

## Data Sheet

Sheet No.: BH 1.200.02 Rev. A

Date: October 2010

BHH

# New spring selection

In order to provide a spring-return actuator that will cover a broader range of applications, Bettis is introducing a new spring set for the BHHF which will provide balanced torques at lower hydraulic supply pressures.

## Reasoning :

The native marine industry of the BHH utilizes 135bar or 2000 psi as the supply pressure, as do other industries. But a wide range of industry segments are also using 100 bar or 1500 psi as the hydraulic supply pressure to the actuator. As the example shown in table 1, for the BHHF250 SR2 size, 135 bar or 2000 psi is sufficient to compress the springs and still generate 64Nm or 566 in-lbs of torque at the end of the opening cycle. However, 90 bar or 1300 psi of supply will NOT be sufficient to fully compress the spring and complete the full 90 degree rotation to open.

Table 1

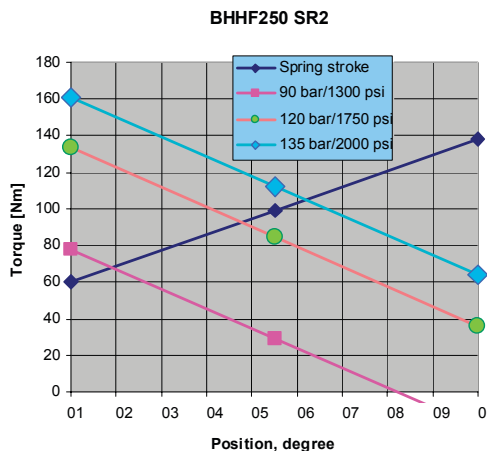
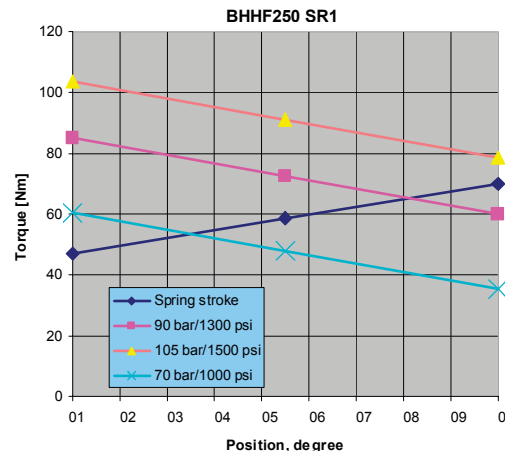


Table 2



With the introduction of the BHHFXXX SR1, we are now able to provide an effective spring return solution to the industry segment using lower supply pressures in their hydraulic systems. As shown in table 2, the SR1 version offers less spring force, in turn allowing the modified design to provide balance torques at pressures as low as 90 bar or 1300 psi, making the unit more versatile to more industries.

## New torque charts :

Attached you will find two familiar "step" charts, both in metric and imperial units, showing torque output for BHH and the BHHF SR1 and SR2 version. Please note that the SR1 version is not available in size BHHF 8000 and BHHF 16000. PDF versions of the torque charts are available at :

[www.emerson.com](http://www.emerson.com)

Note: Not Certified dimensional drawings. Such drawings are available on request. Contact factory with correct model designation and serial number. Important: Due to Emerson's continuing commitment to engineered product advancement, data presented herein is subject to change.

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## Data Sheet

Sheet No.: BHHI 1.01 Rev. A

Date: September 2010

BHH

# Torque Ratings – (Hydraulic)

All Published Torques are Guaranteed Minimum Values.

### Double-Acting BHH Series

Actuator Model	Stroke Position	Operating Pressure (PSIG)								
		500	750	1000	1250	1500	1750	2000	2500	3000
		Hydraulic Torque Output (in-lbs)								
BHH125	Start/End/Minimum	283	407	575	735	859	982	1106	1390	1699
BHH250	Start/End/Minimum	575	814	1142	1469	1717	1965	2213	2779	3390
BHH500	Start/End/ Minimum	1142	1637	2292	2947	3434	3930	4425	5567	6780
BHH1000	Start/End/ Minimum	1965	3275	4585	5895	6877	7859	8851	11143	13568
BHH2000	Start/End/ Minimum	4585	6550	9178	11798	13763	15728	17701	22286	27136
BHH4000	Start/End/ Minimum	9178	13108	18356	23596	27535	31464	35403	44581	54282
BHH8000	Start/End/ Minimum	18356	26216	36713	47201	55069	63938	70806	89162	108563
BHH16000	Start/End/ Minimum	36713	52441	73426	94402	110139	125875	141612	178325	217135

### Single-Acting BHH Series

Actuator Model	Spring Torque (in-lbs) Start/Min./End	Operating Pressure (PSIG)								
		500	750	1000	1250	1500	1750	2000	2500	3000
		Hydraulic Torque Output (in-lbs)								
BHHF 125-SR1	Start	336		230	398	522	646	770		
	Min.	266		133	301	416	540	664		
	End	186		27	195	319	443	566		
BHHF 125 - SR2	Start	549			407	531	655	779	1062	1372
	Min.	407			230	354	478	602	885	1186
	End	266			44	168	292	416	699	1009
BHHF 250-SR1	Start	620		425	752	1000	1248	1487		
	Min.	522		310	646	885	1133	1381		
	End	416		204	531	779	1027	1266		
BHHF 250 - SR2	Start	1354				832	1080	1328	1859	2505
	Min.	894				398	646	894	1469	2071
	End	575				35	212	460	1036	1637
BHHF 500-SR1	Start	1319		947	1602	2098	2584	3080		
	Min.	1115		717	1372	1868	2354	2850		
	End	903		487	1142	1637	2124	2620		
		Hydraulic Torque Output (in-lbs)								
Actuator Model	Spring Torque (in-lbs) Start/Min./End	500	750	1000	1250	1500	1750	2000	2500	3000
		Operating Pressure (PSIG)								

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BHH

## Torque Ratings – (Hydraulic)

All Published Torques are Guaranteed Minimum Values.

### Single-Acting BHH Series (cont.)

Actuator Model	Spring Torque (in-lbs) Start/Min./End		Operating Pressure (PSIG)								
			500	750	1000	1250	1500	1750	2000	2500	3000
			Hydraulic Torque Output (in-lbs)								
BHHF 500 - SR2	Start	5854					1682	2168	2664	3815	5027
	Min.	1912					956	1452	1947	3089	4301
	End	1239					239	726	1221	2372	3585
BHHF 1000-SR1	Start	2797			1921	3231	4204	5195	6187		
	Min.	2319			1398	2717	3700	4862	5664		
	End	1841			855	2195	3177	4160	5142		
BHHF 1000 - SR2	Start	5372				2788	3770	4753	5735	8028	10453
	Min.	4045				1505	2487	3469	4452	6744	9169
	End	2832				221	1204	2186	3169	5461	7231
BHHF 2000-SR1	Start	5585			3824	6443	8408	10373	12347		
	Min.	4478			2859	5487	7452	9417	11382		
	End	3363			1903	4523	6488	8452	10426		
BHHF 2000-SR2	Start	8922				4806	6780	8745	10709	15303	20153
	Min.	7293				2806	4779	6477	8709	13303	18153
	End	5355				805	2779	4744	6709	11302	16153
BHHF 4000-SR1	Start	11134			8364	13612	17542	21481	25410		
	Min.	9134			6196	11444	15374	19312	23242		
	End	7125			4027	9276	13205	17144	21074		
BHHF 4000 - SR2	Start	22569					13373	17312	21242	30420	40120
	Min.	17038					6957	10895	14825	24003	33704
	End	21242					540	4478	8408	17586	27287
BHHF 8000 - SR2	Start	42484					26747	34615	42484	60840	80250
	Min.	31863					16126	23994	31863	50219	69629
	End	21242					5505	10718	21242	39598	59008
BHHF 16000 - SR2	Start	73461					53494	69231	84967	121680	160491
	Min.	57972					32252	47989	63725	100438	139249
	End	42484					11010	26747	24284	79196	118007
Actuator Model	Spring Torque (in-lbs) Start/Min./End		Hydraulic Torque Output (in-lbs)								
			500	750	1000	1250	1500	1750	2000	2500	3000
			Operating Pressure (PSIG)								

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## Data Sheet

Sheet No.: BHHM 1.01 Rev. A

Date: September 2010

BHH

# Torque Ratings – (Hydraulic)

All Published Torques are Guaranteed Minimum Values.

### Double-Acting BHH Series

Actuator Model	Stroke Position	Operating Pressure (Bar)								
		35	50	70	90	105	120	135	170	207
		Hydraulic Torque Output (Nm)								
BHH125	Start/End/Minimum	32	46	65	83	97	111	125	157	192
BHH250	Start/End/Minimum	65	92	129	166	194	222	250	314	383
BHH500	Start/End/ Minimum	129	185	259	333	388	444	500	629	766
BHH1000	Start/End/ Minimum	222	370	518	666	777	888	1000	1259	1533
BHH2000	Start/End/ Minimum	518	740	1037	1333	1555	1777	2000	2518	3066
BHH4000	Start/End/ Minimum	1037	1481	2074	2666	3111	3555	4000	5037	6133
BHH8000	Start/End/ Minimum	2074	2962	4148	5333	6222	7111	8000	10074	12266
BHH16000	Start/End/ Minimum	4148	5925	8296	10666	12444	14222	16000	20148	24533

### Single-Acting BHH Series

Actuator Model	Spring Torque (in-lbs) Start/Min./End		Operating Pressure (Bar)								
			35	50	70	90	105	120	135	170	207
			Hydraulic Torque Output (Nm)								
BHHF 125-SR1	Start	38			26	45	59	73	87		
	Min.	30			15	24	47	61	75		
	End	21			3	22	36	50	64		
BHHF 125 - SR2	Start	62				46	60	74	88	120	155
	Min.	46				26	40	54	68	100	134
	End	30				5	19	33	47	79	114
BHHF 250-SR1	Start	70			48	85	113	141	168		
	Min.	59			35	73	100	128	156		
	End	47			23	60	88	116	143		
BHHF 250 - SR2	Start	153					94	122	150	210	283
	Min.	101					45	73	101	166	234
	End	65					-4	24	52	117	185
BHHF 500-SR1	Start	149			107	181	237	292	348		
	Min.	126			81	155	211	266	322		
	End	102			55	129	185	240	296		
Actuator Model	Spring Torque (in-lbs) Start/Min./End		Hydraulic Torque Output (Nm)								
			35	50	70	90	105	120	135	170	207
			Operating Pressure (Bar)								

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# Torque Ratings – (Hydraulic)

All Published Torques are Guaranteed Minimum Values.

### Single-Acting BHH Series (cont.)

Actuator Model	Spring Torque (in-lbs) Start/Min./End		Operating Pressure (Bar)								
			35	50	70	90	105	120	135	170	207
			Hydraulic Torque Output (Nm)								
BHHF 500 - SR2	Start	292					190	245	301	431	568
	Min.	216					108	164	220	349	486
	End	140					27	82	138	268	405
BHHF 1000-SR1	Start	316			217	365	475	587	699		
	Min.	262			158	307	418	529	640		
	End	208			100	248	359	470	581		
BHHF 1000 - SR2	Start	607				315	246	537	648	907	1181
	Min.	457				170	281	392	503	762	1036
	End	320				25	136	247	358	617	817
BHHF 2000-SR1	Start	631			432	728	950	1172	1395		
	Min.	506			323	620	842	1064	1286		
	End	380			215	511	733	955	1178		
BHHF 2000-SR2	Start	1008				543	766	988	1210	1729	2777
	Min.	824				317	540	762	984	1503	2051
	End	605				91	314	536	758	1277	1825
BHHF 4000-SR1	Start	1258			945	1538	1982	2427	2871		
	Min.	1032			700	1293	1737	2182	2626		
	End	805			455	1048	1492	1937	2381		
BHHF 4000 - SR2	Start	2550					1511	1956	2400	3437	4533
	Min.	1925					786	1231	1675	2712	3808
	End	1350					61	506	950	1987	3083
BHHF 8000 - SR2	Start	4800					3022	3911	4800	6874	9067
	Min.	3600					1822	2711	3600	5674	7867
	End	2400					622	1211	2400	4474	6667
BHHF 16000 - SR2	Start	8300					6044	7822	9600	13748	18133
	Min.	6550					3644	5422	7200	11348	15733
	End	4800					1244	3022	4800	8948	13333
Actuator Model	Spring Torque (in-lbs) Start/Min./End		Hydraulic Torque Output (Nm)								
			35	50	70	90	105	120	135	170	207
			Operating Pressure (Bar)								

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