Hydril Sentry 13-5M / 13-10M RAM Blowout Preventer

Compact, powerful and reliable

High performance and efficiency for the most demanding wells

Product description

Hydril Sentry™ BOP combines the ease of maintenance, operational flexibility, and low cost required to be competitive in today's land market. Shorter and lighter than other 13 in. drilling ram blowout preventers (RBOPs), the Sentry design retains the strength and reliability for which Hydril Pressure Control RBOPs have been known for the past 40+ years. Assemblies can be customized to meet user's needs with:

- Single or double body
- Single or tandem operators
- Blind shear ram blocks
- Fixed pipe ram blocks
- Variable ram blocks
- 5,000 psi and 10,000 psi versions

Benefits

The Hydril Sentry blowout preventer is a hydraulically operated unit designed to be light, small, cost-effective, and easy to maintain to help any land or jackup rig system operate more efficiently and competitively. Highlights include:

- Extreme cold/hot temperature tested to:
  - Blind shear 30/350°F
  - Fixed bore 30/300°F
  - Variable 40/250°F
- API 16A, 4th Edition PR2 compliant
- Hydrostatic testing to 15,000 psi
- Highest shear force of similar sized products in the market at 813,000 lbs
- Lower Total Cost of Ownership vs. similar BOPs

Key features

- The Hydril Sentry design encompasses features critical to the land and jackup market. Unlike conventional RBOPs, the ram blocks are removed via dedicated ram access doors. In addition, a tandem operator is used for maximizing the closing force with minimal size requirements
- Ram blocks can be removed, inspected, re-dressed, and re-installed without breaking the bonnet door seal
- Ram blocks are 1 in. shorter and 30% lighter than previous designs. The fixed and variable seals remain unchanged from their proven designs; minimizing potential discrepancies in spares inventory management
- Ram access bolting torque requirements are 1,750 ft-lb, less than half of the 4,000 ft-lb required to torque the conventional bonnet bolts
- Faster lead times supported by a product-specific, streamlined supply chain process
- Conventional 19 in. operator has been replaced by a 13.5 in. diameter tandem operator. The tandem operator is 25% shorter and 50% lighter while still providing the same shear capabilities at all pressure ratings
- Control tubing is ported directly to the operators, reducing the number of pressure connections required for operation
- The Hydril Sentry weighs 35% less, is 5% shorter, has 25% fewer part numbers, and 36% fewer components than the previous 13 in. 10-ksi RBOP design



Sentry Specifications



Item/Parameter			Measurement
Bore (inches)			13 5/8
Working pressure (psi)			5,000/10,000
Hydraulic operating pressure (psi)			1,500 - 3,000 (max)
Gal. to close (U.S. gal.)	Standard operator	13 1/2 in.	6.0
	Tandem operator	13 1/2 in.	12.8
Gal. to open (U.S. gal.)	Standard operator	13 1/2 in.	4.8
	Tandem operator	13 1/2 in.	5.5
Closing ratio	Standard operator	13 1/2 in.	9.5:1
	Tandem operator	13 1/2 in.	19.1:1
Stud face to flange face height (inches)	Single		32.4
	Double		52.7
Stud face to flange face weight for 10M unit, 5M unit slightly less (pounds)	Single	Standard	11,600
		Tandem	13,280
	Double	Standard/Standard	20,710
		Standard/Tandem	23,320
Length (inches)	Single operator	13 1/2 in.	117.7
	Tandem operator	13 1/2 in.	156.3
Closing force (pounds)	Single operator	13 1/2 in.	429,415
	Tandem operator	13 1/2 in.	813,000
API 16A compliance status			4th Ed., PR2
API 16A T350 Metallic Rating			0/350F

Elastomer Qualification

Ram Component			Elastomer (Compound)	NACE TM 0187	API 6A
Top Seals	Fixed bore	All sizes	HNBR (216)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
	HVR	2-7/8” to 5”	HNBR (216)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
		3-1/2” to 5-1/2”			
		5” to 7”			
	BSR		HNBR (148)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
Packer/ Lateral Seals	Fixed Bore	All Sizes	HNBR (216)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
	HVR	2-7/8” to 5”	HNBR (213)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
			HNBR (1000 Series)	20% H_2S at 300F, 160 hours	10% H_2S at 200F, 160 hours
		3-1/2” to 5-1/2”	NBR (1)	N/A	5% H_2S at 200F, 160 hours
			HNBR (1000 Series)	20% H_2S at 300F, 160 hours	10% H_2S at 200F, 160 hours
		5” to 7”	HNBR (213)	20% H_2S at 300F, 160 hours	20% H_2S at 300F, 160 hours
			HNBR (1000 Series)	20% H_2S at 300F, 160 hours	10% H_2S at 200F, 160 hours
	BSR		HNBR (148/216)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
Body Seals	Piston Rod		HNBR (213)	20% H_2S at 300F, 160 hours	35% H_2S at 350F, 160 hours
	Door				
	Bonnet		FKM (VG109)	20% H_2S at 347F, 160 hours	NA
					CO_2 = 5% for all

Ram Block	Size	Packer Elastomer (Compound)	API Temp Code (Extreme hot hold time)	API	API Temp (F)	MOPFLPS (psi)	Hangoff (Kips)
Fixed bore	All sizes	HNBR (216)	EDF (8 hours)	PR2	30/240/300	189	600
HVR	2-7/8” to 5”	HNBR (213)	EGD (2 hrs on 5” mandrel)	PR1	30/TBD/250	250	600
		HNBR (1000 Series)	FBD (8 hrs on 5” mandrel)	PR2	40/180/250	250	600
	3-1/2” to 5-1/2”	NBR (1)	TBD	3rd Edition			
		HNBR (1000 Series)	In progress				
	5” to 7”	HNBR (213)	EGB (8 hrs on 5” mandrel)	PR1	30/TBD/200	568	TBD
		HNBR (1000 Series)	FBD (9 hrs on 7” mandrel)	PR2	40/180/250	569	TBD
BSR	N/A	HNBR (148/216)	EDF (8 hrs @300F)	PR2	30/240/350	242	N/A

Quality control

HMH maintains state of art, in-house quality control and qualification laboratories to meet or exceed API Q1 manufacturing standards.

ISO certified, third party providers for NACE testing are utilized for extended duration H_2S and other environmental testing procedures.



Shear Testing and Total Cost of Ownership





Shear Sample	OD (in)	Wall (in)	Wt (lbs)	Sy (psi)	Sult (psi)	Elong (%)	Actual Shear (avg psi)
5.5” S-135 24.7lb/ft Pipe	5.5	0.415	24.7	157,000	167,000	21.5	1903 (3 shears)
3.5” 15.5-18.58 ppf X52 Pipe 1	3.5	0.619	15.5-18.58	79,200	101,600	27.8	2492 (1shear) Pipes 1&2 sheared side-by-side
3.5” 15.5-18.58 ppf X52 Pipe 2	3.5	0.592	15.5-18.58	89,600	103,200	29.9	
Wireline and slickline	0.5	N/A					

Total Cost of Ownership

The Hydril Sentry 13-10 Cost of Ownership is reduced compared to similar 13-10 RAM BOP models with a double cavity and tandem operators by approximately 30%

- Lower costs are accomplished by reducing number of serviceable parts
- The ram access door design eliminates requirement to remove bonnet for ram block servicing
- HMH offers a rotable program for key spare parts such as bodies and bonnets to ensure uptime and lower
- Ram block packers and seals are replaced annually or according to usage. BOP service parts and schedule are included below

Maintenance Items	Year 1	Year 2	Year 3	Year 4	Year 5
Connecting Rod Seal Kit		✓		✓	
Tandem Operator Piston/Rod seal kit		✓		✓	
Single Operator Piston/Rod Seal Kit		✓		✓	
Tail Rod Seal Kit		✓		✓	
Packing Assembly		✓		✓	
Door Seals		✓		✓	
Sentry Shear Blade Bolts			✓		
Sentry Shear Blades				✓	
Overhaul & Repair					✓

Contact your sales representative for more information about the Hydril Sentry Ram BOP and how it can increase your uptime and lower your costs.

©HMH 2026 | Sentry 13-10-102026