



**DAC 850T**  
**Option 3, 4, 13, & 14**  
**DIGITAL-TO-ANALOG**  
**CONVERTER**  
**(B020000 and up)**

**INSTRUCTIONS**

Tektronix, Inc.  
P.O. Box 500  
Beaverton, Oregon 97077

Serial Number \_\_\_\_\_

**OEM WARRANTY**  
**COMMUNICATIONS DIVISION**  
**DAC 850T**

The DAC 850T is warranted against defective materials and workmanship under normal use and service for a period of ninety days from date of initial shipment. Tektronix will repair or replace, at its option, those products determined to be defective within the warranty period and returned, freight prepaid, to Tektronix Factory Service, Delivery Station 93-186, P.O. Box 500, Beaverton, Oregon 97077.

Tektronix shall be under no obligation to furnish warranty service if:

- a. Attempts to repair or service the equipment are made by other than Tektronix personnel.
  
- b. Modifications are made by other than Tektronix personnel.

The foregoing warranty shall be enforceable only by the original buyer and not by the buyer's customer.

There is no implied warranty for fitness of purpose.

**Copyright © 1977 by Tektronix, Inc. All rights reserved. Contents of this publication may not be reproduced in any form without the permission of Tektronix, Inc.**

**Products of Tektronix, Inc. and its subsidiaries are covered by U.S. and foreign patents and/or pending patents.**

**TEKTRONIX, TEK, SCOPE-MOBILE, TELEQUIPMENT, and  are registered trademarks of Tektronix, Inc. Printed in U.S.A. Specification and price change privileges are reserved.**

# DAC 850T

## Option 3, Option 4, Option 13, and Option 14

### DESCRIPTION

The TEKTRONIX DAC 850T is an 8-bit digital-to-analog converter optimized for digital video processing but capable of operating at a 50-MHz input word rate, and designed for an OEM market. The Option 3 and Option 4 models have been optimized to operate at three and four times subcarrier rate (respectively) in the NTSC system. The Option 13 and 14 models have been optimized to operate at three and four times subcarrier rate (respectively) in the PAL system. The low-pass filter and sin x/x-corrected output amplifiers are flat over the video passband. The advanced design of the DAC 850T provides a clean, monotonic, analog signal without the usual "deglitching" output circuits of more conventional high-speed converters. The DAC 850T does not need to be "matched" to a specific analog-to-digital converter. The DAC 850T can be utilized as a multiplying or external-referenced D/A converter.

The DAC 850T in its option configurations consists of a small Low-Pass Filter board piggy-backed on the larger Converter board. The larger board is 6" x 8", with a dual 40-contact edge connector, with 0.1" spacing, and no parts projecting more than 1" above the main board. Both boards are manufactured with and by UL-approved materials and processes.

### INTERFACE REQUIREMENTS

#### Signal Input Considerations

The DAC 850T requires an 8-bit, parallel, straight binary code (BIN) input format. Logic levels are TTL-compatible; a "high" is 2 V to 5.5 V, a "low" is 0 V to 0.8 V. Each data input represents one standard TTL load. Bit 0 (LSB) through Bit 7 (MSB) inputs are assigned to edge-connector pins 3, 5, 7, 9, 11, 13, 15, and 17, respectively. (All odd pin numbers are on the component side of the edge connector, with the even numbers on the opposite side.)

#### Strobe (or clock) Input Consideration

The input word can be updated at any rate up to 50 MHz. The pulse applied to the differential strobe inputs must be at least 8 ns wide and end at least 8 ns before the next pulse transition. In each Option, the low-pass filter and output amplifier have been optimized for minimum nonlinear distortions at the respective update rates of each system subcarrier multiple.

The strobe inputs at pins 37 and 38 are balanced ECL, terminated in 100  $\Omega$ , and requiring logic levels of  $-0.96$  to  $-0.81$  V to recognize a "high", and  $-1.85$  to  $-1.65$  V to recognize a "low". Locations for pulldown resistors for each strobe input are provided on the A1 Converter board in the event that the external system does not pull down on the clock bus lines. (See the schematic diagram and Figure 3, Parts Location Illustration.)

NOTE

*If a TEKTRONIX ADC 820T is being used in the system, and is strobed by a common clock bus, pulldowns (100  $\Omega$  to  $-2$  V) already exist on the A/D board and need not be added to the D/A board.*

**Reference Voltages**

INTERNAL. The DAC 850T contains its own highly regulated, internal reference voltage source. When referenced to this internal voltage source, all conversion performance specifications are guaranteed.

EXTERNAL. A special external reference voltage input is provided at pin 1 of the edge connector and requires a strap change on the Converter board. (See the schematic diagram and Figure 3, Parts Location Illustration.) In the externally-referenced mode, the DAC 850T can be used as a multiplying D/A converter. In this mode, the conversion specification tolerances cannot be guaranteed.

**Output Capabilities**

The output signal is bipolar and monotonic over the peak-to-peak full-scale voltage range of 1.214 V. The resolution is 1 LSB of the 8-bit input code. This can be stated two ways:  $1/255$  equals 0.4%, or  $1.214/255$  equals 4.76 mV. Output accuracy is within  $\pm 1/2$  LSB (0.2% of full scale, or 2.38 mV).

Non-linear distortions in the form of differential phase and gain have been minimized for use in the video passband, especially for applications in color television.

The output signal is dc-offset  $-286$  mV, with a 50 mV adjustable range. Two outputs are provided at pins 59 and 61 of the edge connector. Each output can be terminated in 75  $\Omega$  and has a return loss of  $-30$  dB or greater.

**Timing Relationships**

See Figure 1. The key timing reference point is the 50% point of the leading edge of the strobe pulse. The data must be present and stable for at least 7 ns before the pulse edge occurs, and must remain stable for at least 1 ns after the pulse edge.

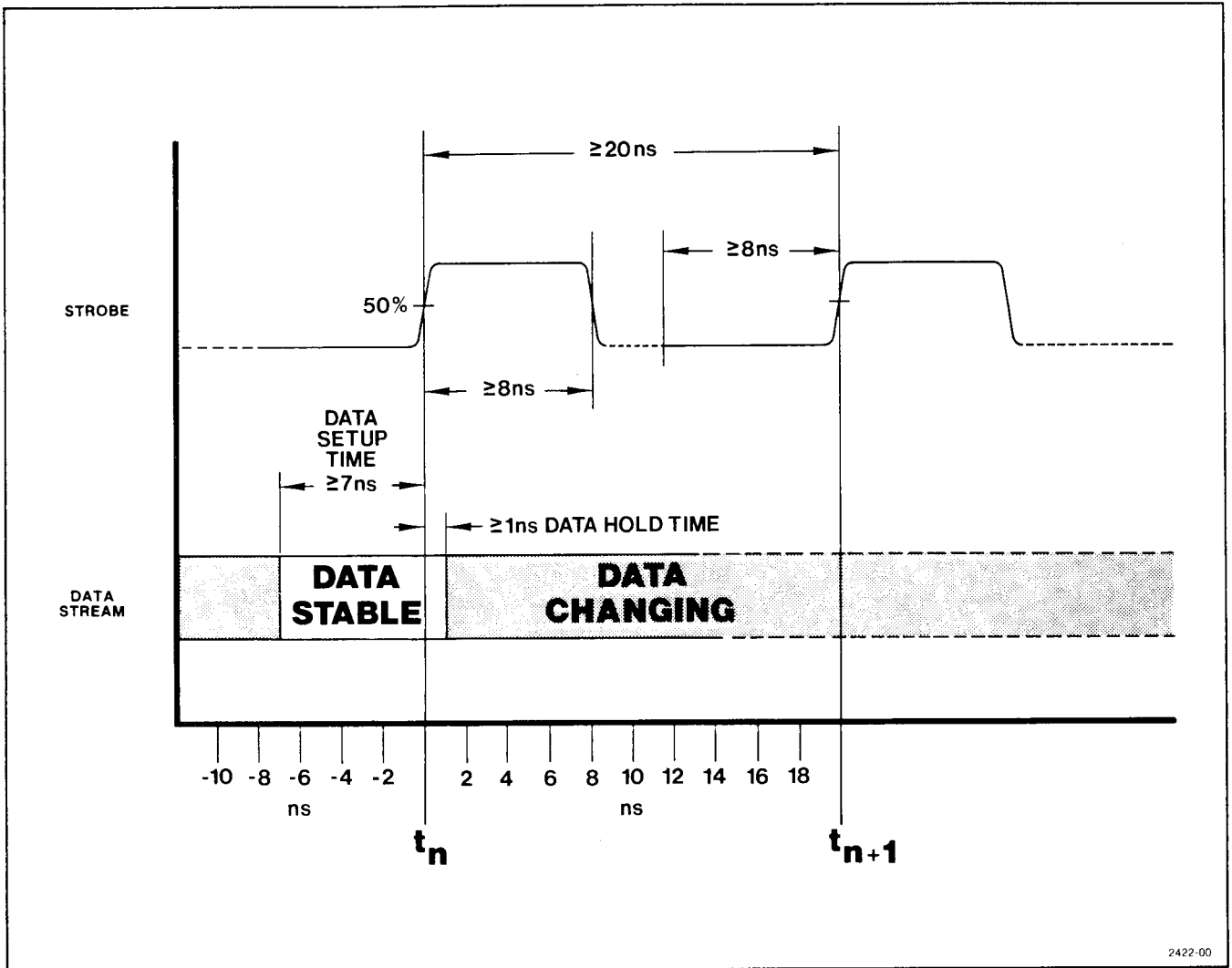


Fig. 1. Data and Strobe Timing Relationships for Minimum Pulse Width and Maximum Update Rate for DAC 850T, Option 4.

### Power Supply Requirements

The DAC 850T is designed to operate from commonly available analog and digital power supplies of +12 V, -12 V, +5 V (two each required), and -5.2 V. A +5 V supply capable of delivering at least 75 mA is required for analog circuits, while a second +5 V supply capable of delivering at least 125 mA is required for the digital circuits. Power supply lines should be carefully decoupled and as noise-free as possible, especially the +5 V Analog and -5.2 V supplies. Each power supply is named for its nominal value, with the tolerable limits and current delivery capabilities called out in the specification table. No more than 5.3 watts are needed to power the DAC 850T.

## INSTALLATION

### Thermal Considerations

The DAC 850T will operate within its stated specification in ambient temperatures ranging from 0° C to 60° C. Location within an OEM enclosure should consider convection air flow and temperature rise effect of the physical board orientation and relationship to other system components.

### Physical Orientation

The circuit board will benefit from optimum convection air flow when mounted vertically with the edge connector down. Other recommended mounting positions are also vertical on either edge. The worst position would be flat with the component side down.

### Mechanical Outline

See Figure 2 for the maximum outside dimensions. Note that the dual-40 edge connector has a keying slot between pins 30, 31, and 32, 33. Components have been kept back from the sides of the board to allow mounting using card guides.

### Connectors

The following connectors will mate satisfactorily with the DAC 850T dual-40, 0.100"-spacing, edge connector:

Style	Vendor	Tektronix Part Number
0.025" Square Pins	Continental Connector Corporation, K600-100-80WB	131-0626-00
Pierced Tabs	Viking, 3VH40/1JN5	131-1856-00
Zero Insertion Force (with square pins)	AMP 1-530801-3 (3/16" leads)	none

This list is by no means exhaustive. Examination of connector manufacturers' catalogs may show other compatible connectors.

## SERVICE

Please review the warranty in force at the time of purchase. For repair and recalibration, End Users should return the DAC 850T to the OEM who supplied their equipment. End Users who purchase directly from Tektronix should return the DAC 850T directly to Factory Service in Beaverton, Oregon 97077.

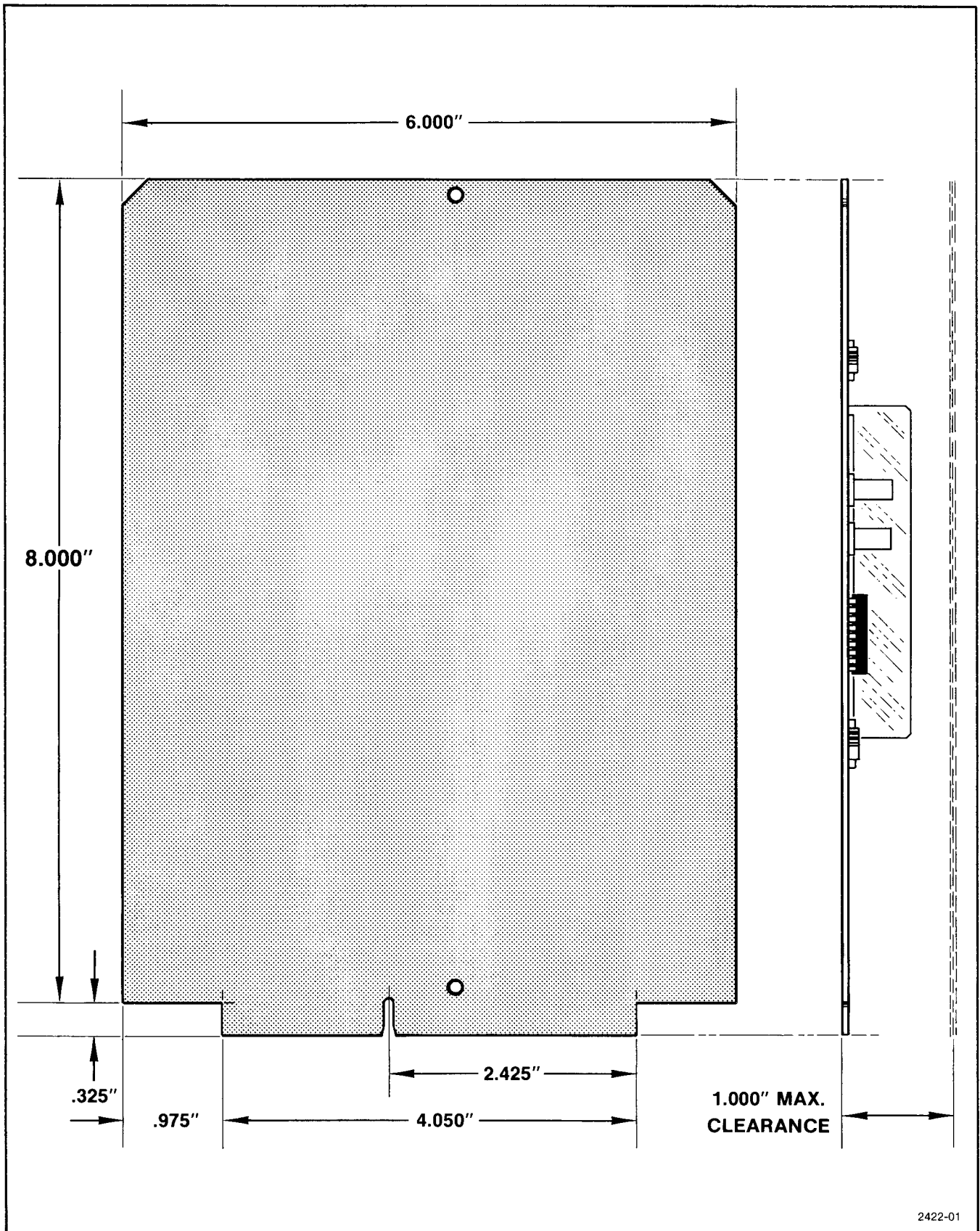


Fig. 2. Circuit Board maximum dimensions.

2422-01

## CONNECTOR PIN ASSIGNMENTS

All odd pin numbers are on the component side of the board. All even numbers are on the opposite side.)

Function	(Top-side) Pin	(Bottom-side) Pin	Function
External Reference Voltage	1	2	NC
Bit 0	3	4	Ground
Bit 1	5	6	Ground
Bit 2	7	8	Ground
Bit 3	9	10	Ground
Bit 4	11	12	Ground
Bit 5	13	14	Ground
Bit 6	15	16	Ground
Bit 7	17	18	Ground
NC	19	20	NC
NC	21	22	NC
NC	23	24	NC
NC	25	26	NC
NC	27	28	NC
Ground	29	30	Ground
NC	31	32	NC
NC	33	34	NC
NC	35	36	NC
Strobe	37	38	Strobe
NC	39	40	NC
+5 V <sub>2</sub> Digital	41	42	NC
NC	43	44	NC
NC	45	46	NC
NC	47	48	NC
NC	49	50	NC
NC	51	52	-5.2 V
+5 V <sub>1</sub> Analog	53	54	NC
NC	55	56	NC
NC	57	58	NC
Signal Out	59	60	Signal Out Ground
Signal Out	61	62	Signal Out Ground
NC	63	64	NC
NC	65	66	+12 V
NC	67	68	NC
NC	69	70	-12 V
NC	71	72	NC
NC	73	74	Ground
NC	75	76	NC
NC	77	78	NC
NC	79	80	NC

## SPECIFICATION

Characteristic	Performance Requirements			
D/A Conversion (Valid for Internal $V_{ref}$ only)				
Resolution	8 bits (1 LSB = 0.4% of full scale)			
Accuracy (including Linearity)	$\pm 1/2$ LSB ( $\pm 0.2\%$ of full scale)			
Monotonicity	Guaranteed for 8 bits. Output polarity follows input code change.			
Nonlinear Distortions	(Measured with a distortion-free, digitized, 286 mV p-p subcarrier linearity ramp)			
Differential Gain	0.75% or less (Options 4 & 14), 1% or less (Options 3 & 13)			
Differential Phase	0.25° or less (Options 4 & 14), 0.5° or less (Options 3 & 13)			
Frequency Response	Option 3	Option 4	Option 13	Option 14
Amplitude				
0 dB, $\pm 0.2$ dB	0 to 4.5 MHz	0 to 5 MHz	0 to 5 MHz	0 to 6 MHz
-3 dB or less	5.37 MHz	7.16 MHz	6.65 MHz	8.8 MHz
-42 dB or less	7.5 MHz and up	10 MHz and up	9.3 MHz and up	12.4 MHz and up
Constant Delay (within 10 ns)	0 to 4.5 MHz	0 to 5 MHz	0 to 5 MHz	0 to 6 MHz
Noise	-67 dB or less to 5 MHz			
	-60 dB or less to 20 MHz			
<b>Interface requirements</b>				
Data Inputs				
Format	8-bit parallel, straight binary (BIN)			
Logic	TTL-compatible: High 2 V to 5.5 V Low 0 V to 0.8 V			

## SPECIFICATION (cont)

Characteristic	Performance Requirements
Setup Time	At least 7 ns before 50% point of leading edge of strobe pulse
Hold Time	At least 1 ns after 50% point of leading edge of strobe pulse
Strobe Input Format	Differential ECL inputs, terminated in 100 $\Omega$
Logic	ECL: High $-0.96$ to $-0.81$ V Low $-1.85$ to $-1.65$ V
Up-date Rate	50 MHz, maximum
Minimum Pulse Width	8 ns
Maximum Pulse Width	Must end at least 8 ns before next pulse transition
External Reference Input ( $V_{REF}$ Multiplying Input)	A wire jumper must be moved on the Converter board to connect to the external input pin. (The DAC $V_{REF}$ is normally tied to an onboard reference supply.)
$V_{REF}$ for Normal Output	$-5.66$ V
External Reference Gain	350 mV/V Full Scale
Frequency Response	
Option 3	0 dB to 5.37 MHz
Option 4	0 dB to 7.16 MHz
Option 13	0 dB to 6.65 MHz
Option 14	0 dB to 8.8 MHz
Output	
Full Scale Range	1.214 V peak-to-peak $\pm 1\%$ (adjustable)
DC-Offset	$-286$ mV $\pm 50$ mV (adjustable)
Offset Range	At least 100 mV
Impedance	75 $\Omega$ (2 outputs)
Return Loss	At least $-30$ dB

## SPECIFICATION (cont)

Characteristic	Performance Requirements
Power Supply Requirements	
+12 V	+12 Vdc $\pm$ 1.5% (11.8 to 12.2 V) at 16 mA
-12 V	-12 Vdc $\pm$ 1.5% (-11.8 to +12.2 V) at 160 mA
+5 V (Analog V1)	+5 Vdc $\pm$ 5% (4.75 to 5.25 V) at 75 mA
+5 V (Digital V2)	+5 Vdc $\pm$ 5% (4.75 to 5.25 V) at 125 mA
-5.2 V	-5.2 Vdc $\pm$ 5% (-4.94 to -5.46 V) at 370 mA
Power Consumption	5.3 Watts or less
Physical Size	6" x 8" x 1"
Connector	Dual 40 contact card edge, with 0.1" spacing
Environmental Temperature Range	0° to 60° C
Warmup Time	Allow 20 minutes

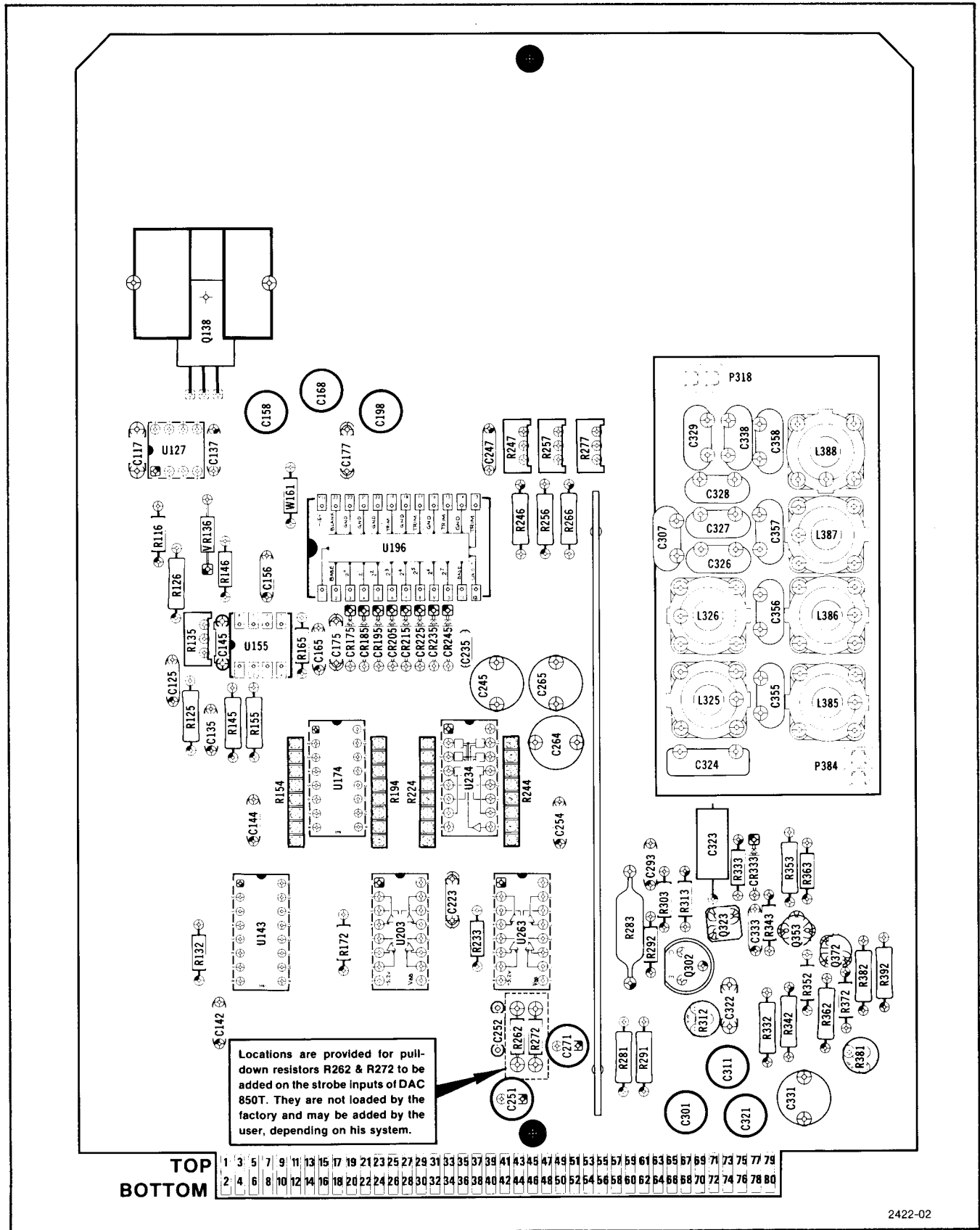


Fig. 3. Parts Location Illustration.

# REPLACEABLE ELECTRICAL PARTS

## PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

## SPECIAL NOTES AND SYMBOLS

X000 Part first added at this serial number  
00X Part removed after this serial number

## ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

## ABBREVIATIONS

ACTR	ACTUATOR	PLSTC	PLASTIC
ASSY	ASSEMBLY	QTZ	QUARTZ
CAP	CAPACITOR	RECP	RECEPTACLE
CER	CERAMIC	RES	RESISTOR
CKT	CIRCUIT	RF	RADIO FREQUENCY
COMP	COMPOSITION	SEL	SELECTED
CONN	CONNECTOR	SEMICOND	SEMICONDUCTOR
ELCTLT	ELECTROLYTIC	SENS	SENSITIVE
ELEC	ELECTRICAL	VAR	VARIABLE
INCAND	INCANDESCENT	WW	WIREWOUND
LED	LIGHT EMITTING DIODE	XFMR	TRANSFORMER
NONWIR	NON WIREWOUND	XTAL	CRYSTAL

CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
00853	SANGAMO ELECTRIC CO., S. CAROLINA DIV.	P O BOX 128	PICKENS, SC 29671
01121	ALLEN-BRADLEY COMPANY	1201 2ND STREET SOUTH	MILWAUKEE, WI 53204
03888	KDI PYROFILM CORPORATION	60 S JEFFERSON ROAD	WHIPPANY, NJ 07981
04713	MOTOROLA, INC., SEMICONDUCTOR PROD. DIV.	5005 E MCDOWELL RD, PO BOX 20923	PHOENIX, AZ 85036
07263	FAIRCHILD SEMICONDUCTOR, A DIV. OF FAIRCHILD CAMERA AND INSTRUMENT CORP.	464 ELLIS STREET	MOUNTAIN VIEW, CA 94042
07910	TELEDYNE SEMICONDUCTOR	12515 CHADRON AVE.	HAWTHORNE, CA 90250
09023	CORNELL-DUBILIER ELECTRONIC DIVISION FEDERAL PACIFIC ELECTRIC CO.	2652 DALRYMPLE ST.	SANFORD, NC 27330
32997	BOURNS, INC., TRIMPOT PRODUCTS DIV.	1200 COLUMBIA AVE.	RIVERSIDE, CA 92507
55210	GETTIG ENG. AND MFG. COMPANY	PO BOX 85, OFF ROUTE 45	SPRING MILLS, PA 16875
56289	SPRAGUE ELECTRIC CO.		NORTH ADAMS, MA 01247
72982	ERIE TECHNOLOGICAL PRODUCTS, INC.	644 W. 12TH ST.	ERIE, PA 16512
73138	BECKMAN INSTRUMENTS, INC., HELIPOT DIV.	2500 HARBOR BLVD.	FULLERTON, CA 92634
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
91637	DALE ELECTRONICS, INC.	P. O. BOX 609	COLUMBUS, NE 68601
93790	CORNELL-DUBLILIER ELECTRONICS DIVISION FEDERAL PACIFIC ELECTRIC CORP.	1605 RODNEY FRENCH BLVD.	NEW BEDFORD, MA 02741

Replaceable Electrical Parts—DAC 850T (SN B020000 & up)

Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
A1	670-5323-00			CKT BOARD ASSY:D/A CONVERTER BOARD	80009	670-5323-00
A2	670-5325-00			CKT BOARD ASSY:LOW PASS FILTER OPTION 4	80009	670-5325-00
C117	281-0519-00			CAP.,FXD,CER DI:47PF,+/-4.7PF,500V	72982	308-000C0G0470K
C125	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C135	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C137	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C142	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C144	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C145	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C156	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C158	290-0755-00			CAP.,FXD,ELCTLT:100UF,+50-10%,10V	56289	502D223
C165	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C168	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C175	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C177	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C198	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C235	283-0212-00			CAP.,FXD,CER DI:2UF,20%,50V	72982	8141N064Z5U0205M
C245	281-0160-00			CAP.,VAR,CER DI:7-25PF,350V	72982	538-011B7-25
C247	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C251	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C252	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C254	281-0775-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8005H9AABZ5U104M
C264	281-0160-00			CAP.,VAR,CER DI:7-25PF,350V	72982	538-011B7-25
C265	281-0167-00			CAP.,VAR,CER DI:9-45PF,200V	72982	538-011-D 9-45
C271	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C293	283-0649-00			CAP.,FXD,MICA D:105PF,1%,300V	00853	D153F1050F0
C301	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C307 <sup>1</sup>	283-0645-00			CAP.,FXD,MICA D:790PF,1%,100V	00853	D151E791F0
C311	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C321	290-0745-00			CAP.,FXD,ELCTLT:22UF,+50-10%,25V	56289	502D225
C322	283-0648-00	B020000	B020139	CAP.,FXD,MICA D:10PF,5%,100V	00853	D151C100DC
C322	281-0572-00	B020140		CAP.,FXD,CER DI:6.8PF,+/-0.5PF,500V	72982	301-000C0H0689D
C323	290-0415-00			CAP.,FXD,ELCTLT:5.6UF,10%,35V	56289	150D565X9035B2
C324 <sup>1</sup>	283-0696-00			CAP.,FXD,MICA D:2300PF,1%,500V	93790	CD19ED232F03
C326 <sup>1</sup>	283-0649-00			CAP.,FXD,MICA D:105PF,1%,300V	00853	D153F1050F0
C327 <sup>1</sup>	283-0641-00			CAP.,FXD,MICA D:180PF,1%,100V	00853	D151E181F0
C328 <sup>1</sup>	283-0690-00			CAP.,FXD,MICA D:560PF,0.5%,300V	09023	CD15FCS61E03
C329 <sup>1</sup>	283-0637-00			CAP.,FXD,MICA D:20PF,2.5%,100V	00853	D151E200D0
C331	281-0167-00			CAP.,VAR,CER DI:9-45PF,200V	72982	538-011-D 9-45
C333	283-0601-00			CAP.,FXD,MICA D:22PF,10%,300V	00853	D153C220K0
C338 <sup>1</sup>	283-0637-00			CAP.,FXD,MICA D:20PF,2.5%,100V	00853	D151E200D0
C355 <sup>1</sup>	283-0668-00			CAP.,FXD,MICA D:184PF,1%,500V	00853	D155F1840F0
C356 <sup>1</sup>	283-0725-00			CAP.,FXD,MICA D:214PF,1%,500V	00853	D15-5E2140F0
C357 <sup>1</sup>	283-0603-00			CAP.,FXD,MICA D:113PF,2%,300V	00853	D153F1130G0
C358 <sup>1</sup>	283-0752-00			CAP.,FXD,MICA D:345PF,1%,500V	00853	D15ED50F500
CR175	152-0153-02			SEMICONV DEVICE:SILICON,15V,100NA 10V	80009	152-0153-02
CR185	152-0153-02			SEMICONV DEVICE:SILICON,15V,100NA 10V	80009	152-0153-02
CR195	152-0153-02			SEMICONV DEVICE:SILICON,15V,100NA 10V	80009	152-0153-02
CR205	152-0153-02			SEMICONV DEVICE:SILICON,15V,100NA 10V	80009	152-0153-02
CR215	152-0153-02			SEMICONV DEVICE:SILICON,15V,100NA 10V	80009	152-0153-02
CR225	152-0153-02	B020000	B020139	SEMICONV DEVICE:SILICON,15V,100NA 10V	80009	152-0153-02
CR225	153-0068-00	B020140		SEMICONV DVC,SE:SWITCH,TRIO MATCHED	80009	153-0068-00

<sup>1</sup>Option 4 only.

(SN B020000 & up) Replaceable Electrical Parts—DAC 850T

Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
CR235	152-0153-02	B020000	B020139	SEMICON DVC,SE:SWITCH,TRIO MATCHED	80009	152-0153-02
CR235	153-0068-00	B020140		SEMICON DVC,SE:SWITCH,TRIO MATCHED	80009	153-0068-00
CR245	152-0153-02	B020000	B020139	SEMICON DVC,SE:SWITCH,TRIO MATCHED	80009	152-0153-02
CR245	153-0068-00	B020140		SEMICON DVC,SE:SWITCH,TRIO MATCHED	80009	153-0068-00
CR333	152-0141-02			SEMICON DVC,SE:SWITCH,TRIO MATCHED	07910	1N4152
L325 <sup>1</sup>	114-0349-00			COIL,RF:VARIABLE,0.98 TO 1.08MH	80009	114-0349-00
L326 <sup>1</sup>	114-0350-00			COIL,RF:VARIABLE,1.04 TO 1.12MH	80009	114-0350-00
L385 <sup>1</sup>	120-1139-00			XFMR,RF:VARIABLE,POT CORE	80009	120-1139-00
L386 <sup>1</sup>	120-1138-00			XFMR,RF:VARIABLE,POT CORE	80009	120-1138-00
L387 <sup>1</sup>	114-0351-00			COIL,RF:VARIABLE,1.95 TO 2.05MH	80009	114-0351-00
L388 <sup>1</sup>	108-0890-00			COIL,RF:FIXED,2.32MH POT CORE	80009	108-0890-00
Q138	151-0462-01			TRANSISTOR:SILICON,PNP,SELECTED	80009	151-0462-01
Q302	151-0103-02			TRANSISTOR:SILICON,NPN,SEL	80009	151-0103-02
Q323	151-0438-01			TRANSISTOR:SILICON,PNP,SELECTED	80009	151-0438-01
Q353	151-0190-07			TRANSISTOR:SILICON,NPN,SEL	80009	151-0190-07
Q372	151-0190-07			TRANSISTOR:SILICON,NPN,SEL	80009	151-0190-07
R116	315-0331-00			RES.,FXD,CMPSN:330 OHM,5%,0.25W	01121	CB3315
R125	321-0638-00	B020000	B020139	RES.,FXD,FILM:7.96K OHM,1%,0.125W,TC=TO	91637	MFF1816G432ROF
R125	321-0278-00	B020140		RES.,FXD,FILM:7.68K OHM,1%,0.125W	91637	MFF1816G7680OF
R126	321-0158-00	B020000	B020139	RES.,FXD,FILM:432 OHM,1%,0.125W	91637	MFF1816G432ROF
R126	321-0147-00	B020140		RES.,FXD,FILM:332 OHM,1%,0.125W	91637	MFF1816G332ROF
R132	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R135	311-1036-00	B020000	B020139	RES.,VAR,NONWIR:TRMR,200 OHM,0.5W	73138	66WR-201K-SM
R135	311-1307-00	B020140		RES.,VAR,NONWIR:500 OHM,0.50W	73138	62-325-0
R145	321-0208-00			RES.,FXD,FILM:1.43K OHM,1%,0.125W	91637	MFF1816G1430OF
R146	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R154	307-0539-00			RES NTWK,THK FI:(7)510 OHM,10%,1W	03888	A3HT727
R155	321-0169-00			RES.,FXD,FILM:562 OHM,1%,0.125W	91637	MFF1816G562ROF
R165	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R172	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R194	307-0539-00			RES NTWK,THK FI:(7)510 OHM,10%,1W	03888	A3HT727
R224	307-0539-00			RES NTWK,THK FI:(7)510 OHM,10%,1W	03888	A3HT727
R233	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R244	307-0539-00			RES NTWK,THK FI:(7)510 OHM,10%,1W	03888	A3HT727
R246	321-0244-00			RES.,FXD,FILM:3.4K OHM,1%,0.125W	91637	MFF1816G3400OF
R247	311-1896-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3299W-1-502
R256	321-0244-00			RES.,FXD,FILM:3.4K OHM,1%,0.125W	91637	MFF1816G3400OF
R257	311-1896-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3299W-1-502
R266	321-0244-00			RES.,FXD,FILM:3.4K OHM,1%,0.125W	91637	MFF1816G3400OF
R277	311-1896-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3299W-1-502
R281	321-0085-00			RES.,FXD,FILM:75 OHM,1%,0.125W	91637	MFF1816G75ROOF
R283	308-0252-00			RES.,FXD,WW:390 OHM,5%,3W	91637	CW2B-B390ROJ
R291	321-0085-00			RES.,FXD,FILM:75 OHM,1%,0.125W	91637	MFF1816G75ROOF
R292	315-0680-00			RES.,FXD,CMPSN:68 OHM,5%,0.25W	01121	CB6805
R303	307-0103-00			RES.,FXD,CMPSN:2.7 OHM,5%,0.25W	01121	CB27G5
R312	311-1263-00			RES.,VAR,NONWIR:1K OHM,10%,0.50W	32997	3329P-L58-102
R313	315-0272-00			RES.,FXD,CMPSN:2.7K OHM,5%,0.25W	01121	CB2725
R332	321-0203-00			RES.,FXD,FILM:1.27K OHM,1%,0.125W	91637	MFF1816G1270OF
R333	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R342	321-0165-00			RES.,FXD,FILM:511 OHM,1%,0.125W	91637	MFF1816G511ROF
R343	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R352	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025

<sup>1</sup>Option 4 only.

Replaceable Electrical Parts—DAC 850T (SN B02000 & up)

Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
R353	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R362	321-0293-00			RES.,FXD,FILM:11K OHM,1%,0.125W	91637	MFF1816G11001F
R363	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R372	315-0220-00			RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R381	311-1271-00			RES.,VAR, NONWIR:50K OHM,10%,0.50W	32997	3329P-L58-503
R382	321-0397-00			RES.,FXD,FILM:133K OHM,1%,0.125W	91637	MFF1816G13302F
R392	321-0210-00			RES.,FXD,FILM:1.5K OHM,1%,0.125W	91637	MFF1816G15000F
U127	156-0067-13			MICROCIRCUIT,LI:OPNL AMPL,SELECTED	80009	156-0067-13
U143	156-0368-01			MICROCIRCUIT,DI:MECL 10K TTL TO ECL QUAD	80009	156-0368-01
U155	156-0921-01			MICROCIRCUIT,LI:OPERATIONAL,AMPLIFIER,SEL	80009	156-0921-01
U174	156-0633-01			MICROCIRCUIT,DI:HEX D MASTER-SLAVE FF	80009	156-0633-01
U196	155-0169-00			MICROCIRCUIT,DI:D/A HYBRID,8 BIT	80009	155-0169-00
U203	156-0368-01			MICROCIRCUIT,DI:MECL 10K TTL TO ECL QUAD	80009	156-0368-01
U234	156-0633-01			MICROCIRCUIT,DI:HEX D MASTER-SLAVE FF	80009	156-0633-01
U263	156-0308-03			MICROCIRCUIT,DI:QUAD LINE RECEIVER	80009	156-0308-03
VR136	152-0395-00			SEMICOND DEVICE:ZENER,0.4W,4.3V,5%	04713	1N749A
W161	131-0566-00			LINK,TERM.CONNE:0.086 DIA X 2.375 INCH L	55210	L-2007-1

# REPLACEABLE MECHANICAL PARTS

## PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

## SPECIAL NOTES AND SYMBOLS

X000 Part first added at this serial number  
 00X Part removed after this serial number

## FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

## INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

```

1 2 3 4 5           Name & Description
Assembly and/or Component
Attaching parts for Assembly and/or Component
    - - - * - - -
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
    - - - * - - -
Parts of Detail Part
Attaching parts for Parts of Detail Part
    - - - * - - -
    
```

Attaching Parts always appear in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation. The separation symbol - - - \* - - - indicates the end of attaching parts.

**Attaching parts must be purchased separately, unless otherwise specified.**

## ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U. S. Federal Cataloging Handbook H6-1 can be utilized where possible.

## ABBREVIATIONS

#	INCH NUMBER SIZE	ELCTRN	ELECTRON	IN	INCH	SE	SINGLE END
ACTR	ACTUATOR	ELEC	ELECTRICAL	INCAND	INCANDESCENT	SECT	SECTION
ADPTR	ADAPTER	ELCTLT	ELECTROLYTIC	INSUL	INSULATOR	SEMICON	SEMICONDUCTOR
ALIGN	ALIGNMENT	ELEM	ELEMENT	INTL	INTERNAL	SHLD	SHIELD
AL	ALUMINUM	EPL	ELECTRICAL PARTS LIST	LPHLDR	LAMPHOLDER	SHLDR	SHOULDERED
ASSEM	ASSEMBLED	EQPT	EQUIPMENT	MACH	MACHINE	SKT	SOCKET
ASSY	ASSEMBLY	EXT	EXTERNAL	MECH	MECHANICAL	SL	SLIDE
ATTEN	ATTENUATOR	FIL	FILLISTER HEAD	MTG	MOUNTING	SLFLKG	SELF-LOCKING
AWG	AMERICAN WIRE GAGE	FLEX	FLEXIBLE	NIP	NIPPLE	SLVG	SLEEVEING
BD	BOARD	FLH	FLAT HEAD	NON WIRE	NOT WIRE WOUND	SPR	SPRING
BRKT	BRACKET	FLTR	FILTER	OB	ORDER BY DESCRIPTION	SQ	SQUARE
BRS	BRASS	FR	FRAME or FRONT	OD	OUTSIDE DIAMETER	SST	STAINLESS STEEL
BRZ	BRONZE	FSTNR	FASTENER	OVH	OVAL HEAD	STL	STEEL
BSHG	BUSHING	FT	FOOT	PH BRZ	PHOSPHOR BRONZE	SW	SWITCH
CAB	CABINET	FXD	FIXED	PL	PLAIN or PLATE	T	TUBE
CAP	CAPACITOR	GSKT	GASKET	PLSTC	PLASTIC	TERM	TERMINAL
CER	CERAMIC	HDL	HANDLE	PN	PART NUMBER	THD	THREAD
CHASS	CHASSIS	HEX	HEXAGON	PNH	PAN HEAD	THK	THICK
CKT	CIRCUIT	HEX HD	HEXAGONAL HEAD	PWR	POWER	TNSN	TENSION
COMP	COMPOSITION	HEX SOC	HEXAGONAL SOCKET	RCPT	RECEPTACLE	TPG	TAPPING
CONN	CONNECTOR	HLCPS	HELICAL COMPRESSION	RES	RESISTOR	TRH	TRUSS HEAD
COV	COVER	HLEXT	HELICAL EXTENSION	RGD	RIGID	V	VOLTAGE
CPLG	COUPLING	HV	HIGH VOLTAGE	RLF	RELIEF	VAR	VARIABLE
CRT	CATHODE RAY TUBE	IC	INTEGRATED CIRCUIT	RTNR	RETAINER	W/	WITH
DEG	DEGREE	ID	INSIDE DIAMETER	SCH	SOCKET HEAD	WSHR	WASHER
DWR	DRAWER	IDNT	IDENTIFICATION	SCOPE	OSCILLOSCOPE	XFMR	TRANSFORMER
		IMPLR	IMPELLER	SCR	SCREW	XSTR	TRANSISTOR

Replaceable Mechanical Parts—DAC 850T (SN B020000 & up)

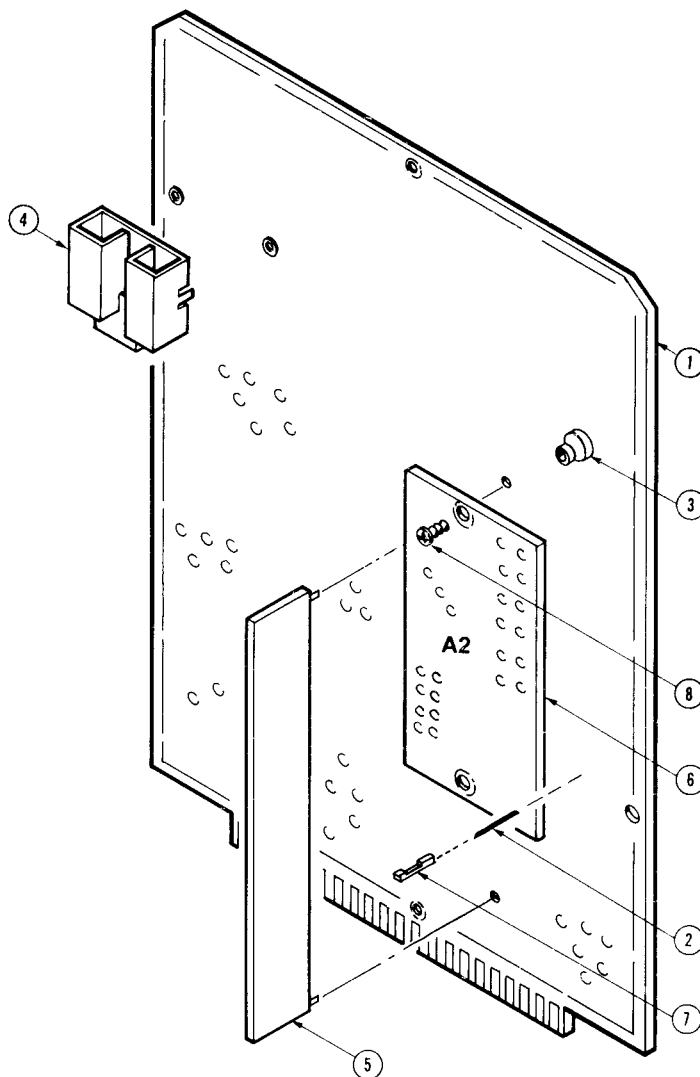
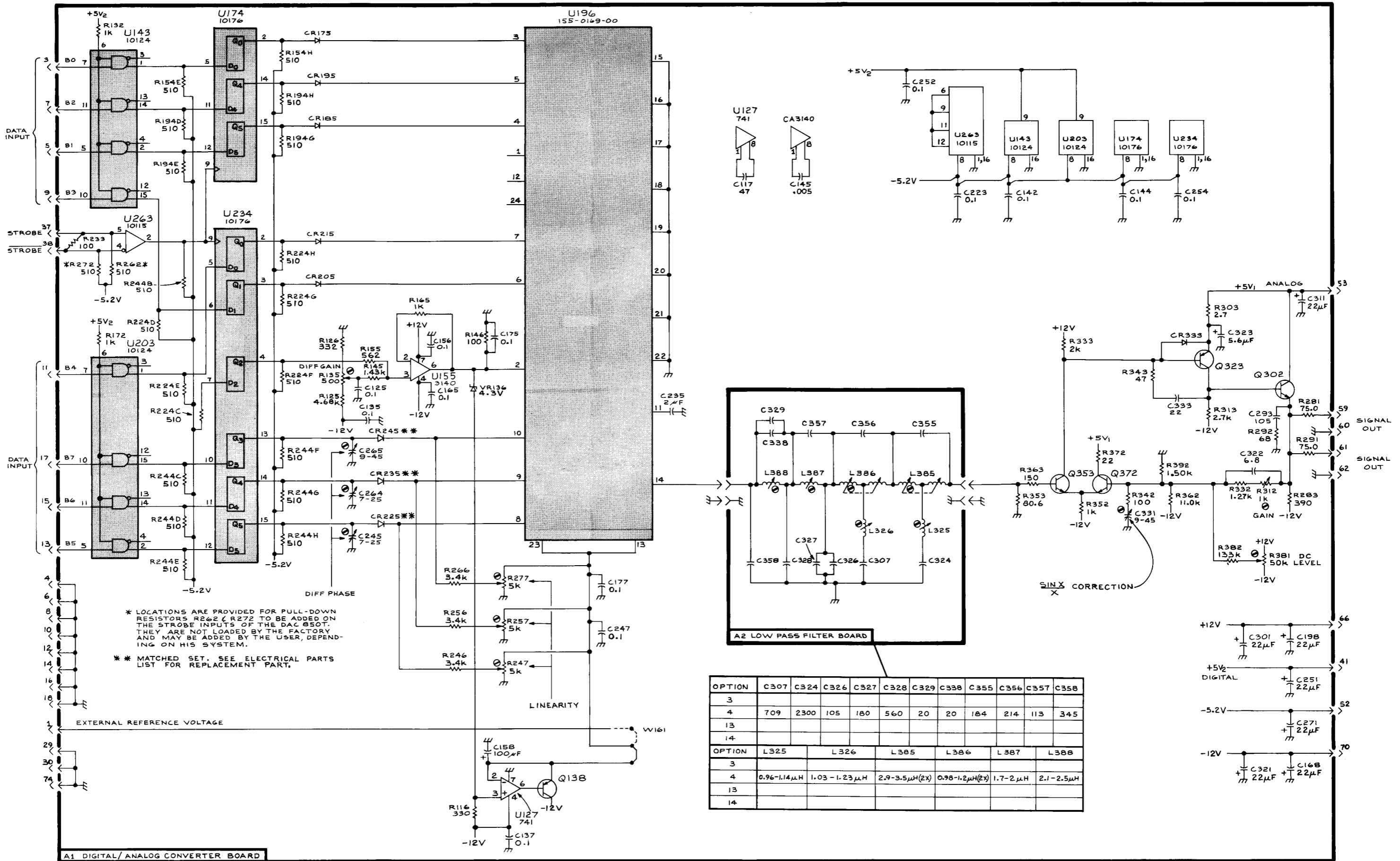


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
-1	-----	-----		1						CKT BOARD ASSY:D/A CONVERTER BOARD(SEE A1 EPL)		
-2	131-0787-00			4						. CONTACT,ELEC:0.64 INCH LONG	22526	47359
-3	129-0106-00			2						. POST,ELEC-MECH:0.218 OD X 0.125 INCH L,RRS	80009	129-0106-00
-4	214-2518-00			1						. HEAT SINK,XSTR:T0-220 OR T0-202	000BH	106B-B-HT
-5	337-1995-00			1						. SHLD,ELECTRICAL:DEFLECTION CIRCUIT CARD	80009	337-1995-00
-6	-----			1						. CKT BOARD ASSY:LOW PASS FILTER(SEE A2 EPL)		
-7	136-0263-04			4						. . SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN (ATTACHING PARTS)	22526	75377-001
-8	211-0097-00			2						. SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
	070-2422-00			1						MANUAL,TECH:INSTRUCTION(NOT SHOWN)	80009	070-2422-00

CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
000BH	FAB-TEK	17 SUGAR HALLOW ROAD	DANBURY, CT 06810
22526	BERG ELECTRONICS, INC.	YOUK EXPRESSWAY	NEW CUMBERLAND, PA 17070
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
83385	CENTRAL SCREW CO.	2530 CRESCENT DR.	BROADVIEW, IL 60153



DAC 850T, OPTION 3, 4, 13 & 14  
(8020000 & UP)

@

D-A CONVERTER