



Photo courtesy of ChingFu Shipyard.

## Jastram Model S Steering Gear

The Jastram Model S Actuators are specifically certified for use in commercial marine hydraulic steering systems. Their rugged steel construction includes many standard features resulting from our long experience in the manufacture, operation and service of steering systems.

Model S Actuators include features many manufacturers do not provide but are essential to a high quality, reliable steering gear for commercial marine application:

- Micro-honed heavy wall cylinder barrel
- Precision ground, chrome-plated piston rod
- Oversize piston and piston rod bearings
- Piston rod wiper
- Tie-rod construction
- Self-aligning spherical bearings
- SAE outlet ports

Type Approved Product; see details on back page

## STEERING SYSTEM SPECIFICATIONS (INCH)

STEERING GEAR MODEL	RATED TORQUE		STEERING ANGLE	ACTUATOR MODEL	DISPL.	A	B	C	D	E	F	G	H	J	K (Bolt Dia)	SINGLE RUDDER		TWIN RUDDERS	
	T.M.	LBF.FT.														L	M (Max Dia)	L	M (Max Dia)
S2-11	1.1	8,130	45	S-300-11	130	7.44	28.49	5.07	3/4"-16 SAE straight thread	3.06	3.06	5.50	4.63	2.19	1/2	5.27	4.54	4.18	3.61
S2-16	1.6	11,450	35		128	9.04	28.49	7.22								5.91	5.09	4.69	4.04
S2-18	1.8	12,737	45	S-300-17	204	11.65	37.73	7.95	3/4"-16 SAE straight thread	3.06	3.06	5.50	4.63	2.19	1/2	6.12	5.28	4.86	4.19
S2-25	2.5	17,931	35		201	14.16	37.73	11.31								6.86	5.92	5.45	4.70
S2-23	2.3	16,441	45	S-400-12	263	8.46	34.23	5.77	1 1/16"-12 SAE straight thread	3.69	3.88	7.00	5.75	2.63	3/8	6.67	5.75	5.29	4.56
S2-32	3.2	23,146	35		259	10.28	34.23	8.21								7.47	6.44	5.93	5.11
S2-28	2.8	20,469	45	S-400-15	327	10.51	38.72	7.17	1 1/16"-12 SAE straight thread	3.69	3.88	7.00	5.75	2.63	3/8	7.17	6.18	5.69	4.91
S2-40	4.0	28,787	35		322	12.78	38.72	10.20								8.03	6.93	6.38	5.50
S2-36	3.6	25,699	45	S-400-19	411	13.22	44.67	9.02	1 1/16"-12 SAE straight thread	3.69	3.88	7.00	5.75	2.63	3/8	7.74	6.67	6.14	5.29
S2-50	5.0	36,165	35		405	16.07	44.67	12.83								8.67	7.47	6.88	5.93
S2-45	4.5	32,259	45	S-400-24	516	16.58	52.03	11.31	1 1/16"-12 SAE straight thread	3.69	3.88	7.00	5.75	2.63	3/8	8.35	7.19	6.62	5.71
S2-63	6.3	45,351	35		508	20.15	52.03	16.09								9.35	8.06	7.42	6.40
S2-57	5.7	41,084	45	S-500-20	658	13.53	48.51	9.23	1 1/16"-12 SAE straight thread	4.56	5.06	8.50	7.00	3.63	3/8	9.05	7.80	7.18	6.19
S2-80	8.0	57,864	35		648	16.45	48.51	13.13								10.14	8.74	8.05	6.94
S2-71	7.1	51,391	45	S-500-25	822	16.92	55.94	11.54	1 1/16"-12 SAE straight thread	4.56	5.06	8.50	7.00	3.63	3/8	9.75	8.40	7.74	6.67
S2-100	10.0	72,330	35		811	20.56	55.94	16.42								10.92	9.42	8.67	7.47
S2-94	9.4	67,629	45	S-500-32	1,069	21.99	67.07	15.00	1 1/16"-12 SAE straight thread	4.56	5.06	8.50	7.00	3.63	3/8	10.68	9.21	8.48	7.31
S2-130	13.0	94,029	35		1,054	26.73	67.07	21.35								11.92	10.28	9.46	8.16
S2-114	11.4	82,239	45	S-600-27*	1,316	18.80	68.12	12.82	1" SAE 4-bolt flange	6.25	6.25	12.00	10.25	4.50	3/8	11.40	9.83	9.05	7.80
S2-160	16.0	115,728	35		1,297	22.85	68.12	18.25								12.78	11.01	10.14	8.74
S2-128	12.8	92,583	45	S-600-31*	1,480	21.15	73.28	14.43	1" SAE 4-bolt flange	6.25	6.25	12.00	10.25	4.50	3/8	11.86	10.22	9.41	8.11
S2-180	18.0	130,194	35		1,459	25.70	73.28	20.53								13.29	11.45	10.55	9.09
S2-156	15.6	113,052	45	S-600-38*	1,809	25.85	83.59	17.63	1 1/4" SAE 4-bolt flange	7.50	8.00	16.00	13.00	5.75	1	12.68	10.93	10.06	8.67
S2-220	22.0	159,126	35		1,783	31.42	83.59	25.09								14.21	12.25	11.28	9.72
S2-176	17.6	127,301	45	S-800-24*	2,056	16.52	68.29	11.27	1 1/4" SAE 4-bolt flange	7.50	8.00	16.00	13.00	5.75	1	13.19	11.37	10.47	9.02
S2-250	25.0	180,825	35		2,026	20.08	68.29	16.04								14.83	12.78	11.77	10.14
S2-228	22.8	164,551	45	S-800-31*	2,632	21.16	78.45	14.43	1 1/4" SAE 4-bolt flange	7.50	8.00	16.00	13.00	5.75	1	14.37	12.38	11.40	9.83
S2-320	32.0	231,456	35		2,594	25.71	78.45	20.53								16.10	13.88	12.78	11.01
S2-284	28.4	205,418	45	S-800-38*	3,288	26.43	90.02	18.03	1 1/4" SAE 4-bolt flange	7.50	8.00	16.00	13.00	5.75	1	15.47	13.34	12.28	10.58
S2-400	40.0	289,321	35		3,241	32.12	90.02	25.65								17.34	14.95	13.76	11.86
S2-355	35.5	256,989	45	S-1000-31*	4,112	21.15	88.79	14.43	1 1/2" SAE 4-bolt flange	10.00	10.50	21.00	18.00	7.50	1 1/2	16.67	14.37	13.23	11.40
S2-500	50.0	361,651	35		4,054	25.71	88.79	20.53								18.68	16.10	14.83	12.78
S2-448	44.8	323,894	45	S-1000-39*	5,183	26.66	100.88	18.18	1 1/2" SAE 4-bolt flange	10.00	10.50	21.00	18.00	7.50	1 1/2	18.00	15.52	14.29	12.32
S2-630	63.0	455,680	35		5,109	32.40	100.88	25.88								20.17	17.39	16.01	13.80
S2-568	56.8	411,124	45	S-1000-49*	6,578	33.84	116.63	23.08	1 1/2" SAE 4-bolt flange	10.00	10.50	21.00	18.00	7.50	1 1/2	19.49	16.81	15.47	13.34
S2-800	80.0	578,641	35		6,484	41.13	116.63	32.84								21.85	18.83	17.34	14.95
S2-711	71.1	513,906	45	S-1000-62*	8,222	42.30	135.19	28.85	1 1/2" SAE 4-bolt flange	10.00	10.50	21.00	18.00	7.50	1 1/2	21.00	18.10	16.67	14.37
S2-1000	100.0	723,301	35		8,105	51.41	135.19	41.06								23.53	20.29	18.68	16.10

TORQUE RATING IS DETERMINED AT 1500 PSI (103 BAR)

**Note:** Hoses, shut-off valves and tiller pins are not supplied with Model S Actuators

Dimensions A-M are all in inches

<sup>1</sup> Model S2 indicates 2 actuators are used. S4 indicates 4 actuators

<sup>2</sup> Other steering angles are also available

<sup>3</sup> Other actuator stroke lengths are available upon request

\* These actuators require 6 tail mounting bolts (K on chart)

All other actuators require 4 tail mounting bolts (K)

### MODEL S STEERING GEAR CODE

Example: S2 - 320 - 2 - 35

NO. OF ACTUATORS  
S2=Two steel actuators  
S4=Four steel actuators

TORQUE  
In T.M. x 10

RUDDER ANGLE  
NO. OF RUDDERS

Description of Model S2-320-2-35 Steering Gear:

Two S-800-31 actuators producing a torque of 32.0 T.M. on two rudders at 2 x 35°

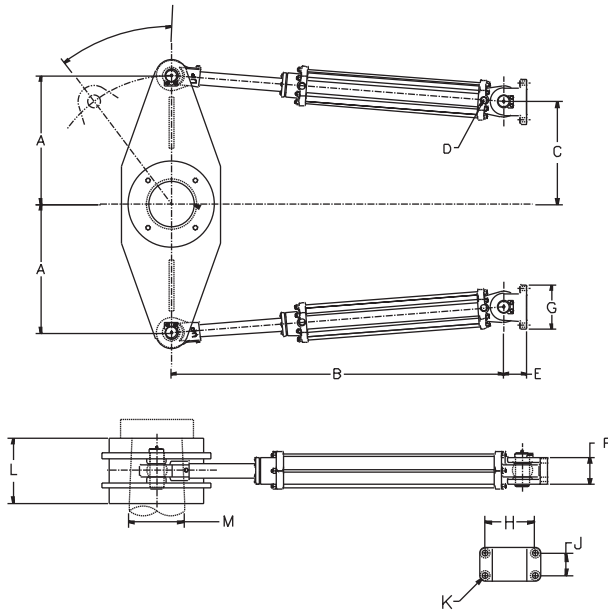
## STEERING SYSTEM SPECIFICATIONS (METRIC)

STEERING GEAR MODEL	RATED TORQUE		STEERING ANGLE	ACTUATOR MODEL	DISPL.	A	B	C	D	E	F	G	H	J	K (Bolt Dia)	SINGLE RUDDER		TWIN RUDDERS	
	T.M.	LBF.FT.														L	M (Max Dia)	L	M (Max Dia)
S2-11	1.1	8,130	45	S-300-11	2,130	189	724	129	3/4"-16 SAE straight thread	78	78	140	117	56	M12	134	115	106	92
S2-16	1.6	11,450	35		2,098	230	724	183								150	129	119	103
S2-18	1.8	12,737	45	S-300-17	3,343	296	958	202	3/4"-16 SAE straight thread	78	78	140	117	56	M12	156	134	123	106
S2-25	2.5	17,931	35		3,294	360	958	287								174	150	138	119
S2-23	2.3	16,441	45	S-400-12	4,310	215	869	147	1 1/16"-12 SAE straight thread	94	98	178	146	67	M16	169	146	134	116
S2-32	3.2	23,146	35		4,244	261	869	209								190	164	151	130
S2-28	2.8	20,469	45	S-400-15	5,359	267	983	182	1 1/16"-12 SAE straight thread	94	98	178	146	67	M16	182	157	145	125
S2-40	4.0	28,787	35		5,277	325	983	259								204	176	162	140
S2-36	3.6	25,699	45	S-400-19	6,735	336	1135	229	1 1/16"-12 SAE straight thread	94	98	178	146	67	M16	197	169	156	134
S2-50	5.0	36,165	35		6,637	408	1135	326								220	190	175	151
S2-45	4.5	32,259	45	S-400-24	8,456	421	1322	287	1 1/16"-12 SAE straight thread	94	98	178	146	67	M16	212	183	168	145
S2-63	6.3	45,351	35		8,325	512	1322	409								237	205	188	162
S2-57	5.7	41,084	45	S-500-20	10,783	344	1232	234	1 1/16"-12 SAE straight thread	116	129	216	178	92	M20	230	198	182	157
S2-80	8.0	57,864	35		10,619	418	1232	334								258	222	204	176
S2-71	7.1	51,391	45	S-500-25	13,470	430	1421	293	1 1/16"-12 SAE straight thread	116	129	216	178	92	M20	248	213	196	169
S2-100	10.0	72,330	35		13,290	522	1421	417								277	239	220	190
S2-94	9.4	67,629	45	S-500-32	17,518	559	1704	381	1 1/16"-12 SAE straight thread	116	129	216	178	92	M20	271	234	215	186
S2-130	13.0	94,029	35		17,272	679	1704	542								303	261	240	207
S2-114	11.4	82,239	45	S-600-27*	21,565	478	1730	326	1" SAE 4-bolt flange	159	159	305	260	114	M20	290	250	230	198
S2-160	16.0	115,728	35		21,254	580	1730												

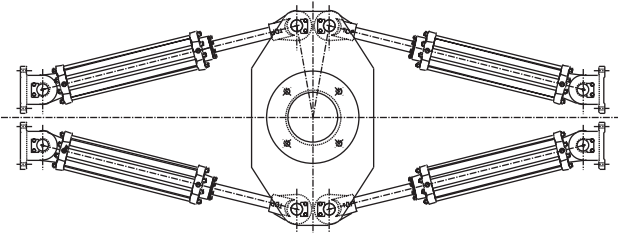
## Steering Gear Arrangements

### Single Rudder

#### Two Actuators



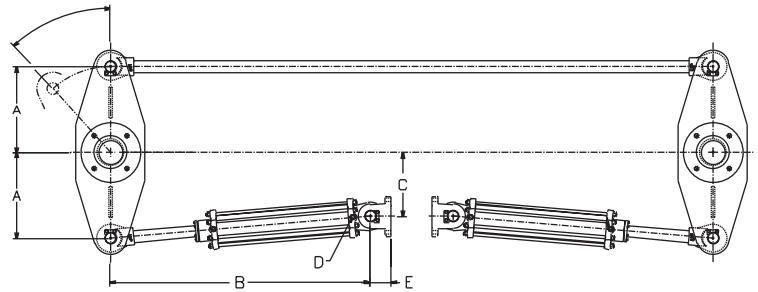
#### Four Actuators



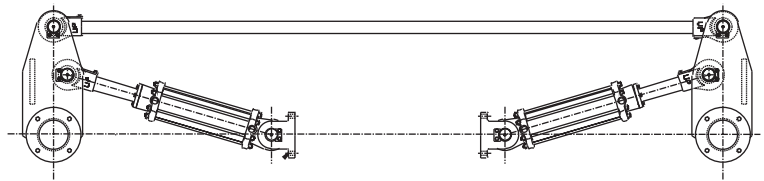
Jastram Model S steering gears are supplied with either two or four Model S actuators and can be used with single, twin or multiple rudders. These actuators and tillers are designed and manufactured to meet the standards of all major classification societies. Model S hydraulic actuators have passed rigorous inspection and testing and are CERTIFIED UNDER THE ABS, DNV & GL TYPE APPROVAL PROGRAMS.

### Twin Rudder

#### Arrangement option 1



#### Arrangement Option 2



The S Model Actuators are Type Approved for under the following standards:

- ABS Type Approved Product under 2006 Building and Classing Steel Vessels 4-3-4/7.3.
- DNV Type Approved for Classification of Ships on the Model S-300, S-400, S-500, S-600, S-800 & S-1000 hydraulic actuators.
- GL Type Approved for "Rules for Classification and Construction" Part 1, Chapter 2 Section 14A "Steering Gears", Edition 2008.



*Data is subject to change without notice.*