

TSR+ AUTO RETURN TENSIONERS

FASTEST AUTO RETURN TENSIONER ON THE MARKET



Latest technology
and innovation



Fully interchangeable
with TSR



Significant time
and labour savings



Improved
durability

BOLTIGHT™

TSR+ FEATURES

FASTEST AUTO RETURN TENSIONER ON THE MARKET

The all new TSR+ auto return tensioner range has been designed to ensure fast, simple, safe and reliable operation. With a focus on productivity and a reduction in downtime we have implemented state of the art materials and technology resulting in significant time saving during operation.



Interchangeable

TSR+ load cells have exactly the same overall dimensions and hydraulic specification as the existing TSR load cells. This ensures interchangeability and ease of customer upgrades to the new range.

Durable

Operational performance does not degrade during the life of the tool. Extensive in-house tests at full stroke and full pressure have shown that it far out performs current TSR load cells.

Increased Safety

TSR+ Load cells have a relief valve to prevent accidental overstroke of the tool. This safety mechanism prevents seal blow outs and the users exposure to ejected oil.

Premium Surface Treatment

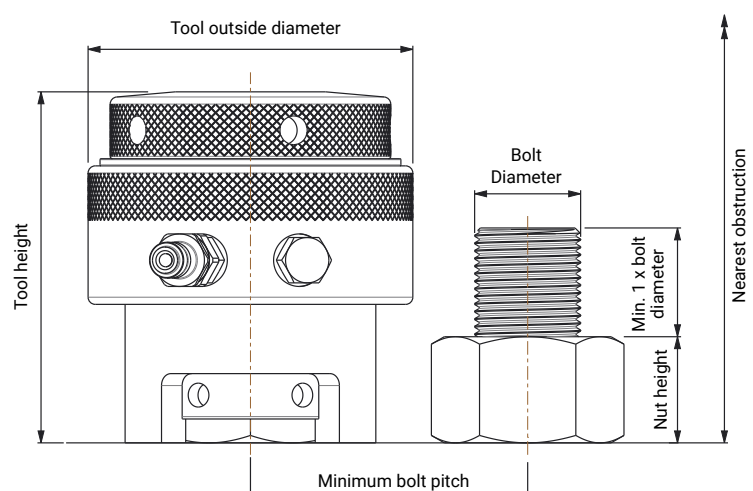
All load cells have Boltight's unique surface finish which provides a long lasting finish against harsh environments.

Improved seal technology

Latest design eases seal changeouts and enhances general performance throughout high cycle usage.

Options

- Twin port hydraulic connections
- Oversized threads
- Gear drive nut rotation
- Swivel connectors
- Special designs



TECHNICAL & DIMENSIONAL SPECIFICATION

Tensioner Design

Single acting cylinder, auto return

Maximum Operating Pressure

1500bar (21750psi)

Stroke

10mm (0.375") except TSR+ 0 – 8mm (0.315")

Hydraulic Oil Type

ISO 32 or equivalent

Tool No.	Bolt diameter		Hydraulic area	Max. load		Tool outside diameter		Tool height		Distance to nearest obstruction		Total tool weight		Load cell weight	
	mm	inch		kN	Lbf	mm	inch	mm	inch	mm	inch	kg	lbs	kg	lbs
TSR+ 0*	M20	3/4	1,070	160	35,970	66	2.60	93	3.66	142	5.59	1.4	3.1	1	2.2
	M22	7/8						93	3.66	144	5.67				
TSR+ 1	M24	1	1,870	280	62,950	87	3.43	117	4.61	175	6.89	4.0	8.8	2.4	5.3
	M27	1 1/8						117	4.61	178	7.01				
	—	—						120	4.72	178	7.01				
TSR+ 2	M24	1	3,000	450	101,160	103	4.06	117	4.61	175	6.89	5.8	12.8	3.3	7.3
	M27	1 1/8						117	4.61	178	7.01				
	M30	1 1/4						120	4.72	184	7.24				
	M33	1 3/8						123	4.84	190	7.48				
	M36	—						126	4.96	196	7.72				
TSR+ 3	M33	1 1/4	4,400	660	148,370	118	4.65	123	4.84	192	7.56	7.7	17	4.2	9.3
	M36	1 3/8						126	4.96	198	7.80				
	M39	1 1/2						130	5.12	204	8.03				
	M42	1 5/8						133	5.24	211	8.31				
TSR+ 4	M39	1 1/2	6,670	1,000	224,810	141	5.55	132	5.20	212	8.35	12.0	26.5	6.1	13.4
	M42	1 5/8						135	5.31	218	8.58				
	M45	1 3/4						139	5.47	225	8.86				
	M48	1 7/8						142	5.59	231	9.09				
	—	2						145	5.71	231	9.09				
TSR+ 5	M52	2	10,000	1,500	337,210	176	6.93	148	5.83	248	9.76	19.4	42.8	9.5	21.0
	M56	2 1/4						154	6.06	258	10.16				
	M60	2 1/2						161	6.34	262	10.31				
	M64	2 3/4						161	6.34	273	10.75				
	M68	—						167	6.57	283	11.14				
TSR+ 6	M72	2 3/4	16,670	2,500	562,020	219	8.62	167	6.57	297	11.69	34.5	76.0	14.7	32.4
	M76	3						171	6.73	308	12.13				
	M80	3 1/4						180	7.09	312	12.28				
	M85	3 1/2						180	7.09	323	12.72				
	M90	—						186	7.32	334	13.15				
TSR+ 7	M90	3 1/2	21,340	3,200	719,390	252	9.92	186	7.32	341	13.43	47.0	103.6	19.4	42.8
	M95	3 3/4						186	7.32	346	13.62				
	M100	4						192	7.56	356	14.02				
	—	—						199	7.83	356	14.02				

*TSR+ 0 is not an auto return tensioner.

NEW TSR+ 4 vs. CURRENT TSR 4

Four TSR+ tools were used to demonstrate a typical application. Using a standard air driven pump the tools were activated to full stroke then depressurised and allowed to return.

THE NEW TSR+ 4 IS 4X FASTER THAN THE EXISTING TSR4 TOOL!



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NORD-LOCK
GROUP

XTRA LOAD RANGE HYDRAULIC BOLT TENSIONING TOOLS

Boltight's Xtra load range has been developed to offer 30% more load than the T-Series.



XTRA LOAD RANGE

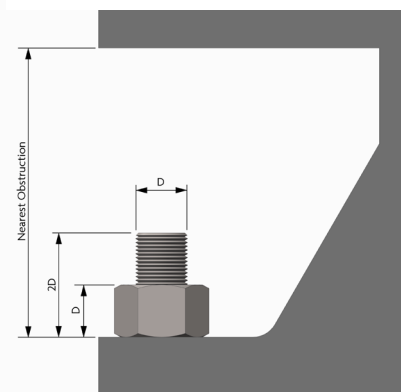
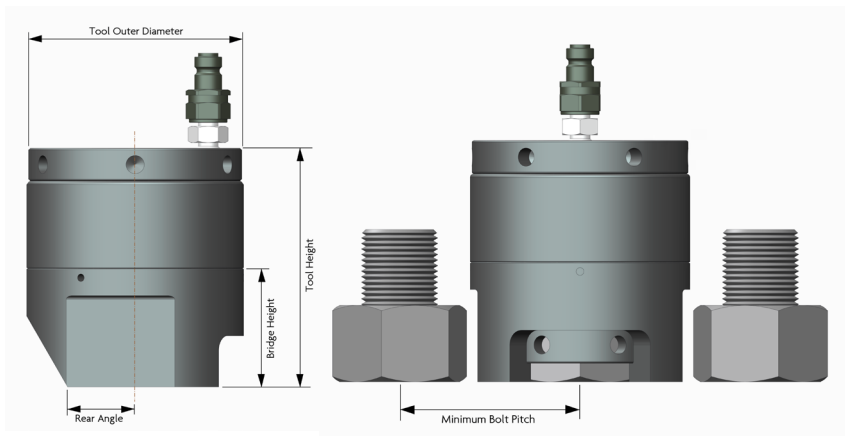
SPECIFICATION

- Designed to fit most ANSI B16.5, MSS SP-44, API17D and Norsok L005 Compact flanges.
- Compatible with imperial and metric bolts from 3/4" - 4" (M20 – M100).
- 1500 bar maximum working pressure.
- 15mm Stroke.
- Available as standard or spring return.

BENEFITS

- High wear and corrosion resistant surface treatment.
- Internal features to compensate for joint misalignment.
- Tools can be connected in sequence improving operation speed and ensuring even joint compression.

Bolt Diameter		Hydraulic Area	Max Load		Tool Outer Diameter	Tool Height	Bridge Height	Rear Angle	Minimum Bolt Pitch	Nearest Obstruction	Tool Weight	
Inch	mm	mm2	kN	klbf	mm	mm	mm	mm	mm	mm	kg	lbs
3/4	M20	891	134	30.1	56	85	40	14.8	48.4	158	1.3	2.9
7/8	M22	1268	190	42.7	63.5	92	45	18	52.2	167	1.8	4.0
1	M24	1628	244	54.9	72	99	46	24	58.6	180	2.5	5.5
1-1/8	M27 M30	2154	323	72.6	83	105	50	25	62.9	191	3.4	7.5
1-1/4	M33	2747	412	92.6	92	109	53	27	70.2	199	4.3	9.5
1-3/8	M36	3419	512	115.3	101	114	55	31	77.2	207	5.3	11.6
1-1/2	M39	4153	623	140	111	127	62	36	81	222	6	19.8
1-5/8	M42	4966	745	167.5	119	131	65	37	98.4	229	8.2	18
1-3/4	M45	5901	878	199	129	139	69	39	94.3	242	10.4	23
1-7/8	M48	6817	1022	229.8	138	143	69	42.5	100.3	247	12.2	26.8
2	M52	7856	1178	264.8	147	152	74	44	108.3	260	14.5	31.9
2-1/4	M56 M60	10117	1519	341.5	167	164	79	50	120	282	20.1	44.2
2-1/2	M64	12702	1904	428.2	187	181	90	55	132.8	300	26.5	58.2
2-3/4	M68 M72	14084	2111	474.6	198	191	96	62	144.5	320	33	72.6
3	M76	16912	2539	570.8	215	200	102	69	160.3	330	40	88
3-1/4	M80 M85	20056	3006	676.9	236	219	110	69.5	170.3	362	48.3	106.3
3-1/2	M90	23423	3512	789.5	250	224	115	79	185.9	370	61	134.2
3-3/4	M95	27051	4058	912.2	267	246	125	80	195.3	394	69.8	153.6
4	M100	30984	4648	1044.9	286	257	132	88	241.1	411	78.5	172.7



XTRA LOAD SPRING RETURN RANGE

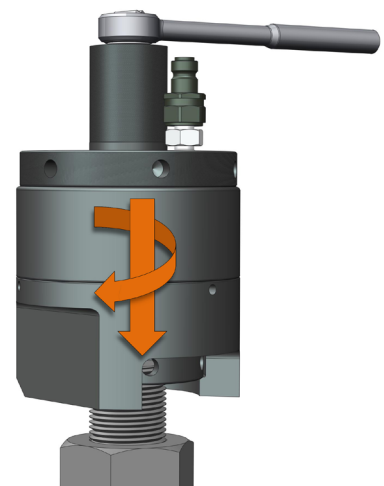
Bolt Diameter		Hydraulic Area	Max Load		Tool Outer Diameter	Tool Height	Bridge Height	Rear Angle	Minimum Bolt Pitch	Nearest Obstruction	Tool Weight	
Inch	mm	mm ²	kN	klbf	mm	mm	mm	mm	mm	mm	kg	lbs
3/4	M20	891	134	30.1	56	85	40	14.8	48.4	158	1.3	2.9
7/8	M22	1268	190	42.7	63.5	92	45	18	52.2	167	1.8	4.0
1	M24	1628	244	54.9	72	99	46	24	58.6	180	2.5	5.5
1-1/8	M27 M30	2154	323	72.6	83	105	50	25	62.9	191	3.4	7.5
1-1/4	M33	2747	412	92.6	92	109	53	27	70.2	199	4.3	9.5
1-3/8	M36	4000	600	134.9	101	114	55	31	77.2	207	5.3	11.6
1-1/2	M39	4153	623	140	111	127	62	36	81	222	6	19.8
1-5/8	M42	4966	745	167.5	119	131	65	37	98.4	229	8.2	18
1-3/4	M45	5901	878	199	129	139	69	39	94.3	242	10.4	23
1-7/8	M48	6817	1022	229.8	138	143	69	42.5	100.3	247	12.2	26.8
2	M52	7856	1178	264.8	147	152	74	44	108.3	260	14.5	31.9
2-1/4	M56 M60	10117	1519	341.5	167	164	79	50	120	282	20.1	44.2
2-1/2	M64	12702	1904	428.2	187	181	90	55	132.8	300	26.5	58.2
2-3/4	M68 M72	16333	2450	550.8	198	191	96	62	144.5	320	33	72.6
3	M76	16912	2539	570.8	215	200	102	69	160.3	330	40	88
3-1/4	M80 M85	22666	3400	764.4	236	219	110	69.5	170.3	362	48.3	106.3
3-1/2	M90	23423	3512	789.5	250	224	115	79	185.9	370	61	134.2
3-3/4	M95	30000	4500	1011.6	267	246	125	80	195.3	394	69.8	153.6
4	M100	30984	4648	1044.9	286	257	132	88	241.1	411	78.5	172.7

Square Drive Adaptor

Square drive adaptors are available for the Xtra load range of hydraulic bolt tensioners.

Adaptors are self fixing, allowing the tool to be used upside down or horizontally. They slot into the top of the tool and work with any wrench or nut runners with a square drive which allows quick and effortless installation.

The adaptors are model specific and stamped with the model number to identify them easily. They can be transferred between imperial and metric sizes tensioners.



Slot the adaptor into the top of the tensioner and rapidly wind down onto the stud using a square drive wrench or nut runner.

FLANGE CLASS - TOOL SELECTION TABLES

ANSI B16.5 WELDING NECK FLANGES

Class 150				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
10	12	7/8	1	21
12	12	7/8	1	21
14	12	1	2, 3	21
16	16	1	2, 3	21
18	16	1-1/8	2, 3	21
20	20	1-1/8	2, 3, 4	21
24	20	1-1/4	3, 4, 5	22

Class 300				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
4	8	3/4	1	21
5	8	3/4	1	21
6	12	3/4	1	21
8	12	7/8	1, 2	21
10	16	1	2, 3	21
12	16	1-1/8	2, 3, 4	21
14	20	1-1/8	2, 3, 4	21
16	20	1-1/4	3, 4, 5	22
18	24	1-1/4	3, 4, 5	22
20	24	1-1/4	3, 4, 5	22
24	24	1-1/2	5, 6, 7	22

Class 400				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
4	8	7/8	1	21
5	8	7/8	1	21
6	12	7/8	1, 2	21
8	12	1	2, 3	21
10	16	1-1/8	2, 3	21
12	16	1-1/4	3, 4	22
14	20	1-1/4	3, 4, 5	22
16	20	1-3/8	4, 5, 6	22
18	24	1-3/8	4, 5, 6	22
20	24	1-1/2	5, 6, 7	22
24	24	1-3/4	7, 8, 9	23

Class 600				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
3-1/2	8	7/8	1	21
4	8	7/8	1, 2	21
5	8	1	2, 3	21
6	12	1	2, 3	21
8	12	1-1/8	2, 3, 4	21
10	16	1-1/4	3, 4, 5	22
12	20	1-1/4	3, 4, 5	22
14	20	1-3/8	4, 5, 6	22
16	20	1-1/2	5, 6, 7	22
18	20	1-5/8	6, 7, 8	23
20	24	1-5/8	6, 7, 8	23
24	24	1-7/8	8, 9, 10	23

Class 900				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
3	8	7/8	1, 2	21
4	8	1-1/8	2, 3, 4	21
5	8	1-1/4	3, 4, 5	22
6	12	1-1/8	2, 3, 4	21
8	12	1-3/8	4, 5, 6	22
10	16	1-3/8	4, 5, 6	22
12	20	1-3/8	4, 5, 6	22
14	20	1-1/2	5, 6, 7	22
16	20	1-5/8	6, 7, 8	23
18	20	1-7/8	8, 9	23
20	20	2	9, 10	23
24	20	2-1/2	11, 12	24

Class 1500				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
2	8	7/8	1	21
2-1/2	8	1	2, 3	21
3	8	1-1/8	2, 3	21
4	8	1-1/4	3, 4	22
5	8	1-1/2	5, 6	22
6	12	1-3/8	4, 5, 6	22
8	12	1-5/8	6, 7, 8	23
10	12	1-7/8	8, 9, 10	23
12	16	2	9, 10	23
14	16	2-1/4	10, 11	24
16	16	2-1/2	11, 12	24
18	16	2-3/4	12, 13	25
20	16	3	13, 14, 15	25
24	16	3-1/2	15	26

Class 2500				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
1-1/2	4	1-1/8	2	21
2	8	1	2, 3	21
2-1/2	8	1-1/8	2, 3, 4	21
3	8	1-1/4	3, 4, 5	22
4	8	1-1/2	5, 6, 7	22
5	8	1-3/4	7, 8, 9	23
6	8	2	9, 10	23
8	12	2	9, 10	23
10	12	2-1/2	11, 12	24
12	12	2-3/4	12, 13	25

MSS SP44 WELDING NECK FLANGES

Class 150				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	12	7/8	1	21
14	12	1	2, 3	21
16	16	1	2, 3	21
18	16	1-1/8	2, 3	21
20	20	1-1/4	2, 3, 4	22
22	20	1-1/4	3, 4, 5	22
24	20	1-1/4	3, 4, 5	22
26	24	1-1/4	3, 4, 5	22
28	28	1-1/4	3, 4, 5	22
30	28	1-1/4	3, 4, 5	22
32	28	1-1/2	5, 6, 7	22
34	32	1-1/2	5, 6, 7	22
36	32	1-1/2	5, 6, 7	22
38	32	1-1/2	5, 6	22
40	36	1-1/2	5, 6, 7	22
42	36	1-1/2	5, 6, 7	22
44	40	1-1/2	5, 6, 7	22
46	40	1-1/2	5, 6, 7	22
48	44	1-1/2	5, 6, 7	22
50	44	1-3/4	7, 8, 9	23
52	44	1-3/4	7, 8, 9	23
54	44	1-3/4	7, 8, 9	23
56	48	1-3/4	7, 8, 9	23
58	48	1-3/4	7, 8, 9	23
60	52	1-3/4	7, 8, 9	23

Class 400				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	16	1-1/4	3, 4	22
14	20	1-1/4	3, 4, 5	22
16	20	1-3/8	4, 5, 6	22
18	24	1-3/8	4, 5, 6	22
20	24	1-1/2	5, 6, 7	22
22	24	1-5/8	6, 7, 8	23
24	24	1-3/4	7, 8, 9	23
26	28	1-3/4	7, 8, 9	23
28	28	1-7/8	8, 9	23
30	28	2	9, 10	23
32	28	2	9, 10	23
34	28	2	9, 10, 11	23
36	32	2	9, 10	23
38	32	1-3/4	7, 8, 9	23
40	32	1-7/8	8, 9	23
42	32	1-7/8	8, 9	23
44	32	2	9	23
46	36	2	9, 10	23
48	28	2-1/4	10	24
50	32	2-1/4	10, 11	24
52	32	2-1/4	10, 11	24
54	28	2-1/2	11, 12	24
56	32	2-1/2	11, 12	24
58	32	2-1/2	11	24
60	32	2-3/4	12, 13	25

Class 300				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	16	1-1/8	2, 3, 4	21
14	20	1-1/8	2, 3, 4	21
16	20	1-1/4	3, 4, 5	22
18	24	1-1/4	3, 4, 5	22
20	24	1-1/4	3, 4, 5	22
22	24	1-1/2	5, 6, 7	22
24	24	1-1/2	5, 6, 7	22
26	28	1-5/8	6, 7, 8	23
28	28	1-5/8	6, 7, 8	23
30	28	1-3/4	7, 8, 9	23
32	28	1-7/8	8, 9, 10	23
34	28	1-7/8	8, 9, 10	23
36	32	2	9, 10	23
38	32	1-1/2	5, 6, 7	22
40	32	1-5/8	6, 7	23
42	32	1-5/8	6, 7, 8	23
44	32	1-3/4	7, 8	23
46	28	1-7/8	8, 9	23
48	32	1-7/8	8, 9	23
50	32	2	9	23
52	32	2	9	23
54	28	2-1/4	10	24
56	28	2-1/4	10	24
58	32	2-1/4	10	24
60	32	2-1/4	10	24

Class 600				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	20	1-1/4	3, 4, 5	22
14	20	1-3/8	4, 5, 6	22
16	20	1-1/2	5, 6, 7	22
18	20	1-5/8	6, 7, 8	23
20	24	1-5/8	6, 7, 8	23
22	24	1-3/4	7, 8, 9	23
24	24	1-7/8	8, 9, 10	23
26	28	1-7/8	8, 9	23
28	28	2	9	23
30	28	2	9, 10	23
32	28	2-1/4	10	24
34	28	2-1/4	10, 11	24
36	28	2-1/2	11, 12	24
38	28	2-1/4	10, 11	24
40	32	2-1/4	10	24
42	28	2-1/2	11, 12	24
44	32	2-1/2	11	24
46	32	2-1/2	11, 12	24
48	32	2-3/4	12	25
50	28	3	13, 14	25
52	32	3	13	25
54	32	3	13, 14	25
56	32	3-1/4	14, 15	26
58	32	3-1/4	14, 15	26
60	28	3-1/2	15	26

MSS SP44 WELDING NECK FLANGES

Class 900				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
12	20	1-3/8	4, 5, 6	22
14	20	1-1/2	5, 6, 7	22
16	20	1-5/8	6, 7, 8	23
18	20	1-7/8	8, 9	23
20	20	2	9, 10	23
24	20	2-1/2	11, 12	24
26	20	2-3/4	12, 13	25
28	20	3	13, 14	25
30	20	3	13, 14, 15	25
32	20	3-1/4	14, 15	26
34	20	3-1/2	15	26
36	20	3-1/2	15	26
38	20	3-1/2	15	26
40	24	3-1/2	15	26
42	24	3-1/2	15	26

API 605 WELDING NECK FLANGES

Class 75				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
36	40	3/4	1	21
42	48	3/4	1	21
48	44	7/8	1	21
54	48	7/8	1	21
60	44	1	use 1500 bar	21

Class 150				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
26	36	3/4	1	21
28	40	3/4	1	21
30	44	3/4	1	21
32	48	3/4	1	21
34	40	7/8	1, 2	21
36	44	7/8	1, 2	21
42	48	1	2	21
54	56	1-1/8	2, 3, 4	21
60	52	1-1/4	3, 4, 5	22

Class 300				
Pipe Size inch	No of Bolts	Bolt Dia Inch	1000 bar Tool No's	1500 bar Tool No's
26	32	1-1/4	3, 4, 5	22
28	36	1-1/4	3, 4	22
30	36	1-3/8	4, 5, 6	22
32	32	1-1/2	5, 6, 7	22
34	36	1-1/2	5, 6, 7	22
36	32	1-5/8	6, 7, 8	23
42	36	1-3/4	7, 8, 9	23
48	40	1-7/8	8, 9, 10	23
54	48	1-7/8	8, 9	23
60	40	2-1/4	10, 11, 12	24

API 605 WELDING NECK FLANGES

Class 2000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	5/8	20
2-9/16	8	3/4	21
3-1/8	8	3/4	21
4-1/16	8	7/8	21
5-1/8	8	1	21
7-1/16	12	1	21
9	12	1-1/8	21
11	16	1-1/4	22

Class 3000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	7/8	21
2-9/16	8	1	21
3-1/8	8	7/8	21
4-1/16	8	1-1/8	21
5-1/8	8	1-1/4	22
7-1/16	12	1-1/8	21
9	12	1-3/8	22
11	16	1-3/4	22

Class 5000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	7/8	21
2-9/16	8	1	21
3-1/8	8	1-1/8	21
4-1/16	8	1-1/4	22
5-1/8	8	1-1/2	22
7-1/16	12	1-3/8	22
9	12	1-5/8	23
11	12	1-7/8	23

API 17SS WELDING NECK FLANGES

Class 5000 psi			
Pipe Size inch	No of Bolts	Bolt Dia Inch	1500 bar Tool No's
2-1/16	8	7/8	21
2-9/16	8	1	21
3-1/8	8	1-1/8	21
4-1/16	8	1-1/4	22
5-1/8	8	1-1/2	22
7-1/16	12	1-3/8	22
9	12	1-5/8	23
11	12	1-7/8	23

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Email: sales.boltight.uk@nord-lock.com
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Sales Office Nord-Lock Ltd

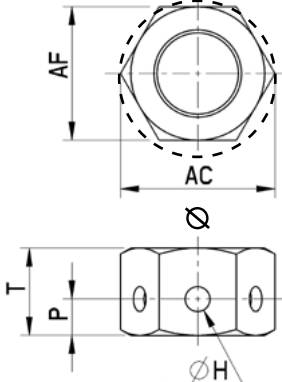
Tel: +44 (0) 1264 355557
Email: enquiries@nord-lock.co.uk
www.nord-lock.com

NORD-LOCK
GROUP

HYDRAULIC BOLTING APPLICATION CHECKLIST

CUSTOMER NAME	
CUSTOMER CONTACT DETAILS	
CUSTOMER PROJECT/APPLICATION REFERENCE	

3 NUT DATA



CRITICAL INFORMATION

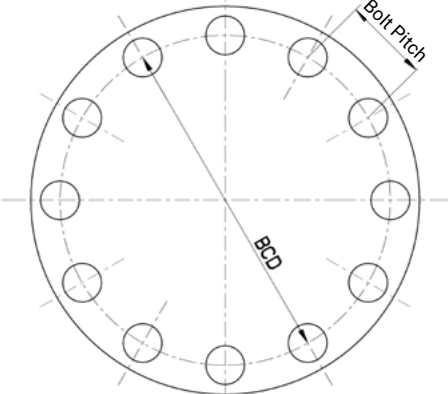
1 BOLT DATA

Bolt Thread Diameter & Pitch:	
Bolt Material:	

2 LOAD DATA

Load:	<input type="checkbox"/> kN	<input type="checkbox"/> lbf
Required Load:	<input type="checkbox"/> Residual	<input type="checkbox"/> Applied <input type="checkbox"/> Tool

4 BOLT CIRCLE DIAMETER



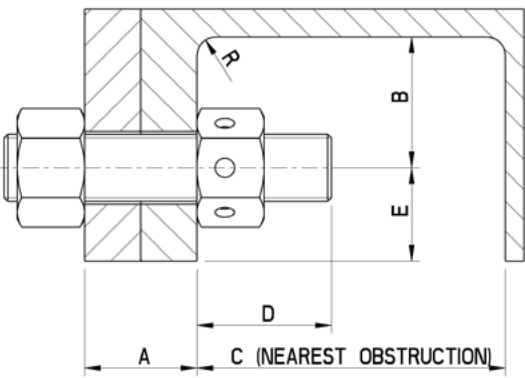
3 NUT DATA

Nut Type:	<input type="checkbox"/> Round	<input type="checkbox"/> Hex	<input type="checkbox"/> Drilled	<input type="checkbox"/> Other (Provide Details below)
Nut AF:	Nut AC/ Q			
Nut Height (T):	Hole Position (P):			
Hole (H): Q	Other:			
Hole Quantity:				

4 BOLT SPACING

Number of Bolts:	
BCD:	or Bolt Pitch:

5 SPACE ENVELOPE



5 SPACE ENVELOPE

A:	B:
C:	D:
E:	R:
Washer Q:	Washer Thickness:
Washer Material:	

ADDITIONAL CONSIDERATIONS: (PROVIDE DETAIL SEPARATELY)

<input type="checkbox"/> Frequency of use	<input type="checkbox"/> Additional Tool Features	<input type="checkbox"/> Washer	<input type="checkbox"/> Environment
<input type="checkbox"/> Spot Face	<input type="checkbox"/> Castellated/Flat Nut	<input type="checkbox"/> Orientation	<input type="checkbox"/> Temperature
<input type="checkbox"/> Handling	<input type="checkbox"/> Stud Coatings	<input type="checkbox"/> Other	