

HYDRAULIC BOLT TENSIONER

- Fit all Standard flanges oncluding ANSI and PAI Flanges.
- Lightweight and easily handled design.
- Quick-Release bridge and Hex. Socket design-for fast change over.
- Electro-less nickel plating prolongs tool life and reduces in-the-job maintenance.
- Improved seal design offer increased reliability.
- Simple and easy to maintain.

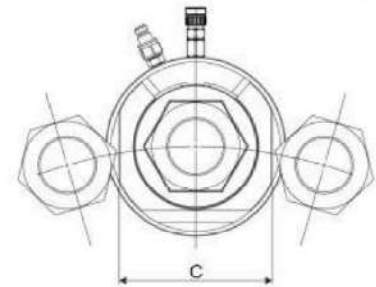
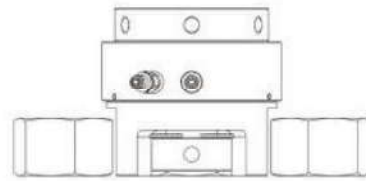
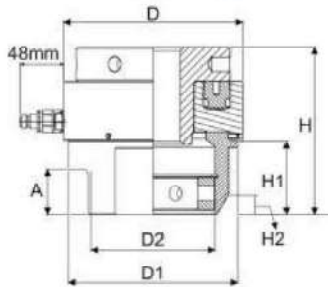
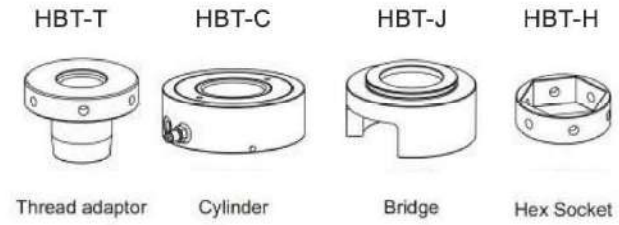
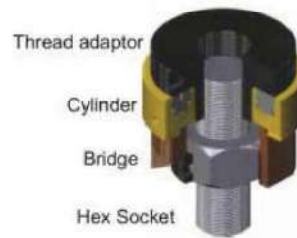
HBT-Series

HBT-Series

Capacity : 30-465 ton

Stroke : 8-10 mm

Max. Operating Pressure : 1500 bar



Model	HBT-20	HBT-35	HBT-50	HBT-60	HBT-90	HBT-130	HBT-160	HBT-200	HBT-250	HBT-310
Bolt dimension (ϕ *pitch)	M20*2.5	M27*3	M36*4	M42*4.5	M45*4.5	M60*5.5	M72*6	M80*6	M100*6	M125*6
	M22*2.5	M30*3.5	M39*4	M45*4.5	M48*5	M64*6	M76*6	M85*6	M110*6	M130*6
	M24*3	M33*3.5	M42*4.5	M48*5	M52*5	M68*6	M80*6	M90*6	M120*6	M140*6
	M27*3	M36*4	M45*4.5	M52*5	M56*5.5	M72*6		M85*6	M125*6	M150*6
Threads (ϕ in-)	3/4"-10	1"-8	1-3/8"-6	1-1/2"-6	1-3/4"-5	2-1/2"-4	2-3/4"-4	3-1/4"-4	3-3/4"-4	5"-4
	7/8"-9	1-1/8"-7	1-1/2"-6	1-3/4"-5	2"-4-1/2	2-3/4"-4		3"-4	3-1/2"-4	4"-4
	1"-8	1-1/4"-7	1-3/4"-5	2"-4-1/2	2-1/4"-4-1/2			3-3/4"-4	4-1/4"-4	5-1/2"-4
		1-3/8"-6							4-1/2"-4	5-3/4"-4
Max. Pressure	(bar)	1500	1500	1500	1500	1500	1500	1500	1500	1500
	(psi)	21756	21756	21756	21756	21756	21756	21756	21756	21756
Hydraulic area	(cm ²)	20	35	50	60	90	130	160	200	250
	(in ²)	3.1	5.43	7.75	9.3	13.95	20.15	24.8	31	38.75
Max. hydraulic load	(kN)	300	525	750	900	1350	1950	2400	3000	3750
	(lbf)	67443	118025	168606	202328	303492	438377	539541	674426	843032
Piston stroke	(mm)	8	8	8	8	8	10	10	10	10
D (mm)		86	109	128	144	170	198	220	244	300
H (mm)		105	116	128	140	154	185	190	203	235
H1 (mm)		30	40	49	54	65	82	86	106	131
H2 (mm)		5.2	5.2	10.39	10.39	13.86	22.52	22.52	22.52	25.11
D1 (mm)		74	97	116	133	154	187	203	232	272
D2 (mm)		56	73	90	102	114	137	145	180	223
A (mm)		26	31	38	40	42	50	50	60	73
C (mm)		86	83	100	118	134	167	175	210	253
Weight (kg)		3	4.8	7.5	11	17.3	25	33	39	56

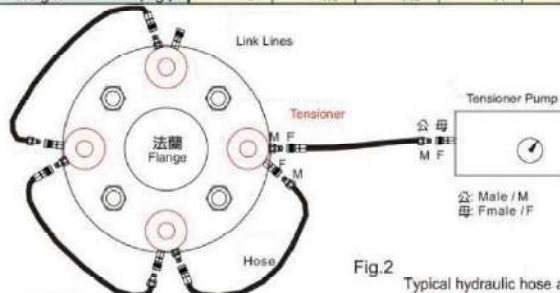


Fig.2 Typical hydraulic hose arrangement



Model	HBT-20		HBT-35		HBT-50		HBT-60		HBT-90		HBT-130		HBT-160		HBT-200		HBT-250		HBT-310		
Chart	psi	bar	lbf	kN	lbf	kN	lbf	kN	lbf	kN	lbf	kN	lbf	kN	lbf	kN	lbf	kN	lbf	kN	
	1000	69	3100	14	5425	24	7750	34	9300	41	13950	62	20150	90	24800	110	31000	138	38750	172	48050
2000	138	6200	28	10850	48	15500	69	18600	83	27900	124	40300	179	49600	221	62000	276	77500	345	96100	427
3000	207	9300	41	16275	72	23250	103	27900	124	41850	186	60450	269	74400	331	93000	414	116250	517	144150	641
4000	276	12400	55	21700	97	31000	138	37200	165	55800	248	80600	359	99200	441	124000	552	155000	689	192200	855
5000	345	15500	69	27125	121	38750	172	46500	207	69750	310	100750	448	124000	552	155000	689	193750	862	240250	1069
6000	414	18600	83	32550	145	46500	207	55800	248	83700	372	120900	538	148800	662	186000	827	232500	1034	288300	1282
7000	483	21700	97	37975	169	54250	241	65100	290	97650	434	141050	627	173600	772	217000	965	271250	1207	336350	1496
8000	552	24800	110	43400	193	62000	276	74400	331	111600	496	161200	717	198400	883	248000	1103	310000	1379	384400	1710
9000	621	27900	124	48825	217	69750	310	83700	372	125550	558	181350	807	223200	993	279000	1241	348750	1551	432450	1924
10000	689	31000	138	54250	241	77500	345	93000	414	139500	621	201500	896	248000	1103	310000	1379	387500	1724	480500	2137
11000	758	34100	152	59675	265	85250	379	102300	455	153450	683	221650	986	272800	1213	341000	1517	426250	1896	528550	2351
12000	827	37200	165	65100	290	93000	414	111600	496	167400	745	241800	1076	297600	1324	372000	1655	465000	2068	576600	2565
13000	896	40300	179	70525	314	100750	448	120900	538	181350	807	261950	1165	322400	1434	403000	1793	503750	2241	624650	2779
14000	965	43400	193	75950	338	108500	483	130200	579	195300	869	282100	1255	347200	1544	434000	1931	542500	2413	672700	2992
15000	1034	46500	207	81375	362	116250	517	139500	621	209250	931	302250	1344	372000	1655	465000	2068	581250	2586	720750	3206
16000	1103	49600	221	86800	386	124000	552	148800	662	223200	993	322400	1434	396800	1765	496000	2206	620000	2758	768800	3420
17000	1172	52700	234	92225	410	131750	586	158100	703	237150	1055	342550	1524	421600	1875	527000	2344	658750	2930	816850	3634
18000	1241	55800	248	97650	434	139500	621	167400	745	251100	1117	362700	1613	446400	1986	558000	2482	697500	3103	864900	3847
19000	1310	58900	262	103075	459	147250	655	176700	786	265050	1179	382850	1703	471200	2096	589000	2620	736250	3275	912950	4061
20000	1379	62000	276	108500	483	155000	689	186000	827	279000	1241	403000	1793	496000	2206	620000	2758	775000	3447	961000	4275
21000	1448	65100	290	113925	507	162750	724	195300	869	292950	1303	423150	1882	520800	2317	651000	2896	813750	3620	1009050	4488
22000	1517	68200	303	119350	531	170500	758	204600	910	306900	1365	443300	1972	545600	2427	682000	3034	852500	3792	1057100	4702

Bolt	M	6	8	10	12	14	16	18	20	22	24	27	30	33	36	39	42	45	48	52	56	60	64	68
Hexagon	mm	10	13	17	19	22	24	27	30	32	36	41	46	50	55	60	65	70	75	80	85	90	95	100
Thickness	mm	5	6.5	8	10	11	13	15	16	18	19	22	24	26	29	31	34	36	38	42	45	48	51	54

Bolt	M	72	76	80	85	90	95	100	105	110	115	120	125	130	140	150
Hexagon	mm	105	110	115	120	130	135	145	150	155	165	170	180	185	200	210
Thickness	mm	58	61	64	72	84										

Bolt		3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
hexagon	mm	17	22	27	32	36	41	46	50	55	60	65	70	75	80
Thickness	mm	9.5	12.5	15.8	19	22	25	28	32	35	38	41	44	47	50
Hexagon	in	11/16	7/8	1-1/16	1 1/4	1 7/16	1 5/8	1 13/16	2	2 3/16	2 3/8	2 9/16	2 3/4	2 15/16	3 1/8
Thickness	in	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2

Bolt		2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
Hexagon	mm	90	100	108	118	127	137	146	156	165	175	184	194	203	213
Thickness	mm	57	63	70	76										
Hexagon	in	3 1/2	3 7/8	4 1/4	4 5/8	5	5 3/8	5 3/4	6 1/8	6 1/2	6 7/8	7 1/4	7 5/8	8	8 3/8
Thickness	in	2 1/4	2 1/2	2 3/4	3										

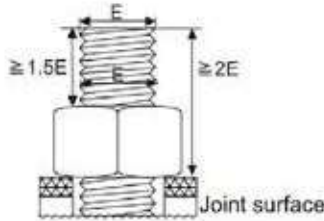
Bolt		5 3/4	6
Hexagon	mm	222	232
Thickness	mm		
Hexagon	in	8 3/4	9 1/8
Thickness	in		



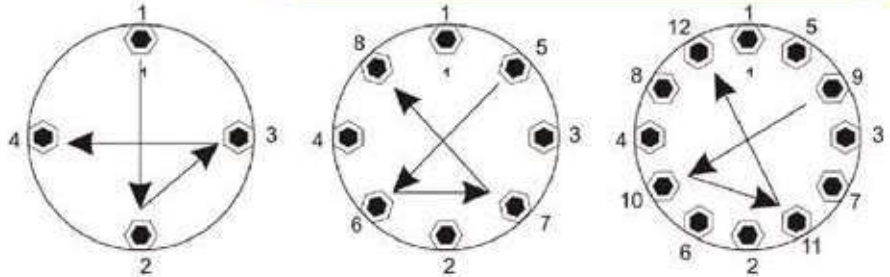
sectional drawing

Torque Procedure

When torque it is common to tighten only one bolt at a time, this can result in Point Loading and Load Scatter. To avoid this, torques applied in stages following a prescribed pattern:



Min. protrusion 1.5 x Bolt Diameter

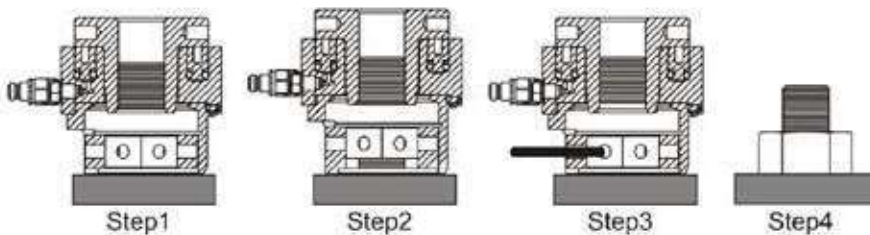


Manufacturer's rating of pressure and torque are maximum safe limits. Good practice encourages using only 80% of these ratings!

- Step1 : Spanner tight the nut firmly seated against the joint surface and check minimum protruding length 1.5 bolt diameter extend above nut to engage the tensioner.
- Step2 : Tighten each bolt to one-third of the final required torque following the pattern as shown above.
- Step3 : Increase the torque to two-thirds following the pattern shown above.
- Step4 : Increase the torque to full torque following the pattern shown above.
- Step5 : Perform one final pass on each bolt working clockwise from bolt 1, at the full final torque.

Tension Operation

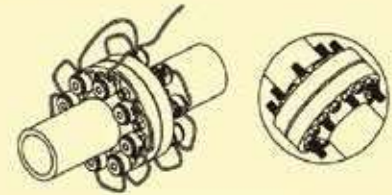
Tensioning permits the simultaneous tightening of multiple bolts; the tools are connected in sequence via a high-pressure hose assembly to a single pump unit. This ensure tool develops the exact same load and provides a uniform clamping force across the joint.



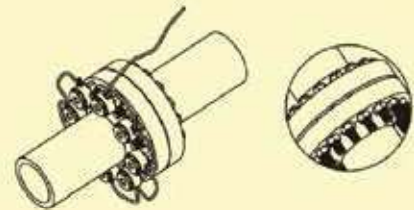
- Step1 : The bolt Tensioner is fitted over the stud.
- Step2 : Hydraulic pressure is applied to the tensioner which then stretches the stud.
- Step3 : The stud's nut is wound down against the joint face.
- Step4 : Pressure is released and the tool removed.

Less than 100% Tensioning

Not all applications allow for the simultaneous fit of a tensioning device on each bolt, in these cases at least two tensioning pressure are applied. This is to account for a load loss in those bolts already tensioned as the next sets are tightened.



Set-up using a 100% tensioning procedure



Set-up using a 50% tensioning procedure

