

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 23A76 ASSET # 004092 DATE 20 Nov. 96

ITEM DATA:
Manufacturer Prolo Model 6104
Description 6.99p Servo Driver Serial # 34047
Accessories add for

ACTION REQUESTED _____

CUSTODIAN Donnell Dunn, Div. 20

Turned in by: _____ Phone 6070

CHARGE # 20-5708-561 Date Required _____

INSTRUMENT USED ON: NUCLEAR DOD NASA GLP SPPE
 OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

CONDITION RECEIVED: _____ Out of tolerance, repaired to specifications
_____ In tolerance, minor adjustments/repairs made
 In tolerance, no adjustments/repairs
_____ Out of tolerance, adjusted to specifications
_____ Received into system, introduced or reactivated
_____ Calibration internal
_____ Reliability code

ACTION TAKEN: (Calibration/Repair/Parts) Stat 20925 to Cliff Coats "el.

CAL ENVIRONMENT:
Temperature 69 °F Humidity 0 %RH

CALIBRATED/REPAIRED:
By Cliff Coats, Houston, Tx Cal Procedure 9867-W-6860
Date 12/2/96 Accuracy ±.4% of F.S.
Cal Interval 6 mos. Time to complete: _____
Next Cal due 05/28-97 Cal _____ Repair _____
Standards used (Asset#) Vendor

DATE COMPLETED 02 Dec 96
DATE PICKED UP 12/2/96 PICKED UP BY [Signature]

23A76

GULF COAST CALIBRATION

7999 Hansen, Suite 321
Houston, TX 77061
(713) 944-3139

Certificate Of Calibration

REPORT # 96-11986

Customer SOUTHWEST RESEARCH INSTITUTE Date 11-25-1996
SAN ANTONIO, TX Expires 05-25-1997

Customer P.O. 02120

Type and Size of Gauge PROTO 0-100 INOZ. TORQUE WRENCH

Serial No. 314047 Tolerance ±4%

WRENCH SET	AS RECEIVED	FINAL READING
20 INOZ.	20	20
40 INOZ.	40	40
60 INOZ.	59	59
80 INOZ.	77	77
100 INOZ.	97	97

DONE IN ACCORDANCE WITH Q.A. MANUAL REV. 3 DATED 12/1/1995. 10CFR21 APPLIES.

Test Equipment GCC-174 Date of Cal. 11-22-1996 Expires 11-22-1997

This is to certify that the calibration above meets the requirement for accuracy of applicable Federal Specification GGG-W-686D. Our Test Equipment use for calibration is traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY. Maintained in accordance with conditions as noted by ANSI Z540-1. Temperature during calibration 69!F.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
No. ~~XXXXXX~~ 40093, ~~XXXXXXXXXXXXXX~~

Technician Michael Ha

This certificate of calibration shall not be reproduce except in full without written approval by GULF COAST CALIBRATION.

WORK ORDER 37287

Date Received 12/31/99

Asset No. 004092 Manufacturer PROTO Model 6104
Description TORQUE SCREWDRIVER Serial Number 314047
Accessory Received/Required NONE
Div/CC ID NONE Accessory to Asset No. N/A Accuracy +/-4% STG.
Div/CC DIV20 Location B57 Custodian DARRELL DUNN Tel. 6090
Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE
Work Requested CALIBRATION
Receiving Inspection O.K.
Delivered By _____ Tel. 6090

WORK HISTORY

Date	Start Time	Stop Time	Notes
01/11			U.I.T. found O.D.T.
02/07			Ken gave to me to send out for repair estimate. Custodian will make decision to replace or repair when cost given.
02/09			Stanley Industrial Tools 1-800-952-1126 ST# 358697 PR# 518800
03/03			Darry of Stanley called w/ \$32.00 repair quote. Informed Custodian who gave verbal O.K. Forwarded P.R. Notified Darry to proceed. X80214R.

PARTS

Part Name	Part Number	Cost	Failure Description

WORK SUMMARY

Failure Description U.I.T. found O.D.T.
Repair Action Repaired by Stanley Proto.
Cal Procedure CL-15, MAY99 Temp 70 F Hum 65 %
Tech F216 Cal Hrs. 1.5 Repair Hrs. _____ Part Cost _____
Action Taken Calibrated Per Procedure
Standards Used 6407, 7010
Date Cal 22/Jan/00 Int. 6 Mo. Date Due 22/Sep/00 Reliability Code _____
Date Picked Up 3/22/2000 Picked Up By [Signature]

37287



6220 Culebra Road
 San Antonio, TX 78238
 Department of Quality Assurance
 Calibration Laboratory

Out of Tolerance Notice

14 January 2000

The following asset was found to be out of tolerance when submitted for calibration. Please be aware measurements made with this instrument may be inaccurate.

Instrument Information

Issued to: DARRELL DUNN DIV20 B57
 Manufacturer/Model: PROTO 6104
 Description: TORQUE SCREWDRIVER
 Serial Number: 314047
 Asset Number: 004092
 SwRI Cap No.: NONE
 Calibration Interval: 6 months
 Remarks:

Accuracy: +/-4% STG.
 Calibration Procedure: CL-15, MAY99

Calibration Results

Out of Tolerance Date: 11 Jan 00

Last Valid Calibration Date: 19 May 99

CAL STD	TOOL AS RECEIVED (CLOCKWISE)	LIMITS	
		LOWER	UPPER
26.00 IN/OZ	24.79 IN/OZ*	24.96	27.04
50.00 IN/OZ	46.76 IN/OZ*	48.00	52.00
76.00 IN/OZ	70.50 IN/OZ*	72.96	79.04
100.0 IN/OZ	96.33 IN/OZ	96.00	104.0

*OUT OF TOLERANCE.

~~TOOL~~ TO BE ADJUSTED/REPAIRED TO MANUFACTURER SPECIFICATIONS
 OR REMOVED FROM CALIBRATION RECALL SYSTEM.

Signed:

Checked by:



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

22 March 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: PROTO 6104
Description: TORQUE SCREWDRIVER
Serial Number: 314047
Asset Number: 004092

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 70.0 Degrees Fahrenheit Humidity: 65 % RH

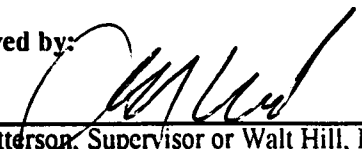
Calibration Date: 22 Mar 00 **Calibration Procedure:** CL-15, 5/99

Condition as Received: OUT OF TOLERANCE

Condition as Released: IN TOLERANCE, REPAIRED

Remarks:

Approved by:


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 37287

m:\nona21a.rpt Rev date 13 Apr 99

Measurements performed by:


Ken Harp, Technician

Page 1 of 1

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by RCRUZ at 10:15:41AM on 10/26/00

I4213

1 10001 0001 0001 0001 0001 0001 0001 0001

Work Order No 444041144

Arrived 10/26/00

Asset No. 004092 Manufacturer PROTO

Model 6104

Instrument Type/Class TORQUE SCREWDRIVER

Serial No. 314047

Accessory No. Calibration Procedure CL-15, 5/99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

Charge/Project No. 20.00751.006

Delivered By / Telephone

IN4CAL

Special Instructions _____

WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description _____

Repair Action _____

Calibration Procedure CL-15, May 99 Temp 73 F Hum. 91 %

Tech 8214 Totals Cal Hours 1 Repair Hours _____ Parts Cost _____

Standards Used std 6 7010, 6407

Date Picked Up 11/14/2000

Picked Up By Darrell Dunn

41144



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

9 November 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: PROTO 6104
Description: TORQUE SCREWDRIVER
Serial Number: 314047
Asset Number: 004092

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 73.0 Degrees Fahrenheit Humidity: 31 % RH

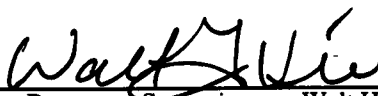
Calibration Date: 9 Nov 00 **Calibration Procedure:** CL-15, 5/99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:



Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 444041144

mAa2la.rpt Rev date 22 May 00

Measurements performed by:



Ken Harp, Technician

Page 1 of 1

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

RUSH

Arrived 6/4/01

Processed by RCRUZ at 9:26:30AM on 6/4/01

1 10001 10011 10011 10011 10011 10011 10011 10011

Work Order **444043904**Asset No. 004092 Manufacturer PROTOModel 6104Instrument Type/Class TORQUE SCREWDRIVERSerial No. 314047Accessory No. Calibration Procedure CL-15, 5/99Location B57Div/Client DIV20Custodian DARRELL DUNNMail Stop B57Tel. 6090Charge/Project No. 00751.006 1.20

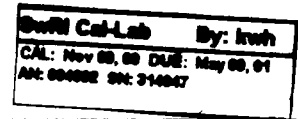
Delivered By / Telephone

RUSH

Special Instructions 20.00751.006

WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description _____

Repair Action _____

Calibration Procedure HAND TORQUE TOOLS, Red 00 Temp 68 F Hum. 40 %Tech W/Man Anthony Romero Totals Cal Hours 1.0 Repair Hours _____ Parts Cost _____Standards Used 6401, 6408Date Picked Up 6/4/01Picked Up By [Signature]

43904

Calibration Results

SwRI Calibration Laboratory

UUT: PROTO 6104
TORQUE SCREWDRIVER
Serial No: 314047
Asset No. 004092

Result: **PASS**
Performed on: 6/4/01 at 13:53:10
Performed by: Mark Anthony Romero
Environment: Temp. 69.0°F Humid. 40 %
Condition F/L: FOUND-LEFT
Procedure Completed:

Notes:

Standards Used

Asset	Mfg	Model	Description	Cal. Date	Due Date
006407	CDI	950-DT	DIGITAL READOUT	31-Jan-01	31-Jul-01
006408	CDI	TTPM-41	TORQUE TRANSDUCER	5-Mar-01	5-Sep-01

Test Data

TEST#	STD PARAMETER	TRUE VALUE	----- READING	UNIT UNDER TEST TOLERANCE	----- UUT ERROR	ERROR in (% of Tol)	NOTIFY TUR USER
20% F.S.							
44	20.000in/oz		19.500	1.2in/oz	-0.5in/oz	42	
45	20.000in/oz		19.530	1.2in/oz	-0.47in/oz	39	
46	20.000in/oz		20.030	1.2in/oz	0.03in/oz	3	
60%F.S.							
47	60.000in/oz		60.980	3.6in/oz	0.98in/oz	27	
48	60.000in/oz		60.840	3.6in/oz	0.84in/oz	23	
49	60.000in/oz		60.930	3.6in/oz	0.93in/oz	26	
100%F.S.							
50	100.000in/oz		102.100	6in/oz	2.1in/oz	35	
51	100.000in/oz		101.100	6in/oz	1.1in/oz	18	
52	100.000in/oz		102.700	6in/oz	2.7in/oz	45	
20%F.S. CCW							
105	20.000in/oz		19.730	1.2in/oz	-0.27in/oz	22	
106	20.000in/oz		20.240	1.2in/oz	0.24in/oz	20	
107	20.000in/oz		19.680	1.2in/oz	-0.32in/oz	27	
60%F.S. CCW							
108	60.000in/oz		58.730	3.6in/oz	-1.27in/oz	35	
109	60.000in/oz		60.120	3.6in/oz	0.12in/oz	3	
110	60.000in/oz		58.080	3.6in/oz	-1.92in/oz	53	
100%F.S. CCW							
111	100.000in/oz		103.500	6in/oz	3.5in/oz	58	
112	100.000in/oz		98.440	6in/oz	-1.56in/oz	26	
113	100.000in/oz		100.300	6in/oz	0.3in/oz	5	

End of Test Data



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

4 June 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: PROTO 6104
Description: TORQUE SCREWDRIVER
Serial Number: 314047
Asset Number: 004092
Work Order Number: 444043904

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

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The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 69.0 Degrees Fahrenheit Humidity: 40 % RH

Calibration Date: 4 Jun 01 **Calibration Procedure:** HAND TORQUE TOOLS, NOV 2000

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:

Mark Romero, Technician