


MASTER COPY

1	1	REVISED DUE TO SPRING MATERIAL AS PER STANDARD MSS-SP-58 ADDED	PIPE SUPPORTS	PIPE SUPPORTS	PIPE SUPPORTS	ANSALDO	19/12/02
0	1	FIRST ISSUE	PIPE SUPPORTS	PIPE SUPPORTS	PIPE SUPPORTS	ANSALDO	12/11/02
Rev. rev.	Sc. sc.	Descrizione Description of revision	Preparato prepared	Controllato checked	Verificato Checked	Approvato approved	Data Date

AKRIMOTA THERMAL POWER STATION
STAGE-I, UNITS # 1 & 2 (2 x 125 MW)

OWNER		GUJARAT MINERAL DEVELOPMENT CORPORATION LIMITED
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CONSULTANT		DESEIN PRIVATE LIMITED CONSULTING ENGINEERS
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Commissa job no.	Emittente issued by	Tipo doc. doc. type	Form. Size	Scala scale	Derivato da derived from	Rev. Rev.
0180	PIPESUPPORTS	CCD	A4			1

ANSALDO Ansaldo Energia s.p.a.	Titolo Title <h2 style="text-align: center;">SPRING HANGER SUPPORTS DRAWINGS & DATA SHEETS</h2>
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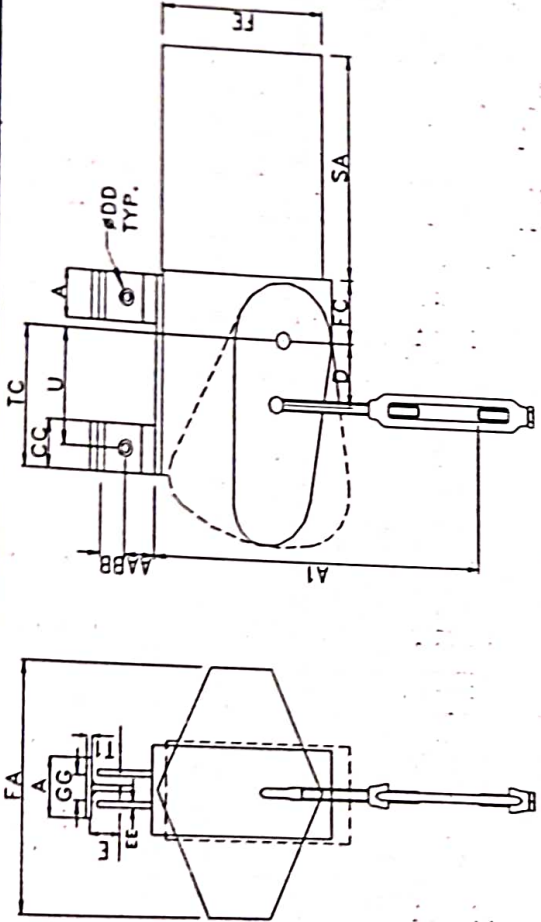
Identificativo/document no.	Foglio Sheet	Segue fg. Foll. Sheet	Di Of
0180 - VXVFS162	1	2	6

Client	Asian Power Projects Ltd.		
Project	Akrimota-TPS		
Client ref.	LOI LP/LOI-AKRI/SAI/1847 dt 28/10/02		
PSI ref	1609	Doc. No.:-	1609-BM1-001
MATERIAL DESCRIPTION			
Sr No	DESCRIPTION	MATERIAL	
1	SPRING	IS:4454/EN45/EN45A/EN47/50CrV4/60Cr4.2/50Cr4V2/60SiCr7/55Si7/60Si7/SAE9254/51CrMOV4. (As per MSS-SP-58)	
	CAN SECTION	IS:2062 Gr-AB	
	PLATE	IS:2062 Gr-AB	
	ROD	IS:2062 Gr-AB	
	HARDWARE	IS:1367 CL4.6 & CL4	
	NAMEPLATE	ALUMINIUM	
Painting:-			
Primer:- 2 Coats of Epoxy Resin Zinc Rich Primer to 100 microns DFT			
Finish:- 3 Coats of Polyamide cured Epoxy MIO Paint to 200 microns DFT			
Threads Zinc Plated			
Amendments:-			
Rev-0 by SRG on 08/11/02			Chkd By:-
Rev-1 by SRG on 29/11/02			
Rev-2 by SRG on 16/12/02			Appd By
Rev Note: Spring Material List included.			

er No	Tag No	Size	Operating Load kg	Travel (+up) (-down) mm	Spring Rate kg/mm	Preset Load kg	Load Var. %	K mm	M mm	S mm	P mm	U mm	Base Bolt size	V mm	Y mm	J mm	Qty Nos
1	1-BQ-0001	V1-20	1298	-6	21.7	1168	10	198	250	270	240	170	M20	12	120	296	1
2	1-BQ-0027	V2-17	646	-12	4.61	591	8.56	198	250	270	240	170	M20	12	100	347	1
3	1-BQ-0036	V2-17	547	14	4.61	612	11.8	198	250	270	240	170	M20	12	100	343	1
4	1-BQ-0037	V2-20	1319	18	10.9	1515	14.8	250	320	270	268	190	M20	12	120	372	1
5	1-BQ-0051	V1-17	530	2	9.22	548	3.48	164	200	270	240	170	M20	10	100	250	1
6	1-BQ-0057	V1-17	471	2	9.22	489	3.91	164	200	270	240	170	M20	10	100	257	1
7	1-BQ-0062	V1-17	489	2	9.22	507	3.77	164	200	270	240	170	M20	10	100	255	1
8	1-BQ-0144	V2-17	467	21	4.61	564	20.7	198	250	270	240	170	M20	12	100	353	1
9	1-BQ-0154	V2-17	563	17	4.61	641	13.9	198	250	270	240	170	M20	12	100	336	1
10	1-BQ-0163	V2-17	565	18	4.61	648	14.7	198	250	270	240	170	M20	12	100	335	1
11	2-BQ-0001	V1-20	1298	-6	21.7	1168	10	198	250	270	240	170	M20	12	120	296	1
12	2-BQ-0027	V2-17	646	-12	4.61	591	8.56	198	250	270	240	170	M20	12	100	347	1
13	2-BQ-0036	V2-17	547	14	4.61	612	11.8	198	250	270	240	170	M20	12	100	343	1
14	2-BQ-0037	V2-20	1319	18	10.9	1515	14.8	250	320	270	268	190	M20	12	120	372	1
15	2-BQ-0051	V1-17	511	2	9.22	529	3.61	164	200	270	240	170	M20	10	100	252	1
16	2-BQ-0057	V1-17	451	3	9.22	479	6.13	164	200	270	240	170	M20	10	100	258	1
17	2-BQ-0062	V1-17	474	3	9.22	502	5.83	164	200	270	240	170	M20	10	100	255	1
18	2-BQ-0144	V2-17	467	21	4.61	564	20.7	198	250	270	240	170	M20	12	100	353	1
19	2-BQ-0154	V2-17	563	17	4.61	641	13.9	198	250	270	240	170	M20	12	100	336	1
20	2-BQ-0163	V2-17	565	18	4.61	648	14.7	198	250	270	240	170	M20	12	100	335	1
21	1-BQ-0221	V1-21	1898	3	28.9	1985	4.56	198	250	270	240	170	M20	12	120	304	1
22	2-BQ-2063	V2-18	684	18	6.13	794	16.1	198	250	270	240	170	M20	12	100	363	1
23	2-BQ-0221	V1-21	1898	3	28.9	1985	4.56	198	250	270	240	170	M20	12	120	304	1

Note: Base Plate Bolts are not in our scope

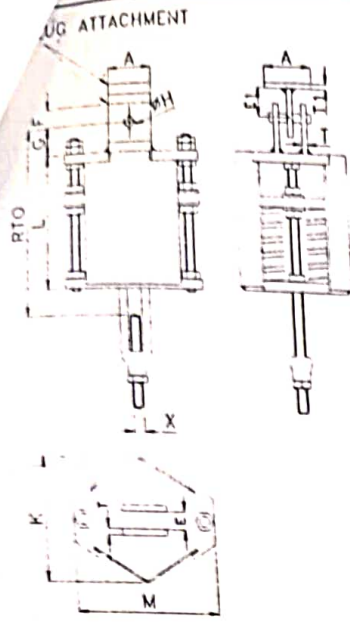
Load Data Sheet for Constants Model:- HD-TS3



Customer :-	Ansaldo Services Private Limited		PSI Offer Ref:-	1609
Project :-	Akrimota 2x125 MW TPS		Drwg No:-	1609-HD-TS3-001
Eng. Ref:-	LOI LPWI-AKRI/SAI/1847 dt 28/10/02		Rev-0 :-	By SRG on 08/11/02
			Rev-1 :-	By SRG on 29/11/02
			Rev-2 :-	By SRG on 16/12/02
			Rev Note: Spring Material list included	
Painting:-	Material Specification:-			
Primer:-	2 Coats of Epoxy Resin Zinc Rich Primer to 100 mic DFT		Plates/Rods/Can Section:- IS:2062 Gr-A/B	
Finish:-	3 Coats of Epoxy MIO Paint - Total DFT 300 Microns		Spring :- IS:4454/EN45/EN45A/EN47/50CrV4/60CrV4/60Cr4V2/50Cr4V2/60SiCr7/55Si7/60Si7/SAE9254-51CrMOV4 (As Per MSS-SP-58)	
Threads:-	Zinc Plated		Turn Buckle:- SA105 / IS:2062	

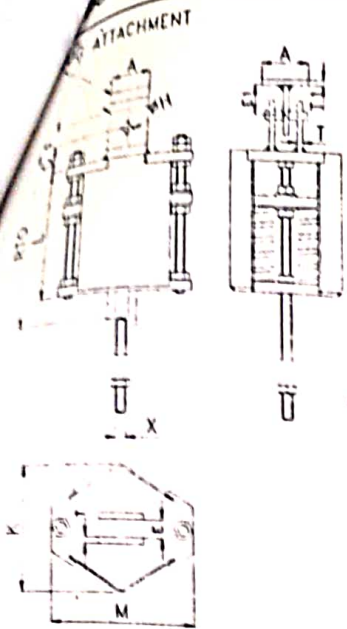
Ser. No	Tag No	Size	Hot Load Kg	Travel (+ up) mm	Movement Provided mm	A1 mm	D mm	DIA 'X'	U mm	A mm	E mm	T1 mm	FA mm	FC mm	FE mm	TC mm	SA mm	AA mm	BB mm	CC mm	DD mm	EE mm	GG mm	QY Nos
1	1-BQ-0043	C4-12	572	73	100	585	188	M20	155	60	50	10	330	95	250	205	286	36	30	50	18	6	25	1
2	1-BQ-0044	C3-9	234	58	110	530	148	M16	120	60	42	10	250	65	198	145	253	36	30	50	18	6	25	2
3	2-BQ-0043	C4-12	572	73	100	585	134	M20	155	60	50	10	330	95	250	205	286	36	30	50	18	6	25	1
4	2-BQ-0044	C3-9	234	58	110	530	148	M16	120	60	42	10	250	65	198	145	253	36	30	50	18	6	25	2

Note:-All the dimensions except 'A1' are for reference only.



Client	Asian Power Projects Ltd.		
Project	Akrimota-TPS		
Client ref.	LOI LP/LOI-AKRI/SAI/1847 dt 28/10/02		
PSI ref	1609	Org No.:-	1609-TS3-001
MATERIAL DESCRIPTION			
Sr No	DESCRIPTION	MATERIAL	
1	SPRING	IS 4454/EN45/EN45A/EN47/50CrV4/50CrV4/50CrV2/50SiCr1/55Si7/60Si7/SAE9254 51CrMOV4. (As per MSS-SP-58)	
	CAN SECTION	IS 2062 Gr-A/B	
	PLATE	IS 2062 Gr-A/B	
	ROD	IS 2062 Gr-A/B	
	TURNBUCKLE	SA105	
	HARDWARE	IS:1367 CL4 6 & CL4	
	NAMEPLATE	ALUMINIUM	
	LUG ATTACHMENT	IS 2062 Gr-A/B	
Painting:-			
Primer:- 2 Coats of Epoxy Resin Zinc Rich Primer to 100 microns DFT			
Finish:- 3 Coats of Polyamide Cured Epoxy MIO paint to 200 microns DFT			
Threads Zinc Plated			
Amendments:-			
Rev-0 by SRG on 08/11/02			
Rev-1 by SRG on 29/11/02			
Rev-2 by SRG on 16/12/02			
Rev. Note:	Spring Material List included.		

Ser No	Tag No	Size	Operating Load	Travel (+up) (-down)	Spring Rate	Preset Load	Load Var.	X	K	M	L	E1	F	G	H	T	T1	A	E	T	RTO	QTY
			kg	mm	kg/mm	kg	%		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nos
1	1-BQ-0004	V1-21	1535	8	28.9	1766	15	M24	198	250	259	80	55	80	40	16	20	100	45	16	358	1
2	1-BQ-0005	V1-20	1185	9	21.7	1381	16.5	M24	198	250	231	70	55	70	33	12	16	100	40	12	322	1
3	1-BQ-0006	V2-17	524	-20	4.61	432	17.6	M20	198	250	264	50	35	50	22	10	10	60	30	10	320	1
4	1-BQ-0007	V2-20	1318	-17	10.9	1133	14	M24	250	320	311	70	55	70	33	12	16	100	40	12	401	1
5	1-BQ-0011	V2-18	694	15	6.13	786	13.3	M20	198	250	284	50	35	50	22	10	10	60	30	10	377	1
6	1-BQ-0012	V3-19	973	28	4.07	1087	11.7	M20	250	320	473	60	45	60	26	10	12	80	35	10	630	1
7	1-BQ-0014	V3-17	626	-38	2.3	538	14	M20	250	320	409	50	35	50	22	10	10	60	30	10	518	1
8	1-BQ-0017	V3-15	339	34	1.36	385	13.6	M16	164	200	455	42	30	36	18	6	10	60	25	6	606	1
9	1-BQ-0019	V2-16	407	-21	3.72	329	19.2	M16	198	250	244	50	35	50	22	10	10	60	30	10	305	1
10	1-BQ-0022	V2-16	358	19	3.72	429	19.7	M16	198	250	244	50	35	50	22	10	10	60	30	10	332	1
11	1-BQ-0025	V3-15	367	-34	1.36	321	12.6	M16	164	200	455	42	30	36	18	6	10	60	25	6	558	2
12	1-BQ-0029	V3-14	254	-55	1.04	197	22.5	M12	164	200	406	42	30	36	18	6	10	60	25	6	473	1
13	1-BQ-0034	V1-11	108	8	1.73	122	12.8	M12	122	155	139	30	20	30	14	6	8	50	20	6	212	2
14	1-BQ-0042	V2-18	610	19	6.13	727	19.1	M20	198	250	284	50	35	50	22	10	10	60	30	10	367	1
15	1-BQ-0093	V3-10	70	25	0.321	78	11.4	M12	164	200	351	30	20	30	14	6	8	50	20	6	458	1
16	1-BQ-0099	V1-12	130	10	2.34	153	18	M12	122	155	139	30	20	30	14	6	8	50	20	6	209	1
17	1-BQ-0102	V3-7	33	21	0.143	36	9.09	M12	122	155	336	30	20	30	14	6	8	50	20	6	471	1
18	1-BQ-0109	V2-11	107	10	0.865	116	8.09	M12	164	200	209	30	20	30	14	6	8	50	20	6	291	1
19	1-BQ-0123	V1-13	184	-2	3	178	3.26	M12	122	155	160	42	30	36	18	6	10	60	25	6	214	2
20	1-BQ-0133	V1-14	199	3	4.15	211	6.25	M12	122	155	173	42	30	36	18	6	10	60	25	6	220	2
21	1-BQ-0143	V2-14	187	18	2.07	224	20	M12	164	200	235	42	30	36	18	6	10	60	25	6	300	2
22	1-BQ-0145	V1-14	211	2	4.15	219	3.93	M12	122	155	173	42	30	36	18	6	10	60	25	6	222	2
23	1-BQ-0153	V2-14	211	18	2.07	248	17.7	M12	164	200	235	42	30	36	18	6	10	60	25	6	311	2
24	1-BQ-0155	V1-13	204	2	3	210	2.94	M12	122	155	160	42	30	36	18	6	10	60	25	6	224	2
25	1-BQ-0162	V2-14	232	18	2.07	269	16.1	M12	164	200	235	42	30	36	18	6	10	60	25	6	321	2
26	1-BQ-0175	V1-11	92	12	1.73	113	22.6	M12	122	155	139	30	20	30	14	6	8	50	20	6	206	2
27	1-BQ-0176	V3-15	276	-22	1.36	246	10.8	M16	164	200	455	42	30	36	18	6	10	60	25	6	503	1
28	1-BQ-0177	V2-9	65	-11	0.5	59.5	8.46	M12	122	155	208	30	20	30	14	6	8	50	20	6	275	2
29	1-BQ-0179	V2-8	41	-14	0.358	36	12.2	M12	122	155	206	30	20	30	14	6	8	50	20	6	244	2
30	1-BQ-0181	V2-12	131	20	1.17	154	17.9	M12	164	200	213	30	20	30	14	6	8	50	20	6	297	1



Client	Asian Power Projects Ltd.		
Project	Akrimota-TPS		
Client ref.	LOI LP/LOI-AKRI/SAI/1847 dt 28/10/02		
PSI ref	1609	Drg No.:-	1609-TS3-001

Sr No	DESCRIPTION	MATERIAL DESCRIPTION
1	SPRING	IS:4454/EN45/EN45A/EN47/50C/VA/60C/VA/2/50C/VA/2/60S/C/1155S/160S/17SAE925A/51CrMOV4. (As per MSS-SP-58)
	CAN SECTION	IS 2062 Gr-A/B
	PLATE	IS 2062 Gr-A/B
	ROD	IS 2062 Gr-A/B
	TURNBUCKLE	SA105
	HARDWARE	IS 1367 CL4 6 & CL4
	NAMEPLATE	ALUMINIUM
	LUG ATTACHMENT	IS 2062 Gr-A/B

Painting:-
 Primer:- 2 Coats of Epoxy Resin Zinc Rich Primer to 100 microns DFT
 Finish:- 3 Coats of Polyamide Cured Epoxy MIO paint to 200 microns DFT
 Threads Zinc Plated

Amendments:-
 Rev-0 by SRG on 08/11/02
 Rev-1 by SRG on 29/11/02
 Rev-2 by SRG on 16/12/02

Rev. Note: Spring Material List included.

Ser No	Tag No	Size	Operating Load	Travel (+up) (-down)	Spring Rate	Presel Load	Load Var.	X	K	M	L	E1	F	G	H	T	T1	A	E	T	RTO	QTY
			kg	mm	kg/mm	kg	%	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Nos
31	2-BQ-0004	V1-21	1535	8	28.9	1766	15	M24	198	250	259	80	55	80	40	16	20	100	45	16	358	1
32	2-BQ-0005	V1-20	1185	9	21.7	1381	16.5	M24	198	250	231	70	55	70	33	12	16	100	40	12	322	1
33	2-BQ-0006	V2-17	524	-20	4.61	432	17.6	M20	198	250	264	50	35	50	22	10	10	60	30	10	320	1
34	2-BQ-0007	V2-20	1318	-17	10.9	1133	14	M24	250	320	311	70	55	70	33	12	16	100	40	12	401	1
35	2-BQ-0011	V2-18	694	15	6.13	786	13.3	M20	198	250	284	50	35	50	22	10	10	60	30	10	377	1
36	2-BQ-0012	V3-19	973	28	4.07	1087	11.7	M20	250	320	473	60	45	60	26	10	12	80	35	10	630	1
37	2-BQ-0014	V3-17	626	-38	2.3	538	14	M20	250	320	409	50	35	50	22	10	10	60	30	10	518	1
38	2-BQ-0017	V3-15	339	34	1.36	385	13.6	M16	164	200	455	42	30	36	18	6	10	60	25	6	606	1
39	2-BQ-0019	V2-16	407	-21	3.72	329	19.2	M16	198	250	244	50	35	50	22	10	10	60	30	10	305	1
40	2-BQ-0022	V2-16	358	19	3.72	429	19.7	M16	198	250	244	50	35	50	22	10	10	60	30	10	332	1
41	2-BQ-0025	V3-15	367	-34	1.36	321	12.6	M16	164	200	455	42	30	36	18	6	10	60	25	6	558	2
42	2-BQ-0029	V3-14	254	-55	1.04	197	22.5	M12	164	200	406	42	30	36	18	6	10	60	25	6	473	1
43	2-BQ-0034	V1-11	108	8	1.73	122	12.8	M12	122	155	139	30	20	30	14	6	8	50	20	6	212	2
44	2-BQ-0042	V2-18	610	19	6.13	727	19.1	M20	198	250	284	50	35	50	22	10	10	60	30	10	367	1
45	2-BQ-0093	V3-10	70	25	0.321	78	11.4	M12	164	200	351	30	20	30	14	6	8	50	20	6	458	1
46	2-BQ-0099	V1-12	130	10	2.34	153	18	M12	122	155	139	30	20	30	14	6	8	50	20	6	209	1
47	2-BQ-0102	V3-7	33	21	0.143	36	9.09	M12	122	155	336	30	20	30	14	6	8	50	20	6	471	1
48	2-BQ-0109	V2-11	107	10	0.865	116	8.09	M12	164	200	209	30	20	30	14	6	8	50	20	6	291	1
49	2-BQ-0123	V1-13	184	-2	3	178	3.26	M12	122	155	160	42	30	36	18	6	10	60	25	6	214	2
50	2-BQ-0133	V1-14	199	3	4.15	211	6.25	M12	122	155	173	42	30	36	18	6	10	60	25	6	220	2
51	2-BQ-0143	V2-14	187	18	2.07	224	20	M12	164	200	235	42	30	36	18	6	10	60	25	6	300	2
52	2-BQ-0145	V1-13	158	2	3	164	3.8	M12	122	155	160	42	30	36	18	6	10	60	25	6	209	2
53	2-BQ-0153	V2-14	211	18	2.07	248	17.7	M12	164	200	235	42	30	36	18	6	10	60	25	6	311	2
54	2-BQ-0155	V1-13	204	2	3	210	2.94	M12	122	155	160	42	30	36	18	6	10	60	25	6	224	2
55	2-BQ-0162	V2-14	232	18	2.07	269	16.1	M12	164	200	235	42	30	36	18	6	10	60	25	6	321	2
56	2-BQ-0175	V1-11	92	12	1.73	113	22.6	M12	122	155	139	30	20	30	14	6	8	50	20	6	206	2
57	2-BQ-0176	V3-15	276	-22	1.36	246	10.8	M16	164	200	455	42	30	36	18	6	10	60	25	6	503	1
58	2-BQ-0177	V2-9	65	-11	0.5	59.5	8.46	M12	122	155	208	30	20	30	14	6	8	50	20	6	275	2
59	2-BQ-0179	V2-8	41	-14	0.358	36	12.2	M12	122	155	206	30	20	30	14	6	8	50	20	6	244	2
60	2-BQ-0181	V2-12	131	20	1.17	154	17.9	M12	164	200	213	30	20	30	14	6	8	50	20	6	297	1

