

20k Subsea Drilling System

20k System

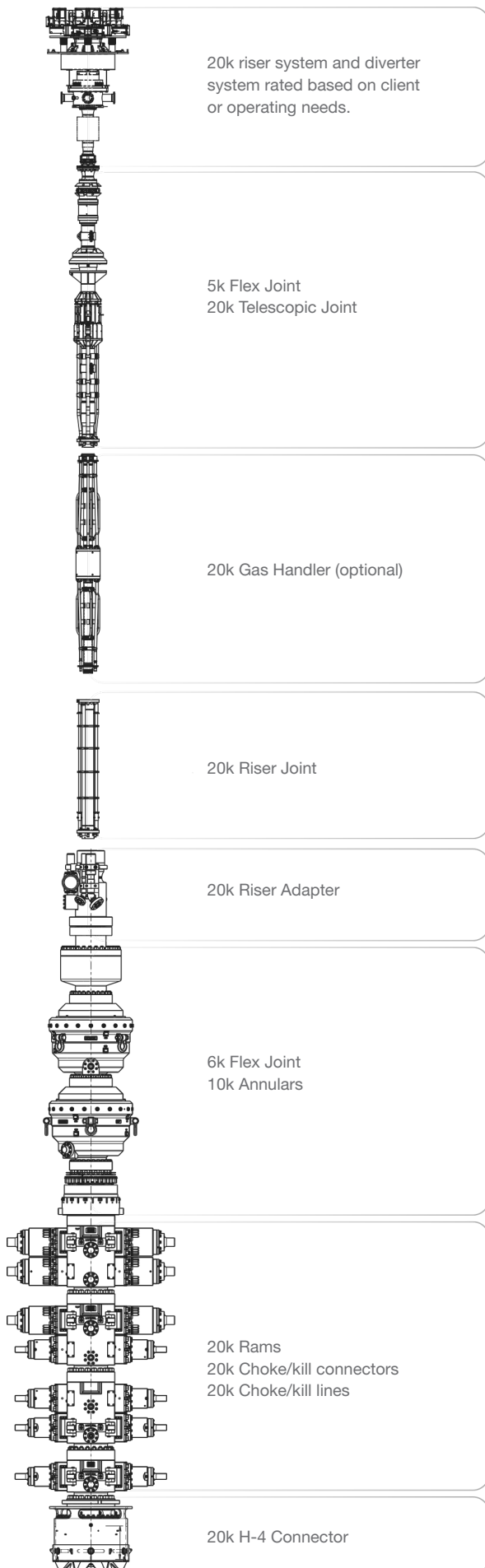
HMH's 20k subsea drilling system is currently available and consists of all the major components from moon pool to wellhead that are needed to drill a 20k rated well. The 20,000 psi pressure containing components have been built and qualified, with some already built and delivered. The other 20k system components leverage our proven equipment with newly designed interface and connection points.

Product Options

- 3rd Party certification
- API monogrammed BOPs and connectors
- BOP cavities: 5-8 (including SSTV capability)
- ABOP: dual or single
- Riser: QTR, MR-6C to 6E, MR-6H SE, MR-6J SE, or HMF D to H

Key Features

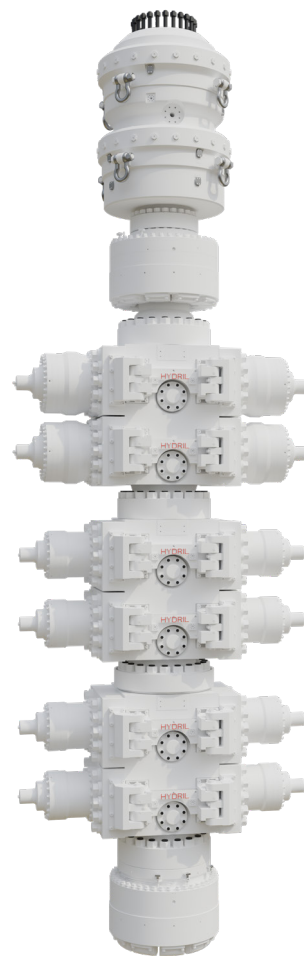
- Increased reliability, availability, and maintenance accessibility
- Capability to shear and seal up to 14.15 in casing
- Weight: 990 to 1,184 kips (dry)
- Compact stack: footprint of 235 in x 178 in (same as 15k) and a height of 49 ft to 63 ft
- Qualified to API 16A PR2, API 6A, API 16C, API 16F, API 17D, NACE MR0175, API 17TR8, 1PER 15K-1, API 16A Annex H (Draft), ASME Sec. VIII Div 2
- Water depth rating: 10,000 ft



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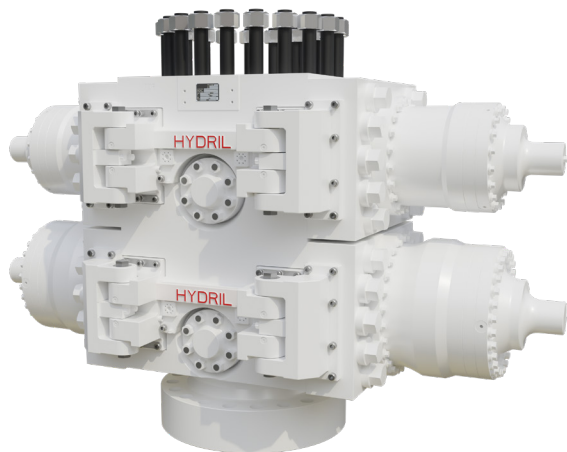
Major Components

Product	Description
10k Annular BOP	Our industry leading GXP ABOP, Annuflex or single style
OEC flange	20k rated flange that utilizes our proven VGX-2 gasket
20k H-4 connector	20k rated, 30" SHD 18-20 H-4 connector
20k Ram BOP	20k rated RBOP system that is API 16A, 4th edition PR2 monogramable
Flex loop	20k rated C&K flex loop assembled to annuflex
20k C&K valves	20k rated valves that are API 6A & 17D qualified
20k C&K connectors	Our floating design rated for 20k
LMRP mandrel	20k rated mandrel with 30" high angle release H-4 profile
LMRP connector	Our 30" SHD H-4 modified for high angle release
Subsea controls	SeaPrime - MUX control system or discrete hydraulic control system
Surface controls	SeaONYX - Real-time monitoring and data analytics
Riser joints	20k C&K lines onto retrofitted connections (QTR, MR-6C to 6E, MR-6H SE, MR-6J SE, or HMF D to H)
Spider	Hands free systems available
Tensioner	Full tensioning system from actuators to KT ring interface
Telescopic joint	Our proven technology retrofitted with 20k C&K lines
Gas handler	OD drifts through 59 1/4" and larger rotary tables



Hydril® 20k RBOP

Blowout Preventer



Product Description

HMH presents our 18¾" 20,000 psi Hydril® Ram BOP. The design builds on the successful track record of our 18¾" 15,000 psi compact Ram BOP. This next-generation BOP is the industry's first API 16A PR2 qualified, 20k capable RBOP. This is a cornerstone in our 20k subsea drilling system that enables drilling leaders to access offshore reservoirs previously beyond the industry's capabilities. Throughout the design, HMH has partnered with several major operators and drilling contractors, ensuring that the most critical and valuable features are incorporated.

Product Options¹

- **Ram block offerings:**
 - Casing shear ram
 - Wireline blind shear ram
 - Hydril® variable ram (4½"-7")
 - Fixed pipe ram (5" to 9⅝")
- Third-party certification
- Single or double cavity bodies
- SSTV cavity available
- Studded or flanged top connection
- Flanged bottom connection
- 22" or 28½" operators
- Alloy 625 inlay on all wellbore sealing surfaces
- API monogram available

¹ Additional custom options available upon request.

Key Features

- **Easy field maintenance:** fluid hinged doors
- **Locking system:** multi-position lock (MPL) requires no hydraulic or special adjustments
- **Field maintainability:** replaceable top seal seats and bottom wear plates
- **Increased reliability:** fatigue tested to beyond API 16A requirements
- Compliant with NACE MR0175 for H₂S service
- Designed and validation tested in accordance with API 16A annex H (draft)
- API 16A, 4th edition PR2 compliant

Technical Specifications

RBOP 18-20			
Bore (inches)		18¾	
Working pressure (psi)		20,000	
Max hydraulic operating pressure (psi)	22" Operator	3,000	
	28½" Operator	5,000	
Gal. to close (U.S. gallons)	22" Operator	40.8	
	28½" Operator	68.4	
Gal. to open (U.S. gallons)	22" Operator	38.0	
	28½" Operator	64.8	
Closing ratio	22" Operator	14.7 : 1	
	28½" Operator	18.5 : 1	
Stud face to flange face height (inches)	Single	78	
	Double	119	
Length (inches)	22" Operator	177.75	
	28½" Operator	181.75	
Stud face to flange face weight (pounds)	Single	22" Operator	67,400
		28½" Operator	73,900
	Double	22" Operator	125,200
		28½" Operator	138,200
Closing force (million pounds)	22" Operator	1.14	
	28½" Operator	2.55	
Metallic temperature rating (°F)		0 to 350	
API 16A, 4 th edition rating		PR2	



Vetco Gray® 18¾" 20k SHD H-4 Wellhead Connector

Product Description

HMH presents our 20,000 psi capable, Super Heavy Duty (SHD) H-4® wellhead connector. This design builds on the successful track record of our 18¾" 15,000 psi SHD and expands our H-4 connector family, which has lead the market since 1964. This wellhead connector is a cornerstone of our 20K subsea drilling system, delivering the highest capacity rating in the industry for unmatched performance and reliability.

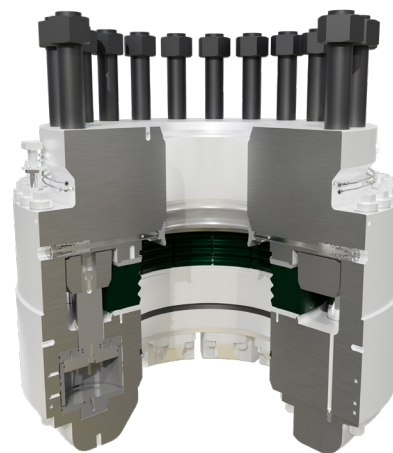
Product Options¹

- Third-party certification
- Studded or flanged top connection
- Gasket nudge pins

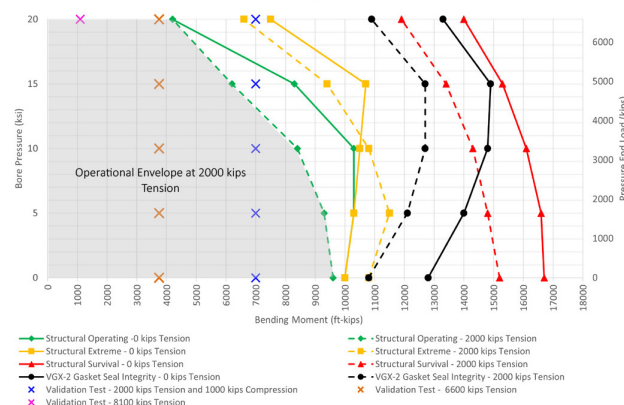
¹ Additional custom options available upon request.

Key Features

- **Proven technology:** Utilizes the 30" SHD 18-15's proven, 3ksi hydraulically actuated locking mechanism and circuit
- **Increased reliability:** > 99% proven through testing beyond API 16A requirements
- **Increased availability:** > 99% proven through testing beyond API STD 53 requirements
- **Water depth:** 10,000 ft rated
- **Temperature rating:** BGD elastomer rating, T-0/350 metallic rating (per API 16A, 4th edition)
- API 16A operational/extreme/survival
- Utilizes our proven VGX-2 gasket, qualified to API 6A and API 16A Annex H (draft)
- Compliant with NACE MR0175 for H2S service
- API 17 ASME section VIII Div 2 with fracture mechanics
- API 16A, 4th edition PR2 compliant



Capacity Chart at 350°F per ASME Sec. VIII Div. 2 & API 16A Annex H (Draft)
18.75"-20ksi Wellhead Connector and Mating 30" SHD H-4 Profile
HMH 18.75"-20ksi OEC Flange capacity exceeds this chart



18-3/4" 20ksi SHD H-4 load capacity envelope

Elastic-plastic load capacity per ASME BPVC Section VIII Division 2

Note: Capacity values at the wellhead for 3,000 psi connector locking pressure

Technical Specifications

SHD 18-20	
Bore (inches)	18¾
Working pressure (psi)	20,000
Hydraulic circuits	10
Lock fluid volume (gallons)	12.10
Unlock fluid volume (gallons)	15.10
Outside diameter (inches)	66
Weight (pounds)	32,400
Swallow (inches)	32.25
Max hydraulic operator pressure (psi)	3,000
API 16A, 4 th edition rating	PR2

