

The specimen details

Diameter of bolt	d (mm)	20
Diameter of bolt hole	d ₀ (mm)	22
End distance	e ₁ (mm)	60
Edge distance	e ₂ (mm)	50
Spacing between centres of bolts in the direction of load transfer	p ₁ (mm)	60
Spacing between rows of bolts	p ₂ (mm)	103
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

20°C

Time (minute)	Jack Displacement (mm)	Load Angle $\alpha(^{\circ})$	Beam Rotation ($^{\circ}$)	Column Rotation ($^{\circ}$)	Connection Rotation ($^{\circ}$)	Force Rotation ($^{\circ}$)	F3 from F1 (kN)	F3 from F2 (kN)	F3 from Reading (kN)	Tension (kN)	Shear (kN)	Moment (kN*m)
0	-0.0006											
1	-0.0001											
2	-0.0003											
3	-0.0002	37.44	0.000	0.000	0.000	77.255	-0.21	-1.36	-0.78	-0.62	-0.47	-270.93
4	-0.0004	37.45	0.021	0.012	0.009	77.248	1.27	0.25	0.82	0.65	0.50	286.72
5	-0.0004	37.51	0.051	0.032	0.019	77.184	2.93	2.11	2.16	1.71	1.31	755.19
6	-0.0006	37.58	0.084	0.051	0.033	77.117	4.72	5.41	4.17	3.31	2.55	1463.17
7	0.0000	37.66	0.137	0.066	0.071	77.035	7.37	7.68	6.36	5.04	3.89	2234.20
8	0.4562	37.76	0.185	0.083	0.102	76.931	9.65	11.00	8.60	6.80	5.27	3026.92
9	2.2685	37.87	0.231	0.093	0.138	76.823	12.32	14.17	10.96	8.65	6.73	3862.46
10	3.7026	37.96	0.297	0.104	0.193	76.730	14.23	16.84	12.66	9.98	7.79	4471.11
11	5.2043	38.07	0.370	0.107	0.263	76.628	15.58	18.31	13.99	11.02	8.63	4950.55
12	6.7900	38.15	0.448	0.119	0.329	76.547	16.73	19.57	15.09	11.87	9.32	5348.98
13	8.3990	38.22	0.533	0.119	0.414	76.473	17.76	20.88	16.12	12.66	9.97	5718.74
14	9.9920	38.31	0.632	0.123	0.509	76.388	18.71	21.61	17.05	13.38	10.57	6059.14
15	11.5368	38.38	0.723	0.130	0.593	76.315	19.41	22.18	17.95	14.07	11.14	6388.95
16	13.0085	38.45	0.826	0.130	0.696	76.242	19.89	23.04	18.80	14.72	11.69	6700.52
17	14.6474	38.50	0.938	0.130	0.808	76.195	20.55	23.18	19.50	15.26	12.14	6957.68
18	16.1952	38.56	1.049	0.128	0.921	76.134	21.07	23.96	20.29	15.87	12.65	7247.41
19	17.7219	38.59	1.172	0.124	1.047	76.107	21.45	24.43	21.06	16.46	13.13	7524.06
20	19.3027	38.61	1.293	0.127	1.166	76.085	22.10	24.42	21.76	17.00	13.58	7778.62
21	20.8737	38.64	1.423	0.127	1.295	76.057	22.62	25.40	22.72	17.75	14.19	8126.56
22	22.4166	38.67	1.551	0.131	1.420	76.027	23.14	25.67	23.65	18.47	14.78	8463.55

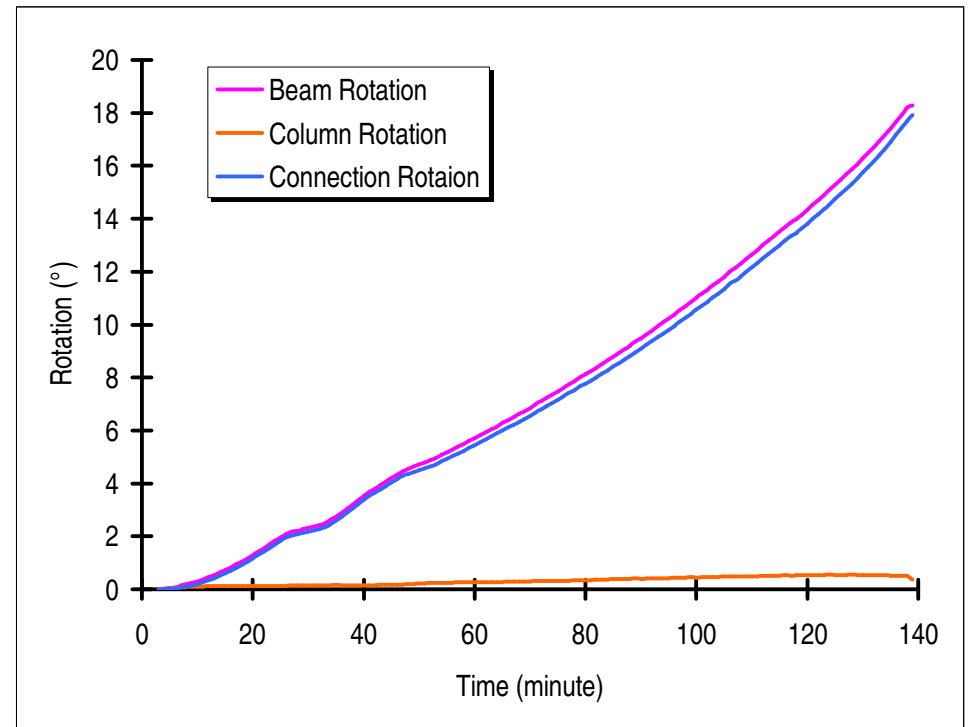
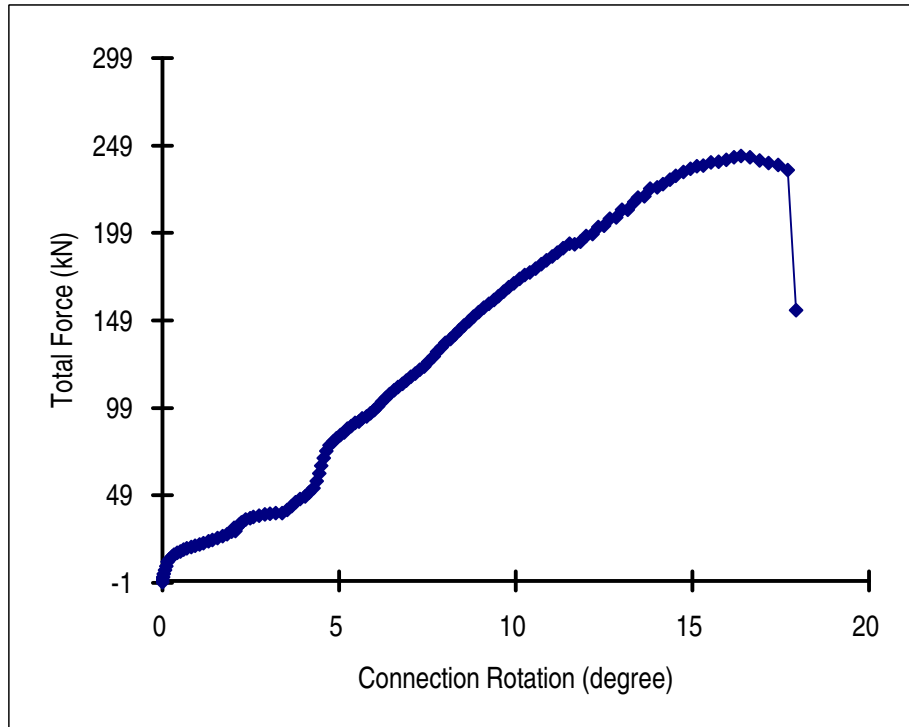
01 June 2007 Web-cleat Test Result

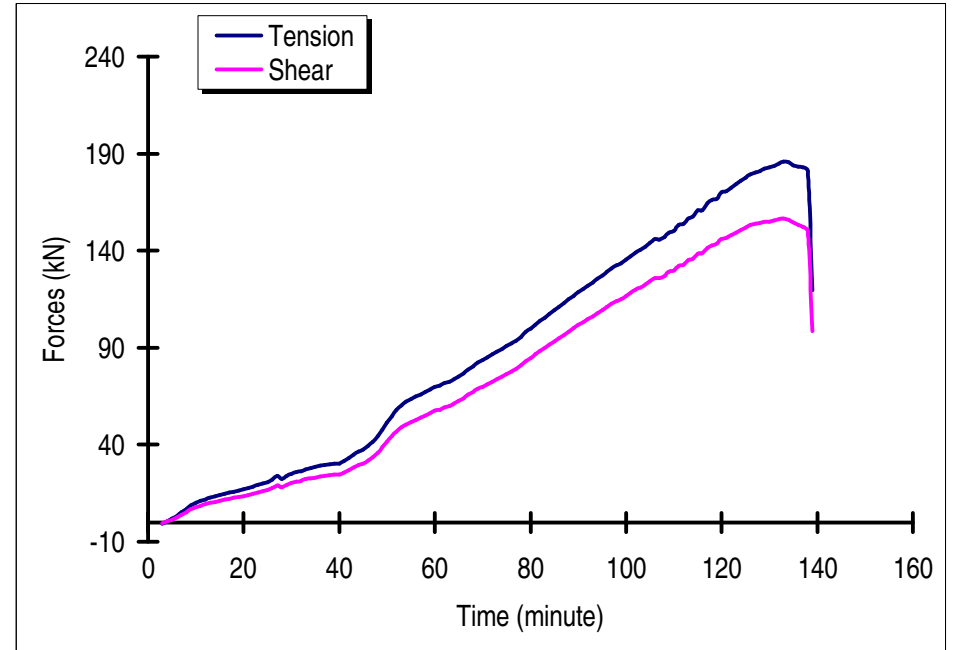
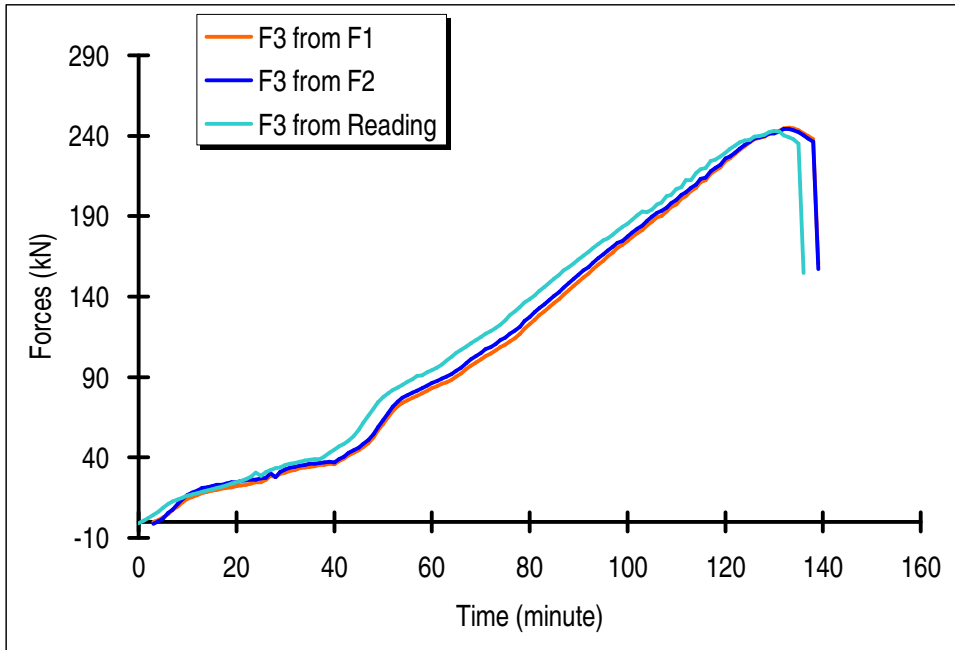
23	23.9974	38.70	1.688	0.131	1.557	75.997	23.76	26.02	24.66	19.25	15.42	8831.17
24	25.5542	38.73	1.827	0.133	1.694	75.964	24.53	26.20	25.54	19.92	15.98	9150.24
25	27.1681	38.76	1.956	0.129	1.827	75.931	24.80	26.83	26.64	20.77	16.68	9549.28
26	28.7660	38.78	2.087	0.130	1.956	75.910	26.18	27.47	28.10	21.91	17.60	10077.83
27	30.2500	38.85	2.167	0.137	2.030	75.848	28.46	30.02	30.57	23.81	19.18	10977.48
28	31.5832	38.90	2.207	0.138	2.069	75.793	27.99	27.94	28.77	22.39	18.07	10341.68
29	32.6681	38.93	2.268	0.145	2.123	75.765	29.70	31.14	30.94	24.07	19.44	11126.06
30	33.9645	38.93	2.314	0.140	2.174	75.768	30.62	32.64	32.26	25.10	20.27	11600.04
31	35.2175	38.95	2.381	0.144	2.237	75.745	31.80	33.83	33.24	25.85	20.90	11958.09
32	36.3962	38.97	2.410	0.146	2.264	75.729	32.26	34.07	33.77	26.26	21.24	12152.75
33	37.8304	38.99	2.501	0.147	2.354	75.702	33.43	35.02	35.29	27.43	22.20	12704.27
34	39.2657	39.01	2.632	0.153	2.479	75.688	33.76	35.39	36.13	28.08	22.74	13011.17
35	40.6763	39.00	2.741	0.160	2.581	75.690	34.29	36.14	36.75	28.56	23.13	13232.05
36	42.1677	38.99	2.888	0.154	2.734	75.700	34.66	36.33	37.42	29.08	23.55	13472.32
37	43.7054	38.98	3.049	0.157	2.892	75.717	35.26	36.41	38.01	29.55	23.91	13679.07
38	45.3092	38.96	3.200	0.149	3.051	75.730	35.53	36.87	38.57	29.99	24.25	13877.85
39	46.8157	38.95	3.361	0.150	3.211	75.749	36.13	37.26	39.05	30.37	24.54	14044.64
40	48.3313	38.93	3.538	0.153	3.385	75.763	35.77	36.98	39.02	30.35	24.52	14030.88
41	49.9161	38.92	3.680	0.152	3.528	75.773	37.63	38.90	40.72	31.68	25.58	14641.11
42	51.4874	38.92	3.808	0.155	3.653	75.775	39.51	40.66	42.85	33.34	26.92	15405.30
43	53.0657	38.92	3.934	0.167	3.767	75.775	41.16	43.00	44.97	34.99	28.25	16167.99
44	54.5496	38.91	4.071	0.172	3.899	75.782	42.97	44.67	46.84	36.45	29.42	16838.58
45	56.2092	38.90	4.203	0.171	4.031	75.798	44.47	46.21	48.37	37.65	30.37	17383.76
46	57.7388	38.89	4.334	0.181	4.153	75.802	46.39	48.52	50.66	39.43	31.81	18204.41
47	59.3020	38.90	4.452	0.177	4.275	75.791	49.06	50.83	53.30	41.48	33.47	19158.45
48	60.7598	38.90	4.546	0.187	4.359	75.795	52.62	54.65	57.19	44.51	35.92	20555.28
49	62.2828	38.93	4.634	0.198	4.436	75.764	56.95	58.70	61.55	47.88	38.68	22133.58
50	63.7984	38.96	4.707	0.215	4.492	75.739	60.97	63.15	66.09	51.39	41.55	23776.57
51	65.2878	38.98	4.789	0.224	4.565	75.715	65.28	67.61	70.45	54.77	44.32	25357.50
52	66.8917	39.01	4.874	0.236	4.638	75.684	68.89	71.76	74.37	57.79	46.81	26782.23

53	68.4630	39.04	4.966	0.244	4.722	75.652	72.14	74.89	77.67	60.32	48.92	27987.96
54	70.1221	39.07	5.071	0.240	4.830	75.622	73.96	77.13	79.95	62.07	50.39	28825.93
55	71.6608	39.12	5.168	0.242	4.926	75.572	75.63	78.62	81.77	63.43	51.59	29507.25
56	73.1838	39.19	5.281	0.245	5.036	75.508	77.07	80.21	83.52	64.74	52.77	30175.83
57	74.9313	39.26	5.393	0.255	5.138	75.439	78.45	81.56	85.11	65.90	53.86	30789.72
58	76.4463	39.30	5.483	0.254	5.229	75.392	79.89	82.96	87.00	67.33	55.11	31501.42
59	78.0251	39.36	5.601	0.260	5.341	75.332	81.67	84.68	88.78	68.64	56.31	32180.26
60	79.5000	39.41	5.707	0.261	5.446	75.282	83.12	86.18	90.56	69.97	57.50	32856.52
61	81.1510	39.52	5.819	0.266	5.553	75.175	84.39	87.37	91.24	70.39	58.06	33167.10
62	82.5913	39.57	5.929	0.269	5.660	75.125	85.86	89.17	93.02	71.71	59.25	33843.97
63	84.0747	39.63	6.040	0.269	5.771	75.061	86.81	90.12	94.11	72.48	60.03	34280.87
64	85.7183	39.68	6.154	0.265	5.889	75.010	88.24	91.69	95.81	73.73	61.18	34929.78
65	87.3046	39.75	6.280	0.276	6.004	74.943	90.34	93.89	97.77	75.17	62.52	35688.07
66	88.8597	39.80	6.391	0.280	6.111	74.893	92.44	95.97	100.03	76.85	64.03	36547.28
67	90.3663	39.82	6.505	0.284	6.220	74.879	94.86	98.68	102.70	78.88	65.76	37531.07
68	92.0565	39.86	6.615	0.292	6.323	74.836	96.87	100.89	104.84	80.48	67.19	38344.97
69	93.6057	39.88	6.728	0.296	6.432	74.815	98.92	102.94	107.10	82.19	68.67	39186.11
70	95.2000	39.92	6.852	0.299	6.552	74.778	100.92	105.12	108.99	83.60	69.94	39904.11
71	96.7863	39.94	6.979	0.304	6.675	74.751	102.88	107.31	110.97	85.08	71.25	40648.76
72	98.2767	39.98	7.103	0.308	6.795	74.713	104.53	108.66	112.87	86.49	72.52	41370.43
73	99.9279	40.02	7.219	0.312	6.907	74.673	106.40	110.65	114.74	87.87	73.78	42085.24
74	101.4750	40.05	7.347	0.313	7.034	74.645	108.42	113.05	116.79	89.40	75.15	42859.54
75	103.0217	40.10	7.481	0.317	7.164	74.597	110.32	114.70	118.68	90.78	76.44	43591.08
76	104.5452	40.15	7.599	0.314	7.285	74.546	112.22	116.82	120.67	92.24	77.81	44363.96
77	106.1069	40.20	7.734	0.320	7.414	74.498	114.18	118.86	122.62	93.66	79.14	45116.44
78	107.6863	40.24	7.860	0.334	7.526	74.457	116.94	121.44	125.31	95.66	80.94	46140.68
79	109.2088	40.27	8.000	0.327	7.673	74.429	120.08	124.93	128.45	98.02	83.02	47321.69
80	110.7324	40.32	8.116	0.343	7.773	74.374	122.99	127.38	130.93	99.82	84.72	48279.76
81	112.1897	40.35	8.242	0.349	7.893	74.347	125.76	130.28	133.68	101.89	86.55	49320.68
82	113.6566	40.38	8.369	0.356	8.013	74.313	128.38	132.90	136.23	103.77	88.26	50289.43

83	115.2454	40.42	8.506	0.358	8.148	74.278	130.80	135.35	138.48	105.43	89.78	51151.35
84	116.7835	40.44	8.647	0.368	8.278	74.251	133.52	137.89	140.99	107.30	91.46	52103.80
85	118.2729	40.47	8.782	0.375	8.407	74.224	135.97	140.35	143.66	109.28	93.24	53114.05
86	119.7644	40.49	8.919	0.377	8.541	74.206	138.52	142.88	146.03	111.06	94.82	54009.24
87	121.2147	40.52	9.062	0.381	8.681	74.177	141.26	145.66	148.61	112.97	96.55	54991.00
88	122.7463	40.55	9.199	0.388	8.811	74.148	143.91	148.47	151.16	114.86	98.26	55963.97
89	124.1976	40.59	9.353	0.401	8.952	74.109	146.82	151.02	153.71	116.73	100.00	56946.62
90	125.6629	40.59	9.492	0.393	9.099	74.105	149.22	153.60	156.28	118.68	101.68	57903.75
91	127.1935	40.61	9.636	0.403	9.233	74.081	151.80	156.14	158.45	120.29	103.14	58732.84
92	128.8044	40.64	9.782	0.404	9.378	74.053	154.33	158.34	160.65	121.90	104.63	59575.72
93	130.2808	40.66	9.929	0.409	9.520	74.033	156.93	160.89	162.97	123.63	106.19	60459.18
94	131.8821	40.67	10.076	0.416	9.660	74.020	159.72	163.72	165.38	125.43	107.78	61364.23
95	133.3886	40.69	10.221	0.419	9.802	74.007	162.28	166.14	167.85	127.28	109.43	62297.97
96	135.0161	40.72	10.379	0.428	9.951	73.973	165.11	168.60	170.30	129.07	111.10	63244.45
97	136.5703	40.74	10.535	0.427	10.108	73.959	167.56	171.18	172.62	130.80	112.64	64119.49
98	138.0452	40.73	10.689	0.440	10.249	73.963	170.11	173.45	174.88	132.52	114.11	64953.96
99	139.5924	40.76	10.847	0.448	10.399	73.931	172.10	174.79	176.27	133.51	115.09	65507.38
100	141.2349	40.76	11.016	0.447	10.569	73.933	174.50	177.53	178.68	135.34	116.66	66401.59
101	142.8383	40.76	11.175	0.455	10.720	73.930	176.93	179.91	181.12	137.18	118.26	67310.23
102	144.2409	40.76	11.325	0.456	10.869	73.932	179.41	182.22	183.50	138.99	119.81	68192.48
103	145.8046	40.76	11.489	0.459	11.030	73.937	181.35	184.30	185.48	140.50	121.09	68925.20
104	147.3588	40.77	11.644	0.460	11.184	73.927	184.11	186.76	187.75	142.20	122.60	69781.02
105	148.9622	40.78	11.808	0.472	11.336	73.912	186.63	189.59	190.39	144.16	124.36	70778.24
106	150.4858	40.75	12.002	0.475	11.527	73.941	189.45	192.18	192.76	146.02	125.83	71622.77
107	152.0304	40.83	12.147	0.481	11.666	73.864	190.23	193.38	192.44	145.61	125.82	71602.35
108	153.5455	40.85	12.313	0.480	11.833	73.848	192.80	195.48	194.14	146.86	126.97	72252.00
109	155.0620	40.81	12.485	0.488	11.997	73.885	195.72	198.21	197.43	149.44	129.03	73432.33
110	156.5520	40.82	12.657	0.491	12.166	73.877	197.32	199.99	198.55	150.26	129.78	73857.49
111	158.1312	40.76	12.823	0.492	12.331	73.936	200.86	203.40	202.41	153.32	132.15	75216.84
112	159.5981	40.79	13.006	0.505	12.501	73.908	202.37	204.86	203.29	153.92	132.80	75580.43

113	161.1678	40.80	13.171	0.503	12.668	73.891	205.47	207.54	206.99	156.68	135.26	76977.79
114	162.7783	40.76	13.347	0.510	12.837	73.934	207.78	209.57	208.07	157.61	135.85	77323.08
115	164.3013	40.70	13.511	0.512	12.999	73.999	211.34	213.32	212.33	160.99	138.45	78815.39
116	165.8806	40.74	13.695	0.523	13.172	73.953	212.41	213.88	212.38	160.91	138.61	78897.88
117	167.4022	40.68	13.864	0.519	13.345	74.011	216.47	218.13	216.73	164.35	141.28	80431.19
118	168.7581	40.70	13.979	0.526	13.453	73.996	218.52	220.14	219.09	166.11	142.86	81329.28
119	170.4327	40.73	14.160	0.524	13.636	73.968	220.43	221.94	220.04	166.75	143.56	81721.44
120	171.7947	40.65	14.336	0.535	13.801	74.047	224.16	225.81	224.37	170.24	146.15	83214.36
121	173.2374	40.68	14.530	0.534	13.996	74.014	225.98	227.15	224.96	170.60	146.64	83481.41
122	174.7123	40.65	14.708	0.535	14.173	74.047	228.53	229.58	227.03	172.26	147.89	84201.17
123	176.1395	40.61	14.898	0.536	14.362	74.080	231.05	231.90	229.58	174.28	149.45	85099.46
124	177.5496	40.58	15.081	0.547	14.534	74.114	233.37	234.14	231.78	176.03	150.77	85861.29
125	179.3046	40.54	15.276	0.535	14.741	74.150	235.81	236.24	233.94	177.77	152.07	86608.69
126	180.8282	40.49	15.475	0.537	14.938	74.208	237.72	238.17	235.88	179.40	153.15	87236.58
127	182.4235	40.45	15.661	0.542	15.119	74.242	238.71	239.22	237.07	180.40	153.82	87626.16
128	183.8487	40.44	15.863	0.546	15.317	74.259	239.66	240.05	237.61	180.85	154.11	87796.56
129	185.4752	40.35	16.067	0.540	15.527	74.346	241.14	241.46	239.28	182.36	154.92	88280.96
130	187.0946	40.30	16.282	0.534	15.748	74.399	241.72	241.49	239.76	182.87	155.06	88375.42
131	188.6965	40.25	16.495	0.531	15.964	74.446	243.13	242.79	240.76	183.76	155.55	88667.39
132	190.2999	40.20	16.713	0.539	16.174	74.499	244.51	244.18	242.23	185.02	156.33	89124.42
133	191.7366	40.11	16.919	0.534	16.385	74.589	245.20	244.42	243.17	185.99	156.65	89327.34
134	193.4103	40.04	17.167	0.531	16.636	74.658	244.80	243.51	242.45	185.63	155.96	88956.46
135	194.9896	40.00	17.413	0.519	16.894	74.691	243.26	242.12	240.30	184.07	154.47	88113.75
136	196.6311	39.87	17.666	0.507	17.159	74.824	241.66	240.41	238.88	183.34	153.13	87383.87
137	198.2988	39.76	17.932	0.504	17.428	74.933	240.00	238.45	237.89	182.87	152.15	86851.31
138	199.1000	39.68	18.203	0.497	17.706	75.018	237.80	236.32	235.01	180.88	150.04	85670.24
139	198.9956	39.45	18.282	0.355	17.927	75.246	160.48	157.20	154.80	119.53	98.35	56196.70





Photographs after Test

