

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 loop server driver Serial # 34047  
Accessories adder

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. X 802144.

### PARTS

Part Name	Part Number	Cost	Failure Description

37287

### 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 F2/6 Cal Hrs. 1.5 Repair Hrs. \_\_\_\_\_ Part Cost \_\_\_\_\_  
 Action Taken Calibrated Per Procedure  
 Standards Used 6407, 7D10  
 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]





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

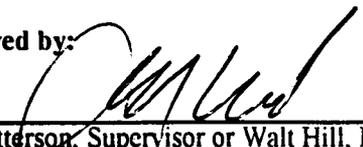
**Calibration Date:** 22 Mar 00 **Calibration Procedure:** CL-15, 5/99

**Condition as Received:** OUT OF TOLERANCE

**Condition as Released:** IN TOLERANCE, REPAIRED

**Remarks:**

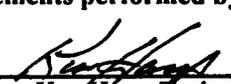
Approved by:

  
\_\_\_\_\_  
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

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

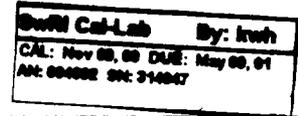
Delivered By / Telephone

## 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]

444043904

# 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/NCCL 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