

P.O. BOX 250  
2900 MAIN STREET  
ALAMEDA, CALIFORNIA 94501

800 / 300-4TSG  
510 / 522-8328  
FAX 510 / 522-3136

Attn: Scott Arnold, GTS INC. 10/7/11  
Dear Sir's regarding your inquiry into dead weight tester's, calibration  
and certification.

Typical pre test evaluation;

- a) Ensure all weights are accounted for and that they match capacity of tester.
- b) When pressure is applied ensure that piston rises and rotates smoothly.
- c) During initial checks ensure that unit is capable of going to full capacity, making notations at prescribed points, recording results.
- d) At this time if irregularities occur, record findings, determine what course to proceed with ie., cleaning flushing, and or repairs if needed.
- e) Reassemble, refill and test record all results at prescribed points.

RE: AMETEK 3000-PSI DEAD WEIGHT TESTER, S/N2845, test date 9/27/11.

Unit received, and visually inspected at receiving, case was opened up all accessories were in proper order all weights were accounted for, general cleanliness was good..

Initial test of unit, pressure applied results normal up to 1000 psi then noticeable sticking above 1000 psi, notations of findings made.

Unit disassembled, contaminated fluid was found, unit flushed and thoroughly cleaned, new mineral oil installed, retested all readings taken at prescribed test points, test sat, accy.25%.

Determined that contam oil, at higher pressures above 1000 psi increased friction of piston enough to drag on column, causing noticeable errors, below 1000 psi friction would be correspondingly reduced, not causing noticeable errors, accuracy at or below 1000 psi would maintain their accy.

The condition of this particular unit was actually above average in appearance and general cleanliness compared to normal field type portable units.

# TECHNICAL SERVICES GROUP

2900 Main St Alameda CA 94501 Phone (510)522-8326 Fax (510)522-3136

## Certificate of Calibration

CONTRA COSTA INSPECTIONS

2820 LA JOLLA DR.

ANTIOCH

CA. 94531

Customer ID # 4292

Rated Accuracy .25%

File # 0

Pass/Fail as Found PASS

Instrument Type DEAD WEIGHT  
TESTER

Pass/Fail as Left PASS

1st (Mfg) S/N 2517

Range 3000

Units PSIG

2nd S/N 2845

Resolution N/A

Mfg. AMETEK

Model 3K

Cal Date 9/27/2011

Cal By ROBERT LWIN WONG  
0831

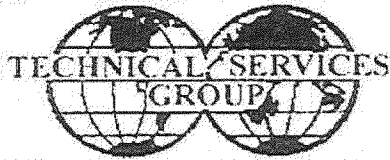
Notes Cal Due 9/27/2012

Current Cal Cycle (Months) 12

Previous Cal Cycle N/A

Standards Used AMETEK PK-654WC S/N73272  
DUE 1.28.2012

TECHNICAL SERVICES GROUP CERTIFIES THAT THIS INSTRUMENT  
HAS BEEN CALIBRATED TRACEABLE TO THE NATIONAL INSTITUTE  
OF STANDARDS AND TECHNOLOGY AND CONFORMS TO ISO 10012  
AND ANSI / NCSL Z-540. UNLESS OTHERWISE SPECIFIED  
MEASUREMENT UNCERTAINTIES ARE LESS THAN 1/4 OF TOLERANCE  
OR 1 MINOR DIVISION.



# CALIBRATION DATA SHEET

## PRESSURE / TEMPERATURE

LAST REVISION: 18 FEB 2011

2900 MAIN ST ALAMEDA CA 94501 PHONE (510) 522-8326 FAX (510) 522-3136

CUSTOMER <i>Control Convector Inspection</i>	TSG JOB <i>7799</i>	TSG ITEM <i>9020</i>	CUST. P. O. #	SHIPPING # <i>56946</i>	DESCRIPTION: PRESS. <input checked="" type="checkbox"/> RECORDER <input type="checkbox"/> OTHER	TEMP	TEST GAGE	ASSIGNED G-T #
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1ST SERIAL # <i>2517</i>	2ND SERIAL # <i>2945</i>	MANUFACTURER <i>Ametek</i>	MODEL <i>Mini-Dia. Wk Tester</i>	RANGE <i>0/3000PSI</i>	RESOLUTION	DIGITAL	ANALOG <input checked="" type="checkbox"/>
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CASE SIZE <i>Mini</i>	CONNECTION TYPE BOTTOM <input type="checkbox"/> BACK <input type="checkbox"/>	CONNECTION SIZE <i>NA</i>	THREAD TYPE <i>NA</i>	RATED ACCURACY % <i>± 0.5%</i>	NIST TRACEABLE # PRESSURE: 35817.001 TEMPERATURE: TE188, TE192, TE195
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EXISTING CAL CYCLE <i>1/24</i>	CAL CYCLE UPDATE <i>1/25</i>	LAST CAL DATE	CAL DATE <i>9-27-11</i>	RECALIBRATE <i>9-27-12</i>
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TECHNICIAN <i>Robert L. Swin</i>	BADGE # <i>83</i>	TEMPERATURE DEG. F 68 - 72	RELATIVE HUMIDITY % < 60 %	CALIBRATION PROCEDURE G-A1, SCP-01, SCP-02, SCP-03
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CONDITION				STANDARDS USED				TECHNICAL SERVICES GROUP CERTIFIES THAT THIS INSTRUMENT HAS BEEN CALIBRATED TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY AND CONFORMS TO ISO 10012 AND ANSI / NCSL Z-540 UNLESS OTHERWISE SPECIFIED MEASUREMENT UNCERTAINTIES ARE LESS THAN 1/4 OF TOLERANCE OR 1 MINOR DIVISION
AS RECEIVED		AS RETURNED		MFG.	MODEL	SERIAL #	RECALIBRATE	
GOOD	DAMAGED	IN TOL.	OUT OF TOL.	AMETEK	PK-654WC	73272	1/28/2012	
IN TOL.	OUT OF TOL.	LIMITED	D.E.R.	EUTECHNICS	4600	100049	2/2/2012	
		REPAIRED BEFORE TEST	PCS. CALIB.					

PARAMETER	RANGE	STANDARD VALUE	OBSERVED INDICATION	CORRECTED INDICATION	TOLERANCE	PASS	FAIL
PRESSURE:							
PSIG		<i>500 PSI</i>	<i>500 PSI</i>	<i>500 PSI</i>	<i>± 0.5%</i>	/	
PSID	<i>0/3000 PSI</i>	<i>1000 "</i>	<i>1000 "</i>	<i>1000 "</i>		/	
PSIA		<i>1500 "</i>	<i>1475 "</i>	<i>1500 "</i>		/	
IN Hg		<i>2000 "</i>	<i>1975 "</i>	<i>2000 "</i>		/	
IN H <sub>2</sub> O		<i>3000 "</i>	<i>2950 "</i>	<i>3000 "</i>		/	
OTHER							
VACUUM:							
IN Hg							
OTHER							
TEMPERATURE:							
DEG F							
DEG C							
OTHER							

DETERMINATION OF IMPACT / NOTES: <i>Cleaned the sys, refilled with new oil.</i>	TSG CALIBRATION SUP. / QUALITY ASSURANCE SUP.
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# CALIBRATION DATA SHEET

## PRESSURE / TEMPERATURE

LAST REVISION: 18 FEB 2011

2900 MAIN ST ALAMEDA CA 94501 PHONE (510) 522-8326 FAX (510) 522-3136

CUSTOMER <i>Contra Costa Inspectors</i>		TSG JOB <i>43-012 9020</i>	TSG ITEM <i>36946</i>	CUST. P. O. #	SHIPPING #	DESCRIPTION: PRESSURE RECORDER <input checked="" type="checkbox"/> TEMP <input type="checkbox"/> TEST GAGE <input type="checkbox"/> ASSIGNED G-T #
1ST SERIAL # <i>2517</i>	2ND SERIAL # <i>2845</i>	MANUFACTURER <i>Amtek</i>	MODEL <i>Mini Deadweight Tester</i>	RANGE <i>0-5000 PSI</i>	RESOLUTION	DIGITAL <input type="checkbox"/> ANALOG <input checked="" type="checkbox"/>
CASE SIZE <i>Mini</i>	CONNECTION TYPE BOTTOM <input checked="" type="checkbox"/> BACK <input type="checkbox"/>	CONNECTION SIZE <i>N/A</i>	THREAD TYPE NPT <input type="checkbox"/> TUBE <input type="checkbox"/> UN <input type="checkbox"/> ISO <input type="checkbox"/>	RATED ACCURACY % <i>± 0.25%</i>	NIST TRACEABLE # PRESSURE: 35817.001 TEMPERATURE: TE188, TE192, TE195	
EXISTING CAL CYCLE <i>1 yr</i>	CAL CYCLE UPDATE <i>1 yr</i>	LAST CAL DATE		CAL DATE <i>9-27-11</i>	RECALIBRATE <i>9-27-12</i>	
TECHNICIAN <i>Robert J. ...</i>		BADGE # <i>85</i>	TEMPERATURE DEG. F <i>68 - 72</i>	RELATIVE HUMIDITY % <i>&lt; 60%</i>	CALIBRATION PROCEDURE G-A1, SCP-01, SCP-02, SCP-03	

CONDITION				STANDARDS USED				TECHNICAL SERVICES GROUP CERTIFIES THAT THIS INSTRUMENT HAS BEEN CALIBRATED TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY AND CONFORMS TO ISO 10012 AND ANSI/ NCSL Z-540 UNLESS OTHERWISE SPECIFIED MEASUREMENT UNCERTAINTIES ARE LESS THAN 1/4 OF TOLERANCE OR 1 MINOR DIVISION
AS RECEIVED		AS RETURNED		MFG.	MODEL	SERIAL #	RECALIBRATE	
GOOD	DAMAGED	IN TOL.	OUT OF TOL.	AMETEK	PK-654WC	73272	1/28/2012	
IN TOL.	OUT OF TOL.	LIMITED	B.E.R.	EUTECHNICS	4600	100049	2/2/2012	
		REPAIRED BEFORE TEST	PCS . CALIB.					

PARAMETER	RANGE	STANDARD VALUE	OBSERVED INDICATION	CORRECTED INDICATION	TOLERANCE	PASS	FAIL
PRESSURE : PSIG		<i>500 PSI</i>	<i>Cleaned the system Refilled w/ new oil It been checked</i>	<i>500 PSI</i>	<i>± 0.25%</i>	/	
PSID	<i>0-3,000 PSI</i>	<i>1000 n</i>		<i>1000 n</i>		/	
PSIA		<i>1500 n</i>		<i>1500 n</i>		/	
IN Hg		<i>2000 n</i>		<i>2000 n</i>		/	
IN H2O		<i>2500 n</i>		<i>2500 n</i>		/	
OTHER		<i>3000 n</i>		<i>3000 n</i>		/	
VACUUM : IN Hg							
OTHER							
TEMPERATURE : DEG F							
DEG C							
OTHER							

DETERMINATION OF IMPACT / NOTES :

TSG CALIBRATION SUP. / QUALITY ASSURANCE SUP.

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