

SERVICETEKNOTES

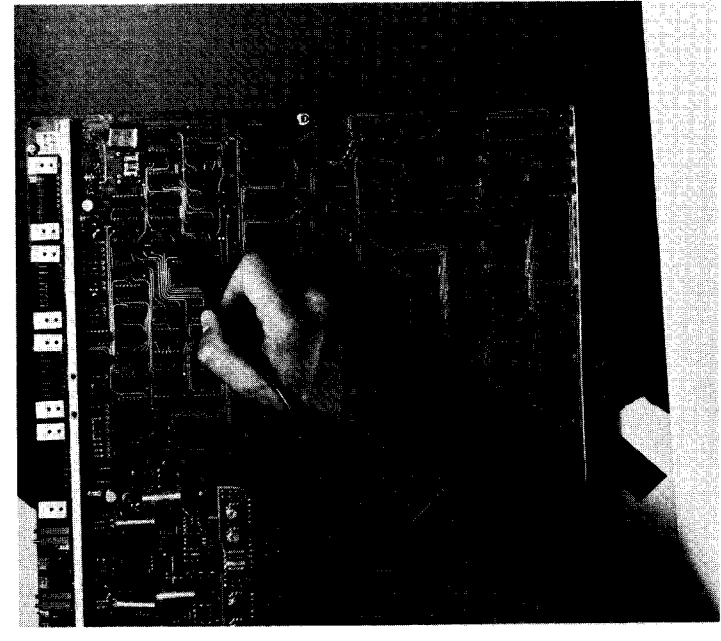
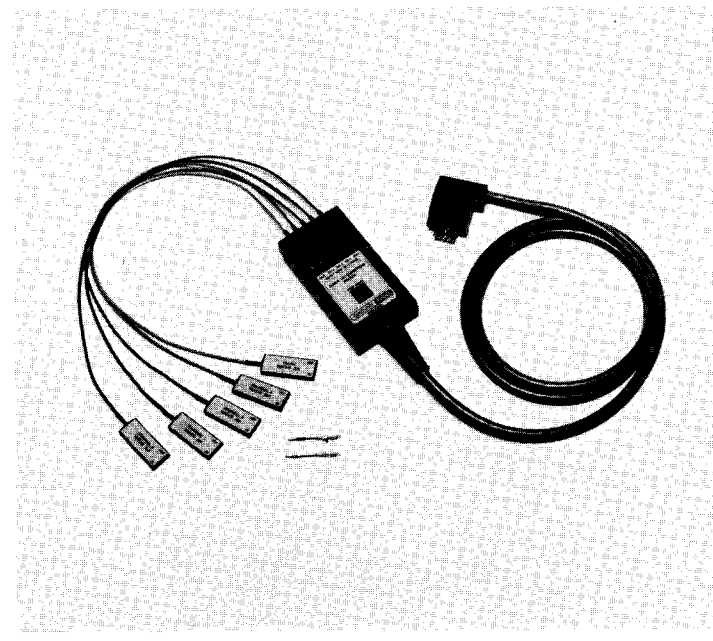
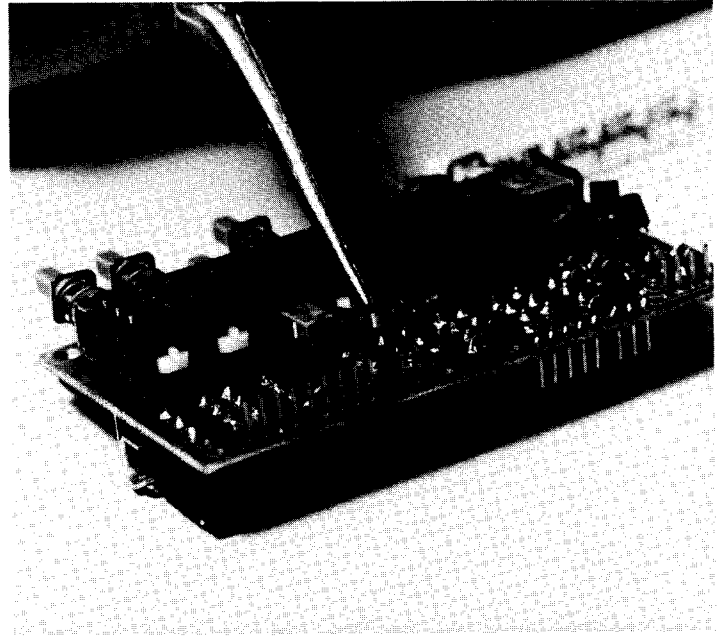
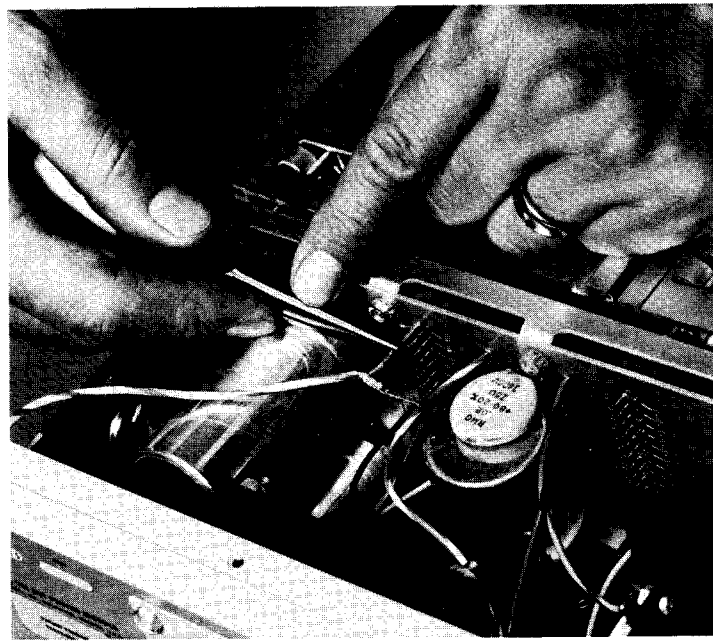


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PINK POLY (ANTI-STATIC) FOAM

A part number has been set up in CMS stock that will provide a piece of pink poly foam that is suitable for use where there are static damage concerns for active devices.

Part Number 006-2331-02 provides a piece of rigid foam that is 1" x 12" x 24" in size. This material can be cut into 3 or 4 sections, and will provide a "safe" (anti-static) place for the Service Technician to store his bench spares.

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PS5010 RELIABILITY IMPROVEMENT

Some capacitors in the PS5010 below serial number B029999 have failed and generated enough heat to damage the circuit board itself. To prevent this from happening, it is recommended that A14C1640, A14C1641, A14C1642 and A14C1644 be removed. These capacitors are not replaced by any other part, and their removal does not affect instrument operation. All PS5010's of serial number B030000 and above have been manufactured without these capacitors.

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TSG6/TSG16/TSG26 MULTIBURST RISETIME

- REF: TSG6 Instruction Manual
070-2528-00
- TSG16 Instruction Manual
070-2649-00
- TSG26 Instruction Manual
070-4567-00
- Mod 48661

Present TSG6/16/26 instruments have had difficulty making the risetime

specs of the multiburst packets. One of the methods that has been used to achieve specs has been to select U447.

To prevent the requirement of selecting U447 for risetime specs, C444 on the A61 Multiburst Output Board has been changed to .002ufd (P/N 283-0104-00).

Other changes were also implemented on this board to make the Voltage Controlled Oscillator easier to adjust, and to improve Low Frequency Sweep flatness.

U365 was changed to P/N 156-1191-02, and Q345 and Q346 were changed to a matched pair, P/N 151-0198-03.

Implementation of these changes will result in the following board P/N changes:

<u>INST.</u>	<u>PRESENT BOARD</u>	<u>NEW BOARD</u>
TSG6	670-5508-00	becomes 670-5508-02
TSG16	670-5792-00	becomes 670-5792-02
TSG26	670-5807-01	becomes 670-5807-02

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TV MANUAL REVISIONS

The following manuals have been revised/updated.

<u>MANUAL P/N</u>	<u>PRODUCT</u>	<u>REV DATE</u>
070-2759-00	1410 S/N B010135	Jan '84
070-4523-00	1910 Service	Jan '84
070-2664-00	TSP11	Mar '84

W2 Issue 14-7

147A/149A MANUAL CORRECTIONS

REF: 147A/149A Instruction Manual
070-2029-00

The correct part numbers for Q9083 and Q9084 are as follows:

Q9083 is 151-0301-00
Q9084 is 151-0192-00

A manual corrections request has been submitted.

W2 Issue 14-6

463X CUTTER CLUTCH (105-0520-01)
SET SCREWS

Ref: 4631 Service Manual, 070-1831-02
4632 Service Manual, 070-1686-04
4634 Service Manual, 070-3636-00

The cutter clutch, P/N 105-0520-01, that is used in several of the 463X hard copy units, may have set screws that are too short. Some of the cutter clutches are arriving in the field with .125" length set screws that will have a tendency to work loose because they are being used with a cutter cam shaft that has a recess cut. When the .125" set screws are screwed in until they bottom out in the recess cut on the cutter cam shaft, there is not enough body support for the set screws to prevent them from tipping and working loose when torque is applied.

A length was never specified for the set screws on the engineering drawings for the cutter clutch. Until recently the cutter clutches were being supplied by the vendor with .188" length set screws. Evidently, the cutter clutch manufacturer ran out of the .188" set screws and substituted .125" set screws. The engineering drawings are being revised to specify that 6-32 x .188" set screws be used on the cutter clutch. Unfortunately, this will not produce any immediate relief in the field because of the quantity of cutter

clutches with short set screws that are already in the system. I would suggest that a small quantity of 6-32 x .188" set screws, P/N 213-0004-00, be obtained to replace the .125" set screws that may turn up during a cutter clutch replacement.

W2 Issue 14-7

670 SERIES HIGH VOLTAGE PHASING

REF: 670A Instruction Manual
070-2201-01

One place to look for a possible solution to a persistent Horizontal Phasing problem is the emitter to ground connection of Q5030. A few ohms of resistance in this area due to corrosion or loose hardware can cause Horizontal Phasing to drift out of specs in a period of days.

W2 Issue 14-7

1430 CAL PROCEDURE CHANGE

REF: 1430 Manual, P/N 070-1455-00

On the following page is a procedure change to Step 5, Page 4-8.

(ARTICLE CONTINUED ON THE NEXT PAGE)

DESCRIPTION

Product Group 20

TEXT, PARTS LIST, and SCHEMATIC CHANGES

Eff SN B100900

SECTION 4 MAINTENANCE AND CALIBRATION, Page 4-8, Calibration step 5 NOISE PEDESTAL part d**CHANGE TO READ:**

d. DELAY Range. Rotate the DELAY control fully clockwise and fully counterclockwise.

Check - Range of control should cover the entire 10 to 64 μ S active portion of the line. If it does not, the Noise Insertion Start timing cap, C2063, may be selected (1800 pF nominal \pm 600 pF) to achieve this coverage. If C2063 is selected, parts b and c of this step must be repeated.

SECTION 5 REPLACEABLE ELECTRICAL PARTS**CHANGE TO READ:**C2063 283-0626-00
-----CAP,FXD,MICA DI: 1800 PF, 5%, 500V
(TEST SEL)

The above part is located on the A2 PROGRAM circuit board, and is shown on diagram 2 PROGRAM.

4110 SERIES GRAPHIC TABLET MAINTENANCE CHANGES

REF: 4110 F13/14 Graphics Tablet
Instruction Manual,
P/N 070-3814-00

Prior modification to the 4110 Series Graphic Tablet firmware have prompted changes in the Tablet Controller Timing Adjustment Procedure. Setting the timing straps will now take less time and more consistent results will be achieved. Refer to Page 4-5 of the instruction manual.

Timing straps for Option 13 adjust position by 0.005 inch per bit. Timing straps for Option 14 adjust position by 0.008 inch per bit.

Step 4 formulas are:

$$(9.000 - (X_r - X_1)) / 0.005 =$$

XCHANGE for Option 13, or

$$(38.000 - (X_r - X_1)) / 0.008 =$$

XCHANGE for Option 14.

Step 6 formulas are:

$$(9.000 - (Y_t - Y_b)) / 0.005 =$$

YCHANGE for Option 13, or

$$(28.000 - (Y_t - Y_b)) / 0.008 =$$

YCHANGE for Option 14.

If the Preamplifier, Pulser or Controller board is repaired or replaced, the timing could be changed. No operator action is required when changing tablets provided the tablet size is not changed.

W2 Issue 14-5

4115B DISPLAY CONVERGENCE CORNER IMPROVEMENT

Ref: GMA304/4115B 19-inch Color Raster Display Monitors Service Manual, 070-4668-01.

The 4115B has experienced some problems with particular CRTs and yokes that

require more convergence current than the present system can deliver. This is exhibited when adjusting convergence and the corners go into a distortion mode. When trying to adjust the convergence, the limit is reached and distortion results from exceeding this point.

A modification (corporate #53339) was implemented, which changes R143, R149, R153, and R159 from (321-1296-03) 12K ohms to (321-0306-00) 15K ohms. Also, Pin 23 on U631 was floating and needed to be tied to ground. The 670-7654-02 board number was rolled to 670-7654-03.

If convergence problems are occurring, then check to see if the digital convergence board has the four 15K ohm resistors and a wire strapping Pin 23 to Pin 24 on U631. If not, then the problem may be fixed by installing this modification.

W2 Issue 14-6

4115B FET KIT (050-1829-00) ADD DIODES FOR ARC PROTECTION

REF: Corporate Mod #53746
Service Manual (070-4668-00)

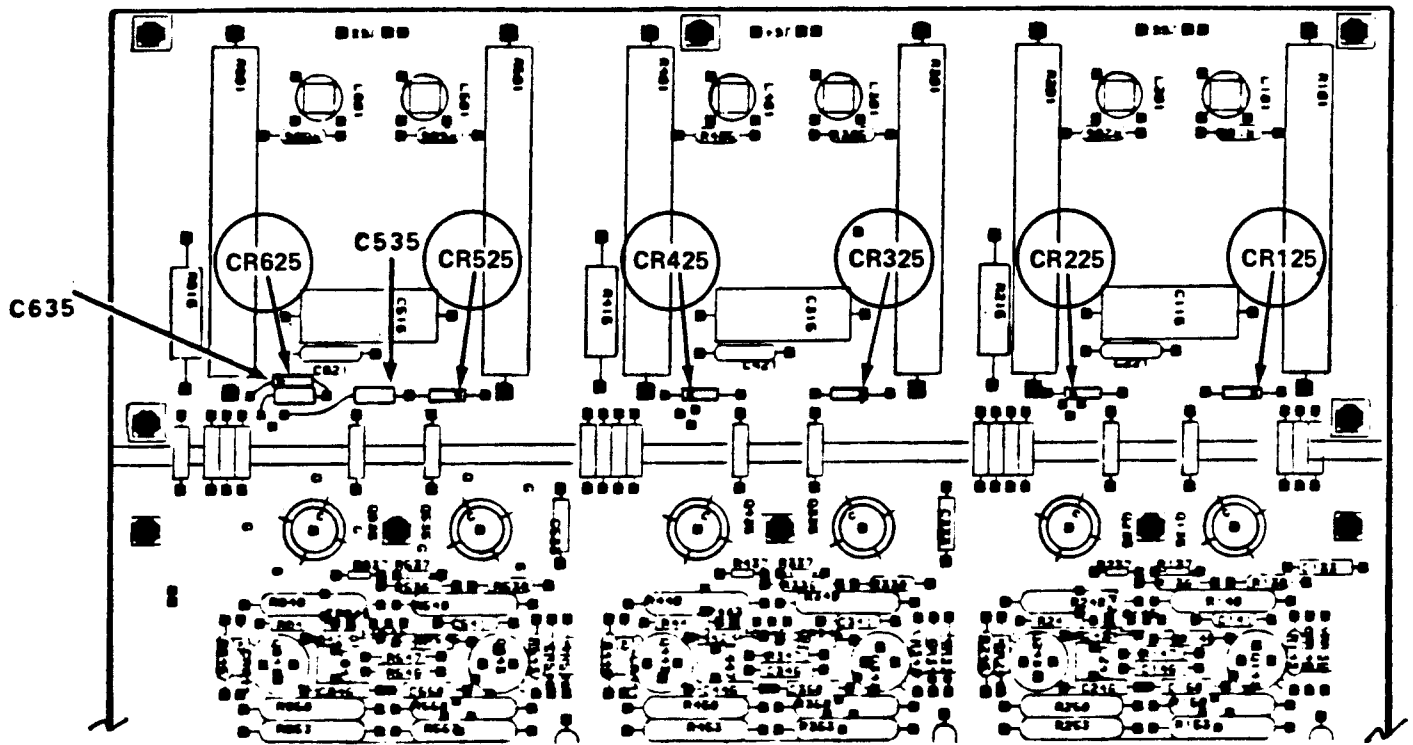
The new bipolar transistors on the Video Amplifier, for the 4115B, will fail on occasion with CRT arcing. Six diodes P/N 152-0333-00 have been added to the video output circuitry to provide protection from CRT arcing.

The cathode end of the diode is connected to a by-passed 62V supply and the anode end connects to the collectors of each of the video output bipolar transistors. See figure for placement; note, cathode band for polarity.

The Video Amplifier board rolls to 670-7651-02. The FET replacement kit 050-1829-01 will contain the six new diodes.

(ARTICLE CONTINUED ON THE NEXT PAGE)

4115B FET KIT (050-1829-00) AND DIODES
FOR ARC PROTECTION (CONT.)



4631/4632/4634 LINE FUSE CHANGE 53025

REF: 4631 Service Manual
070-1831-02
4632 Service Manual
070-1686-04
4634 Instruction Manual
070-3636-00

The design specifications for the 4631, 4632 and 4634 products state that the line fuse, F1001 shall be an 8.0 amp fast blow fuse. As the result of errors in the bills of materials for the three products, the fuse that has been installed in the past is an 8.0 amp medium blow device.

To correct this, change order 53025 changes the bills' requirements for F1001 from the 159-0046-00 medium blow device to a 159-0188-00 fast blow fuse. All existing field documentation should be corrected accordingly.

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4633A MOD JL/JN MANUAL CORRECTIONS

REF: 061-2557-00 4633A MOD JL
Instruction Manual
061-2558-00 4633A Mod JN
Instruction Manual

The 4633A Mods JL and JN are no longer in production and manual corrections will no longer be issued on the above manuals. Therefore, please note the following corrections for your records.

Corrections to 061-2557-00

Page 3-3:

On the video interface assembly (CM672-0853-53), under the "REPLACE" heading, resistor R135 should be added. This resistor is changed from 1.47 K ohms to 1.21 K ohms, and its new P/N is, 321-0201-00.

(ARTICLE CONTINUED ON THE NEXT PAGE)

4633A MOD JL/JN MANUAL CORRECTIONS (CONT.)

The mainboard used in the 4633A Mod JL is a custom modified device. Its P/N is CM670-6394-50. It is identical to the 4633AJE mainboard 670-6394-05 except for the addition of C350, a 27pf capacitor, 283-0094-00, between pins 2 and 6 of U351.

Page 4-1:

The video interface schematic shows the wrong value for R135. It should be 1.21 K ohms.

Resistor R446 going from TP445 to ground does not exist and should be removed from the schematic.

Page 4-2:

The trace from pin 5 of U499 to pin 12 of U491 is in error. A correct schematic showing pin 9 of U251 to pin 12 of U491 is given below.

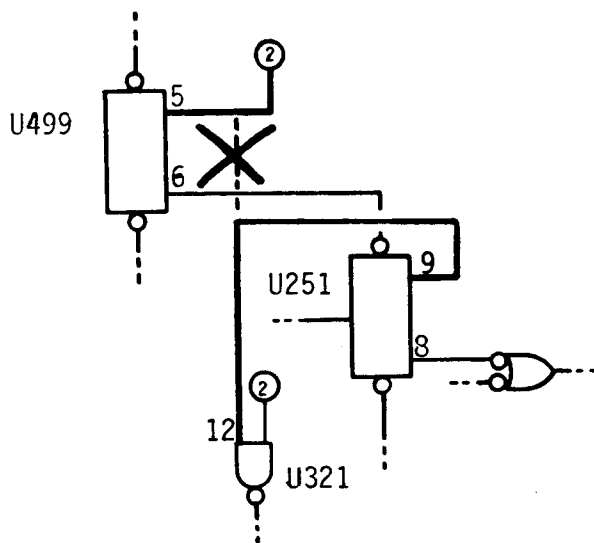


Figure 1.

Corrected Schematic for CM670-6391-53
Logic Board

Page 4-3:

The supply voltage at the top of R447 should be +15 volts, not +5 volts.

Correction to 061-2558-00

Page 3-4:

The mod JN video interface assembly is identical to that in the JL except for the addition of a connector cover, P/N 200-0678-00, to occupy the unused video connector.

The logic boards in the JL and JN are identical. The reference to a -55 level board is incorrect and should be -53.

The same mainboard is used in the JL and JN products. The P/N is CM670-6394-50. This board is the same as the 670-6394-05 with the addition of C350, a 27pf capacitor, P/N 283-0094-00 between pins 2 and 6 of U351.

Page 4-2:

Resistor R446 shown between TP445 and ground does not exist and should be removed from the schematic.

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4633A MOD VA/VB/VC LOGIC BOARD JUMPERING

Ref: 061-2407-01 4633A Mod VA/VB/VC Service Manual; "4633A Mod VA/VB/VC Electrical Calibration Procedure," Wizards Workshop issue 14-2, February 3, 1984.

The 670-6391-52 and 670-7762-00 logic boards used in the 4633A Mod VA/VB/VC are similar to logic boards used in a number of other products. The jumpers J10, J11, and J12 are used to
(ARTICLE CONTINUED ON THE NEXT PAGE)

4633A MOD VA/VB/VC LOGIC BOARD
JUMPERING (CONT.)

accomodate the same board layouts to this variety of line scan recorders.

In the 4633A Mod VA/VB/VC, the logic board jumpers should be set as follows:

<u>JUMPER</u>	<u>POSITION</u>
J10 (RTP) (enables/disables remote TV page copy)	enabled; 1□ 2□ 3□
J11 (RPS) (enables/disables remote M-mode copy initiation)	enabled; 1□ 2□ 3□
J12 (minimum M-mode page length)	long; 1□ 2□ 3□

W2 Issue 14-6

4635 MAINBOARD POWER DEVICE WIRING

REF: 4635 Option 01, 02 Service Manual, 061-2830-01
4635 Option 05 Service Manual, 061-2831-01

Mainboard replacement in the 4635 requires removal of the mainboard from the backpanel and heatsink. Once the wire assemblies connecting Q1010, Q1020, U2000 and U2002 are removed from J6, J7, J8 and J9, it is easy to mistakenly swap leads and create a failure. To reduce this occurrence, the proper configuration of the heatsink power devices and their connecting cables is illustrated below. This illustration also applies to 4633A modified products such as the 4633AJE, 4633AJR, 4633A Mod JL/JN and 4633A Mod VA/VB/VC.

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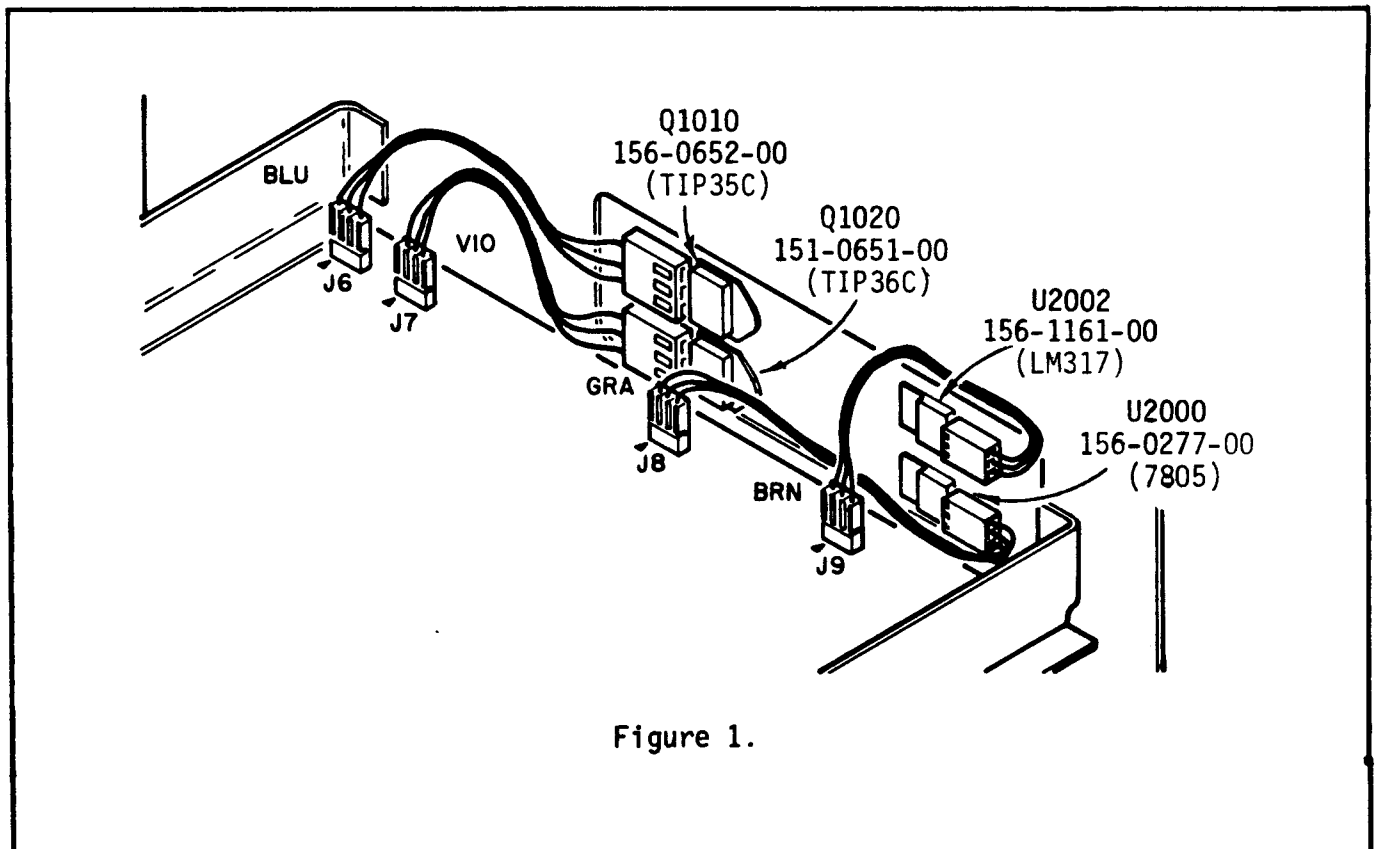


Figure 1.

4643 SPLINE GEAR ADJUSTMENT PROCEDURE

REF: 4643 Service Manual,
P/N 070-3870-01

The 4643 printers paperfeed mechanism utilizes a clutch/gear arrangement to mechanically transfer the driving force of the paperfeed motor to the Tractor Drive Shaft, which in turn causes the paperfeed tractors to advance the paper through the printer. The clutch/gear arrangement consists of a Drive Pulley and a Spline Gear. With the Spline Gear engaged into the Drive Pulley, rotation of the paperfeed motor shaft will cause the Tractor Drive Shaft to rotate, resulting in paper motion. With the Spline Gear disengaged, the Tractor Drive Shaft will not rotate, hence no paper motion.

Improper positioning of the Spline Gear on the Tractor Drive Shaft will alter the required engagement force and lead to any number of paper motion related problems. Anytime any maintenance is performed on the 4643 in the field that alters the Spline Gear position, such as replacing the collar, the following Spline Gear adjustment procedure must be performed.

Spline Gear/Collar Adjustment

- A. Loosen the screw on the collar so that the Spline Gear moves freely on the shaft (Figure 1).
- B. Insert a 1mm (.039") shim (feeler gauge) between the universal cylinder and the brass bearing located on the left side assembly (Figure 1).
- C. While pushing the right end of the tractor drive shaft to the left (with even pressure), slide the Spline Gear into the drive pulley and tighten the screw in the collar (3.5" lbs). (Figures 1 and 2)
- D. Remove the shim (Figure 1).
- E. Press down on the universal cylinder until it contacts the universal hub and hold it in that position (Figure 3).
- F. The distance between the drive pulley face and the Spline Gear face should be a minimum of 2mm (.078") (Figure 3). If the gap is less than 2mm, repeat the procedure.

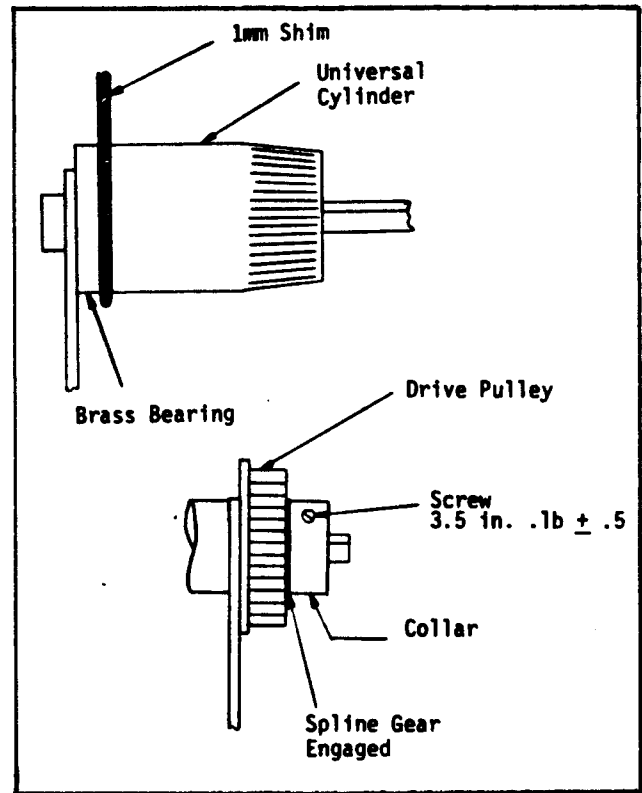


Figure 1.

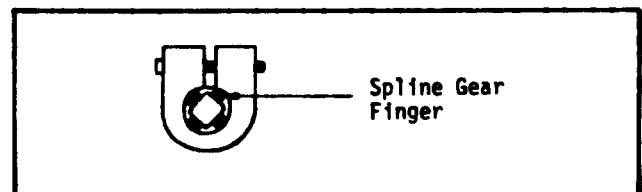


Figure 2.

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4643 SPLINE GEAR ADJUSTMENT PROCEDURE (CONT.)

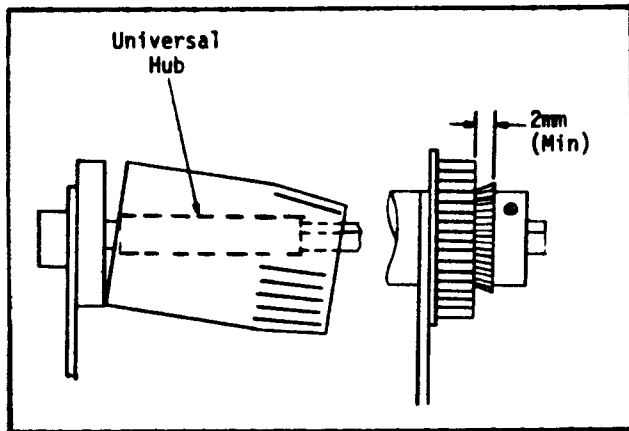


Figure 3.

W2 Issue 14-5

4695 PAPER PERFORMANCE

REF: 4695 Operator's Manual
070-4646-00
4695 Service Manual
070-4645-00

Several types of paper have been used for the 4695 8 1/2" and 10" paper rolls (016-0738-00 and 016-0743-00, respectively). Each type of paper has had its own characteristics. Paper shipped prior to December of 1983 tended to mute the colors, but gave excellent resolution. Paper shipped since December of 1983 has rendered vibrant colors, but has also shown some bleeding or migration of ink. That paper has also tended to highlight anomalies in the copy. The issue of paper characteristics is being studied by Engineering.

Bad batches of paper have been found that failed to accept ink altogether, but confusion has also produced some false alarms. To reduce the confusion, please recognize that the 4695 paper is made to accept ink on only one side; the coated side. This coated side feels finely abrasive, tacky when

moistened and has a matte finish (no luster). The uncoated side is smooth and has a low lustre. Before concluding that a given roll of paper is bad, check that the paper is loaded correctly. Figure 3-4 in the operator's manual illustrates the loading of paper. If this is not the problem, check that the roll is wound correctly. The coated side of the paper should be on the inside of the roll (see figure 1 below). As a check, tear off a portion of paper and run it through the copier "inside out."

The 4695 is specified to produce only the six colors (cyan, magenta, yellow, green, red, violet) and one shade (black). The combination colors of red, green and violet are produced by combining two of the simple colors. For example, red results from combining yellow with magenta. Any color that requires more than two jets in continuous operation in a fill pattern exceeds the product specifications. Running of the ink and buckling of the paper may result, regardless of the paper quality.

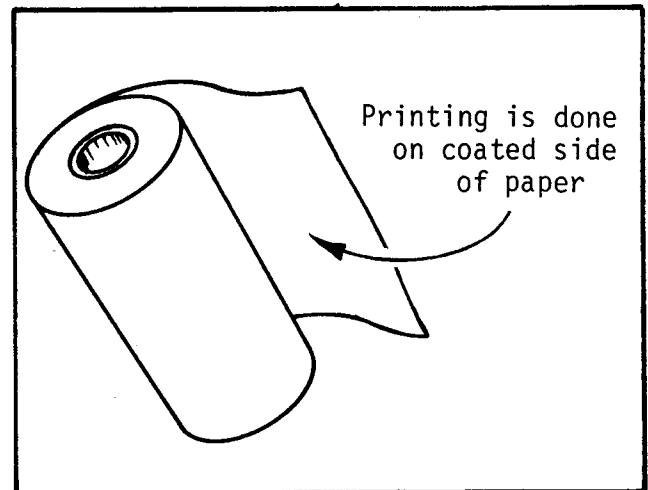


Figure 1.

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This publication is meant to provide technical information to the customer who has decided to maintain his own Tektronix products. It contains product servicing information and is written for the technician.

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