

TL

Offshore ram-type BOP

APPLICATIONS

Offshore drilling operations

BENEFITS

- Increased shearing and sealing capability
- Lighter-weight design for reduced footprint
- Simplified maintenance to reduce downtime
- Improved safety and performance from interlock with operating system

FEATURES

- Pressure-energized rams
- Tandem booster bonnets
- BroadShear* off-center tool joint shear ram booster bonnets available
- Side ram removal and hydraulically opening bonnets for simplified changeout
- Bonnet seal carriers for reduced makeup torque on bonnet studs and nuts
- Access caps on ram-change pistons for easier access from end of bonnet
- Bonnet studs rather than bolts

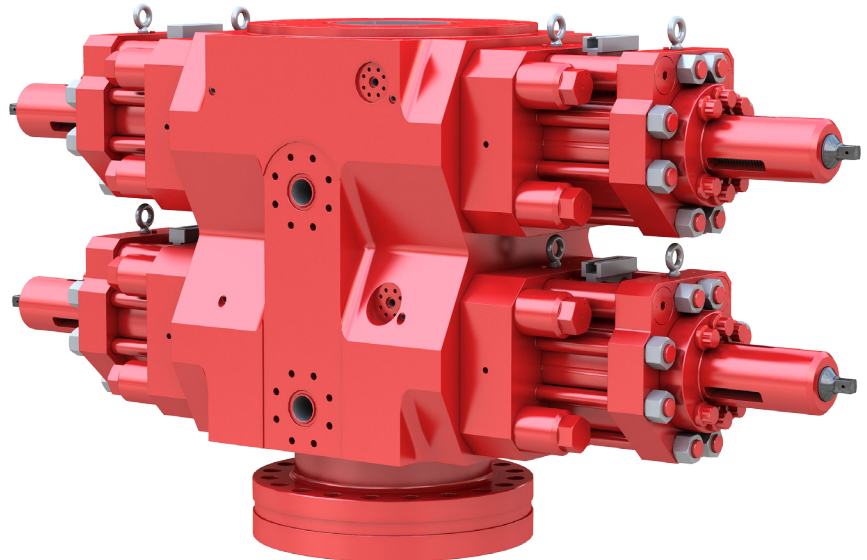
The TL* offshore ram-type BOP extends our proven high-quality, reliable BOP design expertise to a lighter-weight design. Available in single, double, and triple configurations, bore sizes from 13 $\frac{3}{8}$ to 18 $\frac{3}{4}$ in, and working pressures from 10,000 to 20,000 psi, the TL BOP is a solution for increased shearing and sealing requirements.

Improved safety and performance

Ram locks, standard T (ST) locks, and wedge locks can be interlocked with the TL BOP operating system using sequence caps to ensure the lock is retracted before pressure is applied to open the BOP.

Reduced downtime

The TL BOP helps decrease downtime through the use of side ram removal and hydraulically opening bonnets. Seal replacement does not require bonnet removal, and bonnet seal carriers eliminate the need for high makeup torque on bonnet studs and nuts. Access caps on the ram-change piston also enable easier access from the end of the bonnet.



The TL offshore ram-type BOP offers the same quality, reliability, and performance as the U surface ram-type BOP and U11* subsea ram-type BOP in a lighter design.*

TL BOP Specifications

	Height, in [cm]	Width (Including Bonnets), in [cm]	Weight, lbm [kg]	Length (Bonnets Closed), in [cm]	Length (Bonnets Open), in [cm]
13½ in, 10,000 psi (double BOP, flange × studded)	56.00 [142]	30.75 [78]	23,650 [10,700]	43.02 [109]	172.52 [438]
18¾ in, 5,000 psi (single BOP, flange × studded)					
Manual lock screws	33.50 [85]	47.50 [121]	17,500 [7,900]	148.00 [376]	207.00 [526]
Wedge locks	33.50 [85]	67.81 [172]	18,700 [8,500]	147.10 [374]	180.03 [457]
Ram locks	33.50 [85]	38.25 [97]	20,050 [9,100]	150.86 [383]	187.75 [477]
Tandem boosters [†]	33.50 [85]	38.25 [97]	20,500 [9,300]	182.36 [463]	219.25 [557]
18¾ in, 5,000 psi (double BOP, flange × studded)					
Manual lock screws	58.00 [147]	47.50 [121]	33,600 [15,200]	148.00 [376]	207.00 [526]
Wedge locks	58.00 [147]	67.81 [172]	36,000 [16,300]	147.10 [374]	180.03 [457]
Ram locks	58.00 [147]	38.25 [97]	38,300 [17,300]	150.86 [383]	187.75 [477]
Tandem boosters [†]	58.00 [147]	38.25 [97]	39,300 [17,800]	182.36 [463]	219.25 [557]
18¾ in, 10,000 psi (single BOP)					
Manual lock screws					
Flange × studded	41.34 [105]	42.00 [107]	22,700 [10,300]	157.13 [399]	217.50 [552]
Studded × studded	27.00 [69] [†]	42.00 [107]	22,700 [10,300]	157.13 [399]	217.50 [552]
ST locks					
Flange × studded	41.34 [105]	61.80 [157]	26,450 [12,000]	167.25 [425]	202.95 [515]
Studded × studded	27.00 [69] [†]	61.80 [157]	26,450 [12,000]	167.25 [425]	202.95 [515]
Ram locks					
Flange × studded	41.34 [105]	42.00 [107]	25,750 [11,700]	150.86 [218]	187.51 [576]
Studded × studded	27.00 [69] [†]	42.00 [107]	25,750 [11,700]	150.86 [218]	187.51 [576]
18¾ in, 10,000 psi (double BOP, flange × studded)					
Manual lock screws	65.98 [168]	42.00 [107]	42,400 [19,200]	157.13 [399]	217.50 [552]
ST locks	65.98 [168]	61.80 [157]	60,500 [27,400]	167.25 [425]	202.95 [515]
Ram locks	65.98 [168]	42.00 [107]	49,750 [22,600]	150.86 [383]	187.51 [476]
18¾ in, 15,000 psi (single BOP, flanged × studded)					
ST locks	49.03 [125]	61.80 [157]	39,150 [17,800]	173.86 [442] [§]	215.59 [548] ^{††}
Ram locks	49.03 [125]	51.60 [131]	35,950 [16,300]	155.91 [396] [§]	197.64 [502] ^{††}
Tandem boosters	49.03 [125]	58.60 [149]	44,650 [20,250] ^{††}	222.53 [565] [§]	264.27 [671] ^{††}
18¾ in 15,000 psi (double BOP, flanged × studded)					
Manual lock screws	83.22 [211]	58.60 [149]	55,440 [25,150] ^{†††}	163.26 [415] ^{†††}	228.50 [580] ^{§§§}
ST locks	83.22 [211]	61.80 [157]	74,800 [34,000]	173.86 [442] ^{†††}	215.59 [548] ^{§§§}
Ram locks	83.22 [211]	58.60 [149]	68,400 [31,000]	155.91 [386] ^{†††}	197.64 [502] ^{§§§}
SuperShear rams	83.22 [211]	58.60 [149]	70,025 [31,800] ^{§§} ; 66,825 [30,300] ^{†††}	151.89 [386] ^{†††}	–
BroadShear rams	83.22 [211]	58.60 [149]	70,025 [31,800]; 66,825 [30,300]	151.89 [386]	–
18¾ in 15,000 psi (triple BOP, flanged × studded)					
ST locks	117.20 [298]	61.80 [157]	121,900 [55,300]	173.86 [442]	215.59 [548]
SuperShear rams	117.20 [298]	58.60 [149]	107,900 [48,950] ^{††††}	155.91 [386]	197.64 [502]
Tandem boosters	117.20 [298]	58.60 [149]	107,900 [48,950] ^{††††}	222.53 [565]	264.27 [671]

[†] With ram locks and tandem boosters

[‡] With ST locks

[§] Manual lock screws: 163.26

^{††} Manual lock screws: 228.50

^{†††} Flange × flange

^{§§} With ST locks and SuperShear rams

^{††††} With ram locks and SuperShear rams

^{†††††} Tandem boosters: 222.53

^{§§§} Tandem boosters: 264.27

^{††††††} With SuperShear rams and two tandem boosters

Operational Data

	Volume to Close Ram, galUS [L]	Volume to Open Ram, galUS [L]	Volume to Close Bonnet, galUS [L]	Volume to Open Bonnet, galUS [L]	Closing Ratio	Opening Ratio	Close Area, in² [cm²]	Open Area, in² [cm²]
13⁵/₈ in, 10,000 psi	5.8 [22]	5.5 [21]	7.5 [28]	6.8 [26]	0.29:1	2.3:1	156.3 [1,008]	148.7 [959]
18³/₄ in, 5,000 psi[†]								
Manual lock screws	21.3 [81]	19.3 [73]	20.7 [78]	23.9 [90]	10.3:1	2.3:1	202 [1,303]	194.2 [1,253]
Wedge locks	21.3 [81]	19.3 [73]	20.7 [78]	23.9 [90]	10.3:1	2.3:1	202 [1,303]	194.2 [1,253]
Ram locks	21.3 [81]	19.3 [73]	20.7 [78]	23.9 [90]	10.89:1	3.13:1	213 [1,374]	194.2 [1,253]
Tandem boosters [‡]	29.2 [111]	27.0 [102]	28.1 [106]	31.6 [120]	14.59:1	11.2:1	286.4 [1,848]	273.8 [1,766]
18³/₄ in, 10,000 psi[§]								
Manual lock screws	21.3 [81]	19.3 [73]	20.6 [78]	24.6 [93]	10.3:1	2.3:1	202 [1,303]	194.2 [1,253]
Wedge locks	24.6 [93]	23.4 [89]	24.7 [93]	27.9 [106]	6.7:1	3.1:1	202 [1,303]	194.2 [1,253]
Ram locks	21.3 [81]	19.3 [73]	20.6 [78]	24.6 [93]	10.89:1	3.13:1	213 [1,374]	194.2 [1,253]
Tandem boosters [‡]	29.2 [110]	27.0 [102]	28.1 [106]	31.6 [120]	15.158:1	11.2:1	297.6 [1,920]	273.1 [1,762]
18³/₄ in, 15,000 psi[§]								
Manual lock screws	24.6 [93]	23.4 [89]	25.4 [96]	28.1 [106]	6.7:1	3.1:1	238.1 [1,536]	219.3 [1,415]
Wedge locks	24.6 [93]	23.4 [89]	25.4 [96]	28.1 [106]	6.7:1	3.1:1	238.1 [1,536]	219.3 [1,415]
ST locks	24.6 [93]	23.4 [89]	25.4 [96]	28.1 [106]	6.7:1	3.1:1	238.1 [1,536]	219.3 [1,415]
Ram locks	25.9 [98]	22.3 [84]	24.3 [92]	29.4 [111]	7.13:1	3.10:1	254.9 [1,645]	219.3 [1,415]
SuperShear rams	71.3 [270]	67.1 [254]	–	–	17.3:1	8.9:1	615.5 [3,971]	579.8 [3,741]
BroadShear rams	74.0 [280]	69.6 [263]	74 [280]	69.6 [263]	17.3:1	8.9:1	615.75 [3,973]	35.7 [230]
Tandem boosters [‡]	45.4 [172]	44.1 [167]	46.1 [175]	48.9 [185]	14.3:1	6.9:1	476.3 [3,073]	457.5 [2,952]

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