



Receipt Date: November 21, 2016  
Cal. Date: November 23, 2016  
Report Date: November 23, 2016

Report No.: 336818  
Serial No.: 28816  
Barcode: 019785

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 21  
Technician ID: 07

Item(s) Submitted: 100 Gallon LPG Prover  
Manufacturer: Arrow  
Material: Mild Steel  
Description: Zero Bottom  
Condition: Excellent\*  
Temperature: 18.7 °C  
Pressure: 738.4 mmHg  
Relative Humidity: 50.3 %  
Standard H<sub>2</sub>O Temp. 15.2 °C  
Artifact H<sub>2</sub>O Temp.: 15.3 °C

Nominal	Calibrated				
Volume (gal)	Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
100	As Found (at 100 psig)	99.839	-37.2	2.02	5.3 0.0000186
	As Left (at 100 psig)	99.839	-37.2		

\* Neck scale plate and adjustment mechanism is not adequately sealable. Repair by next calibration.

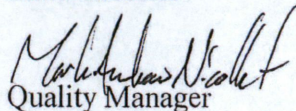
Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow. The prover listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-4 (2010). Uncertainty calculations contain the components in NIST SOP 21 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

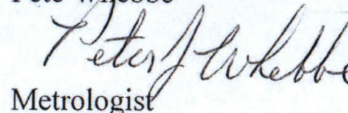
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F.

Mark Nicollet

  
Quality Manager

Reviewed by:

Pete Whebbe

  
Metrologist



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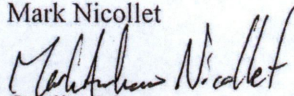
## Pressure Correction Chart

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 21  
Technician ID: 7

Item(s) Submitted: 100 Gallon LPG Prover  
Manufacturer: Arrow  
Material: Mild Steel  
Description: Zero Bottom  
Condition: Excellent\*  
Temperature: 18.7 °C  
Pressure: 738.4 mmHg  
Relative Humidity: 50.3 %

Pressure Gauge Reading (psig)	Corrected Volume (gal)
0	99.666
10	99.690
20	99.714
30	99.739
40	99.763
50	99.787
60	99.797
70	99.808
80	99.818
90	99.829
100	99.839
110	99.850
120	99.861
130	99.871
140	99.882
150	99.893
160	99.902
170	99.910
180	99.919
190	99.928
200	99.936

Mark Nicollet



Quality Manager



Receipt Date: November 21, 2016  
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Report No.: 336817  
Serial No.: 24360  
Barcode: 201188

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 21  
Technician ID: 07

Item(s) Submitted: 25 Gallon LPG Prover  
Manufacturer: Arrow  
Material: Mild Steel  
Description: Zero Bottom  
Condition: Excellent\*  
Temperature: 18.7 °C  
Pressure: 737.9 mmHg  
Relative Humidity: 48.0 %  
Standard H<sub>2</sub>O Temp. 16.0 °C  
Artifact H<sub>2</sub>O Temp.: 16.0 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
25	As Found (at 100 psig)	25.021	4.8	2.16	1.5	0.0000186
	As Left (at 100 psig)	25.021	4.8			

\* Neck scale plate and adjustment mechanism is not adequately sealable. Repair by next calibration.

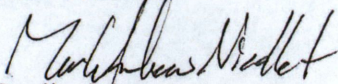
Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow. The prover listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-4 (2010). Uncertainty calculations contain the components in NIST SOP 21 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

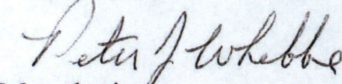
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F.

Mark Nicollet

  
Quality Manager

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Pete Whebbe

  
Metrologist



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## Pressure Correction Chart

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 21  
Technician ID: 7

Item(s) Submitted: 25 Gallon LPG Prover  
Manufacturer: Arrow  
Material: Mild Steel  
Description: Zero Bottom  
Condition: Excellent\*  
Temperature: 18.7 °C  
Pressure: 737.9 mmHg  
Relative Humidity: 48.0 %

Pressure Gauge Reading (psig)	Corrected Volume (gal)
0	24.971
10	24.979
20	24.986
30	24.994
40	25.001
50	25.009
60	25.011
70	25.014
80	25.016
90	25.019
100	25.021
110	25.023
120	25.025
130	25.028
140	25.030
150	25.032
160	25.034
170	25.037
180	25.039
190	25.042
200	25.044

Mark Nicollet

Quality Manager



Receipt Date: November 14, 2016  
Cal. Date: November 14, 2016  
Report Date: November 14, 2016

Report No.: 336762  
Serial No.: 051271555-0103  
Barcode: 202102

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 19  
Technician ID: 11

Item(s) Submitted: 100 Gallon Prover  
Manufacturer: Determan Brownie Inc  
Material: Stainless Steel (304)  
Type: No Bottom Zero  
Condition: Good  
Temperature: 19.8 °C  
Pressure: 735.8 mmHg  
Relative Humidity: 48.3 %  
Standard H<sub>2</sub>O Temp.: 14.3 °C  
Artifact H<sub>2</sub>O Temp.: 14.4 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (°F)
100	As Found	99.992	-1.7	2.01	3.3	0.0000288
	As Left	99.992	-1.7			

Neck Calibration: No neck calibration was performed at this time.

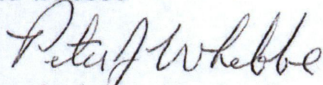
This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

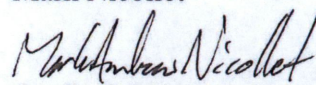
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

  
Metrologist

Reviewed by:

Mark Nicollet

  
Quality Manager



Receipt Date: November 14, 2016  
Cal. Date: November 14, 2016  
Report Date: November 14, 2016

Report No.: 336761  
Serial No.: 031271251-0101  
Barcode: 202101

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 19  
Technician ID: 11

Item(s) Submitted: 500 Gallon Prover  
Manufacturer: Determan Brownie Inc  
Material: Stainless Steel (304)  
Type: No Bottom Zero  
Condition: Good  
Temperature: 19.5 °C  
Pressure: 735.9 mmHg  
Relative Humidity: 43.1 %  
Standard H<sub>2</sub>O Temp.: 14.1 °C  
Artifact H<sub>2</sub>O Temp.: 14.3 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (1/°F)
500	As Found	499.988	-3	2.02	12	0.0000288
	As Left	499.988	-3			

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F  
Conversion to SI unit: 1 gallon = 231 in<sup>3</sup> = 0.00378541 m<sup>3</sup>.

Pete Whebbe

*Pete Whebbe*  
Metrologist

Reviewed by:

Mark Nicollet

*Mark Nicollet*  
Quality Manager



Receipt Date: November 17, 2016  
Cal. Date: November 17, 2016  
Report Date: November 17, 2016

Report No.: 336796  
Serial No.: 2063  
Barcode: 201332

## Calibration Certificate

WESTMOR FLUID SOLUTIONS LLC  
14044 W. FREEWAY DRIVE  
COLUMBUS, MN 55038  
Contact: Ryan Hartin  
Phone: 651-842-2551  
PO Number: NONE  
SOP: 21  
Technician ID: 07

Item(s) Submitted: 100 Gallon LPG Prover  
Manufacturer: Gas Service & Supply  
Material: Mild Steel  
Description: Zero Bottom  
Condition: Good\*  
Temperature: 19.6 °C  
Pressure: 727.5 mmHg  
Relative Humidity: 48.3 %  
Standard H<sub>2</sub>O Temp. 15.2 °C  
Artifact H<sub>2</sub>O Temp.: 15.4 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in <sup>3</sup> )	<i>k</i>	U (in <sup>3</sup> )	CCE (1/°F)
100	As Found (at 100 psig)	100.047	10.8	2.02	5.3	0.0000186
	As Left (at 100 psig)	100.047	10.8			

\* Levels are not accurate and could not be adjusted. Level to the prover neck.

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow. The prover listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

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CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F.

Mark Nicollet

Quality Manager

Reviewed by:

Erik Alfvin

Metrologist