FIELD CHANGE ORDER

NO. 17-014

RCSL: 44-RT 1196

MANDATORY [x]	RETROFIT ON FAILURE [ ]	OPTIONAL [ ]
WARRANTY [x]	NON WARRANTY [ ]	

PAGE 1 OF 1

RE ECN NO. 17-014

MANUFACTURING EFFECTUATION

DSC801/39,40,43 and upwards.

EQUIPMENT AFFECTED

RC 8000

RC 8200 / DSC 801

Disc Storage Controller.

NOTE

SCOPE

Correction of Bus-out parity during write operations.

CONT'D [ ]

FIELD INSTRUCTION

1. On DSC 801, remove wire going from pos. 61 pin 6 to pos. 31 pin 3.

2. Insert wire between pos. 61 pin 5 and pos. 31 pin 3.

3. Code the FCO-Label 17-014.

CONT'D [ ]

ADDITIONAL COMMENTS

QTY	PARTS REQUIRED	RC - P/N

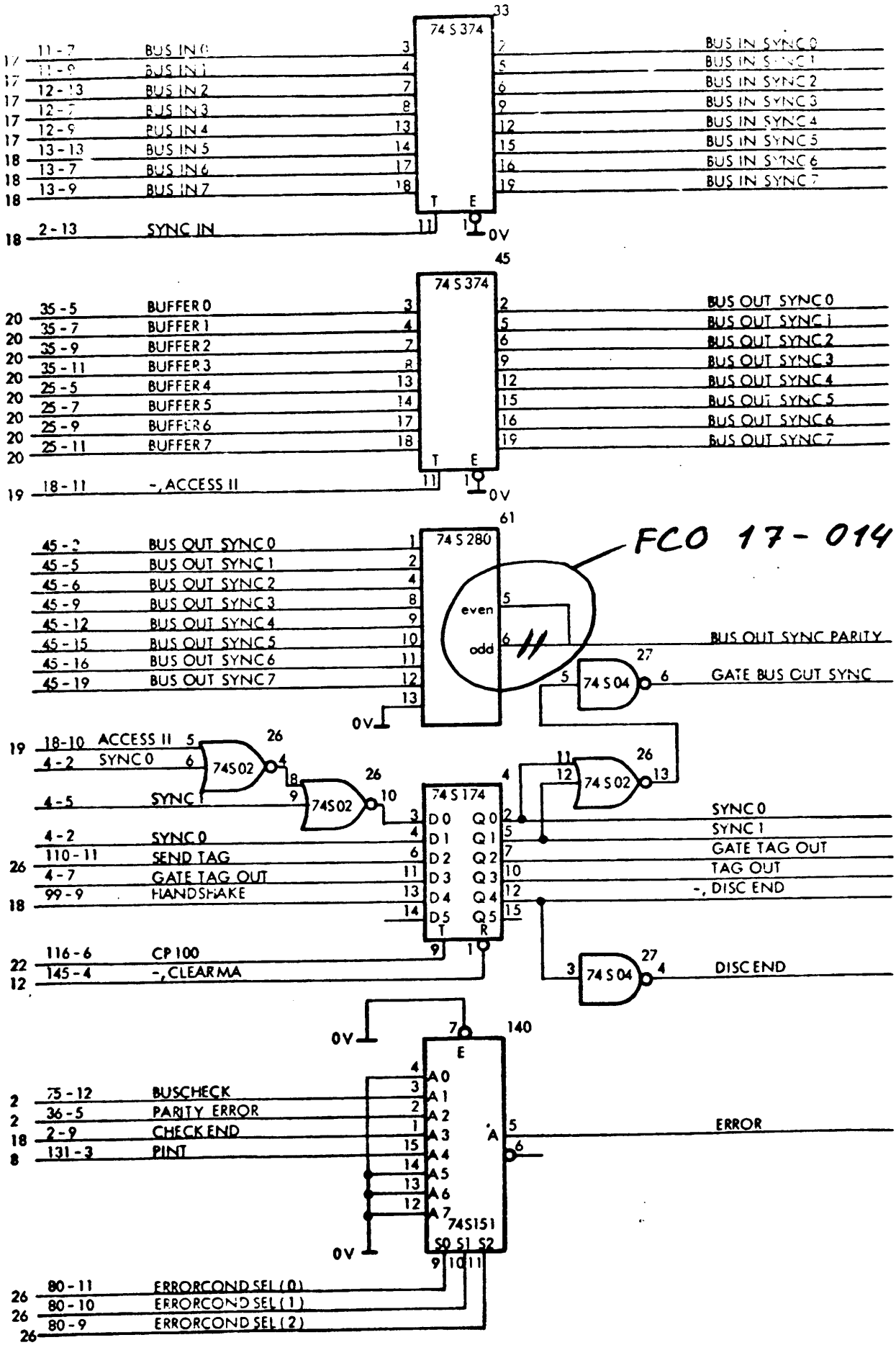
DOCUMENTATION ENCLOSED

Preliminary Logic diagram page 21 (1page)

TIME REQUIRED 30 mins.

DATE 25/8-77

SIGN



761111 PKA 761111 ERC

FIELD CHANGE ORDER

NO. 17-017

RCSL: 44-RT 1196

MANDATORY	X	RETROFIT ON FAILURE		OPTIONAL	
WARRANTY	X	NON WARRANTY			

PAGE 1 OF 4

RE ECN NO. 17-017

MANUFACTURING EFFECTUATION

DSC 801/45 and upwards.

EQUIPMENT AFFECTED

RC 8000

RC 8200 / DSC 801
Disc Storage Controller

NOTE

SCOPE

Change in DSC 801 preventing latch up of handshake flip flop, and ensuring reliable Disc-powerup and autoload.

CONT'D

FIELD INSTRUCTION

1. Execute the wiring changes as shown the enclosed hardoc formula.
2. In position 3 substitute 56Ω resistor with a 2N2222A emitter in pin 10, collector in pin 11, base in pin 12. (Position 3 is changed to circuit no KT 214, see page 4)
3. Code the FCO-label 17 - 017.

CONT'D

ADDITIONAL COMMENTS

QTY	PARTS REQUIRED	RC - P/N
1	2N2222A transistor	3-4116
1	Transispace	1-1502

DOCUMENTATION ENCLOSED

Provisional logic diagrams for DSC 801 Technical Manual. (3 pages)

TIME REQUIRED 1 hour.

DATE 77.09.13

SIGN

RCSL: 44-RT 1572

A/S REGNECENTRALEN | Modification formular HARDOC 1 | UNIT: DSC 801 | Designed 77.09.08 PKA

Signal name	Wire description on input- and/or outputform	In	Out	Executed
	(150-12) (110-11) (79-9) (27-9) (32-15) (31-15) (32-6) (21-15) (22-1)		X	
	(22-1) (22-2) (21-6) (4-6)		X	
	(150-12) (110-11) (79-9) (27-9) (32-15) (31-15) (32-6) (21-15) (22-1)	X		
	(22-1) (21-6) (4-6)	X		
	(1-13) (1-11) (2-4)		X	
	(1-13) (1-11) (2-4) (22-2)	X		
	(23-8) (23-6) (23-5) (23-19) (23-18)		X	
	(23-8) (23-19) (23-18)	X		
	(27-10) (56-19)		X	
	(27-10) (56-19) (3-12)	X		

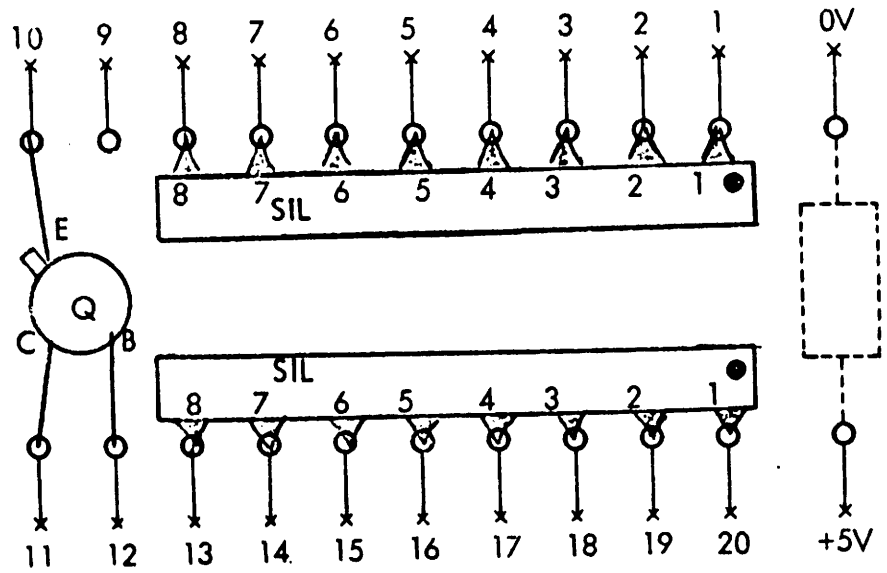
RCSL: 44-RT 1572

A/S REGNECENTRALEN Modification formular HARDOC 2 UNIT: DSC 801 Designed 77,09,08 PKA

Signal name	Wire description on input- and/or outputform	In	Out	Executed
	56-17 56-13 145-3		X	
	23-5 23-6 56-17 56-13 145-3	X		
	27-2 99-14		X	
	23-4 22-4 11-13 22-14 23-17 23-16		X	
	99-14 23-4 22-4 11-13 22-14 23-17 23-16	X		
	131-6 130-9 130-2 27-1		X	
	131-6 130-9 130-2	X		

Circuit: KT 214 (Pull - down resistors + transistor)

Mounting: Seen from the componentside



Internal wiring:

0V - 1

0V - 20

+5V - 11

Components:

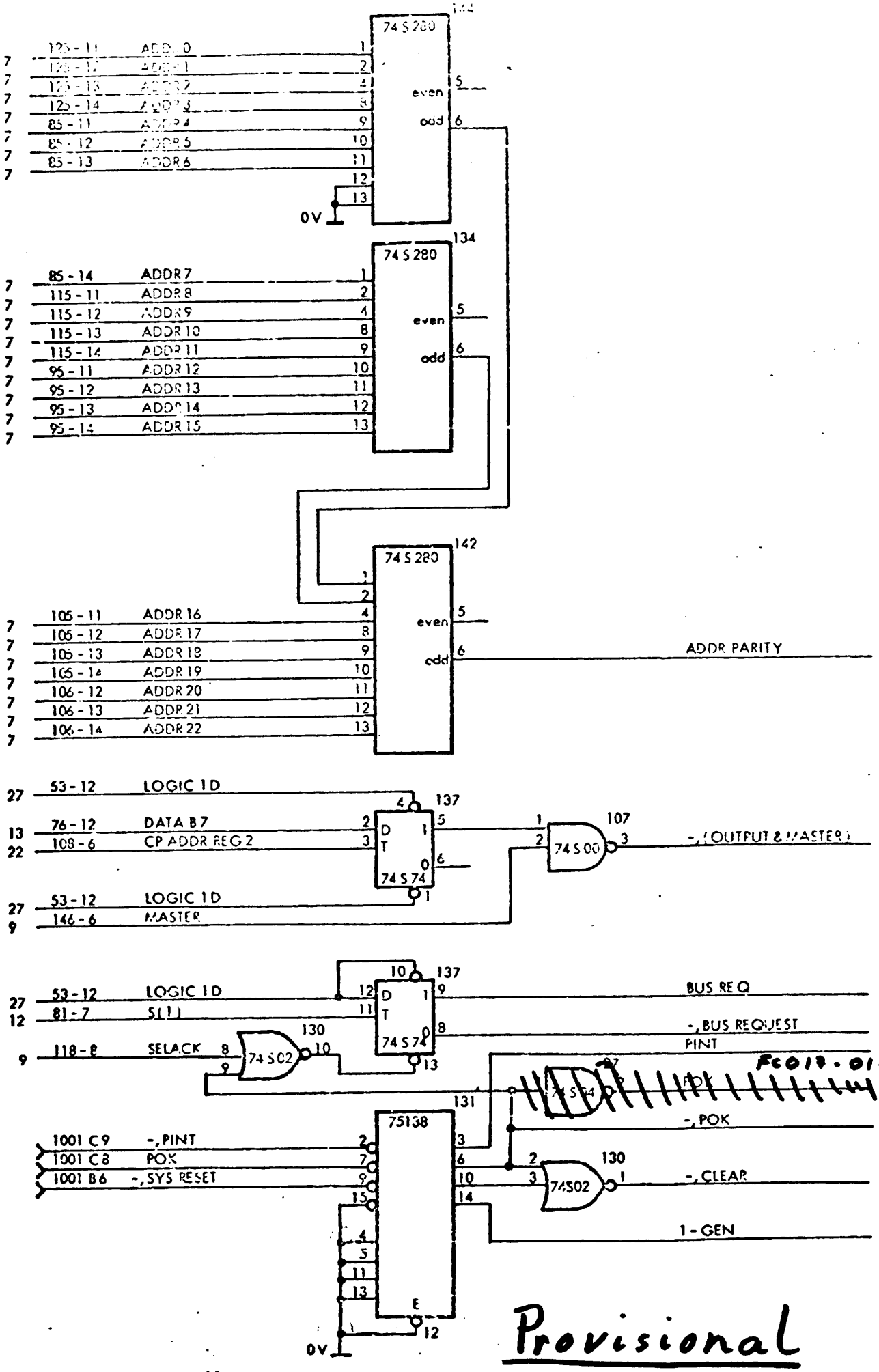
SIL: 216CH101X5LT (Sprague 7* 100E)

Q: Transistor 2N2222A

FIELD CHANGE ORDER

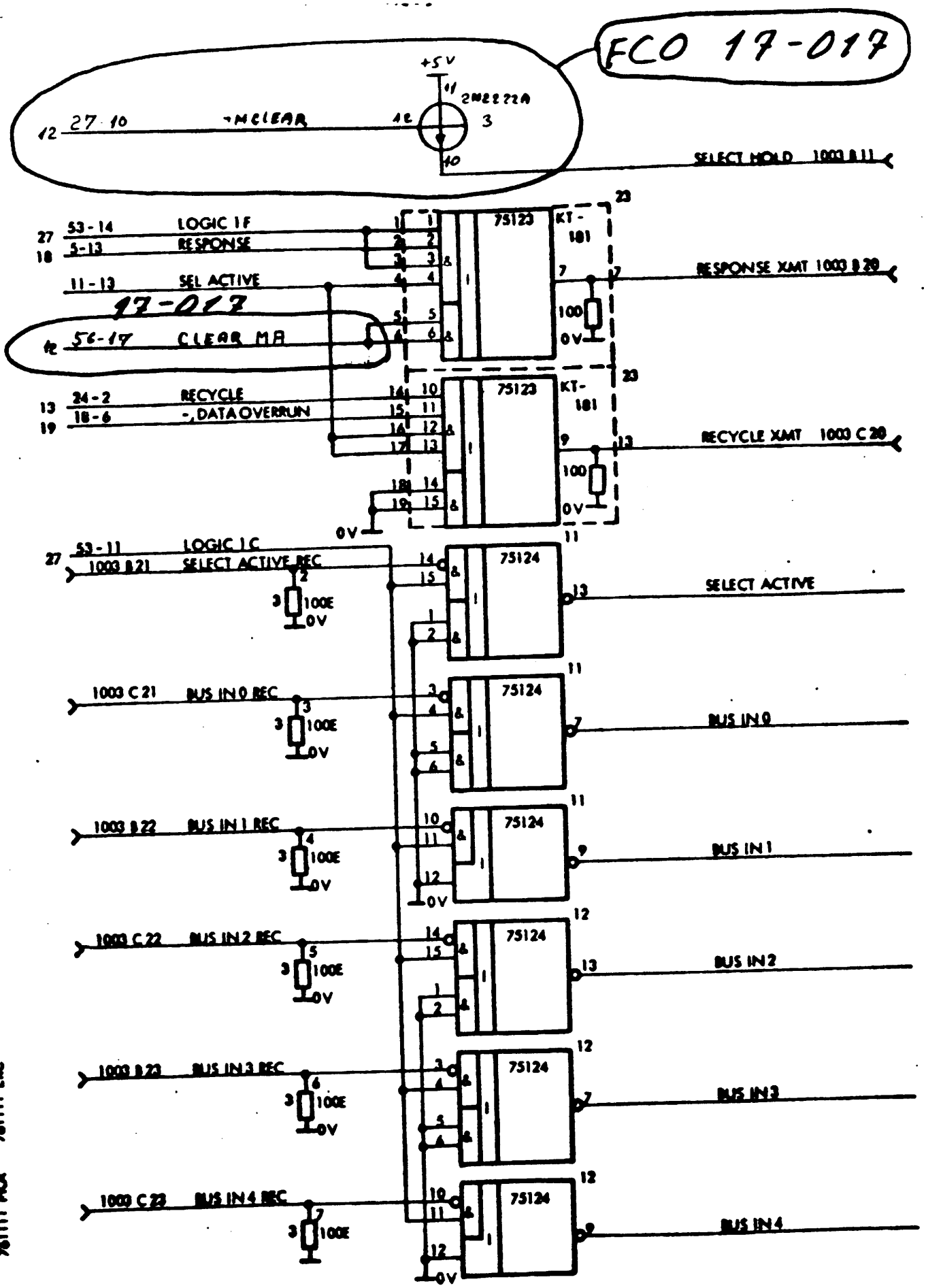
NO. 17 - 017

PAGE 4 OF 4



761111 PKA 761111 ERC

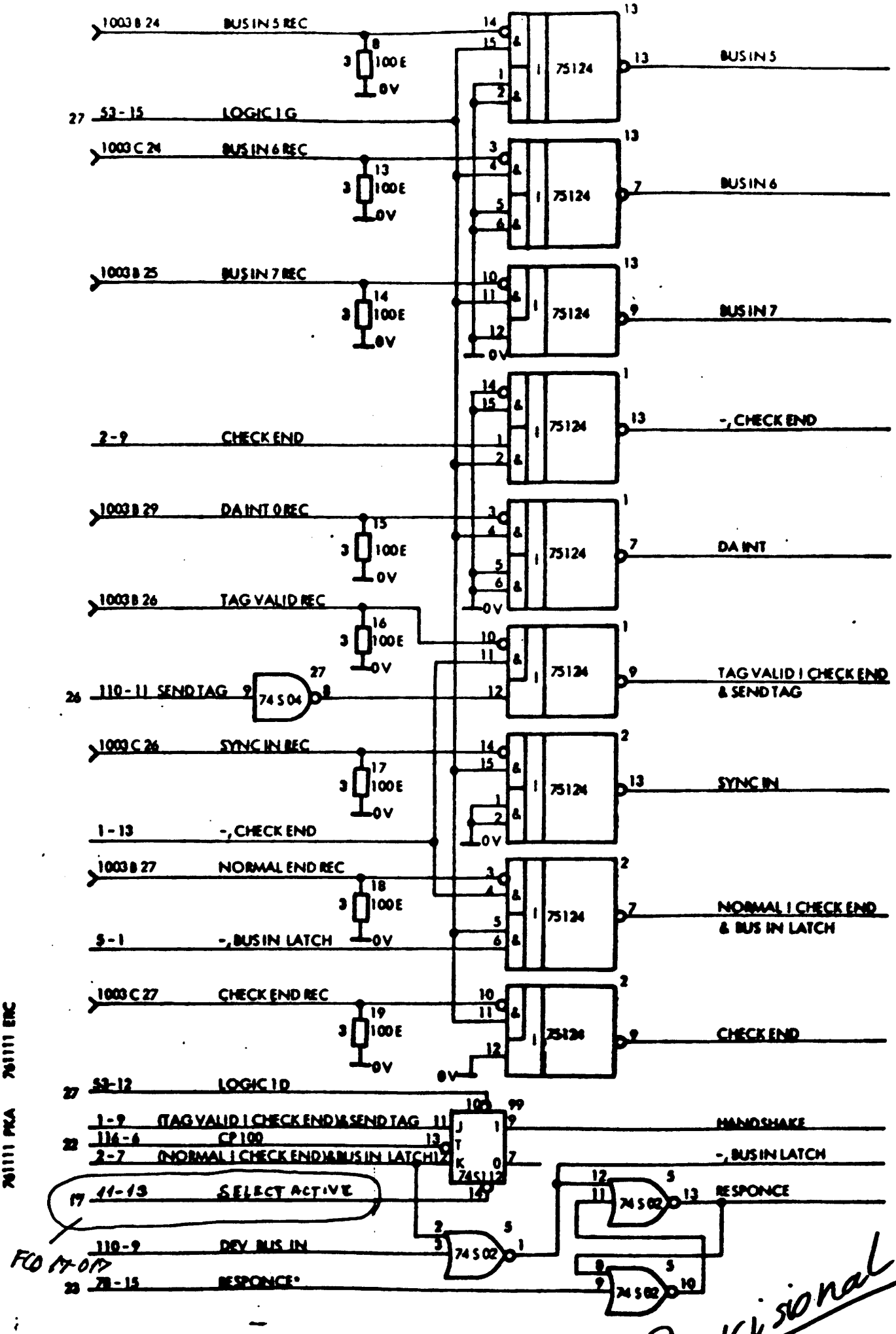
DSC 801 PARITYGENERATORS, INPUT,/OUTPUT FLIP-FLOP, RECEIVERS FOR RESETSIGNALS P8
LOGIC DIAGRAM



761111 PKA 761111 EBC

DSC 801

DISCINTERFACE TRANSMITTERS AND RECEIVERS
LOGIC DIAGRAM


1003 B 24
BUS IN 5 REC
3 8 100E 0V
27 53-15
LOGIC 1 G
1003 C 24
BUS IN 6 REC
3 13 100E 0V
1003 B 25
BUS IN 7 REC
3 14 100E 0V
2-9
CHECK END
1003 B 29
DA INT 0 REC
3 15 100E 0V
1003 B 26
TAG VALID REC
3 16 100E 0V
26 110-11 SEND TAG 9
74 S 04
1003 C 26
SYNC IN REC
3 17 100E 0V
1-13
-, CHECK END
1003 B 27
NORMAL END REC
3 18 100E 0V
5-1
-, BUS IN LATCH
1003 C 27
CHECK END REC
3 19 100E 0V
27 52-12
LOGIC 1 D
1-9
(TAG VALID I CHECK END)& SEND TAG
22 116-6
CP 100
2-7
(NORMAL I CHECK END)& BUS IN LATCH
17 11-13
SELECT ACTIVE
110-9
DEV BUS IN
28 78-15
RESPONCE*
75124
74S112
74 S 02
BUS IN 5
BUS IN 6
BUS IN 7
-, CHECK END
DA INT
TAG VALID I CHECK END & SEND TAG
SYNC IN
NORMAL I CHECK END & BUS IN LATCH
CHECK END
HANDSHAKE
-, BUS IN LATCH
RESPONCE
FC 17 OP
Provisional

Modtaget d. 13-9-77

Antal doc's

Antal kits

Leverandør RC — Info FCO

	Accept i. h. t. liste (cirkulere/retur) - (kopi)	Dato	Response +/-
	Accept - selektiv		

Produkt	No.
8600	17-017

Renskrift / SA 20/9-77

		Antal	Bestilt d.	
X	Trykning / fotokopiering	40	26 9 77	
	Kits			
	RCSL o. a. doc's			
	Testprogram			

Udført d. 1-10 77

X Distribution i. h. t. liste

☐ Distribution - selektiv

Att.	Afd.	Doc.	Kit	S/N m.m.

X Cirkulation i. h. t. liste

☐ Cirkulation - selektiv

FIELD CHANGE ORDER

FCO

NO 17-020
ISSUE WEEK 09-78

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO: 17-020

SERIAL EFFECTIVITY

DSC 801/78 and upwards.

EQUIPMENT AFFECTED

RC 8000
RC 8200/DSC 801
Disc Storage Controller

NOTE

FCO 17-019 (on DSA 801) must be implemented before this FCO has any effect.

REASON FOR CHANGE

To enable possibility for error corrections in the Disc Storage Channels, a change is introduced in the DSC 801 microprogram.

DESCRIPTION OF CHANGE

1. Replace ROM 170 with ROM 423.
2. Code the FCO-Label 17-020.

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
1	ROM 423	

DOCUMENTATION ENCLOSED

Listing of PROM change (1 page)
(The flow diagram is not changed)

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES X	NO	

ESTIMATED INSTALLATION TIME: 15 mins.

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
					28.02.14		15/2-78

Listing of PROM change.

The following change is introduced to the microprogram PROM (ROM 170 / 423).

address 650 0111 ⟶ 1111

The flow diagram is not changed.

FIELD CHANGE ORDER

NO: 17-024
ISSUE WEEK 44-78

RCSL: 44 - RT 1634

MANDATORY	[X]	RETROFIT ON FAILURE	[ ]
WARRANTY	[X]	NON WARRANTY	[ ]

PAGE 1 OF 1
RE: ECN NO: 17-024

SERIAL EFFECTIVITY

DSA702/10 and upwards
DSA802/14,16 and upwards

EQUIPMENT AFFECTED

RC3600/6000/8000

RC3789/DSA702
RC8201/DSA802
Disc Storage Adaptor

NOTE

REASON FOR CHANGE

1. Autoload from the Fixed Media Disc Unit RC8233 might fail after a power-up, caused by a micro-program error.

2. "Hard error" might occur if the Disc Drive is connected via a 12 m cable, caused by a timing error in the micro-program.

DESCRIPTION OF CHANGE

1. Replace the following micro-program PROMs:

ROM470	by	ROA030
ROM471	by	ROA031
ROM472	by	ROA034
ROM473	by	ROA035

2. Code the FCO-label 17-024.

ADDITIONAL COMMENTS

ROA is just a new name for a PROM, which is going to replace ROM, because all ROM-numbers have been used.

QTY:	PARTS REQUIRED	RC -P/N
1	ROA030	
1	ROA031	
1	ROA034	
1	ROA035	

DOCUMENTATION ENCLOSED

New provisonal pages 78 and 88 for the DSA702 manual (44-RT 1743) and the DSA802 manual (30M161) (2 pages)

KITS FREE OF CHARGE FROM ISS:	YES [X]	NO [ ]	
RETURN CHANGED PARTS TO ISS:	YES [X]	NO [ ]	

ESTIMATED INSTALLATION TIME: 10 minutes

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
LMJ	13/10/78		16/10/78		19/10/78		20-10-78

```
10018
01                ; TARGET COMMAND.
02                ;       ECC IS RESAT DURING THIS COMMAND.
03  0222 24113600004  TARG:   EXEC     RESECC,DSCOUT,DRIVOUT,1,PAS,0,0,VALID
04                                                          ; SET TAG VALID,
05                                                          ; DRIVE OUT:=DSC OUT;
06  0223 04002251200          FCCJUMP  RESECC,JSR,CCRES          ; SUBROUTINE: ECC RESET.
07  0224 00002575206          DOJUMP   JSR,SENDTAG,SETTAG        ; SUBROUTINE: SEND TAG.
08  0225 24063600007          EXEC     RESECC,0,GAPRS,1,PAS,0,0,CLTAG  ; RESET GAPCOUNTER,
09  0226 20002000000          DO       0                         ; CLEAR TAG OUT;
10  0227 30013600377          IMID     DRIVOUT,1,PAS,0,377       ; DRIVE OUT:=-1,
11                                                          ; PREPARING FOR CLEAR RPS.
12  0230 00002074000          JUMP     JMP,CONT                  ; GO TO CONT.
13
14                ; TARGET COMMAND WITH BIT1=1 IS A CLEAR RPS COMMAND;
15                ; IT ALWAYS FOLLOWS A TARGET COMMAND WITH BIT1=0.
16                ; CLEAR RPS ENTERS HERE. (MAP ADDRESS).
17  0231 20707261046  CLRPS:  EXEC     0,ERROR,0,LOADA,OR,DSA,ZERO,SETTAG ; SET TAG OUT WITH
18                                                          ; PREVIOUS SELECTED
19                                                          ; TAG COMMAND.
20  0232 00002566404          DOJUMP   JMPC0,CC15,VALID          ; SET TAG VALID;
21                                                          ; IF PINT, SET'CHECKEND;
22  0233 20303600602          EXEC     0,CONTR,0,1,PAS,0,BIT6?,NMEND   ; SET NORMAL END,
23                                                          ; IF TAG GATE IN=1,
24  0234 00002242500          JUMP     JMPC,CC24                 ; GO TO CC24.
25  0235 20303600600        DO SETCOND CONTR,PAS,0,BIT6? O       ; IF TAG GATE IN=1,
26  0236 00002243007          DOJUMP   JMPC,CC72,CLTAG           ; GO TO CC72.
27                                                          ; CLEAR TAG OUT.
28  0237 20303600000  CC23:   SETCOND  CONTR,PAS,0,BIT0?        ; IF DSC TAG OUT=0,
29  0240 00002237400          JUMP     JMPC0,CC23                ; THEN LOOP,
30  0241 00002021003          DOJUMP   JMP,WAIT,CHECK            ; ELSE SET CHECKEND,
31                                                          ; GO TO WAIT.
32  0242 20002000007  CC24:   DO       CLTAG                     ; CLEAR TAG OUT;
33  0243 20002000000  CC72:   DO       0
34  0244 30011600000          IMID     DRIVOUT,LOADQ,PAS,0,0     ; DRIVOUT:=0,Q:=0;
35  0245 30037600007          IMID     DRIVCN,LOADA,PAS,ACC,7    ; TAG:=CONTROL, ACC:=7
36
37                ; ***START WAITING FOR RAF OR WAF.
38  0246 20303600000  CC45:   SETCOND  CONTR,PAS,0,BIT0?        ; IF DSC TAG OUT=1
39  0247 00002000105          DOJUMP   JMPMPC,0,TIMER           ; JUMP MAP,SET TIMER.
40  0250 00002246000          JUMP     JMP,CC45                 ; ELSE LOOP.
41
42                ; SUBROUTINE: RESET ECC REGISTERS.
```

NOT USED.

Provisional

```
10000
01                ;* LOCATION 0 IS INTERRUPT ADDRESS. THE DSA CAN BE INTERRUPTED
02                ; BY TIME OUT, POWER, OR FALL OF SELECT ACTIVE LINE.
03'       000000            .LOC 0
04  0000 20703600047        EXEC    0,ERROR,0,1,PAS,0,ZERO,CLTAG     ; IF STATUS=0 THEN
05  0001 00002005500        JUMP    JMPC,IDLE                        ; GO TO IDLE;
06  0002 20703600700        SETCOND ERROR,PAS,0,BIT7?                ; IF POWER RESTART=0
07  0003 00002553400        JUMP    JMPC0,TIME                       ; THEN GO TO TIME OUT.
08                                                                   ;
09        30007607200       IMID    0,LOADA,PAS,RESRD,BIT0.
10  0004 ~~20007107000~~ POWER: ~~EXEC~~  0,0,0,LOADA,CLEAR,RESRD,0,0   ; RESET UNIT RESERVED;
11                                                                       SET FIXHEAD STATE.
12                ; IN THE IDLE STATE THE DSA WAITS FOR SELECT HOLD SIGNAL FROM DSC.
13                ; THEN IT SETS UP THE SELECT ACTIVE LINE.
14  0005 20303600200 IDLE:  SETCOND CONTR,PAS,0,BIT2?                ; IF SELECT HOLD 0 =1
15  0006 00002012500        JUMP    JMPC,DSC0                        ; THEN GO TO DSC0;
16  0007 20303600300        SETCOND CONTR,PAS,0,BIT3?                ; IF SELECT HOLD 1 =1
17  0010 00002014500        JUMP    JMPC,DSC1                        ; THEN GO TO DSC1;
18  0011 00002005001        DOJUMP  JMP,IDLE,RESET                   ; ELSE GO TO IDLE;
19  0012 30043600002 DSC0:  IMID    DSCCN,1,PAS,0,BIT6               ; SET SELECT ACTIVE 0=1
20  0013 00002015000        JUMP    JMP,RES                          ; GO TO RES;
21  0014 30043600001 DSC1:  IMID    DSCCN,1,PAS,0,BIT7               ; SET SELECT ACTIVE 1=1
22                  5                                          HIGH
23  0015 20017107001 RES:   EXEC    0,0,DRIVOUT,LOADA,CLEAR,~~ACC~~,0,RESET ; RESET ERRORS,
24                                                                   ; RESET ~~ACC~~ AND DRIVE HIGH CYLINDER
25                                                                   ; BUS OUT;
26  0016 20037101000        EXEC    0,0,DRIVCN,LOADA,CLEAR,DSA,0,0   ; RESET DRIVE TAG AND
27                                                                   ; DSA STATUS;
28  0017 20027102000        EXEC    0,0,DSCIN,LOADA,CLEAR,DR1,0,0    ; RESET DSC BUS IN AND
29                                                                   ; DRIVE STATUS;
30  0020 20067106000        EXEC    0,0,GAPRS,LOADA,CLEAR,LCYL,0,0   ; RESET GAPCOUNTER AND
31                                                                   ; LOW CYLINDER.
32
33                ; IN THE WAIT STATE THE DSA WAITS FOR TAG OUT FROM THE DSC.
34                ; THEN IT PERFORMS A JUMP WITH A MAP OF THE INSTRUCTIONS.
35  0021 20002000001 WAIT:  DO      RESET                            ; RESET ERRORS.
36  0022 20303600000 CC50:  SETCOND CONTR,PAS,0,BIT0?                ; IF TAG OUT = 1 THEN
37  0023 00002000105        DOJUMP  JMPMPC,0,TIMER                   ; JUMP MAP, SET TIMER;
38  0024 00002022000        JUMP    JMP,CC50                         ; ELSE LOOP;
39
40                ; END ADDRESS FOR SUCCEEDED COMMANDS;
41  0025 00002021002 NORMAL: DOJUMP JMP,WAIT,NMEND                   ; SET NORMAL END AND
42                                                                 ; GO TO WAIT;
```

Provisional

FIELD CHANGE ORDER

NO: 17-024
ISSUE WEEK 44-78

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO: 17-024

SERIAL EFFECTIVITY

DSA702/10 and upwards
DSA802/14,16 and upwards

EQUIPMENT AFFECTED

RC3600/6000/8000

RC3789/DSA702
RC8201/DSA802
Disc Storage Adaptor

NOTE

REASON FOR CHANGE

1. Autoload from the Fixed Media Disc Unit RC8233 might fail after a power-up, caused by a micro-program error.

2. "Hard error" might occur if the Disc Drive is connected via a 12 m cable, caused by a timing error in the micro-program.

DESCRIPTION OF CHANGE

1. Replace the following micro-program PROMs:

ROM470	by	ROA030
ROM471	by	ROA031
ROM472	by	ROA034
ROM473	by	ROA035

2. Code the FCO-label 17-024.

ADDITIONAL COMMENTS

ROA is just a new name for a PROM, which is going to replace ROM, because all ROM-numbers have been used.

QTY:	PARTS REQUIRED	RC -P/N
1	ROA030	
1	ROA031	
1	ROA034	
1	ROA035	

DOCUMENTATION ENCLOSED

New provisonal pages 78 and 88 for the DSA702 manual (44-RT 1743) and the DSA802 manual (30M161) (2 pages)

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES X	NO	

ESTIMATED INSTALLATION TIME: 10 minutes

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
LMJ	13/10-78		16/10 78	B/C	19/10 78		24/10-78

```
10018
01                ; TARGET COMMAND.
02                ;       ECC IS RESAT DURING THIS COMMAND.
03  0222 24113600004  TARG:   EXEC     RESECC,DSCOUT,DRIVOUT,1,PAS,0,0,VALID
04                                                          ; SET TAG VALID,
05                                                          ; DRIVE OUT:=DSC OUT;
06  0223 04002251200          FCCJUMP  RESECC,JSR,CCRES        ; SUBROUTINE: ECC RESET.
07  0224 00002575206          DOJUMP   JSR,SENDTAG,SETTAG      ; SUBROUTINE: SEND TAG.
08  0225 24063600007          EXEC     RESECC,0,GAPRS,1,PAS,0,0,CLTAG  ; RESET GAPCOUNTER,
09  0226 20002000000          DO       0                       ; CLEAR TAG OUT;
10  0227 30013600377          IMID     DRIVOUT,1,PAS,0,377     ; DRIVE OUT:=-1,
11                                                          ; PREPARING FOR CLEAR RPS.
12  0230 00002074000          JUMP     JMP,CONT                ; GO TO CONT.
13
14                ; TARGET COMMAND WITH BIT1=1 IS A CLEAR RPS COMMAND;
15                ; IT ALWAYS FOLLOWS A TARGET COMMAND WITH BIT1=0.
16                ; CLEAR RPS ENTERS HERE. (MAP ADDRESS).
17  0231 20707261046  CLRPS:  EXEC     0,ERROR,0,LOADA,OR,DSA,ZERO,SETTAG ; SET TAG OUT WITH
18                                                          ; PREVIOUS SELECTED
19                                                          ; TAG COMMAND.
20  0232 00002566404          DOJUMP   JMPC0,CC15,VALID        ; SET TAG VALID;
21                                                          ; IF PINT, SET'CHECKEND;
22  0233 20303600602          EXEC     0,CONTR,0,1,PAS,0,BIT6?,NMEND   ; SET NORMAL END,
23                                                          ; IF TAG GATE IN=1,
24  0234 00002242500          JUMP     JMPC,CC24               ; GO TO CC24.
25  0235 20303600600        Do ~~SETCOND CONTR,PAS,0,BIT6?~~ O  ; ~~IF TAG GATE IN=1~~,
26  0236 00002243807          DOJUMP   JMPX,CC72,CLTAG         ; GO TO CC72.
27                                                          ; CLEAR TAG OUT.
28  0237 20303600000  CC23:   SETCOND  CONTR,PAS,0,BIT0?      ; IF DSC TAG OUT=0,
29  0240 00002237400          JUMP     JMPC0,CC23              ; THEN LOOP,
30  0241 00002021003          DOJUMP   JMP,WAIT,CHECK          ; ELSE SET CHECKEND,
31                                                          ; GO TO WAIT.
32  0242 20002000007  CC24:   DO       CLTAG                   ; CLEAR TAG OUT;
33  0243 20002000000  CC72:   DO       0
34  0244 30011600000          IMID     DRIVOUT,LOADQ,PAS,0,0   ; DRIVOUT:=0,Q:=0;
35  0245 30037600007          IMID     DRIVCN,LOADA,PAS,ACC,7  ; TAG:=CONTROL, ACC:=7
36
37                ; ***START WAITING FOR RAF OR WAF.
38  0246 20303600000  CC45:   SETCOND  CONTR,PAS,0,BIT0?      ; IF DSC TAG OUT=1
39  0247 00002000105          DOJUMP   JMPMPC,0,TIMER          ; JUMP MAP,SET TIMER.
40  0250 00002246000          JUMP     JMP,CC45                ; ELSE LOOP.
41
42                ; SUBROUTINE: RESET ECC REGISTERS.
```

NOT USED.

Provisional

```
01          ;* LOCATION 0 IS INTERRUPT ADDRESS. THE DSA CAN BE INTERRUPTED
02          ; BY TIME OUT, POWER, OR FALL OF SELECT ACTIVE LINE.
03   000000          .LOC 0
04 0000 20703600047          FXEC     0,ERROR,0,1,PAS,0,ZERO,CLTAG     ; IF STATUS=0 THEN
05 0001 00002005500          JUMP     JMPC,IDLE                        ; GO TO IDLE;
06 0002 20703600700          SETCOND  ERROR,PAS,0,BIT7?                ; IF POWER RESTART=0
07 0003 00002553400          JUMP     JMPC0,TIME                       ; THEN GO TO TIME OUT.
08                                                                     ;
09   300076072 00          IMID     0,LOADA,PAS,RESRD,BIT0,
10 0004 ~~20007107000~~ POWER: ~~EXEC~~   0,0,0,LOADA,CLEAR,RESRD,0,0   ; RESET UNIT RESERVED;
11                                                                       SET FIXHEAD STATE.
12          ; IN THE IDLE STATE THE DSA WAITS FOR SELECT HOLD SIGNAL FROM DSC.
13          ; THEN IT SETS UP THE SELECT ACTIVE LINE.
14 0005 20303600200 IDLE:    SETCOND CONTR,PAS,0,BIT2?                ; IF SELECT HOLD 0 =1
15 0006 00002012500          JUMP     JMPC,DSC0                       ; THEN GO TO DSC0;
16 0007 20303600300          SETCOND  CONTR,PAS,0,BIT3?               ; IF SELECT HOLD 1 =1
17 0010 00002014500          JUMP     JMPC,DSC1                       ; THEN GO TO DSC1;
18 0011 00002005001          DOJUMP   JMP,IDLE,RESET                  ; ELSE GO TO IDLE;
19 0012 30043600002 DSC0:    IMID     DSCCN,1,PAS,0,BIT6              ; SET SELECT ACTIVE 0=1
20 0013 00002015000          JUMP     JMP,RES                         ; GO TO RES;
21 0014 30043600001 DSC1:    IMID     DSCCN,1,PAS,0,BIT7              ; SET SELECT ACTIVE 1=1
22                5                                          HIGHL
23 0015 2001710X001 RES:     EXEC     0,0,DRIVOUT,LOADA,CLEAR,ACC,0,RESET ; RESET ERRORS,
24                                                                     ; RESET ~~ACC~~ AND ~~DRIVE~~ HIGH CYLINDER
25                                                                     ; BUS OUT;
26 0016 20037101000          EXEC     0,0,DRIVCN,LOADA,CLEAR,DSA,0,0  ; RESET DRIVE TAG AND
27                                                                     ; DSA STATUS;
28 0017 20027102000          EXEC     0,0,DSCIN,LOADA,CLEAR,DR1,0,0   ; RESET DSC BUS IN AND
29                                                                     ; DRIVE STATUS;
30 0020 20067106000          EXEC     0,0,GAPRS,LOADA,CLEAR,LCYL,0,0  ; RESET GAPCOUNTER AND
31                                                                     ; LOW CYLINDER.
32
33          ; IN THE WAIT STATE THE DSA WAITS FOR TAG OUT FROM THE DSC.
34          ; THEN IT PERFORMS A JUMP WITH A MAP OF THE INSTRUCTIONS.
35 0021 20002000001 WAIT:    DO       RESET                           ; RESET ERRORS.
36 0022 20303600000 CC50:    SETCOND  CONTR,PAS,0,BIT0?               ; IF TAG OUT = 1 THEN
37 0023 00002000105          DOJUMP   JMPMPC,0,TIMER                  ; JUMP MAP, SET TIMER;
38 0024 00002022000          JUMP     JMP,CC50                        ; ELSE LOOP;
39
40          ; END ADDRESS FOR SUCCEEDED COMMANDS;
41 0025 00002021002 NORMAL: DOJUMP   JMP,WAIT,NMEND                   ; SET NORMAL END AND
42                                                                   ; GO TO WAIT;
```

Provisional

HW3

FIELD CHANGE ORDER

NO: 17-025
ISSUE WEEK 47-78

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO: 17-025

SERIAL EFFECTIVITY

DSC801/98,110 and upwards

EQUIPMENT AFFECTED

RC8000
RC8200/DSC801
RC8201/DSC801
Disc Storage Controller

NOTE

REASON FOR CHANGE

To prevent busparity indication on the MCU, as a consequence of autoload after power-up.

DESCRIPTION OF CHANGE

1. Replace ROM169 by ROA028

2. Code the FCO-label 17-025

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
1	ROA028	

DOCUMENTATION ENCLOSED

Listing of PROM change (1 page)
(the flow diagram has not been changed)

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES	NO X	

ESTIMATED INSTALLATION TIME: 10 minutes

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
	8/11 78		6/11-78		8/11-78		7/11-78

LISTING OF PROM CHANGE

The following change is introduced to the micro program PROM (ROM169 - ROA028).

address 304 0001 → 0000
adress 305 0000 → 0001

The flow diagram has not been changed.

HW3

FIELD CHANGE ORDER

NO: 17-026
ISSUE WEEK 47-78

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO: 17-026

SERIAL EFFECTIVITY

DSC801/98,110 and upwards

EQUIPMENT AFFECTED

RC8000
RC8200/DSC801
RC8201/DSC801
Disc Storage Controller

NOTE

REASON FOR CHANGE

Enabling the use of DSC801 in the CPU-chassis, by bypassing the CPU-priority signal.

DESCRIPTION OF CHANGE

1. Wrap the connection 1001B4 - 1001B5
2. Code the FCO-label 17-026

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
1/4 m	Mini Wrap Wire	4-4910

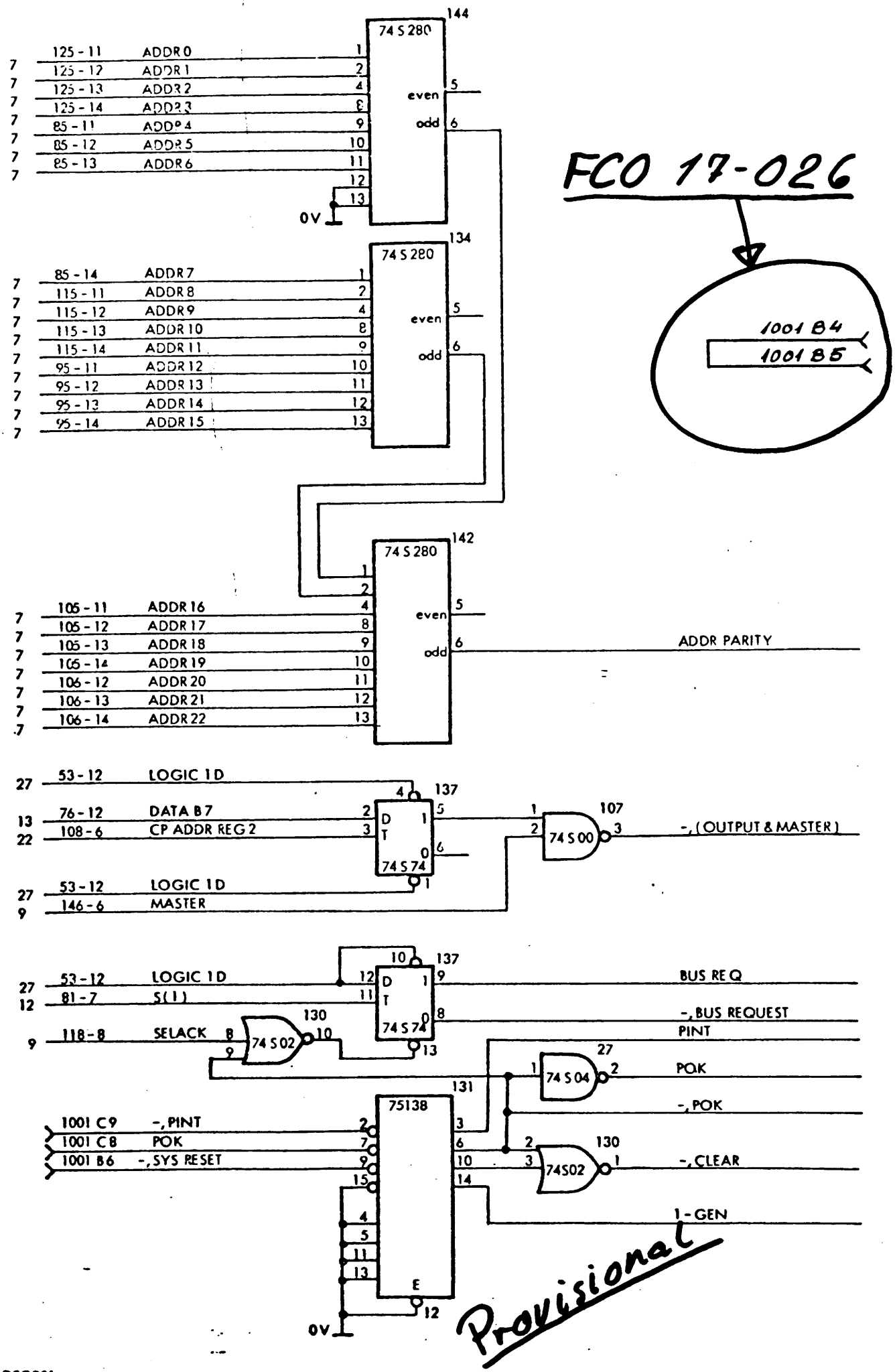
DOCUMENTATION ENCLOSED

Provisional logic diagram
(1 page)

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES	NO X	

ESTIMATED INSTALLATION TIME: 15 minutes

PROJECT ENGINEEP		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
	6/11-78		6/11-78		8/11-78		14-78



761111 PKA 761111 ERC

DSC B01

PARITYGENERATORS, INPUT/OUTPUT FLIP-FLOP, RECEIVERS FOR RESETSIGNALS
LOGIC DIAGRAM

P8

FIELD CHANGE ORDER

NO. 17-027B
SS JE WEEK 48-78

RCSL: 44 - RT 1634

MANDATORY	[X]	RETROFIT ON FAILURE	[ ]
WARRANTY	[X]	NON WARRANTY	[ ]

PAGE 1 OF 1
RE: ECN NO: 17-027B

SERIAL EFFECTIVITY

FDC 705/5, 14 and upwards.

EQUIPMENT AFFECTED

RC 3600
RC 3787/FDC 705
Flexible Disc Channel

NOTE In FCO 17-027A the components which were to be replaced were erroneously called ROM393 and ROM394. It should have read ROM493 and ROM494. Please delete FCO17-027A, and replace it with this FCO17-027B

REASON FOR CHANGE

When "Bad Cylinders" less than the current cylinder are loaded, the controller does not set the Position Error Status when seeking to cylinder 1. Instead cylinder 0 is accessed as being cylinder 1.

DESCRIPTION OF CHANGE

1. Replace ROM 493 in pos. 2 with ROA 036.
   Replace ROM 494 in pos. 1 with ROA 037.
2. Code the FCO-Label 17-027B.

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
1	ROA 036	
1	ROA 037	

DOCUMENTATION ENCLOSED

None
(The upgraded documentation is included in the first release of the Technical Manual.)

KITS FREE OF CHARGE FROM ISS: YES [X] NO [ ]
RETURN CHANGED PARTS TO ISS: YES [ ] NO [X]

ESTIMATED INSTALLATION TIME: 5 mins.

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
	30/3-79		30/3 79		3/4-79		4-79

FIELD CHANGE ORDER

NO 17-031 A
ISSUE WEEK 01-79

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO: 17-031 A

SERIAL EFFECTIVITY

DSA702/15 and upwards.
DSA802/12,19 and upwards.

EQUIPMENT AFFECTED

RC3600

RC3789/DSA702
RC8201/DSA802
Disc Storage Adaptor

NOTE In FCO 17-031 the units affected were called DSA702 and DSA801. They should have been DSA702 and DSA 802. Please replace FCO 17-031 by this one, 17-031A.

REASON FOR CHANGE

Harderror, position error, occurs when using long A-cables. caused by long delay on tag gate out - tag gate in signals in the cables.

DESCRIPTION OF CHANGE

1. Replace ROM470/ROA030 in position 130 by ROA162.

2. Code the FCO-label 17-031 A

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
1	ROA162	

DOCUMENTATION ENCLOSED

Provisional micro program listing (1 page).

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES X	NO	

ESTIMATED INSTALLATION TIME: 10 minutes

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
LMJ	7/12/78		19/12 78		19/12 78		19/12-78

```
10023
01                  ; READ COMMAND ***.
02                  ;       READ DATA COMMAND ENTERS HERE.
03                  ;       ACC=7,TAG=CONTROL,DRIVE OUT=0.
04
05 0360 20000410040  RDF:    ALUCOND LOADQ,INC.Q,0,ZERO              ;IF Q IS NOT -1,
06 0361 00002543400          JUMP    JMPC0,SEQE1                     ; GOTO SEQUENSE ERROR;
07                                                                ; THE RDF WAS NOT PRO-
08                                                                ; CEDED BY A RAF;
09                                                                ; ELSE;
10
11                  ; READ ADDRESS ENTERS HERE, THE FOLLOWING IS BOTH RDF AND RAF.
12 0362 20003003306  RAF:    EXEC    0,0,0,1,PAS.A,DRNO,BIT3?,SETTAG ; SET TAG OUT,
13                                                                ; IF ATTENTION BIT
14 0363 00002546504          DOJUMP  JMPC,RWATT,VALID                ; SET, GOTO RWATT,
15                                                                ; SET TAG VALID;
16 0364 20603230020          SETCOND GAP,SUB,ACC,CARRY               ; IF ACC-GAPCOUNT LESS
17 0365 00002544400          JUMP    JMPC0,SEQERR                    ; THAN 0, GOTO SEQERR;
18 0366 20303600600          SETCOND CONTR,PAS,0,BIT6?               ; IF TAG GATE IN=0,
19 0367 00002563400          JUMP    JMPC0,INCOM                     ; GOTO INCOMPLETE;
20 0370 20003600700          SETCOND DRIVIN,PAS,0,BIT7?              ; IF CHECK DIAGNOSTIC=1,
21 0371 00002541500          JUMP    JMPC,CC16                       ; GOTO CC16;
22 0372 20103600100          SETCOND DSCOUT,PAS,0,BIT1?              ; IF DSC OUT BIT1=1,
23 0373 00002454500          JUMP    JMPC,RDF1                       ; GOTO READ DATA FIELD,
24
25                  ; THE FOLLOWING IS READ ADDRESS FIELD ONLY;
26                  ;       ACC=7.
27 0374 20603230020  CC26:   SETCOND GAP,SUB,ACC,CARRY               ; IF ACC-GAPCOUNT IS LESS
28 0375 00002374500          JUMP    JMPC,CC26                       ; THAN 0,CONTINUE ELSE LOOP;
29 0376 30013600030          IMID    DRIVOUT,1,PAS,0,30              ; SET READ GATE AND AM ENABLE;
30 0377 30007600053          IMID    0,LOADA,PAS,ACC,53              ; ACC:=43;
31 0400 20603230020  CC27:   SETCOND GAP,SUB,ACC,CARRY               ; IF ACC-GAP IS LESS THAN 0,
32 0401 00002550400          JUMP    JMPC0,AMNF                      ; GOTO AM NOT FOUND;
33 0402 20003600000          SETCOND DRIVIN,PAS,0,BIT0?              ; IF AM FOUND, CONTINUE,
34 0403 00002400400          JUMP    JMPC0,CC27                      ; ELSE LOOP;
35 0404 30013600020          IMID    DRIVOUT,1,PAS,0,20              ; DROP AM ENABLE;
36 0405 20063000000          BUSLOAD GAPRS,0                         ; RESET GAPCOUNTER;
37 0406 20053600012          EXEC    0,0,GAPST,1,PAS,0,0,RDCLOCK     ; START GAPCOUNT,
                                                                  ; SET READ CLOCK;
38
39 0407 30007600015          IMID    0,LOADA,PAS,ACC,15              ; ACC:=13;
40
41                  ; AT THIS POINT RDF AGAIN ENTERS, THE FOLLOWING IS BOTH RDF AND RAF.
42                  ;       RAF: ACC=13, RDF: ACC=21.
```

Provisional (FCO 17.031)

FIELD CHANGE ORDER

NO: 17-035
ISSUE WEEK 11-79

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

RE: ECN NO: 17-035

SERIAL EFFECTIVITY

DSA 702/20 and upwards.
DSA 802/23,25 and upwards.

EQUIPMENT AFFECTED

RC 3600/8000
RC 3789/DSA 702
RC 8201/DSA 802
Disc Storage Adapter

NOTE

REASON FOR CHANGE

Disc channels with 4 storage modules may have difficulty in communicating with the last disc on the chain. This is caused by noise on the "tag gate in" signal on cable A, giving extra delay.

DESCRIPTION OF CHANGE

1. Execute the wiring changes according to the Hardoc formula (page 2).
2. Code the FCO-Label 17-035

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
0.5m	Mini Wrap Wire	4-4910

DOCUMENTATION ENCLOSED

New provisional page 31 in DSA 702/802 Technical Manual (1 page)

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES	NO X	

ESTIMATED INSTALLATION TIME: 20 mins.

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE
	12/79		6/5-79		1/3 79		5-3-79

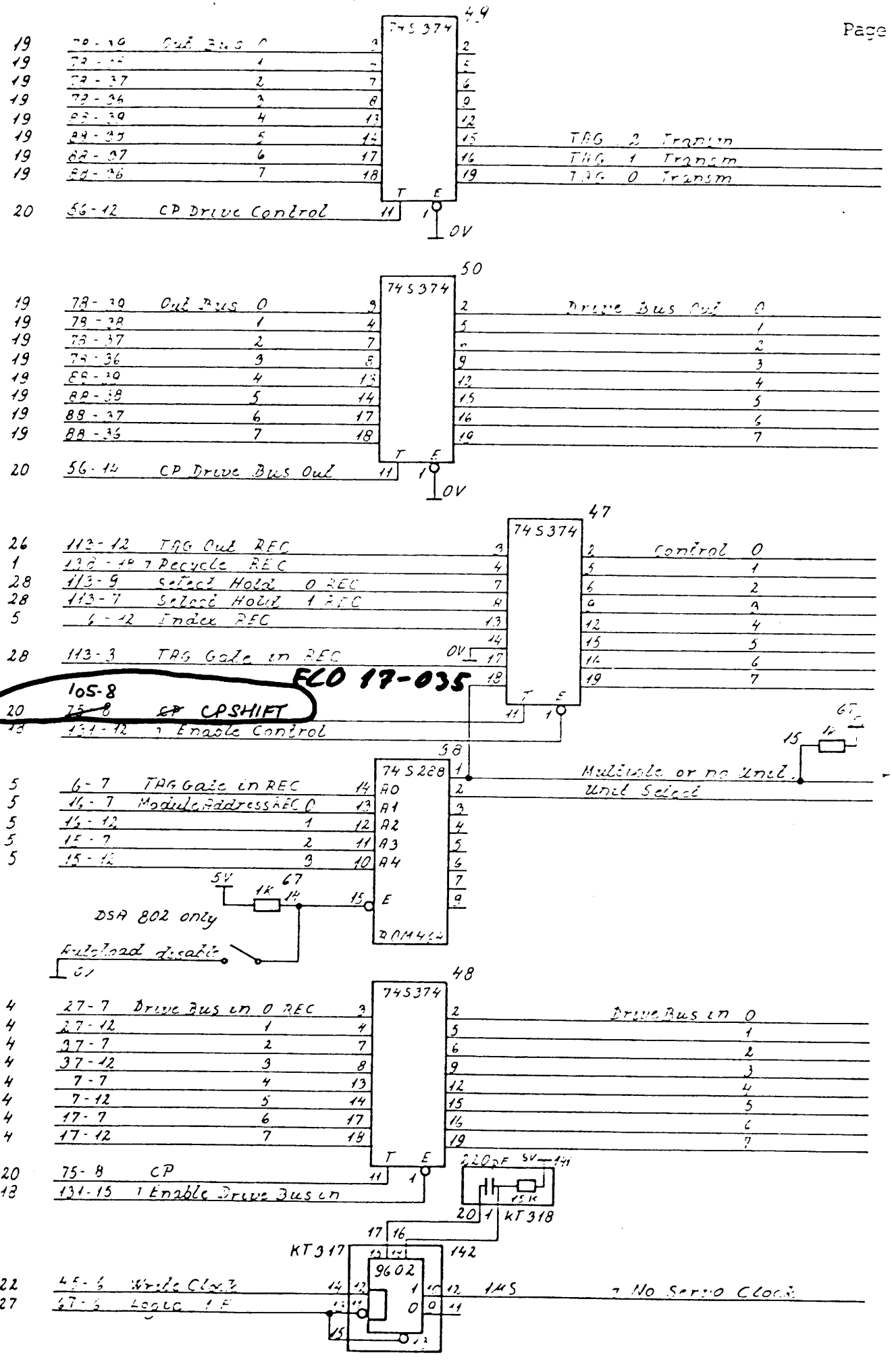
RCSL: 44-RT 1197

A/S REGNECENTRALEN Modification formular Hardwaredocumentation

UNIT: DSA 702/802

Designed 78.09.29 IMJ

Signal name	Wire description on input- and/or outputform	In	Out	Executed
CP	(48-11) (47-11) (75-8) (115-11) (116-11) (136-11) (108-11)		X	
	(48-11) (75-8) (115-11) (116-11) (136-11) (108-11)	X		
CP - shift	(134-11) (135-2) (125-2) (126-2) (105-8) (59-12)		X	
	(134-11) (135-2) (125-2) (126-2) (105-8) (59-12) (47-11)	X		



Drive Interface Control

FIELD CHANGE ORDER

NO: 17-042
ISSUE WEEK 15-79

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO:

SERIAL EFFECTIVITY

FDC 705/5,25,34,58,61 and upwards.

EQUIPMENT AFFECTED

RC 3600

RC 3787 / FDC 705
Flexible Disc Channel

NOTE

REASON FOR CHANGE

The Master Reset Input pin on Floppy disc controller chips was not previously utilized on the FDC 705. However, in order to prevent Dead-lock in some cases, it has been necessary to provide a Reset-pulse to the chips. This is performed by connecting the Reset-pin to the Bussignal >PINT.

DESCRIPTION OF CHANGE

1. Remove the wire : (78-36) ⟶ (80-19) ⟶ (70-19)
2. Insert the wire : (1003-A28) ⟶ (80-19) ⟶ (70-19)
3. Code the FCO-Label 17-042

ADDITIONAL COMMENTS

QTY:	PARTS REQUIRED	RC -P/N
40cm.	Mini Wrap Wire	4-4910

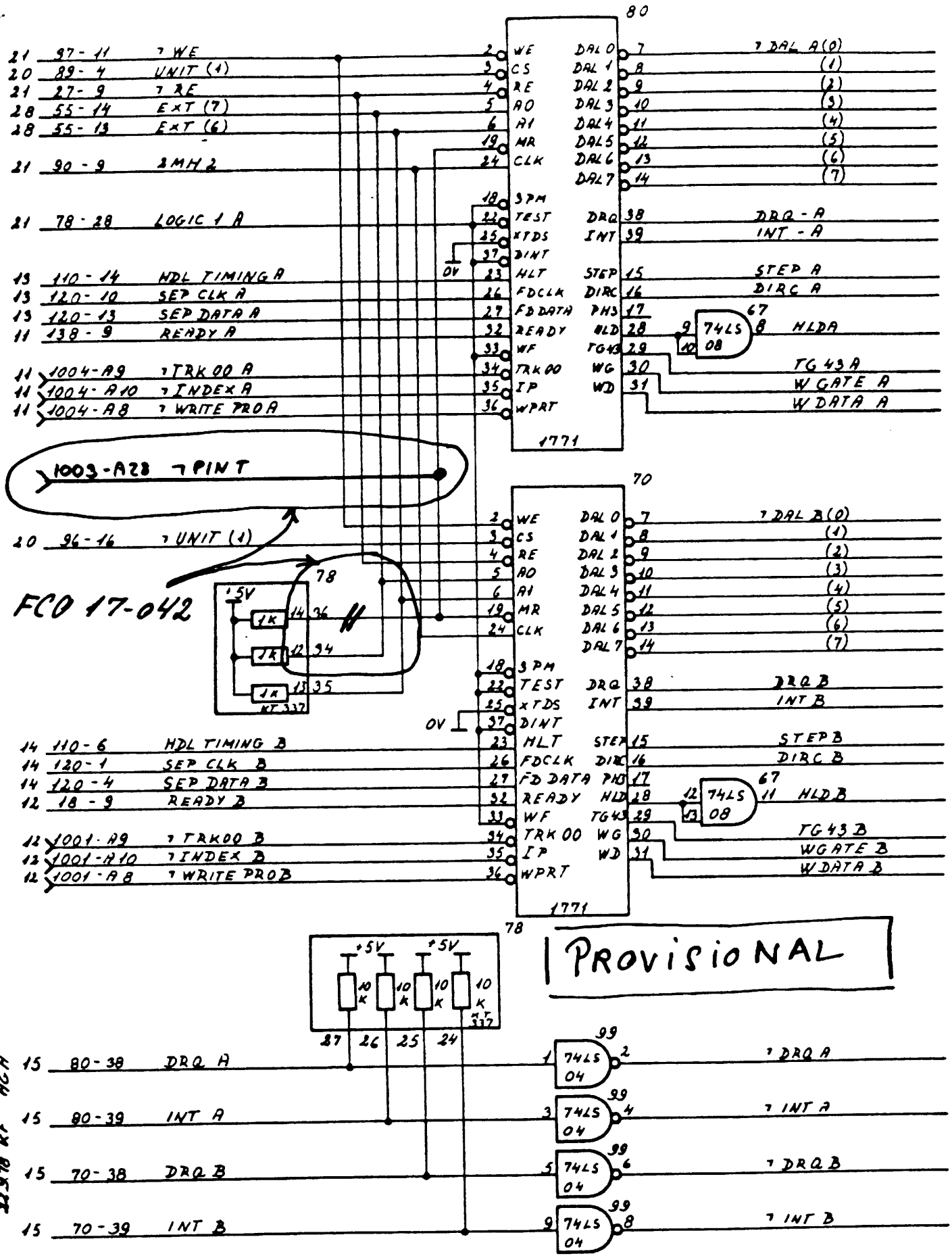
DOCUMENTATION ENCLOSED

Provisional Logic Diagram for FDC 705.

KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES	NO X	

ESTIMATED INSTALLATION TIME: 10 mins.

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
	6/3-79		6/3-79		4/4.79		6/4-79


80
21 97-11 ⌐WE
20 89-4 UNIT (1)
21 27-9 ⌐RE
28 55-14 EXT (7)
28 55-13 EXT (6)
21 90-9 2MHZ
21 78-28 LOGIC 1 A
13 110-14 HDL TIMING A
13 120-10 SEP CLK A
13 120-13 SEP DATA A
11 138-9 READY A
11 1004-A9 ⌐TRK 00 A
11 1004-A10 ⌐INDEX A
11 1004-A8 ⌐WRITE PRO A
1003-A28 ⌐PINT
20 96-16 ⌐UNIT (1)
FCO 17-042
78
+5V
1K
1K
1K
KT 337
WE
CS
RE
AO
A1
MR
CLK
SPM
TEST
XTDS
DINT
HLT
FDCLK
FD DATA
READY
WF
TRK 00
IP
WPRT
1771
DAL 0
DAL 1
DAL 2
DAL 3
DAL 4
DAL 5
DAL 6
DAL 7
DRQ
INT
STEP
DIRC
PHS
HLD
TG43
WG
WD
⌐DAL A(0)
(1)
(2)
(3)
(4)
(5)
(6)
(7)
DRQ - A
INT - A
STEP A
DIRC A
67
74LS 08
HLDA
TG 43 A
W GATE A
W DATA A
70
⌐DAL B(0)
DRQ B
INT B
STEP B
DIRC B
HLD B
TG 43 B
WGATE B
W DATA B
PROVISIONAL
78
+5V
10K
KT 337
99
74LS 04
⌐DRQ A
⌐INT A
⌐DRQ B
⌐INT B
15 80-38 DRQ A
15 80-39 INT A
15 70-38 DRQ B
15 70-39 INT B
2378 KF AGA

FIELD CHANGE ORDER

NO: 17-043
ISSUE WEEK 25-79

RCSL: 44 - RT 1634

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

RE: ECN NO: 17-043

SERIAL EFFECTIVITY

FDC 705/5,80 and upwards.

EQUIPMENT AFFECTED

RC 3600

RC 3787/FDC 705

Flexible Disc Controller

NOTE

FCO 17-042 must be implemented before this FCO has any effect.

REASON FOR CHANGE

On the FDC 705 the Bussignal >PINT is used to reset the two Floppy Disc Controller Chips (FCO 17-042). However, in some systems the >PINT signal is deactivated before the on board generated -5V and +12V voltages are stable. In these systems the chips may not be reset, and Dead-Lock may occur.

DESCRIPTION OF CHANGE

1. Mount the components in position 71 according to the assembly drawing on page 2.
2. Add the following wires :
   (1003-A27) → (71-20)
   (1003-A28) → (71-11)
   (71-1) → (71-3) → (71-4)
   (71-12) → (71-13) → (71-17) → (71-18) → (71-19)
   (83-2) → (71-2)
3. Code the FCO-Label 17-043

ADDITIONAL COMMENTS

This change provides a -5V voltage-monitoring, to secure that the >PINT signal is active at least 10msec. after the -5V is stable. In case of errors (-5V missing) the >PINT will not be released and the whole system will be inoperable.

QTY:	PARTS REQUIRED	RC -P/N
1	390ohms Resistor,1/8W, 5%	1-5118
1	2.4Kohms Resistor,1/8W, 5%	1-0609
1	10Kohms Resistor,1/8W, 5%	1-0704
1	15uF/20V Tantal Capacitor	1-1116
1m.	Mini Wrap Wire	4-4910

DOCUMENTATION ENCLOSED

Provisional Logic Diagram for FDC 705

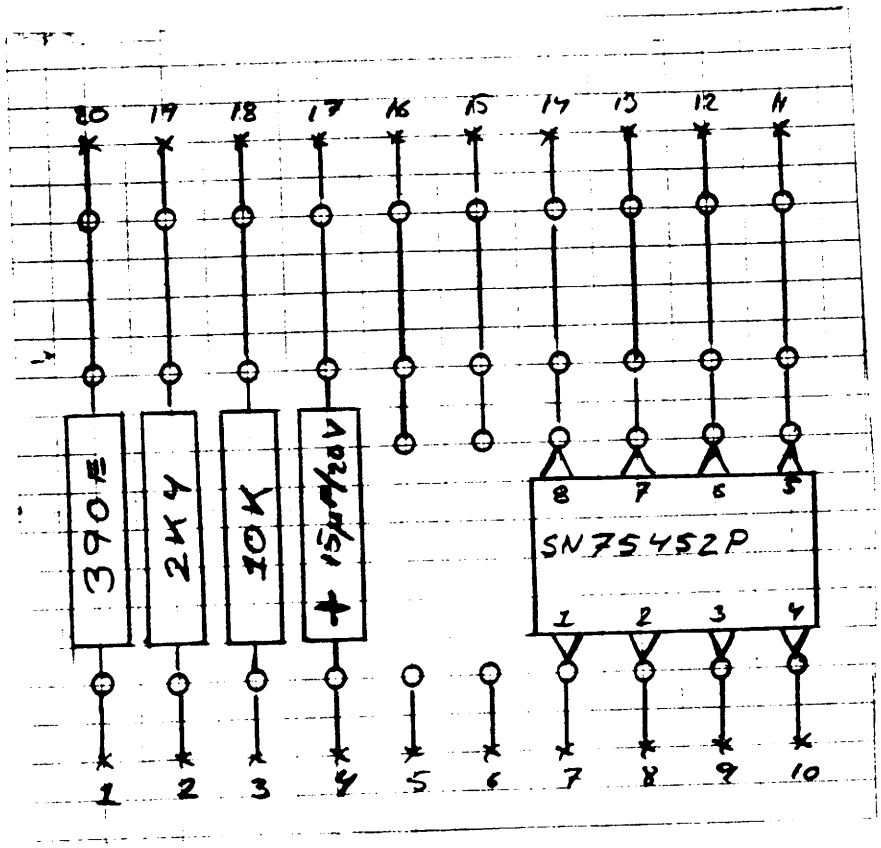
(1 page)

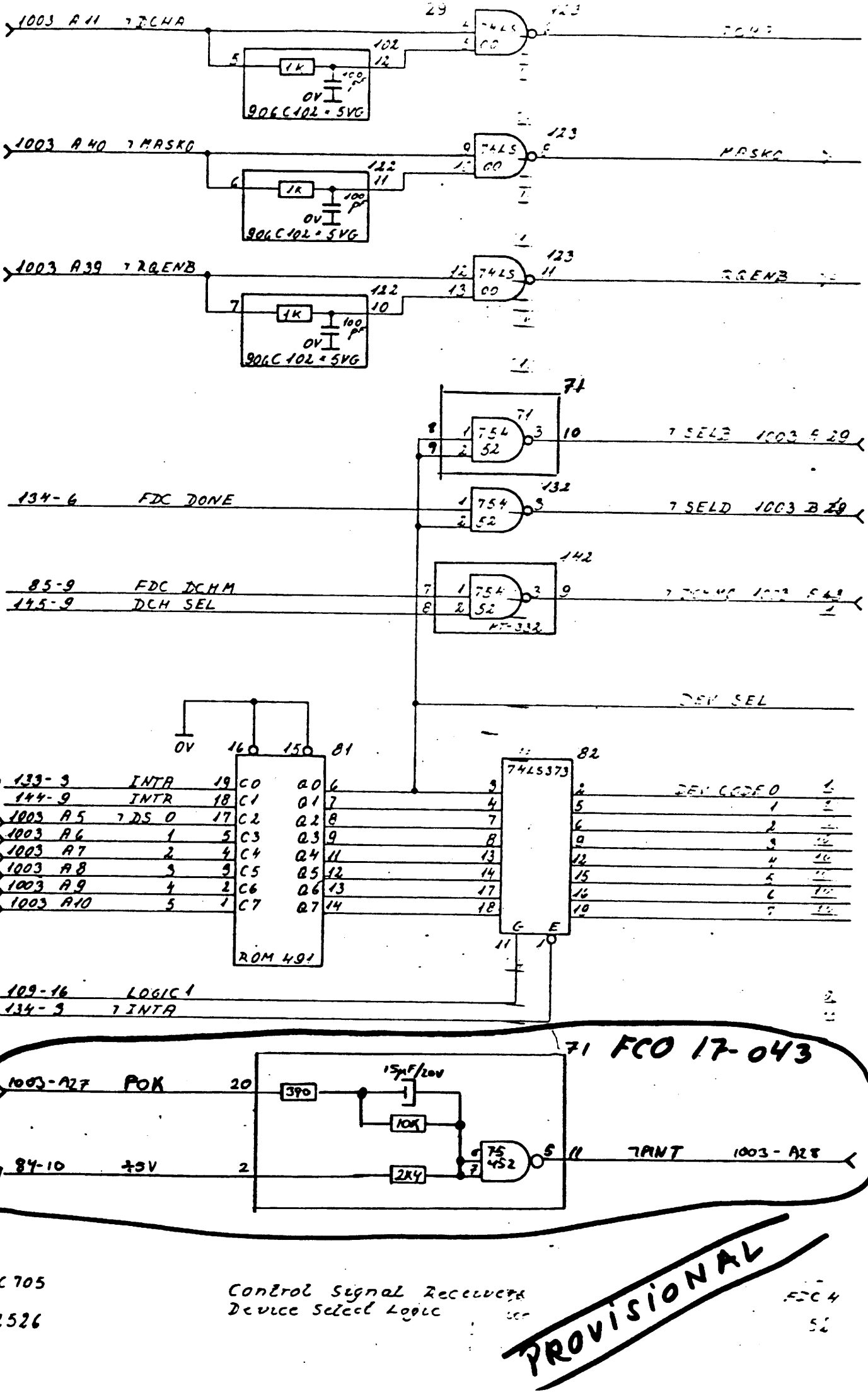
KITS FREE OF CHARGE FROM ISS:	YES X	NO	
RETURN CHANGED PARTS TO ISS:	YES	NO X	

ESTIMATED INSTALLATION TIME: 30 mins.

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
	5/5-79		17/6-79		20/6-79		21/6-79

Position 71 :


20
19
18
17
16
15
14
13
12
11
390Ω
2K4
10K
Varistor
SN75452P
8
7
6
5
1
2
3
4
1
2
3
4
5
6
7
8
9
10



FDC 705

R 12526

Control Signal Receivers
Device Select Logic

PROVISIONAL

FDC 4

52

RC COMPUTER A/S REGNECENTRALEN af 1979

FIELD CHANGE ORDER

NO: 17-044
ISSUE WEEK 42-79

RCSL: 44 - RT 1911

MANDATORY	☐	RETROFIT ON FAILURE	☒
WARRANTY	☐	NON WARRANTY	☒

PAGE 1 OF 1
RE: ECN NO: 17-044

SERIAL EFFECTIVITY

DSA 802/72 and upwards.

EQUIPMENT AFFECTED

RC 8000

RC 8201/ DSA 802

NOTE

REASON FOR CHANGE

Problems with communication with 4. disc on a chain, especially when using shielded A-cables.

DESCRIPTION OF CHANGE

Change microprogram-proms.

pos. 130 ROA 199
pos. 120 ROA 200
pos. 110 ROA 201
pos. 100 ROA 202

ADDITIONAL COMMENTS

THE FCO-KIT CAN BE ORDERED AT THE SPARE PART STOCK
UNDER RC-PARTNUMBER: 8-0744
ADDRESS: HOVEDVEJEN 9, DK-2600 GLOSTRUP DENMARK

KITS FREE OF CHARGE YES ☒ NO ☐

THE FCO-KIT INCLUDES:

QTY	DESCRIPTION	RC P/N
1	ROA 199	
1	ROA 200	
1	ROA 201	
1	ROA 202	

DOCUMENTATION ENCLOSED

New page 103 in DSA 802 Technical Manual.

ESTIMATED INSTALLATION TIME: 0.5 hour

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE 24/10 79	SIGN.	DATE 26/10 79	SIGN.	DATE 26/10-79	SIGN.	DATE

```
 0027 056A62
01 000724 0000204A7AC0          JUMP    JMPCO,CC53                      ; GOTO CC53.
02 000727 0000274A1204          DOJUMP  JSR,SENDTAG,SETTAG              ; SUBROUTINE SENDTAG;
03 000731 0000200003C0          JUMP    RTRN,0                          ; RETURN.
04
05                      ; SENDTAG DURING RELEASE.
06 000751 3003560000C0  CC70:   INIT    DRIVCH,1,PAS,0,0                ; TAG:=UNIT SELECT.
07 000732 0000274A1205          DOJUMP  JSR,SENDTAG,SETTAG              ; SUBROUTINE SENDTAG.
08 000753 0003020740C0          JUMP    JMP,CONT                        ; GOTO CONT.
09                      ; SUBROUTINE: HCC
10                      ; HIGH CYLINDER COMMAND WITH SIX HEAD OPTION.
11 000754 2000700725C0  HCC:    SETCOND 0,PAS.A,DRNO,RLTS?              ; IF NO FIX HEAD OPTION,
12 000755 0000277A7407          JUMP    JMPCO,HCC1                      ; GOTO HCC1;
13 000756 2C1056A5A7C0          LOAD    DSCOUT,HICYL                    ; HICYL:=DSCOUT;
14 000757 2011760C0003  HCC1:   PASS    DSCOUT,DRIVOUT                  ; DRIVEOUT:=DSCOUT;
15 000760 0000200007C7          JUMP    RTRN,0                          ; RETURN.
16
17                      ; DELAY FOR ALLOWING UNIT SWITCHING:
18 000741 2000200C0000  SENDTA: NO      0
19 000742 2000200A0007          NO      0
20 000743 2000200C0000          NO      0
21 000744 0000257502C0          JUMP    JMP,SEND
22 000745 2000200C02C1  STAT1:  NO      0
23 000746 2000200B03C0          NO      0
24 000747 2000200C0000          NO      0
25 000750 0000271502C0          JUMP    JMP,SATT
```

FCO.

FCO 17-044

COMPUTER A/S REGNECENTRALEN af 1979

FIELD CHANGE ORDER

NO: 17-046
ISSUE WEEK 11-80

RCSL: 44 - RT 1911

MANDATORY	☐	RETROFIT ON FAILURE	☒
WARRANTY	☒	NON WARRANTY	☐

PAGE 1 OF 1
RE: ECN NO: 17-046

SERIAL EFFECTIVITY

DSC 801/ 220 and upwards.

EQUIPMENT AFFECTED

RC 8000
RC 8201/ DSC 801
Disc Controller.

NOTE

REASON FOR CHANGE

The disc controller is not able to store status in core addresses higher than 65535_{10}.

DESCRIPTION OF CHANGE

1. Change ROM 172 in pos. 49 to ROA 288.
2. Code the FCO-label: 17-046.

ADDITIONAL COMMENTS

This FCO is necessary for running the new testprogram , which will released autumn 80.

THE FCO-KIT CAN BE ORDERED AT THE SPARE PART STOCK
UNDER RC-PARTNUMBER: 8-0746
ADDRESS: HOVEDVEJEN 9, DK-2600 GLOSTRUP DENMARK

KITS FREE OF CHARGE YES ☒ NO ☐

THE FCO-KIT INCLUDES:

QTY	DESCRIPTION	RC P/N
1	ROA 288	

DOCUMENTATION ENCLOSED

New microprogramlist page 2.

ESTIMATED INSTALLATION TIME: 0.5 hour.

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYS. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN.	DATE	SIGN.	DATE	SIGN.	DATE
	16/5-80		19-5-80		20/5-80		22/5-80

ROA028

DSC801 P2		ROM-163	-164	-165	-166	-167	-168	-169	-170	-171	-172	-173	-174	-175
000 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
001 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
002 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
003 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
004 065		1000	0000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
005 006	E3W3	0000	1000	0011	0000	0111	0111	0000	1111	0000	0000	0000	0000	0000
006 022	C2	0000	0010	0000	0001	0000	0111	0000	0011	1100	1110	0000	1000	0001
007 013		0000	0000	0000	0000	1000	1111	0000	0011	1100	1000	0000	1000	0001
010 474		1000	1000	1000	0011	1100	1111	0001	0000	0000	0000	0000	0000	0000
011 061		1000	0000	0000	0011	0000	1001	0000	0000	0000	0000	0000	0000	0000
012 005	E3W3	1000	0000	0011	0000	0111	1111	0000	0000	0000	0000	0000	0000	0000
013 021		1000	0000	0000	0001	0000	0111	0000	0010	1000	0000	0000	0000	0100
014 015		1000	0000	0000	0000	1100	1111	0000	0000	0000	0000	0000	0001	0000
015 016		0000	1000	0000	0000	1100	0111	1000	0111	0110	1100	0000	0000	0000
016 017		0000	0000	0000	0000	1100	0111	0100	0111	1000	1100	0000	0000	0000
017 010	C2	1000	0010	0000	0000	1000	0111	0010	0111	1010	1100	0000	0000	0000
020 023	W3	0000	0000	0000	0001	0011	0111	0000	0000	0000	0000	0000	0000	0001
021 020	W3	1000	1000	0000	0001	0011	1111	0000	0000	0000	0000	0000	0000	0100
022 011		1000	0000	0000	0000	1000	0111	0000	1111	0100	0000	0000	0000	0000
023 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0100	0001
024 030	E2	1000	1000	0010	0001	1000	1111	0000	0011	1111	1000	0011	0000	0000
025 035	E2	1000	0000	0010	0001	1100	0111	0000	1111	1000	0000	0010	0000	0000
026 054	E2	1000	1000	0010	0010	1100	0011	0000	0000	0000	0000	0001	0000	0000
027 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0001	0000
030 040	C3	1000	0011	0000	0010	0000	1110	0000	0001	1010	0110	0000	0000	0000
031 042	C3	0000	0011	0000	0010	0000	0111	0000	1111	1000	0000	0000	0000	0000
032 050	C2	1000	0010	0000	0010	1000	1111	0000	1111	0110	0000	0000	0000	0000
033 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0001	0000
034 025	E1	1000	0000	0001	0001	0100	1111	0000	1111	1010	0000	0000	0000	0000
035 036	E2	0000	1000	0010	0001	1100	0111	0000	1111	0110	0000	0001	0000	0000
036 752		0000	1000	1000	1110	1000	1111	0000	0000	0000	0000	0000	0000	0000
037 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0001	0000

RC COMPUTER A/S REGNECENTRALEN af 1979

FIELD CHANGE ORDER

NO: 17-047
ISSUE WEEK 82-45

RCSL: 44 - RT 1911

MANDATORY	X	RETROFIT ON FAILURE	
WARRANTY	X	NON WARRANTY	

PAGE 1 OF 1
RE: ECN NO:

SERIAL EFFECTIVITY

DSC 801, S/N 322, 354 and upwards

EQUIPMENT AFFECTED

RC8000
RC8200/RC8201, DSC 801
Disc Storage Controller

NOTE

REASON FOR CHANGE

1. To correct a microprogramm error in DSC 801, which under severe busload conditions may cause improper busoperation with busparity as possible result.
2. To avoid microprogram hang up and subsequent system hang up, after attempts to read uninitialized discpacks.

DESCRIPTION OF CHANGE

Replace ROM 167 in pos. 40 by ROB 364
- ROM 163 - - 38 - ROB 365
- ROM 164 - - 28 - ROB 366
- ROM 165 - - 80 - ROB 367

Fill in the FCO-label

ADDITIONAL COMMENTS

THE FCO-KIT CAN BE ORDERED AT THE SPARE PART STOCK
UNDER RC-PARTNUMBER: -
ADDRESS: HOVEDVEJEN 9, DK-2600 GLOSTRUP DENMARK

KITS FREE OF CHARGE	YES	NO
	X	

THE FCO-KIT INCLUDES:

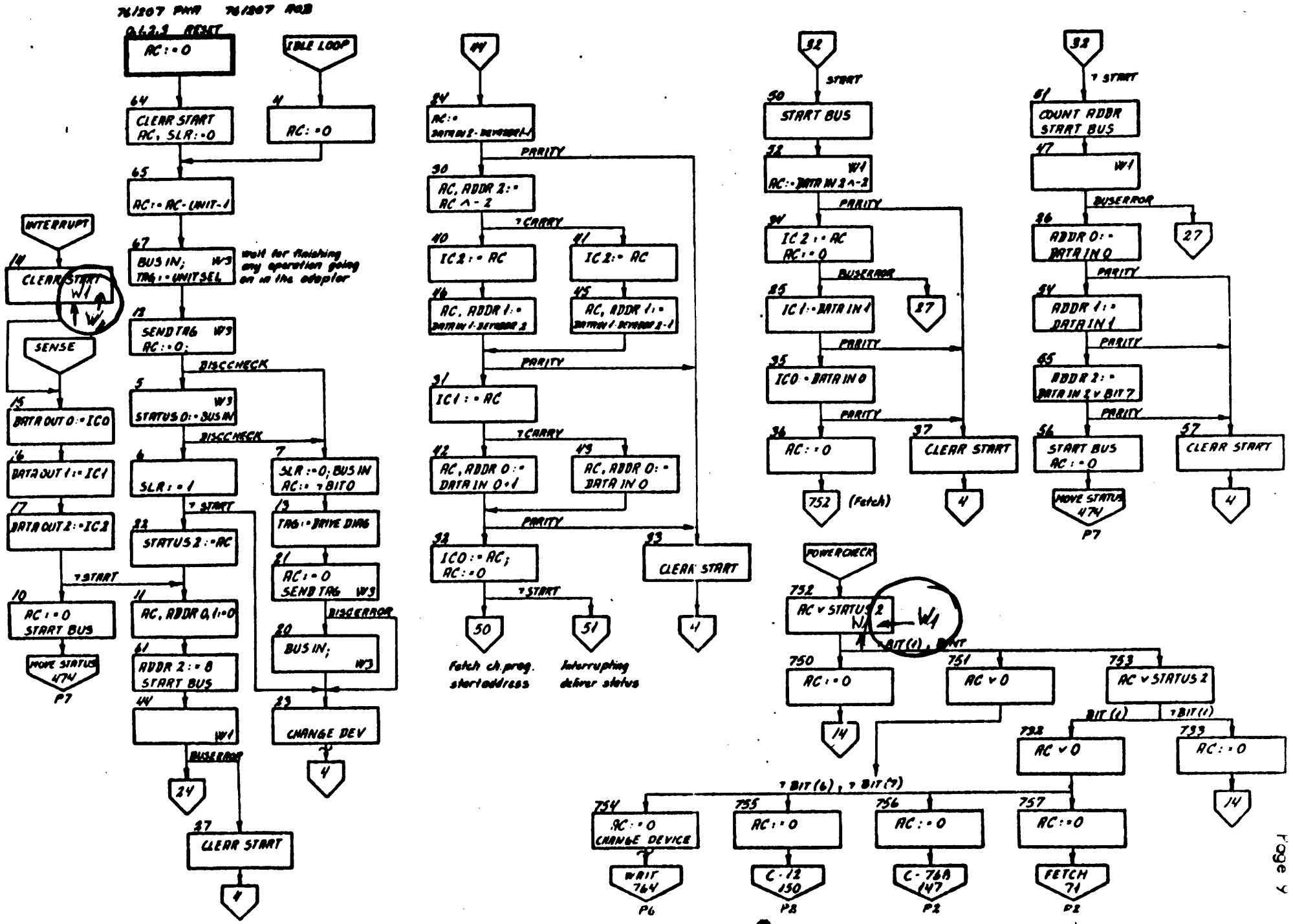
QTY	DESCRIPTION	RC P/N
1	ROB 364	
1	ROB 365	
1	ROB 366	
1	ROB 367	

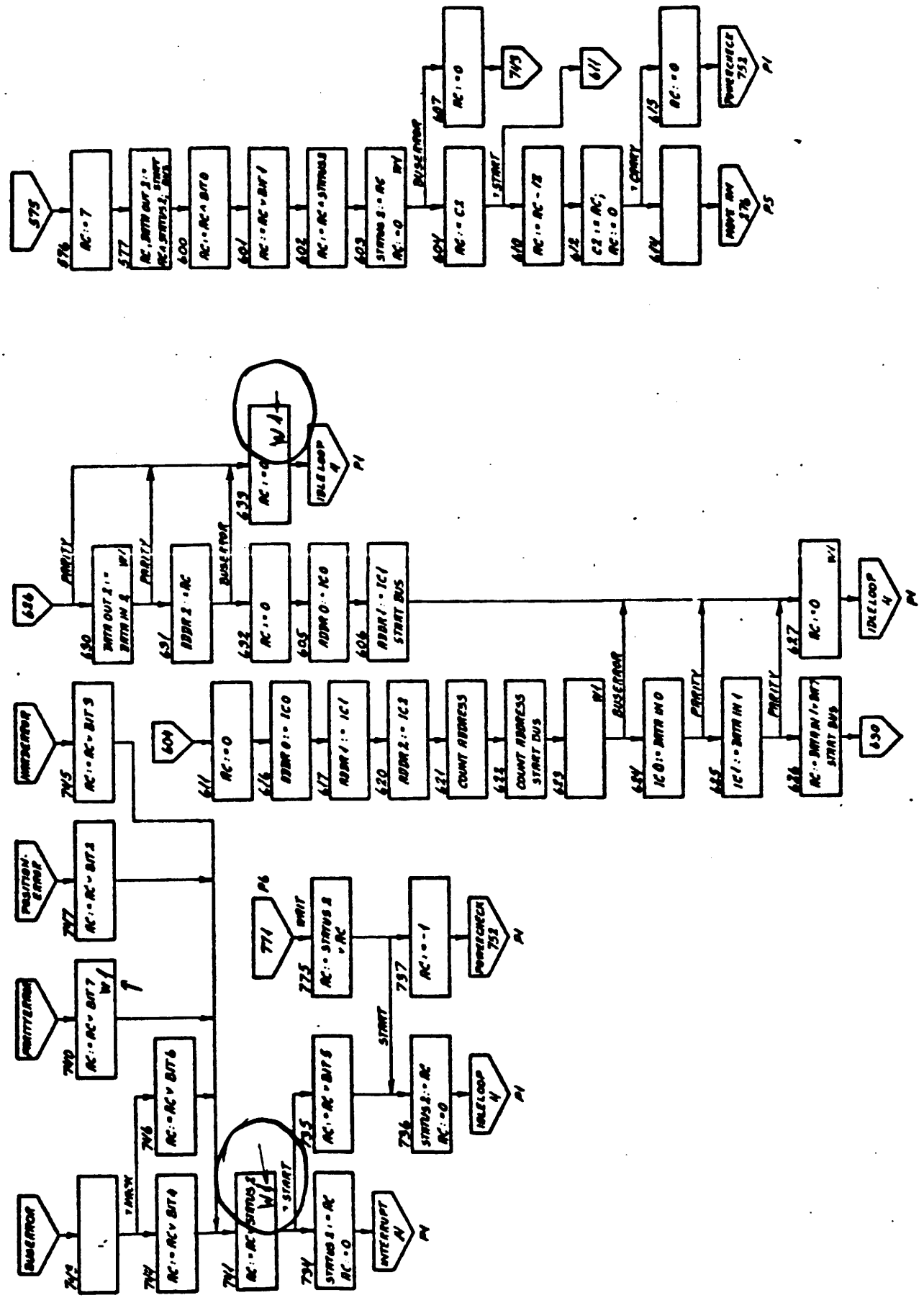
DOCUMENTATION ENCLOSED

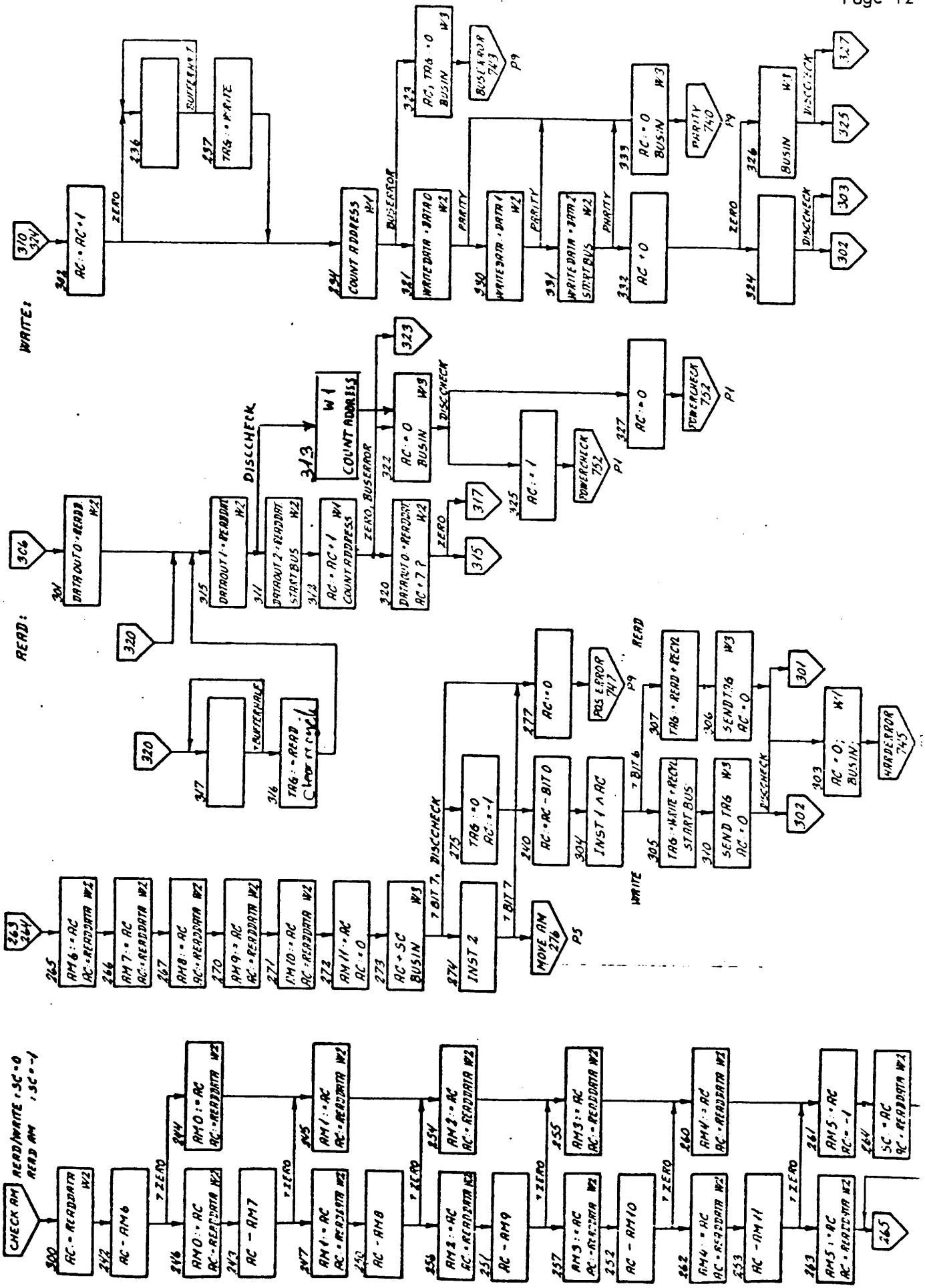
3 pages of provisional flow chart.
4 pages of provisional microprogram-list

ESTIMATED INSTALLATION TIME: 0,5 h

PROJECT ENGINEER		DEVELOPMENT MANAGER		SYST. PRODUCTION MANAGER		TECH. SERVICE MANAGER	
SIGN.	DATE	SIGN	DATE	SIGN	DATE	SIGN.	DATE
	821109		82-11-22		82-11-24		82-11-24


76/207 PHA
76/207 AQB
0,1,2,3 RESET
AC: = 0
64
CLEAR START AC, SLR: = 0
65
AC: = AC - UNIT - 1
67
BUS IN; WS TAG: = UNITSEL
wait for finishing any operation going on in the adapter
13
SEND TAG WS AC: = 0;
DISCCHECK
5
WS STATUS 0: = BUS IN
DISCCHECK
6
SLR: = 1
7
SLR: = 0; BUS IN AC: = ↓BIT 0
↓START
22
STATUS 2: = AC
11
AC, ADDR 0,1: = 0
61
ADDR 2: = 8 START BUS
44
W1
BUSERROR
24
27
CLEAR START
4
IDLE LOOP
4
AC: = 0
19
TAG: = DRIVE DIAG
21
AC: = 0 SEND TAG WS
DISCERROR
20
BUS IN; WS
23
CHANGE DEV
4
INTERRUPT
14
CLEAR START W1
SENSE
15
DATA OUT 0: = IC 0
16
DATA OUT 1: = IC 1
17
DATA OUT 2: = IC 2
↓START
10
AC: = 0 START BUS
MOVE STATUS 474
P7
44
84
AC: = DATA IN 2 - DEVICE 1
PARITY
30
AC, ADDR 2: = RC ^ - 2
↑CARRY
40
IC 2: = AC
41
IC 2: = AC
46
AC, ADDR 1: = DATA IN 1 - DEVICE 2
45
AC, ADDR 1: = DATA IN 1 - DEVICE 2 - 1
PARITY
31
IC 1: = AC
↑CARRY
42
AC, ADDR 0: = DATA IN 0 + 1
49
AC, ADDR 0: = DATA IN 0
PARITY
32
ICO: = AC; AC: = 0
↑START
50
Fetch ch. prog. start address
51
Interrupting deliver status
33
CLEAR START
4
92
START
90
START BUS
92
W1 AC: = DATA IN 2 ^ - 2
PARITY
94
IC 2: = AC AC: = 0
BUSERROR
95
IC 1: = DATA IN 1
27
PARITY
35
ICO: = DATA IN 0
PARITY
36
AC: = 0
37
CLEAR START
752
(Fetch)
4
92
↑START
61
COUNT ADDR START BUS
47
W1
BUSERROR
26
ADDR 0: = DATA IN 0
27
PARITY
24
ADDR 1: = DATA IN 1
PARITY
65
ADDR 2: = DATA IN 2 ∨ BIT 7
PARITY
56
START BUS AC: = 0
57
CLEAR START
MOVE STATUS 474
P7
4
POWERCHECK
752
AC ∨ STATUS 2
W1
BIT (1), BUSY
750
AC: = 0
751
AC ∨ 0
753
AC ∨ STATUS 2
BIT (1)
↑BIT (1)
14
732
AC ∨ 0
733
AC: = 0
14
↑BIT (6), ↑BIT (7)
754
AC: = 0 CHANGE DEVICE
WAIT 764
P6
755
AC: = 0
C-12 150
P8
756
AC: = 0
C-76A 147
P2
757
AC: = 0
FETCH 71
P2





DSC 801

R11687

MICROPROGRAM
CHECK AM, READ/WRITE

ROB364

DSC801 P2		ROM-163	-164	-165	-166	[illegible]	-168	-169	-170	-171	-172	-173	-174	-175
000 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
001 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
002 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
003 064		1000	1000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
004 065		1000	0000	0000	0011	0100	1111	0000	0000	0000	0000	0000	0000	0000
005 005	E3W3	0000	1000	0011	0000	0111	0111	0000	1111	0000	0000	0000	0000	0001
006 022	C2	0000	0010	0000	0001	0000	0111	0000	0011	1100	1110	0000	1000	0000
007 013		0000	0000	0000	0000	1000	1111	0000	0011	1100	1000	0000	1000	0001
010 474		1000	1000	1000	0011	1100	1111	0001	0000	0000	0000	0000	0000	0000
011 061		1000	0000	0000	0011	0000	1001	0000	0000	0000	0000	0000	0000	0000
012 005	E3W3	1000	0000	0011	0000	0111	1111	0000	0000	0000	0000	0000	0000	0100
013 021		1000	0000	0000	0001	0000	0111	0000	0010	1000	0000	0000	0000	1000
014 015	W1	1000	0000	0000	0000	1000	1111	0000	0000	0000	0000	0000	0001	0000
015 016		0000	1000	0000	0000	1100	0111	1000	0111	0110	1100	0000	0000	0000
016 017		0000	0000	0000	0000	1100	0111	0100	0111	1000	1100	0000	0000	0000
017 010	C2	1000	0010	0000	0000	1000	0111	0010	0111	1010	1100	0000	0000	0000
020 023	W3	0000	0000	0000	0001	0011	0111	0000	0000	0000	0000	0000	0000	0001
021 020	W3	1000	1000	0000	0001	0011	1111	0000	0000	0000	0000	0000	0000	0100
022 011		1000	0000	0000	0000	1000	0111	0000	1111	0100	0000	0000	0000	0000
023 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0100	0001
024 030	E2	1000	1000	0010	0001	1000	1111	0000	0011	1111	1000	0011	0000	0000
025 035	E2	1000	0000	0010	0001	1100	0111	0000	1111	1000	0000	0010	0000	0000
026 054	E2	1000	1000	0010	0010	1100	0011	0000	0000	0000	0000	0001	0000	0000
027 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0001	0000
030 040	C3	1000	0011	0000	0010	0000	1110	0000	0001	1010	0110	0000	0000	0000
031 042	C3	0000	0011	0000	0010	0000	0111	0000	1111	1000	0000	0000	0000	0000
032 050	C2	1000	0010	0000	0010	1000	1111	0000	1111	0110	0000	0000	0000	0000
033 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0001	0000
034 025	E1	1000	0000	0001	0001	0100	1111	0000	1111	1010	0000	0000	0000	0000
035 036	E2	0000	1000	0010	0001	1100	0111	0000	1111	0110	0000	0001	0000	0000
036 752		0000	1000	1000	1110	1000	1111	0000	0000	0000	0000	0000	0000	0000
037 004		1000	1000	0000	0000	0100	0111	0000	0000	0000	0000	0000	0001	0000

DSC801 P14		ROM-163	-164	-165	-166	~~-167~~	-168	-169	-170	-171	-172	-173	-174	-175
600 601		1000	0000	1000	1000	0000	1111	0000	0011	1100	0110	0000	0000	0000
601 602		0000	1000	1000	1000	0000	1111	0000	0000	0010	1010	0000	0000	0000
602 603		0000	0000	1000	1000	0000	1111	0000	0111	0100	0110	0000	0000	0000
603 604	E1W1	1000	1000	1001	1000	0101	1111	0000	1111	0100	0000	0000	0010	0000
604 610	C2	1000	0010	1000	1000	1000	1111	0000	0110	0100	1010	0000	0000	0000
605 606		0000	1000	1000	1000	0100	0011	0000	0111	0110	1010	0000	0000	0000
606 627		0000	0000	1000	1001	0100	0101	0001	0111	1000	1010	0000	0000	0000
607 743		0000	0000	1000	1110	0000	1111	0000	0000	0000	0000	0000	0000	0000
610 612		0000	1000	1000	1000	1000	1111	0000	0001	1000	1001	0000	0000	0000
611 616		0000	1000	1000	1000	1100	1111	0000	0000	0000	0000	0000	0000	0000
612 614	C3	1000	0011	1000	1000	1100	1111	0000	1110	0100	0000	0000	0000	0000
613 646		0000	1000	1000	1010	0100	0111	0000	0010	0110	0000	0000	0000	1000
614 276		0000	1000	0000	1011	1100	0111	0000	0000	0000	0000	0000	0000	0000
615 752		0000	1000	1000	1110	1000	1111	0000	0000	0000	0000	0000	0000	0000
616 617		0000	0000	1000	1000	1100	0011	0000	0111	0110	1010	0000	0000	0000
617 620		1000	1000	1000	1001	0000	0101	0000	0111	1000	1010	0000	0000	0000
620 621		1000	0000	1000	1001	0000	0110	0000	0111	1010	1010	0000	0000	0000
621 622		0000	1000	1000	1001	0000	0111	0000	0000	0000	0000	0000	0010	0000
622 623		0000	0000	1000	1001	0000	0111	0001	0000	0000	0000	0000	0010	0000
623 624	E1W1	1000	1000	1001	1001	0101	0111	0000	0000	0000	0000	0000	0000	0000
624 625	E2	1000	0000	1010	1001	0100	0111	0000	1111	0110	0000	0001	0000	0000
625 626	E2	0000	1000	1010	1001	0100	0111	0000	1111	1000	0000	0010	0010	0000
626 630	E2	1000	1000	1010	1001	1000	1111	0001	0000	1110	1010	0011	0000	0000
627 004	W1	1000	1000	0000	0000	0101	1111	0000	0000	0000	0000	0000	0000	0000
630 631	E2W1	1000	0000	1010	1001	1001	0111	0010	0000	0000	1010	0011	0000	0000
631 632	E1	0000	1000	1001	1001	1000	0110	0000	0000	0000	1010	0000	0000	0000
632 605		1000	0000	1000	1000	0100	1111	0000	0000	0000	0000	0000	0000	0000
633 004	W4	1000	1000	0000	0000	0100	1111	0000	0000	0000	0000	0000	0000	0000
634 635		1000	0000	1000	1001	1100	0111	0000	1110	1100	0000	0000	0000	0000
635 636		0000	1000	1000	1001	1100	1111	1000	0000	1000	1101	0000	0000	0000
636 637		0000	0000	1000	1001	1100	0111	0000	1101	1100	0000	0000	0000	0000
637 640		1000	1000	1000	1010	0000	1111	0000	0000	0000	1101	0000	0000	0000

DSC801 P17			ROM-163	-164	-165	-166	~~-167~~ 8B364	-168	-169	-170	-171	-172	-173	-174	-175
740	741	E1W1	1000	0000	1001	1110	0001	1111	0000	0000	1110	1100	0000	0000	0000
741	734	C2 W1	1000	0010	1000	1101	1100	1111	0000	0111	0100	1010	0000	0000	0000
742	772		0000	1000	1000	1111	1000	0111	0000	1101	0100	0000	0000	0000	0000
743	744C2		0010	1000	1000	1110	0100	0111	0000	0000	0000	0000	0000	0000	0000
744	741		1000	0000	1000	1110	0000	1111	0000	0000	1000	1010	0000	0000	0000
745	741		1000	0000	1000	1110	0000	1111	0000	0000	0110	1010	0000	0000	0000
746	741		1000	0000	1000	1110	0000	1111	0000	0000	1100	1010	0000	0000	0000
747	741		1000	0000	1000	1110	0000	1111	0000	0000	0100	1010	0000	0000	0000
750	014		1000	1000	0000	0000	1100	1111	0000	0000	0000	0000	0000	0000	0000
751	754C7C7		0111	0111	1000	1110	1100	0111	0000	0000	0000	1010	0000	0000	0000
752	750	C4E4 W1	1000	0100	1100	1110	1100	0111	0000	0111	0100	1010	0000	0000	0000
753	732	C4	0000	0100	1000	1101	1000	0111	0000	0111	0100	1010	0000	0000	0000
754	764		1000	1000	1000	1111	0100	1111	0000	0000	0000	0000	0000	0100	0000
755	150		1000	1000	0000	0110	1000	1111	0000	0000	0000	0000	0000	0000	0000
756	147		0000	0000	0000	0110	0100	1111	0000	0000	0000	0000	0000	0000	0000
757	071		1000	0000	0000	0011	1000	1111	0000	0000	0000	0000	0000	0000	0000
760	334	C7E3W3	1000	0111	0011	1101	1111	0111	0000	0101	1100	0110	0000	0000	0100
761	171	E3W3	1000	0000	0011	0111	1011	0111	0000	0101	1100	0000	0000	0000	1100
762	760		1000	1000	1000	1111	0000	1111	0000	0010	0110	0110	0000	0000	0000
763	761C1		0001	0000	1000	1111	0000	1111	0000	0000	1010	1111	0000	0000	1000
764	770		1000	1000	1000	1111	1000	1111	0000	0011	1110	1000	0100	0000	0000
765	766	E3W3	0000	1000	1011	1111	0111	1111	0000	0000	0000	0000	0000	0000	0100
766	771	E3W3	1000	0000	1011	1111	1011	0111	0000	1111	0000	0000	0000	0000	0001
767	745		1000	0000	1000	1110	0100	1111	0000	0000	0000	0000	0000	0000	0001
770	765		1000	0000	1000	1111	0100	0111	0000	0010	0000	0000	0000	0000	1000
771	774	C5	1000	0101	1000	1111	1100	0111	0000	0111	0000	1010	0000	0000	0000
772	452		0000	1000	1000	0010	1000	1111	0000	1101	0110	1111	0000	0000	0000
773	014		1000	1000	0000	0000	1100	1111	0000	0000	0000	0000	0000	0000	0000
774	014		1000	1000	0000	0000	1100	1111	0000	0000	0000	0000	0000	0000	0000
775	736	C2	0000	0010	1000	1101	1100	1111	0000	0111	0100	1010	0000	0000	0000
776	646		0000	1000	1000	1010	0100	1111	0000	0000	0100	1010	0000	0000	0000
777	706		0000	1000	1000	1100	0100	0111	0001	0000	0000	0000	0000	0000	0000

ROB-365 -366 -367

DSC801 P8		ROM [illegible]	[illegible]	[illegible]	-166	-167	-168	-169	-170	-171	-172	-173	-174	-175
300 242	W2	0000	1000	0000	1010	0010	1111	0000	0000	0000	0000	0000	0000	0010
301 315	W2	1000	0000	0000	1100	1110	0111	1000	0000	0000	0000	0000	0000	0010
302 234C3		0011	1000	0000	1001	1100	1111	0000	0000	0000	1101	0000	0000	0000
303 745	W1	1000	0000	1000	1110	0101	1111	0000	0000	0000	0000	0000	0000	0001
304 305C7		0111	0000	0000	1100	0100	0111	0001	0101	1000	0110	0000	0000	0000
305 310		1000	1000	0000	1100	1000	0111	0000	0011	0110	0000	0000	0000	1000
306 301	E3W3	1000	0000	0011	1100	0011	1111	0000	0000	0000	0000	0000	0000	0100
307 306		0000	1000	0000	1100	0100	0111	0000	0011	0010	0000	0000	0000	1000
310 302	E3W3	0000	1000	0011	1100	0011	1111	0000	0000	0000	0000	0000	0000	0100
311 312	W2	0000	1000	0000	1100	1010	0111	0011	0000	0000	0000	0000	0000	0010
312 320C3	E1W1	0011	1000	0001	1101	0001	1111	0000	0000	0000	1101	0000	0010	0000
313 321	E1W1	0000	0000	0001	1101	0001	0111	0000	0000	0000	0000	0000	0010	0000
314 742		0000	1000	1000	1110	0000	0111	0000	1101	0010	0000	0000	0000	0000
315 311	W2	1000	0000	0000	1100	1010	0111	0100	0000	0000	0000	0000	0000	0010
316 315		1000	0000	0000	1100	1100	0111	0000	0011	0000	0000	0000	0000	1000
317 316 C1		0000	0001	0000	1100	1100	0111	0000	0000	0000	0000	0000	0000	0000
320 315C3	W2	0011	0000	0000	1100	1110	0111	1000	0001	0110	1100	0000	0000	0010
321 330	E2W2	1000	1000	0010	1101	1010	0111	0000	0000	0000	0000	0001	0000	0010
322 325	E3W3	1000	0000	0011	1101	0111	1111	0000	0000	0000	0000	0000	0000	0001
323 743	W3	0000	0000	1000	1110	0011	1111	0000	0000	0000	0000	0000	0000	1001
324 302	E3	0000	1000	0011	1100	0000	0111	0000	0000	0000	0000	0000	0000	0000
325 752		0000	1000	1000	1110	1000	1111	0000	0000	0000	1101	0000	0000	0000
326 325	E3W3	1000	0000	0011	1101	0111	0111	0000	0000	0000	0000	0000	0000	0001
327 752		0000	1000	1000	1110	1000	1111	0000	0000	0000	0000	0000	0000	0000
330 331	E2W2	1000	0000	0010	1101	1010	0111	0000	0000	0000	0000	0010	0000	0010
331 332	E2W2	0000	1000	0010	1101	1010	0111	0001	0000	0000	1101	0011	0000	0010
332 324C3		0011	1000	0000	1101	0100	0111	0000	0000	0000	1100	0000	0000	0000
333 740	W3	1000	1000	1000	1110	0011	1111	0000	0000	0000	0000	0000	0000	1001
334 300		1000	1000	0000	1100	0000	0111	0000	0000	0000	0000	0000	0000	0000
335 336	E3	0000	1000	0011	1101	1100	1111	0001	0000	0000	0000	0000	0000	0000
336 340	E1W1	1000	1000	0001	1110	0001	0111	0000	0000	0000	0000	0000	0010	0000
337 745		1000	0000	1000	1110	0100	1111	0000	0000	0000	0000	0000	0000	1001