lock screws preparation and two studded outlet sof 2-9/16" 3K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw. API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2-9/16" 3K flange end, Full port slab gate , 3000# MAWP, API 6A Monogram. Forged body	2	2-9/16"	N/A	API 6A	EE	P-U	PSL1	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 1" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal sleeve 3-1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.	1	3-1/8"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 3K floating and rotating flange btm preparation , 3-1/8" 3K flange rotating thread top preparation , with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack " preparation ( according item 32) for protection of chemical injection tubing.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 1" flange bowl & 2 HNBR automatic seals, w/ 3-1/2" EU thrd BOX top & bottom, BPV 3" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack " preparation ( according item 32) for protection of chemical injection tubing.	1	11"	3-1/2" EU 8 RD & 3" BPV H Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8TPI UN Thread with Hydrogine Nitrile Seals Packing System	8	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connect or preparation ( EFT Mandrel Types/ Three Leg Types)	1	N/A	N/A	N/A	DD	P-U	PSL2	PR1
16	Cross with four studded outlets: 3-1/8" 3K TOP & BOTTOM x 2-9/16" OUTLETS, API 6A Monogram.	1	3-1/8" x 2-9/16"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 2-9/16" 3K , API 6A Monogram.	1	2-9/16"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 3-1/8" 3K flange end, Full port , slab gate , 3000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 2-9/16" 3K, Sch 80, RTJ , ASTM ( A105), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	2-9/16"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 2-9/16" 3K flange end, Full port slab gate , 3000# MAWP, API 6A Monogram. . Forged body	1	2-9/16"	N/A	API 6A	EE	P-U	PSL1	PR1
21	Gate Valve 3-1/8" 3K flange end, Full port , slab gate , 3000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 3-1/8" 3K bottom flange preparation , w/ 3-1/2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial , 0-3000 Psi Rating.	2	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieve tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4-1/2" IF box Lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 1" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 1" Flange bowl , 4-1/2" IF pin x 4-1/2" IF box Lifting & runing thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Runing casing hanger tool W/ BTC 9-5/8" Box thread top x Acme 2TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2TPI Pin	<15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8" , C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	In case you use Mandrel type system: Multipack system chemical injection tubing, W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case other connector system type: Multipack system chemical injection tubing, W/ holes 3/8" LP thread preparation top & btm for injection lines	1	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01


A.4. DATA SHEET PARA CABEZALES ESTANDARES DE PRODUCCION , RATING 3000 PSI

																															
Title: WELL HEADS DATA SHEET		Código:	Elaborado por: V.Yáñez	Revisado por: M.Carvajal / O. Calvache	Aprobado por: P.Luna/ F.Ramirez	Revisión: 3																									
WELLHEADS DATA SHEET - STANDAR SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Estandar )																															
<div><div></div><div><div>PROJECT'S DATA</div><div>DATA'S ISSUE/FECHA EMISION10/12/2011 DESIGNED BY/ DISEÑADOR PORV.Yáñez</div><div>DESCRIPTION/DESCRIPCION Wellhead Standar System configuration: 20"x13-3/8"x 9-5/8"x4-1/2" OD , 3K PSI , PSL1, PR1, DD, P-U, API 6A Code</div><div>DATA SHEET NUMBER2011/ 006</div><div>FIELD/ CAMPOALLEP PETROECUADOR FIELDS</div><div>Notes: A 2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet Not as 1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 3000 Psi. 2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos</div><div><table><tr><th colspan="2" rowspan="2">Material Class</th><th colspan="2">Minimum material requirements</th></tr><tr><th>Body, bonnet , end and outlet connections</th><th>Pressure-control parts, stems &amp; mandrel hangers</th></tr><tr><td>AA</td><td>General Service</td><td>Carbon or low-steel</td><td>Carbon or low- steel</td></tr><tr><td>BB</td><td>General Service</td><td>Carbon or low- steel</td><td>Stainless steel</td></tr><tr><td>DD</td><td>Sour Service</td><td>Carbon or low- steel</td><td>Carbon or low- alloy steel</td></tr><tr><td>EE</td><td>Sour Service</td><td>Carbon or low- steel</td><td>Stainless steel</td></tr></table></div></div></div>										Material Class		Minimum material requirements		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers	AA	General Service	Carbon or low-steel	Carbon or low- steel	BB	General Service	Carbon or low- steel	Stainless steel	DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel	EE	Sour Service	Carbon or low- steel	Stainless steel
Material Class		Minimum material requirements																													
		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers																												
AA	General Service	Carbon or low-steel	Carbon or low- steel																												
BB	General Service	Carbon or low- steel	Stainless steel																												
DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel																												
EE	Sour Service	Carbon or low- steel	Stainless steel																												
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS																															
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm																										
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8																										
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	3000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A																										
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD ( SI/NO)	YES																										
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUADOR TYPE (HYDRAULIC/NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC																										
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	YES																										
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES																										
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT MANDREL TYPES / THREE LEG TYPES																										
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS																										
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LEGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H , WITH FLUOROCARBON COATED , THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners																										
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A , OCTOGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallc, Lamons, Carrara																										
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS , ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE																										
13	TYPE OF COMPLETION ( SINGLE/ DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELIGENTE )	SINGLE	29	ALL WELL NECK FLANGE RTJ , ASTM ( A105) , API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffer , Metalfar , WFI																										
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING , ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING , ETC ) (24,25,26,27)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelock																										
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, VKM																										
16			32	GATE VALVES	VALVEWORKS / CAMERON / FMC / ARRAY/ AXON/ NOV/ STREAMFLO																										
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES																															
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1																						
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram.	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1																						
2	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1																						
3	Ball Valve 6000# MAWP, SS body, 316 SS and stem, threaded ends per API 6A , Full port / reduce port , lever operated. Fire safe. Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1																						
4	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1																						
5	Slip Casing hanger 13-5/8" X9-5/8" , C22 bowl preparation ,	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																						
6	Blind Bull plug with 2" API 6A LP thread pin	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1																						
7	Tubing Head Spool 13-5/8" 3K Flanged btm preparation , 11" 3K flange top preparation , with eight lock screws preparation and two studded outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock	1	9-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																						
8	Gate Valve 2-1/16" 5K flange end, Full port slab gate , 5000# MAWP , API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																						
9	Companion flange 2-1/16" 5K, w/ 1 outlet 2 inch API 6A LP threads, API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1																						
10	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-3000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A																						
11	Seal sleeve 4-1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.	1	4-1/16"	N/A	N/A	AA	P-U	PSL1	PR1																						
12	Tubing Head Adapter 11" 3K floating and rotating flange btm preparation , 4-1/16" 3K flange rotating thread top preparation, with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack preparation ( according item 15) for protection of chemical injection tubing.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 4-1/2" EU thrd BOX top & bottom, BPV4" H type preparation with EFT preparation for Three leg Connect or types or Mandrel connect or type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack preparation ( according item 15) for protection of chemical injection tubing.	1	11"	4-1/2" EU 8 RD & 4" BPV H Type	N/A	DD	P-U	PSL1	PR1																						
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	8	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1																						
15	In case yo use Mandrel type system: Multipack system chemical injection tubing, W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case of her connector system type: Multipack system chemical injection tubing, W/ holes 3/8" LP thread preparation top & btm, for injection lines	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1																						
16	Surface electrical Connector ( BIWOR QUICK Conn. Type)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1																						
17	Cross with four studded outlets 4-1/16" 3K , API 6A Monogram.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
18	Blind Flange 4-1/16" 3K , API 6A Monogram.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
19	Gate Valve 4-1/16" 3K flange end, Full port , slab gate , 3000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4-1/16"	N/A	N/A	EE	P-U	PSL2	PR1																						
20	Weldneck Flange 4-1/16" 3K , Sch 80, RTJ , ASTM ( A105) , ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
21	Gate Valve 4-1/16" 3K flange end, Full port , slab gate , 3000# MAWP, reverse acting, Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																						
22	Gate Valve 4-1/16" 3K flange end, Full port , slab gate , 3000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	4-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																						
23	Tree Cap 4-1/16" 3K bottom flange preparation , w/ 4-1/2" EU Lifting thread , hammer nut & cone seal system, API 6A Monogram	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
24	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																						
25	BOP test plug bushing reducer with external preparation for 13-5/8" Flange bowl & Internal preparation for 11" Flange bowl , W/ 4 retainers for test Plug 11" bowl preparation	1	11"	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1																						
26	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1																						
27	Running & Testing Tool with external preparation for 11" Flange bowl , 4-1/2" IF pin x 4-1/2" IF box Lifting & runing thread preparation.	1	11"	4-1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1																						


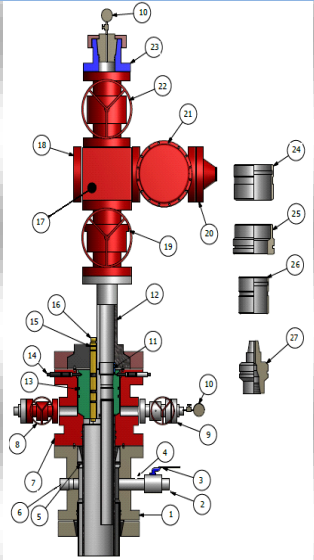
CLASIFICACIÓN: PÚBLICO


"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."  
Formato: PCA.10.04.FO.02 (V05)      Página 22 de 55




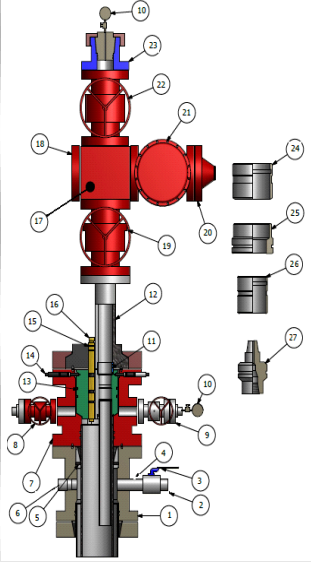
	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

A.5. DATA SHEET PARA CABEZALES ESTANDARES DE PRODUCCION , RATING 5000 PSI


									
Title: WELL HEADS DATA SHEET			Código:	Elaborado por: V.Yáñez	Revisado por: M.Carvajal / O.Calvache	Aprobado por: P.Luna/ F.Ramírez	Revisión: 3		
WELLHEADS DATA SHEET - ESTANDAR SYSTEM									
( Hoja de Datos de Cabezales de Pozo - Sistema Estandar )									
					PROJECT'S DATA				
					DATA'S ISSUE/FECHA EMISION		28/11/2011		
					DESIGNED BY/ DISEÑADOR POR		V.Yáñez		
					DESCRIPTION/ DESCRIPCION				
					Wellhead Standar System configuration: 20"x13-3/8"x 9-5/8"x4-1/2" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code				
DATA SHEET NUMBER			2011/ 007						
FIELD/ CAMPO			ALL EP PETROECUADOR FIELDS						
Notes:									
1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.									
2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet									
Notes									
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.									
2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
Material Class		Minimum material requirements							
		Body, bonnet, end and outlet connections				Pressure-control parts, stems & mandrel hangers			
AA	General Service	Carbon or low-steel				Carbon or low-steel			
BB	General Service	Carbon or low-steel				Stainless steel			
DD	Sour Service	Carbon or low-steel				Carbon or low-alloy steel			
EE	Sour Service	Carbon or low-steel				Stainless steel			
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS									
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	% ppm				
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8				
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A				
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD ( SI/NO)	YES				
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE: HYDRAULIC/ NEUMATIC / TIPO DE ACTUADOR	PNEUMATIC				
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DELEVANTAMIENTO ARTIFICIAL	YES				
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED / CONECTOR ELECTRICO	YES				
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT MANDREL TYPES / THREE LEG TYPES				
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS				
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners				
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit alloy, Lamons, Carrara				
12	NACE MR 0175 APPLY (Y/N) / NACE MR 0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE				
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELLIGENTE )	SINGLE	29	ALL WELL NECK FLANGE RTJ, ASTM ( A105 ), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffey, Metalfar, WFI				
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) ( 24, 25, 26, 27 )	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok				
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM				
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO				
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorange system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram.	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body, 316 SS and stem, threaded ends per API 6A, Full port / reduce port, lever operated. Fire safe. Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Nipple carbon steel seamless pipe sch. 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
5	Slip Casing hanger 13-5/8" X 9-5/8", C22 bowl preparation, Slip must be constructed only in USA	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
6	Blind Bull plug with 2" API 6A LP thread pin	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
7	Tubing Head Spool 13-5/8" 3K Flanged bottom preparation, 11" 5K flange top preparation, with 12 lock screws preparation and two studded outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation. Include Guide Screw and Pack Off retainer lock	1	9-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
8	Gate Valve 2-1/16" 5K flange end, Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
9	Companion flange 2-1/16" 5K, w/ 1 outlet 2 inch API 6A LP threads, API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
10	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-3000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
11	Seal sleeve 4-1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.	1	4-1/16"	N/A	N/A	AA	P-U	PSL1	PR1
12	Tubing Head Adapter 11" 5K floating and rotating flange bottom preparation, 4-1/16" 5K flange rotating thread top preparation, with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01 ), with multipack preparation ( according item 15 ) for protection of chemical injection tubing.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 4-1/2" EU thrd BOX top & bottom, BPV 4" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01 ), with multipack preparation ( according item 15 ) for protection of chemical injection tubing.	1	11"	4-1/2" EU 8 RD & 4" BPV H Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	12	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
15	In case you use Mandrel type system: Multipack system chemical injection tubing, W/ 3 holes 3/8" LP thread preparation top & bottom for injection lines In case other connector system type: Multipack system chemical injection tubing, W/ holes 3/8" LP thread preparation top & bottom for injection lines	1	N/A	N/A	N/A	DD	P-U	PSL1	PR1
16	Surface electrical Connector ( BIW or QUICK Conn. Type )	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1
17	Cross with four studded outlets 4-1/16" 5K, API 6A Monogram.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
18	Blind Flange 4-1/16" 5K, API 6A Monogram.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
19	Gate Valve 4-1/16" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4-1/16"	N/A	N/A	EE	P-U	PSL2	PR1
20	Weldneck Flange 4-1/16" 5K, Sch 160, RTJ, ASTM ( A105 ), ANSI B16.5. No machined by the same wellhead constructor.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
21	Gate Valve 4-1/16" 5K flange end, Full port, slab gate, 5000# MAWP, reverse acting, Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Gate Valve 4-1/16" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	4-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
23	Tree Cap 4-1/16" 5K bottom flange preparation, w/ 4-1/2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
24	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
25	BOP test plug bushing reducer with external preparation for 13-5/8" Flange bowl & Internal preparation for 11" Flange bowl, W/ 4 retainers for test Plug 11" bowl preparation	1	11"	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
26	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
27	Running & Testing Tool with external preparation for 11" Flange bowl, 4-1/2" IF pin x 4-1/2" IF box Lifting & running thread preparation.	1	11"	4-1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01


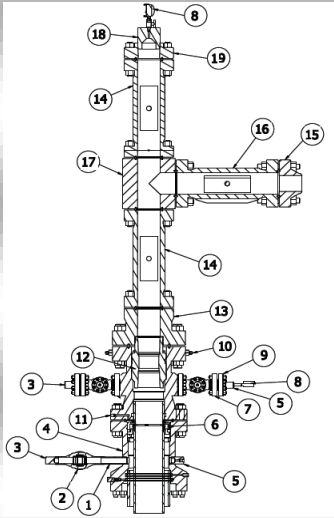
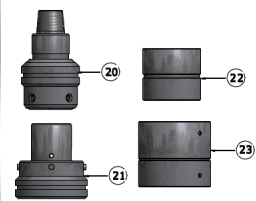
A.5b. DATA SHEET PARA CABEZALES ESTANDARES DE PRODUCCION , RATING 5000 PSI


																																																																																					
Title: WELL HEADS DATA SHEET		Código:	Elaborado por: V.Yáñez	Revisado por: M.Carvajal / O. Calvache	Aprobado por: P.Luna/ F.Ramirez	Revisión: 3																																																																															
WELLHEADS DATA SHEET - STANDAR SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Estandar )																																																																																					
<div><div></div><div><table><thead><tr><th colspan="4">PROJECT'S DATA</th></tr></thead><tbody><tr><td colspan="2">DATA'S ISSUE/FECHA EMISION</td><td colspan="2">28/11/2011</td></tr><tr><td colspan="2">DESIGNED BY/ DISEÑADOR POR</td><td colspan="2">V.Yáñez</td></tr><tr><th colspan="4">DESCRIPTION/DESCRIPCION</th></tr><tr><td colspan="4">Wellhead Standar System configuration: 20"x13-3/8"x 9-5/8"x3-1/2" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code</td></tr><tr><td colspan="2">DATA SHEET NUMBER</td><td colspan="2">2011/ 008</td></tr><tr><td colspan="2">FIELD/ CAMPO</td><td colspan="2">ALLEP PETROECUADOR FIELDS</td></tr><tr><td colspan="4">Notes:</td></tr><tr><td colspan="4">1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.</td></tr><tr><td colspan="4">2.- All studied or flanged connections must include their studs, nut and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet</td></tr><tr><td colspan="4">Notes</td></tr><tr><td colspan="4">1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.</td></tr><tr><td colspan="4">2.- Todas las bridas y salidas esperragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos</td></tr><tr><th colspan="2">Material Class</th><th colspan="2">Minimum material requirements</th></tr><tr><td colspan="2"></td><td>Body, bonnet , end and outlet connections</td><td>Pressure-control parts, stems &amp; mandrel hangers</td></tr><tr><td>AA</td><td>General Service</td><td>Carbon or low-steel</td><td>Carbon or low-steel</td></tr><tr><td>BB</td><td>General Service</td><td>Carbon or low-steel</td><td>Stainless steel</td></tr><tr><td>DD</td><td>Sour Service</td><td>Carbon or low-steel</td><td>Carbon or low-alloy steel</td></tr><tr><td>EE</td><td>Sour Service</td><td>Carbon or low-steel</td><td>Stainless steel</td></tr></tbody></table></div></div>										PROJECT'S DATA				DATA'S ISSUE/FECHA EMISION		28/11/2011		DESIGNED BY/ DISEÑADOR POR		V.Yáñez		DESCRIPTION/DESCRIPCION				Wellhead Standar System configuration: 20"x13-3/8"x 9-5/8"x3-1/2" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code				DATA SHEET NUMBER		2011/ 008		FIELD/ CAMPO		ALLEP PETROECUADOR FIELDS		Notes:				1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.				2.- All studied or flanged connections must include their studs, nut and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet				Notes				1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.				2.- Todas las bridas y salidas esperragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos				Material Class		Minimum material requirements				Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers	AA	General Service	Carbon or low-steel	Carbon or low-steel	BB	General Service	Carbon or low-steel	Stainless steel	DD	Sour Service	Carbon or low-steel	Carbon or low-alloy steel	EE	Sour Service	Carbon or low-steel	Stainless steel
PROJECT'S DATA																																																																																					
DATA'S ISSUE/FECHA EMISION		28/11/2011																																																																																			
DESIGNED BY/ DISEÑADOR POR		V.Yáñez																																																																																			
DESCRIPTION/DESCRIPCION																																																																																					
Wellhead Standar System configuration: 20"x13-3/8"x 9-5/8"x3-1/2" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code																																																																																					
DATA SHEET NUMBER		2011/ 008																																																																																			
FIELD/ CAMPO		ALLEP PETROECUADOR FIELDS																																																																																			
Notes:																																																																																					
1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.																																																																																					
2.- All studied or flanged connections must include their studs, nut and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet																																																																																					
Notes																																																																																					
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.																																																																																					
2.- Todas las bridas y salidas esperragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos																																																																																					
Material Class		Minimum material requirements																																																																																			
		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers																																																																																		
AA	General Service	Carbon or low-steel	Carbon or low-steel																																																																																		
BB	General Service	Carbon or low-steel	Stainless steel																																																																																		
DD	Sour Service	Carbon or low-steel	Carbon or low-alloy steel																																																																																		
EE	Sour Service	Carbon or low-steel	Stainless steel																																																																																		
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS																																																																																					
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm																																																																																
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/ NO)	Ver Tabla # 8																																																																																
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/ NO)	N/A																																																																																
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD ( SI/ NO)	YES																																																																																
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC																																																																																
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	YES																																																																																
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES																																																																																
8	TYPE OF WELL ( PRODUCTION/ INJECTION) / TIPO DE CABEZAL ( INYECCION/ PRODUCCION)	PRODUCER	24	TYPE/ TIPO	EFT MANDREL TYPES / THREE LEG TYPES																																																																																
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA/ OTROS DATOS	BRANDS																																																																																
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A 193 GR B7 / ASTM A 194 GR 2H , WITH FLUOROCARBON COATED , THREADED AND DIMENSIONS PER ASME B 16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners																																																																																
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A , OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara																																																																																
12	NACE MR 0175 APPLY (Y/N) / NACE MR 0175 (SI/ NO)	YES	28	ALL ELASTOMERIC SEALS , ACCORDING ASTM D 1414 & D 1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE																																																																																
13	TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELLIGENTE)	SINGLE	29	ALL WELL NECK FLANGE RTJ , ASTM ( A 105) , API 6A MONOGRAM / ANSI B 16.5.	Ulma, Mega Coffer , Metalfar , WFI																																																																																
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok																																																																																
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, VKM																																																																																
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO																																																																																
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES																																																																																					
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1																																																																												
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlet with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	≤26	DD	P-U	PSL1	PR1																																																																												
2	Bull plug with 2" API 6A LP thread Pin , with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1																																																																												
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated. Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1																																																																												
4	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1																																																																												
5	Slip Casing hanger 13-5/8" X 9-5/8" , C22 bowl preparation , Slip must be constructed only in USA	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
6	Blind Bull plug with 2" API 6A LP thread pin	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1																																																																												
7	Tubing Head Spool 13-5/8" 3K Flanged btm preparation , 11" 5K flange top preparation , with eight lock screws preparation and two studded outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer loc	1	9-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
8	Gate Valve 2-1/16" 5K flange end, Full port slab gate , 5000# MAWP , API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																																																																												
9	Companion flange 2-1/16" 5K, w/ 1 outlet 2 inch API 6A LP threads, API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1																																																																												
10	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-3000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A																																																																												
11	Seal sleeve 3-1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.	1	3-1/8"	N/A	N/A	AA	P-U	PSL1	PR1																																																																												
12	Tubing Head Adapter 11" 5K floating and rotating flange btm preparation , 3-1/8" 5K flange rotating thread top preparation , with EFT preparation for three leg Connector type or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack preparation ( according item 15) for protection of chemical injection tubing.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 3-1/2" EU thrd BOX top & bottom, BPV3" H type preparation with EFT preparation for Three leg Connector types or Mandrel connector type ( according with PAM-EP-ECU-OPR-00-STD-002-01) , with multipack preparation ( according item 15) for protection of chemical injection tubing.	1	11"	3-1/2" EU 8 RD & 3" BPV H Type	N/A	DD	P-U	PSL1	PR1																																																																												
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	12	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1																																																																												
15	In case you use Mandrel type system: Multipack system chemical injection tubing, W/ 3 holes 3/8" LP thread preparation top & btm for injection lines In case other connector system type: Multipack system chemical injection tubing, W/ holes 3/8" LP thread preparation top & btm, for injection lines	1	N/A	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
16	Surface electrical Connector ( BIW or QUICK Conn. Type)	1	N/A	N/A	N/A	EE	P-U	PSL2	PR1																																																																												
17	Cross with four studded outlets 3-1/8" 5K , API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
18	Blind Flange 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
19	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	N/A	EE	P-U	PSL2	PR1																																																																												
20	Weldneck Flange 3-1/8" 5K , Sch 160, RTJ , ASTM ( A 105) , ANSIB 16.5. <b>No machined by the same wellhead constructor.</b>	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
21	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, reverse acting , Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1																																																																												
22	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1																																																																												
23	Tree Cap 3-1/8" 5K bottom flange preparation , w/ 3-1/2" EU lifting thread , hammer nut & cone seal system, API 6A Monogram	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
24	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
25	BOP test plug bushing reducer with external preparation for 13-5/8" Flange bowl & Internal preparation for 11" Flange bowl , W/ 4 retainers for test Plug 11" bowl preparation	1	11"	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1																																																																												
26	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1																																																																												
27	Running & Testing Tool with external preparation for 11" Flange bowl , 4-1/2" IF pin x 4-1/2" IF box Lifting & running thread preparation.	1	11"	4-1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1																																																																												



	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		Código: EXP.03.RC.DR.05
	Proceso (nivel 1): Gestión de Desarrollar		Fecha: 04.2021
			Versión: 01

A.6. DATA SHEET PARA CABEZALES INYECTORES , RATING 5000 PSI

																															
Title: WELL HEADS DATA SHEET				Código	Elaborado por: V.Yáñez	Revisado por: M.Carvajal/ O. Calvache	Aprobado por: P.Luna/ F.Ramírez	Revisión: 3																							
WELLHEADS DATA SHEET - INJECTOR SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema inyector )																															
 				PROJECT'S DATA																											
				DATA'S ISSUE/ FECHA EMISION		18/10/2011																									
				DESIGNED BY/ DISEÑADOR POR		V.Yáñez																									
				DESCRIPTION/ DESCRIPCION																											
				Wellhead injector System configuration: 20"x13-3/8"x9-5/8"x7" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code																											
DATA SHEET NUMBER				201V 009																											
FIELD/ CAMPO				ALL EP PETROECUADOR FIELDS																											
Notes: All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet																															
Notas Todas las bridas y salidas esparragadas deben incluir sus esparragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos																															
<table><tr><th colspan="2" rowspan="2">Material Class</th><th colspan="2">Minimun material requirements</th></tr><tr><th>Body, bonnet , end and outlet connections</th><th>Pressure-control parts, stems &amp; mandrel hangers</th></tr><tr><td>AA</td><td>General Service</td><td>Carbon or low- steel</td><td>Carbon or low- steel</td></tr><tr><td>BB</td><td>General Service</td><td>Carbon or low- steel</td><td>Stainless steel</td></tr><tr><td>DD</td><td>Sour Service</td><td>Carbon or low- steel</td><td>Carbon or low- alloy steel</td></tr><tr><td>EE</td><td>Sour Service</td><td>Carbon or low- steel</td><td>Stainless steel</td></tr></table>				Material Class		Minimun material requirements		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers	AA	General Service	Carbon or low- steel	Carbon or low- steel	BB	General Service	Carbon or low- steel	Stainless steel	DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel	EE	Sour Service	Carbon or low- steel	Stainless steel						
						Material Class		Minimun material requirements																							
				Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers																										
				AA	General Service	Carbon or low- steel	Carbon or low- steel																								
				BB	General Service	Carbon or low- steel	Stainless steel																								
DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel																												
EE	Sour Service	Carbon or low- steel	Stainless steel																												
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS																															
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm																										
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/ NO)	Ver Tabla# 8																										
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/ NO)	N/A																										
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES ( Y/N ) / VALVULAS DE SEGURIDAD ( SI/ NO)	N/A																										
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HIDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	N/A																										
6	SERVICE FLUID/ FLUIDO DE SERVICIO	WATER	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	N/A																										
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED / CONECTOR ELECTRICO	N/A																										
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	INJECTOR	24	TYPE / TIPO	N/A																										
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS																										
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H , WITH FLUOROCARBON COATED , THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners																										
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara																										
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/ NO)	YES	28	ALL ELASTOMERIC SEALS , ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE																										
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE )	SINGLE	29	ALL WELL NECK FLANGE RTJ, ASTM (A105) , API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffer , Metalfar , WFL																										
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelock																										
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant , Velan, Warren, WKM																										
16			32	GATE VALVES	VALVEWORKS / CAMERON / FMC / ARRAY/ AXON/ NOV/ STREAMFLO																										
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES																															
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1																						
1	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1																						
2	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated. Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1																						
3	Blind Bull plug with 2" API 6A LP thread pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1																						
4	Casing Head, with 13-3/8 inch Sliplock system ring anchorange system with two Hydrogine Nit rile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1																						
5	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1																						
6	Slip Casing hanger 13-5/8" X9-5/8" , C22 bow preparation , <b>Slip must be constructed only in USA</b>	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																						
7	Gate Valve 2- 1/16" 5K flange end. Full port slab gate , 5000# MAWP , API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																						
8	Pressure Gauge Manometer and needle valve kit SS , 4- 1/2" dial , 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A																						
9	Companion flange 2- 1/16" 5K, w/ 1outlet 2 inch API 6A LP threads, API 6A Monogram	2	2- 1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1																						
10	Lock screw, 8TPI UN Thread with Hydrogine Nit rile Seals Packing System	12	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1																						
11	Tubing Head Spool 13-5/8" 3K Flanged btm preparation , 11" 5K flange top preparation , with twelve lock screws preparation and two studded outlets of 2- 1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock	1	9-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																						
12	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 4 HNBR automatic seals,( 2 body , 2 neck ) w/ 7" BC thrd BOX top & bottom, Concentric BPV 7" H. API 6A Monogram.	1	11"	7" inch BC	N/A	EE	P-U	PSL1	PR1																						
13	Tubing Head Adapter 11" 5K floating and rotating flange btm preparation , 7- 1/16" 5K flange rotating thread top preparation. API 6A Monogram.	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
14	Gate Valve 7- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	7- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																						
15	Weldneck Flange 7- 1/16" 5K, Sch 160, RTJ, ASTM ( A105 ), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
16	Gate Valve 7- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, reverse acting , Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged	1	7- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1																						
17	Tee body with studded outlets 7- 1/16" 5K , API 6A Monogram.	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1																						
18	Bull plug with 7" BC thread Pin, with 1/2" API 6A LP thread box , API 6A Monogram.	1	N/A	7" BC	N/A	DD	P-U	PSL1	PR1																						
19	Companion flange 7- 1/16" 5K, w/ 1outlet 7" BC API 6A LP threads, API 6A Monogram	1	7- 1/16"	7" BC	API 6A	DD	P-U	PSL1	PR1																						
20	Running & Testing Tool with external preparation for 11" Flange bowl , 4- 1/2" IF pin x 4- 1/2" IF box Lifting & runing thread preparation.	1	11"	4- 1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1																						
21	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4- 1/2" IF pin x 4- 1/2" IF box Lifting & runing thread preparation.	1	13-5/8"	4- 1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1																						
22	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1																						
23	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1																						



PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.7. DATA SHEET PARA CABEZALES DUALES CONCENTRICOS MODELO 1 , RATING 5000 PSI



Title:WELL HEADS DATA SHEET

Código:

Elaborado por:V.Yáñez

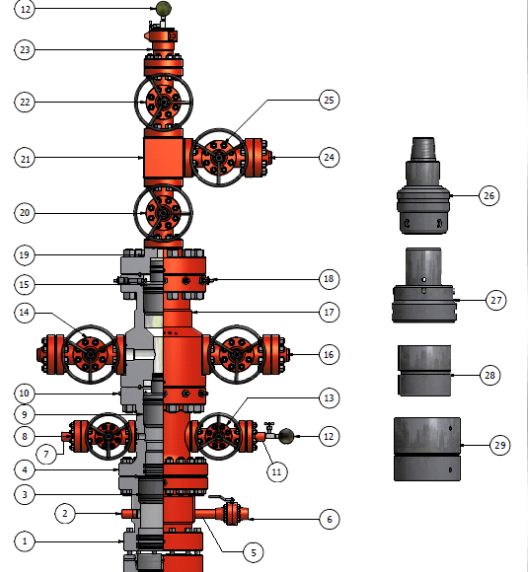
Revisado por:M.Carvajal / O. Calvache

Aprobado por:P.Luna / F. Ramirez

Revisión:3

WELLHEADS DATA SHEET - DUAL CONCENTRIC SYSTEM

( Hoja de Datos de Cabezales de Pozo - Sistema Concentrico )



PROJECT'S DATA

DATA'S ISSUE/FECHA EMISION

DESIGNED BY/ DISEÑADOR POR

16-10-2011

V.Yáñez

DESCRIPTION/DESCRIPCION

Wellhead Dual Concentric System configuration:  
20"x13-3/8"x9-5/8"x5-1/2"x2-7/8" OD , 5M PSI , PSL1, PR1, DD, P-U,  
API 6A Code

DATA SHEET NUMBER

FIELD/ CAMPO

2011/ 010

ALLEP PETROECUADOR FIELDS

Notes:

1.- This wellhead can transform in injector or , when the pressure of injection don't be over 5000 Psi.

2.- All studied or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet

Notas

1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.

2.- Todas las bridas y salidas de escape de los arboles deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos

Material Class

Minimun material requirements

Body, bonnet , end and outlet connections

Pressure-control parts, stems & mandrel hangers

AA

General Service

Carbon or low- steel

Carbon or low- steel

BB

General Service

Carbon or low- steel

Stainless steel

DD

Sour Service

Carbon or low- steel

Carbon or low- alloy steel

EE

Sour Service

Carbon or low- steel

Stainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS

1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECOBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECOBRIMIENTO INTERNO (SI/NO)	N/A
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD ( SI/NO)	YES
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	YES
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO	THREE LEG TYPES
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A , OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit alloy, Lamons, Carrara
12	NACEMR 0175 APPLY (Y/N) / NACEMR 0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE )	DUAL	29	ALL WELL NECK FLANGE RTJ, ASTM (A105), API 6A MONOGRAM/ ANSI B16.5.	Ulma, Mega Coffer , Metalfar , WFI
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES (WEAR BUSHING, ETC) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO

PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES


ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system, ring and changes system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Slip Casing Hanger 9-5/8" external seat preparation body for 13-5/8" flange bowl . <b>Slips must be constructed only in USA</b>	1	9-5/8"	N/A	<7	DD	P-U	PSL1	PR1
4	Tubing Head Spool 13-5/8" 3K studded bottom preparation , 11" 5K flange top preparation , with ten lock screws preparation and two studded outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw . API 6A Monogram.	1	9-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated . Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
7	Blind Bull plug with 2" API 6A LP thread Pin	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Companion flange 2-1/16" 5K , w/ 1 outlet 2 inch API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
9	Mandrel Casing Hanger external body preparation for 11" flange bowl 4 HNBR automatic seals ( 2 body , 2 neck ) , w/ 5-1/2" BC third top & bottom . BPV 5" H type preparation . W/ 2 Three leg connector type holes preparation and 4 capilar tubing injection holes preparation . w/ Seal sleeve 5-1/2" ID, SS Body W/ four HNBR O-ring Seals	1	11"	5-1/2" BC thread & 5" BPVH type , thread	N/A	AA	P-U	PSL1	PR1
10	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
11	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
12	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
13	Gate Valve 2-1/16" 5K flange end, Full port slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged body	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
14	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, reverse acting , with Actuator Pneumatic system and override API 6A Monogram . With slab gate and metal-metal seal. Forged	2	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
15	Mandrel Tubing Hanger external body preparation for 11" flange bowl 4 HNBR automatic seals ( 2 body , 2 neck ) , w/ 2-7/8" EUE 8RD third top & bottom . BPV 2-1/2" H type preparation.	1	11"	2-7/8" EUE 8RD & 2-1/2" BPV	N/A	DD	P-U	PSL1	PR1
16	Weldneck Flange 3-1/8" 5K , Sch 160, RTJ , ASTM ( A105 ), ANSIB16.5. <b>No machined by the same wellhead constructor.</b>	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Tubing Head Spool 11" 5K studded bottom preparation , 11" 5K flange top preparation , with ten lock screws preparation and two studded outlets of 3-1/8" 5K with VR plug 11.5 TPI sharp Vee preparation . W/ 2 Three leg Connector or Type Holes preparation and four capilar tubing injection holes preparation . . API 6A Monogram.	1	5-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
18	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
19	Tubing Head Adapter 11" 5K floating and rotating flange bottom preparation , 3-1/8" 5K studded flange	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
20	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, 6A Monogram . With slab gate and metal-metal seal. Forged body	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
21	Tee with three studded outlets 3-1/8" 5K , API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
22	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, 6A Monogram . With slab gate and metal-metal seal. Forged body	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
23	Tree Cap 3-1/8" 5K bottom flange preparation , w/ 3-1/2" EU Lifting thread , hammer nut & cone seal system, API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
24	Weldneck Flange 3-1/8" 5K , Sch 160, RTJ , ASTM ( A105 ), ANSIB16.5. <b>No machined by the same wellhead constructor.</b>	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
25	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP, reverse acting , with Actuator Pneumatic system and override API 6A Monogram . With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
26	Running & Testing Tool with external preparation for 11" Flange bowl , 4-1/2" IF pin x 4-1/2" IF box Lifting & runing thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
27	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4-1/2" IF box Lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
28	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
29	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1

CLASIFICACIÓN: PÚBLICO

“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”

Formato: PCA.10.04.FO.02 (V05)

Página 26 de 55



PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.8. DATA SHEET PARA CABEZALES DUALES CONCENTRICOS MODELO 1 , RATING 5000 PSI



Title:WELL HEADS DATA SHEET

Código

Elaborado por:V.Yáñez

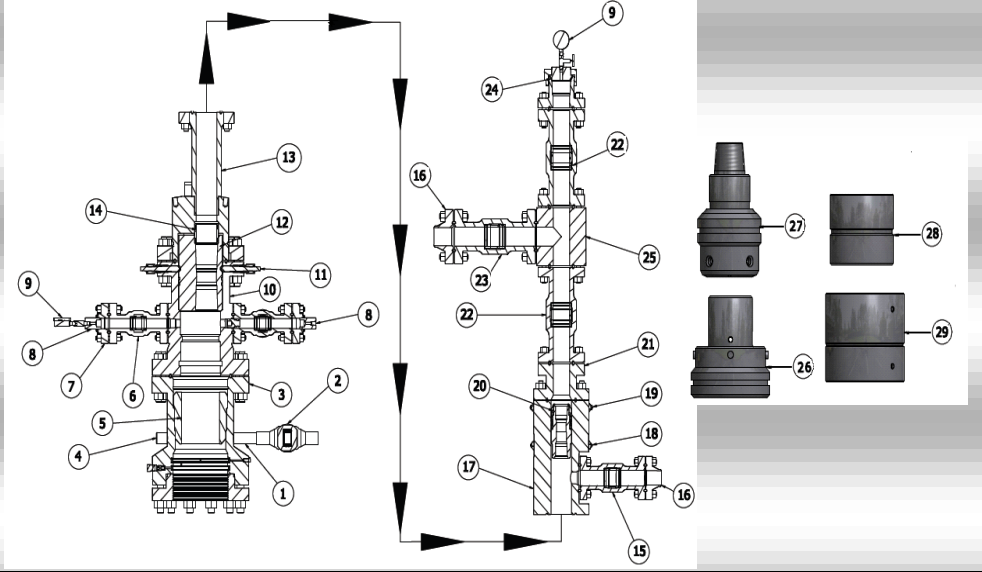
Revisado por:M.Carvajal / O. Calvache

Aprobado por:P.Luna/ F.Ramírez

Revisión:3

WELLHEADS DATA SHEET - CONCENTRIC SYSTEM

( Hoja de Datos de Cabezales de Pozo - Sistema Dual Concentrico)



PROJECT'S DATA

DATA'S ISSUE/FECHA EMISION18/10/2011

DESIGNED BY/ DISEÑADOR PORV.Yáñez

DESCRIPTION/DESCRIPCION

Wellhead Dual Concentric System configuration:  
20"x13-3/8"x9-5/8"x5-1/2"x2-7/8" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code

DATA SHEET NUMBER2011/ 009

FIELD/ CAMPOALL EP PETROECUADOR FIELDS

Notes:  
1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.  
2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet  
Notas:  
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.  
2.- Todas las bridas y salidas selladas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos

Material Class

Minimum material requirements

Body, bonnet, end and outlet connections

Pressure-control parts, stems & mandrel hangers

AAGeneral ServiceCarbon or low-st steelCarbon or low-st steel

BBGeneral ServiceCarbon or low-st steelStainless steel

DD Sour ServiceCarbon or low-st steelCarbon or low- alloy steel

EE Sour ServiceCarbon or low-st steelStainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS

1SPEC/ CODIGO

API 6A

17

CO2 CONCENTRATION %/ %CONCENTRACION CO2

%/ ppm

2EDITION/ EDICION

20 Th EDITION

18

EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)

Ver Tabla # 8

3MAX WORKING PRESSURE/ PRESION DE TRABAJO

5000 PSI.

19

INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)

N/A

4CORROSION PRESENCE/ PRESENCIA DE CORROSION

YES

20

SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD ( SI/NO)

YES

5WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO

-20°C @ 180°C

21

ACTUATOR TYPE (HYDRAULIC/ PNEUMATIC) / TIPO DE ACTUADOR

PNEUMATIC

6SERVICE FLUID/ FLUIDO DE SERVICIO

OIL

22

ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL

YES

7H2O CONCENTRATION %/ %CONCENTRACION DE H2S

%/ ppm

23

ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO

YES

8TYPE OF WELL ( PRODUCTION / INJECTION) / TIPO DE CABEZAL ( INYECCION / PRODUCCION)

PRODUCER

24

TYPE/ TIPO

Mandrel Types

9LOCATION/ LOCALIZACION

EP PETROECUADOR

25

OTHER DATA / OTROS DATOS

BRANDS

10CUSTOMER/ CLIENTE

EP PETROECUADOR

26

ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A

Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners

11COUNTRY/ PAIS

ECUADOR

27

ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING

Wolar, Danloc, Flexit alloy, Lamons, Carrara

12NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)

YES

28

ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418

GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE

13TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELLIGENTE)

DUAL

29

ALL WELL NECK FLANGE RTJ, ASTM (A105), API 6A MONOGRAM / ANSI B16.5.

Ulma, Mega Coffer, Metal far , WFI

14AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC) (24,25,26,27,28,29,30,31)

YES

30

MANOMETERS / NEEDLE VALVE

Ashcroft, Wika, AGCO, KF, Swagelok

15

31

BALL VALVES

AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM

16

32

GATE VALVES

VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLOW

PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES

ITEM

DETAIL / DETALLE

CANT

Ø NOMINAL

THREAD CONEXION

LONG. L ( IN)

MATERIAL CLASS

TEMP. RANGE

PSL

PR1

1

Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A

1

2"

2" LP

N/A

DD

P-U

PSL1

PR1

2

Ball Valve 6000# MAWP, SS body, 316 SS stem, threaded ends per API 6A, Full port / reduce port, lever operated. Fire safe. Test per API 598

1

2"

2" LP

N/A

EE

P-U

PSL1

PR1

3

Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram.

1

13-5/8"

N/A

<26

DD

P-U

PSL1

PR1

4

Blind Bull plug with 2" API 6A LP thread pin

1

2"

2" LP

N/A

DD

P-U

PSL1

PR1

5

Slip Casing hanger 13-5/8"x9-5/8", C22 bowl preparation,

1

13-5/8"

N/A

N/A

DD

P-U

PSL1

PR1

6

Gate Valve 2-1/16" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body

2

2-1/16"

N/A

API 6A

EE

P-U

PSL2

PR1

7

Companion flange 2-1/16" 5K, w/ 1outlet 2 inch API 6A LP threads, API 6A Monogram

2

2-1/16"

2" LP

API 6A

DD

P-U

PSL1

PR1

8

Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box

2

2"

2" LP

N/A

DD

P-U

PSL1

PR1

9

Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Psi Rating.

1

N/A

1/2" NPT

N/A

N/A

P-U

N/A

N/A

N/A

10

Tubing Head Spool 13-5/8" 3K Flanged btm preparation, 11" 5K flange top preparation, with eight lock screws preparation and two studded outlets of 2-1/16" 5K with V/R plug 11.5 TPI sharp Vee preparation. Include Guide Screw and Pack Off retainer loc

1

9-5/8"

N/A

N/A

DD

P-U

PSL1

PR1

11

Lock screw, 8TPI UN Thread with Hydrogine Nitrile Seals Packing System

12

N/A

UN, 8TPI

N/A

DD

P-U

PSL1

PR1

12

Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2HNBR automatic seals w/ 5-1/2" BC thrd BOX top & bottom, BPV5" H type preparation w/ 2 Mandrel connector Types preparation and 4 capillary tubing injection ports preparation.

1

11"

5-1/2" BC & 5" BPV H type

N/A

DD

P-U

PSL1

PR1

13

Tubing Head Adapter 11" 5K floating and rotating flange btm preparation, 5-1/8" 5K flange rotating thread top preparation with 2 Mandrel electrical connector Types preparations and 4 capillary tubing injection ports preparation.

1

5-1/8"

N/A

N/A

DD

P-U

PSL1

PR1

14

Seal Sleeve 5-1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.

1

5-1/8"

N/A

N/A

AA

P-U

PSL1

PR1

15

Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, reverse acting, Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged

1

3-1/8"

N/A

API 6A

EE

P-U

PSL2

PR1

16

Weldneck Flange 3-1/8" 5K, Sch 160, RTJ, ASTM (A105), ANSI B16.5. No machined by the same wellhead constructor.

1

3-1/8"

N/A

N/A

DD

P-U

PSL1

PR1

17

Tubing Head 5-1/8" 5K studded TOP & BTM preparation w/ one 3-1/8" 5k outlet studded w/ Retractable Load Shoulder by 4 Lock Screw 8TPI UN Thread btm preparation & 4 lock screw 8TPI UN thread top preparation API 6A Monogram

1

5-1/8"

N/A

N/A

AA

P-U

PSL1

PR1

18

Lock screw for retractil shoulder, 8TPI UN Thread with Hydrogine Nitrile Seals Packing System

4

N/A

UN, 8TPI

N/A

DD

P-U

PSL1

PR1

19

Lock screw, 8TPI UN Thread with Hydrogine Nitrile Seals Packing System

4

N/A

UN, 8TPI

N/A

DD

P-U

PSL1

PR1

20

Tubing Hanger Concentric 5-1/8" Nominal, 2-7/8" EJE, 8RD box top & bottom, 2-1/2" HBPV w/ two Vulcanized Hydrogine Nitrile compression rings Seals and one compress cap Packing Sys. Assembled API 6A Monogram.

1

5-1/8"

2-7/8" EU 8RD & 2-1/2" BPV H TYPE

N/A

AA

P-U

PSL1

PR1

21

Tubing Head Adapter 5-1/8" 5K Flange btm X3-1/8" 5K studded top preparation

1

3-1/8"

N/A

API 6A

DD

P-U

PSL1

PR1

22

Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body

2

3-1/8"

N/A

API 6A

EE

P-U

PSL2

PR1

23

Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, reverse acting, Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged

1

3-1/8"

N/A

API 6A

EE

P-U

PSL2

PR1

24

Tree Cap 3-1/8" 5k bottom flange preparation, w/ 3-1/2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram.

1

3-1/8"

N/A

N/A

DD

P-U

PSL1

PR1

25

Tee with three studded outlets 3-1/8" 5K, API 6A Monogram.

1

3-1/8"

N/A

N/A

DD

P-U

PSL1

PR1

26

Running & Testing Tool with external preparation for 11" Flange bowl, 4-1/2" IF pin x 4-1/2" IF box Lifting & running thread preparation.

1

11"

4-1/2" IF PIN x BOX

N/A

DD

P-U

PSL1

PR1

27

Running & Testing Tool with external preparation for 13-5/8" Flange bowl, 4-1/2" IF pin x 4-1/2" IF box Lifting & running thread preparation.

1

13-5/8"

4-1/2" IF PIN x BOX

N/A

DD

P-U

PSL1

PR1

28

Wear Bushing with external preparation for 11" Flange bowl.

1

11"

N/A

N/A

DD

P-U

PSL1

PR1

29

Wear Bushing with external preparation for 13-5/8" Flange bowl.

1

13-5/8"

N/A

N/A


DD

P-U


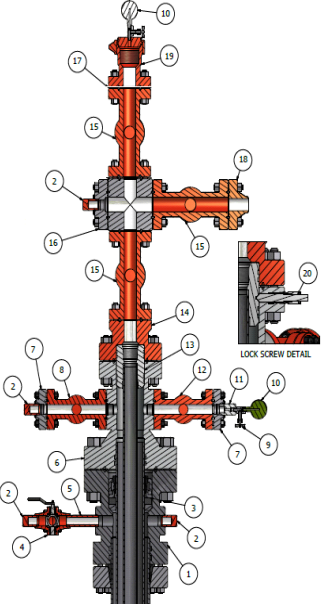
PSL1

PR1




	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

A.9. DATA SHEET PARA CABEZALES EXPLORADORES, RATING 5000 PSI

										
Title: WELL HEADS DATA SHEET				Código:	Elaborado por: V.Yáñez		Revisado por: M.Carvajal / O.Calvache		Aprobado por: P.Luna/F.Ramírez	Revisión: 3
WELLHEADS DATA SHEET - EXPLORER WELLHEAD ( Hoja de Datos de Cabezales de Pozo - Cabezal Exploratorio )										
				PROJECT'S DATA						
				DATA'S ISSUE/FECHA EMISION				14/ 10/2011		
				DESIGNED BY/ DISEÑADOR POR				V.Yáñez		
				DESCRIPTION/ DESCRIPCION						
				Explorer Wellhead System configuration: 5/8"x 7" x 3- 1/2" OD , 5M PSI , PSL1, PR1, DD, P-U, 6A Code						
DATA SHEET NUMBER				2013/ 012						
FIELD/ CAMPO				ALL EP PETROECUADOR FIELDS						
Notes:										
1.- This wellhead can transform in injector, when the pressure of injection don't be over 5000 Psi.										
2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet										
Notas										
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.										
2.- Todas las bridas y salidas de esperragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos										
Material Class				Minimum material requirements						
				Body, bonnet, end and outlet connections		Pressure-control parts, stems & mandrel hangers				
AA	General Service			Carbon or low- steel		Carbon or low- steel				
BB	General Service			Carbon or low- steel		Stainless steel				
DD	Sour Service			Carbon or low- steel		Carbon or low- alloy steel				
EE	Sour Service			Carbon or low- steel		Stainless steel				
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS										
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm					
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/ NO)	Ver Tabla # 8					
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/ NO)	N/A					
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES ( Y/N ) / VALVULAS DE SEGURIDAD ( SI/ NO)	YES					
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC					
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	YES					
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES					
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	EXPLORER	24	TYPE/ TIPO	THREE LEG TYPES					
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS					
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners					
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara					
12	NACE MR 0175 APPLY (Y/N) / NACE MR 0175 (SI/ NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE					
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE )	SINGLE	29	ALL WELL NECK FLANGES RTJ, ASTM (A105), API 6A MONOGRAM/ ANSI B16.5.	Ulma, Mega Coffer, Metalfair, WFI					
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (21,22,23,24)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok					
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM					
16			32	GATE VALVES	VALVEWORKS/ CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLOW					
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES										
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1	
1	Casing Head, with 9- 5/ 8 inch Sliplock system ring anchor and range system with two Hydrogine Nit rile Seals low casing seal preparation x 11 inch Flange 5K top & C22 bowl preparation, with two lock screw and two outlet with 2 inch API 6A LP threads, API 6A Monogram.	1	9- 5/ 8"	N/A	≤26	DD	P-U	PSL1	PR1	
2	Blind Bull plug with 2" API 6A LP thread Pin	4	2"	2" LP	N/A	DD	P-U	PSL1	PR1	
3	Slip Casing Hanger with 11" x 7", C22 bowl preparation, API 6A Monogram. Slips must be constructed only in USA	1	11"	N/A	N/A	DD	P-U	PSL1	PR1	
4	Ball Valve 6000# MAWP, SS body, 316 SS and stem, threaded ends per API 6A, Full port / reduce port, lever operated. Fire safe. Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1	
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1	
6	Tubing Head Spool 11" 5K Flanged btm preparation, 7- 1/ 16" 5K flange top preparation, with four lock screws preparation and two studded outlets of 2- 1/ 16" 5K with VR plug 11.5 TPI sharp Vee preparation. Include Guide two HNBR seals Pack Off's lower preparation. API 6A Monogram.	1	7"	N/A	N/A	DD	P-U	PSL1	PR1	
7	Companion flange 2- 1/ 16" 5K, w/ 1 outlet 2 inch API 6A Monogram	2	2- 1/ 16"	2" LP	API 6A	DD	P-U	PSL1	PR1	
8	Gate Valve 2- 1/ 16" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body Gate Valve 3- 1/ 8" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	2- 1/ 16"	N/A	API 6A	EE	P-U	PSL2	PR1	
9	Needle Valve 6000 psi, w/ 1/ 2" NPT PIN x BOX	2	N	1/ 2" NPT	N/A	DD	P-U	PSL2	PR1	
10	Pressure Gauge Manometer SS, 4- 1/ 2" dial diameter, 0- 5000 Psi Rating Pressure, w/ 1/ 2" NPT pin thread connection	2	N/A	1/ 2" NPT	N/A	N/A	P-U	N/A	N/A	
11	Bull plug with 2" API 6A LP thread Pin, with 1/ 2" API 6A LP thread Box	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1	
12	Gate Valve 2- 1/ 16" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body Gate Valve 3- 1/ 8" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	2- 1/ 16"	N/A	API 6A	EE	P-U	PSL2	PR1	
13	Mandrel Tubing Hanger external body preparation for 7- 1/ 16" flange bowl & 2 HNBR automatic seals, ( in case to use seal sleeve ) or & 4 HNBR automatic seals if don't use seal sleeve, w/ 3- 1/ 2" EUE 8 TPI Top & Btm preparation, 3" BPV type H preparation, w/ Three leg electrical Connector preparation.	1	3- 1/ 2"	3- 1/ 2" EUE 8 TPI & 3" BPV H TYPE	N/A	DD	P-U	PSL1	PR1	
14	Tubing Head Adapter 7- 1/ 16" 5K floating and rotating flange btm preparation, 3- 1/ 8" 5K flange rotating thread top preparation, & Three Leg electrical Connector preparation	1	3- 1/ 8"	N/A	N/A	DD	P-U	PSL1	PR1	
15	Gate Valve 3- 1/ 8" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	3	3- 1/ 8"	N/A	API 6A	EE	P-U	PSL2	PR1	
16	Companion flange 3- 1/ 8" 5K, w/ 1 outlet 2 inch API 6A Monogram	1	3- 1/ 8"	2" LP	API 6A	DD	P-U	PSL1	PR1	
17	Cross with four studded outlets 3- 1/ 8" 5K, API 6A Monogram.	1	3- 1/ 8"	N/A	N/A	DD	P-U	PSL1	PR1	
18	Weld neck Flange 3- 1/ 8" 5K, Sch 160, RTJ, ASTM (A105), ANSI B16.5. No machined by the same wellhead constructor.	1	3- 1/ 8"	N/A	N/A	DD	P-U	PSL1	PR1	
19	Tree Cap 3- 1/ 8" 5K bottom flange preparation, w/ 3- 1/ 2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram	1	3- 1/ 8"	3- 1/ 2" EU 8 RD	N/A	DD	P-U	PSL1	PR1	
20	Lock screw, 8 TPI UN Thread with Hydrogine Nit rile Seals Packing System	4	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1	
21	Running & Testing Tool with external preparation for 11" Flange bowl, 4- 1/ 2" IF pin x 4- 1/ 2" IF box Lifting & running thread preparation.	1	11"	4- 1/ 2" IF pin x box	N/A	DD	P-U	PSL1	PR1	
22	Running & Testing Tool with external preparation for 7" Flange bowl, 4- 1/ 2" IF pin x 4- 1/ 2" IF box Lifting & running thread preparation.	1	7"	4- 1/ 2" IF pin x box	N/A	DD	P-U	PSL1	PR1	
23	Wear Bushing with external preparation for 7" Flange bowl.	1	7"	N/A	N/A	DD	P-U	PSL1	PR1	
24	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1	

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."  
Formato: PCA.10.04.FO.02 (V05)      Página 28 de 55



PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.10. DATA SHEET PARA CABEZALES MULTIBOWL INYECTOR. RATING 5000 PSI



Title: WELL HEADS DATA SHEET

Código

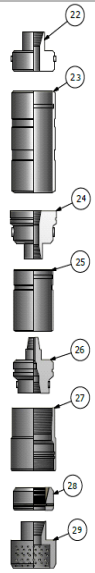
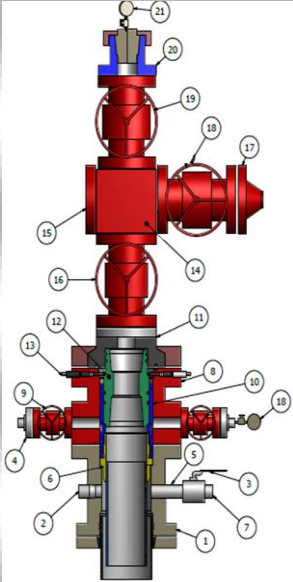
Elaborado por: V.Yáñez

Revisado por: M.Carvajal / O.Calvache

Aprobado por: P.Luna/F.Ramírez

Revisión: 3

WELLHEADS DATA SHEET - MULTIBOWL INJECTOR SYSTEM  
( Hoja de Datos de Cabezales de Pozo - Sistema Inyector Multitazon )



PROJECT'S DATA

DATA'S ISSUE/FECHA EMISION22-09-2011  
DESIGNED BY/DISEÑADOR PORV.Yáñez

DESCRIPTION/DESCRIPCION

Wellhead Multibowl Injector System configuration:  
20"x13-3/8"x9-5/8"x7" OD , 5M PSI , PSL1, PR1, DD, P-U,  
API 6A Code

DATA SHEET NUMBER2013 / 013

FIELD / CAMPOALLEP PETROECUADOR FIELDS

Notes:  
1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.  
2.- All studded or flanged conection must include their studs, nut and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet  
Notas  
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.  
2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos

Material Class		Minimun material requirements	
		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers
AA	General Service	Carbon or low- steel	Carbon or low- steel
BB	General Service	Carbon or low- steel	Stainless steel
DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel
EE	Sour Service	Carbon or low- steel	Stainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS

	SPEC/ CODIGO	API 6A		CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES ( Y/N ) / VALVULAS DE SEGURIDAD ( SI/NO)	N/A
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUADOR TYPE (HYDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	N/A
6	SERVICE FLUID / FLUIDO DE SERVICIO	WATER	22	ARTIFICIAL LIFT METHOD / METODO DELEVANTAMIENTO ARTIFICIAL	N/A
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED / CONECTOR ELECTRICO	N/A
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	INJECTOR	24	TYPE / TIPO	N/A
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LEGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A 193 GR B7 / ASTM A 194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B 16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners
11	COUNTRY / PAIS	EQUADOR	27	ALL RING GASKET API 6A, OCTOGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit alloy, Lamons, Carrara
12	NACEM R 0175 APPLY (Y/N) / NACEM R 0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D 1414 & D 1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE
13	TYPE OF COMPLETATION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE )	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM (A 105), API 6A MONOGRAM / ANSI B 16.5.	Ulma, Mega Coffe, Metal far , WFI
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) ( 24, 25, 26, 27, 28, 29, 30, 31 )	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft , Wika, AGCO, KF, Swagelock
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM
16			32	GATE VALVES	VALVEWORKS / CAMERON / FMC / ARRAY / AXON / NOV / STREAMFLOW


PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES

ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13- 3/8 inch Sliplock system ring anchor age system with two Hydrogine Nit rile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlet with 2 inch API 6A LP threads, API 6A Monogram .	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body, 316 SS and stem, threaded ends per API 6A , Full port / reduce port, lever operated. Fire safe. Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2- 1/16" 5K, w/ 1outlet 2 inch API 6A Monogram	2	2- 1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seat preparation body for 13-5/8" 3K flange bowl. W/ BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top , API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded btm preparation , 13-5/8" 5K flange top preparation , with ten lock screws preparation and two studded outlets of 2- 1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw. API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2- 1/16" 5K flange end. Full port slab gate , 5000# MAWP , API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 11" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Tubing Head Adapter 13-5/8" 5K floating and rotating flange btm preparation , 7- 1/16" 5K flange rotating thread top preparation,	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
12	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals in body and 2 HNBR automatic seals in neck, w/ 7" BC thrd BOX top & bottom, BPV 7" H.	1	11"	7" BC & 7" BPV H Type	N/A	EE	P-U	PSL1	PR1
13	Lock screw, 8 TPI UN Thread with Hydrogine Nit rile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
14	Cross with four studded outlets 7- 1/16" 5K , API 6A Monogram.	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
15	Blind Flange 7- 1/16" 5K, API 6A Monogram.	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
16	Gate Valve 7- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	7- 1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
17	Weldneck Flange 7- 1/16" 5K, Sch 160, RTJ , ASTM ( A 105), ANSI B 16.5. No machined by the same wellhead constructor .	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 7- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, 6A Monogram. With slab gate and metal-metal seal. Forged body	1	7- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Gate Valve 7- 1/16" 5K flange end, Full port , slab gate , 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	7- 1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
20	Tree Cap 7- 1/16" 5K bottom flange preparation , w/ 7" BC Lifting thread , hammer nut & cone seal system, API 6A Monogram	1	7- 1/16"	N/A	N/A	DD	P-U	PSL1	PR1
21	Pressure Gauge Manometer and needle valve kit SS, 4- 1/2" dial, 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
22	Pack Off retrieve tool, with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1
23	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
24	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4- 1/2" IF box Lifting thread preparation.	1	13-5/8"	4- 1/2" IF	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 11" Flange bowl , 4- 1/2" IF pin x 4- 1/2" IF box Lifting & runing thread preparation.	1	11"	4- 1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
27	Runing casing hanger tool W/ BTC 9-5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
28	Slip Casing hanger 13-5/8" x 9-5/8" . C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
29	Washing Tool, with 4- 1/2" IF box Lifting thread preparation	1	11"	4- 1/2" IF box	N/A	DD	P-U	PSL1	PR1

CLASIFICACIÓN: PÚBLICO

“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”

Formato: PCA.10.04.FO.02 (V05)Página 29 de 55



PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.10.b DATA SHEET PARA CABEZALES MULTITAZON INYECTOR. RATING 5000 PSI



Title:  
WELLHEADS DATA SHEET

Código


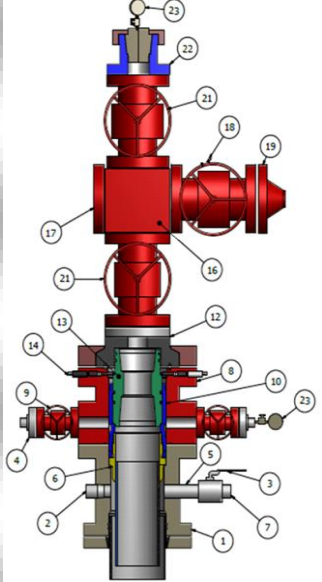
Elaborado por:  
V.Yáñez

Revisado por:  
M.Carvajal / O. Calvache

Aprobado por:  
P.Luna/ F.Ramírez

Revisión:  
3

WELLHEADS DATA SHEET - MULTIBOWL SYSTEM  
( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon )



PROJECT'S DATA

DATA'S ISSUE/FECHA EMISION  
DESIGNED BY/ DISEÑADOR POR

22-09-2011  
V.Yáñez

DESCRIPTION/DESCRIPCION

Wellhead Multibowl Injector System configuration:  
20"x13-3/8"x 9-5/8"x3-1/2" OD , 5M PSI , PSL1, PR1, DD, P-U,  
API 6A Code

DATA SHEET NUMBER  
FIELD/ CAMPO

2013 / 014  
ALL EP PETROECUADOR FIELDS

Notes:

1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.  
2.- All studded or flanged connections must include their studs, nut and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet  
Notas  
1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.  
2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos

Material Class		Minimum material requirements	
		Body, bonnet , end and outlet connections	Pressure-control parts, stems & mandrel hangers
AA	General Service	Carbon or low- steel	Carbon or low- steel
BB	General Service	Carbon or low- steel	Stainless steel
DD	Sour Service	Carbon or low- steel	Carbon or low- alloy steel
EE	Sour Service	Carbon or low- steel	Stainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TÉCNICOS

1	SPEC / CODIGO	API 6A	17	CO2 CONCENTRATION % / CONCENTRACION CO2	% ppm
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES ( Y/N ) / VALVULAS DE SEGURIDAD ( SI/NO)	N/A
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HIDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	N/A
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DELEVANTAMIENTO ARTIFICIAL	N/A
7	H2O CONCENTRATION % / CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED / CONECTOR ELECTRICO	N/A
8	TYPE OF WELL ( PRODUCTION/ INJECTION) / TIPO DE CABEZAL ( INYECCION / PRODUCCION)	INJECTOR	24	TYPE/ TIPO	N/A
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LEGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED , THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTOGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit allc, Lamons, Carrara
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS , ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE
13	TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELIGENTE)	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM (A105), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffe r , Metalfar , WFI
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelock
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant , Velan, Warren, WKM
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLO

PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES

ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation , with two lock screw and two outlet with 2 inch API 6A LP threads , API 6A Monogram .	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated. Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2-1/16" 5K , w/ 1 outlet 2 inch API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seat preparation body for 13-5/8" 3K flange bowl. W/BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top , API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin , with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded bottom preparation , 13-5/8" 5K flange top preparation , with ten lock screws preparation and two studded outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation . Include Guide Screw and Pack Off retainer lock screw . API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2-1/16" 5K flange end. Full port slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal.	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 11" flange bowl , all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 5K floating and rotating flange bottom preparation , 3-1/8" 5K flange rotating thread top preparation ,	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 3-1/2" EU thrd BOX top & bottom, BPV3" H type preparation Note:	1	11"	3-1/2" EU 8 RD & 3" BPVH Type	N/A	EE	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
16	Cross with four studded outlets 3-1/8" 5K , API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 3-1/8" 5K , API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 3-1/8" 5K flange end , Full port , slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 3-1/8" 5K , Sch 160, RTJ , ASTM ( A105) , ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
21	Gate Valve 3-1/8" 5K flange end , Full port , slab gate , 5000# MAWP , API 6A Monogram . With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 3-1/8" 5K bottom flange preparation , w/ 3-1/2" EU Lifting thread , hammer nut & cone seal system , API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Ps Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieve tool , with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl , 4-1/2" IF box Lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 11" Flange bowl , 4-1/2" IF pin x 4-1/2" IF box Lifting & runing thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Runing casing hanger tool W/BTC 9-5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8" , C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool , with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1


CLASIFICACIÓN: PÚBLICO

“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”

Formato: PCA.10.04.FO.02 (V05)

Página 30 de 55





PROCEDIMIENTO: ESPECIFICACIÓN  
TÉCNICA PARA CABEZALES DE POZO Y  
ARBOLES DE NAVIDAD


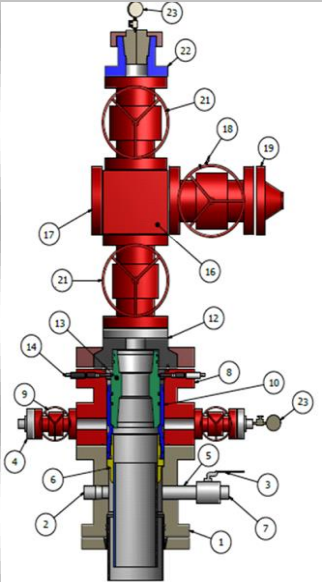
Proceso (nivel 1): Gestión de Desarrollar

Código: EXP.03.RC.DR.05

Fecha:  
04.2021

Versión: 01

A.10.c DATA SHEET PARA CABEZALES MULTITAZON INYECTOR. RATING 5000 PSI



PROJECT'S DATA

DATA'S ISSUE/FECHA EMISION

22-09-2011

DESIGNED BY/ DISEÑADOR POR

V.Yáñez

DESCRIPTION/DESCRIPCION

Wellhead Multibowl Injector System configuration:  
20"x13-3/8"x 9-5/8"x4-1/2" OD , 5M PSI , PSL1, PR1, DD, P-U, API 6A Code

DATA SHEET NUMBER

2013/ 014

FIELD/ CAMPO

ALL EP PETROECUADOR FIELDS

Notes:

1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.

2.- All studded or flanged connections must include their studs, nut and ring gasket according API 6A and the requirement of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet

Notas

1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.

2.- Todas las bridas y salidas de esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos

Material Class

Minimun material requirements

Body, bonnet , end and outlet connections

Pressure-control parts, stems & mandrel hangers

AA

General Service

Carbon or low- steel

Carbon or low- steel

BB

General Service

Carbon or low- steel

Stainless steel

DD

Sour Service

Carbon or low- steel

Carbon or low- alloy steel

EE

Sour Service

Carbon or low- steel


Stainless steel

TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS


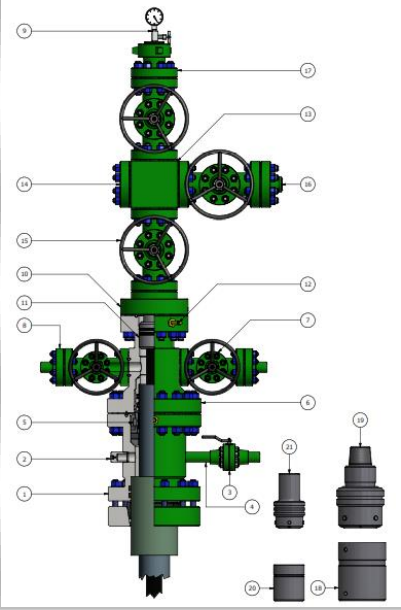
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES ( Y/N) / VALVULAS DE SEGURIDAD ( SI/NO)	N/A
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HIDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	N/A
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD / METODO DELEVANTAMIENTO ARTIFICIAL	N/A
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	%/ ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	N/A
8	TYPE OF WELL ( PRODUCTION/ INJECTION) / TIPO DE CABEZAL ( INYECCION / PRODUCCION)	INJECTOR	24	TYPE/ TIPO	N/A
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUD, FULL LEGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners
11	COUNTRY/ PAIS	Ecuador	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit alloy, Lamons, Carrara
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS , ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE
13	TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELIGENTE)	SINGLE	29	ALL WELL NECK FLANGERTJ, ASTM (A105), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffer , Metalfar , WFI
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelock
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM
16			32	GATE VALVES	VALVEWORKS / CAMERON / FMC / ARRAY / AXON / NOV / STREAMFLO

PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES


ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram.	1	13-5/8"	N/A	≤26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body, 316 SS stem, threaded ends per API 6A, Full port / reduce port , lever operated. Fire safe. Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2-1/16" 5K, w/ 1 outlet 2 inch API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seat preparation body for 13-5/8" 3K flange bowl. W/BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top, API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	≤15	DD	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K studded bottom preparation, 13-5/8" 5K flange top preparation, with ten lock screws preparation and two studded outlet of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation. Include Guide Screw and Pack Off retainer lock screw. API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2-1/16" 5K flange end. Full port slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal.	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 11" flange bowl, all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 5K floating and rotating flange bottom preparation, 4-1/16" 5K flange rotating thread top preparation,	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 4-1/2" EU thrd BOX top & bottom, BPV 4" H type preparation Note:	1	11"	4-1/2" EU 8 RD & 4" BPV H Type	N/A	EE	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
16	Cross with four studded outlets 4-1/16" 5K, API 6A Monogram.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
17	Blind Flange 4-1/16" 5K, API 6A Monogram.	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
18	Gate Valve 4-1/16" 5K flange end, Full port , slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
19	Weldneck Flange 4-1/16" 5K, Sch 160, RTJ, ASTM (A105), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	4-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
21	Gate Valve 4-1/16" 5K flange end, Full port , slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	4-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Tree Cap 4-1/16" 5K bottom flange preparation, w/ 4-1/2" EU lifting thread, hammer nut & cone seal system, API 6A Monogram	1	4-1/16"	4-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
23	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
24	Pack Off retrieve tool, with 4-1/2" IF box lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
25	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Running & Testing Tool with external preparation for 13-5/8" Flange bowl, 4-1/2" IF box lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
27	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
28	Running & Testing Tool with external preparation for 11" Flange bowl, 4-1/2" IF pin x 4-1/2" IF box lifting & running thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
29	Runing casing hanger tool W/BTC 9-5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	≤15	DD	P-U	PSL1	PR1
30	Slip Casing hanger 13-5/8" x 9-5/8", C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
31	Washing Tool, with 4-1/2" IF box lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		Código: EXP.03.RC.DR.05
	Proceso (nivel 1): Gestión de Desarrollar		Fecha: 04.2021
			Versión: 01


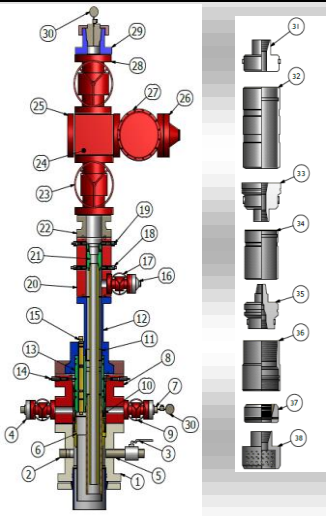
A.10d DATA SHEET PARA CABEZALES REINYECTORES DE PRODUCCION , RATING 5000 PSI


									
Title:		WELL HEADS DATA SHEET		Código	Elaborado por:	Revisado por:	Aprobado por:	Revisión:	
					M.Carvajal/ O. Calvache		P.Luna/ F.Ramírez	1	
WELLHEADS DATA SHEET - ESTÁNDAR REINJECTOR SYSTEM									
( Hoja de Datos de Cabezales de Pozo - Sistema Reinyector Estandar )									
					PROJECT'S DATA				
					DATA'S ISSUE/FECHA EMISION				
					DESIGNED BY/ DISEÑADOR POR				
					DESCRIPTION/DESCRIPCION				
					Wellhead Standar Reinjector System configuration: 10- 3/4" x 7" X 3-1/2" OD , 5K PSI , PSL1, PR1, DD, P-U, API 6A Code				
					DATA SHEET NUMBER				
					FIELD/ CAMPO		ALL EP PETROECUADOR FIELDS		
					Notes:				
					1.- This wellhead can transform in injector , when the pressure of injection don't be over 5000 Psi.				
					2.- All studded or flanged connections must include their studs, nuts and ring gasket according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet				
					Notas				
					1.- Este cabezal , puede ser inyector , siempre y cuando la presión de inyección no supere los 5000 Psi.				
					2.- Todas las bridas y salidas esparragadas deben incluir sus espárragos con tuercas y ring gasket según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos				
					Minimum material requirements				
					Material Class		Body, bonnet, end and outlet connections		Pressure-control parts, stems & mandrel hangers
					AA	General Service	Carbon or low- steel		Carbon or low- steel
					BB	General Service	Carbon or low- steel		Stainless steel
					DD	Sour Service	Carbon or low- steel		Carbon or low- alloy steel
					EE	Sour Service	Carbon or low- steel		Stainless steel
TECHNICAL REQUIREMENTS / REQUISITOS TECNICOS									
1	SPEC/ CODIGO	API 6A	17	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A				
2	EDITION/ EDICION	20 Th EDITION	18	SURFACE SAFETY VALVES ( Y/N ) / VALVULAS DE SEGURIDAD ( SI/NO)	NOT				
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	ACTUATOR TYPE (HIDRAULIC/ NEUMATIC) / TIPO DE ACTUADOR	NOT				
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	ARTIFICIAL LIFT METHOD/ METODO DE LEVANTAMIENTO ARTIFICIAL	NOT				
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	NOT				
6	SERVICE FLUID/ FLUIDO DE SERVICIO	WATER	22	TYPE/ TIPO	N/A				
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	OTHER DATA / OTROS DATOS	BRANDS				
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION)	REINJECTOR	24	ALL BOLTS, STUD, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H , WITH FLUOROCARBON COATED , THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners				
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	ALL RING GASKET API 6A , OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara				
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL ELASTOMERIC SEALS , ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE				
11	COUNTRY/ PAIS	ECUADOR	27	ALL WELL NECK FLANGE RTJ , ASTM (A105), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffe , Metalfar , WFI				
12	NACE MR0175 APPLY (Y/N) / NACE MR0175 (SI/NO)	YES	28	MANOMETERS / NEEDLE VALVE	Ashcroft , Wika, AGCO, KF, Swagelok				
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELIGENTE)	SINGLE	30	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant , Velan, Warren, WKM				
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27)	YES	31	GATE VALVES	VALVEWORKS / CAMERON / FMC / ARRAY/ AXON/ NOV/ STREAMFLO				
15	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm							
16	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8							
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 10-3/4 inch Sliplock system ring anchor and system with two Hydrogene Nitrile Seals low casing seal preparation x 11 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlet with 2 inch API 6A LP threads, API 6A Monogram .	1	11"	2" LP	N/A	DD	P-U	PSL1	PR1
2	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	4	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body , 316 SS and stem , threaded ends per API 6A , Full port / reduce port , lever operated. Fire safe . Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded ends per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
5	Slip Casing hanger 11" X7" , C22 bowl preparation , Slip must be constructed only in USA	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
6	Tubing Head Spool 11" 3K Flanged btm preparation , 7-1/16" 5K flange top preparation , with 04 lock screws preparation and two studded outlets of 2-1/16" 5K.	1	11" x 7-1/16"	N/A	N/A	DD	P-U	PSL1	PR1
7	Gate Valve 2-1/16" 5K flange end. Full port slab gate , 5000# MAWP , API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
8	Companion flange 2-1/16" 5K, w/ 1 outlet 2 inch API 6A LP threads, API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
9	Pressure Gauge Manometer and needle valve kit SS , 4-1/2" dial , 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
10	Tubing Head Adapter 7-1/16" 5K floating and rotating flange btm preparation , 3-1/8" 5K flange rotating top preparation	1	7-1/16" X 3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
11	Mandrel Tubing Hanger external body preparation for 7" flange bowl & 2 HNBR automatic seals, w/ 3-1/2" EU thrd BOX top & bottom, BPV3" H type preparati	1	7"	3-1/2" EU 8 RD & 3" BPVH Type	N/A	EE	P-U	PSL1	PR1
12	Lock screw, 8TPI UN Thread with Hydrogene Nitrile Seals Packing System	4	N/A	UN, 8TPI	N/A	DD	P-U	PSL1	PR1
13	Cross with four studded outlets 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
14	Blind Flange 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
15	Gate Valve 3-1/8" 5K flange end, Full port , slab gate , 5000# MAWP , API 6A Monogram. With slab gate and metal-metal seal. Forged	3	3-1/8"	N/A	N/A	EE	P-U	PSL2	PR1
16	Weldneck Flange 3-1/8" 5K , Sch 160, RTJ , ASTM ( A105 ), ANSI B16.5. No machined by the same wellhead constructor.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Tree Cap 3-1/8" 5K bottom flange preparation , w/ 3-1/2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
18	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
19	Test plug external preparation for 11"	1	11"	4-1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1
20	Wear Bushing with external preparation for 7" Flange bowl.	1	7"	N/A	N/A	DD	P-U	PSL1	PR1
21	Test plug external preparation for 7"	1	7"	4-1/2" IF PIN x BOX	N/A	DD	P-U	PSL1	PR1




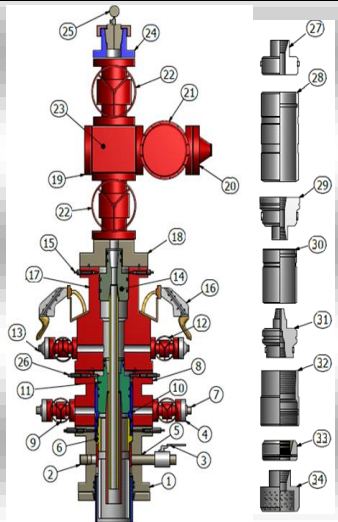
	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01


A.11. DATA SHEET PARA CABEZAL MULTIBOWL DUAL CONCENTRICO MODELO A RATING 5000 PSI

									
Title: WELL HEADS DATA SHEET		Código:	Elaborado por: V.Yáñez		Revisado por: M.Carvajal / O.Calvache		Aprobado por: P.Luna/ F.Ramírez		Revisión: 3
WELLHEADS DATA SHEET - MULTIBOWL DUAL CONCENTRIC MODEL A SYSTEM									
( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon Dual Concentrico )									
					PROJECT'S DATA				
					DATA'S ISSUE/FECHA EMISION				22-09-2011
					DESIGNED BY/ DISEÑADOR POR				V.Yáñez
					DESCRIPTION/DESCRIPCION				
					Wellhead Multibowl Dual Concentric Model A System configuration: 20"x13-3/8"x9-5/8"x5-1/2"x2-7/8" OD , 5M PSI , PSL1, PR1, DD, P-U, API 6A Code				
DATA SHEET NUMBER				2013/015					
FIELD/ CAMPO				ALLEP PETROECUADOR FIELDS					
Notes:					1.- This wellhead can transform in injector, when the pressure of injection don't be over 5000 Psi.				
					2.- All studied or flanged connections must include their studs, nuts and ring gaskets according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet				
Notas:					1.- Este cabezal, puede ser inyector, siempre y cuando la presión de inyección no supere los 5000 Psi.				
					2.- Todas las bridas salidas esparagadas deben incluir sus espárragos con tuercas y ring gaskets según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos				
Material Class		Minimum material requirements							
		Body, bonnet, end and outlet connections				Pressure-control parts, stems & mandrel hangers			
AA	General Service	Carbon or low-steel				Carbon or low-steel			
BB	General Service	Carbon or low-steel				Stainless steel			
DD	Sour Service	Carbon or low-steel				Carbon or low-alloy steel			
EE	Sour Service	Carbon or low-steel				Stainless steel			
TECHNICAL REQUIREMENTS / REQUISITOS TÉCNICOS									
1	SPEC/ CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	%/ ppm				
2	EDITION/ EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8				
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A				
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD (SI/NO)	YES				
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HYDRAULIC/NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC				
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD / METODO DE LEVANTAMIENTO ARTIFICIAL	YES				
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES				
8	TYPE OF WELL ( PRODUCTION / INJECTION ) / TIPO DE CABEZAL ( INYECCION / PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT Mandrel Types				
9	LOCATION/ LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS				
10	CUSTOMER/ CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUDS, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5/ API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners				
11	COUNTRY/ PAIS	ECUADOR	27	WELL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexitallic, Lamons, Carrara				
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE				
13	TYPE OF COMPLETION ( SINGLE / DUAL / INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE / DUAL / INTELLIGENTE )	DUAL	29	ALL WELL NECK FLANGERTJ, ASTM (A105), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffer, Metalfar, WFI				
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok				
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM				
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLOW				
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXION	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchorage system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram.	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body, 3/16 SS and stem threaded end per API 6A, Full port / reduce port, lever operated. Fire safe. Test per API 598.	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion flange 2-1/16" 5K, w/ 10 outlet 2 inch API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded end per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seal preparation body for 13-5/8" 3K flange bowl. W/ BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top, API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 3K threaded btm preparation, 13-5/8" 5K flange top preparation, with ten lock screws preparation and two studied outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation. Include Guide Screw and Pack Off retainer lock screw. API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2-1/16" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal.	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-5/8" flange bowl & internal preparation for 11" flange bowl, all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Seal Sleeve 5-1/2" ID, SS Body w/ four Hydrogine Nitrile O-ring Seals.	1	5-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
12	Tubing Head Adapter 13-5/8" 5K floating and rotating flange btm preparation, 5-1/8" 5K flange rotating thread top preparation, with 2 Mandrel electrical connector & Multipack's preparation. With four 3/8" NPT Box injection ports	1	5-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
13	Mandrel Tubing Hanger external body preparation for 11" flange bowl & HNBR automatic seals, w/ 5-1/2" BTC thrd BOX top & bottom, BPV5" H type preparation with 2 Mandrel electrical connector & Multipack's preparation. With four 3/8" NPT Box injection ports	1	11"	5-1/2" EU 8 RD & 5" BPV H Type	N/A	DD	P-U	PSL1	PR1
14	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	12	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
15	Surface electrical connector preparation ( Three leg or Mandrel Connector Type)	2	N/A	UN, 8 TPI	N/A	EE	P-U	PSL1	PR1
16	Weldneck Flange 3-1/8" 5K, Sch 160, RTJ, ASTM (A105), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	2	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
17	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP reverse acting, with Actuator Pneumatic and override manual system, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
18	Lock screws retractil shoulder, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	4	N/A	UN, 8 TPI	N/A	DD	P-U	PSL2	PR1
19	Lock screws 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	4	N/A	UN, 8 TPI	N/A	DD	P-U	PSL2	PR1
20	Tubing Head 5-1/8" 5K studied Top & Bottom preparation w/ One 3-1/8" out studied w/ Retractable Load Shoulder by 4 lock screw 8 TPI UN thread btm preparation & 4 lock screw 8 TPI UN thread top preparation, API 6A Monogram	1	5-1/8"	N/A	API 6A	AA	P-U	PSL1	PR1
21	Tubing Hanger concentric 5-1/8" Nominal, 2-7/8" EU 8 RD top & bottom, 2-1/2" HBPV, w/ Two vulcanized Hydrogine Nitrile Compression rings seals and one compress cap Packing Sys. Assembled API 6A Monogram	1	5-1/8"	2-7/8" EU 8 RD & 2-1/2" BPV H TYPE	API 6A	DD	P-U	PSL1	PR1
22	Tubing Head Adapter 13-5/8" 5K flange btm preparation, 3-1/8" 5K flange rotating thread top preparation	1	3-1/8"	N/A	API 6A	DD	P-U	PSL1	PR1
23	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
24	Cross with four studied outlets 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
25	Blind Flange 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
26	Weldneck Flange 3-1/8" 5K, Sch 160, RTJ, ASTM (A105), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	2	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
27	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP reverse acting, with Actuator Pneumatic and override manual system, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
28	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	2	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
29	Tree Cap 3-1/8" 5K bottom flange preparation, w/ 3-1/2" EU Lifting thread, hammer nut & cone seal system, API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
30	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Psi Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
31	Pack Off retrieval tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
32	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
33	Running & Testing Tool with external preparation for 13-5/8" Flange bowl, 4-1/2" IF box Lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
34	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
35	Running & Testing Tool with external preparation for 11" Flange bowl, 4-1/2" IF pin x 4-1/2" IF box Lifting & running thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
36	Runing casing hanger tool W/ BTC 9-5/8" Box thread top x Acme 2 TPI Box thread bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
37	Slip Casing hanger 13-5/8" x 9-5/8", C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
38	Washing Tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

A.12. DATA SHEET PARA CABEZAL MULTIBOWL DUAL CONCENTRICO RATING 5000 PSI

									
Title: WELLHEADS DATA SHEET		Código:	Elaborado por: V.Yáñez		Revisado por: M.Carvajal / O.Calvache		Aprobado por: P.Luna/F.Ramírez		Revisión: 3
WELLHEADS DATA SHEET - MULTIBOWL DUAL CONCENTRIC MODEL B SYSTEM ( Hoja de Datos de Cabezales de Pozo - Sistema Multitazon Dual Concéntrico )									
					PROJECT'S DATA				
					DATA'S ISSUE/FECHA EMISION: 22-09-2011				
					DESIGNED BY/ DISEÑADOR POR: V.Yáñez				
					DESCRIPTION/DESCRIPCION Wellhead Multibowl Dual Concentric Model B System configuration: 20"x13-3/8"x 9-5/8"x5-1/2"x2-7/8" OD , 5M PSI , PSL1, PR1, DD, P-U, API 6A Code				
					DATA SHEET NUMBER: 2013/014				
FIELD/ CAMPO: ALL EP PETROECUADOR FIELDS									
Notes: 1.- This wellhead can't transform in injector, when the pressure of injection don't be over 5000 Psi. 2.- All studied or flanged connections must include their studs, nuts and ring gaskets according API 6A and the requirements of items 26 and 27 of TECHNICAL REQUIREMENTS section of this data sheet. Notas 1.- Este cabezal, puede ser inyector, siempre y cuando la presión de inyección no supere los 5000 Psi. 2.- Todas las bridas y salidas esperagadas deben incluir sus espárragos con tuercas y ring gaskets según lo indique API 6A y lo incluido en el numeral 26 y 27 de la sección Requisitos Técnicos de esta hoja de datos									
					Minimum material requirements				
					Body, bonnet, end and outlet connections				
					Pressure-control parts, stems & mandrel hangers				
					Carbon or low-steel				
					Carbon or low-steel				
					Carbon or low-steel				
					Carbon or low-steel				
					Carbon or low-steel				
					Carbon or low-steel				
TECHNICAL REQUIREMENTS / REQUISITOS TÉCNICOS									
1	SPEC / CODIGO	API 6A	17	CO2 CONCENTRATION %/ %CONCENTRACION CO2	% ppm				
2	EDITION / EDICION	20 Th EDITION	18	EXTERNAL COATING (Y/N) / RECUBRIMIENTO EXTERNO (SI/NO)	Ver Tabla # 8				
3	MAX WORKING PRESSURE/ PRESION DE TRABAJO	5000 PSI.	19	INTERNAL COATING (Y/N) / RECUBRIMIENTO INTERNO (SI/NO)	N/A				
4	CORROSION PRESENCE/ PRESENCIA DE CORROSION	YES	20	SURFACE SAFETY VALVES (Y/N) / VALVULAS DE SEGURIDAD (SI/NO)	YES				
5	WORKING TEMPERATURE/ TEMPERATURA DE TRABAJO	-20°C @ 180°C	21	ACTUATOR TYPE (HIDRAULIC/NEUMATIC) / TIPO DE ACTUADOR	PNEUMATIC				
6	SERVICE FLUID/ FLUIDO DE SERVICIO	OIL	22	ARTIFICIAL LIFT METHOD/ METODO DELEVANTAMIENTO ARTIFICIAL	YES				
7	H2O CONCENTRATION %/ %CONCENTRACION DE H2S	% ppm	23	ELECTRICAL CONNECTOR NEEDED/ CONECTOR ELECTRICO	YES				
8	TYPE OF WELL ( PRODUCTION/ INJECTION ) / TIPO DE CABEZAL ( INYECCION/ PRODUCCION )	PRODUCER	24	TYPE/ TIPO	EFT Mandrel Types/ Three Legs Types				
9	LOCATION / LOCALIZACION	EP PETROECUADOR	25	OTHER DATA / OTROS DATOS	BRANDS				
10	CUSTOMER / CLIENTE	EP PETROECUADOR	26	ALL BOLTS, STUDS, FULL LENGTH THREADED WITH HEAVY HEX NUTS, CS ASTM A193 GR B7 / ASTM A194 GR 2H, WITH FLUOROCARBON COATED, THREADED AND DIMENSIONS PER ASME B16.5 / API 6A	Danloc, Alloy & Stainless Fasteners, Highland, Lamons, Choice Fasteners				
11	COUNTRY/ PAIS	ECUADOR	27	ALL RING GASKET API 6A, OCTAGONAL OR OVAL STAINLESS RING	Wolar, Danloc, Flexit alloy, Lamons, Carrara				
12	NACEM R0175 APPLY (Y/N) / NACEM R0175 (SI/NO)	YES	28	ALL ELASTOMERIC SEALS, ACCORDING ASTM D1414 & D1418	GENERIC BASE POLYMER MUST BE HNBR FROM USA OR EUROPE				
13	TYPE OF COMPLETION ( SINGLE/ DUAL/ INTELLIGENT ) / TIPO DE COMPLETACION ( SIMPLE/ DUAL/ INTELIGENTE )	DUAL	29	ALL WELL NECK FLANGERTJ, ASTM ( A105 ), API 6A MONOGRAM / ANSI B16.5.	Ulma, Mega Coffer, Metalfar, WFI				
14	AUXILIARY EQUIPMENT TEST ( WEAR BUSHING, ETC ) / EQUIPO DE PRUEBAS AUXILIARES ( WEAR BUSHING, ETC ) (24,25,26,27,28,29,30,31)	YES	30	MANOMETERS / NEEDLE VALVE	Ashcroft, Wika, AGCO, KF, Swagelok				
15			31	BALL VALVES	AOP, KF, Nibco, Nutron, Pbv, Quadrant, Velan, Warren, WKM				
16			32	GATE VALVES	VALVEWORKS / CAMERON/ FMC/ ARRAY/ AXON/ NOV/ STREAMFLOW				
PARTS SPECIFICATION / ESPECIFICACIONES DE PARTES									
ITEM	DETAIL / DETALLE	CANT	Ø NOMINAL	THREAD CONEXIÓN	LONG. L ( IN )	MATERIAL CLASS	TEMP. RANGE	PSL	PR1
1	Casing Head, with 13-3/8 inch Sliplock system ring anchor system with two Hydrogine Nitrile Seals low casing seal preparation x 13-5/8 inch Flange 3K top & C22 bowl preparation, with two lock screw and two outlets with 2 inch API 6A LP threads, API 6A Monogram.	1	13-5/8"	N/A	<26	DD	P-U	PSL1	PR1
2	Blind Bull plug with 2" API 6A LP thread Pin	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
3	Ball Valve 6000# MAWP, SS body, 3/16 SS and stem, threaded end per API 6A, Full port / reduce port, lever operated, Fire safe. Test per API 598	1	2"	2" LP	N/A	EE	P-U	PSL1	PR1
4	Companion Flange 2-1/16" 5K, w/ 1 outlet 2 inch API 6A Monogram	2	2-1/16"	2" LP	API 6A	DD	P-U	PSL1	PR1
5	Nipple carbon steel seamless pipe sch 160 with 2" API 6A LP thread Pin threaded end per API 6A	1	2"	2" LP	N/A	DD	P-U	PSL1	PR1
6	Mandrel Casing Hanger external seat preparation body for 13-5/8" 3K flange bowl. W/BTC 9-5/8" Box thread bottom x Acme 2 TPI Pin thread top, API 6A Monogram.	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	AA	P-U	PSL1	PR1
7	Bull plug with 2" API 6A LP thread Pin, with 1/2" API 6A LP thread Box	2	2"	2" LP	N/A	DD	P-U	PSL1	PR1
8	Tubing Head Spool 13-5/8" 5K threaded btm preparation, 13-5/8" 5K flange top preparation, with ten lock screws preparation and two studded outlets of 2-1/16" 5K with VR plug 11.5 TPI sharp Vee preparation. Include Guide Screw and Pack Off retainer lock screw. API 6A Monogram.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
9	Gate Valve 2-1/16" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal.	2	2-1/16"	N/A	API 6A	EE	P-U	PSL2	PR1
10	Pack Off with external body preparation for 13-3/8" flange bowl & internal preparation for 11" flange bowl, all seals HNBR	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
11	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 5-1/2" EU thrd BOX top & bottom, BPV 5" H type preparation Three leg Connect or Mandrel connect or Types preparation, and 4 capilar tubing injection holes preparation. API 6A Monogram	1	11"	5-1/2" BC Casing Thrd & 5" BPV H type thread	N/A	DD	P-U	PSL1	PR1
12	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, reverse acting, Actuator manual system API 6A Monogram. With slab gate and metal-metal seal. Forged body	2	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
13	Weldneck Flange 3-1/8" 5K, Sch 160, RTJ, ASTM ( A105 ), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	2	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
14	Mandrel Tubing Hanger external body preparation for 11" flange bowl & 2 HNBR automatic seals, w/ 2-7/8" EU thrd BOX top & bottom, BPV 2-1/2" H type preparation Three leg Connect or Mandrel connect or Typ API 6A Monogram	1	11"	2-7/8" EU 8 RD & 2-1/2" BPV H type thread	API 6A	DD	P-U	PSL1	PR1
15	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
16	Surface electrical connect or preparation (EFT Mandrel Types/ Three Leg types)	2	N/A	UN, 8 TPI	N/A	DD	P-U	PSL2	PR1
17	Tubing Head Spool 13-5/8" 5K threaded btm preparation & Tbg. Hanger's neck pocket preparation, 11" 5K flange top preparation C29 bowl preparation, with ten lock screws preparation and two studded outlets of 3-1/8" 5K with VR plug 11.5 TPI sharp Vee preparation. Three leg Connect or Mandrel Electrical connect or Types preparation and 4 capilar tubing injection holes preparation. API 6A Monogram.	1	5-1/8"	N/A	The axial of 2-1/16" outlets must be min 15" above de celar stop	DD	P-U	PSL1	PR1
18	Tubing Head Adapter 11" 5K floating and rotating flange btm preparation, 3-1/8" 5K flange rotating thread top preparation.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
19	Blind Flange 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
20	Weldneck Flange 3-1/8" 5K, Sch 160, RTJ, ASTM ( A105 ), ANSI B16.5. <b>No machined by the same wellhead constructor.</b>	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
21	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, reverse acting, Actuator pneumatic system and override manual system API 6A Monogram. With slab gate and metal-metal seal. Forged body	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
22	Gate Valve 3-1/8" 5K flange end, Full port, slab gate, 5000# MAWP, API 6A Monogram. With slab gate and metal-metal seal. Forged	1	3-1/8"	N/A	API 6A	EE	P-U	PSL2	PR1
23	Cross with four studded outlets 3-1/8" 5K, API 6A Monogram.	1	3-1/8"	N/A	N/A	DD	P-U	PSL1	PR1
24	Tree Cap 3-1/8" 5K bottom flange preparation, w/ 3-1/2" EU lifting thread, hammer nut & cone seal system, API 6A Monogram	1	3-1/8"	3-1/2" EU 8 RD	N/A	DD	P-U	PSL1	PR1
25	Pressure Gauge Manometer and needle valve kit SS, 4-1/2" dial, 0-5000 Psg Rating.	1	N/A	1/2" NPT	N/A	N/A	P-U	N/A	N/A
26	Lock screw, 8 TPI UN Thread with Hydrogine Nitrile Seals Packing System	10	N/A	UN, 8 TPI	N/A	DD	P-U	PSL1	PR1
27	Pack Off retrieval tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1
28	Wear Bushing with external preparation for 13-5/8" Flange bowl.	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
29	Running & Testing Tool with external preparation for 13-5/8" Flange bowl, 4-1/2" IF box Lifting thread preparation.	1	13-5/8"	4-1/2" IF	N/A	DD	P-U	PSL1	PR1
30	Wear Bushing with external preparation for 11" Flange bowl.	1	11"	N/A	N/A	DD	P-U	PSL1	PR1
31	Running & Testing Tool with external preparation for 11" Flange bowl, 4-1/2" IF pin x 4-1/2" IF box Lifting & runing thread preparation.	1	11"	4-1/2" IF pin x box	N/A	DD	P-U	PSL1	PR1
32	Runing casing hanger tool W/BTC 9-5/8" Box thread top x Acme 2 TPI Box thread Bottom	1	9-5/8"	9-5/8" BTC Box Acme 2 TPI Pin	<15	DD	P-U	PSL1	PR1
33	Slip Casing hanger 13-5/8" x 9-5/8", C21 bowl preparation	1	13-5/8"	N/A	N/A	DD	P-U	PSL1	PR1
34	Washing Tool, with 4-1/2" IF box Lifting thread preparation	1	11"	4-1/2" IF box	N/A	DD	P-U	PSL1	PR1

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		Código: EXP.03.RC.DR.05
	Proceso (nivel 1): Gestión de Desarrollar		Fecha: 04.2021
			Versión: 01

## ANEXO B

Para estos casos se debe respetar las especificaciones y procedimientos indicados en los marcos contractuales, o en acuerdos firmados por los administradores de contratos. Estos requisitos técnicos deberán estar reflejados en el Acta de Inicio de cada intervención, así también en el documento "Sistema de Validación de Bienes" (SVB) cuando se solicite la liberación de un cabezal o sus componentes. A continuación se indican los requerimientos técnicos contractuales para cabezales provistos por algunos de los Consorcios

### B.1. SHAYA

Extracto del documento CO-02158-PAM-EP-2015

Perforación de Pozos Nuevos: Cabezales de Pozo	<ul style="list-style-type: none"> <li>- Cabezal Sencillo según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2 1/16" (5M) y una válvula lateral (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE.</li> <li>- Cabezal Dual según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2 1/16" (5M) y una válvula lateral (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M), "C" tubing head spool 13 5/8" (5M) x 11" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE.</li> <li>- Cabezal inyector según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2 1/16" (5M) y una válvula lateral (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE (colgador de acero inoxidable).</li> <li>• El diseño del cabezal del pozo no considera ambiente corrosivo (agrio, dulce). En caso de que se confirme la necesidad de diseñar el cabezal de pozo para un ambiente corrosivo, el costo adicional generado por el cambio en el diseño será reconocido como Servicios Suplementarios.</li> <li>• Se reutilizará el mismo cabezal del pozo, previamente se realizará un servicio de mantenimiento. En caso de que el pozo a ser intervenido cuente con un cabezal NO API, se reemplazará el mismo por uno API.</li> </ul>
Reacondicionamiento de pozos (workover): Cabezal de Pozo	

### B.2. IGAPÓ

Extracto del Contrato PAM-IGAPÓ, ANEXO C-1

<b>ANEXO C-1</b> <b>SERVICIOS, EQUIPOS Y MATERIALES COMPRENDIDOS DENTRO DEL ALCANCE DE LAS ACTIVIDADES CAPEX DE TALADROS DE PERFORACION Y REACONDICIONAMIENTO -</b>	
Perforación de Pozos Direccional y/o Horizontal.  Cabezales	<ul style="list-style-type: none"> <li>- Cabezal Sencillo según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2" LP con una válvula lateral de bola (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2.</li> <li>- Cabezal Dual según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2" LP con una válvula lateral de bola (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M), "C" tubing head spool 13 5/8" (5M) x 11" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2.</li> <li>• El diseño del cabezal del pozo no considera ambiente corrosivo (agrio, dulce). En caso de que se confirme la necesidad de diseñar el cabezal de pozo para un ambiente corrosivo, el costo adicional generado por el cambio en el diseño será reconocido como Servicios Suplementarios.</li> </ul>
Reacondicionamiento de pozos (workover): Cabezal de Pozo	<ul style="list-style-type: none"> <li>• Se reutilizará el mismo cabezal del pozo, previamente se realizará un servicio de mantenimiento. En caso de que el pozo a ser intervenido cuente con un cabezal NO API y se requiera reemplazo y/o modificación mayor esta se realizará como un Servicio Suplementario.</li> </ul>

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 35 de 55





## PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar


Fecha:  
04.2021

Versión: 01

### B.3. PAÑATURI

#### Especificaciones Técnicas de Cabezales PAÑATURI

中国石化集团国际石油工程有限公司瑞尼嘉技术有限公司  
SERVICIOS INTEGRADOS PAÑATURI S.A.



### ESPECIFICACIONES TÉCNICAS / TECHNICAL SPECIFICATIONS

WELLHEAD MULTIBOWL FOR BES PRODUCTION: 20" x 13-3/8" x 9-5/8" x 3-1/2" OD, 3M / 5M, PSL2, PR1, DD/EE, P, API 6A MONOGRAMMED.

#### REQUERIMIENTOS TÉCNICOS / TECHNICAL REQUIREMENTS

No.	Requerimiento	Detalle
1	Especificaciones aplicables:	API 6A - Edición 20 PAM-EP-EQU-QAQC-20-ESP-004-00
2	Presiones de trabajo:	Sección A / Sección B : 3000 Psi. Sección C: 5000 Psi.
3	Temperatura de trabajo:	-20 °F @ 180 °F (Clasificación P)
4	Materiales:	Válvulas: Internos acero inoxidable (Clase EE - servicio ácido) Demás elementos: Acero al carbono o baja aleación (Clase DD)
5	Nivel de especificación:	PSL2
6	Recubrimiento:	Preparación superficial: SSPC SP 1 / 2 / 3. Interno: N/A. Externo: Epoxi / Poliéster / Poliuretano
7	Espárragos y tuercas:	Deben cumplir con los requerimientos de las normas ASTM A193 B7 / ASTM A194 H y su recubrimiento es fluorocarbonado.
8	Ring gasket:	El material debe ser AISI 316 y cumplir con la normativa ASME B31.3
9	Materiales no metálicos:	Deben cumplir con los requerimientos de las normas ASTM A5418, ASTM D1414 y D471.
10	Levantamiento artificial:	Bombeo electrosumergible, completación simple.

Temperature classification	Operating range			
	min. °C	max. °C	min. °F	max. °F
K	-60	82	-75	180
L	-60	82	-50	180
N	-46	80	-50	140
P	-29	82	-20	180
S	-18	80	0	140
T	-18	82	0	180
U	-18	121	0	250
V	2	121	35	250

Material class	Minimum essential requirements	
	Body, bonnet, and end outlet connections	Pressure-containing parts, stems and mandrel hangers
AA Ferrous	Carbon or low alloy steel	Carbon or low alloy steel
BB Castable ferrous	Carbon or low alloy steel	Stainless steel
CC Ferrous	Stainless steel	Stainless steel
DD Castable non-ferrous	Carbon or low alloy steel	Carbon or low alloy steel
EE Cast non-ferrous	Carbon or low alloy steel	Stainless steel
FF Cast non-ferrous	Stainless steel	Stainless steel
HH Cast non-ferrous	Stainless steel	Stainless steel

Figure A-18 — Recommended minimum PSL for primary parts of wellhead and christmas tree equipment

Preparado por: Jaime Gaezón  
Revisado por: F. Huilca  
Aprobado por: Son 8

Nombre: Jaime Gaezón  
Firma: F. Huilca  
Fecha: 15-marzo-2019

15-Mar-2019

2019, March 15th

Página: 1 de 2


CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 36 de 55



	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		Código: EXP.03.RC.DR.05
	Proceso (nivel 1): Gestión de Desarrollar		Fecha: 04.2021
			Versión: 01

#### B.4. KAMANA

##### Extracto del Contrato PAM-KAMANA

SERVICIOS, EQUIPOS Y MATERIALES COMPRENDIDOS DENTRO DEL ALCANCE DE LAS ACTIVIDADES CAPEX DE TALADROS DE PERFORACION Y REACONDICIONAMIENTO CAMPO EDEN YUTURI	
Perforación de Pozos Nuevos: Cabezales de Pozo	<ul style="list-style-type: none"> <li>- Cabezal Sencillo según normas API, con dos secciones: "A" - 13 5/8" (3M) con una válvula lateral 2 1/16"(3M), "B" - 13 5/8" (3M) con dos válvulas 2 1/16" (3M) y árbol de producción de 3M con 3 válvulas 4 1/16" (3M), PSL-2, EE.</li> <li>- Cabezal Dual según normas API, con dos secciones: "A" - 13 5/8" (3M) con una válvula lateral 2 1/16"(3M), "B" - 13 5/8" (3M) con dos válvulas 2 1/16" (3M), tubing head spool 13 5/8" (3M) x 11" (3M) y árbol de producción con 3 válvulas 3 1/8" (3M), PSL-2, EE.</li> <li>- El diseño del cabezal del pozo no considera ambiente corrosivo. En caso de que se confirme la necesidad de diseñar el cabezal de pozo para un ambiente corrosivo, el costo adicional generado por el cambio en el diseño será reconocido como Servicios Suplementarios.</li> </ul>
Reacondicionamiento de pozos (workover): Cabezal de Pozo	<ul style="list-style-type: none"> <li>- Se reutilizará el mismo cabezal del pozo previo servicio de inspección y mantenimiento. En caso de que el pozo a ser intervenido cuente con un cabezal NO API, se reemplazará el mismo por uno API (secciones B y/o C según se necesite para dejar en producción el pozo)</li> </ul>

#### B.5. CUYABENOPETRO

##### Extracto del Contrato CO403-PAM-EP-2018 ANEXO C

2	Perforación de Pozos Nuevos: Cabezales de Pozo	<ul style="list-style-type: none"> <li>- Cabezal Sencillo según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2" LP con una válvula lateral de bola (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE.</li> <li>- Cabezal Dual según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2" LP con una válvula lateral de bola (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M), "C" Tubing head spool 13 5/8" (5M) x 11" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE.</li> <li>- Cabezal Injector según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2 1/16" (5M) y una válvula lateral (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE (colgador de acero inoxidable).</li> <li>- El diseño del cabezal del pozo no considera ambiente corrosivo (agrio, dulce). En caso de que se confirme la necesidad de diseñar el cabezal de pozo para un ambiente corrosivo, el costo adicional generado por el cambio en el diseño será reconocido como Servicios Suplementarios.</li> </ul>
---	--	---

#### B.6. TRIBOILGAS

##### Extracto del Contrato CO404-PAM-EP-2018 ANEXO C

2	Perforación de Pozos Nuevos: Cabezales de Pozo	<p>según su respectivo diseño.</p> <ul style="list-style-type: none"> <li>- Cabezal Sencillo según normas API, con dos secciones: "A" - 13 5/8" (3M) con dos salidas laterales de 2" LP con una válvula lateral de bola (3M), "B" - 13 5/8" (5M) con dos salidas laterales 2 1/16" (5M) y árbol de producción de 3 1/8" (5M) con 3 válvulas (5M), PSL-2, EE.</li> <li>- El diseño del cabezal del pozo no considera ambiente corrosivo (agrio, dulce). En caso de que se confirme la necesidad de diseñar el cabezal de pozo para un ambiente corrosivo, el costo adicional generado por el cambio en el diseño será reconocido como Servicios Suplementarios.</li> <li>- El fluido de perforación se diseñará de acuerdo a las características litológicas y geo-mecánicas de cada zona.</li> </ul>
---	--	--

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 38 de 55



# PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

Código: EXP.03.RC.DR.05

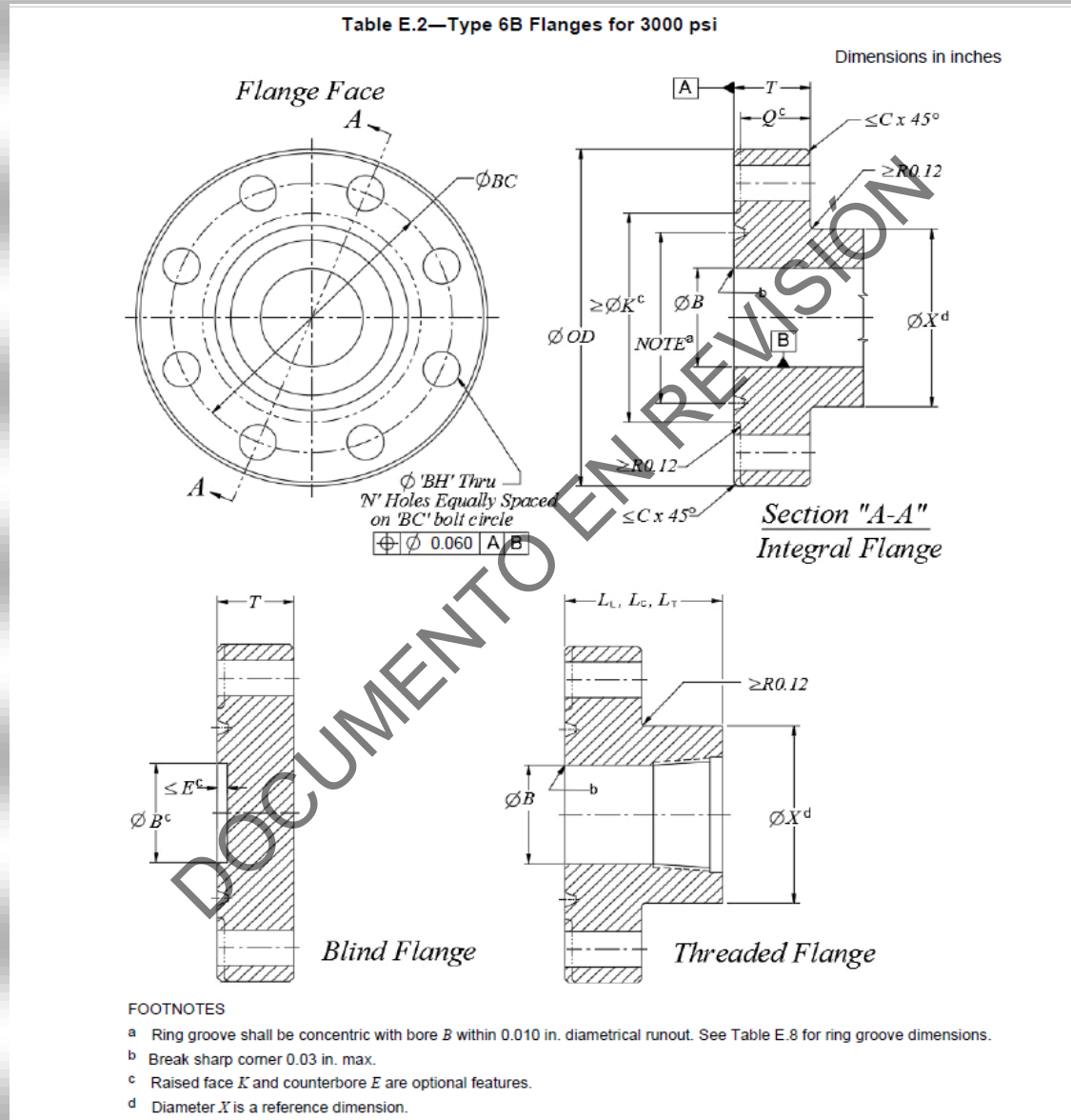
Proceso (nivel 1): Gestión de Desarrollar

Fecha:  
04.2021

Versión: 01

## ANEXO C

### C.1.TABLAS DIMENSIONALES SEGÚN API 6A, PARA BRIDAS TIPO 6B DE RATING 3000 PSI



CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 39 de 55





# **PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD**

**Código:** EXP.03.RC.DR.05

**Proceso (nivel 1):** Gestión de Desarrollar

**Fecha:**  
04.2021

**Versión:** 01

**Table E.2—Type 6B Flanges for 3000 psi (continued)**

Dimensions in inches

Nominal Size of Flange <sup>a</sup>	Maximum Bore	Outside Diameter of Flange	Max. Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Counter-bore Depth
	<i>B</i>	<i>OD</i>	<i>C</i>	<i>K</i>	<i>T</i>	<i>Q</i>	<i>X</i>	<i>E</i>
Tolerance	max.	As noted	max.	min.	+0.12/-0	min.	Reference	+0.02/-0
2 1/16	2.09	8.50 ±0.06	0.12	4.88	1.81	1.50	4.12	0.31
2 9/16	2.59	9.62 ±0.06	0.12	5.38	1.94	1.62	4.88	0.31
3 1/8	3.22	9.50 ±0.06	0.12	6.12	1.81	1.50	5.00	0.31
4 1/16	4.28	11.50 ±0.06	0.12	7.12	2.06	1.75	6.25	0.31
5 1/8	5.16	13.75 ±0.06	0.12	8.50	2.31	2.00	7.50	0.31
7 1/16	7.16	15.00 ±0.12	0.25	9.50	2.50	2.19	9.25	0.31
9	9.03	18.50 ±0.12	0.25	12.12	2.81	2.50	11.75	0.31
11	11.03	21.50 ±0.12	0.25	14.25	3.06	2.75	14.50	0.31
13 5/8	13.66	24.00 ±0.12	0.25	16.50	3.44	3.12	16.50	0.31
16 3/4	16.78	27.75 ±0.12	0.25	20.62	3.94	3.50	20.00	0.44
20 3/4	20.78	33.75 ±0.12	0.25	25.50	4.75	4.25	24.50	0.50

**FOOTNOTE**

<sup>a</sup> For flange sizes 26 3/4 in. and 30 in., see Table E.7.

Nominal Size of Flange <sup>a</sup>	Diameter of Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Hub Length, Threaded Flange			Ring Groove
						Line Pipe Flange	Casing Flange	Tubing Flange	
	<i>BC</i>	<i>N</i>		<i>BH</i>		<i>L<sub>L</sub></i>	<i>L<sub>C</sub></i>	<i>L<sub>T</sub></i>	
Tolerance >	See figure for GDT		(Ref.)	Diameter	Tolerance	min.	min.	min.	
2 1/16	6.50	8	7/8-9	1.00	+0.06/-0.02	2.56	—	2.56	R 24
2 9/16	7.50	8	1-8	1.12	+0.06/-0.02	2.81	—	2.81	R 27
3 1/8	7.50	8	7/8-9	1.00	+0.06/-0.02	2.44	—	2.94	R 31
4 1/16	9.25	8	1 1/8-8	1.25	+0.06/-0.02	3.06	3.50	3.50	R 37
5 1/8	11.00	8	1 1/4-8	1.38	+0.06/-0.02	3.44	4.00	—	R 41
7 1/16	12.50	12	1 1/2-8	1.25	+0.06/-0.02	3.69	4.50	—	R 45
9	15.50	12	1 3/8-8	1.50	+0.06/-0.02	4.31	5.00	—	R 49
11	18.50	16	1 3/4-8	1.50	+0.06/-0.02	4.56	5.25	—	R 53
13 5/8	21.00	20	1 3/4-8	1.50	+0.06/-0.02	4.94	4.94	—	R 57
16 3/4	24.25	20	1 5/8-8	1.75	+0.09/-0.02	5.06	5.69	—	R 66
20 3/4	29.50	20	2-8	2.12	+0.09/-0.02	6.75	6.75	—	R 74

**FOOTNOTE**

<sup>a</sup> For flange sizes 26 3/4 in. and 30 in., see Table E.7.

**CLASIFICACIÓN: PÚBLICO**

**"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."**

**Formato: PCA.10.04.FO.02 (V05)**

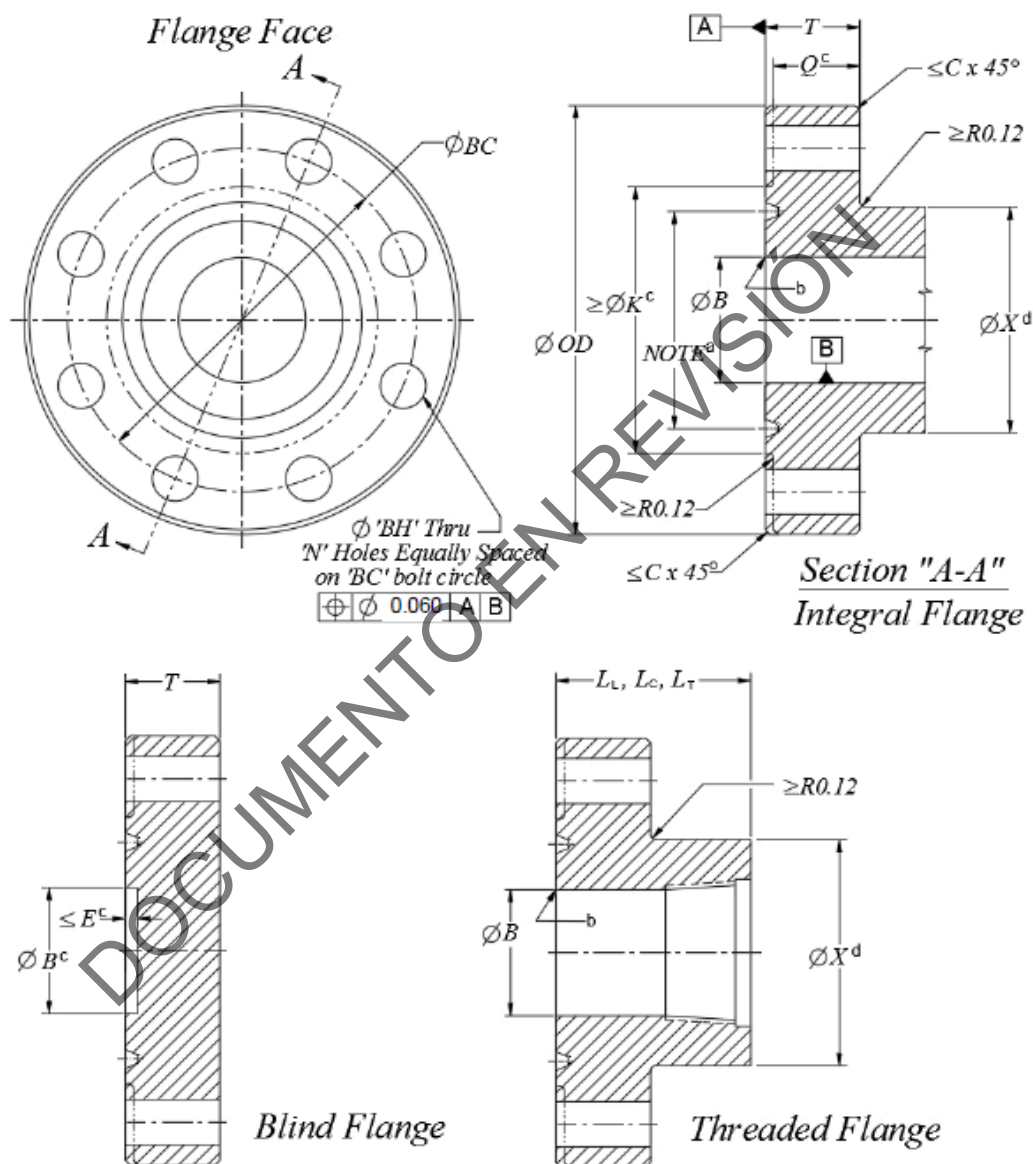
**Página 40 de 55**



C.2. TABLAS DIMENSIONALES SEGÚN API 6A, PARA BRIDAS TIPO 6B DE RATING 5000 PSI

**Table E.3—Type 6B Flanges for 5000 psi**

Dimensions in inches



**FOOTNOTES**

- <sup>a</sup> Ring groove shall be concentric with bore *B* within 0.010 in. diametrical runout. See Table E.8 for ring groove dimensions.
- <sup>b</sup> Break sharp corner 0.03 in. max.
- <sup>c</sup> Raised face *K* and counterbore *E* are optional features.
- <sup>d</sup> Diameter *X* is a reference dimension.



# **PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD**

**Código:** EXP.03.RC.DR.05

**Proceso (nivel 1):** Gestión de Desarrollar

**Fecha:**  
04.2021

**Versión:** 01

**Table E.3—Type 6B Flanges for 5000 psi (continued)**

Dimensions in inches

Nominal Size of Flange <sup>a</sup>	Maximum Bore	Outside Diameter of Flange	Max. Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Counter-bore Depth
	<i>B</i>	<i>OD</i>	<i>C</i>	<i>K</i>	<i>T</i>	<i>Q</i>	<i>X</i>	<i>E</i>
Tolerance	max.	As noted	max.	min.	+0.12/-0	min.	Reference	+0.02/-0
2 1/16	2.09	8.50 ±0.06	0.12	4.88	1.81	1.50	4.12	0.31
2 9/16	2.59	9.62 ±0.06	0.12	5.38	1.94	1.62	4.88	0.31
3 1/8	3.22	10.50 ±0.06	0.12	6.62	2.19	1.88	5.25	0.31
4 1/16	4.28	12.25 ±0.06	0.12	7.62	2.44	2.12	6.38	0.31
5 1/8	5.16	14.75 ±0.06	0.12	9.00	3.19	2.88	7.75	0.31
7 1/16	7.16	15.50 ±0.12	0.25	9.75	3.62	3.25	9.00	0.38
9	9.03	19.00 ±0.12	0.25	12.50	4.06	3.62	11.50	0.44
11	11.03	23.00 ±0.12	0.25	14.63	4.69	4.25	14.50	0.44

**FOOTNOTE**

<sup>a</sup> For flange sizes 13 5/8 in., 16 3/4 in., 18 3/4 in., and 21 1/4 in., see Table E.7.

Nominal Size of Flange <sup>a</sup>	Diameter of Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Hub Length, Threaded Flange			Ring Groove
						Line Pipe Flange	Casing Flange	Tubing Flange	
	<i>BC</i>	<i>N</i>		<i>BH</i>		<i>L<sub>L</sub></i>	<i>L<sub>C</sub></i>	<i>L<sub>T</sub></i>	
Tolerance >	See figure for GDT	(Ref.)		Diameter	Tolerance	min.	min.	min.	
2 1/16	6.50	8	7/8-9	1.00	+0.06/-0.02	2.56	—	2.56	R 24
2 9/16	7.50	8	1-8	1.12	+0.06/-0.02	2.81	—	2.81	R 27
3 1/8	8.00	8	1 1/8-8	1.25	+0.06/-0.02	3.19	—	3.19	R 35
4 1/16	9.50	8	1 1/4-8	1.38	+0.06/-0.02	3.88	3.88	3.88	R 39
5 1/8	11.50	8	1 1/2-8	1.62	+0.06/-0.02	4.44	4.44	—	R 44
7 1/16	12.50	12	1 3/8-8	1.50	+0.06/-0.02	5.06	5.06	—	R 46
9	15.50	12	1 5/8-8	1.75	+0.09/-0.02	6.06	6.06	—	R 50
11	19.00	12	1 7/8-8	2.00	+0.09/-0.02	6.69	6.69	—	R 54

**FOOTNOTE**

<sup>a</sup> For flange sizes 13 5/8 in., 16 3/4 in., 18 3/4 in., and 21 1/4 in., see Table E.7.


**CLASIFICACIÓN: PÚBLICO**

**“Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado.”**

**Formato: PCA.10.04.FO.02 (V05)**

**Página 42 de 55**



	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

## ANEXO D


- Todas las bridas tipo WELDING NECK deberán ser marcadas según el ASME B16.5 y/o MSS SP-25: País de fabricación, nombre del fabricante, material, clase, conformidad con la norma B16.5, tamaño, cédula (si aplicase) y un número de identificación.
- Las bridas de clase 900 y mayores deben ser RTJ. Las bridas de clase 600 y menores pueden ser de caras resaltadas (RF) o de caras planas (FF), con un terminado estriado espiral.
- Bridas de cuello soldable son requeridas para todas las tuberías bridadas.
- Las bridas de acero utilizadas para acoplarse con equipos que tienen bridas de hierro fundido, hierro dúctil o aluminio deben tener las caras maquinadas planas (FF).
- Los agujeros para los pernos de las bridas deben estar encuadrados con la tubería horizontal y con las líneas de centro verticales.
- Las bridas API, clasificadas como 2000, 3000 o 5000 PSI deben ser del tipo 6B.

CLASIFICACIÓN: PÚBLICO

*"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."*


Formato: PCA.10.04.FO.02 (V05)

Página 44 de 55

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		Código: EXP.03.RC.DR.05
	Proceso (nivel 1): Gestión de Desarrollar		Fecha: 04.2021
			Versión: 01

## ANEXO E

E.1. Si el cabezal requiriere la instalación de un sistema de seguridad de control de flujo, EP PETROECUADOR aplica los requerimientos descritos en siguiente data sheet.

				Department: PERFORACION-OPERACIONES Code No.: Rev: 0 Page No.: 1 of 1	
SSV Data Sheet for Wing Valves's Wellheads					
Tag No.	P&ID	Service	ON/OFF, SSV Valve On Wheel Head Outlet		
1	Fluid: Multiphase	Fluid State: LIQUID & GAS	Max Flow	Norm Flow	Min Flow
2	Flow Rate	Units	BPD		
3	Inlet Pressure	PSIG			
4	Outlet Pressure	PSIG			
5	Inlet Temperature	DEG F			
6	Spec Grav/Mol Wt				
7	Viscosity/Spec Heats Ratio	cP			
8	Vapor Pressure Pv	Psig			
9	*Required Cv				
10	*Travel				
11	Allowable/Predicted SPL	db			
12					
13	Pipe Line Size: In		53	*Type: Spring & Diaphragm / Single Acting	
14	& Schedule Out		54	*MFR & Model: Note 2, 5	
15	Pipe Line Insulation	None	55	*Size: Note 2 Eff. Area: MFR STD	
16	*Type: GATE VALVE		56	On / Off: Yes Modulating:	
17	*Size: API Pressure Rating:		57	Spring Action Open/Close: Close	
18	Max Press/Temp:		58	*Max Allowable Pressure: 150	
19	*MFR & Model: Note 2, 5		59	*Min Required Pressure: 80	
20	*Body/Bonnet Matl: EE API 6A 60K / EE API 6A 60K		60	Available Air Supply Pressure: 90	
21	*Liner Material/ID: PSL-2		61	Max: 100 psig Min: 70 psig	
22	End Connection: In: RTJ FLANGE API Type 6B		62	*Bench Range: (Note 2)	
23	Out: RTJ FLANGE API Type 6B		63	Actuator Orientation: Horizontal / Vertical	
24	Flg Face Finish: Full machined, 63µin RMS		64	Handwheel Type: None	
25	End Ext/Matl:		65	Air Failure Valve: Close	
26	*Flow Direction:		66	Operating Cycles PR2	
27	*Type of Bonnet: With Diaphragm pneumatic actuator prepared		67	Input Signal	
28	Lub & Iso Valve: By provider		68	Type:	
29	*Packing Material: HNBR / Viton		69	MFR & Model:	
30	*Packing Type: By provider		70	On Incr Signal Output Incr/Decr	
31			71	Gauge By pass	
32	*Type: EE		72	Cam Characteristic Linear	
33	*Size: Full Port Rated Travel:		73		
34	*Characteristic: Linear		74	Type: Leverless Limit Switches Quantity: 2	
35	*Balanced/Unbalanced:		75	*MFR & Model: GO SWITCH- MODEL LPS (Note 2)	
36	*Rated Cv: Nota 2 Fl: Xt:		76	Contacts/Rating: 0.25 AMP @ 120 VAC/24VDC	
37	*Plug/Ball/Gate: EE API 6A 75K		77	Form SPST <input type="checkbox"/> SPDT <input checked="" type="checkbox"/> DPDT <input type="checkbox"/>	
38	*Seat Material: Seal (apply if is not a metal-metal seal) : PEEK/PTFE lined (Note 2,4)		78	Tag No's Open/Close:	
39	*Cage/Guide Material: EE API 6A 75K		79	MFR & Model:	
40	*Stern Material: EE API 6A 75K		80	*Set Pressure:	
41	Other: Operating Cycles PR2		81	Filter: Gauge:	
42			82		
43	NEC: Class Group Div		83	*Hydro Pressure:	
44	1 C, D 1		84		
45	NACE: MR 0175		85	ANSI/FCI Leakage Class: CLASS VI	
46			86		
47					
48					
NOTES	1. Each instrument shall have stamped TAG as vendor standard.				
	2. The MFR is responsible of the adequate sizing and selection of the actuator and valve under specification 6A and recommend use of regulator valve.				
	3. All electrical equipment shall be UL labeled for use in NEC Class I, Div.1&2, Group C & D Area.				
	4. Reinforced trim may be selected .				
	5. Proposed brands and models: Valve Manufacturer: STREAMFLO/VALVE WORKS / CAMERON / FMC / ARRAY/ AXON / NOV Actuators: 1.- SAFOCO 2.- CAMERON 3.- ARRAY 4.- BETTIS				
	6 One red (close) and one green (open) LEDs with the valve, installed on linear installation				


CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 45 de 55



	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## E.2. Datos técnicos de actuadores SAFOCO

# Diaphragm Actuators (SSV)

## DIAPHRAGM-TYPE ACTUATOR ECONOMY WITH TRADITIONAL QUALITY

The SAFOCO Diaphragm Actuator combines simplicity with ease of maintenance to provide an extraordinary value in a SSV actuator.

Its operating principle and rugged design make this actuator inherently trouble-free. This diaphragm actuator design has eliminated the problems of downtime and added safety features vital to today's customer requirements. This actuator is designed for most surface safety applications.

The SAFOCO Actuator utilizes the traditional diaphragm concept by eliminating galling, misalignment, and distortion during operation.

The close tolerance problem has been eliminated by providing wear bearings in the actuator and bonnet to suspend the top shaft and bonnet stem from contacting metal during operation.

SAFOCO has designed into each model, series, and size of diaphragm actuator the industry's strongest compression spring. This is important to ensure gate valve closure. No special tools are required when loading the compression spring.

Ease of repair and service has been provided by designing the top seal cartridge so that it can be removed easily and quickly.

To remove the actuator from the bonnet, remove 8 hex head bolts with a crescent wrench, then lift the actuator from the bonnet.

SAFOCO's actuator philosophy emphasizes safety and reliability, compact and simple design, fast response time, easy maintenance, optional use of control pressure and quality in manufacture and service.

### FEATURES

- The top shaft is designed to eliminate the transfer of torque to the gate, seats and bonnet stem when using a manual override. A larger lower shoulder prevents the top shaft from being expelled from the actuator. The top shaft indicates the stroke position of the gate in the valve. The top shaft is protected from metal to metal contact by a wear bearing and top seal cartridge.
- Diaphragm incorporates dual layers of nylon which requires no lubrication and will not wear due to friction. The diaphragm has eliminated the problem of damage to stem by twisting or rolling an O-ring. The design ensures product reliability and flexibility for years of service.
- Helical compression spring provides maximum closure to valve with 900 to 1,000 lbs. at full closed position.
- Top loaded seal cartridge enables top shaft seal replacement without disassembly of actuator. Top seal cartridge incorporates rod wiper to keep shaft sealing area clean for longer life of seals.
- All seal formations are full penetration welds under ASME section IX.
- Base plate ring provides for a 360° actuator rotation when exacting plumbing is required for control pressure inlet.
- A permanent drift adjustment is accomplished by use of stainless steel spacers. Actuator removal does not affect drift adjustment.
- All non-stainless actuator and bonnet components are coated for resistance to marine environment.
- The standard SAFOCO Diaphragm Pneumatic Actuator material meets NACE MR-01-75 requirements.
- Pressure inlet and relief flow passages are .500 NPT. Larger ports are stronger and help eliminate trash buildup.
- The base plate ring to lower housing design utilizes the eight bolts to their strength. The bolts are loaded to use the entire length and diameter. This concept is stronger, safer and more reliable.
- All actuator designs have been finite element analyzed (FEA).

## CERTIFICATES OF AUTHORIZATION



**API 14D Specification  
API 6A Specification**



API License No. 14D-0033 has been replaced by API License No. 6A-0335

The right to use the official API monogram on Wellhead Equipment (as listed in Spec. 6A) under API Specification 6A for Wellhead Equipment.

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 46 de 55



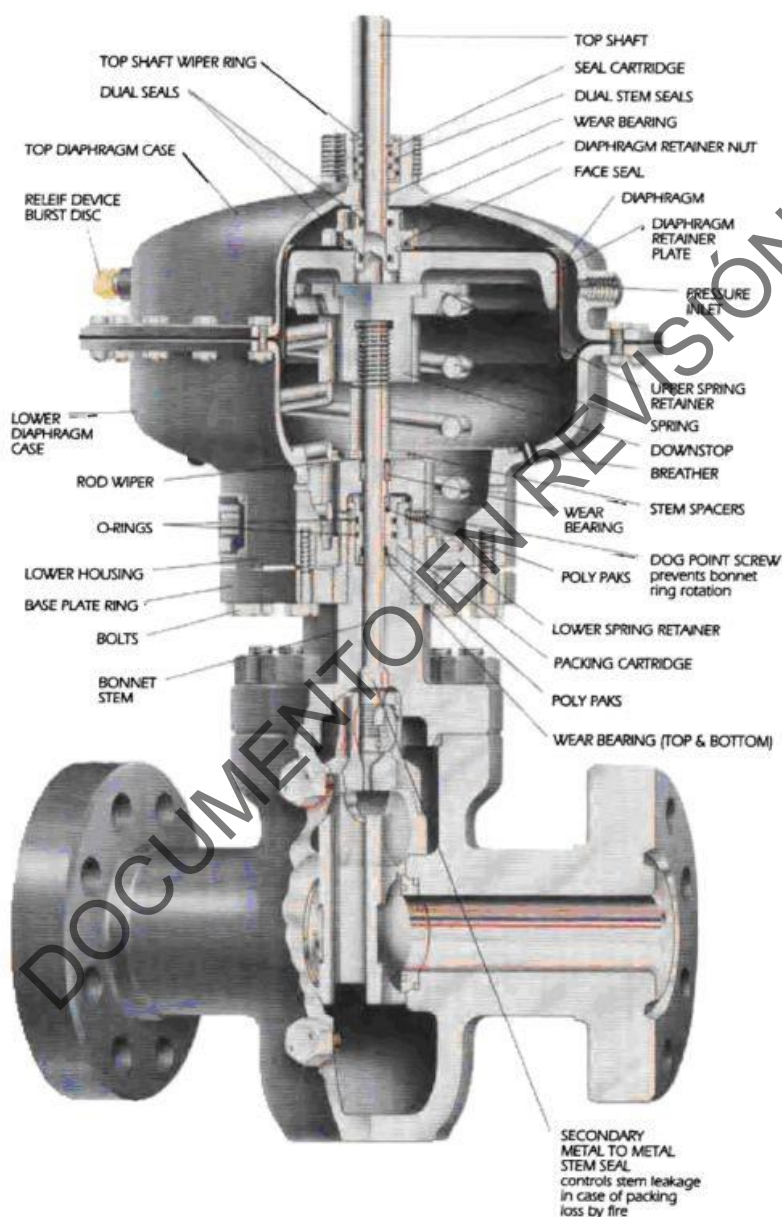
## PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar

Fecha:  
04.2021

Versión: 01

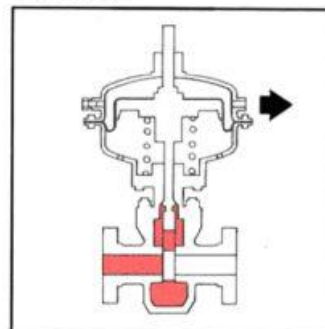


### FAIL CLOSED OPERATION

The SSV valve with a SAFOCO Actuator is normally supplied in the fail-closed configuration. Pneumatic actuator supply pressure drives the valves reverse ported gate down and holds it in the open position under normal operating conditions. In the event of an abnormal condition, the actuator supply pressure is released or bled off by quick exhaust mechanisms, allowing the valve to close by body pressure acting on the bonnet stem diameter and spring force. Restoring of Pneumatic Actuator supply pressure automatically reopens the valve.

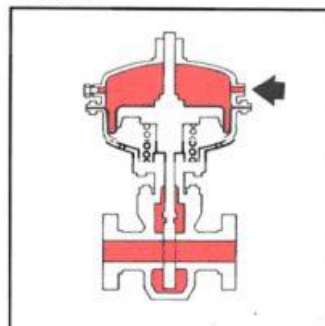
When required, the valve can be configured with a fail open gate design for a vent or blow-down system.

### CLOSED



As actuator pressure exhausts from the housing or cylinder, valve body pressure and actuator spring force close the valve.

### OPEN



Actuator input pressure drives the reverse-port gate downward into open position.

### ACCESSORIES

Heat sensitive lock open devices, manual handwheel operators, hydraulic operators, position indicators, remote control devices, actuator quick exhaust devices, stem protector, electromechanical switches, electrical indicating devices.

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 47 de 55





# PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar

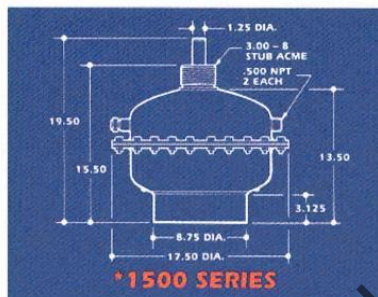
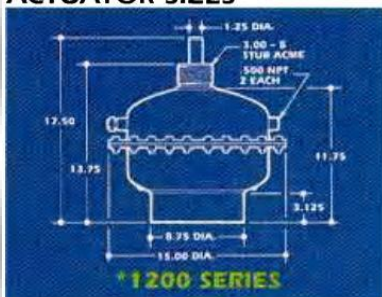
Fecha:  
04.2021

Versión: 01

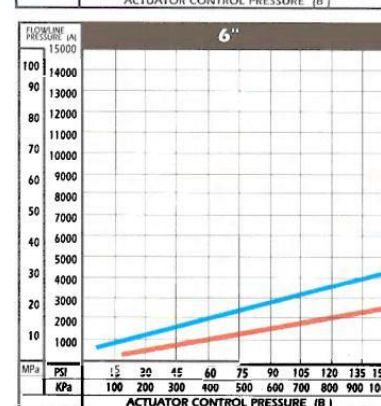
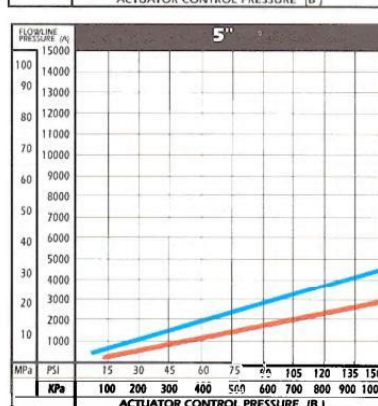
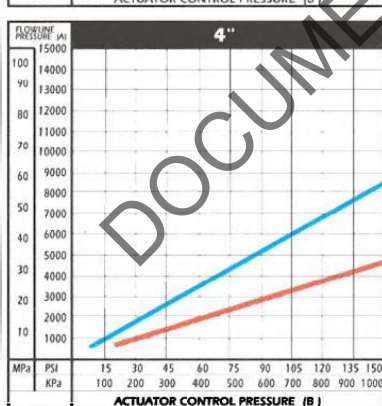
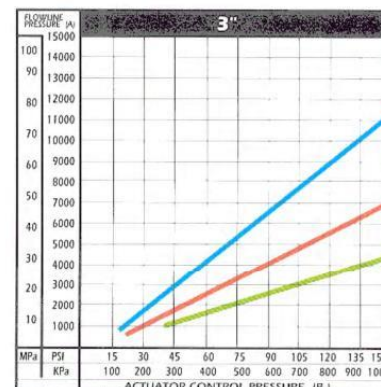
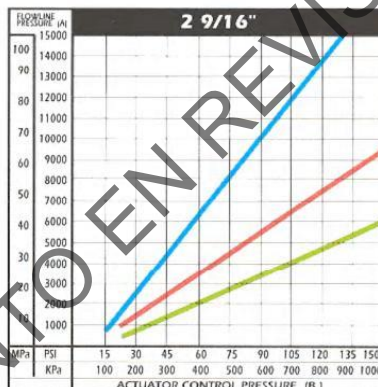
## Diaphragm Actuators (SSV)



### ACTUATOR SIZES



### ACTUATOR APPLICATION



To determine control pressure consult graphs for nominal valve size. Find maximum expected flowline pressure (A) on left hand ordinate. Find the actuator control pressure (B) of a line drawn vertically from (B). The intersection of the two lines indicates the correct size actuator for the specific application.

The graphs shown above predict control pressures for each series of diaphragm pneumatic actuators in this product line. These graphs are based on worst case assumptions with full line pressure and gate drag friction.

### SPECIFICATIONS

Maximum Operating Pressure	150 PSI	10.4 Bars
Production Test Pressure	225 PSI	15.5 Bars
Operating Temperature Range	-20°F to 150°F	-29° C to 65° C
Actuator Weight	1200 Series	89 lbs.
	1500 Series	132 lbs.
	2000 Series	162 lbs.
API 6A	PSL 1, 2, or 3	PR-2
API 14D	Class 1	

\* Typical dimensions, for exact dimensions per application contact SAFOCO customer service.

### CONTROL PRESSURE EQUATION

Actuators Series	1200	1500	2000
1 13/16 - 2 1/16 Valves	.019	.012	.006
2 9/16 Valves	.023	.015	.008
3" Valves	.034	.021	.012
4" Valves	—	.032	.018
5" Valves	—	.058	.032
6" Valves	—	.068	.038

All Equation Nos. x Valve W.P. + 10PSI

**WARRANTY STATEMENT** Products illustrated in this booklet are subject to Terms and conditions of Sale including Warranty and Limitations of Liability as shown in our Price List

"Es:

11421-A Todd Road • Houston, Texas USA • 77055 • Office: 1-713-956-1595 • Fax: 1-713-956-2449



## PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

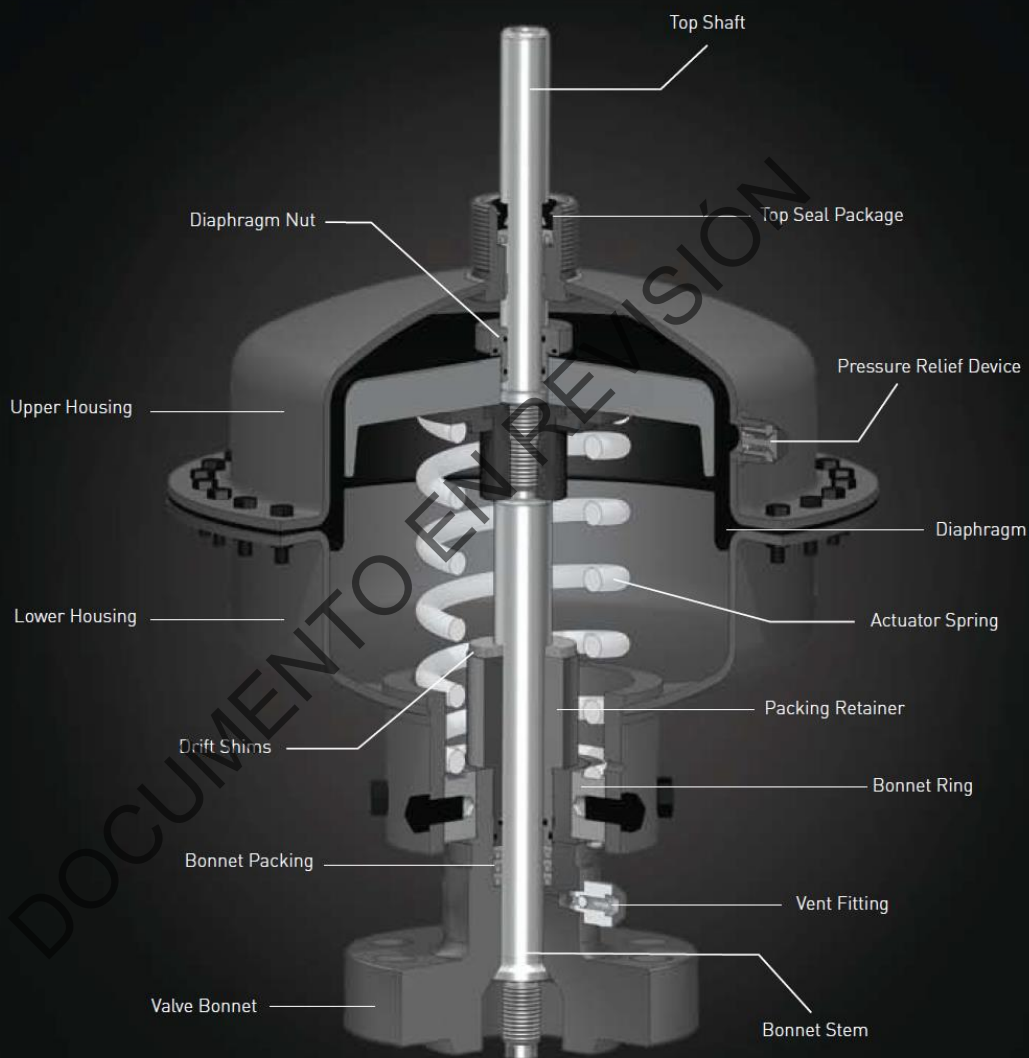
Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar

Fecha:  
04.2021

Versión: 01

page 9



Parts list includes items in a typical bonnet assembly. Some differences may exist in bonnets for valves manufactured by companies other than Array. In those cases the specific differences are usually limited to the design of the bottom of the bonnet and operating stem.

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 49 de 55



## PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar

Fecha:  
04.2021

Versión: 01



page 10

### MODEL APD PNEUMATIC DIAPHRAGM ACTUATOR

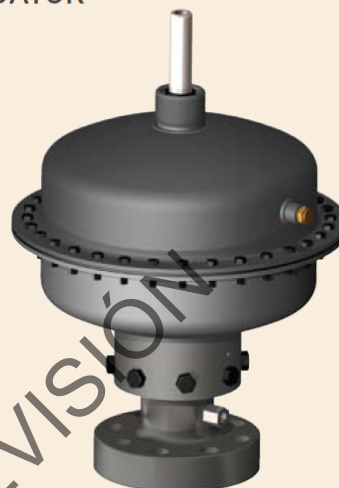
FOR API 6A WELLHEAD GATE VALVES  
(SINGLE ACTUATOR APPLICATIONS)

#### GENERAL DESCRIPTION

The Model APD actuator is a diaphragm type, pneumatically-powered gate valve actuator designed to operate a "fail-closed" or "fail-open" safety valve. It is ideally suited for wellhead safety valve applications, flow lines, header valves and gathering lines. It can also be used for casing relief valve and storage valve applications.

The Model APD actuator is lightweight, easy to maintain and engineered to ensure years of trouble-free service in the harshest of environments and operating conditions on land or off-shore.

The Model APD actuator can be delivered as an actuated valve assembly ready to be placed in service or as an actuated bonnet assembly ready to mount on another manufacturer's valve.



[Shown with typical bonnet assembly]

#### FEATURES AND BENEFITS

**Longer Top Shaft Seal Life:** PolyPak™ seals are used for top shaft dynamic sealing applications. These seals are protected from accumulation of dirt and debris by a durable wiper ring. These two features provide long seal life and minimal maintenance.

**Ease of Maintenance:** Top Shaft seals are easily replaced in the field by simply removing a retainer ring. Disassembly of the actuator or upper housing is not required for seal replacement.

**Improved Corrosion Control:** All non-stainless components are coated with Xylan and Polyester TGIC providing resistance against the corrosive effect of harsh environments.

**Over-pressurization Protection:** A pressure relief device on the actuator top case protects personnel from over-pressurization of the actuator assembly. It is located for easy field inspection and replacement.

##### Confirmation of Bonnet Stem / Back Seat Seal Integrity:

The bonnet is designed with a test fitting below the bonnet seals. This test fitting provides for verification of the bonnet stem metal to metal backseat pressure sealing integrity.

**Visual Confirmation of Bonnet Packing Integrity:** A tattletale port located above the bonnet packing seals provides visual confirmation of the packing integrity. The Bonnet is provided with a port that can be tubed to a containment vessel to prevent escape of fugitive emissions into the atmosphere.

**Modular Design:** Tandem boosters (additional diaphragm actuators) can be mounted in the factory or the field to provide higher actuation force.

**Multiple Safeguards Against Well Fluids Contamination:** The bonnet incorporates multiple safeguards against the invasion of well fluids into the actuator housing. These safeguards are:

- Metal to metal back seat/stem seal
- Multiple Polypak™ bonnet stem seals
- Packing integrity port
- Secondary backup seals utilize o-rings

**Personnel Safety:** Locking screws below the bonnet ring prevent free rotation of the actuator. This guards against personnel injury should the actuator be used as a step during field service operations.

MODEL	SIZE	STROKES AVAILABLE
APD 1000	10"	Up to 2 1/4" bore
APD 1200	12"	Up to 3 1/4" bore
APD 1500	15"	Up to 4 1/4" bore
APD 1800	18"	Up to 5 1/4" bore
APD 2000	20"	Up to 7 1/4" bore

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 50 de 55





## PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

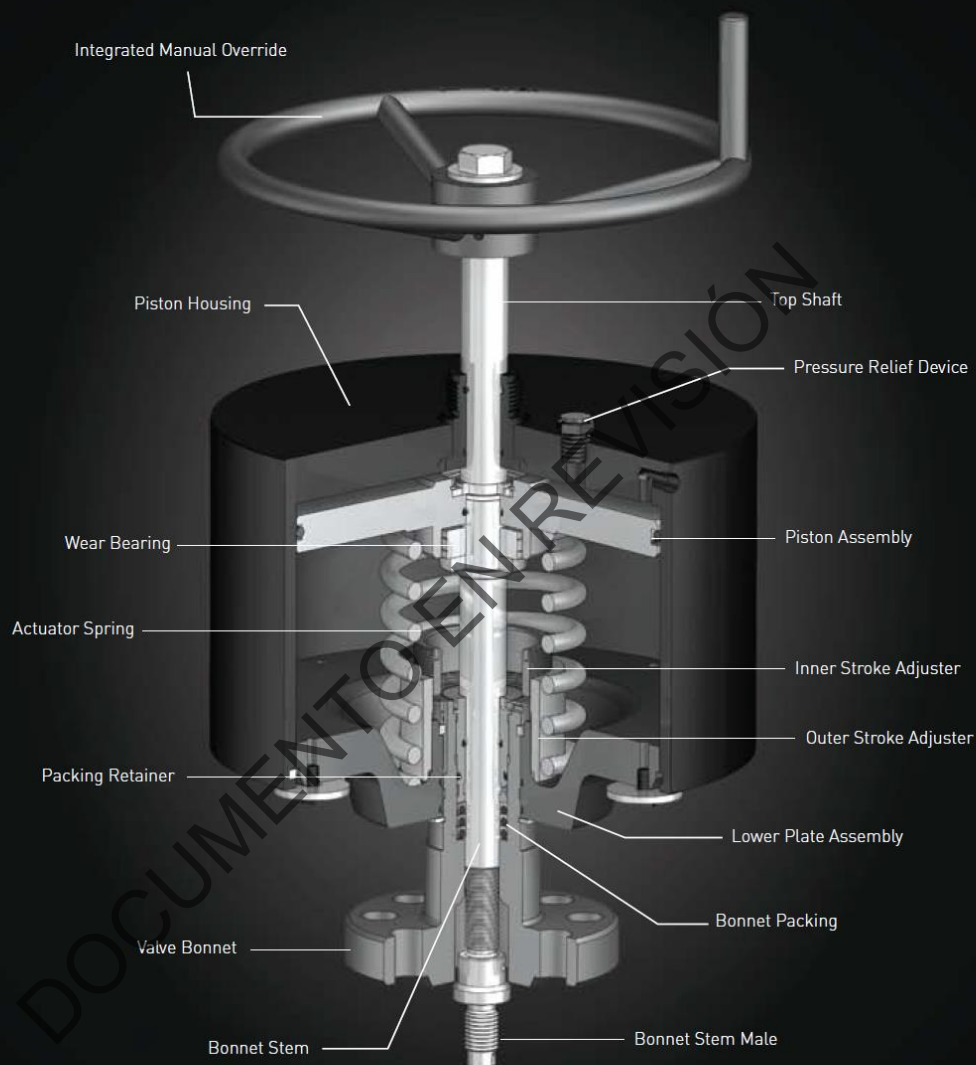
Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar

Fecha:  
04.2021

Versión: 01

page 19




Parts list includes items in a typical bonnet assembly. Some differences may exist in bonnets for valves manufactured by companies other than Array. In those cases the specific differences are usually limited to the design of the bottom of the bonnet and operating stem.

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 51 de 55

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## MODEL APPM PISTON PNEUMATIC ACTUATOR FOR API 6A WELLHEAD GATE VALVES

### GENERAL DESCRIPTION:

The Model APPM actuator is a piston type, pneumatically-powered gate valve actuator with an integrated manual override designed to operate a "fail-closed" or "fail-open" safety valve. It is ideally suited for wellhead safety valve applications, flow lines, header valves and gathering lines. It can also be used for casing relief valve and storage valve applications.

The Model APPM actuator is easy to maintain and engineered to ensure years of trouble-free service in the harshest of environments and operating conditions.

The Model APPM actuator is currently only delivered as a complete actuated valve assembly ready to be placed in service.



(Shown with typical bonnet assembly)

### FEATURES AND BENEFITS:

**Longer Top Shaft Seal Life:** Polypak™ seals are used for actuator shaft sealing applications. These seals are protected from accumulation of dirt and debris by a durable wiper ring. These two features provide long seal life and minimal maintenance.

**Ease of Maintenance:** The APPM is easy to maintain. The Actuator design allows for easy removal of the piston housing for piston and shaft seal replacement.

**Improved Corrosion Control:** All non-stainless components are coated with Xylan and Polyester TGIC providing resistance against the corrosive effect of harsh environments.

**Over-Pressurization Protection:** A pressure relief device located on the Actuator top case protects personnel from over-pressurization of the actuator assembly. It is located for easy field inspection and replacement.

**Confirmation of Bonnet Stem / Back Seat Seal Integrity:** The bonnet is designed with a test fitting below the bonnet packing seals. This test fitting provides for verification of the bonnet stem metal to metal backseat pressure sealing integrity.

**Flexible Adaption:** The APPM Actuator can be mounted on the secondary master or wellhead flow wing. The actuator can be mounted at any point where safety shut down or safety valves are required.

**Easy Closing:** The APPM Actuator can manually open the gate valve in case of pneumatic control pressure loss or mechanical failure without assistance of an outside pressure source.

**Visual Confirmation of Bonnet Packing:** A tattletale port located above the bonnet packing seals provides visual confirmation of the packing integrity.

**Multiple Safeguards Against Well Fluids Contamination:** The bonnet incorporates multiple safeguards against the invasion of well fluids into the actuator housing. These safeguards are:

- Multiple Polypak™ bonnet stem seals
- Packing integrity port
- Metal to metal back seat/stem seal
- Secondary seals

**Pneumatic Control Supply:** The APPM Actuator operates at a maximum of 250 psi.

**Fail Safe Operation:** The APPM Actuators will close a gate valve to the "Fail Safe" or "Fail Close" position automatically.

MODEL	SIZE	STROKES AVAILABLE
APPM 1300	13"	Up to 2 1/16" bore

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 52 de 55





## PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD

Código: EXP.03.RC.DR.05

Proceso (nivel 1): Gestión de Desarrollar

Fecha:  
04.2021

Versión: 01

### ANEXO F


Diametro nominal de la brida	Maxima presion de trabajo	Esparragos para brida esparragada diametro x largo	Esparragos pasantes diametro x largo	Ring gasket	Cant. de esparragos	Espesor de la brida	Diametro de la brida
1-13/16"	10.000	3/4" X 4-1/8"	3/4" X 5-1/4"	BX 151	8	1-5/8"	7-3/8"
1-13/16"	15.000	7/8" X 4-3/8"	7/8" X 5-3/4"	BX 151	8	1-3/4"	8-3/16"
1-13/16"	20.000	1" X 5-1/4"	1" X 7-3/4"	BX 151	8	2-1/2"	10-1/8"
2-1/16"	2.000	5/8" X 3-3/4"	5/8" X 4-3/4"	R 23	8	1-5/16"	6-1/2"
2-1/16"	5.000	7/8" X 4-1/2"	7/8" X 6-1/4"	R 24	8	1-13/16"	8-1/2"
2-1/16"	10.000	3/4" X 4-3/8"	3/4" X 5-1/2"	BX 152	8	1-3/4"	7-7/8"
2-1/16"	15.000	7/8" X 4-5/8"	7/8" X 6-1/4"	BX 152	8	2"	8-3/4"
2-1/16"	20.000	1-1/8" X 5-7/8"	1-1/8" X 8-1/2"	BX 152	8	2-13/16"	11-5/16"
2-9/16"	2.000	3/4" X 4"	3/4" X 5"	R 26	8	1-7/16"	7-1/2"
2-9/16"	5.000	1" X 4-3/4"	1" X 7"	R27	8	1-15/16"	9-5/8"
2-9/16"	10.000	7/8" X 4-3/4"	7/8" X 6-1/4"	BX 153	8	2-1/32"	9-1/8"
2-9/16"	15.000	1" X 5-1/8"	1" X 7"	BX 153	8	2-1/4"	10"
2-9/16"	20.000	1-1/4" X 6-3/8"	1-1/4" X 9-1/2"	BX 153	8	3-1/8"	12-13/16"
3-1/8"	2.000	3/4" X 4-1/8"	3/4" X 5-1/2"	R 31	8	1-9/16"	8-1/4"
3-1/8"	3.000	7/8" X 4-1/2"	7/8" X 6-1/4"	R 31	8	1-13/16"	9-1/2"
3-1/8"	5.000	1-1/8" X 5-3/8"	1-1/8" X 7-3/4"	R 35	8	2-3/16"	10-1/2"
3-1/16"	10.000	1" X 5-1/4"	1" X 7-1/4"	BX 154	8	2-5/16"	10-5/8"
3-1/16"	15.000	1-1/8" X 5-3/4"	1-1/8" X 8"	BX 154	8	2-9/16"	11-5/16"
3-1/16"	20.000	1-3/8" X 7"	1-3/8" X 10-1/4"	BX 154	8	3-3/8"	14-1/16"
4-1/16"	2.000	7/8" X 4-3/4"	7/8" X 6-1/4"	R 37	8	1-13/16"	10-3/4"
4-1/16"	3.000	1-1/8" X 5-1/4"	1-1/8" X 7-1/2"	R 37	8	2-1/16"	11-1/2"
4-1/16"	5.000	1-1/4" X 6"	1-1/4" X 8-1/2"	R 39	8	2-7/16"	12-1/4"
4-1/16"	10.000	1-1/8" X 6-1/4"	1-1/8" X 8-3/8"	BX 155	8	2-3/4"	12-7/16"
4-1/16"	15.000	1-3/8" X 6-3/4"	1-3/8" X 9-3/4"	BX 155	8	3-3/32"	14-3/16"
4-1/16"	20.000	1-3/4" X 8-1/2"	1-3/4" X 12-5/8"	BX 155	8	4-3/16"	17-9/16"
7-1/16"	2.000	1" X 6"	1" X 7-1/2"	R 45	12	2-3/16"	14"
7-1/16"	3.000	1-1/8" X 6-1/4"	1-1/8" X 8-1/2"	R 45	12	2-1/2"	15"
7-1/16"	5.000	1-3/8" X 7-1/2"	1-3/8" X 11-1/4"	R 46	12	3-5/8"	15-1/2"
7-1/16"	10.000	1-1/2" X 8"	1-1/2" X 11-3/4"	BX 156	12	4-1/16"	18-7/8"
7-1/16"	15.000	1-1/2" X 8-3/4"	1-1/2" X 13"	BX 156	16	4-11/16"	19-7/8"
9"	2.000	1-1/8" X 6-1/4"	1-1/8" X 8-1/2"	R 49	12	2-1/2"	16-1/2"
9"	3.000	1-3/8" X 7"	1-3/8" X 9-1/2"	R 49	12	2-13/16"	18-1/2"
9"	5.000	1-5/8" X 8-1/4"	1-5/8" X 12-1/2"	R 50	12	4-1/16"	19"
9"	10.000	1-1/2" X 9"	1-1/2" X 13-1/4"	BX 157	16	4-7/8"	21-3/4"
11"	2.000	1-1/4" X 6-3/4"	1-1/4" X 9-1/4"	R 53	16	2-13/16"	20"
11"	3.000	1-3/8" X 7"	1-3/8" X 10"	R 53	16	3-1/16"	21-1/2"
11"	5.000	1-7/8" X 9-1/4"	1-7/8" X 14-1/2"	R 54	12	4-11/16"	23"
11"	10.000	1-3/4" X 10"	1-3/4" X 15-3/8"	BX 155	16	5-9/16"	25-3/4"
13-5/8"	2.000	1-1/4" X 6-3/4"	1-1/4" X 9-1/2"	R 57	20	3"	22"
13-5/8"	3.000	1-3/8" X 7-1/2"	1-3/8" X 10-3/4"	R 57	20	3-7/16"	24"
13-5/8"	5.000	1-5/8" X 8-3/4"	1-5/8" X 12-1/4"	BX 160	16	4-7/16"	26-1/2"
13-5/8"	10.000	1-7/8" X 11"	1-7/8" X 17-3/4"	BX 159	20	6-5/8"	30-1/4"
16-3/4"	2.000	1-1/2" X 7-1/2"	1-1/2" X 10-3/4"	R 65	20	3-5/16"	27"
16-3/4"	3.000	1-5/8" X 8-3/4"	1-5/8" X 12-1/4"	R66	20	3-15/16"	27-3/4"
16-3/4"	5.000	1-7/8" X 9-1/2"	1-7/8" X 14-1/2"	BX 162	16	5-1/8"	30-3/8"
16-3/4"	10.000	1-7/8" X 11"	1-7/8" X 17-1/2"	BX 162	24	6-5/8"	34-5/16"

CLASIFICACIÓN: PÚBLICO


"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."


Formato: PCA.10.04.FO.02 (V05)

Página 53 de 55

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>	<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar	<b>Fecha:</b> 04.2021
		<b>Versión:</b> 01

ANEXO G: PLAN DE INSPECCIÓN Y PRUEBAS ITP PARA CABEZALES DE POZO

	<b>PLAN DE INSPECCION Y PRUEBAS PARA FABRICACION DE CABEZALES (ITP)</b>				<b>Código:</b>	F3INT/043-00								
					<b>Revisión:</b>	00								
					<b>Fecha de Emisión:</b>	20/08/2017								
		<b>ORDEN DE COMPRA / REQUISICIÓN No.:</b>		<b>CONTRATISTA:</b>										
		<b>EQUIPOS/ACCESORIOS/HERRAMIENTAS:</b>		<b>TAG/SERIE:</b>										
	<b>ITP No:</b>		<b>CÓDIGO DE REGISTRO:</b>											
	<b>ORDEN DE TRABAJO INTERNA:</b>		<b>LOCACIÓN:</b>			<b>CLIENTE:</b>								
<b>Item</b>	<b>DESCRIPCION DEL PROCESO Y ACTIVIDADES DE CONTROL DE CALIDAD</b>	<b>PROCEDIMIENTOS / ESPECIFICACIONES DE REFERENCIA</b>	<b>CRITERIO DE ACEPTACION**</b>	<b>VERIFICACION DE DOCUMENTOS</b>	<b>S-Surveillance W-Witness R-Review H-Hold</b>			<b>Liberado por:</b>						
<b>No.</b>					<b>MP</b>	<b>CYBP</b>	<b>PETROECUADOR</b>	<b>FIRMA MISSION</b>	<b>FECHA</b>	<b>CUYABENO PETRO</b>	<b>FECHA</b>	<b>FIRMA PETROECUADOR</b>	<b>FECHA</b>	
<b>1 PRECONSTRUCTIVOS</b>														
1.1	Revisión de Orden de compra/Requisición	S/E	CUYABENOPETRO	ORDEN DE COMPRA/REQUISICIÓN	H	R	R							
1.2	Revisión de certificados de material	P10-INT/008	API 6A / F10-INT/007	F3-INT/031	H	R	R							
1.3	Revisión de equipos y/o instrumentos de fabricación o inspección	P3-INT/002	ISO 9001/API 6A/API 5B	A3-INT/002-05	H	R	R							
<b>2 INSPECCIÓN A ELEMENTOS FABRICADOS</b>														
2.1	Identificación y marcado de Equipos	P3-INT/005; IN10-API6A/002	API 6A	F16-INT/002	H	R	R							
2.2	Pruebas Hidrostáticas	P10-INT/012	API 6A	F10-INT/011; F10INT/012	H	H	R							
2.3	Prueba de Drift	P10-INT/010	API 6A	F10-INT/011; F10INT/012	H	H	R							
<b>3 CONTROL DE ROSCAS</b>														
3.1	Inspección de Roscas API	P10-INT/010; A10-API6A/001 P10-INT/023	API 5B/5B1/5CT	F10-API5B/032	H	R	R							
<b>4 APLICACIÓN Y PRUEBA DE REVESTIMIENTO</b>														
4.1	*Medición de perfil de anclaje	P10-INT/013	PAM-EP-ECU-QAQC-20-ESP-004-00	F10-INT/019-02 / FCC-061REV 03	H	R	R							
4.2	Aplicación de pintura	P10-INT/013	P10-INT/013	F10-INT/019-02 / FCC-061REV 03	H	R	R							
4.3	Evaluación de espesores secos sistema completo	P10-INT/013	PAM-EP-ECU-QAQC-20-ESP-004-00	F10-INT/019-02 / FCC-061REV 03	H	R	R							
4.4	Evaluación de adherencia sistema completo método Pull Off	P10-INT/013	>750 PSI	F10-INT/019-02	H	H	R							
<b>5 EMBALAJE Y DESPACHO DE EQUIPOS</b>														
5.1	Embalaje del producto.	IN10-INT/005	PAM-EP-ECU-QAQC-20-ESP-004-00	F3-INT/010-00	H	R	R							
5.2	Inspección de producto terminado y liberación	P3-INT/006	API 6A	F3-INT/020	H	R	R							
5.3	Check List de inspección, medición y pruebas.	P3-INT/006	API 6A	F3-INT/005-04	H	R	R							
5.4	Revisión del Manual de Vendedor (Dossier)	PAM-EP-ECU-QAQC-20-ESP-004-00	PAM-EP-ECU-QAQC-20-ESP-004-00	DOSSIER DE CALIDAD	H	R	R							
*Verificación visual de la no presencia de grasas, residuales, óxidos, calamina, metal casi blanco tipo SSPC SP 03, rugosidad 1.5-3 mil. Uso de Press of film														
** En este caso se registrará la norma o si fuera el caso el procedimiento que rige la prueba														
<b>OBS. EL DETALLE DE LOS EQUIPOS LIBERADOS SE ENCUENTRA EN EL PACKING LIST CYBC-100, MP-COT-03950, COD F3-INT/010-02</b>														
<b>NOMBRE:</b>	<b>APROBADO POR MISSIONPETROLEUM S.A</b>		<b>LIBERADO POR</b>		<b>VERIFICADO POR</b>									
	Ing. Edison Razo		Ing. Roberto Parra											
<b>CARGO:</b>	<b>QA/QC DE MISSIONPETROLEUM S.A</b>		<b>QA/QC CUYABENO PETRO</b>		<b>QA/QC PETROECUADOR</b>									
<b>FIRMA:</b>														
<b>FECHA:</b>	00/01/1900		00/01/1900											

	<b>PROCEDIMIENTO: ESPECIFICACIÓN TÉCNICA PARA CABEZALES DE POZO Y ARBOLES DE NAVIDAD</b>		<b>Código:</b> EXP.03.RC.DR.05
	<b>Proceso (nivel 1):</b> Gestión de Desarrollar		<b>Fecha:</b> 04.2021
			<b>Versión:</b> 01

## 10 ACTA DE APROBACIÓN

RESPONSABLE(S)	FIRMA(S)
<b>APROBADOR(ES) Y AUTORIZADOR(ES)</b> <i>Responsable del Macroproceso, Proceso o Subproceso</i>  El(Los) suscrito(s) aprueba(n) este documento para su formalización y publicación en la Normativa Interna de Gestión.	<b>Nombre:</b> Nelson Ramirez <b>Cargo:</b> Gerente de Desarrollo y Optimización  <b>Nombre:</b> Jenny Pacheco <b>Cargo:</b> Jefe de Riesgos y Calidad
<b>ELABORADOR(ES) ÁREA(S) USUARIA(S)</b> <i>Delegado(s) del Responsable del Macroproceso, Proceso o Subproceso</i>  El(Los) suscrito(s) aprueba(n) este documento para su formalización y publicación en la Normativa Interna de Gestión.	<b>Nombre:</b> Oscar Calvache <b>Cargo:</b> Ingeniero de Control de Calidad  <b>Nombre:</b> Santiago Salcedo <b>Cargo:</b> Ingeniero de Control de Calidad  <b>Nombre:</b> Diego Cabezas <b>Cargo:</b> Coordinador de Control de Calidad
<b>REVISIÓN LEGAL</b> <i>Área Legal</i>  El(Los) suscrito(s) deja(n) constancia del asesoramiento a los responsables de los macroprocesos y procesos en la legislación aplicable vigente.	<b>Nombre:</b> XXXXXXXX <b>Cargo:</b> XXXXXXXX  <b>Nombre:</b> XXXXXXXX <b>Cargo:</b> XXXXXXXX

CLASIFICACIÓN: PÚBLICO

"Este documento es de propiedad exclusiva de EP PETROECUADOR. Se prohíbe su uso no autorizado."

Formato: PCA.10.04.FO.02 (V05)

Página 55 de 55