

# Increased Pressure/Temperature Ratings for Fisher® EH and EW Series Steel Valves

## Metric Units

EH Series and EW Series valves with butt-welded ends have increased/temperature ratings, called Intermediate ratings as defined in ASME B16.34-2013.

The extra strength of these valves allows ratings higher than the normal CL900, CL1500, or CL2500 ratings that are specified in ASME B16.34-2013. Two types of the higher (Intermediate) ratings are available: Intermediate Standard and Intermediate Special. All EH and EW Series valves with butt-welded ends listed in the following tables have Intermediate Standard ratings. Intermediate Special ratings allow pressures higher than Intermediate Standard ratings, which can only be obtained by a valve body assembly successfully undergoing certain nondestructive examinations as described in the ASME B16.34-2013 standard.

Intermediate ratings apply only to valve body assemblies with the material listed in tables 1 and 2. EH Series valves with line-size butt-welding ends have Intermediate ratings as listed in tables 3 through 21.

The NPS 12 x 8 CL900 EW Series valve body has Intermediate ratings as shown in table 22. Note that the NPS 1 and 2 socket-weld EH Series valve bodies also provide the ratings shown for NPS 1 and 2 butt-welded valve bodies. Also, the NPS 1-1/2 x 1 EH Series valve body is the only valve body with expanded ends that provides Intermediate ratings; the NPS 2 x 1, 3 x 2, 4 x 3, 6 x 4, and 8 x 6 valve bodies do not allow these higher ratings.

The ratings in tables 3 through 22 were calculated using the maximum stem load listed in each table. These stem loads are for the largest diameter 316 strain-hardened stainless steel stem available for each valve body size. When using the tables, compare the maximum available stem load to the table stem load. If the maximum available stem load is greater than the printed value, consult your Emerson Process Management sales office since the higher stem load may require additional pressure derating due to bolting limitations. If the maximum available stem load is less than or equal to the printed value, a lower load may allow pressures higher than those shown in the tables if the rating is limited by bolting limitations.

Table 1. Body and Bolting Material Descriptions for NPS 1 through 6 EH Series Valves

VALVE BODY MATERIAL		BOLTING MATERIAL				TEMPERATURE, °C
Specification	Grade	Bolts		Nuts		
		Specification	Grade	Specification	Grade	
SA-352	LCC	SA-193	B7	SA-194	2H	to 371
SA-216	WCC	SA-193	B7	SA-194	2H	to 427
SA-217	WC9	SA-193	B7	SA-194	2H	to 427
		SA-193	B7	SA-194	7	over 427
		SA-193	B16	SA-194	7	See table values
SA-351	CF8M or 316 <sup>(1)</sup>	SA-193	B7	SA-193	2H	to 232
		SA-453	660 Class A or B with Belleville washers	SA-194	7	to 427
		SA-453	660 Class A or B rupture tested with Belleville washers	SA-194	7	to 538
		SA-453	660 Class A or B with Belleville washers	SA-194	7M	to 427
		SA-453	660 Class A or B rupture tested with Belleville washers	SA-194	7M	to 538

1. 316H must be specified for service temperatures above 538°C.



Table 2. Body and Bolting Material Descriptions for NPS 8 through 14 EH Series Valves and NPS 12 x 8 EW Series Valves

VALVE BODY MATERIAL		BOLTING MATERIAL				TEMPERATURE, °C
Specification	Grade	Bolts		Nuts		
		Specification	Grade	Specification	Grade	
SA-352	LCC	SA-193	B7	SA-194	2H	to 343
SA-216	WCC	SA-193	B7	SA-194	2H	to 427
SA-217	WC9	SA-193	B7	SA-194	2H	to 427
		SA-193	B7	SA-194	7	over 427
		SA-193	B16	SA-194	7	See table values
SA-351	CF8M or 316 <sup>(1)</sup>	SA-193	B7	SA-193	2H	to 232
		SA-453	660 Class A or B with Belleville washers	SA-194	7	to 427
		SA-453	660 Class A or B rupture tested with Belleville washers	SA-194	7	to 538
		SA-453	660 Class A or B with Belleville washers	SA-194	7M	to 427
		SA-453	660 Class A or B rupture tested with Belleville washers	SA-194	7M	to 538

1. 316H must be specified for service temperatures above 538°C.

Table 3. NPS 1 CL1500 EH Series Valves with Intermediate 2282 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	393	393	393	393	393	393	378	393	49400
93	393	393	393	393	393	393	325	362	44110
149	382	393	382	393	382	389	293	327	40120
204	370	393	370	393	370	380	269	299	36100
232	359	393	359	393	359	379	228	281	34960
260	349	393	349	393	349	378	(4)	(4)	34080
316	317	393	317	393	317	378	(4)	(4)	32550
343	309	393	309	393	309	376	(4)	(4)	31780
371	298	373	298	373	298	373	(4)	(4)	31010
399	264	330	---	---	279	362	(4)	(4)	30750
427	216	270	---	---	266	353	(4)	(4)	30490
454	---	---	---	---	255	337 <sup>(3)</sup>	(4)	(4)	13130
482	---	---	---	---	236	315 <sup>(3)</sup>	(4)	(4)	13010
510	---	---	---	---	198 <sup>(3)</sup>	247 <sup>(3)</sup>	(4)	(4)	12900
538	---	---	---	---	137 <sup>(3)</sup>	172 <sup>(3)</sup>	(4)	(4)	12790
566	---	---	---	---	92 <sup>(3)</sup>	107 <sup>(3)</sup>	(4)	(4)	12790
593	---	---	---	---	--- <sup>(4)</sup>	--- <sup>(4)</sup>	(4)	(4)	12790

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.

**Table 4. NPS 1 CL2500 EH Series Valves with Intermediate 3862 Rating<sup>(1)</sup>**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(3)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(2)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	666	666	666	666	666	666	639	666	49400
93	666	666	666	666	666	666	550	613	44110
149	646	666	646	666	647	658	496	554	40120
204	626	666	626	666	627	643	456	506	36100
232	607	666	607	666	607	641	414	476	34960
260	590	666	590	666	590	639	(5)	(5)	34080
316	537	666	537	666	537	639	(5)	(5)	32550
343	522	666	522	666	522	636	(5)	(5)	31780
371	504	632	504	632	504	632	(5)	(5)	31010
399	447	559	---	---	472	613	(5)	(5)	30750
427	365	456	---	---	450	598 <sup>(4)</sup>	(5)	(5)	30490
454	---	---	---	---	432	571 <sup>(4)</sup>	(5)	(5)	13130
482	---	---	---	---	399 <sup>(4)</sup>	533 <sup>(4)</sup>	(5)	(5)	13010
510	---	---	---	---	335 <sup>(4)</sup>	419 <sup>(4)</sup>	(5)	(5)	12900
538	---	---	---	---	231 <sup>(4)</sup>	289 <sup>(4)</sup>	(5)	(5)	12790
566	---	---	---	---	155 <sup>(4)</sup>	167 <sup>(4)(6)</sup>	(5)	(5)	12790
593	---	---	---	---	--- <sup>(5)</sup>	--- <sup>(5)</sup>	(5)	(5)	12790

1. Intermediate 4080 rating is available with special bolting materials in most valve body materials. Consult your Emerson Process Management sales office.  
2. Ratings based on SA-193-B7 bolts up to 232°C, consult your Fisher sales office for ratings with other bolt material.  
3. For largest available 316 strain-hardened stainless steel stem.  
4. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
5. Consult your Emerson Process Management sales office.  
6. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

**Table 5. NPS 1-1/2 x 1 CL1500 EH Series Valves with Intermediate 1789 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	309	309	309	309	309	309	296	309	49400
93	309	309	309	309	309	309	254	284	44110
149	299	309	299	309	299	305	230	257	40120
204	290	309	290	309	290	298	211	234	36100
232	281	309	281	309	281	297	199	213	34960
260	273	309	273	309	273	296	(4)	(4)	34080
316	249	309	249	309	249	296	(4)	(4)	32550
343	242	309	242	309	242	294	(4)	(4)	31780
371	234	293	234	293	233	292	(4)	(4)	31010
399	207	259	---	---	219	284	(4)	(4)	30750
427	169	211	---	---	209	277	(4)	(4)	30490
454	---	---	---	---	200	264	(4)	(4)	13130
482	---	---	---	---	185	247 <sup>(3)</sup>	(4)	(4)	13010
510	---	---	---	---	155 <sup>(3)</sup>	194 <sup>(3)</sup>	(4)	(4)	12900
538	---	---	---	---	107 <sup>(3)</sup>	134 <sup>(3)</sup>	(4)	(4)	12790
566	---	---	---	---	72 <sup>(3)</sup>	90 <sup>(3)</sup>	(4)	(4)	12790
593	---	---	---	---	--- <sup>(4)</sup>	--- <sup>(4)</sup>	(4)	(4)	12790

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.

Table 6. NPS 1-1/2 x 1 CL2500 EH Series Valves with Intermediate 3021 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	
38	521	521	521	521	521	521	500	521	49400
93	521	521	521	521	521	521	430	479	44110
149	506	521	506	521	506	515	388	433	40120
204	490	521	490	521	490	503	356	396	36100
232	474	521	474	521	475	501	330	372	34960
260	461	521	461	521	462	500	(4)	(4)	34080
316	420	521	420	521	420	500	(4)	(4)	32550
343	409	521	409	521	409	497	(4)	(4)	31780
371	394	494	394	494	394	494	(4)	(4)	31010
399	350	437	---	---	369	479	(4)	(4)	30750
427	286	357	---	---	352	467	(4)	(4)	30490
454	---	---	---	---	338	447	(4)	(4)	13130
482	---	---	---	---	312	416 <sup>(3)</sup>	(4)	(4)	13010
510	---	---	---	---	262 <sup>(3)</sup>	328 <sup>(3)</sup>	(4)	(4)	12900
538	---	---	---	---	181 <sup>(3)</sup>	226 <sup>(3)</sup>	(4)	(4)	12790
566	---	---	---	---	121 <sup>(3)</sup>	151 <sup>(3)</sup>	(4)	(4)	12790
593	---	---	---	---	---(4)	---(4)	(4)	(4)	12790

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.

Table 7. NPS 2 CL1500 EH Series Valves with Intermediate 1758 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	
38	303	303	303	303	303	303	291	303	70830
93	303	303	303	303	303	303	250	279	63180
149	294	303	294	303	294	300	226	252	57430
204	285	303	285	303	285	293	208	230	51650
232	276	303	276	303	276	292	190	208	50010
260	269	303	269	303	269	291	(4)	(4)	48740
316	244	303	244	303	244	291	(4)	(4)	46550
343	238	303	238	303	238	289	(4)	(4)	45450
371	229	288	229	288	230	288	(4)	(4)	44350
399	204	254	---	---	215	279	(4)	(4)	43980
427	167	208	---	---	205	272	(4)	(4)	43600
454	---	---	---	---	197	260	(4)	(4)	23340
482	---	---	---	---	181	242 <sup>(3)</sup>	(4)	(4)	23140
510	---	---	---	---	152 <sup>(3)</sup>	190 <sup>(3)</sup>	(4)	(4)	22940
538	---	---	---	---	106 <sup>(3)</sup>	132 <sup>(3)</sup>	(4)	(4)	22740
566	---	---	---	---	71 <sup>(3)</sup>	88 <sup>(3)</sup>	(4)	(4)	22740
593	---	---	---	---	---(4)	---(4)	(4)	(4)	22740

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.

**Table 8. NPS 2 CL2500 EH Series Valves with Intermediate 3273 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	564	564	564	564	564	564	542	564	70830
93	564	564	564	564	564	564	466	519	63180
149	548	564	548	564	548	558	421	470	57430
204	531	564	531	564	531	545	386	429	51650
232	514	564	514	564	514	543	350	404	50010
260	500	564	500	564	500	542	(4)	(4)	48740
316	455	564	455	564	455	542	(4)	(4)	46550
343	443	564	443	564	443	539	(4)	(4)	45450
371	427	535	427	535	427	535	(4)	(4)	44350
399	379	475	---	---	400	519	(4)	(4)	43980
427	310	387	---	---	382	506 <sup>(3)</sup>	(4)	(4)	43600
454	---	---	---	---	366	484 <sup>(3)</sup>	(4)	(4)	23340
482	---	---	---	---	338 <sup>(3)</sup>	451 <sup>(3)</sup>	(4)	(4)	23140
510	---	---	---	---	284 <sup>(3)</sup>	355 <sup>(3)</sup>	(4)	(4)	22940
538	---	---	---	---	196 <sup>(3)</sup>	245 <sup>(3)</sup>	(4)	(4)	22740
566	---	---	---	---	131 <sup>(3)</sup>	145 <sup>(3,5)</sup>	(4)	(4)	22740
593	---	---	---	---	--- <sup>(4)</sup>	--- <sup>(4)</sup>	(4)	(4)	22740

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.  
 5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

**Table 9. NPS 3 CL1500 EH Series Valves with Intermediate 1756 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	303	303	303	303	303	303	291	303	70830
93	303	303	303	303	303	303	250	279	63180
149	294	303	294	303	294	299	225	252	57430
204	285	303	285	303	285	292	208	230	51650
232	276	303	276	303	276	291	197	221	50010
260	268	303	268	303	268	291	(4)	(4)	48740
316	244	303	244	303	244	291	(4)	(4)	46550
343	238	303	238	303	238	289	(4)	(4)	45450
371	229	287	229	287	229	287	(4)	(4)	44350
399	203	254	---	---	215	279	(4)	(4)	43980
427	166	208	---	---	205	272	(4)	(4)	43600
454	---	---	---	---	197	260	(4)	(4)	23340
482	---	---	---	---	181	242	(4)	(4)	23140
510	---	---	---	---	152	190 <sup>(3)</sup>	(4)	(4)	22940
538	---	---	---	---	105 <sup>(3)</sup>	132 <sup>(3)</sup>	(4)	(4)	22740
566	---	---	---	---	71 <sup>(3)</sup>	88 <sup>(3)</sup>	(4)	(4)	22740
593	---	---	---	---	--- <sup>(4)</sup>	--- <sup>(4)</sup>	(4)	(4)	22740

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.

Table 10. NPS 3 CL2500 EH Series Valves with Intermediate 2932 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	505	505	505	505	505	505	485	505	70830
93	505	505	505	505	506	505	417	465	63180
149	491	505	491	505	491	500	377	421	57430
204	475	505	475	505	476	488	346	384	51650
232	461	505	461	505	461	486	321	362	50010
260	448	505	448	505	448	485	(4)	(4)	48740
316	407	505	407	505	407	485	(4)	(4)	46550
343	396	505	396	505	396	482	(4)	(4)	45450
371	383	480	383	480	383	480	(4)	(4)	44350
399	340	424	---	---	358	465	(4)	(4)	43980
427	277	346	---	---	342	453	(4)	(4)	43600
454	---	---	---	---	328	433 <sup>(3)</sup>	(4)	(4)	23340
482	---	---	---	---	303	404 <sup>(3)</sup>	(4)	(4)	23140
510	---	---	---	---	254 <sup>(3)</sup>	318 <sup>(3)</sup>	(4)	(4)	22940
538	---	---	---	---	176 <sup>(3)</sup>	220 <sup>(3)</sup>	(4)	(4)	22740
566	---	---	---	---	118 <sup>(3)</sup>	147 <sup>(3)</sup>	(4)	(4)	22740
593	---	---	---	---	---(4)	---(4)	(4)	(4)	22740

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.

Table 11. NPS 4 CL1500 EH Series Valves with Intermediate 2083 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	359	359	359	359	359	359	345	359	70830
93	359	359	359	359	359	359	296	330	63180
149	349	359	349	359	349	355	268	299	57430
204	338	359	338	359	338	347	246	273	51650
232	327	359	327	359	327	346	220	257	50010
260	318	359	318	359	318	345	(4)	(4)	48740
316	290	359	290	359	290	345	(4)	(4)	46550
343	282	359	282	359	282	343	(4)	(4)	45450
371	272	341	272	341	272	341	(4)	(4)	44350
399	241	302	---	---	254	330	(4)	(4)	43980
427	197	246	---	---	243	322	(4)	(4)	43600
454	---	---	---	---	233	308 <sup>(3)</sup>	(4)	(4)	23340
482	---	---	---	---	215	287 <sup>(3)</sup>	(4)	(4)	23140
510	---	---	---	---	181 <sup>(3)</sup>	226 <sup>(3)</sup>	(4)	(4)	22940
538	---	---	---	---	125 <sup>(3)</sup>	156 <sup>(3)</sup>	(4)	(4)	22740
566	---	---	---	---	84 <sup>(3)</sup>	102 <sup>(3,5)</sup>	(4)	(4)	22740
593	---	---	---	---	---(4)	---(4)	(4)	(4)	22740

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.  
 5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

**Table 12. NPS 4 CL2500 EH Series Valves with Intermediate 3294 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	568	568	568	568	568	568	545	568	70830
93	568	568	568	568	568	568	469	522	63180
149	551	568	551	568	551	561	423	472	57430
204	534	568	534	568	534	549	389	432	51650
232	517	568	517	568	517	547	353	406	50010
260	503	568	503	568	503	545	(4)	(4)	48740
316	458	568	458	568	458	545	(4)	(4)	46550
343	445	568	445	568	445	542	(4)	(4)	45450
371	430	538	430	538	430	539	(4)	(4)	44350
399	382	477	---	---	402	522 <sup>(3)</sup>	(4)	(4)	43980
427	312	389	---	---	384	510 <sup>(3)</sup>	(4)	(4)	43600
454	---	---	---	---	369	487 <sup>(3)</sup>	(4)	(4)	23340
482	---	---	---	---	340 <sup>(3)</sup>	454 <sup>(3)</sup>	(4)	(4)	23140
510	---	---	---	---	286 <sup>(3)</sup>	357 <sup>(3)</sup>	(4)	(4)	22940
538	---	---	---	---	197 <sup>(3)</sup>	247 <sup>(3)</sup>	(4)	(4)	22740
566	---	---	---	---	132 <sup>(3)</sup>	140 <sup>(3,5)</sup>	(4)	(4)	22740
593	---	---	---	---	---(4)	---(4)	(4)	(4)	22740

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.  
5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

**Table 13. NPS 6 CL1500 EH Series Valves with Intermediate 1876 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	323	323	323	323	323	323	310	323	90470
93	323	323	323	323	323	323	267	298	80640
149	314	323	314	323	314	320	241	269	73270
204	304	323	304	323	304	312	222	246	65870
232	295	323	295	323	295	311	197	231	63770
260	287	323	287	323	287	310	(4)	(4)	62150
316	261	323	261	323	261	310	(4)	(4)	59420
343	254	323	254	323	254	309	(4)	(4)	57980
371	245	307	245	307	245	307	(4)	(4)	56540
399	217	272	---	---	229	298	(4)	(4)	56100
427	178	222	---	---	219	290	(4)	(4)	55660
454	---	---	---	---	210	277 <sup>(3)</sup>	(4)	(4)	36480
482	---	---	---	---	194 <sup>(3)</sup>	259 <sup>(3)</sup>	(4)	(4)	36160
510	---	---	---	---	163 <sup>(3)</sup>	203 <sup>(3)</sup>	(4)	(4)	35850
538	---	---	---	---	112 <sup>(3)</sup>	141 <sup>(3)</sup>	(4)	(4)	35530
566	---	---	---	---	76 <sup>(3)</sup>	88 <sup>(3,5)</sup>	(4)	(4)	35530
593	---	---	---	---	---(4)	---(4)	(4)	(4)	35530

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.  
5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

Table 14. NPS 6 CL2500 EH Series Valves with Intermediate 2987 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD(2) NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M(1)		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	515	515	515	515	515	515	494	515	90470
93	515	515	515	515	515	515	425	474	80640
149	500	515	500	515	500	509	384	429	73270
204	484	515	484	515	484	497	353	391	65870
232	469	515	469	515	469	495	314	368	63770
260	456	515	456	515	456	494	(4)	(4)	62150
316	415	515	415	515	415	494	(4)	(4)	59420
343	404	515	404	515	404	491	(4)	(4)	57980
371	390	489	390	489	390	489	(4)	(4)	56540
399	346	433	---	---	365	474	(4)	(4)	56100
427	282	353	---	---	349	462(3)	(4)	(4)	55660
454	---	---	---	---	334	441(3)	(4)	(4)	36480
482	---	---	---	---	309(3)	412(3)	(4)	(4)	36160
510	---	---	---	---	259(3)	324(3)	(4)	(4)	35850
538	---	---	---	---	179(3)	224(3)	(4)	(4)	35530
566	---	---	---	---	120(3)	142(3,5)	(4)	(4)	35530
593	---	---	---	---	---(4)	---(4)	(4)	(4)	35530

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.  
 5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

Table 15. NPS 8 CL1500 EH Series Valves with Intermediate 1866 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD(2) NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M(1)		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	322	322	322	322	322	322	309	322	154830
93	321	322	321	322	322	322	265	296	137790
149	312	322	312	322	312	318	240	268	124530
204	301	322	301	322	303	311	220	244	114450
232	293	322	293	322	294	310	200	230	109880
260	284	322	284	322	285	309	(4)	(4)	107000
316	260	322	260	322	259	309	(4)	(4)	101140
343	251	322	72	90	252	307	(4)	(4)	99010
371	237	318	---	---	243	305	(4)	(4)	96870
399	217	301	---	---	228	296	(4)	(4)	95530
427	180	270	---	---	218	289	(4)	(4)	94190
454	---	---	---	---	209	276(3)	(4)	(4)	93390
482	---	---	---	---	193(3)	257(3)	(4)	(4)	92580
510	---	---	---	---	162(3)	202(3)	(4)	(4)	91770
538	---	---	---	---	112(3)	140(3)	(4)	(4)	90970
566	---	---	---	---	75(3)	81(3,5)	(4)	(4)	90970
593	---	---	---	---	---(4)	---(4)	(4)	(4)	90970

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.  
 5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.



**Table 16. NPS 8 CL2500 EH Series Valves with Intermediate 2943 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	507	507	507	507	507	507	487	507	87500
93	506	507	506	507	507	507	419	467	78310
149	492	507	492	507	493	502	378	422	71320
204	475	507	475	507	477	490	348	385	64260
232	463	507	463	507	465	488	320	342	62270
260	448	507	448	507	450	487	(4)	(4)	60690
316	411	507	411	507	409	487	(4)	(4)	58050
343	396	507	113	142	398	484	(4)	(4)	56660
371	375	501	---	---	384	481	(4)	(4)	55270
399	342	475	---	---	360	467	(4)	(4)	54830
427	284	426	---	---	343	455	(4)	(4)	54390
454	---	---	---	---	330	435 <sup>(3)</sup>	(4)	(4)	29730
482	---	---	---	---	304	406 <sup>(3)</sup>	(4)	(4)	29470
510	---	---	---	---	256 <sup>(3)</sup>	319 <sup>(3)</sup>	(4)	(4)	29030
538	---	---	---	---	176 <sup>(3)</sup>	220 <sup>(3)</sup>	(4)	(4)	28950
566	---	---	---	---	118 <sup>(3)</sup>	148 <sup>(3)</sup>	(4)	(4)	28950
593	---	---	---	---	---(4)	---(4)	(4)	(4)	28950

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.

**Table 17. NPS 10 CL1500 EH Series Valves with Intermediate 1568 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	270	270	270	270	270	270	260	270	154830
93	269	270	269	270	270	270	223	249	137790
149	262	270	262	270	262	267	201	225	124530
204	253	270	253	270	254	261	185	205	114450
232	247	270	247	270	247	260	176	188	109880
260	239	270	239	270	240	260	(4)	(4)	107000
316	219	270	219	270	218	260	(4)	(4)	101140
343	211	270	60	76	212	258	(4)	(4)	99010
371	200	267	---	---	205	256	(4)	(4)	96870
399	182	253	---	---	192	249	(4)	(4)	95530
427	151	227	---	---	183	242	(4)	(4)	94190
454	---	---	---	---	175	232	(4)	(4)	93390
482	---	---	---	---	162	216 <sup>(3)</sup>	(4)	(4)	92580
510	---	---	---	---	136 <sup>(3)</sup>	170 <sup>(3)</sup>	(4)	(4)	91770
538	---	---	---	---	94 <sup>(3)</sup>	118 <sup>(3)</sup>	(4)	(4)	90970
566	---	---	---	---	63 <sup>(3)</sup>	79 <sup>(3)</sup>	(4)	(4)	90970
593	---	---	---	---	---(4)	---(4)	(4)	(4)	90970

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.

Table 18. NPS 10 CL2500 EH Series Valves with Intermediate 2522 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	435	435	435	435	435	435	417	435	87500
93	433	435	433	435	435	435	359	400	78310
149	422	435	422	435	422	430	324	362	71320
204	407	435	407	435	409	420	298	330	64260
232	397	435	397	435	398	419	283	314	62270
260	384	435	384	435	386	418	(4)	(4)	60690
316	352	435	352	435	351	418	(4)	(4)	58050
343	339	435	97	122	341	415	(4)	(4)	56660
371	321	430	---	---	329	412	(4)	(4)	55270
399	293	407	---	---	308	400	(4)	(4)	54830
427	243	365	---	---	294	390	(4)	(4)	54390
454	---	---	---	---	282	372	(4)	(4)	29730
482	---	---	---	---	261	348	(4)	(4)	29470
510	---	---	---	---	219	273 <sup>(3)</sup>	(4)	(4)	29030
538	---	---	---	---	151 <sup>(3)</sup>	189 <sup>(3)</sup>	(4)	(4)	28950
566	---	---	---	---	101 <sup>(3)</sup>	127 <sup>(3)</sup>	(4)	(4)	28950
593	---	---	---	---	--- <sup>(4)</sup>	--- <sup>(4)</sup>	(4)	(4)	28950

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.

Table 19. NPS 12 and 14 CL1500 EH Series Valves with Intermediate 1650 Rating

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	284	284	284	284	284	284	273	284	154830
93	283	284	283	284	284	284	235	262	137790
149	276	284	276	284	276	281	212	237	124530
204	266	284	266	284	268	274	195	216	114450
232	259	284	259	284	260	273	185	202	109880
260	251	284	251	284	252	273	(4)	(4)	107000
316	230	284	230	284	229	273	(4)	(4)	101140
343	222	284	64	80	223	272	(4)	(4)	99010
371	210	281	---	---	215	270	(4)	(4)	96870
399	192	266	---	---	202	262	(4)	(4)	95530
427	159	239	---	---	193	255	(4)	(4)	94190
454	---	---	---	---	185	244	(4)	(4)	93390
482	---	---	---	---	170	228 <sup>(3)</sup>	(4)	(4)	92580
510	---	---	---	---	143 <sup>(3)</sup>	179 <sup>(3)</sup>	(4)	(4)	91770
538	---	---	---	---	102 <sup>(3)</sup>	124 <sup>(3)</sup>	(4)	(4)	90970
566	---	---	---	---	66 <sup>(3)</sup>	83 <sup>(3)</sup>	(4)	(4)	90970
593	---	---	---	---	--- <sup>(4)</sup>	--- <sup>(4)</sup>	(4)	(4)	90970

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
 2. For largest available 316 strain-hardened stainless steel stem.  
 3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
 4. Consult your Emerson Process Management sales office.

**Table 20. NPS 12 CL2500 EH Series Valves with Intermediate 2940 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	507	507	507	507	507	507	486	507	154830
93	505	507	505	507	507	507	419	466	137790
149	492	507	492	507	492	501	378	422	124530
204	475	507	475	507	477	490	347	385	114450
232	462	507	462	507	464	488	315	362	109880
260	447	507	447	507	449	487	(4)	(4)	107000
316	410	507	410	507	409	487	(4)	(4)	101140
343	396	507	113	142	397	484	(4)	(4)	99010
371	374	501	---	---	384	481	(4)	(4)	96870
399	341	474	---	---	359	466	(4)	(4)	95530
427	283	425	---	---	343	455	(4)	(4)	94190
454	---	---	---	---	329	434 <sup>(3)</sup>	(4)	(4)	93390
482	---	---	---	---	304 <sup>(3)</sup>	405 <sup>(3)</sup>	(4)	(4)	92580
410	---	---	---	---	255 <sup>(3)</sup>	319 <sup>(3)</sup>	(4)	(4)	91770
538	---	---	---	---	176 <sup>(3)</sup>	220 <sup>(3)</sup>	(4)	(4)	90970
566	---	---	---	---	118 <sup>(3)</sup>	130 <sup>(3,5)</sup>	(4)	(4)	90970
593	---	---	---	---	---(4)	---(4)	(4)	(4)	90970

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.  
5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

**Table 21. NPS 14 CL2500 EH Series Valves with Intermediate 2754 Rating**

TEMP, °C	PRESSURE RATINGS, BAR								MAXIMUM STEM LOAD <sup>(2)</sup> NEWTONS
	Valve Body Material and Intermediate Class Designation								
	WCC		LCC		WC9		CF8M <sup>(1)</sup>		
Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class	Standard Class	Special Class		
38	475	475	475	475	475	475	456	475	154830
93	473	475	473	475	475	475	392	437	137790
149	461	475	461	475	461	469	354	395	124530
204	445	475	445	475	447	459	325	361	114450
232	433	475	433	475	435	457	292	340	109880
260	419	475	419	475	421	456	(4)	(4)	107000
316	384	475	384	475	383	456	(4)	(4)	101140
343	371	475	106	133	373	453	(4)	(4)	99010
371	351	469	---	---	359	450	(4)	(4)	96870
399	320	444	---	---	336	437	(4)	(4)	95530
427	265	398	---	---	321	426	(4)	(4)	94190
454	---	---	---	---	308	407	(4)	(4)	93390
482	---	---	---	---	284	380 <sup>(3)</sup>	(4)	(4)	92580
510	---	---	---	---	239 <sup>(3)</sup>	299 <sup>(3)</sup>	(4)	(4)	91770
538	---	---	---	---	165 <sup>(3)</sup>	206 <sup>(3)</sup>	(4)	(4)	90970
566	---	---	---	---	111 <sup>(3)</sup>	130 <sup>(3,5)</sup>	(4)	(4)	90970
593	---	---	---	---	---(4)	---(4)	(4)	(4)	90970

1. Ratings based on SA-193-B7 bolts up to 232°C, consult your Emerson Process Management sales office for ratings with other bolt material.  
2. For largest available 316 strain-hardened stainless steel stem.  
3. SA-193-B16 bolts and SA-194-7 nuts must be used to obtain maximum rating shown.  
4. Consult your Emerson Process Management sales office.  
5. Derating due to bolting limitations, higher ratings may be possible with alternate bolt materials. Consult your Emerson Process Management sales office for ratings with other bolt materials.

**Table 22. NPS 12 x 8 CL900 EW Series Valve with Intermediate 1150 Rating**

TEMPERATURE, °C	PRESSURE RATINGS, BAR				MAXIMUM STEM LOAD, NEWTONS
	Valve Body Material and Intermediate Class Designation				
	WCC		WC9		
	Standard Class	Special Class	Standard Class	Special Class	
38	198	198	198	198	75,620
93	198	198	189	198	74,480
149	192	198	179	198	73,040
204	186	198	171	198	71,610
260	176	198	169	194	70,400
316	160	198	160	194	69,110
343	155	198	155	194	68,580
371	147	189	150	194	67,980
399	134	168	140	192	67,520
427	109	136	134	192	66,700
454	---	---	129	179	65,940
482	---	---	119	159	64,880
510	---	---	99	124	60,640
538	---	---	71	87	56,410

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