



SOUTHWEST RESEARCH INSTITUTE®

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-4834



Calibration Laboratory
Certificate #0972-01

Certificate of Calibration

Cost Center: DIV20

Mail Stop: B51

Customer: DON BANNON

Manufacturer/Model: PROTO / 6104

Description: TORQUE SCREWDRIVER

Serial Number: 139072

Asset Number: 009202

Procedure: TORQUE TOOLS - 29 NOV 2007

Work Order: 303086385

Date Issued: 14-Mar-2009

Date Calibrated: 14-Mar-2009

***Date Due :** 14-Sep-2009

****Results:** FOUND-LEFT

Temperature: 68°F

Humidity: 36 %

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 2005, ANSI/NCSL Z540-1-1994 and relevant requirements of the ISO 9000-2000 standard. This certificate shall not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. This certificate shall not be used to claim product endorsement by Southwest Research Institute, American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government. Results of this calibration relate only to the instrument described above at the time of calibration and does not imply any long term stability of the instrument.

*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. **Found/Left = adjustment and/or repair was not required, As Left = adjusted and/or repaired was required. The customer has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance. See Remarks or attached Measurement Report with the same Work Order number for data.

Reported uncertainty calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM) and represents an expanded uncertainty with a coverage factor of $k=2$ to approximate a 95% confidence level.

Remarks: Cal'd Clockwise +/- 6%

Standards Used

<u>Asset #</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Description</u>	<u>Cal Date</u>	<u>Due Date</u>
012699	CDI	2000-5-02	TORQUE TRANSDUCER 15 - 200 INOZ	7-May-2008	7-May-2009

Reviewed By: () srk () mar (x) wgh

Laboratory Quality Manager

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Calibrated By: Joe Greagrey

Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303086385	Mfr:	Proto	Technician:	JRG
Asset No:	009202	Model:	6104	Type Data:	Found-left
Serial No:	139072	Type:	Torque Screwdriver 100 in-oz	Cal Date:	14-Mar-09
Remarks: Calibrated Clockwise Only.					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Result	%Limit
Torque Clockwise	in-oz	in-oz	in-oz	in-oz	in-oz		
	20.3	20.0	-0.3	1.2	0.53	Pass	25%
	20.8	20.0	-0.8	1.2	0.53	Pass	67%
	20.6	20.0	-0.6	1.2	0.53	Pass	50%
	19.9	20.0	0.1	1.2	0.53	Pass	8%
	20.7	20.0	-0.7	1.2	0.53	Pass	58%
	20.6	20.0	-0.6	1.2	0.53	Pass	50%
	20.4	20.0	-0.4	1.2	0.53	Pass	33%
	20.2	20.0	-0.2	1.2	0.53	Pass	17%
	20.4	20.0	-0.4	1.2	0.53	Pass	33%
	61.1	60.0	-1.1	3.6	0.55	Pass	31%
	59.9	60.0	0.1	3.6	0.55	Pass	3%
	61.3	60.0	-1.3	3.6	0.55	Pass	36%
	61.6	60.0	-1.6	3.6	0.55	Pass	44%
	59.5	60.0	0.5	3.6	0.55	Pass	14%
	62.4	60.0	-2.4	3.6	0.55	Pass	67%
	59.1	60.0	0.9	3.6	0.55	Pass	25%
	61.3	60.0	-1.3	3.6	0.55	Pass	36%
	60.1	60.0	-0.1	3.6	0.55	Pass	3%
	101.6	100.0	-1.6	6.0	0.60	Pass	27%
	101.5	100.0	-1.5	6.0	0.60	Pass	25%
	101.0	100.0	-1.0	6.0	0.60	Pass	17%
	100.7	100.0	-0.7	6.0	0.60	Pass	12%
	102.4	100.0	-2.4	6.0	0.60	Pass	40%
	102.3	100.0	-2.3	6.0	0.60	Pass	38%
	100.1	100.0	-0.1	6.0	0.60	Pass	2%
	100.6	100.0	-0.6	6.0	0.60	Pass	10%
	102.8	100.0	-2.8	6.0	0.60	Pass	47%