CALSER CORPORATION

302 N. Belt East, Swansea, IL 62226 (618) 277-0329

TESTING MACHINE CALIBRATION DATA AND REPORT

Report #: VN# 9435-001

Page 1 of 2

Customer	University of Arkansas		
Location	Civil Engineering	**Date of Service**	12/22/14
	Fayetteville, AR 72701	**Customer Order No.**	Verbal
Manufacturer	Forney **Model** F-400F-LC1	**Order Date**	11/24/14
Serial No.	95037 **Capacity** 400,000 lbf	**Temp.**	56˚ F
Resolution	10 lbf / DIV	**Date Last Done**	12/17/13
Customer Asset No.	231709	**Calibration Next Due**	12/22/15
Auxiliary Equipment:	w/ Admet GB2 Digital R/O #GB2-107721-2	**Method of Verification**	Set the Force
	w/ Dynisco P/T		

Applied Force	*	Indicated Force	Error	%	Applied Force	*	Indicated Force	Error	%
Run #1		"As Found" Condition			Run #2		"As Left" Condition		
400,000lbf Range	*	10lbf / DIV			400,000lbf Range	*	10lbf / DIV		
0	2C	0	0	0.00	0	2C	0	0	0.00
5,000	2C	4,980	-20	0.40	5,000	2C	4,980	-20	0.40
10,000	2C	9,960	-40	0.40	10,000	2C	9,950	-50	0.50
25,000	3	24,980	-20	0.08	25,000	3	24,940	-60	0.24
50,000	3	50,020	20	0.04	50,000	3	49,900	-100	0.20
75,000	12	75,080	80	0.11	75,000	12	74,960	-40	0.05
100,000	12	100,100	100	0.10	100,000	12	99,990	-10	0.01
125,000	12	125,100	100	0.08	125,000	12	124,990	-10	0.01
150,000	12	150,060	60	0.04	150,000	12	149,990	-10	0.01
200,000	12	200,200	200	0.10	200,000	12	200,180	180	0.09
250,000	12	250,350	350	0.14	250,000	12	250,250	250	0.10
300,000	12	300,320	320	0.11	300,000	12	300,230	230	0.08
350,000	12	350,250	250	0.07	350,000	12	350,200	200	0.06
400,000	12	400,180	180	0.05	400,000	12	400,110	110	0.03
0	12	0	80	0.00	0	12	0	20	0.00

Notes:

Calibration in accordance with ASTM E4,
and Calser Corporation Procedure # 1-01, Rev 1.

***CALIBRATION EQUIPMENT**

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Technology (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025 . All instrument readings have been corrected for temperature where necessary.

ACCURACY SUMMARY

Capacity Range	Loading Range	Max. Error
Run 1		
400,000lbf Range	5,000 - 400,000	0.40 %
Run 2		
400,000lbf Range	5,000 - 400,000	0.50 %

Verification Equipment

Manufacturer and Serial #	* L/C	Range and uncertainty	Verification Agency and Date
Interface	2C	653.62 - 10,000 lbf	Morehouse
106798A		1.634	02/17/14
Strainsense	3	12,055.96 - 100,000 lbf	Morehouse
070115		25.174	10/28/14
Strainsense	12	58,630.96 - 600,000 lbf	Morehouse
990921		146.577	01/02/14

Calibration Technician T.R. Gagen

CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226 (618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner : *University of Arkansas*
Location : *Civil Engineering*
Fayetteville, AR 72701

Report # : VN# 9435-001
Page : 2 of 2

Date of Service: *12/22/14*

Manufacturer: *Forney* **Model:** *F-400F-LC1*

Serial No. : *95037* **Capacity:** *400,000 lbf*

Auxillary Equip: *w/ Admet GB2 Digital R/O #GB2-107721-2*
w/ Dynisco P/T

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel. The method of verification and listed data are in accordance with ASTM E 4. Accuracy of all calibration devices is traceable to the National Institute of Standards and Technology (NIST) and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 *400,000lbf Range*	*5,000 - 400,000*	*0.40 %*
Run 2 *400,000lbf Range*	*5,000 - 400,000*	*0.50 %*

VERIFICATION EQUIPMENT

Manufacturer & Serial #	Load Cell #	Range & Uncertainty	Verification Agency & Date	Digital Serial #
Interface 106798A	**2C**	*653.62 - 10,000 lbf 1.634*	*Morehouse 02/17/14*	GB-9911093
Strainsense 070115	**3**	*12,055.96 - 100,000 lbf 25.174*	*Morehouse 10/28/14*	GB-9911093
Strainsense 990921	**12**	*58,630.96 - 600,000 lbf 146.577*	*Morehouse 01/02/14*	GB-9908261

This certificate is issued as a statement of the fact that on the above date the listed testing machine has an accuracy as indicated. It should not be construed or regarded as a Guarantee or Warranty of any kind (in favor of the client, the client's customers, or the public at large) that the testing machine will continue to retain the same percentage (%) of accuracy or efficiency as determined on the date when the calibration, and adjustments if required, was performed and reported by "Calser Corporation" since the calibrator has absolutely no control over the future operation, damage, maintenance, repairs, and overall condition of the testing machine and hereby expressly disclaims any and all liability for damage or loss sustained by all parties arising or resulting from the deterioration, obsolescence, malfunction or substandard performance of said testing machine; which shall remain the sole responsibility of the machine's regular custodian, owner, and/or user. This certificate shall not be reporoduced except in full, without the written approval of Calser Corporation.

CALSER CORPORATION

Quality Control Director

Thomas R. Gagen

Form# 102-01-Rev.4

CALSER CORPORATION

302 N. Belt East, Swansea, IL 62226 (618) 277-0329

TESTING MACHINE CALIBRATION DATA AND REPORT

Report #: **VN# 9435-002**

Customer	*University of Arkansas*	**Date of Service**	*12/22/14*
Location	*Civil Engineering*	**Customer Order No.**	*Verbal*
	Fayetteville, AR 72701	**Order Date**	*11/24/14*
Manufacturer	*TMI* **Model** *CM-5000GB2*	**Temperature**	*56˚ F*
Serial No.	*100317* **Capacity** *500,000 lbf*	**Date Last Done**	*12/17/13*
Resolution	*10 lbf / DIV*	**Calibration Next Due**	*12/22/15*
Customer Asset No.	*264440*	**Method of Verification**	*Set the Force*
Auxiliary Equipment:	*w/ Admet GB2 Digital R/O #GB2-1004302*		
	w/ Dynisco P/T #04-08-10323273		

Applied Force	*	Indicated Force	Error	%	*	Indicated Force	Error	%	*	Indicated Force	Error	%
Run #1		Run #1	"As Found" Condition			Run #2	"As Left" Condition			Run #3	"As Left" Condition	
500,000lbf Range	*	10lbf / DIV			*				*			
0	2C	0	0	0.00	2C	0	0	0.00	2C	0	0	0.00
5,000	2C	5,020	20	0.40	2C	4,990	-10	0.20	2C	4,990	-10	0.20
10,000	2C	10,020	20	0.20	2C	10,010	10	0.10	2C	9,990	-10	0.10
25,000	3	25,080	80	0.32	3	25,020	20	0.08	3	24,980	-20	0.08
50,000	3	50,160	160	0.32	3	50,050	50	0.10	3	50,050	50	0.10
75,000	12	75,140	140	0.19	12	75,040	40	0.05	12	75,020	20	0.03
100,000	12	100,130	130	0.13	12	100,050	50	0.05	12	100,040	40	0.04
150,000	12	150,120	120	0.08	12	150,080	80	0.05	12	150,050	50	0.03
200,000	12	200,200	200	0.10	12	200,050	50	0.03	12	200,050	50	0.03
250,000	12	250,450	450	0.18	12	250,150	150	0.06	12	250,130	130	0.05
300,000	12	300,440	440	0.15	12	300,070	70	0.02	12	300,690	690	0.23
400,000	12	400,820	820	0.21	12	400,160	160	0.04	12	400,130	130	0.03
500,000	12	501,240	1240	0.25	12	500,320	320	0.06	12	500,270	270	0.05
0	12	0	30	0.00	12	0	10	0.00	12	0	-20	0.00

Notes:

Calibration in accordance with ASTM E4, and Calser Corporation Procedure # 1-01, Rev 1.

***CALIBRATION EQUIPMENT**

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Technology (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025 . All instrument readings have been corrected for temperature where necessary.

ACCURACY SUMMARY

Capacity Range	Loading Range	Max. Error
Run 1		
500,000lbf Range	5,000 - 500,000	0.40 %
Run 2		
500,000lbf Range	5,000 - 500,000	0.20 %
Run 3		
500,000lbf Range	5,000 - 500,000	0.23 %

VERIFICATION EQUIPMENT

Manufacturer & Serial #	* L/C	Class A Range (in LBs) and Uncertainty (LBF)	Agency & Date
Interface	2C	653.62 - 10,000 lbf	Morehouse
106798A		1.634	02/17/14
Strainsense	3	12,055.96 - 100,000 lbf	Morehouse
070115		25.174	10/28/14
Strainsense	12	58,630.96 - 600,000 lbf	Morehouse
990921		146.577	01/02/14

Calibration Technician *T.R. Gagen*

CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226 (618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner : *University of Arkansas*
Location : *Civil Engineering*
Fayetteville, AR 72701

Report # : VN# 9435-002

Manufacturer: *TMI* **Model:** *CM-5000GB2* **Date of Service:** *12/22/14*

Serial No. : *100317* **Capacity:** *500,000 lbf*

Auxillary Equip : *w/ Admet GB2 Digital R/O #GB2-1004302*
w/ Dynisco P/T #04-08-10323273

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel. The method of verification and listed data are in accordance with ASTM E 4. Accuracy of all calibration devices is traceable to the National Institute of Standards and Technology (NIST) and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 *500,000lbf Range*	*5,000 - 500,000*	*0.40 %*
Run 2 *500,000lbf Range*	*5,000 - 500,000*	*0.20 %*
Run 3 *500,000lbf Range*	*5,000 - 500,000*	*0.23 %*

Verification Equipment Used:

Manufacturer & Serial #	Load Cell #	Range & Uncertainty	Verification Agency & Date	Digital Serial #
Interface 106798A	**2C**	*653.62 - 10,000 lbf 1.634*	*Morehouse 02/17/14*	GB-9911093
Strainsense 070115	**3**	*12,055.96 - 100,000 lbf 25.174*	*Morehouse 10/28/14*	GB-9911093
Strainsense 990921	**12**	*58,630.96 - 600,000 lbf 146.577*	*Morehouse 01/02/14*	GB-9908261

This certificate is issued as a statement of the fact that on the above date the listed testing machine has an accuracy as indicated. It should not be construed or regarded as a Guarantee or Warranty of any kind (in favor of the client, the client's customers, or the public at large) that the testing machine will continue to retain the same percentage (%) of accuracy or efficiency as determined on the date when the calibration, and adjustments if required, was performed and reported by "Calser Corporation" since the calibrator has absolutely no control over the future operation, damage, maintenance, repairs, and overall condition of the testing machine and hereby expressly disclaims any and all liability for damage or loss sustained by all parties arising or resulting from the deterioration, obsolescence, malfunction or substandard performance of said testing machine; which shall remain the sole responsibility of the machine's regular custodian, owner, and/or user. This certificate shall not be reporoduced except in full, without the written approval of Calser Corporation.

CALSER CORPORATION

Quality Control Director

Thomas R. Gagen