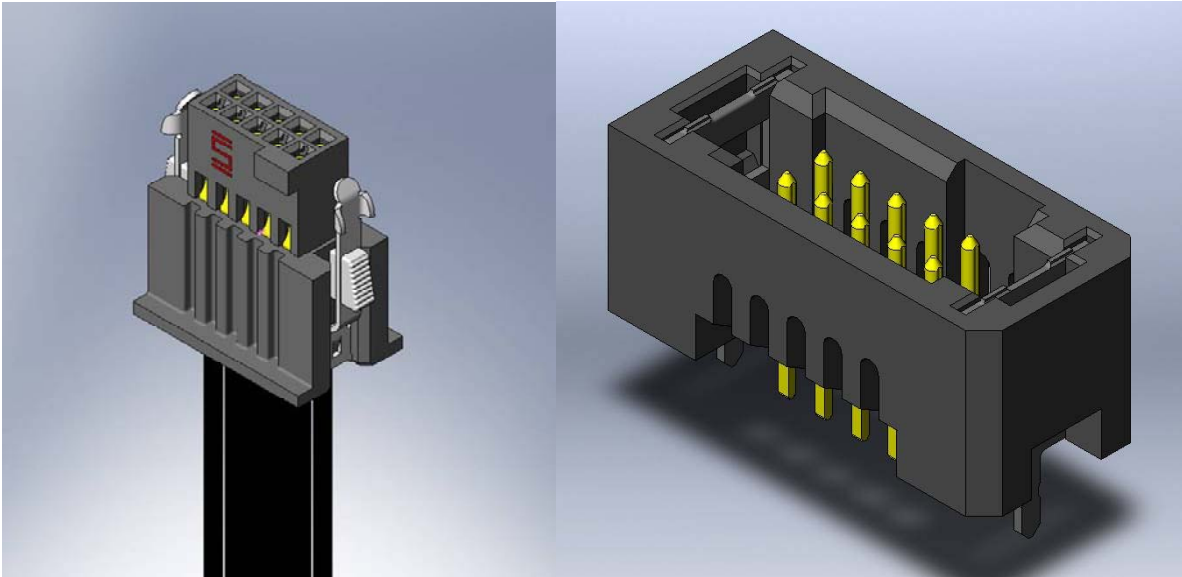




Project Number: SFSD/TFM with latch		Tracking Code: TC0716-SFSD/TFM with latch-1332	
Requested by: Kevin Meredith		Date: 9/10/2008	Product Rev: CR and D
Part #: TFM-105-01-F-D-WT, TFM-120-01-F-D-WT, SFSD-05-28-F-03.25-DR-NDS, SFSD-20-28-F-03.35-DR-NDS		Lot #: na	Tech: Tony Wagoner Eng: Troy Cook
Part description: SFSD/TFM			Qty to test: 40
Test Start: 4/23/2007	Test Completed: 4/25/2007		



**COMPARISON REPORT OF SFSD/TFM
WITH AND WITHOUT LATCHES**

PART DESCRIPTION

TFM-105-01-F-D-WT, TFM-120-01-F-D-WT

Mated with

SFSD-05-28-F-03.25-DR-NDS, SFSD-20-28-F-03.35-DR-NDS

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

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SCOPE

To perform the following tests: Test parts with and without latches for comparison purposes according to SFSD-TFM Latching Test Plan.

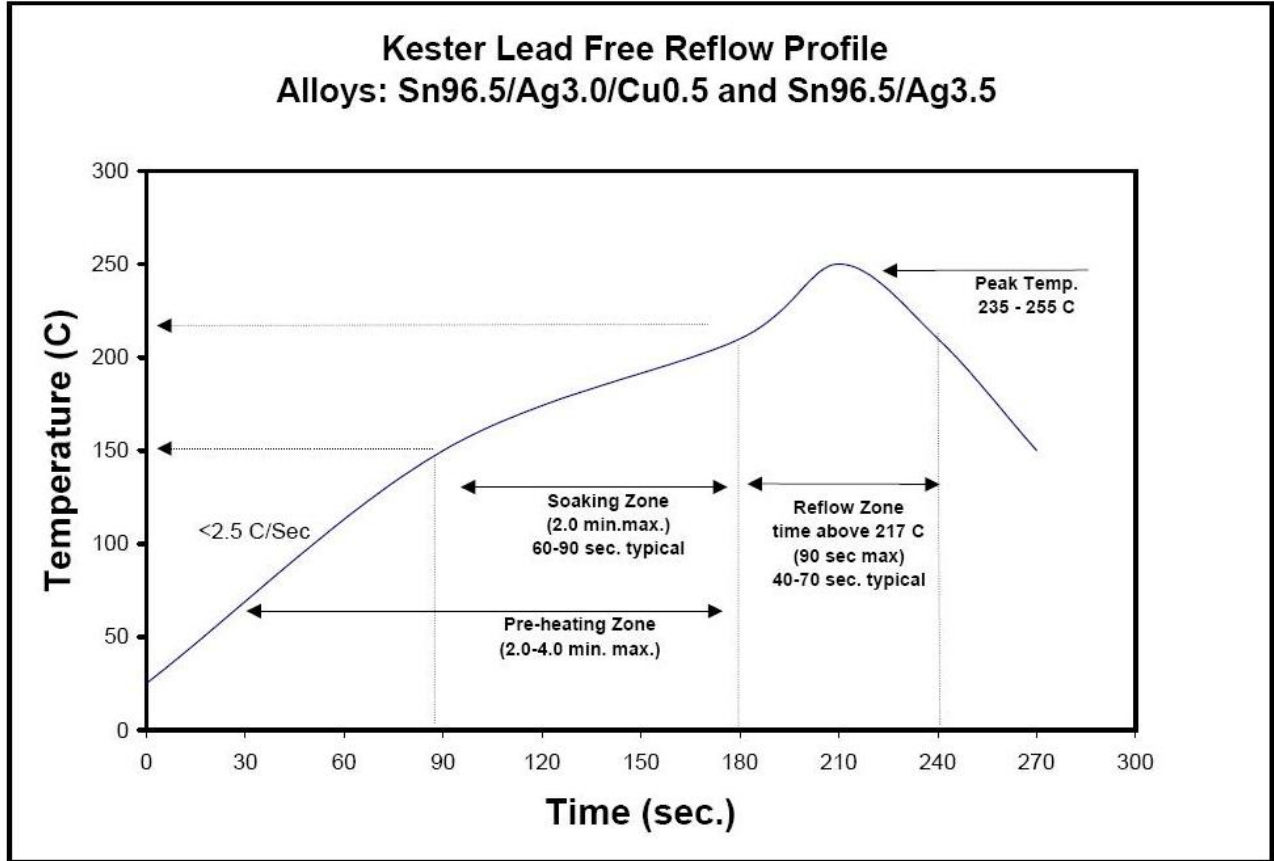
APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Solder Information: Lead Free
- 9) Re-Flow Time/Temp: See accompanying profile.
- 10) Samtec Test PCBs used: PCB-100675-TST-XX

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS**Mating/Unmating****SFSD-05-28-F-3.25-DM-NDS/TFM-105-01-F-D-WT**

TEST STEP	GROUP A 10 Boards 100 Cycles
01	Mating / Unmating
02	Data Review
03	25 Cycles
04	Mating / Unmating
05	Data Review
06	50 Cycles
07	Mating / Unmating
08	Data Review
09	75 Cycles
10	Mating / Unmating
11	Data Review
12	100 Cycles
13	Mating / Unmating
14	Data Review

Mating/Un-Mating Forces = EIA-364-13

Mating/Unmating**SFSD-20-28-F-3.25-DM-NDS/TFM-120-01-F-D-WT**

TEST STEP	GROUP A 10 Boards 100 Cycles
01	Mating / Unmating
02	Data Review
03	25 Cycles
04	Mating / Unmating
05	Data Review
06	50 Cycles
07	Mating / Unmating
08	Data Review
09	75 Cycles
10	Mating / Unmating
11	Data Review
12	100 Cycles
13	Mating / Unmating
14	Data Review

Mating/Un-Mating Forces = EIA-364-13

FLOWCHARTS Continued**Mating/Unmating****SFSD-05-28-F-3.25-D/TFM-105-01-F-D**

TEST STEP	GROUP A 10 Boards 100 Cycles
01	Mating / Unmating
02	Data Review
03	25 Cycles
04	Mating / Unmating
05	Data Review
06	50 Cycles
07	Mating / Unmating
08	Data Review
09	75 Cycles
10	Mating / Unmating
11	Data Review
12	100 Cycles
13	Mating / Unmating
14	Data Review

Mating/Un-Mating Forces = EIA-364-13

Mating/Unmating**SFSD-20-28-F-3.25-D/TFM-120-01-F-D**

TEST STEP	GROUP A 10 Boards 100 Cycles
01	Mating / Unmating
02	Data Review
03	25 Cycles
04	Mating / Unmating
05	Data Review
06	50 Cycles
07	Mating / Unmating
08	Data Review
09	75 Cycles
10	Mating / Unmating
11	Data Review
12	100 Cycles
13	Mating / Unmating
14	Data Review

Mating/Un-Mating Forces = EIA-364-13

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

MATING/UNMATING:

- 1) Reference document: EIA-364-13, *Mating and Unmating Forces Test Procedure for Electrical Connectors*.
- 2) The full insertion position was to within 0.003” to 0.004” of the plug bottoming out in the receptacle to prevent damage to the system under test.
- 3) One of the mating parts is secured to a floating X-Y table to prevent damage during cycling.

RESULTS**5 Position****Mating – Unmating Forces with Latches**

- **Initial**
 - **Mating**
 - **Min** ----- 1.6 lbs
 - **Max** ----- 1.9 lbs
 - **Initial Unmate**
 - **Min** -----11.3 lbs
 - **Max** -----16.2 lbs
 - **Unmating**
 - **Min** ----- 3.3 lbs
 - **Max** -----14.0 lbs
- **After 25 Cycles**
 - **Mating**
 - **Min** ----- 1.6 lbs
 - **Max** ----- 1.9 lbs
 - **Initial Unmate**
 - **Min** -----8.5 lbs
 - **Max** -----22.0 lbs
 - **Unmating**
 - **Min** ----- 4.9 lbs
 - **Max** -----17.8 lbs
- **After 50 Cycles**
 - **Mating**
 - **Min** ----- 1.7 lbs
 - **Max** ----- 2.0 lbs
 - **Initial Unmate**
 - **Min** -----9.8 lbs
 - **Max** -----23.2 lbs
 - **Unmating**
 - **Min** ----- 3.9 lbs
 - **Max** -----22.2 lbs
- **After 75 Cycles**
 - **Mating**
 - **Min** ----- 1.8 lbs
 - **Max** ----- 2.4 lbs
 - **Initial Unmate**
 - **Min** -----6.5 lbs
 - **Max** -----23.6 lbs
 - **Unmating**
 - **Min** ----- 4.1 lbs
 - **Max** -----21.6 lbs
- **After 100 Cycles**
 - **Mating**
 - **Min** ----- 1.8 lbs
 - **Max** ----- 2.4 lbs
 - **Initial Unmate**
 - **Min** -----6.3 lbs
 - **Max** -----22.9 lbs
 - **Unmating**
 - **Min** ----- 4.0 lbs
 - **Max** -----19.8 lbs

Mating – Unmating Forces without Latches

- **Initial**
 - **Mating**
 - **Min ----- 1.2 lbs**
 - **Max----- 1.9 lbs**
 - **Unmating**
 - **Min ----- 1.2 lbs**
 - **Max----- 1.6 lbs**
- **After 25 Cycles**
 - **Mating**
 - **Min ----- 1.4 lbs**
 - **Max----- 2.0 lbs**
 - **Unmating**
 - **Min ----- 1.2 lbs**
 - **Max----- 1.7 lbs**
- **After 50 Cycles**
 - **Mating**
 - **Min ----- 1.4 lbs**
 - **Max----- 2.1 lbs**
 - **Unmating**
 - **Min ----- 1.3 lbs**
 - **Max----- 1.8 lbs**
- **After 75 Cycles**
 - **Mating**
 - **Min ----- 1.6 lbs**
 - **Max----- 2.2 lbs**
 - **Unmating**
 - **Min ----- 1.3 lbs**
 - **Max----- 2.0 lbs**
- **After 100 Cycles**
 - **Mating**
 - **Min ----- 1.6 lbs**
 - **Max----- 2.3 lbs**
 - **Unmating**
 - **Min ----- 1.3 lbs**
 - **Max----- 2.1 lbs**

20 Position**Mating – Unmating Forces with Latches**

- **Initial**
 - **Mating**
 - **Min** ----- 8.3 lbs
 - **Max** -----12.2 lbs
 - **Initial Unmate**
 - **Min** -----17.7 lbs
 - **Max** -----29.4 lbs
 - **Unmating**
 - **Min** -----11.0 lbs
 - **Max** -----17.4 lbs
- **After 25 Cycles**
 - **Mating**
 - **Min** ----- 7.9 lbs
 - **Max** -----10.7 lbs
 - **Initial Unmate**
 - **Min** -----20.7 lbs
 - **Max** -----23.3 lbs
 - **Unmating**
 - **Min** -----14.0 lbs
 - **Max** -----25.9 lbs
- **After 50 Cycles**
 - **Mating**
 - **Min** ----- 8.5 lbs
 - **Max** -----11.7 lbs
 - **Initial Unmate**
 - **Min** -----21.2 lbs
 - **Max** -----31.7 lbs
 - **Unmating**
 - **Min** -----10.0 lbs
 - **Max** -----26.0 lbs
- **After 75 Cycles**
 - **Mating**
 - **Min** ----- 8.8 lbs
 - **Max** -----13.1 lbs
 - **Initial Unmate**
 - **Min** -----16.5 lbs
 - **Max** -----38.0 lbs
 - **Unmating**
 - **Min** -----11.6 lbs
 - **Max** -----25.3 lbs
- **After 100 Cycles**
 - **Mating**
 - **Min** ----- 8.9 lbs
 - **Max** -----14.0 lbs
 - **Initial Unmate**
 - **Min** -----18.2 lbs
 - **Max** -----37.4 lbs
 - **Unmating**
 - **Min** ----- 9.6 lbs
 - **Max** -----25.0 lbs

Mating – Unmating Forces without Latches

- **Initial**
 - **Mating**
 - **Min ----- 6.6 lbs**
 - **Max ----- 8.0 lbs**
 - **Unmating**
 - **Min ----- 6.0 lbs**
 - **Max ----- 7.8 lbs**
- **After 25 Cycles**
 - **Mating**
 - **Min ----- 6.0 lbs**
 - **Max ----- 7.6 lbs**
 - **Unmating**
 - **Min ----- 5.3 lbs**
 - **Max ----- 6.8 lbs**
- **After 50 Cycles**
 - **Mating**
 - **Min ----- 6.3 lbs**
 - **Max ----- 8.1 lbs**
 - **Unmating**
 - **Min ----- 5.4 lbs**
 - **Max ----- 7.0 lbs**
- **After 75 Cycles**
 - **Mating**
 - **Min ----- 6.8 lbs**
 - **Max ----- 8.7 lbs**
 - **Unmating**
 - **Min ----- 5.6 lbs**
 - **Max ----- 7.5 lbs**
- **After 100 Cycles**
 - **Mating**
 - **Min ----- 7.2 lbs**
 - **Max ----- 9.3 lbs**
 - **Unmating**
 - **Min ----- 5.9 lbs**
 - **Max ----- 7.7 lbs**

DATA SUMMARIES**MATING/UNMATING:****5 Position**

	With Latches											
	Initial						After 25 Cycles					
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	25.8	1.6	181.4	11.3	53.4	3.3	24.8	1.6	201.3	8.5	77.9	4.9
Maximum	30.2	1.9	259.0	16.2	224.0	14.0	29.9	1.9	351.8	22.0	284.5	17.8
Average	28.1	1.8	218.2	13.6	137.7	8.8	27.0	1.7	270.2	15.2	179.1	11.2
	After 50 Cycles						After 75 Cycles					
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
	Minimum	27.4	1.7	157.1	9.8	61.9	3.9	28.8	1.8	104.2	6.5	65.0
Maximum	32.3	2.0	370.9	23.2	355.0	22.2	38.6	2.4	377.1	23.6	345.4	21.6
Average	29.7	1.9	292.6	18.3	228.9	14.3	32.7	2.0	271.1	16.9	196.8	12.3
	After 100 Cycles											
	Mating		Initial Unmate		Unmating							
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)						
	Minimum	29.1	1.8	100.6	6.3	63.8	4.0					
Maximum	39.0	2.4	366.9	22.9	317.1	19.8						
Average	35.3	2.2	275.2	17.2	209.7	13.1						

	Without Latches							
	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	19.8	1.2	19.4	1.2	22.7	1.4	18.7	1.2
Maximum	31.0	1.9	25.6	1.6	31.8	2.0	26.9	1.7
Average	24.9	1.6	22.6	1.4	28.0	1.7	23.7	1.5
	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
	Minimum	22.2	1.4	21.4	1.3	24.8	1.6	20.2
Maximum	33.1	2.1	29.1	1.8	35.0	2.2	31.4	2.0
Average	28.5	1.8	24.5	1.5	30.5	1.9	26.2	1.6
	After 100 Cycles							
	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
	Minimum	25.3	1.58	21.3	1.33			
Maximum	36.8	2.3	33.9	2.1				
Average	32.1	2.0	27.8	1.7				

DATA SUMMARIES Continued**20 Position**

	With Latches											
	Initial						After 25 Cycles					
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	133.0	8.3	283.2	17.7	176.5	11.0	126.9	7.9	330.7	20.7	224.0	14.0
Maximum	194.9	12.2	470.1	29.4	278.7	17.4	171.2	10.7	517.1	32.3	413.9	25.9
Average	154.1	9.6	358.3	22.4	230.3	14.4	144.1	9.0	408.2	26.9	293.0	18.3
	After 50 Cycles						After 75 Cycles					
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
	Minimum	135.5	8.5	338.7	21.2	160.5	10.0	140.5	8.8	263.5	16.5	185.8
Maximum	187.2	11.7	506.9	31.7	415.7	26.0	209.3	13.1	608.0	38.0	405.0	25.3
Average	151.9	9.5	427.0	26.7	280.0	17.5	162.7	10.2	458.2	28.6	306.6	19.2
	After 100 Cycles											
	Mating		Initial Unmate		Unmating							
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)						
	Minimum	142.1	8.9	290.6	18.2	153.0	9.6					
Maximum	223.7	14.0	598.1	37.4	399.7	25.0						
Average	169.8	10.6	448.8	28.0	272.5	17.0						

	Without Latches							
	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
Minimum	105.0	6.6	96.3	6.0	96.5	6.0	84.6	5.3
Maximum	127.7	8.0	124.5	7.8	121.8	7.6	108.5	6.8
Average	114.9	7.2	111.9	7.0	112.0	7.0	95.9	6.0
	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
	Minimum	100.8	6.3	85.6	5.4	108.8	6.8	90.1
Maximum	129.0	8.1	112.6	7.0	139.7	8.7	119.8	7.5
Average	116.2	7.3	100.0	6.3	121.9	7.6	104.1	6.5
	After 100 Cycles							
	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
	Minimum	114.6	7.2	94.4	5.9			
Maximum	149.1	9.3	123.7	7.7				
Average	127.7	8.0	106.5	6.7				

DATA

MATING/UNMATING:

5 Position

With Latches													
	Initial						After 25 Cycles						
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating		
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	
1	25.8	1.61				102.9	6.43	28.0	1.75			118.7	7.42
2	29.1	1.82				120.8	7.55	24.8	1.55			77.9	4.87
3	28.2	1.76	237.4	14.84		11.85	25.0	1.56	232.8	14.55	181.0	11.31	
4	27.0	1.69	211.9	13.24		6.80	25.9	1.62	136.5	8.53	105.0	6.56	
5	28.0	1.75	181.4	11.34	53.4	3.34	29.1	1.82	226.4	14.15	206.6	12.91	
6	30.1	1.88	243.7	15.23	224.0	14.00	27.7	1.73	236.3	14.77	197.0	12.31	
7	26.7	1.67	184.8	11.55	115.0	7.19	26.4	1.65	201.3	12.58	148.3	9.27	
8	26.2	1.64	242.2	15.14	152.8	9.55	25.4	1.59	258.2	16.14	203.7	12.73	
9	30.2	1.89	259.0	16.19	173.8	10.86	29.9	1.87	351.8	21.99	284.5	17.78	
10	29.9	1.87	185.0	11.56	158.9	9.93	28.2	1.76	303.2	18.95	268.5	16.78	
	After 50 Cycles						After 75 Cycles						
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating		
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	
1	32.3	2.02				218.7	13.67	35.4	2.21			165.3	10.33
2	27.4	1.71				61.9	3.87	28.8	1.80			65.0	4.06
3	27.7	1.73	369.9	23.12	215.7	13.48	32.3	2.02	307.8	19.24	263.4	16.46	
4	31.4	1.96	157.1	9.82	125.3	7.83	32.3	2.02	104.2	6.51	67.7	4.23	
5	32.0	2.00	319.7	19.98	309.9	19.37	38.6	2.41	299.5	18.72	275.8	17.24	
6	29.3	1.83	303.0	18.94	292.2	18.26	31.0	1.94	377.1	23.57	345.4	21.59	
7	27.5	1.72	214.2	13.39	197.3	12.33	31.2	1.95	307.2	19.20	256.5	16.03	
8	29.1	1.82	370.9	23.18	304.6	19.04	32.0	2.00	295.5	18.47	208.5	13.03	
9	29.4	1.84	289.3	18.08	208.8	13.05	34.9	2.18	237.6	14.85	121.6	7.60	
10	31.2	1.95	316.8	19.80	355.0	22.19	30.2	1.89	239.5	14.97	199.4	12.46	
	After 100 Cycles												
	Mating		Initial Unmate		Unmating								
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)							
1	35.7	2.23			157.9	9.87							
2	38.6	2.41			178.1	11.13							
3	35.4	2.21	366.9	22.93	317.1	19.82							
4	34.6	2.16	100.6	6.29	63.8	3.99							
5	39.0	2.44	318.7	19.92	242.7	15.17							
6	33.0	2.06	330.2	20.64	309.0	19.31							
7	29.1	1.82	305.0	19.06	277.9	17.37							
8	34.2	2.14	203.8	12.74	177.6	11.10							
9	37.1	2.32	301.3	18.83	162.9	10.18							
10	36.2	2.26											

The unmates were left blank due to latches being broke.

Without Latches								
Initial					After 25 Cycles			
Sample#	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	31.0	1.94	25.6	1.60	31.4	1.96	25.6	1.60
2	21.4	1.34	19.4	1.21	26.9	1.68	22.6	1.41
3	25.0	1.56	24.6	1.54	29.8	1.86	26.5	1.65
4	25.2	1.57	22.7	1.42	28.5	1.78	25.3	1.58
5	19.8	1.24	19.8	1.24	25.0	1.56	22.6	1.41
6	24.2	1.51	21.3	1.33	29.0	1.81	23.7	1.48
7	26.1	1.63	24.2	1.51	28.5	1.78	23.5	1.47
8	28.3	1.77	24.2	1.51	31.8	1.99	26.9	1.68
9	23.8	1.49	23.0	1.44	26.2	1.64	21.4	1.34
10	24.6	1.54	21.0	1.31	22.7	1.42	18.7	1.17
After 50 Cycles					After 75 Cycles			
Sample#	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	32.0	2.00	24.6	1.54	33.1	2.07	25.9	1.62
2	27.0	1.69	22.7	1.42	29.4	1.84	25.4	1.59
3	32.2	2.01	28.6	1.79	32.8	2.05	31.4	1.96
4	29.8	1.86	27.2	1.70	32.2	2.01	29.3	1.83
5	26.2	1.64	24.2	1.51	27.5	1.72	26.7	1.67
6	27.0	1.69	22.1	1.38	30.9	1.93	24.8	1.55
7	29.1	1.82	23.4	1.46	30.7	1.92	24.5	1.53
8	33.1	2.07	29.1	1.82	35.0	2.19	30.4	1.90
9	26.6	1.66	21.4	1.34	28.5	1.78	23.2	1.45
10	22.2	1.39	21.9	1.37	24.8	1.55	20.2	1.26
After 100 Cycles								
Sample#	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
1	35.0	2.19	27.2	1.70				
2	32.3	2.02	27.7	1.73				
3	35.0	2.19	33.9	2.12				
4	35.2	2.20	32.8	2.05				
5	29.1	1.82	28.3	1.77				
6	31.8	1.99	26.1	1.63				
7	32.0	2.00	25.8	1.61				
8	36.8	2.30	30.9	1.93				
9	28.0	1.75	23.7	1.48				
10	25.3	1.58	21.3	1.33				

20 Position

With Latches												
	Initial						After 25 Cycles					
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	161.8	10.11	369.1	23.07	176.5	11.03	171.2	10.70	367.5	22.97	225.8	14.11
2	194.9	12.18	396.2	24.76	193.3	12.08	168.2	10.51	499.8	31.24	296.5	18.53
3	158.9	9.93	335.7	20.98	278.7	17.42	142.2	8.89	448.2	28.01	311.0	19.44
4	147.8	9.24	356.5	22.28	275.2	17.20	137.1	8.57	495.7	30.98	356.3	22.27
5	159.2	9.95	470.1	29.38	278.1	17.38	170.2	10.64	505.9	31.62	319.5	19.97
6	146.1	9.13	352.2	22.01	223.2	13.95	134.7	8.42	330.7	20.67	224.0	14.00
7	133.0	8.31	353.9	22.12	242.9	15.18	126.9	7.93	388.8	24.30	258.9	16.18
8	153.8	9.61	333.8	20.86	212.5	13.28	130.2	8.14	517.1	32.32	413.9	25.87
9	139.4	8.71	283.2	17.70	225.4	14.09	127.7	7.98	371.0	23.19	259.8	16.24
10	146.2	9.14	332.2	20.76	196.8	12.30	132.5	8.28	386.6	24.16	264.5	16.53
	After 50 Cycles						After 75 Cycles					
	Mating		Initial Unmate		Unmating		Mating		Initial Unmate		Unmating	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	187.2	11.70	468.3	29.27	160.5	10.03	209.3	13.08	375.8	23.49	185.8	11.61
2	178.6	11.16	401.0	25.06	231.0	14.44	196.6	12.29	487.4	30.46	293.6	18.35
3	139.0	8.69	489.9	30.62	342.7	21.42	151.4	9.46	534.6	33.41	385.3	24.08
4	138.1	8.63	385.3	24.08	268.0	16.75	150.9	9.43	498.2	31.14	378.2	23.64
5	179.4	11.21	492.5	30.78	289.9	18.12	193.9	12.12	533.8	33.36	356.3	22.27
6	148.3	9.27	441.4	27.59	289.1	18.07	152.0	9.50	441.8	27.61	343.8	21.49
7	135.5	8.47	352.5	22.03	317.8	19.86	141.0	8.81	263.5	16.47	213.9	13.37
8	136.5	8.53	506.9	31.68	415.7	25.98	145.3	9.08	608.0	38.00	405.0	25.31
9	137.6	8.60	393.9	24.62	264.8	16.55	140.5	8.78	417.3	26.08	242.6	15.16
10	139.2	8.70	338.7	21.17	220.8	13.80	146.1	9.13	421.4	26.34	261.8	16.36
	After 100 Cycles											
	Mating		Initial Unmate		Unmating							
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)						
1	223.7	13.98	405.3	25.33	199.8	12.49						
2	207.7	12.98	485.3	30.33	321.8	20.11						
3	153.9	9.62	497.4	31.09	370.9	23.18						
4	163.4	10.21	457.6	28.60	153.0	9.56						
5	197.0	12.31	598.1	37.38	399.7	24.98						
6	150.2	9.39	540.0	33.75	304.6	19.04						
7	157.0	9.81	290.6	18.16	153.1	9.57						
8	148.0	9.25	391.7	24.48	243.7	15.23						
9	142.1	8.88	405.4	25.34	304.3	19.02						
10	155.0	9.69	416.5	26.03	274.4	17.15						

Without Latches								
Initial					After 25 Cycles			
Sample#	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	105.1	6.57	109.4	6.84	106.7	6.67	84.6	5.29
2	119.0	7.44	114.1	7.13	121.8	7.61	107.0	6.69
3	115.5	7.22	109.1	6.82	112.8	7.05	108.5	6.78
4	125.0	7.81	120.3	7.52	120.2	7.51	102.1	6.38
5	109.3	6.83	104.0	6.50	110.7	6.92	108.2	6.76
6	117.8	7.36	116.5	7.28	112.0	7.00	87.7	5.48
7	127.7	7.98	124.5	7.78	121.1	7.57	99.7	6.23
8	116.8	7.30	117.1	7.32	109.3	6.83	88.2	5.51
9	105.0	6.56	96.3	6.02	96.5	6.03	86.4	5.40
10	107.7	6.73	107.7	6.73	109.4	6.84	86.7	5.42
After 50 Cycles					After 75 Cycles			
Sample#	Mating		Unmating		Mating		Unmating	
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	105.8	6.61	85.6	5.35	111.7	6.98	93.6	5.85
2	127.2	7.95	112.6	7.04	133.0	8.31	119.8	7.49
3	118.4	7.40	110.4	6.90	134.4	8.40	117.6	7.35
4	129.0	8.06	111.2	6.95	139.7	8.73	116.3	7.27
5	114.7	7.17	109.4	6.84	121.8	7.61	105.4	6.59
6	114.2	7.14	88.3	5.52	114.2	7.14	90.1	5.63
7	126.4	7.90	108.0	6.75	128.0	8.00	110.7	6.92
8	115.7	7.23	93.8	5.86	113.4	7.09	95.4	5.96
9	100.8	6.30	92.3	5.77	108.8	6.80	96.0	6.00
10	109.9	6.87	88.6	5.54	113.9	7.12	96.0	6.00
After 100 Cycles								
Sample#	Mating		Unmating					
	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)				
1	117.1	7.32	94.4	5.90				
2	132.0	8.25	120.8	7.55				
3	140.6	8.79	119.4	7.46				
4	149.1	9.32	123.7	7.73				
5	133.9	8.37	105.3	6.58				
6	123.4	7.71	97.9	6.12				
7	133.4	8.34	113.8	7.11				
8	114.6	7.16	94.9	5.93				
9	115.0	7.19	97.8	6.11				
10	117.4	7.34	97.0	6.06				

EQUIPMENT AND CALIBRATION SCHEDULES**Equipment #:** TCT-04**Description:** Dillon Quantrol TC21 25-1000 mm/min series test stand**Manufacturer:** Dillon Quantrol**Model:** TC2 I series test stand**Serial #:** 04-1041-04**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
... Last Cal: 05/18/2007, Next Cal: 05/18/2008**Equipment #:** LC-250N (icell)-1**Description:** 250 Newton load cell for Dillon Quantrol test stand**Manufacturer:** Dillon Quantrol**Model:** icell**Serial #:** 04-0020-08**Accuracy:** .10 % of Capacity

... Last Cal: 01/18/2008, Next Cal: 01/18/2009

Equipment #: Null**Description:****Manufacturer:****Model:****Serial #:****Accuracy:**

... Last Cal: , Next Cal: