

Diameter of bolt	$d$ (mm)	20
Diameter of bolt hole	$d_0$ (mm)	22
End distance	$e_1$ (mm)	40
Edge distance	$e_2$ (mm)	50
Spacing between centres of bolts in the direction of load transfer	$p_1$ (mm)	60
Thickness of end plate	$t_p$ (mm)	10
Horizontal distance of lever arm	$B_L$ (mm)	490
Vertical distance of lever arm	$D_L$ (mm)	51.7

Steel Grade		S275	S355
Dimension of Members		UB305x165 x40	UC254x25 4x89
Depth of Section	$D$ (mm)	303.4	260.3
Width of Section	$B$ (mm)	165	256.3
Thickness of Web	$t$ (mm)	6	10.3
Thickness of Flange	$T$ (mm)	10.2	17.3
Root Radius	$r$ (mm)	8.9	12.7
Depth between Fillets	$d$ (mm)	265.2	200.3

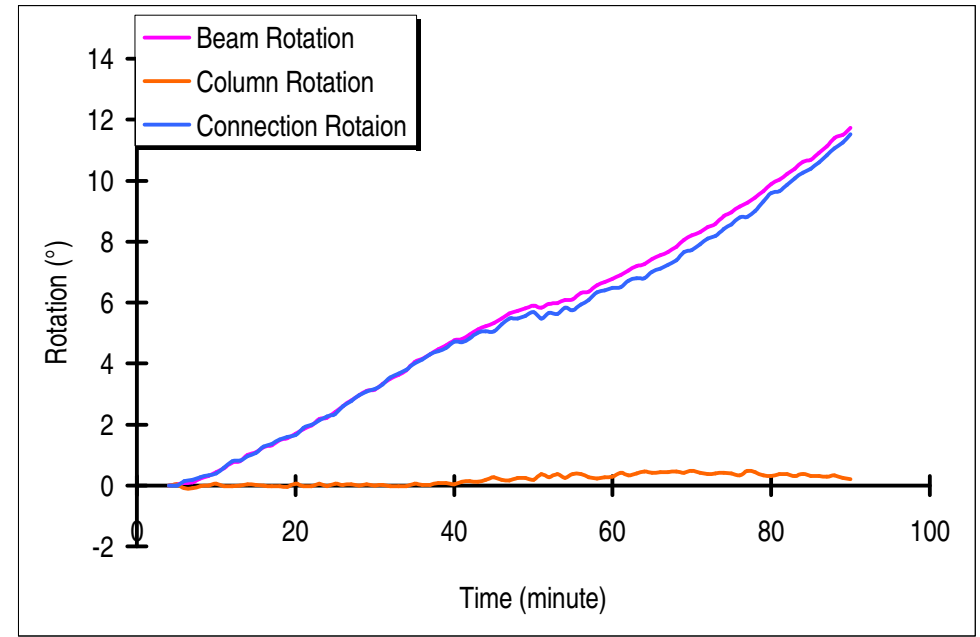
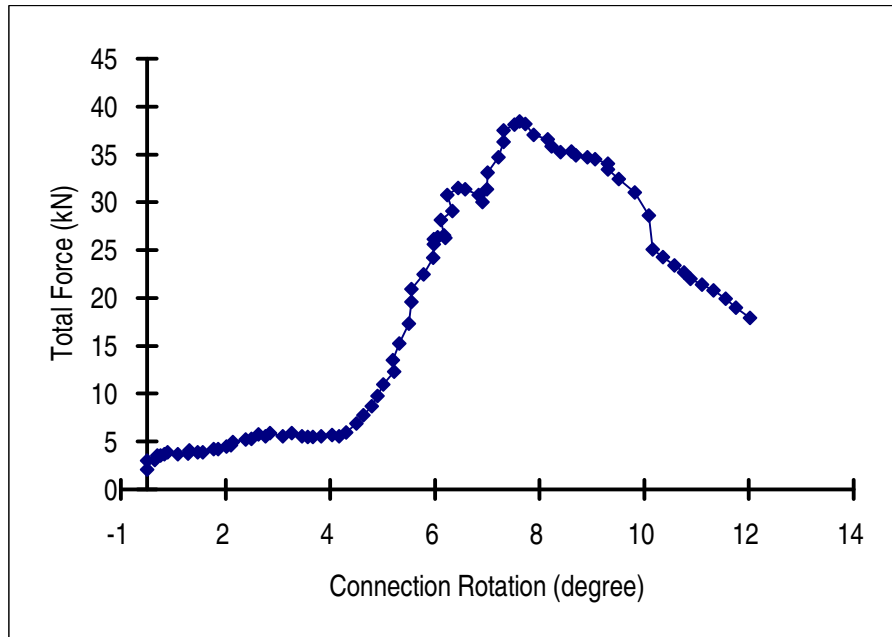
Nominal Temperature 550°C

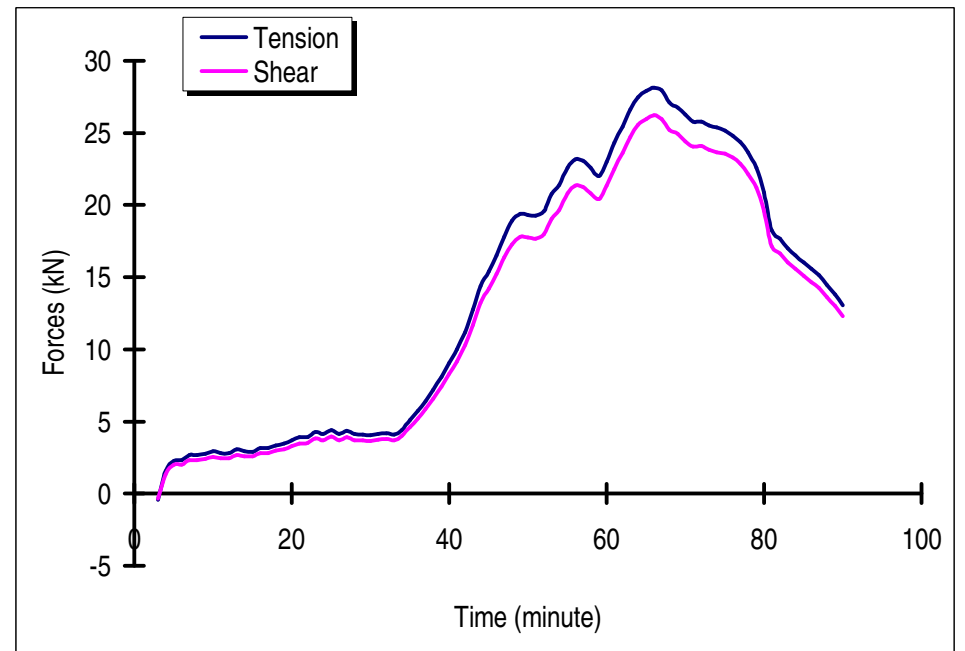
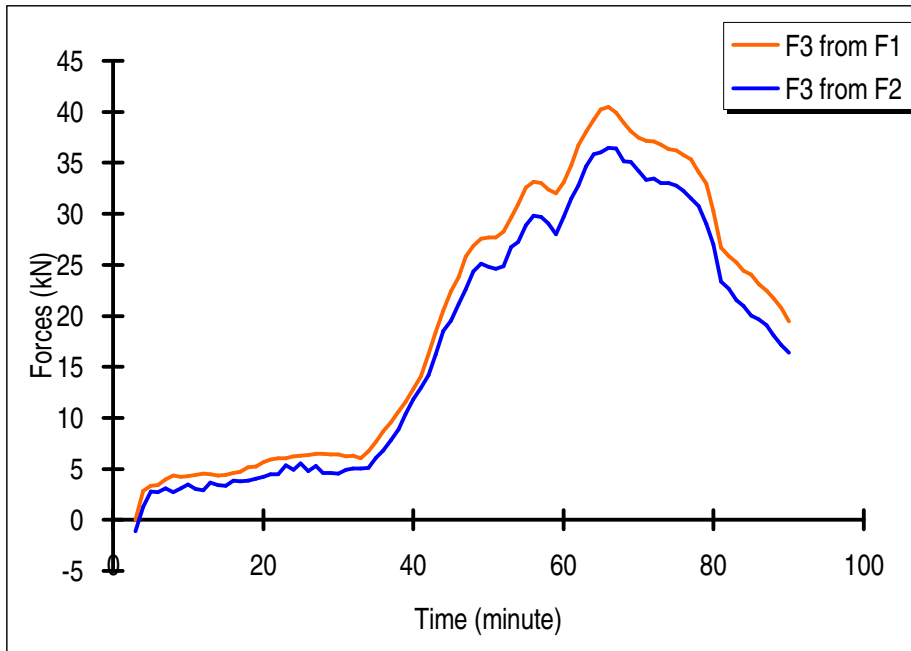
Time	Thermocouple	Jack Displacement	Load Angle	Beam Rotation	Column Rotation	Connection Rotation	Force Rotation	F3 from F1	F3 from F2	F3 Average	Tension	Shear	Moment
(minute)	Average(°C)	(mm)	$\alpha(^{\circ})$	( $^{\circ}$ )	( $^{\circ}$ )	( $^{\circ}$ )	( $^{\circ}$ )	(kN)	(kN)	(kN)	(kN)	(kN)	(kN*m)
0	550.108	0.055											
1	550.197	0.035											
2	550.293	0.024											
3	550.395	0.018	41.00				15.997	0.023	-1.113	-0.545	-0.41	-0.36	-203.45
4	550.397	1.270	41.04	0.000	0.000	0.000	16.040	2.849	1.297	2.073	1.56	1.36	774.14
5	550.509	2.755	41.10	0.027	0.031	-0.004	16.100	3.314	2.753	3.033	2.29	1.99	1133.96
6	550.512	4.177	40.83	0.068	-0.079	0.147	15.825	3.384	2.742	3.063	2.32	2.00	1139.63
7	550.491	5.685	41.02	0.092	-0.099	0.191	16.023	3.995	3.115	3.555	2.68	2.33	1327.17
8	550.560	7.230	41.14	0.226	-0.034	0.260	16.143	4.330	2.724	3.527	2.66	2.32	1319.46
9	550.616	8.660	41.08	0.312	-0.014	0.326	16.083	4.223	3.114	3.669	2.77	2.41	1370.97
10	550.661	10.162	41.23	0.446	0.056	0.390	16.228	4.307	3.463	3.885	2.92	2.56	1455.44
11	550.738	11.775	41.32	0.552	-0.034	0.586	16.323	4.387	3.034	3.710	2.79	2.45	1392.34
12	550.774	13.286	41.31	0.756	-0.034	0.790	16.312	4.531	2.936	3.734	2.80	2.46	1400.80
13	550.843	14.699	41.36	0.796	-0.014	0.810	16.365	4.472	3.669	4.070	3.05	2.69	1528.47
14	550.871	16.215	41.50	1.000	0.031	0.970	16.502	4.375	3.426	3.901	2.92	2.58	1468.25
15	550.931	17.601	41.47	1.080	0.011	1.069	16.467	4.416	3.351	3.883	2.91	2.57	1460.84
16	551.002	19.190	41.62	1.260	-0.014	1.274	16.622	4.614	3.846	4.230	3.16	2.81	1595.35
17	550.991	20.595	41.68	1.325	-0.034	1.359	16.681	4.729	3.754	4.242	3.17	2.82	1601.40
18	551.040	22.080	41.70	1.480	-0.034	1.514	16.699	5.167	3.836	4.501	3.36	2.99	1699.98
19	551.148	23.645	41.70	1.544	-0.054	1.598	16.699	5.215	4.051	4.633	3.46	3.08	1749.59
20	551.131	25.063	41.70	1.699	0.056	1.643	16.699	5.680	4.201	4.941	3.69	3.29	1865.88
21	551.167	26.453	41.75	1.847	-0.034	1.881	16.753	5.947	4.504	5.226	3.90	3.48	1975.34
22	551.137	27.920	41.74	1.964	-0.034	1.998	16.735	6.053	4.480	5.266	3.93	3.51	1990.12
23	551.211	29.395	41.78	2.183	0.050	2.133	16.777	6.061	5.378	5.719	4.27	3.81	2162.84

24	551.196	30.973	41.79	2.228	-0.034	2.262	16.795	6.242	4.882	5.562	4.15	3.71	2103.94
25	551.308	32.416	41.88	2.402	0.056	2.347	16.878	6.265	5.549	5.907	4.40	3.94	2237.55
26	551.308	34.011	41.90	2.603	0.011	2.592	16.896	6.369	4.762	5.566	4.14	3.72	2108.86
27	551.376	35.535	42.02	2.795	0.031	2.764	17.016	6.458	5.280	5.869	4.36	3.93	2228.30
28	551.447	37.043	42.02	2.950	-0.014	2.964	17.021	6.462	4.625	5.544	4.12	3.71	2104.89
29	551.461	38.462	41.97	3.105	0.031	3.074	16.974	6.399	4.591	5.495	4.09	3.68	2084.84
30	551.458	40.015	42.04	3.151	-0.014	3.165	17.039	6.404	4.533	5.469	4.06	3.66	2077.06
31	551.547	41.610	42.02	3.333	0.011	3.322	17.016	6.216	4.893	5.555	4.13	3.72	2108.91
32	551.519	42.934	42.09	3.507	-0.034	3.541	17.094	6.302	5.011	5.657	4.20	3.79	2150.44
33	551.609	44.416	42.09	3.634	-0.034	3.668	17.094	6.046	5.024	5.535	4.11	3.71	2104.14
34	551.619	45.860	42.28	3.771	-0.034	3.805	17.276	6.758	5.132	5.945	4.40	4.00	2266.88
35	551.745	47.430	42.17	4.053	0.050	4.003	17.168	7.667	6.086	6.877	5.10	4.62	2617.57
36	551.770	49.017	42.25	4.145	0.011	4.134	17.246	8.682	6.814	7.748	5.74	5.21	2952.94
37	551.828	50.556	42.35	4.301	0.011	4.290	17.354	9.573	7.794	8.683	6.42	5.85	3315.43
38	551.840	51.878	42.47	4.473	0.075	4.398	17.469	10.611	8.875	9.743	7.19	6.58	3727.12
39	551.902	53.418	42.58	4.594	0.075	4.519	17.579	11.568	10.375	10.972	8.08	7.42	4204.71
40	551.883	54.853	42.56	4.754	0.031	4.724	17.557	12.791	11.787	12.289	9.05	8.31	4707.97
41	551.927	56.408	42.51	4.813	0.120	4.692	17.513	14.098	12.962	13.530	9.97	9.14	5179.57
42	551.987	57.874	42.60	4.956	0.140	4.816	17.598	16.257	14.186	15.222	11.20	10.30	5835.31
43	552.026	59.438	42.52	5.124	0.120	5.003	17.516	18.422	16.196	17.309	12.76	11.70	6626.64
44	552.055	60.864	42.57	5.233	0.185	5.048	17.573	20.563	18.556	19.560	14.40	13.23	7495.23
45	552.077	62.379	42.62	5.325	0.275	5.051	17.620	22.399	19.518	20.959	15.42	14.19	8037.58
46	552.179	63.766	42.66	5.465	0.185	5.280	17.656	23.770	21.148	22.459	16.52	15.22	8617.98
47	552.234	65.320	42.62	5.637	0.165	5.471	17.623	25.832	22.597	24.215	17.82	16.40	9286.61
48	552.325	66.611	42.43	5.729	0.255	5.474	17.428	26.845	24.367	25.606	18.90	17.28	9788.97
49	552.289	67.925	42.51	5.808	0.255	5.553	17.513	27.545	25.111	26.328	19.41	17.79	10078.85
50	552.276	69.016	42.58	5.885	0.191	5.695	17.580	27.690	24.810	26.250	19.33	17.76	10060.08
51	552.305	69.978	42.51	5.839	0.365	5.474	17.513	27.702	24.624	26.163	19.29	17.68	10015.74
52	552.326	71.052	42.60	5.948	0.275	5.673	17.601	28.275	24.881	26.578	19.56	17.99	10189.48
53	552.393	72.253	42.54	5.978	0.365	5.613	17.535	29.607	26.717	28.162	20.75	19.04	10784.87

54	552.354	73.336	42.58	6.087	0.255	5.832	17.579	30.925	27.242	29.084	21.42	19.68	11146.03
55	552.352	74.715	42.62	6.103	0.365	5.739	17.617	32.599	28.855	30.727	22.61	20.80	11782.95
56	552.427	76.165	42.67	6.306	0.365	5.941	17.675	33.161	29.809	31.485	23.15	21.34	12085.18
57	552.452	77.634	42.64	6.352	0.275	6.077	17.642	33.022	29.698	31.360	23.07	21.24	12030.69
58	552.481	79.195	42.70	6.570	0.236	6.334	17.702	32.384	29.072	30.728	22.58	20.84	11799.95
59	552.479	80.830	42.85	6.679	0.275	6.404	17.851	32.014	28.024	30.019	22.01	20.42	11555.78
60	552.537	82.272	42.84	6.773	0.281	6.492	17.838	33.068	29.700	31.384	23.01	21.34	12078.47
61	552.581	83.836	42.75	6.913	0.410	6.503	17.752	34.747	31.494	33.120	24.32	22.48	12728.88
62	552.578	85.279	42.88	7.052	0.339	6.713	17.879	36.690	32.751	34.721	25.44	23.63	13371.52
63	552.641	86.858	42.87	7.193	0.384	6.808	17.873	38.019	34.639	36.329	26.62	24.72	13989.60
64	552.650	88.325	42.92	7.256	0.449	6.808	17.919	39.218	35.856	37.537	27.49	25.56	14465.65
65	552.647	89.950	42.93	7.427	0.410	7.017	17.931	40.248	36.027	38.137	27.92	25.98	14699.97
66	552.686	91.473	42.98	7.551	0.429	7.121	17.976	40.474	36.449	38.462	28.14	26.22	14835.59
67	552.714	92.827	42.92	7.659	0.429	7.230	17.917	39.925	36.386	38.155	27.94	25.98	14703.59
68	552.753	94.432	42.92	7.829	0.449	7.381	17.919	38.917	35.151	37.034	27.12	25.22	14271.69
69	552.790	95.963	42.98	8.064	0.410	7.655	17.980	38.097	35.067	36.582	26.76	24.94	14111.56
70	552.848	97.389	42.92	8.201	0.474	7.727	17.919	37.502	34.225	35.863	26.26	24.42	13820.73
71	552.836	98.911	43.06	8.314	0.410	7.905	18.055	37.167	33.360	35.264	25.77	24.07	13619.60
72	552.848	100.418	43.09	8.470	0.365	8.105	18.093	37.126	33.441	35.284	25.77	24.11	13635.79
73	552.900	101.901	43.08	8.578	0.384	8.194	18.080	36.807	33.028	34.917	25.50	23.85	13491.15
74	552.917	103.495	42.98	8.828	0.410	8.419	17.980	36.352	33.013	34.682	25.37	23.64	13378.86
75	552.918	104.917	43.10	8.950	0.390	8.560	18.099	36.197	32.770	34.483	25.18	23.56	13327.72
76	552.959	106.413	43.22	9.139	0.339	8.800	18.216	35.791	32.294	34.042	24.81	23.31	13182.21
77	552.981	107.865	43.18	9.282	0.474	8.807	18.175	35.319	31.540	33.430	24.38	22.87	12936.31
78	553.009	109.289	43.14	9.437	0.429	9.008	18.137	34.057	30.757	32.407	23.65	22.16	12532.85
79	553.023	111.030	43.22	9.653	0.339	9.314	18.218	32.969	29.027	30.998	22.59	21.23	12003.69
80	553.125	112.336	43.18	9.882	0.300	9.581	18.178	30.232	26.994	28.613	20.87	19.58	11072.88
81	553.126	113.922	43.24	10.024	0.365	9.659	18.237	26.710	23.377	25.043	18.24	17.16	9700.67
82	553.153	115.294	43.24	10.227	0.365	9.862	18.237	25.891	22.653	24.272	17.68	16.63	9401.92
83	553.093	116.912	43.28	10.382	0.300	10.082	18.277	25.254	21.511	23.382	17.02	16.03	9063.03

84	553.161	118.483	43.34	10.620	0.365	10.255	18.336	24.405	20.955	22.680	16.50	15.56	8799.29
85	553.125	119.927	43.32	10.680	0.300	10.380	18.317	24.022	20.001	22.011	16.01	15.10	8537.23
86	553.232	121.392	43.26	10.919	0.320	10.599	18.258	23.107	19.685	21.396	15.58	14.66	8290.76
87	553.266	123.076	43.26	11.122	0.294	10.827	18.256	22.448	19.100	20.774	15.13	14.24	8049.48
88	553.229	124.662	43.26	11.396	0.339	11.056	18.257	21.708	18.082	19.895	14.49	13.63	7709.09
89	553.249	126.153	43.32	11.503	0.255	11.247	18.316	20.787	17.175	18.981	13.81	13.02	7361.74
90	553.270	127.771	43.30	11.731	0.210	11.520	18.297	19.483	16.367	17.925	13.05	12.29	6950.17





Photographs after Test

