

# digital

## FIELD CHANGE ORDER

FCO

TU77A

M

0007

PAGE 1 of 13

Level of Urgency (LOU)

STATUS  
LOU

## FCO EXPENSE RESPONSIBILITY

	WARRANTY	K	PER CALL
Mandatory			
Required	DIGITAL		CUST
Specification			CUST
Improvement			CUST
Hardware Option	PURCHASEABLE OPTION		
Cosmetic	CUST	CUST	CUST

ESTIMATED TIME TO INSTALL and TEST (on-site)  
(Travel time not included)

3.0

DECIMAL HOURS

## APPLICABILITY

SEE PAGE 2.

On-site FCO installation, by DEC, will be in accordance with both APPLICABILITY and the above FCO EXPENSE RESPONSIBILITY matrix.

## QUICK CHECK (To determine if FCO has been installed)

SEE PAGE 3.

LAST PREVIOUS FCO : TU77A-R0005

RELATED OR PREREQUISITE FCO s / MCO s

NONE

SPECIAL TEST EQUIPMENT, TOOLS, or SUPPLIES  
(Not included in the Field Retrofit Kit)

TU77 CALIBRATION TOOLS

## FCO KIT CHARGES (United States and Canada only)

KIT ITEM	DOCUMENTATION	PARTS	OTHER
<input checked="" type="checkbox"/> FCO	<input type="checkbox"/> NONE	∞	
<input type="checkbox"/> PRINTS			

Parts charges are as of FCO release date and are subject to change.

PARTS AVAILABILITY DATE JULY 1981

LOGISTICS CODING 3K 10K 10K

LOGISTICS REVIEW

QTY PART NUMBER DESCRIPTION  
SEE PAGE 5*Em Dwyer 5/13/81*

## FIELD INSTALLATION and TEST PROCEDURE

SEE PAGES 6 THROUGH 13.

ORDER BY

THIS NUMBER

EQ-01091-01

EQ-01091-02

EQ-01091-03

EQ-01091-04

FA-04317-00

KIT CONTAINS

FCO PRINTS PARTS

X X

X X

X X

X X

X

\*\*PARTS PRICE UNDETERMINED AT DATE OF FCO RELEASE.

PROBLEM SYMPTOMS: SEE PAGE 4.

THIS REVISED FCO SUPERSEDES THE ORIGINAL RELEASE OF 15 MAY 1981. IT PROVIDES THE FOLLOWING CORRECTIONS: ON PAGE 11, REWORK STEPS 39 AND 40 WERE ADDED.

APPROVED - Field Service Product Support

*Robert C. Steere*

ROBERT STEERE

LIBRARIES:

11

VAX

KA10

KI10

KL10

KS10

*D. MARCHAND*

LKQ

REVISION 001

FCO RELEASE DATE

3 SEPTEMBER 1981

APPLICABILITY I:

EXCHANGE ALL CONTROL M (2923229) OR CONTROL M2 (29-23774) MODULES, SERIAL NUMBERS WS06000 THROUGH WS08690, AT CS REVISION "F" OR EARLIER WITH CONTROL M2 (29-13774) MODULES AT CS REVISION "G" OR LATER USED IN TU77A'S.

APPLICABILITY II:

RETROFIT ALL JU77A'S SERIAL NUMBERS WS06000 THROUGH WS08900.

APPLICABILITY III:

RETROFIT ALL TU77A'S SERIAL NUMBERS WS06000 THROUGH WS09350.

APPLICABILITY IV:

RETROFIT ALL TU77A'S, SERIAL NUMBERS WS06000 THROUGH WS09300 WITH OUT NOISE REDUCTION KIT AND WITH OUT HEAT EXCHANGER.

QUICK CHECK I:

CONTROL M2 MODULE 29-23774 IS REVISION "G" OR LATER.  
REVISION LEVEL IS STAMPED ON YELLOW VENDOR PART NUMBER TAG.

QUICK CHECK II:

S2 AND S3 ON MAIN DECK BRACKET HAVE PARALLEL SET OF SWITCHES  
MOUNTED ON AN ADDITIONAL ADAPTER.

QUICK CHECK III:

ROCKER STYLE SWITCH (12-14073-01) INSTALLED IN PLACE OF PUSH  
PULL SWITCH.

QUICK CHECK IV:

MUFFLER ON END OF EXHAUST HOSE AT BOTTOM REAR OF DRIVE  
AND AIR COOLER MOUNTED INSIDE REAR DOOR.

## PROBLEM SYMPTOM I:

CAPSTAN WRAPS. MEDIA DAMAGE.

## PROBLEM SYMPTOM II:

TAPE STRETCH AT UNLOAD.

## PROBLEM SYMPTOM III:

NO BACKWRAP DEFEAT FUNCTION. DIFFICULTY LOADING CERTAIN  
TAPES MANUALLY.

## PROBLEM SYMPTOM IV:

NOISE LEVELS ARE BOTHERSOME FOR SOME CUSTOMERS. MEDIA  
PROBLEMS, CAPSTAN WRAPS, AND PREMATURE MODULE FAILURES.

PARTS LIST:

QTY	PART NUMBER	DESCRIPTION
<u>KIT I (EQ-01091-01):</u>		
1	29-23774-00	CONTROL MODULE, REVISION "G" OR LATER
<u>KIT II (EQ-01091-02):</u>		
1	29-24020-00	PERTEC BRACKET ASSEMBLY
<u>KIT III (EQ-01091-03):</u>		
1	29-23297-00	SWITCH, ROCKER TYPE
1	36-18429-01	DECAL
<u>KIT IV (EQ-01091-04):</u>		
1	12-17720-00	FOAM, FRONT COVER
8	<del>90-06073-03</del>	SCREW, TRUS HEAD 10X32X1/2
8	<del>90-07786-00</del>	RETAINER, U NUT 10X32
2	<del>90-07906-00</del>	WASHER, SPLIT LOCK #10
5	<del>90-06664-00</del>	WASHER, FLAT #10
1	29-24025-00	PERTEC COOLING AND ACOUSTIC KIT
1	90-09157-00	PERMABOND #101
1	12-13121-08	FOAM, REAR DOOR, UPPER
1	12-13121-09	FOAM, REAR DOOR, LOWER
2	90-10006-00	CABLE TIE
4	90-08378-00	STANDOFF, 2 INCH
4	90-06083-03	SCREW, 2 1/2 INCH
1	90-06565-00	KEPNUT, 10/32

RETROFIT PROCEDURE  
FOR  
FCO TU77A-M0007

PROCEDURE I: (INSTALL KIT 1)

- 1- POWER DOWN DRIVE.
- 2- EXCHANGE ALL CONTROL M (29-23229) MODULES OR CONTROL M2 (29-23774) MODULES AT CS REVISION "F" OR EARLIER WITH A CONTROL M2, 29-23774 MODULE, AT CS REVISION "G" OR LATER.
- 3- POWER UP DRIVE.
- 4- RUN 1 OR 2 PASSES OF DRIVE FUNCTION TIMER (ZTFCCO) TO ENSURE PROPER OPERATION. HALF GAP TIME IN DRIVE FUNCTION TIMER SHOULD FAIL.

PROCEDURE II: (INSTALL KIT 2)

- 1- POWER DOWN DRIVE.
- 2- OPEN MAIN DECKPLATE AND LOCK IN PLACE.
- 3- REMOVE AND DISCARD SWITCHES S2 AND S3. INSTALL SWITCHES, VENDOR PART NUMBER 506-0023, IN S2 AND S3 LOCATIONS. (FIGURE 1)
- 4- MOUNT PRE-ASSEMBLED SWITCH ASSEMBLY ON INBOARD SIDE OF PRESENT SWITCH MOUNTING BRACKET IN HOLES JUST ABOVE AND BELOW S2 AND S3. (FIGURE 1)
- 5- REMOVE HOSE FROM S2 (DOOR EDGE SIDE). INSTALL HOSE ON CENTER OF PLASTIC T COMING FROM NEW SWITCH ASSEMBLY S16.
- 6- CONNECT OTHER BRANCH FROM T ON S16 TO S2.
- 7- REMOVE HOSE FROM S3 (DOOR EDGE SIDE). INSTALL HOSE ON CENTER OF PLASTIC Y COMING FROM NEW SWITCH ASSEMBLY S17.
- 8- CONNECT OTHER BRANCH OF Y FROM S13 TO S3. USE CABLE TIE, IF NECESSARY, TO DRESS TUBE GOING TO LOOP PORT. RUN TIE THROUGH HOLE. (FIGURE 1)

## RETROFIT PROCEDURE

FOR

FCO TU77A-M0007

PROCEDURE II: (CONTINUED)

- 9- REMOVE HOSE FROM S2 (INBOARD SIDE). INSTALL IT ON CENTER OF Y COMING FROM S16 (INBOARD SIDE).
- 10- CONNECT OTHER BRANCH OF "Y" FROM S16 TO S2 (INBOARD SIDE).
- 11- REMOVE HOSE FROM S3 (INBOARD SIDE). INSTALL IT ON CENTER OF T COMING FROM S17 (INBOARD SIDE).
- 12- CONNECT OTHER BRANCH OF "T" FROM S17 TO S3 (INBOARD SIDE).
- 13- ENSURE HOSES ARE FREE OF ANY OBSTRUCTIONS AND THEY HAVE PROPER CLEARANCE BETWEEN FRAME AND DECKPLATE WHEN DECKPLATE IS OPENED AND CLOSED.
- 14- MAKE THE FOLLOWING ELECTRICAL CONNECTIONS:
  - A) BLACK/WHITE WIRE FROM S2 TO S16 PIN 2.
  - B) ORANGE/WHITE JUMPER FROM S16 PIN 1 TO S2 PIN 1.
  - C) BLACK/WHITE WIRE FROM S3 TO S17 PIN 2.
  - D) PURPLE/YELLOW JUMPER FROM S17 PIN 1 TO S3 PIN 2.
- 15- LOAD AND UNLOAD TO ENSURE PROPER OPERATION.

RETROFIT PROCEDURE  
FOR  
FCO TU77A-M0007

PROCEDURE III: (INSTALL KIT 3)

- 1- POWER DOWN DRIVE.
- 2- PRY OUT OLD STYLE PUSH/PULL TYPE SWITCH (29-23297-00) FROM FRONT PANEL. (FIGURE 2) (IT MAY BE NECESSARY TO REMOVE THE COMPLETE DOOR ASSEMBLY TO REPLACE THE SWITCH.)
- 3- REMOVE TWO SPADE CONNECTORS FROM OLD SWITCH, ENSURING WIRES DO NOT SLIP INTO HOLE.
- 4- INSTALL SPADE CONNECTORS ON NEW SWITCH (12-14073-01).
- 5- CAREFULLY INSTALL NEW SWITCH IN OLD SWITCH LOCATION. BE CAREFUL NOT TO CRIMP WIRES.
- 6- POWER UP DRIVE.
- 7- MOUNT A FULL 10.5 INCH, 2400 FT. REEL ON DRIVE WITHOUT CARTRIDGE.

NOTE: TAPES WITH CARTRIDGES ALWAYS BACKWRAP.

- 8- MOVE NEW SWITCH TO "MAN" (MANUAL) POSITION.
- 9- CLOSE DOOR AND DEPRESS LOAD/REW SWITCH. REEL SHOULD NOT BACKWRAP.
- 10- UNLOAD TAPE AFTER REACHING BOT.
- 11- MOVE NEW SWITCH TO AUTO POSITION, CLOSE DOOR AND DEPRESS LOAD/REW SWITCH. REEL SHOULD BACKWRAP BEFORE LOADING.
- 12- PLACE DECAL (36-18429-01) ON FRONT OF DRIVE. (FIGURE 2)
- 13- RECORD INSTALLATION IN SITE LOG AND COMPLETE LARS REPORT.



RETROFIT PROCEDURE  
FOR  
FCO TU77A-M0007PROCEDURE IV: (INSTALL KIT 4)

- 1- POWER DOWN DRIVE.
  - 2- REMOVE LOWER FRONT DOOR.
  - 3- REMOVE ADHESIVE BACKING FROM FOAM, 12-17720-00.
  - 4- STICK FOAM ON INSIDE OF LOWER FRONT DOOR. (CUTOUT AREA GOES OVER GROUND STUD.)
  - 5- IF DRIVE IS A SLAVE OR IF TM03 POWER SUPPLY IS MOUNTED IN FRONT OF DRIVE, PROCEED TO RETROFIT STEP NUMBER 11.
  - 6- IF DRIVE IS A MASTER AND HAS A REAR MOUNTED POWER SUPPLY, PROCEED TO RETROFIT STEP NUMBER 7.
  - 7- OPEN REAR DOOR.
  - 8- REMOVE THE LOWER SCREW OF THE MASSBUSS CABLE PLATE.
  - 9- PLACE THE POWER SUPPLY OVER THE LOWER EDGE OF THE MASSBUSS PLATE.
  - 10- MOVE U RETAINERS TO THE NEW MOUNTING HOLES.
- NOTE: THE LOWER MOUNTING HOLES OF THE POWER SUPPLY SHOULD NOW BE IN THE 15TH HOLE FROM THE BOTTOM.
- 11- PLACE "U" NUT RETAINERS OVER HOLES 2 AND 12 FROM THE BOTTOM ON THE RIGHT OUTSIDE VERTICAL SUPPORT.
  - 12- REMOVE CABLE TIE HOLDING EXHAUST HOSE.
  - 13- SLIDE WORM GEAR CLAMP, 90-08929-00, OVER END OF EXHAUST HOSE.
  - 14- SLIDE END OF THE HOSE ONTO MUFFLER TUBE.
  - 15- TIGHTEN CLAMP.

RETROFIT PROCEDURE  
FOR  
FCO TU77A-M0007

PROCEDURE IV: (CONTINUED)

- 16- MOUNT MUFFLER WITH HOSE UP BETWEEN RIGHT VERTICAL SUPPORTS USING SPLIT WASHER (90-07906-00), FLAT WASHER (90-0664-00), AND SCREWS (90-06073-03).
- 17- OPEN MAIN TRANSPORT DECKPLATE AND LOCK IN PLACE.
- 18- REMOVE SCREW AND LOCK UNIT FROM AIR BEARING ADJUSTMENT STUD LOCATED ON AIR PRESSURE TRANSFER VALVE.
- 19- PLACE A DROP OF PERMABOND 101 (90-09157-00) OVER AIR BEARING ADJUSTMENT STUD FROM WHERE SCREW WAS REMOVED IN REWORK STEP 18.
- 20- PLACE NEW ADAPTER END OF MUFFLER ASSEMBLY OVER STUD ENSURING SCREW IS UP.
- 21- PLACE HOSE AND MUFFLER DOWN ACROSS BACK OF DECKPLATE. ENSURE THERE IS NO INTERFERENCE WITH EITHER COMPONENTS OR OPENING AND CLOSING THE DECKPLATE.
- 22- SECURE HOSE TO OTHER HOSES WITH CABLE TIES.
- 23- RECHECK WORK.
- 24- POWER UP DRIVE.
- 25- CHECK AIR BEARING AND THREADING PRESSURES.
- 26- USE GAUGES IN TU77 TOOL KIT TO ADJUST AS NECESSARY.
- 27- CHECK FOR PROPER TAPE LOADING BOTH WITH AND WITHOUT CARTRIDGE.
- 28- ENTER PROPER EQ NUMBER IN LARS REPORT.
- 29- POWER DOWN DRIVE.
- 30- PLACE U NUTS, 90-07786-00, OVER HOLES 48 AND 57 ON INSIDE RIGHT AND LEFT VERTICAL SUPPORTS. (HOLES ARE COUNTED TOP TO BOTTOM).
- 31- REFER TO DRAWING UA-TU77-A-0 WHICH INDICATES LOCATION OF VERTICAL SUPPORT AND ASSOCIATED MOUNTING HOLES.
- 32- CUT CABLE TIE HOLDING FILTER IN PLACE. REMOVE LOWER FITTING.
- 33- MOVE FILTER AND SECURE TO INSIDE OF RIGHT VERTICAL STRUT HOLE 53 AND 57 (COUNTING FROM THE TOP USING CABLE TIES, 90-10006-00).

RETROFIT PROCEDURE  
FOR  
FCO TU77A-M0007

PROCEDURE IV: (CONTINUED)

- 34- CONNECT A 12 INCH PIECE OF TUBING BETWEEN THE FIRST AND THIRD CONNECTIONS ON THE BOTTOM OF THE HEAT EXCHANGER. (COUNT CONNECTIONS FROM LEFT TO RIGHT.)
- 35- CLAMP BOTH ENDS OF TUBING WITH A WORM GEAR CLAMP, 12-17915-00.
- 36- MOUNT HEAT EXCHANGER ASSEMBLY, 109579-01, IN HOLES 48 AND 57 USING FOUR (4) TRUS SCREWS.
- 37- CUT A 17 INCH PIECE OF TUBING AND CONNECT OUTPUT 4 OF HEAT EXCHANGER TO BOTTOM OF FILTER.
- 38- CLAMP TUBING IN PLACE.
- 39- CONNECT OUTPUT 2 OF EXCHANGER TO COMPRESSOR.
- 40- CLAMP TUBING IN PLACE.
- 41- FEED AC POWER CORD FROM HEAT EXCHANGER ASSEMBLY THROUGH RIGHT VERTICAL SUPPORT AREA AND PLUG INTO THE POWER CONTROL ASSEMBLY.
- 42- REMOVE AND DISCARD FOAM FROM REAR DOOR. INSTALL UPPER FOAM 12-13121-08 AND LOWER FOAM 12-13121-09.
- 43- REMOVE AND DISCARD FOUR (4) MOUNTING SCREWS FROM REAR DOOR FAN ASSEMBLY.
- 44- RE-INSTALL REAR DOOR FAN ASSEMBLY USING FOUR (4) 2 INCH STANDOFFS (90-08378-00) AND FOUR (4) SCREWS, 2 1/2 INCH, (90-06083-03).
- 45- CHECK SYSTEM VACUUM AND PRESSURE ADJUSTMENTS AND ADJUST IF NECESSARY.
- 46- RUN READ/WRITE DIAGNOSTICS TO ENSURE PROPER OPERATION.

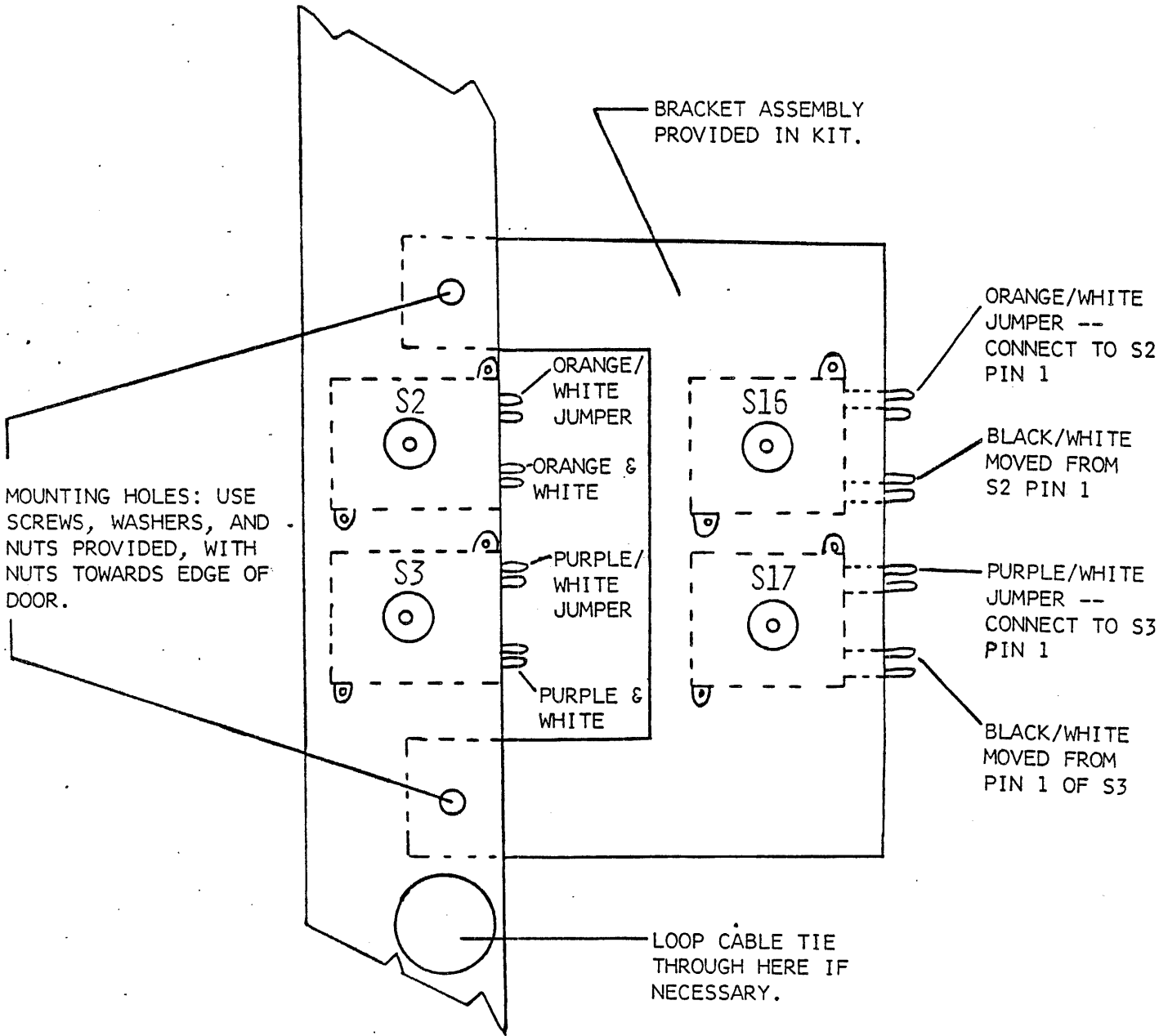
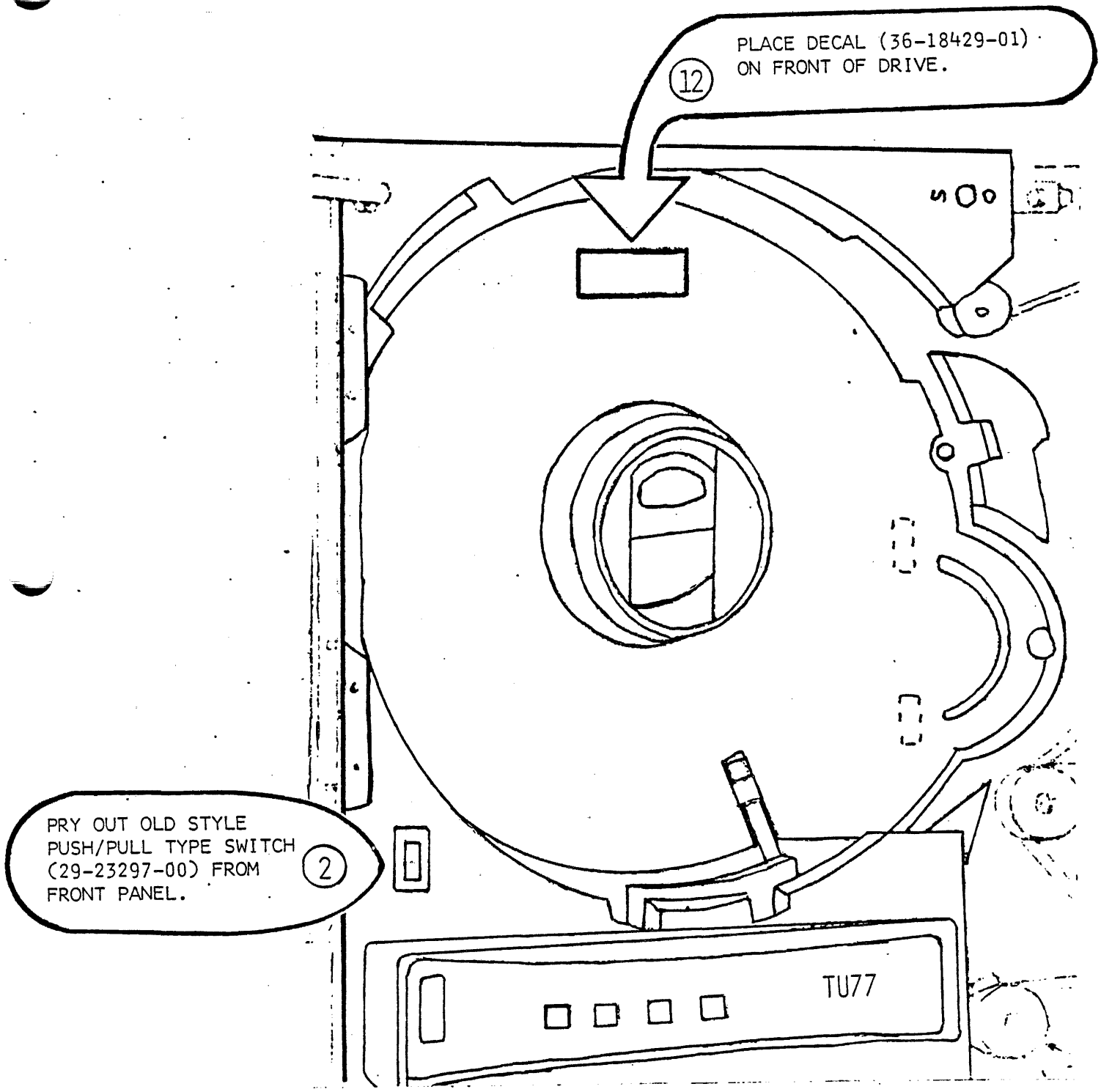


FIGURE 1



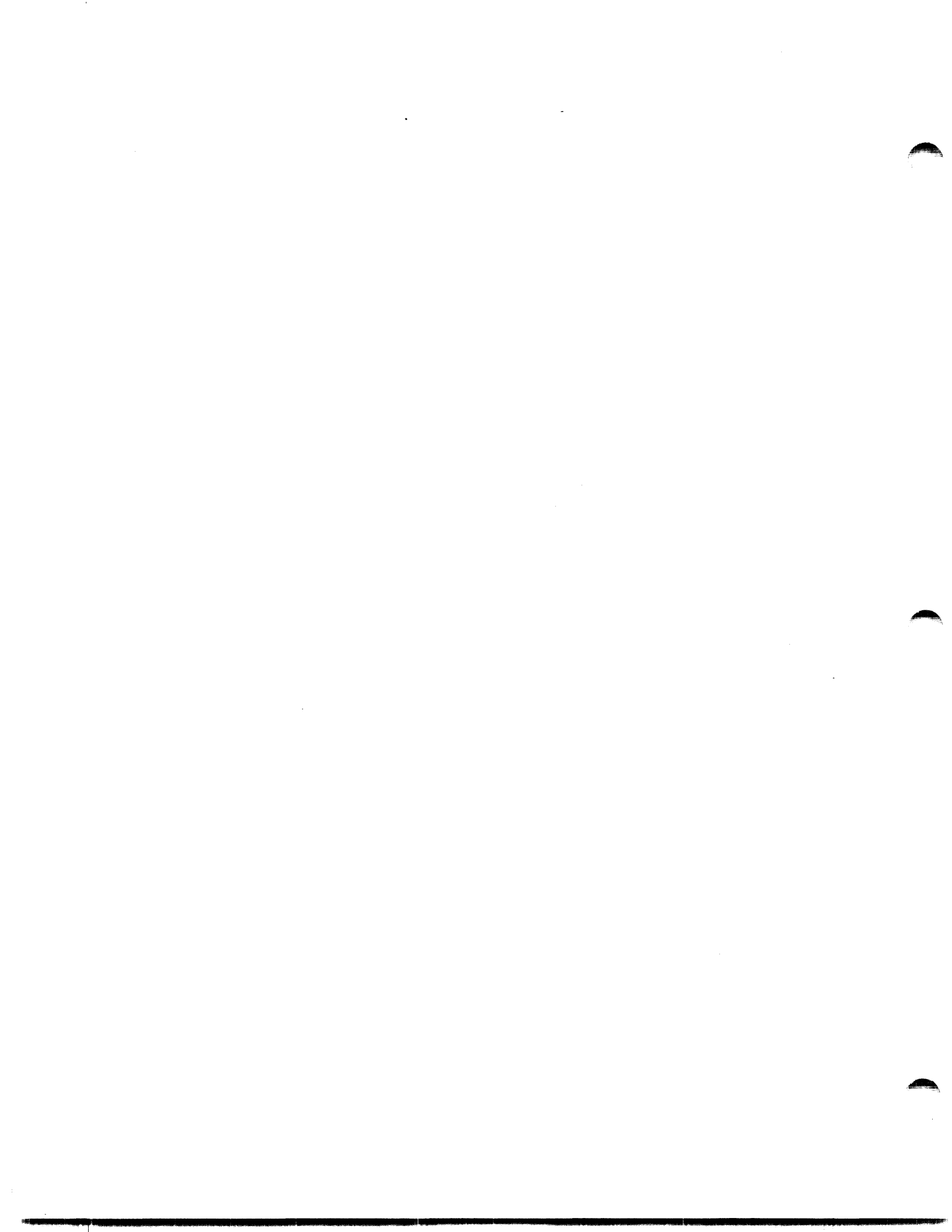
12

PLACE DECAL (36-18429-01) ON FRONT OF DRIVE.

2

PRY OUT OLD STYLE PUSH/PULL TYPE SWITCH (29-23297-00) FROM FRONT PANEL.

FIGURE 2

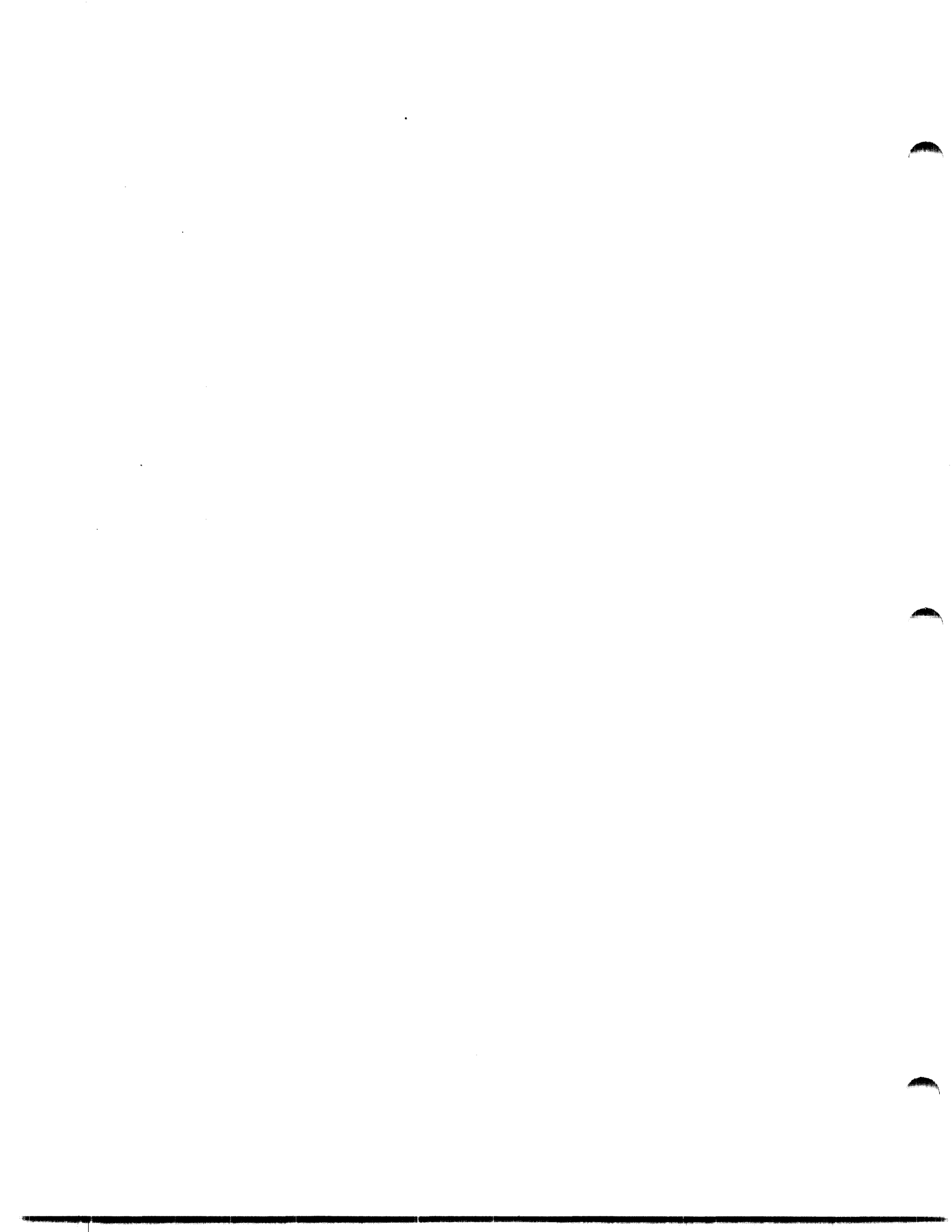


45! 50! 55! 60! 65! 95!	PART NUMBER	PART DESCRIPTION	VENDOR NUMBER	IN STOCK LEVEL OF SERVICE	DEC COST	CONSUMPTION INDEX
545!						
550!	29-23226 *	WRITE PCBA	104811-03	50	202.00	4.85
560!	29-23227 *	DATA L PCBA	104806-03	50	386.00	4.56
570!	29-23228 *	TUBE FITTING (LOWER RESTRAINT TAPE FLUFFIER)	107070-01	TOOL	11.00	
580!	29-23229-714 *	CONTROL M2PCBA	104746-02	90	194.00	1.45
590!	29-23230 *	CAPSTAN/REGULATOR PCBA	104758-01	70	307.00	3.67
595!						
600!	29-23231 *	REEL SERVO PCBA	106926-01	80	500.00	4.19
610!	29-23232 *	9 TRACK PREAMP PCBA	104816-03	50	179.00	7.39
620!	29-23233	9 TRACK HEAD ASSY. (125 IPS)	530-6369	95	344.00	.68
630!	29-23234	CAPSTAN MOTOR ASSY.	107016-01	98	318.00	.37
640!	29-23235	WRITE PROTECT ASSY.	107190-01	98	14.18	.02
645!						
650!	29-23236	REEL MOTOR ASSY.	107067-01	95	97.00	.20
660!	29-23237	VACUUM REEL ASSY.	107009-02		27.00	
670!	29-23238	VACUUM + COLUMN LIMIT SWITCH, 6" H2O	506-0007	50	7.00	.62
680!	29-23239	VACUUM SWITCH, 2" H2O VAC. AIR BEAR. <i>Knipple wheel SW.</i>	506-0008	95	14.00	.12
690!	29-23240	PNEUMATIC INTERLOCK SWITCH, 72" H2O	506-0009	90	9.00	.12
695!						
700!	29-23241	TAPE CLEANER	107029-01		24.00	
710!	29-23242	EDT/BOT ASSY.	107012-01	98	15.00	.06
720!	29-23243	TIP ASSY. (TAPE IN PATH)	107013-01	98	10.00	.01
730!	29-23246	VACUUM TRANSDUCER ASSY.	107192-01	98	276.00	.28
740!	29-23247	CIRCUIT BREAKER	663-0002	98	20.00	.07
745!						
750!	29-23248	VACUUM TRANSFER VALVE	107125-01	98	60.00	.02
760!	29-23249	AIR TRANSFER VALVE (PRESSURE)	107127-01	98	36.00	.02
770!	29-23250	AIR BEARING	107140-01/107040-01	98	10.50	.03
780!	29-23251	AIR BEARING	107140-02/107040-02	98	16.00	.03
790!	29-23252	AIR BEARING	107140-03/107040-03	98	21.00	.01
795!						
800!	29-23253	VACUUM BLOWER ASSY. WITH PULLEY	518-2000	90	87.00	.39
810!	29-23254	MOTOR, AC	106819-01/519-0019	98	84.00	.10
820!	29-23255	GUIDE PLATE *R* <i>RECT GUIDE</i>	107058-01	98	7.35	.01
830!	29-23256	GUIDE PLATE *C* <i>CIBL GUIDE</i>	107061-01	98	5.14	.01
840!	29-23257	COMPRESSOR	518-1000	90	63.00	.39
845!						
850!	29-23258	TRANSFORMER	511-0006	98	68.00	.01
860!	29-23259 *	EXHAUST FILTER (6 MONTH AVERAGE LIFE)	614-007	P.M.	7.90	16.67
870!	29-23279	RFI FILTER	102245-01	98	3.15	.01
880!	29-23280	CARTRIDGE MOTOR	500-0008	70	29.00	1.10
890!	29-23281	CARTRIDGE LOADING ARM	107103-01	98	8.60	.01
895!						
900!	29-23282	TAPE CLEANER CAP CLIP	107202-01		2.87	
910!	29-23283	AIR GUIDE	107059-01	98	32.00	.02
920!	29-23284	MOTOR HUB 50 HZ	107042-01		33.00	
930!	29-23285	MOTOR HUB 60 HZ	107042-01		18.00	
940!	29-23286	SPRING CATCH	615-0006	80	.08	.01
945!						
950!	29-23288	FASTENER RECEPTACLE	615-0121	95	1.60	.01
960!	29-23292 *	UNIVERSAL 3 KIT CASE INSERT, FOAM	TU77-CB	CASE	15.80	
970!	29-23293 *	UNIVERSAL 1 KIT CASE INSERT, FOAM	TU77-P	CASE	14.40	
980!	29-23294	COMPRESSOR BELT	108479-02	50	3.45	.48
990!	29-23295	BLOWER BELT, 50 HZ HIGH ALTITUDE	108479-06		3.68	
995!						

45! 50! 55! 60! 65! 95!	PART NUMBER	PART DESCRIPTION	VENDOR NUMBER	IN STOCK LEVEL OF SERVICE	DEC COST	CONSUMPTION INDEX
995!						
1000!	29-23296	BLOWER BELT, 60 HZ HIGH ALTITUDE	108479-04		3.68	1.00
1010!	29-23297	DOOR INTERLOCK SWITCH (AUTOLOAD)	506-9206	95	3.15	.02
1020!	29-23299	MOTOR PULLEY, 60 HZ LOW ALTITUDE	108478-01		30.00	
1030!	29-23300	MOTOR PULLEY, 60 HZ HIGH ALTITUDE	108478-02		31.00	
1040!	29-23301	MOTOR PULLEY, 50 HZ LOW ALTITUDE	108478-03		32.00	
1045!						
1050!	29-23302	MOTOR PULLEY, 50 HZ HIGH ALTITUDE	108478-04		36.00	
1060!	29-23303 *	BLOWER BELT, 50 HZ LOW ALTITUDE	108479-05	50	3.68	.60
1070!	29-23304 *	COMPRESSOR BELT	108479-01	50	3.15	.48
1080!	29-23305 *	BLOWER BELT, 60 HZ LOW ALTITUDE	108479-03	50	3.44	.60
1090!	29-23306 *	HUB NYLOCK SET SCREW	615-9756		.28	
1095!						
1100!	29-23307 *****	C.D. KIT (BASIC SPECIAL TOOLS AND SPARES; '*' DENOTES CONTENTS)	*****		2325.00	
1110!	29-23308	SOLID STATE RELAY	410-0002	98	20.00	.02
1120!	29-23309	CAPACITOR, 47000 MFD 15 WVDC	134-4792	98	6.00	
1130!	29-23310	CAPACITOR, 61000 MFD 50 WVDC	134-6102	98	24.00	
1140!	29-23311	BRIDGE RECTIFIER, 25 AMP 100 PIV	320-2510	98	7.00	
1145!						
1150!	29-23312	BRIDGE RECTIFIER, 10 AMP 100 PIV	320-1010	95	5.00	
1160!	29-23320	RESISTOR, 33 OHM 20 WATT	111-3305	90	.41	
1170!	29-23321	CABLE, D1 MOTHERBOARD (J24) TO INTERCONNECT F1	107302-01	50	.30	.13
1180!	29-23322	THREAD BLOCK 2	107272-01	95	1.40	.01
1190!	29-23323	THREAD BLOCK 4	107274-01	98	1.65	.01
1195!						
1200!	29-23324	THREAD BLOCK ASSY. WITH LNR	107160-01	98	7.15	.01
1210!	29-23325	THREAD BLOCK ASSY. WITH LNR	107160-05	98	6.00	.01
1220!	29-23326	THREAD BLOCK ASSY. WITH LNR	107160-06	98	7.15	.01
1230!	29-23361	CAP PLUG	660-9032		.09	
1240!	29-23378	3/16" ID HOSE, 11 FT.	669-0011		2.75	
1245!						
1250!	29-23379	3/8" ID TUBING, 1 FT.	669-0012		1.00	
1260!	29-23380	1" ID HOSE, 2 FT.	669-0004		2.50	
1270!	29-23381	1 3/4" ID HOSE, 10 FT.	669-0014		17.50	
1280!	29-23469	1/2" ID TUBING, 12 FT.	669-0017		15.00	
1290!	29-23475	HUB, REEL	108844	98	53.07	.04
1295!						
1300!	47-00038 *	TAPE CRIMPER		TOOL	30.00	
1310!	70-14569	SQUIRREL CAGE BLOWER, 230 VAC		98	50.14	.10
1320!	90-07221	FUSE, 5 AMP 250 V GLASS	663-3050		.00	
1330!	90-08268	HEAT SINK COMPOUND			.00	
1340!	90-08835	FUSE, 20 AMP 32 V GLASS	663-3200		.00	
1345!						
1350!	90-08838	FUSE, 10 AMP 32 V GLASS	663-3100		.00	
1360!						
1370!						
1380!						
1390!						
1395!						

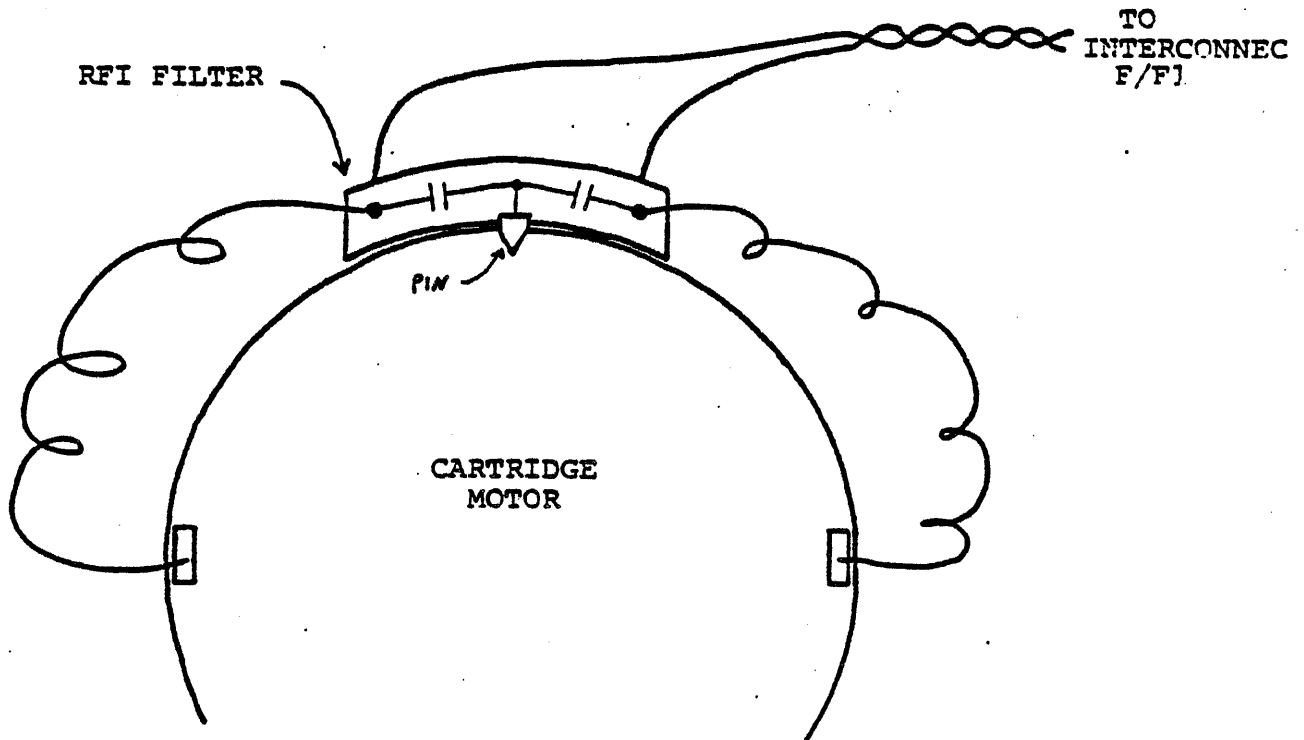


45! 50! 55! 60! 65! 95!	PART NUMBER	PART DESCRIPTION	VENDOR NUMBER	IN STOCK LEVEL OF SERVICE	DEC COST	CONSUMPTION INDEX
100!	BC06R-03*	SLAVE I/O CABLE		95	\$ 12.59	.11
110!	M8901-YD*	PE DATA SYNC PCBA (TM03)			72.86	
120!	M8940 *	MAGTAPE ADAPTER (TU77 ONLY)		80	112.36	1.38
130!	TUC01	TAPE PATH CLEANING KIT			84.55	
140!	10-11643	CAPACITOR 18,000 MFD 25 WVDC	134-1892	90	2.88	
145!						
150!	12-10930-01	EXHAUST FAN, 230 VAC		90	8.80	.20
160!	12-14405	FRONT DOOR ASSY., 19" X 26"			32.15	
170!	29-10562 *	XCELITE HANDLE	XCELITE 99-1	TOOL	.87	
180!	29-11001 *	XCELITE #1 PHILLIPS BIT	XCELITE 99-821	TOOL	.81	
190!	29-11625 *	XCELITE 7 INCH EXTENSION BIT	XCELITE 99-X10	TOOL	1.32	
195!						
200!	29-11630 *	XCELITE 5/32" BALLPOINT DRIVER	XCELITE 99-25BP	TOOL	1.35	
210!	29-11635 *	DIGITACHO (DIGITAL TACHOMETER)	SHIMPO DT-103C	TOOL	115.70	
220!	29-11636 *	0-5 PSI DIFFERENTIAL PRESSURE GAUGE	DWYER 2205	TOOL	29.90	
230!	29-11647 *	GAUGE ACCESSORY + CASE KIT (TWO REQUIRED)	A-432	TOOL	13.90	
240!	29-11650 *	0-40 INCH H2O DIFFERENTIAL PRESSURE GAUGE	DWYER 2040	TOOL	29.90	
245!						
250!	29-11691	1200 FOOT MASTER OUTPUT TAPE	A1200	TOOL	65.00	
260!	29-16280	CARTRIDGE INTERLOCK MICROSWITCH	506-6360	95	2.75	.02
270!	29-16871	MAGNA-SEE FLUX DEVELOPER	6SS-89101	TOOL	2.71	
280!	29-19224	1200 FOOT MASTER SKEW TAPE	FC1200	TOOL	159.60	
290!	29-20273	50-X MICROSCOPE WITH CALIBRATED GRATICLE	60465	TOOL	13.26	
300!	29-22284	EXPANSION RING (REEL HUB)	102275-01		1.72	
310!	29-22390 *	UNIVERSAL 1 KIT CASE (19 HEX SIZE)	UNIVERSAL 1	CASE	55.36	
320!	29-22433 *	FRICTION RING (REEL HUB)	102277-01		1.76	1.20
330!	29-22776	REEL HUB ASSY.	102261-03		53.07	
340!	29-23083 *	UNIVERSAL 3 KIT CASE (SPARES)	UNIVERSAL 3	CASE	66.03	
345!						
350!	29-23206 *	REEL MOTOR CENTERING TOOL	107267-01	TOOL	32.00	
360!	29-23207 *	REEL FLANGE LOCATING BAR	108454-01	TOOL	5.73	
370!	29-23208	HUB, MACHINED	107036-02	98	14.18	.02
380!	29-23209	FRONT FLANGE (REEL)	107034-02	98	4.72	.01
390!	29-23210	REEL FLANGE	107034-01		4.72	
395!						
400!	29-23211	INTERCONNECT D1 (MOTHERBOARD/BACKPLANE ASSY.)	107298-01	98	139.00	.18
410!	29-23212	COVER, VACUUM REEL ASSY.	107033-01		1.84	
420!	29-23213 *	INTERCONNECT F1 (EOT/BOT + PARK ZONE ADJUST ASSY)	106936-01	50	82.00	5.28
430!	29-23214 *	CONTROLS ASSY. (OPERATOR PANEL)	107257-01	95	86.00	.32
440!	29-23215	BUFFER BOX DOOR ASSY.	107021-01	98	86.00	.01
445!						
450!	29-23216	REEL SENSE ASSY	107236-01	98	9.90	.03
460!	29-23217	PACK SENSE ASSY.	107239-01	98	16.00	.03
470!	29-23218 *	PCBA EXTENDER BOARD	107206-01	TOOL	126.00	
480!	29-23219	SPRING, COMPRESSION	100116-01		.08	
490!	29-23220 *	INTAKE AUTOMUFFLER (6 MONTH AVERAGE LIFE)	614-0009	P.M.	8.00	16.67
495!						
500!	29-23221	SOLENOID (USED IN VACUUM AND AIR TRANSFER VALVES)	517-0004		14.00	
510!	29-23222	SPRING, BELLEVILLE (WASHERS ON CAPSTAN ADJUST)	616-0011		.08	
520!	29-23223	WASHER	616-1021		.28	
530!	29-23224	LOWER RESTRAINT (CARTRIDGE)	108485-01/107145-01	98	13.00	.01
540!	29-23225	UPPER RESTRAINT (CARTRIDGE)	108483-01/107143-01	98	13.00	.01
545!						



<b>digital</b>	<b>FIELD SERVICE TECHNICAL MANUAL</b>				Option or Designator
	12 Bit <input type="checkbox"/>	16 Bit <input checked="" type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	TU77
Title <b>Cartridge Opener Motor Replacement</b>				Tech Tip Number <b>TU77-TT-1</b>	
Author <b>Lou Snider</b>		F.S. Office <b>Maynard</b>	Date <b>Mar 79</b>	Revision <b>0</b>	
Processor Applicability		Mgr./Sup <b>Dick Browning</b>		Date	
All <b>XX</b>				Cross Reference	
Approval: <i>[Signature]</i> Date <i>[Date]</i>					

When replacing the tape cartridge opening motor, please note the procedure outlined in Technical Manual Vol II Paragraph 6.7.9. This procedure states that one must replace the RFI Filter (DEC P/N 29-23279) when replacing this motor. This is due to the fact that when the unit is assembled, a pin which protrudes from the filter body is crushed onto the motor housing (making an electrical ground) and becomes deformed. If an attempt is made to use the old filter, with the deformed pin, a good ground may not be achieved. The result will be erroneous load faults.



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Page <b>1</b>	Page Revision <b>0</b>	Publication Date <b>JUN 1979</b>
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# INTERCONNECT D

Title Interconnect "D" (Backplane) Replacement			Tip Number TU77-TT-2	
Author Lou Shider	F.S. Office Maynard	Date March, 79	Revision 0	
Processor Applicability		Mgr./Sup. Dick Browning	Date	Cross Reference
All XX		Approval: <i>[Signature]</i> Date 24 March, 79		

Early TU77 transports shipped with the Interconnect "D" backplane. This backplane includes a cable which is soldered to the etch and runs up to the interconnect F/F1 PCBA on the base assembly (see Fig. 1). Later models (approximate serial #5250 and up) use the Interconnect "D1" backplane which has a detachable cable (See Fig. 2). Logistics will not stock the Interconnect "D" assembly but rather will stock the Interconnect "D1" (29-23211) and the cable (29-23321) separately.

Consequently, if an Interconnect "D" backplane/cable assembly should fail in the field, it must be replaced with the newer style "D1" and the cable assembly must be ordered as a separate line item.

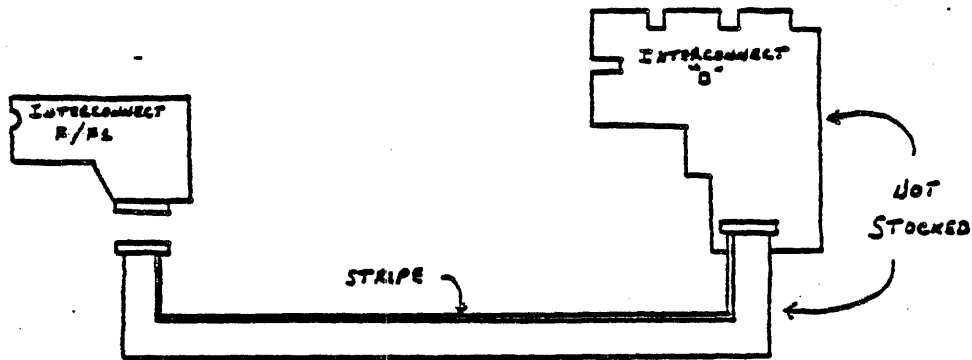


FIG.1 (Old style)

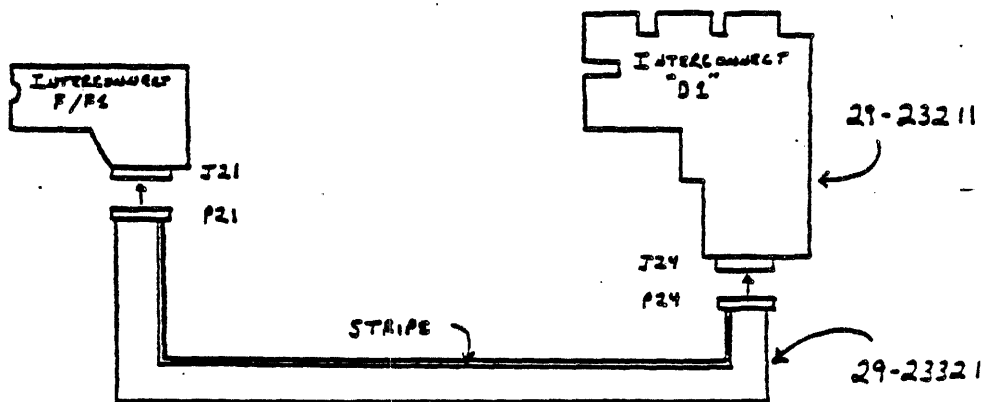


FIG.2 (New style)

Title Interconnect "F" PCBA Replacement			Tech Tip Number TU77-TT-3	
Author Lou Snider	F.S. Office Maynard	Date March 79	Revision A	
Processor Applicability		Mgr./Sup. Dick Browning	Date	Cross Reference
All	Approval:	Date		
XX				

Early TU77 transports shipped with the Interconnect "F" style PCBA mounted on the base assembly. This style can be recognized as having a separate smaller etched board mounted on standoffs with two potentiometers. Later models use the Interconnect "F1" PCBA which is a single board assembly and is a direct replacement for the "F". Logistics will stock the Interconnect "F1" PCBA only and is available under stock number 29-23213. Detailed adjustment procedures for both variations are found in TU77 Technical Manual Volume II.

Title TU77 SUPPLY REEL HUB P/N AND PROCEDURE CHANGE			Tech Tip Number TU77-TT-4	
Author H.T. ZIBAILO	F.S. Office MAYNARD	Date	Revision 0	
Processor Applicability		Mgr./Sup. <i>D. Browning</i>	Date <i>3/1/79</i>	Cross Reference
All	Approval:	Date		

THE TU77 SUPPLY REEL HUB (FORMERLY P/N 29-22776) IS NOW P/N 29-23475. THIS IS AN IMPROVED VERSION AND HAS BEEN INCORPORATED IN ALL PRODUCTION DRIVES SHIPPED TO THE FIELD SINCE 9/1/79. IF A HUB MUST BE REPLACED, PLEASE ORDER THE NEW PART NUMBER.

THIS NEW HUB ASSEMBLY REQUIRES CHANGES TO THE MAINTENANCE PROCEDURE AS FOLLOWS:

1. AN ADDENDUM WILL BE ISSUED TO THE MAINTENANCE MANUAL DESCRIBING THE NEW REPLACEMENT PROCEDURE. THE ONLY DIFFERENCE IS THAT REEL SLIPPAGE WILL BE CHECKED BY CLEANING THE RUBBER FRICTION RING, MARKING THE HUB AND REEL AND THEN RUNNING BASIC FUNCTION DIAGNOSTIC CZTEC FOR 15 MINS. THE HUB IS NOT ADJUSTABLE IN THE FIELD AND IF ANY SLIPPAGE OCCURS, IT MUST BE REPLACED.
2. SUPPLY HUB FRICTION RING REPLACEMENT HAS BEEN DELETED IN ITS ENTIRETY. HUB IS NOT REPAIRABLE OR ADJUSTABLE IN THE FIELD DUE TO CEMENTS AND EPOXIES USED IN ASSEMBLY.
3. HUB REPAIR PARTS WILL BE DELETED FROM THE CD KIT AND A COMPLETE HUB WILL BE STOCKED IN THEIR PLACE.
4. FRICTION RING REPLACEMENT WILL BE DELETED FROM THE PM PROCEDURE.

3

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Title TU77 READ SKEW ADJUSTMENT		Tech Tip Number TU77-TT-5	
Author <i>H.T. Yitilo</i>	F.S. Office PK 3-2	Date 12.12.79	Revision 0
Processor Applicability		Mgr./Sup. <i>L. Brown</i>	Date <i>28 Nov 79</i>
All XX		Approval:	Date
			Cross Reference

THE HEAD AZIMUTH ADJUSTMENT PROCEDURE GIVEN IN THE TU77 M.M. EK-2TU77-TM-001 SECTION 6.5.8.3, IS BASICALLY CORRECT. HOWEVER, THERE HAVE BEEN SOME CHANGES IN THE MOUNTING HARDWARE SINCE IT WAS WRITTEN AND CLARIFICATION IS IN ORDER.

REFER TO FIGURE 1. THE ADJUSTING SCREW NOW PROTRUDES THROUGH THE REAR OF THE HEAD MOUNTING PLATE AND THE HEAD AZIMUTH NUT. THE SCREW IS SECURED IN THE AZIMUTH NUT WITH LOCTITE.

BEFORE THE ADJUSTING SCREW CAN BE TURNED FROM THE FRONT OF THE DRIVE, AS PER THE ADJUSTMENT PROCEDURE, THE LOCTITE SHOULD BE BROKEN BY INSERTING A STRAIGHT BLADE SCREWDRIVER INTO THE REAR OF THE ADJUSTING SCREW AND TWISTING. THE AZIMUTH MAY NOW BE ADJUSTED FROM EITHER THE FRONT OR REAR OF THE DRIVE AND WILL HOLD THE ADJUSTMENT WITHOUT ADDING ANY MORE LOCTITE.

THE ADJUSTMENT IS HELD BY THE PRESSURE OF THE BELLEVILLE SPRINGS IN THE HEAD MOUNTING PLATE.

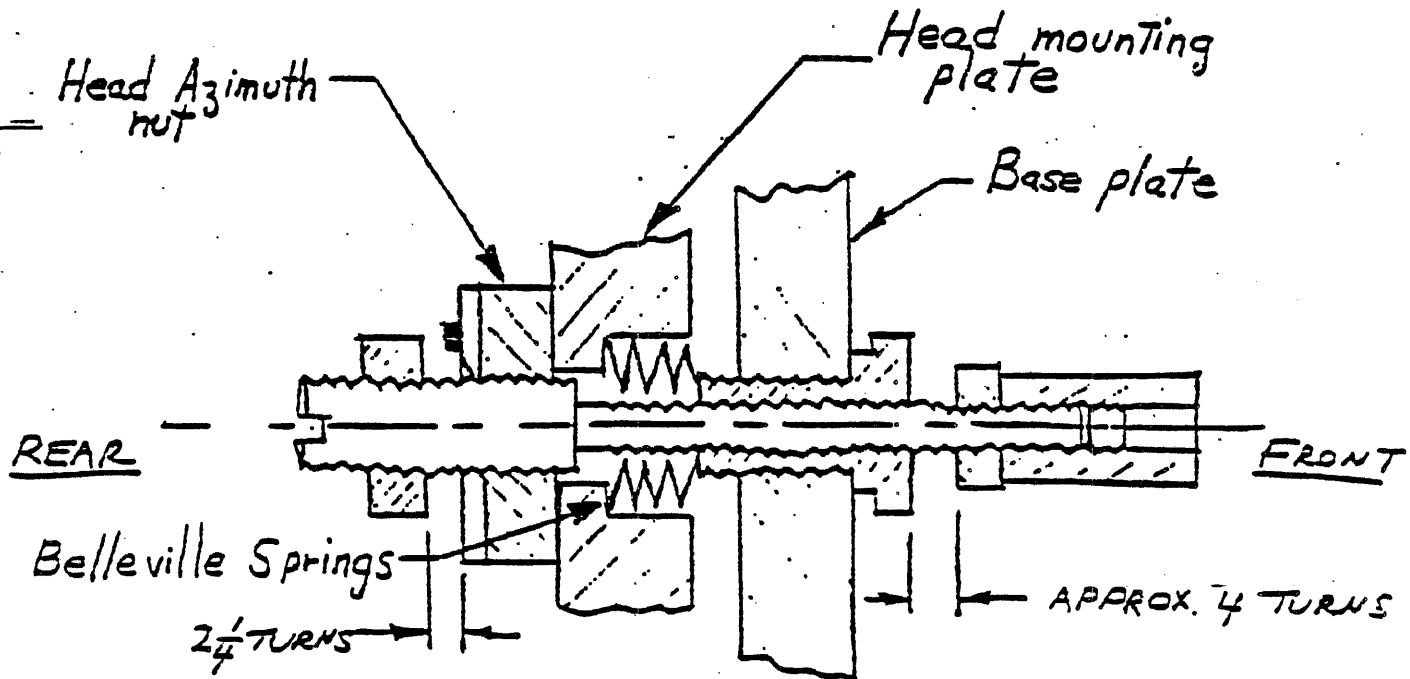


FIG. I



# FIELD SERVICE TECHNICAL MANUAL

Option or Designator

TU77

12 Bit 16 Bit 18 Bit 36 Bit 

## NRZI Threshold Adjustment

Tech Tip  
Number TU77-TT-6

Author H.T. Zibailo

F.S. Office MAYNARD

Date JAN/2/80

Revision 0

Processor Applicability

Mgr./Sup. *H. B. Browning*

Date 2 Jan 80

Cross Reference

All X

Approval:

Date

The Low NRZI read threshold value given in the TU77 Maintenance Procedures, "6.5.8.1 NRZI Threshold Adjustment", is incorrect and must be changed to 900MV + 120 MV. Table 6-15, "Data L Read Thresholds", is also incorrect. Change NRZI low read thresholds to read 900 MV + 120 MV.

If NRZI low threshold is set at 600MV it will affect the normal threshold level causing it to be well below tolerance. The drive will then experience intermittent read problems which may result in unusual system failure symptoms.

Due to the above problem the NRZI threshold adjustment procedure has been re-written so that all the threshold parameters will be verified.

The maintenance manual will be corrected in a future printing. The following is the revised adjustment procedure.

All tables and figures referenced in this procedure are contained in the TU77 maintenance manual, EK-2TU77-TM.

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Page 5

Page Revision 0

Publication Date JAN/7/80

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EN-1189C-12-R277-(79Y)

Title NRZI THRESHOLD ADJUSTMENT				Tech Tip TU77-TT-6 Number	
Author H.T. ZIBATU		F.S. Office MAYNARD		Date JAN/2/80	
Processor Applicability		Mgr./Sup. R.A. BROWNING		Revision 0	
All X		Approval:		Date	
				Cross Reference	

### 6.5.8.1 NRZI Threshold Adjustment:

1. Connect positive lead of a DVM to Data L TP69 (NRZP) and the negative lead to TP49 (GND) (Figure 6-6).
2. Mount and load a work tape to BOT. Leave all the MTA switches in normal position (left), drive offline.
3. Voltage displayed on DVM should be  $+1.2V \pm 120 MV$ .
4. If the voltage is out of tolerance, adjust Data L Potentiometer R11 for a reading of  $+1.2V$ .
5. Configure the MTA maintenance switches as follows:
  - S3 Left NRZI
  - S4 Right Test
  - S6 Right Stop
  - S7 Right Read - place drive online.
 Refer to Figure 6-18 for switch locations.
6. Signal IRZH2 should now be true and low NRZI threshold voltage should be displayed.  
Check DVM for reading of  $+900MV \pm 120MV$ .
7. Configure the MTA maintenance switches as follows:
  - S3 Left NRZI
  - S4 Right Test
  - S6 Left Run
  - S7 Left Write - place drive online.
8. Write threshold is now displayed on the DVM. Check DVM for reading of  $+2.7V \pm 120 MV$ .

NOTE:

All threshold values are interdependent. If any one of the three is out of tolerance and potentiometer R11 can not bring it in, the Data L PCBA should probably be replaced. Table 6-15 lists all the Data L Read Thresholds.





12 Bit

16 Bit

18 Bit

36 Bit

A.C. BLOWER/COMPRESSOR DRIVE MOTER REPLACEMENT

Tech Tip  
Number TU77-TT-7

Author	H.T. ZIBAILO	F.S. Office	MAYNARD	Date	Revision	0
	Processor Applicability	Mgr./Sup.	BROWNING	Date	Cross Reference	
All		Approval:		Date		
XX						

REPLACEMENT A.C. BLOWER/COMPRESSOR DRIVE MOTORS (P/N 29-23254) MAY BE WIRED BACKWARDS INTERNALLY. BEFORE INSTALLING THE REPLACEMENT MOTOR, CHECK THE WIRING UNDER THE MOTOR POWER CORD COVER PLATE. IT SHOULD BE WIRED TO ROTATE CLOCKWISE.

CHECK THE WIRING AGAINST THE DIAGRAM ON THE COVER PLATE OR COMPARE TO THE MOTOR WHICH WAS REMOVED.

AFTER WIRING UP THE POWER CORD, ASSURE THAT THE MOTOR ROTATES CLOCKWISE WHEN LOOKING AT THE PULLEY END.

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Page	7	Page Revision	0	Publication Date	JAN/15/80
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TU77/VAX DATA CORRECTABLE ERRORS

Number TU77-8

Author FRED BOUTIN	F.S. Office MAYNARD	Date 2/22/80	Revision 0
Processor Applicability	Mgr./Sup.	Date	Cross Reference
All IV   A   X	Approval	Date	

IF VAX/TU77 SYSTEMS ARE EXPERIENCING A HIGH SOFT ERROR RATE AND UNUSUAL CONSOLE MESSAGES SUCH AS "CORRECTABLE SKEW ERRORS," THE PROBLEM MAY BE DUE TO A LACK OF AN RH780 ECO WHICH BECAME AVAILABLE IN JANUARY 1980.

THIS ECO IS TO CORRECT EXTRANEIOUS DATA TRANSFERS WHICH OCCUR WHEN READING TAPES WITH CORRECTABLE ERRORS. THIS CONDITION OVERWRITES AREAS OF MEMORY WHICH ARE NOT ASSIGNED AS PART OF THE I/O BUFFER.

TO CHECK FOR PRESENCE OF THE ECO, LOOK FOR A WIRE ON RH780 BACKPLANE ASSY. 70-13627, FROM E02-J1 TO E03-C1.

IF WIRE IS NOT PRESENT, INSTALL THE FOLLOWING 3 ECO'S CONCURRENTLY.

- M8277-TW007
- M8276-TW004
- 70-13627-TW003

AN ECO IS FORTHCOMING TO DOCUMENT THIS TIP.

8

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Vaccum Leaks Around Buffer Box Door			Tech Tip Number TU-77-9	
Author H.T. Zibailo	F.S. Office Maynard	Date 17 MAR 80	Revision 0	
Processor Applicability		Mgr./Sup.	Date	
All <input checked="" type="checkbox"/>		Approval:	Date	
			Cross Reference	

Vacuum leaks can be detected by an audible increase in drive noise level when the tape goes into motion.

Vacuum leaks around the buffer box door can be caused by interference to the floating action of the buffer door glass. This interference is caused by the thin sheet of plexiglass behind the buffer glass not being centered. The plexiglass rides up and over the molded bosses which house the coil springs for the buffer glass and obstruct the floating action.

Since the plexiglass is located by seven small countersunk screws, it is impossible to center it by loosening the screws and repositioning. You must remove the piece and shave away a small crescent of plexiglass where it fits against the molded bosses so that it will fit between them.

The procedure for this is to remove the entire buffer box door assembly and lay it down on a level surface. Carefully remove the buffer glass and plexiglass without losing any screws or springs.

When mounting the door back on the drive, it is a good idea to latch the door shut before tightening the mounting screws. This will help attain an interference free fit.

Remain aware that there are a multitude of other reasons for leaks around buffer doors such as:

1. Missing coil springs (Pertec P/N 616-0024) around periphery of buffer glass.
2. Door assembly not mounted evenly.
3. Door assembly mounting screws loose.
4. Perforated tape stops at ends of columns protruding beyond buffer bars.
5. Lower air bearing ceramic guide mispositioned.

In any case, the buffer door should close freely and completely without interference before latching.

/rc

9

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1908-12-R277-(79Y)

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	12 Bit <input checked="" type="checkbox"/>	16 Bit <input checked="" type="checkbox"/>	18 Bit <input checked="" type="checkbox"/>	36 Bit <input checked="" type="checkbox"/>	TU77

Title <b>UNAUTHORIZED ECO ON CAPSTAN REGULATOR</b>			Tech Tip Number <b>TU77-TT # 11</b>	
Author <b>FRED BOUTIN</b>	F.S. Office <b>Maynard</b>	Date <b>6/27/80</b>	Revision <b>0</b>	
Processor Applicability		Mgr./Sup. <i>J. J. J.</i>	Date	Cross Reference
All <input checked="" type="checkbox"/>		Approval <i>J. J. J.</i>	Date <i>6/19/80</i>	

A PERTEC ECO WAS ADDED TO THE CAPSTAN REGULATOR BOARD (DEC PART 29-2330-00) (VENDOR # 104758-01) THAT CREATED AN "AA" REVISION TO THAT BOARD. A FEW OF THESE BOARDS REACHED INCOMING AND FA&T BEFORE PERTEC WAS NOTIFIED THAT DEC ENGINEERING HAD REJECTED THAT ECO AS NOT DESIRABLE IN OUR MACHINES. PERTEC AND DEC HAVE UNMODIFIED ALL BOARDS WE COULD LOCATE WHICH CREATES AN "AB" REV. IT IS UNLIKELY ANY OF THE "AA" BOARDS REACHED OUR FIELD, HOWEVER, THIS TECH TIP IS DESIGNED TO CIRCUMVENT "MURPHY'S LAW" AND SHOULD YOU FIND AN "AA" REV. BOARD IT SHOULD BE REPLACED AND RETURNED TO STOCKROOM 17 WHERE PERTEC HAS THE RESPONSIBILITY TO REVOKE THEIR ECO.

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Page <b>11</b>	Page Revision <b>0</b>	Publication Date <b>July 1980</b>
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<b>digital</b>	<b>FIELD SERVICE TECHNICAL MANUAL</b>				Option or Designator TU-77
	12 Bit <input type="checkbox"/>	16 Bit <input type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	*

Title INTERCONNECT F1 BOARD WITH GAIN ADJUST POTS (R30 & R31)		Tech Tip Number TU77-TT- 12
Author H.T. ZIBAILO	F.S. Office MAYNARD	Date 24 APR 80
Processor Applicability	Mgr./Sup. <i>R. B. Browning</i>	Date 27 May 80
All	Approval:	Cross Reference

IN ORDER TO REDUCE REEL SERVO CIRCUIT POWER CONSUMPTION AND HEAT DISSIPATION, TWO SERVO GAIN POTS HAVE BEEN ADDED TO THE INTERCONNECT F1 PCBA. THE ACCOMPANYING DIAGRAMS SHOW THE LOCATION OF THE POTS ON THE F1 PCBA AND IN THE CIRCUIT SCHEMATICS. FOLLOWING IS:

LOOP TRAVEL ADJUSTMENT PROCEDURE FOR INTERCONNECT F1 PCBA WITH GAIN ADJUST POTS R30 AND R31. *TAKE-UP*

1. SET POTS R30 AND R31 FULL CW (MAXIMUM GAIN) (FULL RANGE OF POT TAKES APX. 28 TURNS).
2. LOAD A 2400' REEL OF TAPE. ADJUST THE POSITION POTS (R1 SUPPLY, R9 TAKE-UP) TO BRING THE LOOPS INTO THE PARK ZONE.
3. ASSURE VACUUM AND PRESSURE ARE AT NOMINAL (28.0 IN. H2O AND 3.25 P.S.I.) REF. SECT. 6.5.6. TU-77 TECHNICAL MANUAL.
4. MOVE TAPE TO APX. 30' FROM B.O.T. GROUND T.P. 31 ON CONTROL 'M' PCBA TO INITIATE A FORWARD/REVERSE SHUTTLE.
5. ADJUST THE T/U POSITION POT (R9) TO OBTAIN SYMMETRICAL LOOP TRAVEL ABOUT THE CENTER OF THE COLUMN. THIS IS NOT CRITICAL AT THIS TIME BECAUSE THE FINAL ADJUSTMENT WILL OFFSET THE LOOPS IN THE COLUMNS.
6. REMOVE GROUND FROM T.P. 31 OF THE CONTROL M. NOTE PARK POSITION OF THE TAKEUP LOOP. YOU WILL NEED THIS IN STEP 8.

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Page 12	Page Revision 0	Publication Date June 80
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Title INTERCONNECT F1 BOARD WITH GAIN ADJUST POTS (R30 & R31)			Tech Tip Number TU77-TT-12	
Author H.T. ZIBAILO		F.S. Office MAYNARD	Date 24 APR 80	Revision 0
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval L.E. Griswold	Date 24 APR 80	

7. INITIAL SETTING OF TAKEUP GAIN ADJUST POT.

NOTE THE VALUE OF THE GAIN ADJUST POTS, R30 AND R31. IT IS MARKED ON THE BOTTOM OF THE POT AND SHOULD BE 50K. IF IT IS LARGER THAN 50K, DON'T WORRY.

ADJUST TAKEUP GAIN POT R31 APX. 10 TURNS CCW. (IF THE VALUE OF THE POT SHOULD HAPPEN TO BE 200K, ADJUST 2 TURNS CCW.)

8. READJUST LOOP PARK POSITION NOTED IN STEP 6.

9. GROUND TP31 ON THE CONTROL M TO OBTAIN A FORWARD/REVERSE SHUTTLE.

NOTE: IF TAPE LOOP BREAKS INTERLOCK, ADJUST THE POSITION POT R9 TO KEEP LOOP TRAVEL WITHIN THE INTERLOCKS OR INCREASE THE SERVO GAIN BY TURNING R31 CW.

10. FINE TUNE THE TAKEUP LOOP TRAVEL TO OBTAIN A MAXIMUM LOOP TRAVEL OF 9½ INCHES.

REFER TO FIG. 3. NOTE: SINCE THE GAIN AND POSITION POTS INTERACT IT WILL BE NECESSARY TO ALTERNATE POSITION AND GAIN ADJUSTMENTS.

WHEN COMPLETE, RECHECK THE SYSTEM VACUUM TO ENSURE IT IS STILL AT NOMINAL. IF IT IS NECESSARY TO READJUST VACUUM, RECHECK THE LOOP TRAVEL ADJUSTMENT.

11. REMOVE THE GROUND FROM TP31 OF CONTROL M.

12. MOVE THE TAPE TO APX. 30' FROM EOT AND REPEAT STEPS 4-11 FOR THE SUPPLY LOOP.

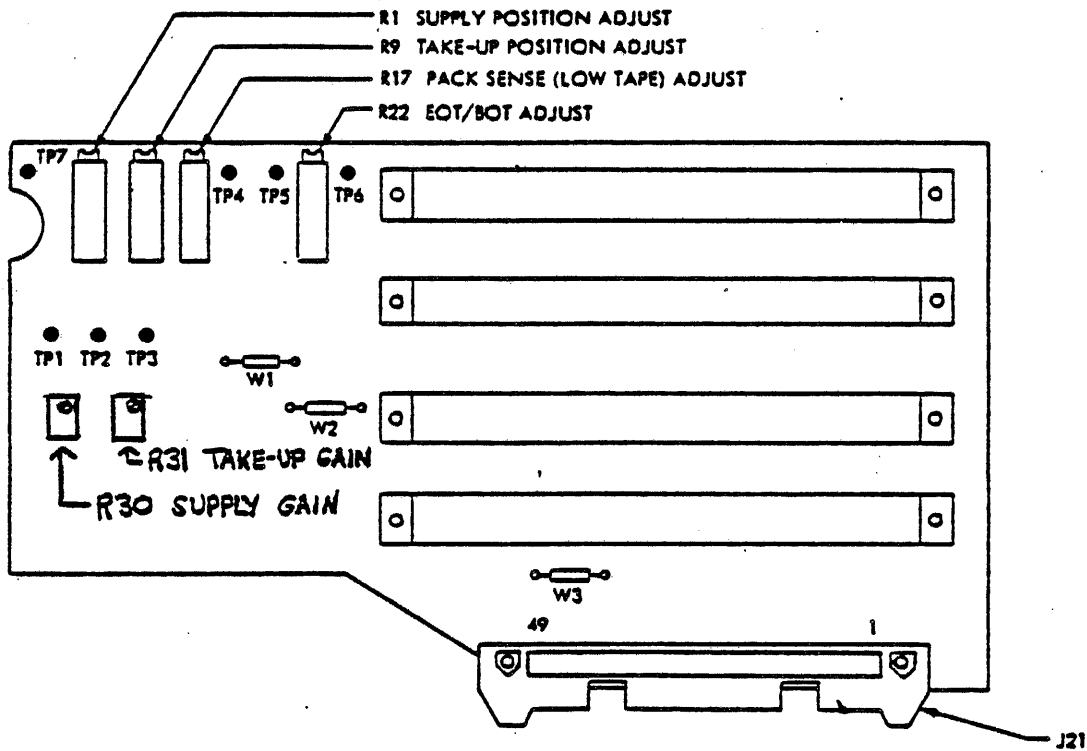
ADJUST TO OBTAIN A MAXIMUM LOOP TRAVEL OF 10 INCHES. REFER TO FIG. 3. THE POSITION POT TO BE USED IS NOW R1 (SUPPLY) AND THE GAIN POT IS NOW R30 (SUPPLY)

13. WHEN COMPLETED, MOVE TAPE TO EOT AND REWIND TO BOT. TAPE MUST NOT BREAK INTERLOCK. DO THIS AT LEAST TWICE. IF INTERLOCK IS BROKEN, READJUST THE POSITION AND GAIN POTS UNTIL AN OPTIMUM ADJUSTMENT IS OBTAINED.

Page 3

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Title INTERCONNECT F1 BOARD WITH GAIN ADJUST POTS (R30 & R31)		Tech Tip Number TU77-TT-12	
Author H.T. ZIBAILO	F.S. Office MAYNARD	Date 24 APR 80	Revision 0
Processor Applicability		Mgr./Sup. <i>R. L. Browning</i>	Date 27 May 80
All	Approval:	Date	Cross Reference



b. Interconnect F1 PCBA

Figure 1 Interconnect F1 PCBA Adjustments and Test Points

Title INTERCONNECT F1 BOARD WITH GAIN ADJUST POTS (R30 & R31)		Tech Tip Number TU77-TT-. 12	
Author H.T. ZIBAILO	F.S. Office WAYNARD	Date 24 APR 80	Revision 0
Processor Applicability	Mgr./Sup. <i>Rh Browning</i>	Date 27 May 80	Cross Reference
All	Approval:	Date	

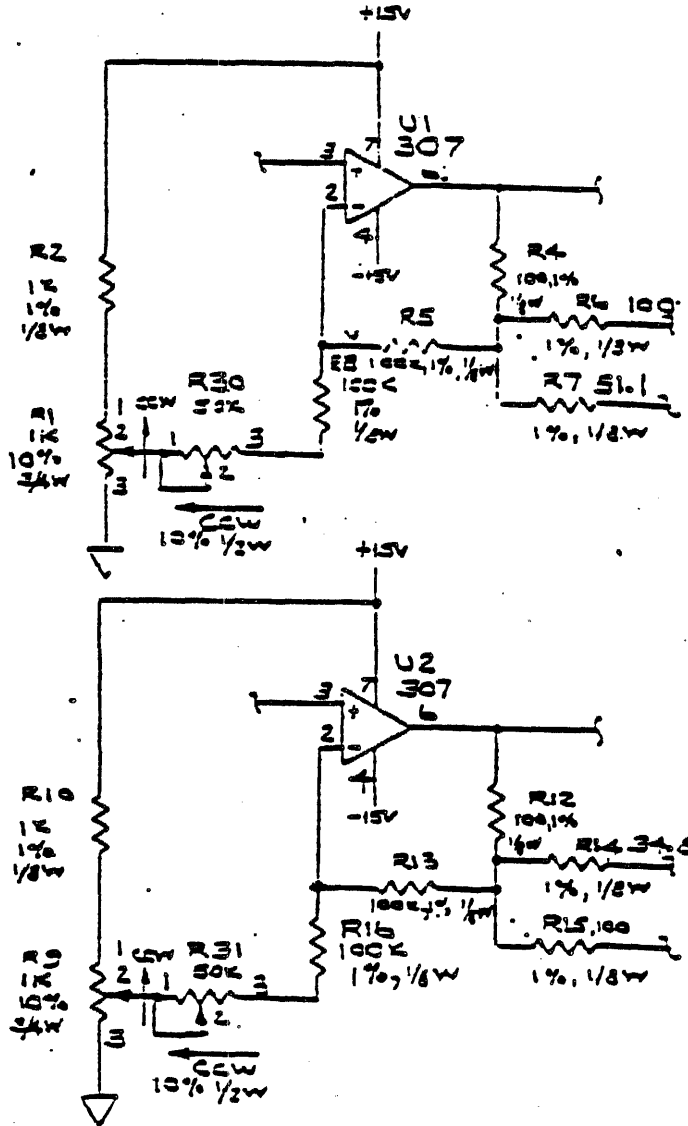
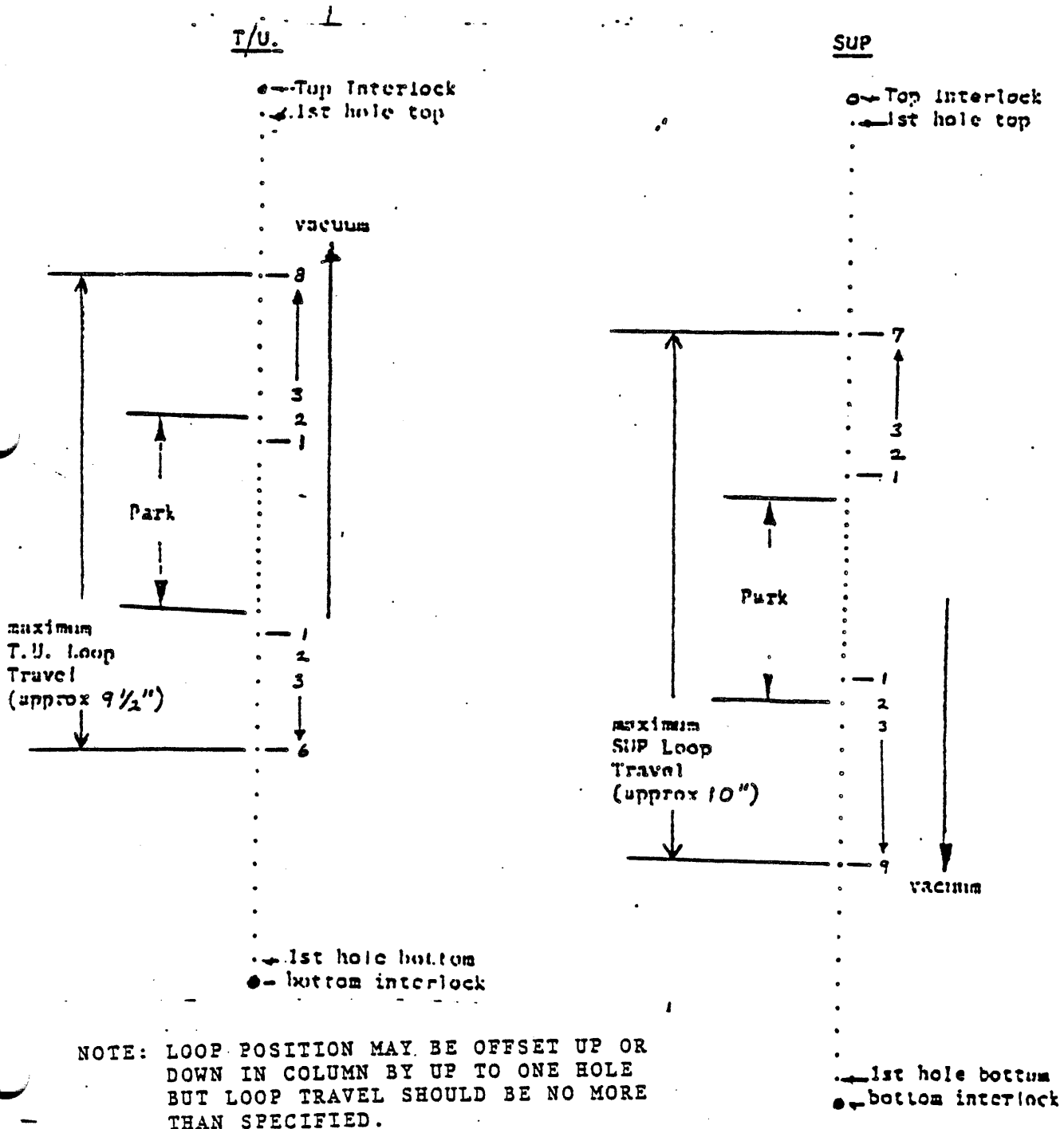


FIGURE 2.



Title INTERCONNECT FI BOARD WITH GAIN ADJUST POTS (R30 & R31)		Tech Tip Number TU77-TT-12	
Author H. T. ZIBAILO	F.S. Office WYBARN	Date 24 APR 80	Revision 0
Processor Applicability:	Mgr./Sup. <i>R. A. Browning</i>	Date 27 May 80	Cross Reference
All	Approval:	Date	

FIGURE 3  
LOOP TRAVEL LIMITS



<b>digital</b>	<b>FIELD SERVICE TECHNICAL MANUAL</b>				Option or Designator TU-77
	12 Bit <input type="checkbox"/>	16 Bit <input type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	

Title TAKEUP REEL VACUUM LOSS - MISSING ACCESS PLUG			Tech Tip Number TU77-TT-13		
Author H. T. ZIBALLO	F.S. Office MAYNARD	Date	Revision 0		
Processor Applicability		Mgr./Sup. <i>R. B. Browning</i>	Date 27 May 80	Cross Reference	
All x		Approval:	Date		

IF TAPE LOADING PROBLEMS ARE ENCOUNTERED DUE TO LOSS OF VACUUM ON THE TAKEUP REEL, THE PROBLEM MAY BE DUE TO A MISSING ACCESS PLUG IN THE LOWER PART OF THE BASE CASTING JUST BELOW THE TAKEUP REEL MOTOR. THIS IS THE PLUG WHICH MUST BE REMOVED IN ORDER TO ACCESS THE TAKEUP REEL HUB CLAMPING SCREWS (REF. EK-2TU77-TM 6.7.8.). IF THE PLUG IS MISSING A LARGE VAC U M LEAK OCCURS AT THIS POINT:

SINCE THE POSSIBILITY EXISTS THAT THE PLUG MAY HAVE FALLEN OUT DURING SHIPMENT, SEARCH THE BASE OF THE TU-77 TO TRY TO FIND IT. IF IT CAN NOT BE FOUND, THE LEAK MAY BE TEMPORARILY FIXED BY TAPING SOMETHING OVER THE HOLE.

NO DEC 29 CLASS PART NO. EXISTS FOR THE ACCESS PLUG BUT IT CAN BE ORDERED BY ITS PERTEC PART NO. 107136-01. A 29 CLASS PART NO. WILL BE ASSIGNED.

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Page 17	Page Revision 0	Publication Date June 80
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	12 Bit <input type="checkbox"/>	16 Bit <input type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	

Title <b>LOOSE TERMINAL SCREWS ON INTERCONNECT F1 PCB</b>			Tech Tip Number <b>TU77-TT-14</b>	
Author <b>H.T. ZIBAILO</b>		F.S. Office <b>MAYNARD</b>	Date	Revision <b>0</b>
Processor Applicability		Mgr./Sup. <i>RA Browning</i>	Date <i>27 May 80</i>	Cross Reference
All X		Approval:	Date	

LOOSE TERMINAL SCREWS ON THE INTERCONNECT F AND F1 PCB CAN BE THE CAUSE OF VARIOUS INTERMITTENT MALADIES INCLUDING TAPE DAMAGE. IN THE INTEREST OF RELIABILITY, IT IS SUGGESTED THAT THESE SCREWS BE CHECKED FOR TIGHTNESS EITHER DURING SCHEDULED MAINTENANCE OR DURING A SERVICE CALL.

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Title <b>CARD CAGE BRACKET</b>			Tech Tip Number <b>TU77-TT-15</b>	
Author <b>BOB STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>9-4-80</b>	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval: <i>[Signature]</i>	Date <i>9/3/80</i>	

IT HAS BEEN FOUND THAT PRINTED CIRCUIT BOARDS CAN VIBRATE OUT OF THE CONNECTORS. NEW PRODUCTION UNITS WILL HAVE A SECOND SUPPORT BRACKET ON THE CARD CAGE, PN. 70-17553-00. IF YOU HAVE THIS PROBLEM, ORDER THE ADDITIONAL BRACKET.

ON NEW PRODUCTION UNITS, THIS ADDITIONAL BRACKET IS A PERMANENT PART OF THE DRIVE AND IS NOT TO BE CONSIDERED A SHIPPING BRACKET.

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Page 19	Page Revision 0	Publication Date September 1980
---------	-----------------	---------------------------------

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Title: DOOR LATCH - PART OF DOOR, FRONT PART #1214405			Tech Tip Number TU77-TT-16	
Author BOB STEERE	F.S. Office MAYNARD	Date 9-4-80	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval: <i>[Signature]</i>	Date 7/3/80	

THE DOOR LATCH ASSEMBLY HAS BEEN INCREASED IN STRENGTH. THE NEW PART NUMBER IS 90-07190. PLEASE MARK YOUR IPB'S ACCORDINGLY.

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Page 20	Page Revision 0	Publication Date September 1980
---------	-----------------	---------------------------------

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Title <b>TU77 VOLUME 1 AVAILABILITY</b>			Tech Tip Number <b>TU77-TT- 17</b>		
Author <b>BOB STEERE</b>		F.S. Office <b>MAYNARD</b>		Date <b>9-8-80</b>	Revision
Processor Applicability		Mgr./Sup.		Date	Cross Reference
All		Approval: <i>[Signature]</i>		Date <b>9/16</b>	

TU77 VOLUME 1 - PRINTSET - IS AVAILABLE AT NORTEBORO DISTRIBUTION. ORDER EX-1TU77-001.



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Page <b>21</b>	Page Revision <b>0</b>	Publication Date <b>Sept 1980</b>
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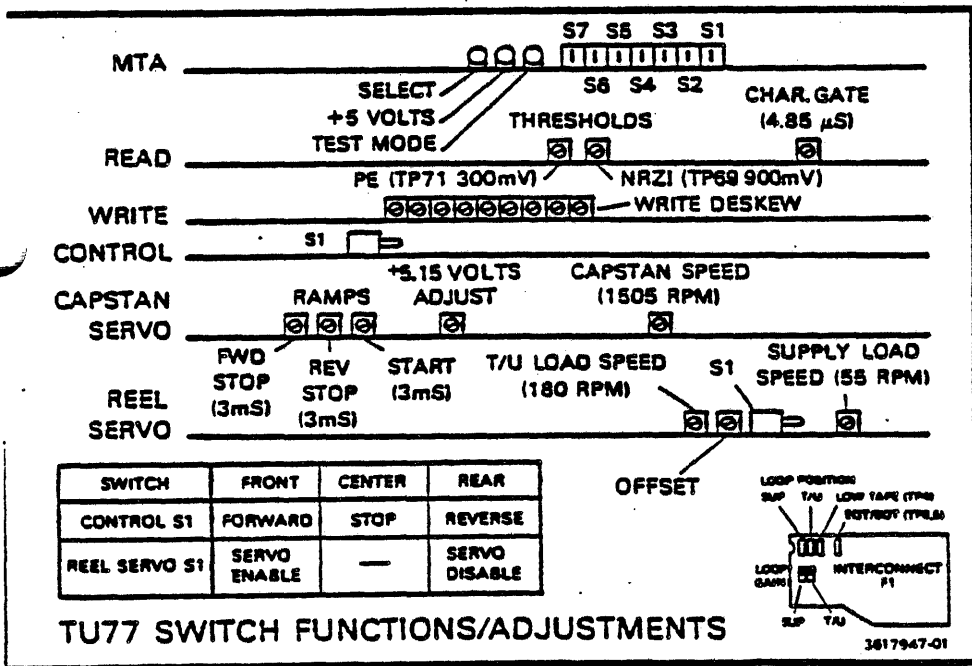
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Title <b>TU77 SWITCH FUNCTION/ADJUSTMENT DECAL</b>			Tech Tip Number <b>TU77-TT-18</b>		
Author <b>BOB STEERE</b>		F.S. Office <b>MAYNARD</b>		Date <b>10-6-80</b>	
Revision		Mgr./Sup.		Date	
Processor Applicability		Approval: <i>L. E. Truitt</i>		Cross Reference	
All		Date <b>10/23/80</b>			

THIS DECAL IS BEING PHASED INTO PRODUCTION DRIVES. ORDER THROUGH SR17. PART NUMBER IS 36-17947-01. IT SHOULD BE PLACED JUST ABOVE THE RIBBON CABLE CLAMPS ON THE LEFT WALL OF THE CARD CAGE.



**MTA SWITCH FUNCTIONS**

SWITCH	LEFT	RIGHT
S1	1600 FCI	3200 FCI
S2	START/STOP	CONTINUOUS
S3	NRZI	PE
S4	NORMAL	TEST MODE
S5	FORWARD	REVERSE
S6	RUN	STOP
S7	WRITE	READ

SKREW PACKET READ TP53

Extender Support

Cable

Clamp

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Page 22	Page Revision 0	Publication Date October 1980
---------	-----------------	-------------------------------

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Title TU77 - HANGS AND SYSTEM FATAL ERRORS			Tech Tip Number TU77-TT-19	
Author Larry Burke/Bob Steere	F.S. Office Maynard	Date 10-2-80	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All	10   20	Approval:	Date	

Putting a TU77 in maintenance mode while it is on line will bring a DECSYSTEM 10 or 20 down with a KEEP ALIVE CEASED.

To do any maintenance procedure using the M8940 switches in the tape unit, the reset button must be pressed first to put the unit off line. The unit can then be switched to maintenance mode (switch on M8940). After it is in maintenance mode the on line push button may be pressed, and any maintenance procedure may be followed.

If a unit is switched to maintenance mode while it is on line, it will generate an interrupt that can not be cleared by the system.

This procedure should also be observed on VAX and 11 systems.



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Page 23	Page Revision 0	Publication Date October 1980
---------	-----------------	-------------------------------

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Title <b>NEW CONTROL M2 AND CONTROL PANEL</b>				Tech Tip Number <b>TU77-TT-26</b>	
Author <b>B. Steere</b>		F.S. Office <b>Maynard</b>		Date <b>11/3/80</b>	Revision
Processor Applicability		Mgr./Sup.		Date	
All					Cross Reference
		Approval:		Date	

TU77's ABOVE SN6420 HAVE INCORPORATED A MOTION INTERLOCK. THE TAPE MOTION WILL NOT START OR WILL CEASE WHEN THE FRONT DOOR IS OPENED.

THE ADDITIONAL CIRCUITRY IS INCORPORATED IN A NEW CONTROL M MODULE, DESIGNATED CONTROL M2, DEC PN 29-23774. THIS IS A DIRECT REPLACEMENT FOR THE PRESENT CONTROL M MODULE, BUT CONTROL M, PN 29-23229 SHOULD NOT BE USED TO REPLACE CONTROL M2, 29-23774.

THE CONTROL PANEL HAS BEEN CHANGED AND INCORPORATES THE INTERLOCK SWITCH ASSY. ON IT. THE NEW PART NUMBER FOR THE CONTROLS ASSY. IS 29-23779. THIS NEW CONTROL ASSY. CAN BE USED TO REPLACE THE OLDER VERSION, 29-23214, BUT THE OLDER ASSY. 29-23214 SHOULD NOT BE USED TO REPLACE THE NEW VERSION 29-23779.

SPARES OF THE NEW PARTS ARE BEING PHASED INTO LOGISTICS AND WILL BE SUPPLIED AS REPLACEMENT PARTS IMMEDIATELY.

THIS INFORMATION HAD PREVIOUSLY BEEN RELEASED VIA TWX TO ALL SERVICES OFFICES.

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Page <b>24</b>	Page Revision <b>0</b>	Publication Date <b>November 1980</b>
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Title <b>CONTROL M2-RESISTOR PACKS MISSING</b>			Tech Tip Number	<b>TU77-TT-24</b>
Author <b>BOB STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>10/29/80</b>	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval:	Date	

NEW CONTROL M2 BOARDS, DEC PN 29-23774, PERTEC PN 106876-02 SHOULD CONTAIN RESISTOR PACKS IN SOCKETS U171 & U181. USE PACKS FROM OLD BOARD IF NECESSARY. PACKS ARE BURNS # 14R-3-221-331.

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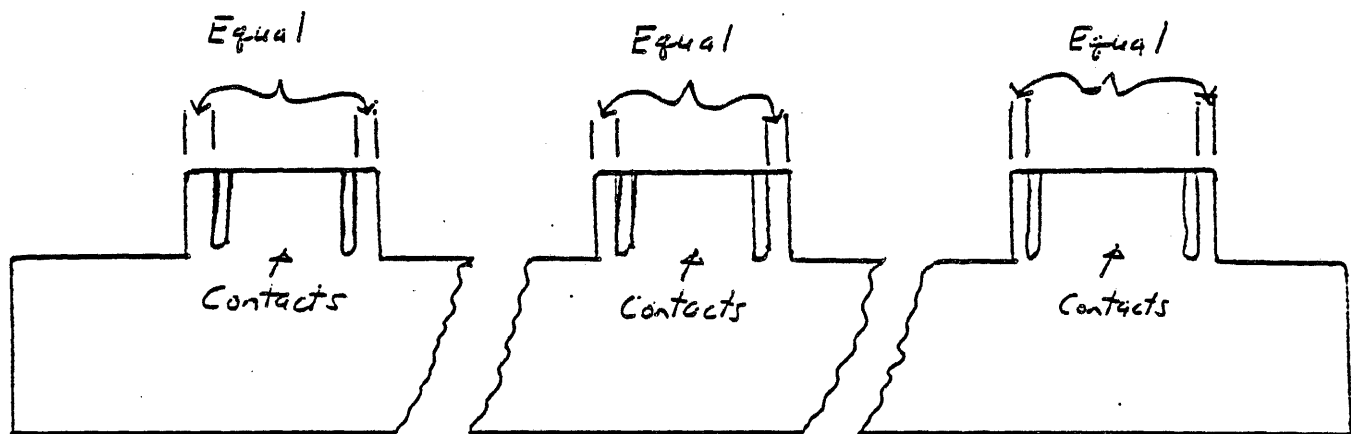
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Title TU77 - M8940 BOARD SEATING			Tech Tip Number TU77-TT- <sup>22</sup> 22	
Author BOB STEERE	F.S. Office MAYNARD	Date 10-6-80	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval:	Date	

A MANUFACTURING DEFECT WAS DETECTED ON THE M8940 MODULE IN THE PIN AREAS. THIS MISCUTTING OF THE BARE MODULE CAN CAUSE THE MODULE TO BE SLIPPED TO THE SIDE. IF YOU ARE HAVING SEATING PROBLEMS, A TEMP. FIX IS TO FILE OFF SOME OF THE MODULE AS SHOWN IN THIS SKETCH. THE AMOUNT OF MODULE MATERIAL ON THE SIDE OF EACH PIN AREA GROUPING SHOULD BE EQUAL. IF NOT, A SLIGHT AMOUNT OF MATERIAL CAN BE FILED OFF. THE BOARD SHOULD THEN BE CAREFULLY CENTERED AND SEATED. THE ADDITIONAL CLAMP AS CALLED OUT IN TU77-TT-18, PN 70-17553, SHOULD BE ADDED AS ADDITIONAL CLAMPING. THIS HAS BEEN CORRECTED IN MANUFACTURING.



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Page 26	Page Revision 0	Publication Date November 1980
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TU77

Title <b>TU77 - CARTRIDGE PRESSURE ADJUSTMENT</b>		Tech Tip Number <b>TU77-TT-23</b> <sup>23</sup>	
Author <b>B. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>10/31/80</b>	Revision
Processor Applicability		Mgr./Sup.	Cross Reference
All		Date	
		Approval: ..	Date

ADJUSTMENT OF THE CARTRIDGE PRESSURE MAY BE DIFFICULT USING THE RECOMMENDED 0-40" WATER GAUGE. THE 2 1/2" SETTING FALLS VERY LOW ON THE SCALE. USE OF A 0-5" WATER GAUGE, PN 29-21290 WOULD GIVE A 1/2 SCALE DEFLECTION FOR EASIER READING. THIS METER WAS USED ON THE RPO4, 5 & 6.

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Page <b>27</b>	Page Revision <b>0</b>	Publication Date <b>November 1980</b>
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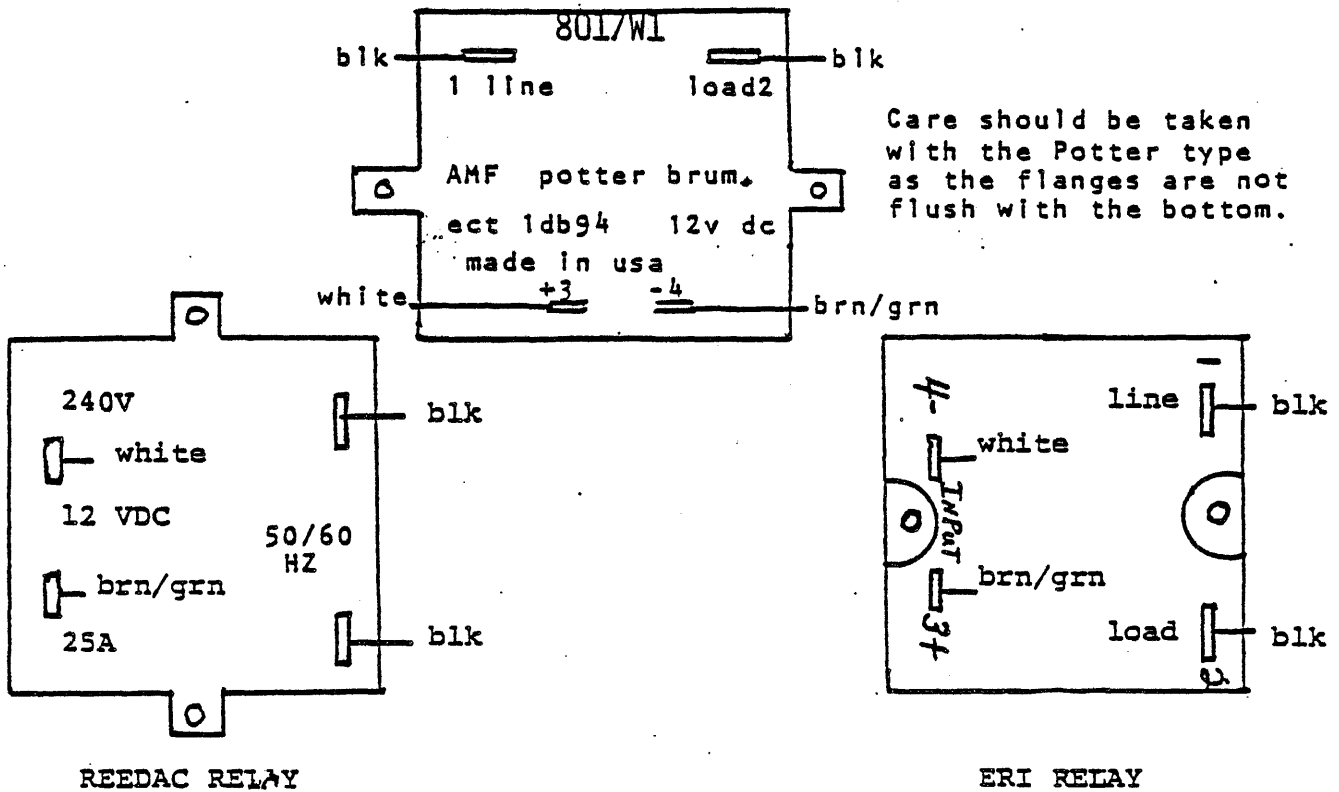
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Title TU 77 AC MOTOR RELAYS			Tech Tip Number TU77-TT-24		
Author P. Rieger	F.S. Office MAYNARD	Date 11/10/80	Revision A		
R. Mox/R STEERE	Mgr./Sup.	Date	Cross Reference		
Processor Applicability		Approv. <i>J. Griswold</i>	Date 11/14/80		
All					

THE TU77 AC MOTOR RELAY, 29-23308, HAS HAD SEVERAL VENDORS; POTTER BRUMFELD, TECCOR, REEDAC AND ERI. PRESENTLY, THE SUPPLIERS ARE REEDAC, ERI AND POTTER. EACH RELAY IS LABELED SLIGHTLY DIFFERENT AND CARE SHOULD BE OBSERVED WHEN REPLACING. THE SKETCHES BELOW SHOW THE GENERAL LABELING OF VENDORS. THIS TECH TIP WILL BE UPDATED IF VENDORS CHANGE.



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Page 28	Page Revision A	Publication Date January 1981
---------	-----------------	-------------------------------

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# FIELD SERVICE TECHNICAL MANUAL

Option or Designator

12 Bit

16 Bit

18 Bit

36 Bit

TU 77

Title TU 77 INTERCONNECT F/F1 TERMINAL BOARD WIRING

Tech Tip Number TU77-TT-25

Author: M. Rieger/R. Steere

F.S. Office: Haynard

Date 11/14/80

Revision

Processor Applicability

Mgr./Sup.

Date

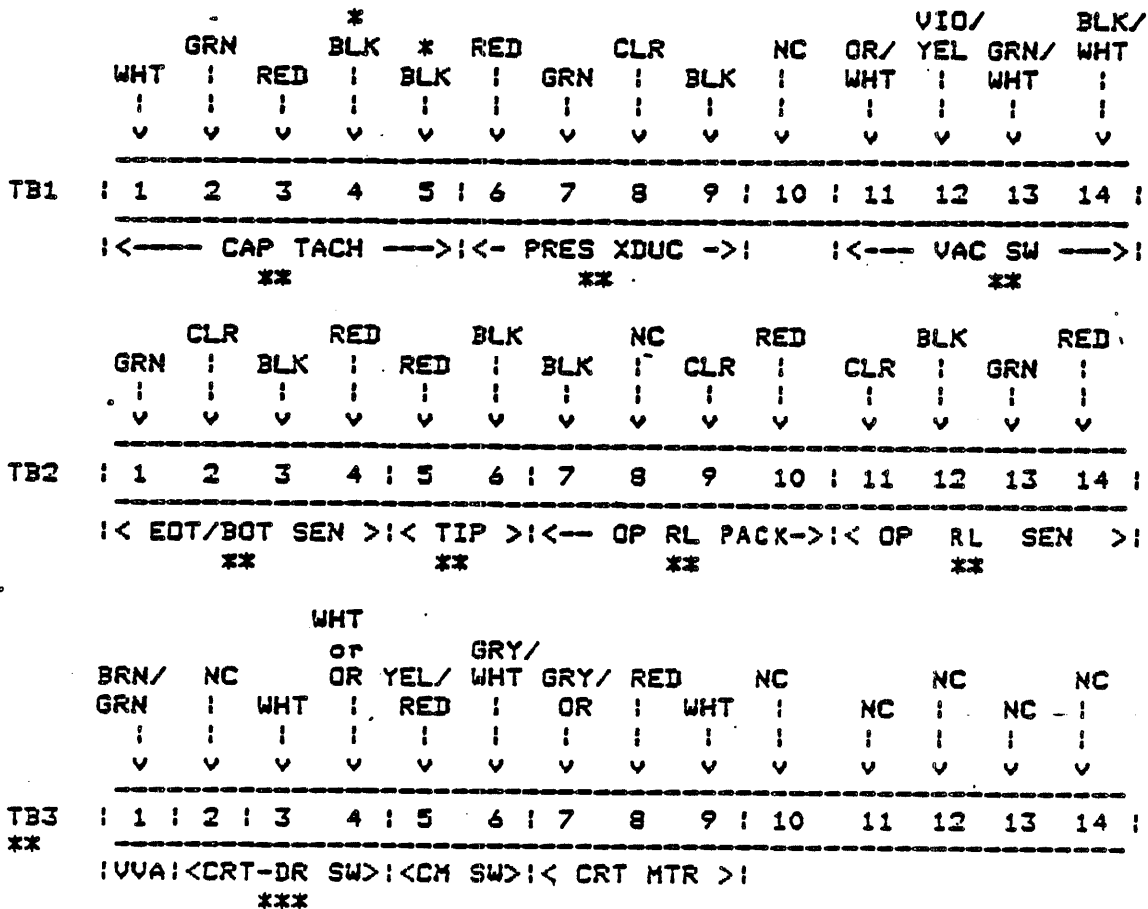
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Approved: *[Signature]* Date 11/14/80

This chart was developed at Salem FA&T for use on the 77 testing. It should prove to be a useful tool for field personnel.

## INTERCONNECT F/F1 CONNECTION DIAGRAM



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Page 29

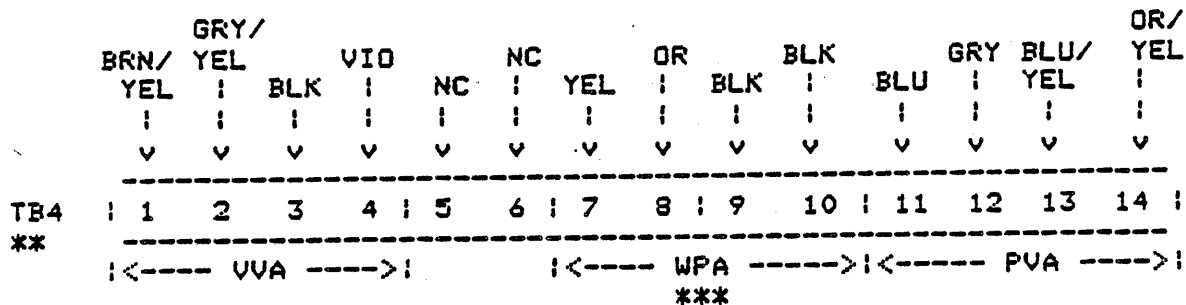
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EN-1189C-12-R277-(79Y)

Title TU 77 INTERCONNECT F/F1 TERMINAL BOARD WIRING				Tech Tip Number TU77-TT-25	
Author: RIEGER R. STEERE		F.S. Office MAYNARD		Date 11/14/80	Revision
Processor Applicability			Mgr./Sup.	Date	Cross Reference
All			Approval: <i>[Signature]</i>	Date 11/14/80	



- \* TB1-4 is a light gauge wire
- \* TB1-5 is a heavy gauge wire (actually multiple wires in one Jacket)
- \*\* CAP TACH, PRES XDUC, EOT/BOT SEN, TIP, OP RL SEN, and PACK SEN cables have outer jackets.
- \*\* VAC SW, TB3, and TB4 cables have no outer jackets.
- NOTE: Only one cable is connected to both TB3 and TB4.
- \*\*\* Connections to TB3-3,4 and TB4-9,10 can be made without concern of polarity.

- CAP TACH = Capstan Tach connections
- PRES XDUC = Pressure Transducer connections
- VAC SW = Vacuum Switch harness connections
- EOT/BOT SEN = EOT/BOT Sensor connections
- TIP = Tape In Path (TIP) Sensor connections
- OP RL SEN = Optical Reel Sensor transducer connections
- OP PACK SEN = Optical Pack Sense transducer connections
- CRT-DR SW = Cartridge present and Door switch connections
- CM SW = Cartridge Motor open/closed switch connections
- CRT MTR = Cartridge Motor connections
- VVA = Vacuum Valve Assembly connections
- WPA = Write Protect Assembly connections
- PVA = Pressure Valve Assembly connections

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Title <b>TU77 REVISION LEVEL MARKINGS</b>			Tech Tip Number <b>TU77-TT -26</b>	
Author <b>B. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>1/13/80</b>	Revision	
Processor Applicability		Mgr./Sys.	Date	Cross Reference
All		Approval: <i>[Signature]</i>	Date <b>11/14/80</b>	

The TU77 is an externally purchased tape transport with a module marking scheme that is different than DEC's. Basically, the board part number is placed on a small sticker, followed by an alpha character indicating the Rev. This alpha character runs A thru Z and then AA thru AZ, etc. In addition to this sticker, the board may also contain other stamped four or five digit numbers which denote factory installed EC's.

The basic DEC 29 class part number will also be on the board with a separate sticker. This basic 29 class part number will not be changed due to Pertec ECN activity.

Any Pertec ECN's that effect form, fit or function are periodically reviewed by a DEC review committee for approval or rejection. Those deemed to be field effect will be turned into DEC FCO's. These FCO's will contain specific instructions on board marking for that FCO.

The OPSUM fiche is being updated to include the TU77 and all TU77 Tech Tips are being updated to the green tech tip fiche. These projects should be in place by Jan. 81. Presently all released TU77 Tech Tips are in the Speed Bulletins.

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Page <b>31</b>	Page Revision <b>0</b>	Publication Date <b>November 1980</b>
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Title <b>Intermittents-TU77-Missing resistor packs</b>			Tech Tip Number <b>TU77-TT-27</b>	
Author <b>R. Steere</b>	F.S. Office <b>Maynard</b>	Date <b>1/8/81</b>	Revision <b>B</b>	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval: <i>L. J. [Signature]</i>	Date <b>1/12/81</b>	

Reports from the field are indicating that missing resistor packs on Pertec TU77 modules can cause intermittent data errors.

The locations of the packs are as follows:

Module	Pertec Pn	DEC Pn	Socket Number
Control M	109746-02	29-23229	U161 & U162
Control M2	106876-02	29-23774	U171 & U181


Part Number is 29-22568.

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Page 32	Page Revision A	Publication Date January 1981
---------	-----------------	-------------------------------

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Title <b>CONTROL M2-29-23774 JUMPERS</b>			Tech Tip Number <b>TU77-TT-28</b>	
Author <b>B. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>12/2/80</b>	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval: <	Date	

JUMPERS FOR CONTROL M2 MODULES, DEC PN 29-23774 ARE AS FOLLOWS: W1, W2, W3, W9, W10, W13 & W17 INSTALLED. BEFORE INSTALLING THIS MODULE IN A DRIVE, ALWAYS CHECK FOR PROPER JUMPERING. SYMPTOMS MAY BE BUG CHECKS, NO ONLINE AT BOT AND POSSIBLE POSITIONING ERRORS. THE PART NUMBER OF THE JUMPERS IS PERTEC 503-0138.

M2 Mod.

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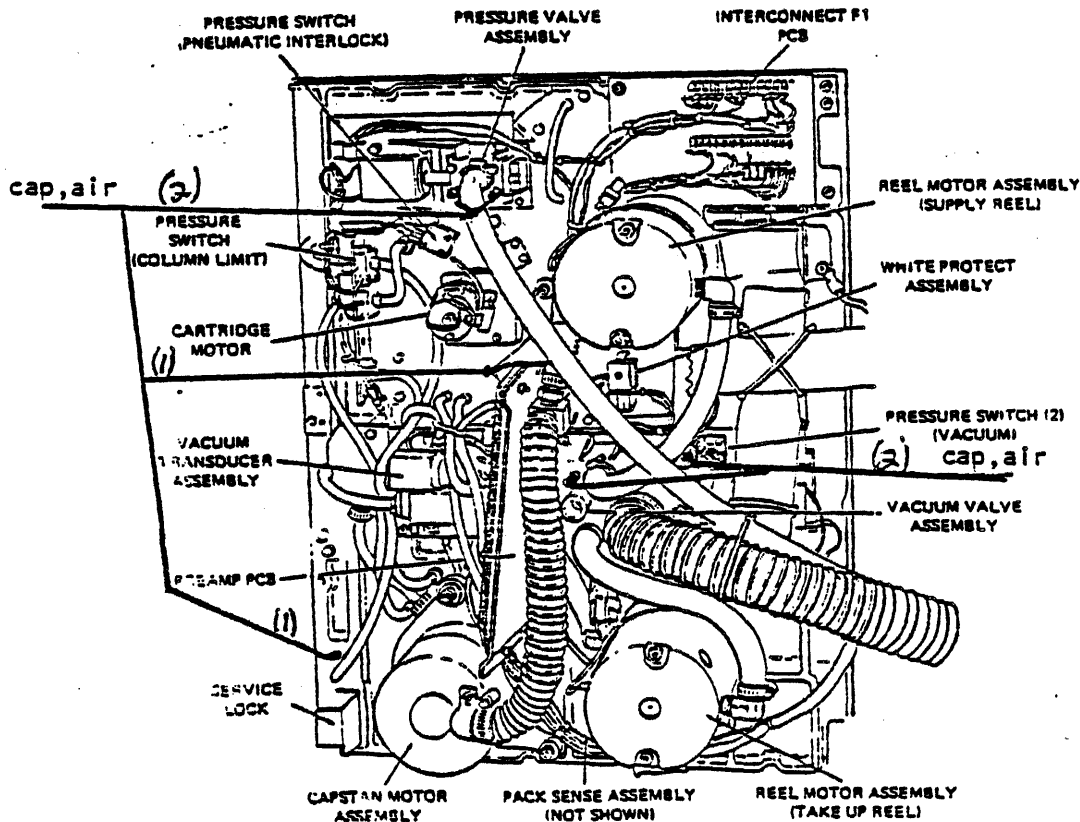
Page 33	Page Revision 0	Publication Date DECEMBER 1980
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Title <b>REPLACEMENT CAPS. FOR TU77 AIR PORTS</b>			Tech Tip Number <b>TU77-TT-29</b>		
Author <b>R. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>12/02/80</b>	Revision		
Processor Applicability		Mgr./Sup.	Date	Cross Reference	
All		Approval:	Date		

MANY REQUESTS HAVE BEEN MADE FOR A REPLACEMENT AIR CAP. FOR THE TU77 AIR PORTS ON THE MAIN DECKPLATE. THE PART NUMBER NOW APPEARS ON THE RSL AS 29-23361. NOTE LOCATIONS ON FOLLOWING FIGURE. MARK IPB'S ACCORDINGLY. ORDER AS NECESSARY.



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Page <b>34</b>	Page Revision <b>0</b>	Publication Date <b>December 1980</b>
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	12 Bit <input type="checkbox"/>	16 Bit <input type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	TU77

Title <b>TU77 - AC PLUG - PART NUMBER</b>			Tech Tip Number <b>TU77-TT -30</b>	
Author <b>R. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>12/16/80</b>	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval:	Date	

The main AC Power plug for the TU77 is a NEMA L6-20P or equivalent, DEC Pn 12-11192.

Its mating connector, supplied by the customer, is NEMA 6-20R or equivalent.

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Title <b>TU77 Capstan Wheel</b>			Tech Tip Number <b>TU77-TT -31</b>	
Author <b>R. STEERE</b>	F.S. Office <b>Maynard</b>	Date <b>12/22/80</b>	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference
All		Approval: _____	Date: _____	

If a TU77 has wrapped tape around the capstan, several things should be done before returning to customer use. After the tape is removed, carefully examine the capstan wheel for any type of damage. In particular, the rubber shoe should not be gouged or the wheel bent in any manner. If it exhibits any damage or is out of round, replace the wheel. The Pertec PN is 107098-01. If the wheel is loose or has to be removed, the screw should be retorqued to 19 inch pounds.

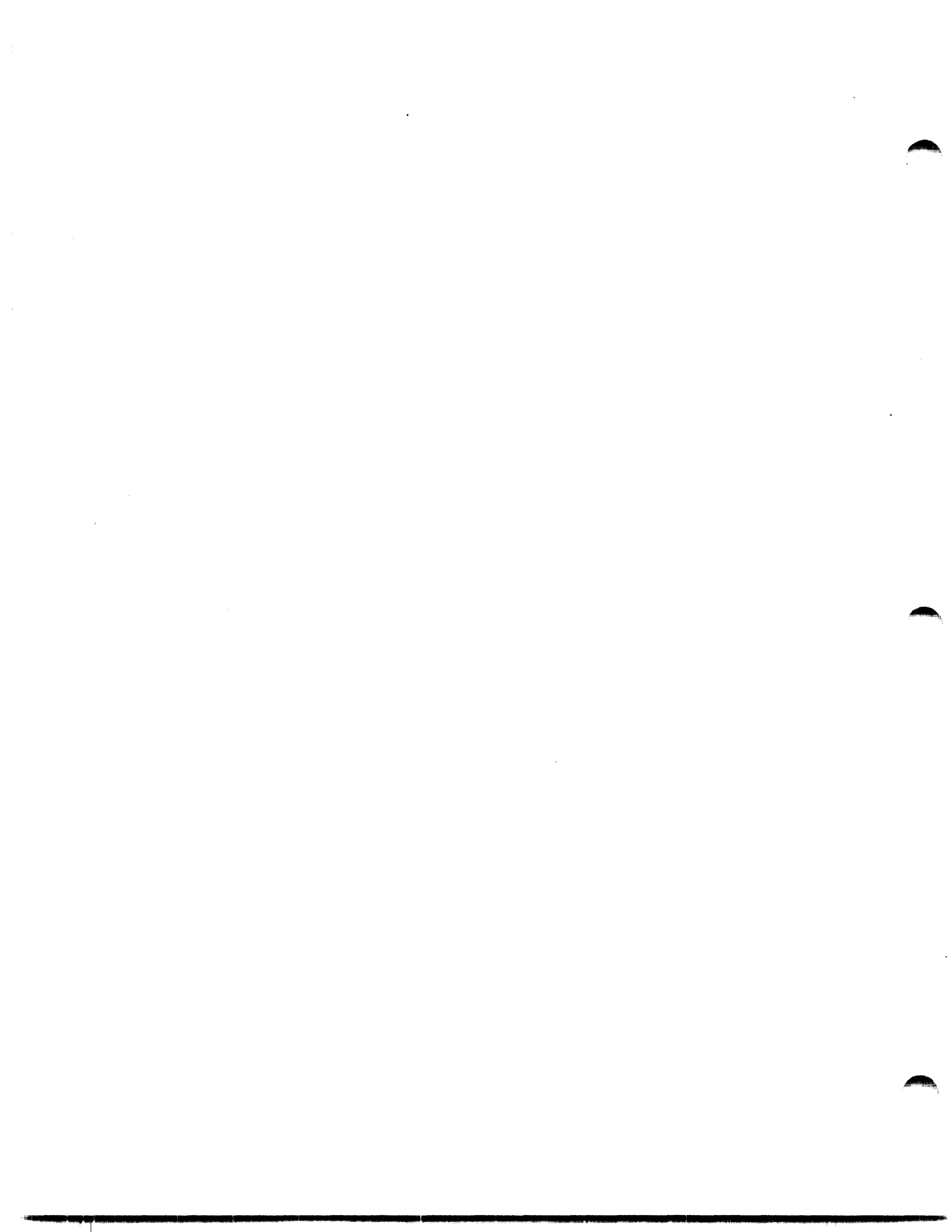
A DEC 29 class PN is in process and will be released as soon as it is received.

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Title TU77 T.M. VOL. II ERRORS					Tech Tip Number TU77-TT-
Author R. STEERE <i>RS</i>		F.S. Office MAYNARD	Date 8/20/81	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference	
All		Approval: <i>Steve Dan</i>	Date 8/21/81		

PLEASE NOTE THE FOLLOWING ERRORS IN THE VOL. II T.M. FOR THE TU77-EK-2TU77-TM-001. CORRECTIONS ARE IN PROCESS.

- PAGE 2-9, 3.3.2 POWER AND CABLING  
ADD STEP 9A.  
9A. USING THE GREEN/YELLOW GROUND CABLE PROVIDED, GROUND THE TU77 CABINET FRAME TO THE CPU CABINET FRAME. THE GROUNDING STUDS FOR THE TU77 ARE LOCATED ON THE LOWER SIDE FRAME MEMBERS (FIGURE 2-11).
- PAGE 2-12, FIGURE 2-11 CORPORATE CABINET WITH SIDE PANELS AND TOP COVER REMOVED.  
DELETE OLD FIGURE 2-11 AND INSERT NEW FIGURE 2-11.
- PAGE 2-12, 2.4.1 MECHANICAL INSTALLATION  
ADD STEPS 13A AND 13B.  
13A. USING THE SHORT GROUND STRAP INCLUDED WITH THE SLAVE TRANSPORTS, GROUND THE MASTER AND SLAVE CABINETS TOGETHER. USE GROUNDING STUDS ON THE LOWER SIDE FRAME MEMBERS (FIGURE 2-11).  
13B. USING THE GREEN/YELLOW GROUND CABLE PROVIDED WITH THE MASTER TRANSPORT, GROUND THE MASTER TU77 CABINET FRAME TO THE CPU CABINET FRAME.

CONTINUED ON PAGE 2

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Title TU77 T.M. VOL II ERRORS				Tech Tip Number TU77-TT-	
Author R. STEERE <i>RS</i>		F.S. Office MAYNARD	Date 8/20/81	Revision	
Processor Applicability		Mgr./Sup.	Date	Cross Reference	
All		Approval: <i>Steve Dail</i>	Date 8/21/81		

- PAGE 6-16, FIGURE 6-7 FORWARD START RAMP  
DELETE OLD FIGURE 6-7 AND INSERT NEW FIGURE 6-7.
- PAGE 6-32, 6.5.8.1 NRZI THRESHOLD ADJUSTMENT  
IN STEP 6, CHANGE THE VOLTAGE RANGES TO:  
+1020 MV MAXIMUM  
+780 MV MAXIMUM  
IN STEP 7, CHANGE THE VOLTAGE READING TO 900 MV.
- PAGE 6-66, TABLE 6-15 DATA L READ THRESHOLDS  
CHANGE THE NRZI READ LOW THRESHOLD VOLTAGES TO:  
TP69 +900 MV +120 MV  
TP70 -900 MV ±120 MV

CONTINUED ON PAGE 3

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Title <b>TU77 T.M. VOL. II ERRORS</b>			Tech Tip Number <b>TU77-TT-</b>		
Author <b>R. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>8/20/81</b>	Revision		
Processor Applicability	Mgr./Sup.	Date	Cross Reference		
All	Approval: <i>Steve Dale</i>	Date <i>8/21/81</i>			

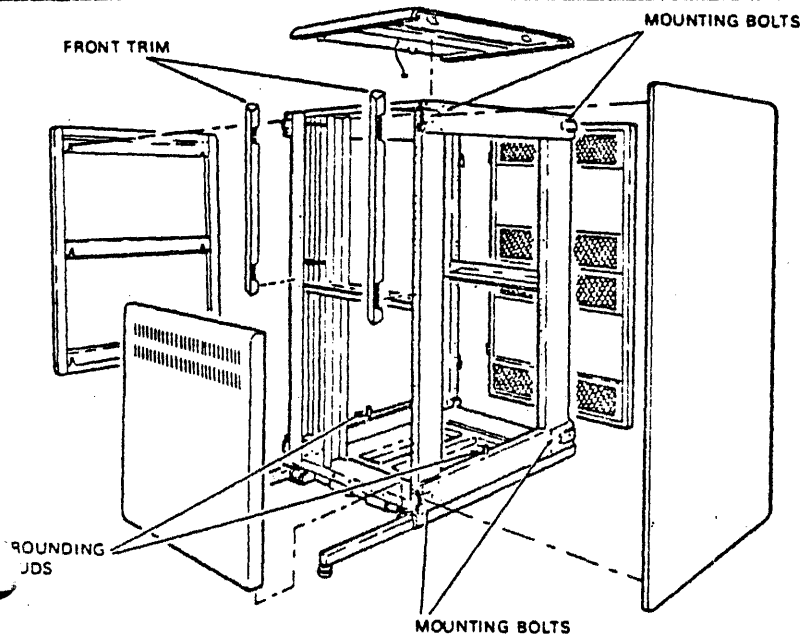
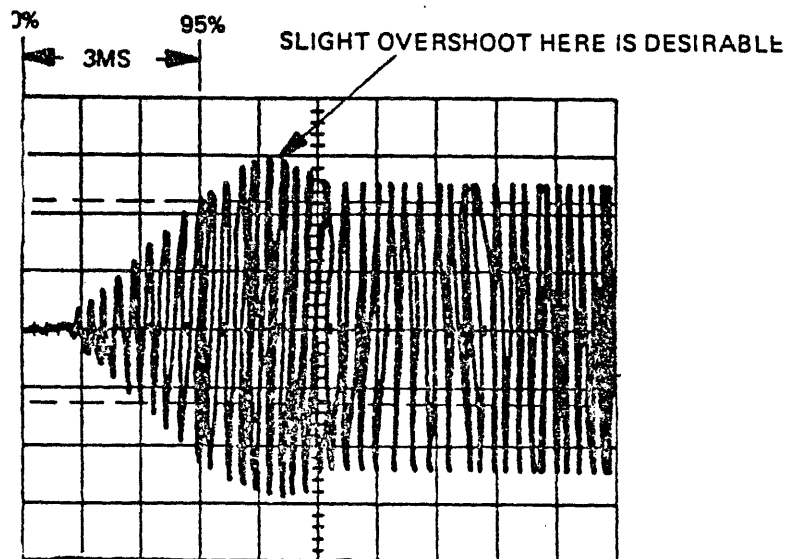


Figure 2-11 Cabinet with Side Panels and Top Cover Removed

Figure 6-7 Forward Start Ramp

PROBE: X10  
 HORIZ: 1.0 MSEC/DIV  
 VERT: 2.0V/DIV  
 CH1: TP901 DATA L PCBA  
 SYNC: AC EXT  
 TP21 CONTROL 'M' PCBA

NOTE: FORWARD START RAMP IS MEASURED BETWEEN 0% AND 95% OF STEADY STATE WAVEFORM



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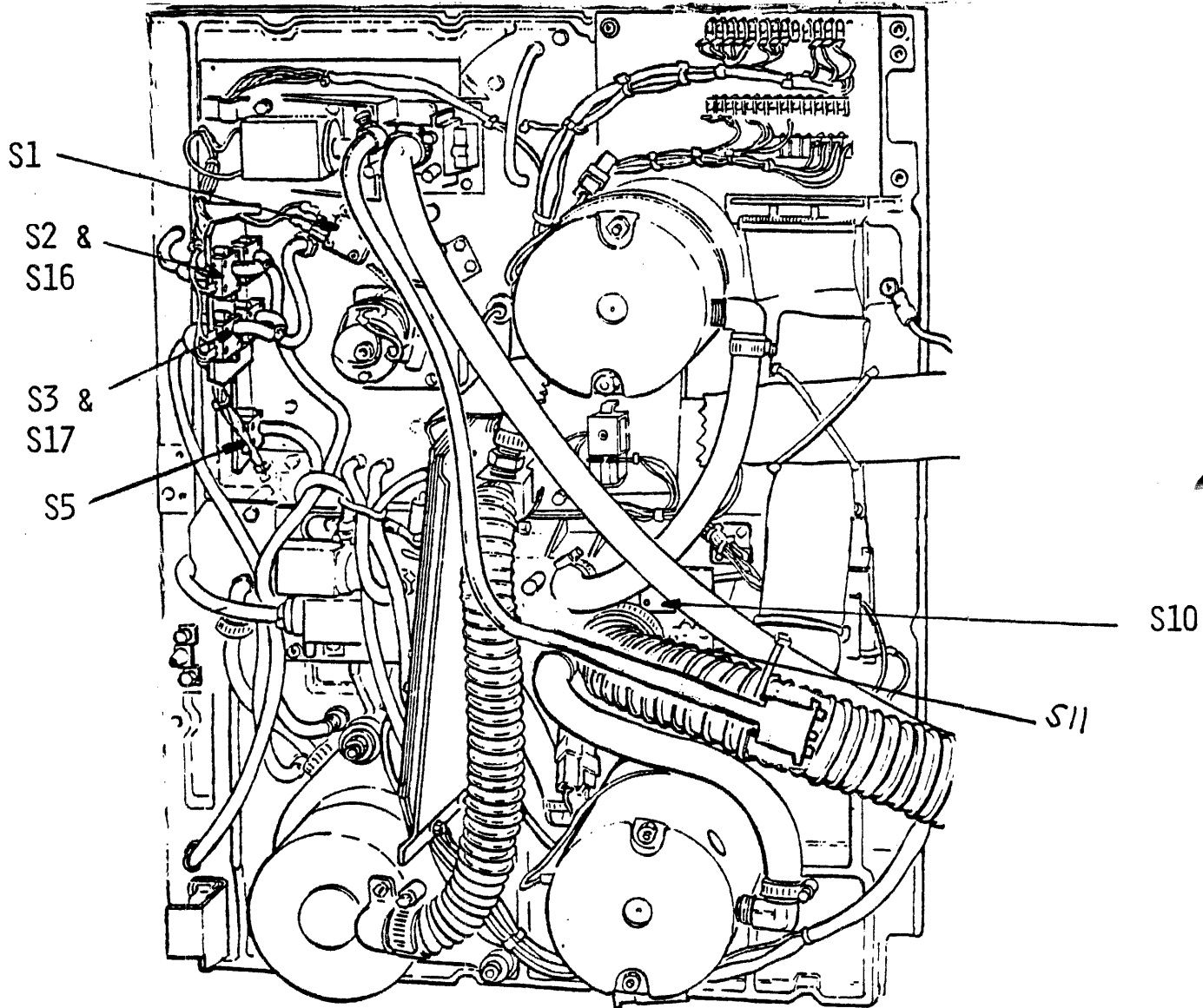
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Title <b>TU77/78 PRESS/VAC NOTATIONS, POSITIONS, P/N'S</b>			Tech Tip Number <b>TU78-TT-</b>	
Author <b>RAY CHAUVIN</b>	F.S. Office <b>MAYNARD</b>	Date <b>2 NOV 81</b>	Revision	
Processor Applicability		PSG	Date	Cross Reference
All <input checked="" type="checkbox"/>		Approval:	Date	




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Title TU77 DOCUMENTATION ERRORS-TU77 PRINT SET			Tech Tip Number TU77-TT- 35		
Author BOB STEERE <i>RS</i>		F.S. Office MAYNARD		Date 7/7/81	
Processor Applicability		Mgr./Sup.		Revision 0	
All		Approval: <i>[Signature]</i>		Date 7/8/81	
Cross Reference					

PLEASE NOTE THE FOLLOWING DISCREPANCIES IN THE TU77 FIELD MAINTENANCE PRINT SET MP00644, AND MP00645. UA TU77-0-0, PAGE 3 OF 3. CORRECTIONS ARE IN PROCESS.

- o A NOTE IN SECTION 6-7B SAYS, "FROM J2 ON MASTER MTA". THIS SHOULD SAY, "FROM J1 ON MASTER MTA".
- o A NOTE IN SECTION 6B SAYS, "FROM J4 ON MASTER MTA". THIS SHOULD SAY, "FROM J3 ON MASTER MTA".
- o A NOTE IN SECTION 5B SAYS, "FROM J6 ON MASTER MTA". THIS SHOULD SAY, "FROM J5 ON MASTER MTA".
- o A NOTE IN SECTION 4B SAYS, "TO J1 ON SLAVE MTA". THIS SHOULD SAY, "TO J2 ON SLAVE MTA".
- o A NOTE IN SECTION 3-4B SAYS, "TO J3 ON SLAVE MTA". THIS SHOULD SAY, "TO J4 ON SLAVE MTA".
- o A NOTE IN SECTION 3B SAYS, "TO J5 ON SLAVE MTA". THIS SHOULD SAY, "TO J6 ON SLAVE MTA".
- o A NOTE IN SECTION 3C SAYS, "TO TM03 ABO2." THIS SHOULD SAY, "TO TM03 ABO1".

CONTINUED ON NEXT PAGE

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Page 40	Page Revision 0	Publication Date July 13, 1981
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Title TU77 DOCUMENTATION ERRORS-TU77 PRINT SET						Tech Tip Number TU77-TT-35	
Author BOB STEERE			F.S. Office MAYNARD		Date 7/7/81	Revision 0	
Processor Applicability			Mgr./Sup.		Date	Cross Reference	
All			Approval: E. MALONE		Date 7/8/81		

o A NOTE IN SECTION 2C SAYS, "TO TM03 AB01". THIS SHOULD SAY, "TO  
 TM03 AB02".


FOR AN ACCURATE CABLING DIAGRAM, SEE FIGURE 2-12, "SLAVE BUS CABLING  
 OF TU77 DAISY CHAIN", LOCATED ON PAGE 2-12 OF THE TU77 USER'S GUIDE  
 (EK-TU77-UG).

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Page 41	Page Revision 0	Publication Date July 13, 1981
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12 Bit	<input type="checkbox"/>	16 Bit	<input type="checkbox"/>	18 Bit	<input type="checkbox"/>	36 Bit	<input type="checkbox"/>
							TU77

Title <b>POWER PROBLEMS - TU77</b>				Tech Tip Number <b>TU77-TT-36</b>			
Author <b>M. BENCE/R. STEERE</b>		F.S. Office <b>MAYNARD</b>		Date <b>5/26/81</b>		Revision <b>0</b>	
Processor Applicability		Mgr./Sup. <i>J. Sweeney</i>		Date <b>7/30/81</b>		Cross Reference	
All X		Approval:		Date			


POWER RELATED PROBLEMS ON THE TU77 HAVE BEEN TRACED TO LOOSE CONNECTION'S ON THE FILTER CAPACITORS IN THE BULK SUPPLY. EXCESSIVE RIPPLE WAS INDICATED AND WAS FIXED BY TIGHTENING THE FILTER CAPACITOR SCREWS.

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Page <b>42</b>	Page Revision <b>0</b>	Publication Date <b>July 31, 1981</b>
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Title <b>TU77 BUFFER BOX DOOR LIMIT PART NUMBERS</b>			Tech Tip Number <b>TU77-TT-37</b>		
Author <b>R. STEERE</b>	F.S. Office <b>MAYNARD</b>	Date <b>6/23/81</b>	Revision <b>0</b>		
Processor Applicability	Mgr./Sup. <i>M. Wallace</i>	Date <b>7/31/81</b>	Cross Reference		
All	Approval: _____	Date _____			

TU77'S HAVE HAD TWO TYPES OF BUFFER BOX DOOR LIMITS. REFER TO FIG.1 AND FIG.2 FOR PART NUMBERS.



FIG 1

VENDOR PN

DOOR STOP - 107204-02

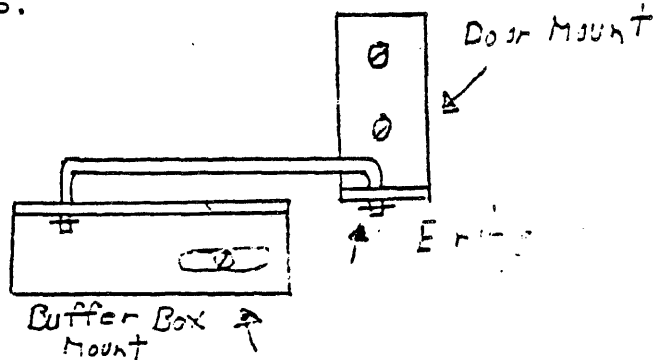


FIG 2

VENDOR PN

DOOR STOP - 109513-01 (COMPLETE)

E RING - 611-0025

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	12 Bit <input type="checkbox"/>	16 Bit <input checked="" type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input checked="" type="checkbox"/>	TU77

Title TU77 won't load or intermitently won't load			Tech Tip Number TU77-TT-39		
Author Frank Joyal		F.S. Office Syracuse, NY		Date 29 July '81	
Processor Applicability		Mgr./Sup.		Revision 0	
All		Approval:		Date	
1   1   7   0   /11/780				Cross Reference	

During load sequence the take-up reel is used for timing pulses. The pulses are generated from two reflective tape strips located on the back of the take-up reel. I have found that the reflective tape, if it gets dirty or greyish looking will give multiple pulses which will cause intermitent load problems or won't load at all.

By cleaning the reflective tape on back of take-up reel problem was resolved. I could see good clear pulses from the pack sense/low tape sensor test point.

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	12 Bit <input type="checkbox"/>	16 Bit <input type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	TU77

Title TU77 T.M. VOL. II ERRORS			Tech Tip Number TU77-TT-40		
Author R. STEERE		F.S. Office MAYNARD		Date 8/20/81	
Processor Applicability		PSG Approval <i>[Signature]</i>		Date 8-25-81	
All		Approval: <i>[Signature]</i>		Date 8/21/81	
			Revision 0		
			Cross Reference		

PLEASE NOTE THE FOLLOWING ERRORS IN THE VOL. II T.M. FOR THE TU77-EK-2TU77-TM-001. CORRECTIONS ARE IN PROCESS.

- PAGE 2-9, 3.3.2 POWER AND CABLING  
ADD STEP 9A.  
9A. USING THE GREEN/YELLOW GROUND CABLE PROVIDED, GROUND THE TU77 CABINET FRAME TO THE CPU CABINET FRAME. THE GROUNDING STUDS FOR THE TU77 ARE LOCATED ON THE LOWER SIDE FRAME MEMBERS (FIGURE 2-11).
- PAGE 2-12, FIGURE 2-11 CORPORATE CABINET WITH SIDE PANELS AND TOP COVER REMOVED.  
DELETE OLD FIGURE 2-11 AND INSERT NEW FIGURE 2-11.
- PAGE 2-12, 2.4.1 MECHANICAL INSTALLATION  
ADD STEPS 13A AND 13B.  
13A. USING THE SHORT GROUND STRAP INCLUDED WITH THE SLAVE TRANSPORTS, GROUND THE MASTER AND SLAVE CABINETS TOGETHER. USE GROUNDING STUDS ON THE LOWER SIDE FRAME MEMBERS (FIGURE 2-11).  
13B. USING THE GREEN/YELLOW GROUND CABLE PROVIDED WITH THE MASTER TRANSPORT, GROUND THE MASTER TU77 CABINET FRAME TO THE CPU CABINET FRAME.

CONTINUED ON PAGE 47

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Page 46	Page Revision 0	Publication Date September 3, 1981
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Title TU77 T.M. VOL II ERRORS				Tech Tip Number TU77-TT-40 <sup>4/3</sup>	
Author R. STEERE		F.S. Office MAYNARD		Date 8/20/81	
Processor Applicability		PSG Approval <i>[Signature]</i>		Date 4-3-81	
All		Approval: <i>[Signature]</i>		Date 8/20/81	
				Revision 0	
				Cross Reference	

- PAGE 6-16, FIGURE 6-7 FORWARD START RAMP  
DELETE OLD FIGURE 6-7 AND INSERT NEW FIGURE 6-7.
- PAGE 6-32, 6.5.8.1 NRZI THRESHOLD ADJUSTMENT  
IN STEP 6, CHANGE THE VOLTAGE RANGES TO:  
+1020 MV MAXIMUM  
+780 MV MAXIMUM  
IN STEP 7, CHANGE THE VOLTAGE READING TO 900 MV.
- PAGE 6-66, TABLE 6-15 DATA L READ THRESHOLDS  
CHANGE THE NRZI READ LOW THRESHOLD VOLTAGES TO:  
TP69 +900 MV +120 MV  
TP70 -900 MV ±120 MV

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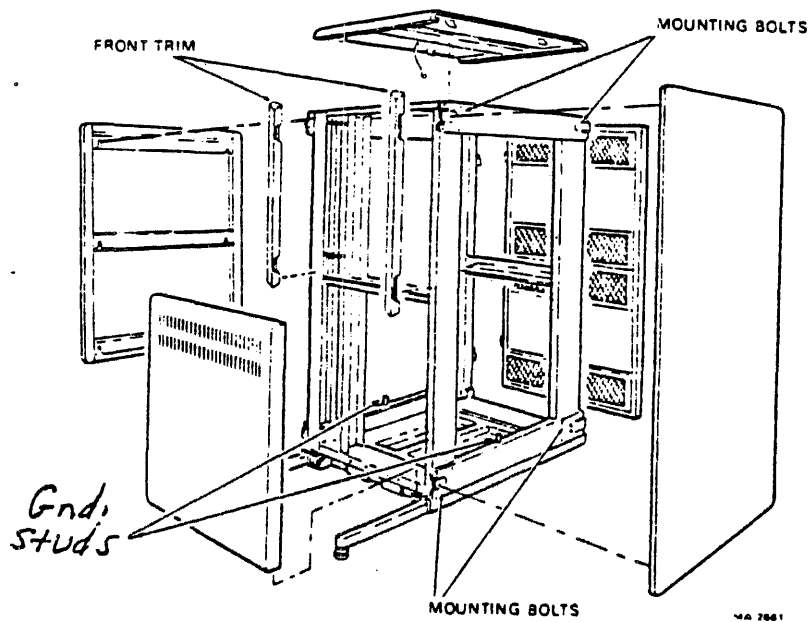
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Title TU77 MASTER-GROUND STRAP				Tech Tip Number TU77-TT-41	
Author R. STEERE		F.S. Office MAYNARD		Date 8/17/81	
Processor Applicability		PSG Approval <i>[Signature]</i>		Date 7-3-81	
All		Approval: <i>SEE DIAL</i>		Date 8/19/81	
				Revision 0	
				Cross Reference	

THE TU77 MANUALS DO NOT MENTION THE INSTALLATION OF THE GROUND STRAP, PN 74-12827-25 WHICH IS SHIPPED WITH EVERY SYSTEM.

THE STRAP SHOULD RUN FROM ONE OF THE GROUND STUDS ON EITHER LOWER SIDE STRUT TO THE HOST CPU. SEE FIGURE 1. THE MANUALS WILL BE CORRECTED.



Cabinet with Side Panels and Top Cover Removed

FIGURE 1

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Title PART NUMBER TU77 BUFFER BOX GLASS SPRING				Tech Tip Number :TU77-TT-42	
Author R. STEERE <i>RS</i>	F.S. Office MAYNARD	Date 9/15/81	Revision $\emptyset$		
Processor Applicability		Mgr./Sup.	Date	Cross Reference	
All		Approval: <i>Steve Davis</i>	Date 9/15/81		

PSG Approval:

*Steve Davis*  
Date: 9/30/81

PART NUMBER FOR THE SPRING LOCATED UNDER THE BUFFER BOX DOOR GLASS IS AS FOLLOWS.

VENDOR PN 616-0024 DEC PN 29-24047

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Title TU77 PRESSURE SOLENOID/CAPSTAN MODULE FAILURE			Tech Tip Number TU77-TT-43		
Author ABE FELER/R. STEERE		F.S. Office MAYNARD		Date 10/20/81	
Processor Applicability		P56 <i>Long</i>		Date 10/29/81	
All		Approval: <i>J.M.E.</i>		Date 10/20/81	
			Revision $\emptyset$		
			Cross Reference		

IT HAS BEEN FOUND THAT Q42 ON THE CAPSTAN MODULE AND PRESSURE SOLENOID FAILURE CAN BE CAUSED BY A STICKY OR SHORTED AIR BEARING PRESSURE SWITCH AT UNLOAD. CONTINUOUS CURRENT FLOWS THRU THE SOLENOID, AND BOTH Q42 AND THE SOLENOID MAY FAIL. RESET SWITCH WILL RESET IT IF OBSERVED. CHANGE S1, LOCATED DIRECTLY UNDER THE PRESSURE SOLENOID. THIS STICKY SWITCH CAN ALSO BE CAUSED BY CONTAMINATION AND/OR DIRTY INLINE FILTER. THESE FILTERS SHOULD BE CHANGED EVERY 2500 HOURS OR SIX MONTHS, WHICHEVER OCCURS FIRST.

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Title TU77/78 BOT/EOT ADJUSTMENT			Tech Tip Number TU77-TT-44		
Author R. STEERE		F.S. Office MAYNARD		Date 10/14/81	
Processor Applicability		PSG <i>Larry Bunker</i>		Date 10/29/81	
All <input checked="" type="checkbox"/>		Approval: _____		Date _____	
			Revision $\emptyset$		
			Cross Reference		

CONNECT A DVM POSITIVE LEAD TO TP5 OF THE INTERCONNECT F1 MODULE. CONNECT THE NEGATIVE LEAD TO TP6.  
 MANUALLY THREAD A TAPE CONTAINING BOTH BOT AND EOT SENSORS APPROX. 6" APART THRU AND ONTO THE TAKEUP REEL. KEEP TAPE TAUT.

NO REFLECTOR IN FRONT OF THE SENSOR, METER SHOULD READ  $0VDC, \pm .1VDC$ .

MOVE THE BOT REFLECTOR IN FRONT OF THE SENSOR. DVM SHOULD READ  $\geq +2.0VDC$ .

MOVE THE EOT REFLECTOR IN FRONT OF THE SENSOR. DVM SHOULD READ  $\leq -2.0VDC$ .

IF ANY LEVELS ARE OUT OF RANGE, THE ADJUSTMENTS ARE:

WITH NO REFLECTORS IN FRONT OF THE SENSORS, ADJ. R22 ON THE F1 OR R6 ON F MODULE FOR  $0VDC, \pm .1VDC$ .

EITHER BOT OR EOT LESS THAN 2.0 VDC, REMOVE COVER FROM SENSOR.

LOOSEN SENSOR MOUNTING SCREW AND MOVE SENSOR ALL THE WAY TO THE RIGHT.

ROTATE THE SENSOR TO OBTAIN A READING OF GREATER THAN 2 VOLTS.

TIGHTEN SCREW.

IF EITHER CANNOT BE ADJUSTED TO A READING GREATER THAN 2.0 VDC, TRY ANOTHER SENSOR, THEN CHECK THE F1 MODULE.

SEE FIGS. 1 AND 2.

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	12 Bit <input type="checkbox"/>	16 Bit <input checked="" type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	TU77

Title <b>TU77/78 BOT/EOT ADJUSTMENT</b>			Tech Tip Number: <b>TU77-TT-44</b>		
Author <b>R. STEERE</b>		F.S. Office <b>MAYNARD</b>		Date <b>10/14/81</b>	
Processor Applicability		PSG		Revision $\emptyset$	
All XX		Approval:		Date	
				Cross Reference	

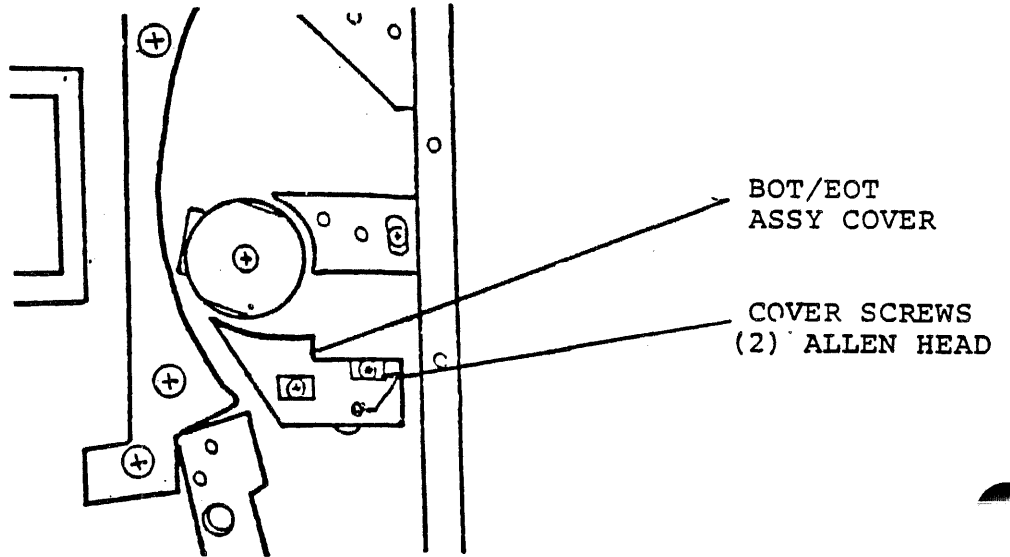


FIG. 1

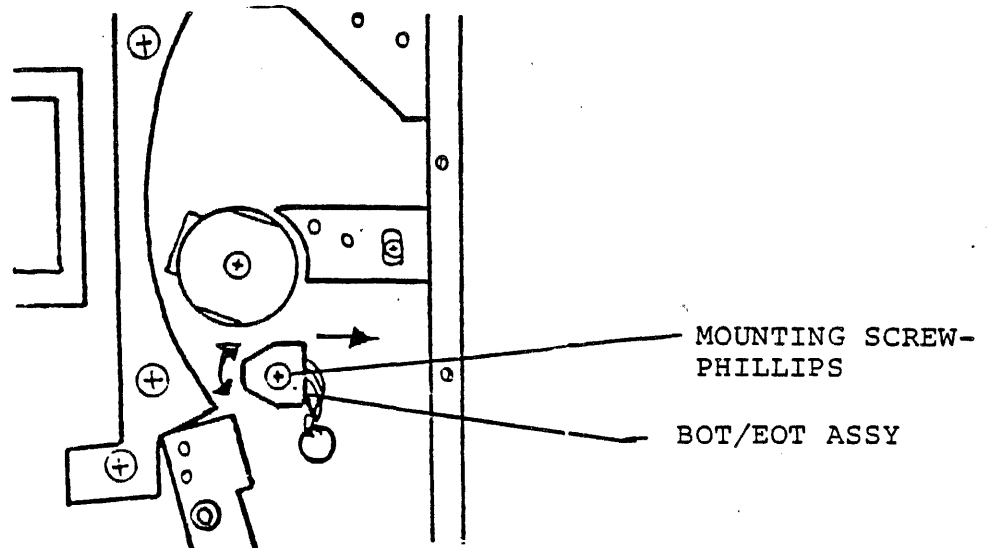


FIG. 2

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Page <b>53</b>	Page Revision $\emptyset$	Publication Date <b>November 3, 1981</b>
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<b>digital</b>	<b>FIELD SERVICE TECHNICAL MANUAL</b>				Option or Designator
	12 Bit <input type="checkbox"/>	16 Bit <input checked="" type="checkbox"/>	18 Bit <input checked="" type="checkbox"/>	36 Bit <input checked="" type="checkbox"/>	TU78

Title TU77/78 PRESS/VAC NOTATIONS, POSITIONS, P/N'S			Tech Tip Number TU78-TT-	
Author RAY CHAUVIN		F.S. Office MAYNARD	Date 2 NOV 81	Revision
Processor Applicability		PSG	Date	Cross Reference
All X		Approval:	Date	

THE PRESSURE/VACUUM SWITCHES ON THE BASEPLATE ARE NOT COMPLETELY INTERCHANGEABLE. THERE ARE DIFFERENT PART NUMBERS, AND THE DIFFERENT NUMBERS SHOULD NOT BE INTERCHANGED. THE DIFFERENT NUMBERS ARE:

<u>SWITCH</u>	<u>VENDOR#</u>	<u>DEC#</u>
S1 - AIR BEARING PRESS	506-0008	29-23239
S2, S16 - SUPPLY REEL LIMIT	506-0023	29-23238
	(REPLACES 506-0007)	
S3, S17 - TAKE UP REEL LIMIT	506-0023	29-23238
	(REPLACES 506-0007)	
S5 - CRIPPLE REEL SWITCH	506-0008	29-23239
S10 - VACUUM SWITCH	506-0008	29-23239
S11 - TAPE ON REEL SWITCH	506-0023	29-23238
	(REPLACES 506-0007)	

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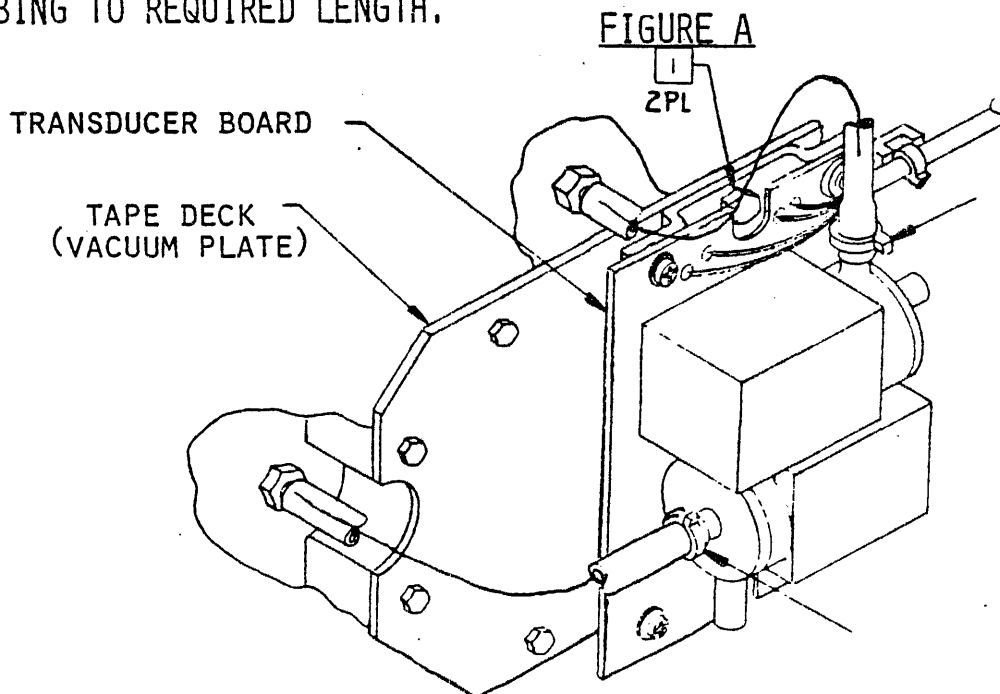
<b>digital</b>	<b>FIELD SERVICE TECHNICAL MANUAL</b>				Option or Designator
	12 Bit <input type="checkbox"/>	16 Bit <input checked="" type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	TU77

Title <b>NEW TRANSDUCER ASSEMBLY INSTALLATION INSTRUCTIONS</b>				Tech Tip Number	<b>TU77-TT-</b>
Author <b>DONNA REUSCH</b>		F.S. Office <b>MAYNARD</b>	Date <b>1/19/82</b>	Revision	
Processor Applicability		PSG	Date	Cross Reference	
All <input checked="" type="checkbox"/>		Approval:	Date	<b>TU78</b>	

THERE IS A NEW TYPE OF TRANSDUCER ASSEMBLY BEING INTRODUCED BY PERTEC. IT IS COMPLETELY INTERCHANGEABLE WITH THE PRESENT ONE. THE PART NUMBER 29-23246-00 WILL NOT CHANGE.

### INSTALLATION INSTRUCTIONS

1. REMOVE TRANSDUCER BOARD, PNEUMATIC TUBING, AND WIRING (SEE FIGURE A) DISCARD. SAVE EXISTING HARDWARE. (SEE #1 OF FIGURE A)
2. INSTALL NEW TRANSDUCER ASSEMBLY WITH EXISTING HARDWARE.
3. CONNECT PNEUMATIC TUBING AND TIE WRAPS AS SHOWN IN FIGURE B. CUT TUBING TO REQUIRED LENGTH.



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**digital****FIELD SERVICE TECHNICAL MANUAL**

Option or Designator

12 Bit 16 Bit 18 Bit 36 Bit 

TU77

Title **NEW TRANSDUCER ASSEMBLY INSTALLATION INSTRUCTIONS**Tech Tip  
Number

TU77-TT-

Author **DONNA REUSCH**F.S. Office **MAYNARD**Date **1/19/82**

Revision

Processor Applicability

PSG

Date:

Cross Reference

All

X

Approval:

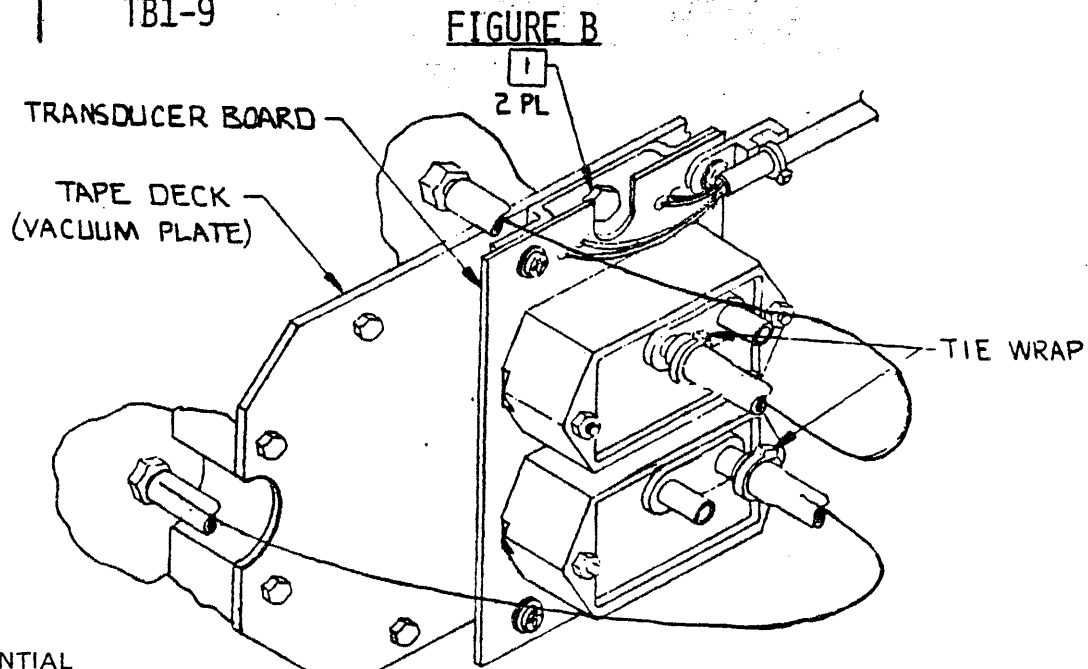
Date:

TU78

4. CONNECT CABLE PER WIRING LIST.
5. DO TAPE LOOP POSITION ADJUSTMENT.

WIRING LIST

WIRE COLOR	CONNECT TO INTERCONNECT F1	<input type="checkbox"/> EXISTING HARDWARE
RED	TB1-6	
GREEN	TB1-7	
CLEAR	TB1-8	
BLACK	TB1-9	



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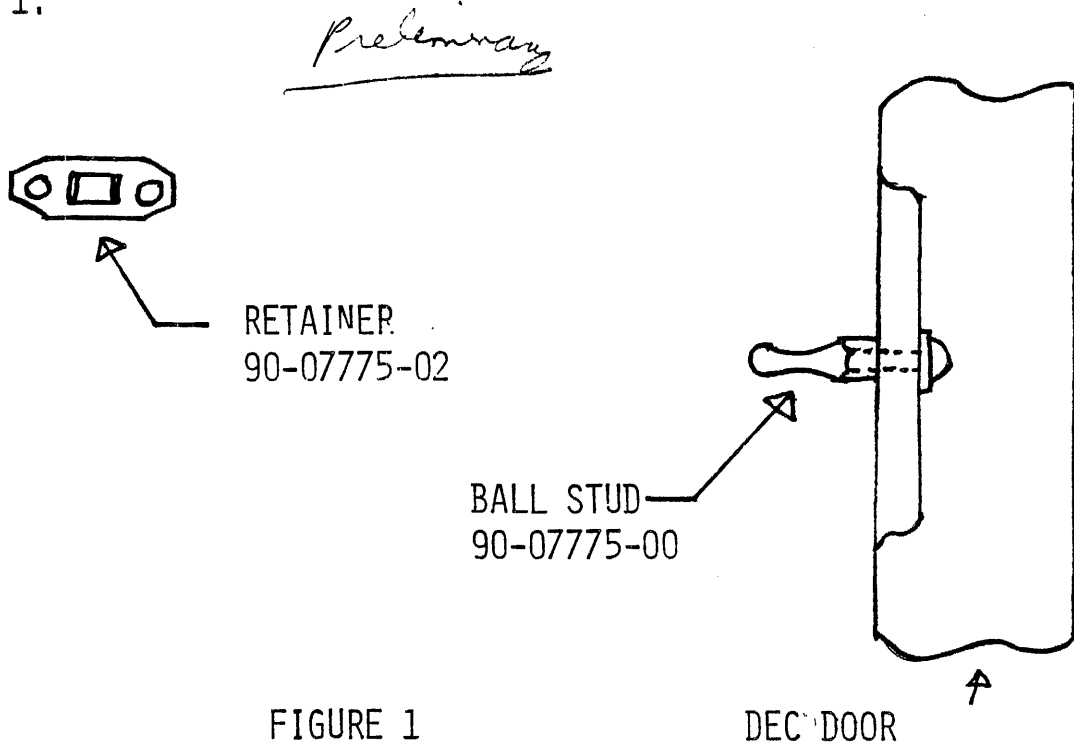
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<b>digital</b>	<b>FIELD SERVICE TECH TIP</b>					Option Designator TU78 / TU77	
	<input type="checkbox"/> 12 Bit	<input type="checkbox"/> 16 Bit	<input type="checkbox"/> 18 Bit	<input checked="" type="checkbox"/> 32 Bit	<input checked="" type="checkbox"/> 36 Bit	Category SYSTEMS	
Title TU77/78 OUTER DOOR LATCH PART NUMBERS					Tech Tip No. TU78-TT-		
Processor Applicability 101201UAX			Cross Reference		Tech Tip Rev A		Page 1 of
Author BOB STEERE				Mgr./Supv. Approval			
Location WESTBORO MSME			Mail Stop YWO		Date		
CSSE Approval					Date		
PSG Approval					Date		

THE PART NUMBERS FOR THE TU77/78 OUTER DOOR LATCH ARE SHOWN IN FIGURE 1.



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FS-98-010 08-14-81

RECOMMENDED SPARES LEVEL

ORIGINAL DATE :04-03-79  
 REVISION DATE :08-07-81  
 UPDATE DATE :00-00-00

OPTION : TU77  
 DESCRIPTION : MAG TAPE TRANSPORT

CD KIT	DEC PART NO.	DESCRIPTION	VENDOR#	COST PRICE	IN STOCK LEVEL OF SERVICE						C.I.
					UPTO 98%	UPTO 95%	UPTO 90%	UPTO 80%	UPTO 70%	UPTO 50%	
	29-23257-00	COMPRESSOR	518-1000	139.65	*	*	*				.39
	29-23258-00	TRANSFORMER	511-0006	75.08	*						.01
	29-23279-00	FILTER, RFI	102245-01	5.25	*						.01
	29-23280-00	MOTOR, GEAR DRV <i>Cartridge</i>	500-0008	19.95	*	*	*	*	*		1.10
	29-23281-00	ARM, CARTRIDGE LOAD	107103-01	6.30	*						.01
	29-23283-00	GUIDE, AIR	107059-01	47.25	*						.02
	29-23286-00	CATCH, SPRING	615-0006	.14	*	*	*	*			.01
	29-23288-00	RECEPTACLE, FASTENER	615-0121	3.15	*	*	*	*			.01
*	29-23294-00	BELT, COMPRESSOR	108479-02	4.46	*	*	*	*	*	*	.48
	29-23295-00	BELT BLOWER 50HZ HI A	108479-06	3.68	*	*	*	*	*	*	.01
	29-23297-00	SWITCH, BKWRAP DEFEAT <i>(facter style)</i>	506-0021	3.41	*	*					.02
*	29-23303-00	BELT BLOWER 50HZ LO A	108479-05	3.68	*	*	*	*	*	*	.60
*	29-23304-00	BELT, COMPRESSOR	108479-01	4.46	*	*	*	*	*	*	.48
*	29-23305-00	BELT BLOWER 60HZ LO A	108479-03	4.46	*	*	*	*	*	*	.60
	29-23308-00	RELAY REED SS 12VDC 2	410-0004	28.35	*						.02
	29-23309-00	47000 MFD 15WVDC+75%	134-4792	6.60	*						
	29-23310-00	61000 MFD 50WVDC+100%	134-6102	24.75	*						
	29-23311-00	RECT, BRDG 25A 100PN	320-2510	3.58	*						
	29-23312-00	RECT, BRDG 10A 100A	320-1010	3.85	*	*					
	29-23320-00	330 20W 10% WW	111-3305	.45	*	*	*				
	29-23321-00	CABLE FL REBN D1(P24-	107302-01	141.75	*	*	*	*	*	*	.13
	29-23322-00	THREAD BLOCK 2	107272-01	1.31	*	*					.01
	29-23323-00	THREAD BLOCK 4	107274-01	1.58	*						.01
	29-23324-00	THREAD BLOCK ASSY W/L	107160-01	7.35	*						.01
	29-23325-00	THREAD BLOCK ASSY W/L	107160-05	6.04	*						.01
	29-23326-00	THREAD BLOCK ASSY W/L	107160-06	1.05	*						.01
*	29-23475-00	HUB REEL	109555-01	107.63	*						.04
*	29-23774-00	PCBA, CNTL M2	106876-02	265.00	*	*	*				1.45
*	29-23779-00	CONTROL ASSY	109536-01	94.60	*	*	*				.32
	29-23964-00	SWITCH ASSY, SAF INTL	109530-00	68.00	*	*	*				.01
	29-23988-00	BELT, BLOWER	108479-03	4.50	*	*	*	*	*	*	.01
	29-23989-00	BELT, BLOWER	73133104	4.00	*	*	*	*	*	*	.01
	29-23990-00	BELT, BLOWER	108479-05	4.00	*	*	*	*	*	*	.01
	29-23991-00	BELT, BLOWER	108479-10	4.00	*	*	*	*	*	*	.01
	29-23992-00	BELT, BLOWER	108479-11	4.00	*	*	*	*	*	*	.01
	29-23993-00	BELT, BLOWER	108479-12	4.00	*	*	*	*	*	*	.01
	29-23994-00	BELT, COMPRESSOR	108479-01	5.00	*	*	*	*	*	*	.01
	29-23995-00	BELT, COMPRESSOR	108479-07	3.50	*	*	*	*	*	*	.01
	29-23996-00	BELT, COMPRESSOR	108479-08	3.50	*	*	*	*	*	*	.01



D 7

FS-98-010 08-14-81

RECOMMENDED SPARES LEVEL

ORIGINAL DATE :04-03-79  
 REVISION DATE :08-07-81  
 UPDATE DATE :00-00-00

OPTION : TU77  
 DESCRIPTION : MAG TAPE TRANSPORT

CD KIT	DEC PART NO.	DESCRIPTION	VENDOR#	COST PRICE	IN STOCK LEVEL OF SERVICE							C.I.
					UPTO 98%	UPTO 95%	UPTO 90%	UPTO 80%	UPTO 70%	UPTO 50%		
	70-14569-00	BLOWER ASSY		52.40	*							.10
TOTAL COST				5274.38	3474.20	2846.91	2258.10	1560.65	1201.02			

PM SECTION: INDICATED LEVELS BASED ON 1 YEARS MAINTENANCE

*	29-23220-00	26MUFFLER		8.40	2	2	2	2	2	2	
*	29-23259-00	26FILTER, AIR		.08	2	2	2	2	2	2	
TOTAL COST				16.96	16.96	16.96	16.96	16.96	16.96	16.96	

MISCELLANEOUS PARTS

12-14073-01	SW,RKR 1P 15A ON/OFF			.38							
12-14405-00	DOOR, TAPE TRANSPORT, FRONT, NORYL, 19" X 26"			41.48							
13-11003-01	R NETWORK 14-180 14-390 16PIN DIP(13-00			.47							
29-11691-00	96TAPE MSTR OTPT 1200X1/2			68.90							
29-16871-00	99MAGNASEE	6		2.87							
29-19224-00	96TAPE, MASTER SKEW 1200"			171.72							
29-22568-00	83RESISTOR PACK 14 PIN DIP	760-5-R		1.75							
29-23219-00	26SPRING, COMPRESSION	1		.09							
29-23222-00	26SPRING, BELLVILLE			.09							
29-23223-00	26WASHER			.28							
29-23241-00	26CLEANER, TAPE	1		25.46							
29-23284-00	26HUB, MOTOR 50HZ	1		19.95							
29-23285-00	26HUB, MOTOR 60HZ	1		15.23							
29-23298-00	26BLOWER ASSY			91.88							
29-23299-00	26PULLEY, 60HZ LO ALT MTR	1		25.73							
29-23300-00	26PULLEY 60HZ HI ALT MTR	1		30.98							
29-23301-00	26PULLEY, 50HZ LO ALT MTR	1		26.25							
29-23302-00	26PULLEY, 50HZ HI ALT MTR	1		35.70							
29-23311-00	26CAP PLUG	1		.10							
29-23378-00	26HOSE, 3/16" ID 11 FT			.28							
29-23655-00	26KIT, VAC HOSE/TUBING	1		43.05							
29-23997-00	26PULLEY, MOTOR	1		27.00							
29-23998-00	26PULLEY, MOTOR	1		23.00							
29-24000-00	26PULLEY, MOTOR	1		38.00							
29-24002-00	26PULLEY, MOTOR	1		38.00							



FS-98-010 08-14-81

## RECOMMENDED SPARES LEVEL

ORIGINAL DATE :04-03-79  
 REVISION DATE :08-07-81  
 UPDATE DATE :00-00-00

OPTION : TU77  
 DESCRIPTION : MAG TAPE TRANSPORT

CD KIT	DEC PART NO.	DESCRIPTION	VENDOR#	COST PRICE	IN STOCK LEVEL OF SERVICE							C.I.	
					UPTO 98%	UPTO 95%	UPTO 90%	UPTO 80%	UPTO 70%	UPTO 50%			
	29-24003-00	26PULLEY, MOTOR		1	38.00								
	29-24004-00	26PULLEY, MOTOR		1	38.00								
	29-24007-00	26PULLEY, MOTOR		1	38.00								
	29-24008-00	26PULLEY, MOTOR		1	38.00								
	29-24009-00	26PULLEY, COMPRESSOR		1	4.75								
	29-24010-00	26PULLEY, COMPRESSOR		1	4.75								
	29-24011-00	26PULLEY, COMPRESSOR		1	24.00								
	29-24012-00	26PULLEY, COMPRESSOR		1	22.00								
	90-07221-00	FUSE,REG BLO 5	A, 250V GLASS		.00								
	90-08835-00	FUSE,REG BLO 20	A, 32V GLASS		.00								
	90-08838-00	FUSE,REG BLO 10	A, 32V GLASS		.00								

## SPECIAL TOOLS

29-10562-00	97HANDLE			.92
29-11001-00	97SCREWDRIVER "1" PHILLIPS			.86
29-11625-00	97EXTENSION 7"			1.40
29-11630-00	97BALLDRIVER 5/32"			1.43
29-11635-00	97TACHOMETER, HAND HELD			122.96
29-11636-00	97GUAGE, 0-5PSI MAG DIFF			31.69
29-11647-00	97ACCESSORIES, PORTABLE USE			14.73
29-11650-00	97GUAGE, 0-40" H2O			31.69
29-20273-00	97MICROSCOPE 50X			37.10
29-23206-00	96CENTERING TOOL REEL MOTOR			33.92
29-23207-00	96BAR, LOCATING, VAC RL FLNG			6.07
29-23218-00	96PCBA EXTENDER 26	1		133.56
29-23228-00	99FITTING, LOW RES TUBE			5.00
47-00038-00	CRIMPER, TAPE 1/2" MAG. AUTO LOAD			40.00

*-08268-00 thermal compound*

<b>digital</b>	<b>FIELD SERVICE TECHNICAL MANUAL</b>				Option or Designer
	12 Bit <input type="checkbox"/>	16 Bit <input type="checkbox"/>	18 Bit <input type="checkbox"/>	36 Bit <input type="checkbox"/>	TU77

Title TU77 - Forward Hitch/Capstan Ramp Adj. <i>Dwg. Error</i>			Tech Tip Number TU77-TT-33		
Author <i>R. Steere</i> / R. Steere		F.S. Office <i>Hayward</i>		Date <i>4/21/81</i>	
Processor Applicability		Mfg. Sub.		Revision <i>0</i>	
AM		Approval: <i>L. Brumby</i>		Date <i>4/21/81</i>	
				Cross Reference	

With the Rev G change to the M2 module, 29-23774, a logic change is being incorporated in the TU77. This additional logic adds what is referred to as a "Forward Hitch", when a reverse tape motion is attempted after a delay of 10 to 20 ms.

For the TU77, this logic also changes the waveform that is seen during capstan ramp adjustment on Pin 21 of the Rev G and above M2 module. Fig. 1 shows the waveform that will be seen on TP21 with this change installed.

The time relationship, T1, shows the slight hitch of forward tape movement and will be between 2.4 and 3.6 ms. This T1 time frame is fixed and is not adjustable.

T2 time frame, which is the actual backward start ramp, is adjustable and should be 3.0 ms ± .15 ms (2.85 - 3.15 ms).

This hitch will not be present between consecutive forward tape motions. It will only be present before reverse tape motion, when 10-20 ms has elapsed since the previous command.

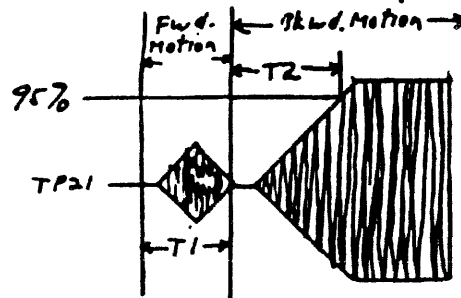


FIG 1

Errors will also occur during the drive function timer diagnostic - Test 16 - forward half gap stop test. The diagnostic is being updated.

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Page 38	Page Revision 0	Publication Date April 23, 1981
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23