AW1-434960

CCA

MR-50P

33	* A02X	19	* A06X	01	* A01X
34	* A04X	20	* A09X	02	* A03X
35	* A07X	21	* A12X	03	* A05X
36	* A10X	22	* A15X	04	* A08X
37	* A13X	23	* EXDEN	05	* A11X
38	* A16X	24	* AMWCX	06	* A14X
39	* BAUDR	25	* MRDCX	07	0V
40	* CLK0	26	* DTRX	08	0V
41	-15V	27	* PCL1	09	0V
42	0V	28	* EXIRQ	10	+5V
43	+24V	29	D00X	11	+5V
44	EXRDY	30	D04X	12	+5V
45	D02X	31	D07X	13	D01X
46	D05X	32		14	D03X
47				15	D06X
48				16	
49				17	
50				18	

CCX1

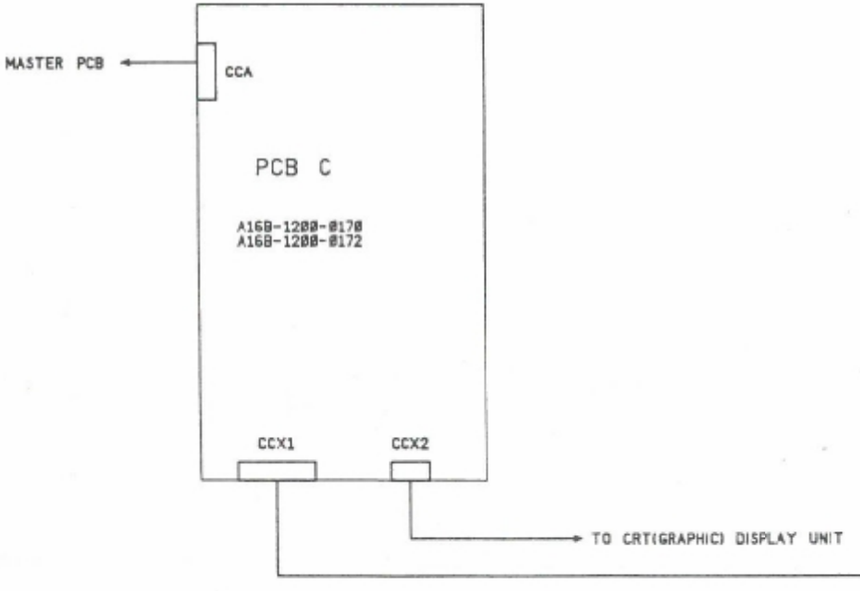
MR-50P

33		19		01	TTY1
34	RS	20		02	TTY2
35	CS	21		03	TTY3
36	DR	22		04	0V
37	0V	23		05	
38	* CD	24		06	
39	0V	25		07	PR
40	* SD	26		08	TE
41	* RD	27		09	ERR
42	0V	28		12	+6V
43	ER	29		11	CH01
44		30		12	CH02
45		31		13	CH03
46	SD	32	+24V	14	CH04
47	0V			15	CH05
48	CH09			16	CH06
49	PI			17	CH07
50	FG			18	CH08

CCX2

MR-20P

14	CLKINH	08	0V	01	VIDEO
15	EXCLKI	09	0V	02	HSYNC
16	DTC2	10	0V	03	VSYNC
17	EXCLKO	11	0V	04	
18	* GD12IH	12	0V	05	
19		13		06	
20	FG			07	



C14

MR-20P

14	CH4	08	FG	01	PR
15	CH5	09	SD	02	TE
16	CH6	10	0V	03	ERR
17	CH7	11	CH1	04	TTY3
18	CH8	12	CH2	05	+6V
19	CH9	13	CH3	06	TTY2
20	PI			07	TTY1

C15

DSUB-25S

01	FG	14	
02	* SD	15	
03	* RD	16	
04	RS	17	
05	CS	18	
06	DR	19	
07	0V	20	ER
08	* CD	21	
09		22	
10		23	
11		24	
12		25	+24V
13			

ASR33,FACIT4070 INTERFACE

RS-232C INTERFACE

CG00

GRAPHIC/PUNCHER INTERFACE

A16C-1200-0170/05

FANUC LTD

001 / 17

AW1-434960

80

AW1-434961

MAIN CPU DI/DO (SYSTEM 6)

		D7	D6	D5	D4	D3	D2	D1	D0
0E7EE	(DI)	*CRT/P	*GRC/P	*14/9	IRM	DOG	*CR9		FACIT

*CRT/P --- = '0' ,WITH CRT/PUNCH CONTROL P.C.B.

*GRC/P --- = '0' ,WITH GRAPHIC/PUNCH CONTROL P.C.B.

FACIT --- = '1' ,FACIT 4070 IS CONNECTED.

IRM --- = '1' INPUT READY (FIFO IS NOT FULL.)

DOG --- GRAPHIC CPU DO

*CR9 --- = '0' WITH 9 INCH CRT = '1' WITH 12 INCH CRT

*14/9 --- = '0' WITH 12 INCH CRT = '1' WITH 9 OR 12 INCH CRT

		D7	D6	D5	D4	D3	D2	D1	D0
0E7F0	(DI/DO)	P7	P6	P5	P4	P3	P2	P1	P0

P0-P7 --- ASR33,RS-232C DATA(DI/DO)

FACIT 4070 DATA(DO)

		D7	D6	D5	D4	D3	D2	D1	D0
	(DI/DO)	S7	S6	S5	S4	S3	S2	S1	S0
0E7F2	(DO)			ERR		TE			PB
	(DI)								PI

S0-S7 --- ASR,RS-232C STATUS(DI/DO)

ERR --- = '1' ERROR OF FACIT 4070 SIDE

TE --- = '1' PAPER TAPE END (FACIT 4070)

PB --- = '1' PUNCH BUSY (FACIT 4070)

PI --- PUNCH INSTRUCTION (FACIT 4070)

		D7	D6	D5	D4	D3	D2	D1	D0
0E7F4	(DO)	CLDCD	PINH	FA/ASRS	RS/AS			SY3	5MHZ

CLDCD --- = '0'→'1'→'0' CLEAR DCD HOLD SIGNAL

PINH --- = '1' PUNCH INHIBIT

FA/ASRS,RS/AS

	FACIT 4070	ASR33	RS-232C
FA/ASRS	1	0	0
RS/AS	0 OR 1	0	1

SY3 --- = '1' SYSTEM 3 = '0' SYSTEM 6

5MHZ --- = '1' MAIN CLOCK FREQ. IS 5MHZ.

		D7	D6	D5	D4	D3	D2	D1	D0
0E7F6	(DI)					DCD			

DCD --- = '1' DATA (FROM RS-232C INTERFACE) IS NOT GOOD.

		D7	D6	D5	D4	D3	D2	D1	D0
0E7FC	(DI/DO)	GCD7	GCD6	GCD5	GCD4	GCD3	GCD2	GCD1	GCD0

GCD0- --- DO MAIN CPU → GRAPHIC CPU

Mate TC

MAIN CPU DI/DO (SYSTEM 3)

		D7	D6	D5	D4	D3	D2	D1	D0
0E7EC	(DI)						*GRC/P		

*GRC/P --- = '0' ,WITH GRAPHIC/PUNCH CONTROL P.C.B.

		D7	D6	D5	D4	D3	D2	D1	D0
0E7F4	(D0)							SY3	

SY3 --- = '1' SYSTEM 3 = '0' SYSTEM 6

		D7	D6	D5	D4	D3	D2	D1	D0
0E7F6	(DI)				*IRM			*DOG	

*IRM ---= '0' INPUT READY (FIFO IS NOT FULL)

*DOG --- GRAPHIC CPU DO

		D7	D6	D5	D4	D3	D2	D1	D0
0E7FC	(DI/DO)	GCD7	GCD6	GCD5	GCD4	GCD3	GCD2	GCD1	GCD0

GCD0- --- DO MAIN CPU → GRAPHIC CPU

CG01

					TITLE
					DRAW NO. A16C-1200-0170/05
					FANUC LTD SHEET 002 /

AW1-434961

AW1-434962

GRAPHIC CPU DI/DO

PORT 1 (DI/DO)

D7	D6	D5	D4	D3	D2	D1	D0
*CR9	TSM	DISMD	COK	GOK	*S10/8	IRG	*CR9/12

*CR9 --- '0' 9 INCH CRT MODE(DO)

TSM --- '1' TRI SIZE MODE(DO)

DISMD --- '1' DISPLAY MODE(DO)

COK --- '1' CHAR. DISPLAY ENABLE(DO)

GOK --- '1' GRAPHIC DISPLAY ENABLE(DO)

S10/8 --- '1' 10 DOTS/CHAR.(DO)

*CR9/12 --- '0' WITH 9 INCH CRT(DI)

IRG --- '1' INPUT READY(FIFO IS NOT FULL.) (DI)

PORT 3 (DI/DO)

D7	D6	D5	D4	D3	D2	D1	D0
1(RDI)	1(WR)		ORG	1(INT1)	1(INT0)	DOG	

ORG --- '1' OUTPUT READY (FIFO IS NOT EMPTY.) (DI)

DOG --- GRAPHIC CPU DO

6000~6FFF A00=0 (DO)

D7	D6	D5	D4	D3	D2	D1	D0
			RA4	RA3	RA2	RA1	RA0

NOTE 1

RA0~RA4 --- REGISTER ADDRESS FOR CRTC

A00=1 (DO)

D7	D6	D5	D4	D3	D2	D1	D0
RD7	RD6	RD5	RD4	RD3	RD2	RD1	RD0

RD0~RD7 --- REGISTER DATA FOR CRTC

NOTE 1 0110 XXXX XXXX XXX0
0110 XXXX XXXX XXX1
DON'T CARE

7000~7FFF (DI/DO)

D7	D6	D5	D4	D3	D2	D1	D0
GCD7	GCD6	GCD5	GCD4	GCD3	GCD2	GCD1	GCD0

NOTE 2

GCD0~ --- DI MAIN CPU ⟶ GRAPHIC CPU

NOTE 2 0111 XXXX XXXX XXXX
DON'T CARE

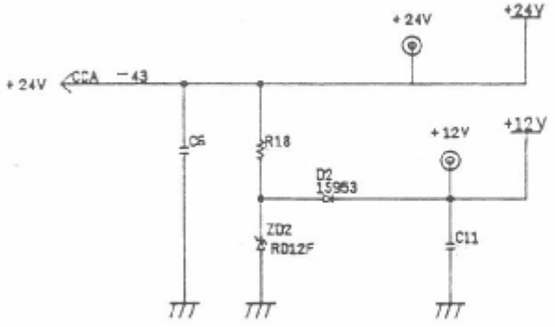
CG02

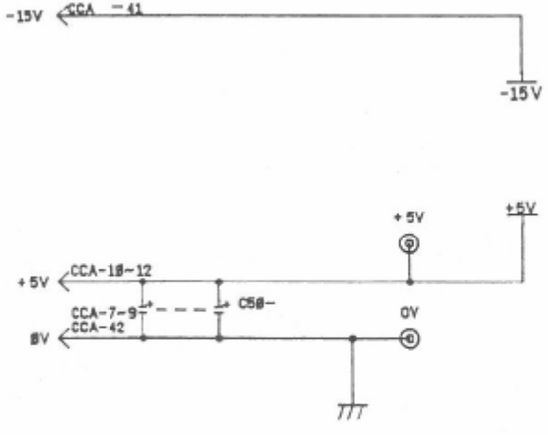
					TITLE	
					DRAW NO.	A16C-1200-0170/05
NO.	DATE	DESIGN	CHECK	DESCRIPTION	FANUC LTD	SHEET 003 /
DRAWN		CHECK		APPR.		

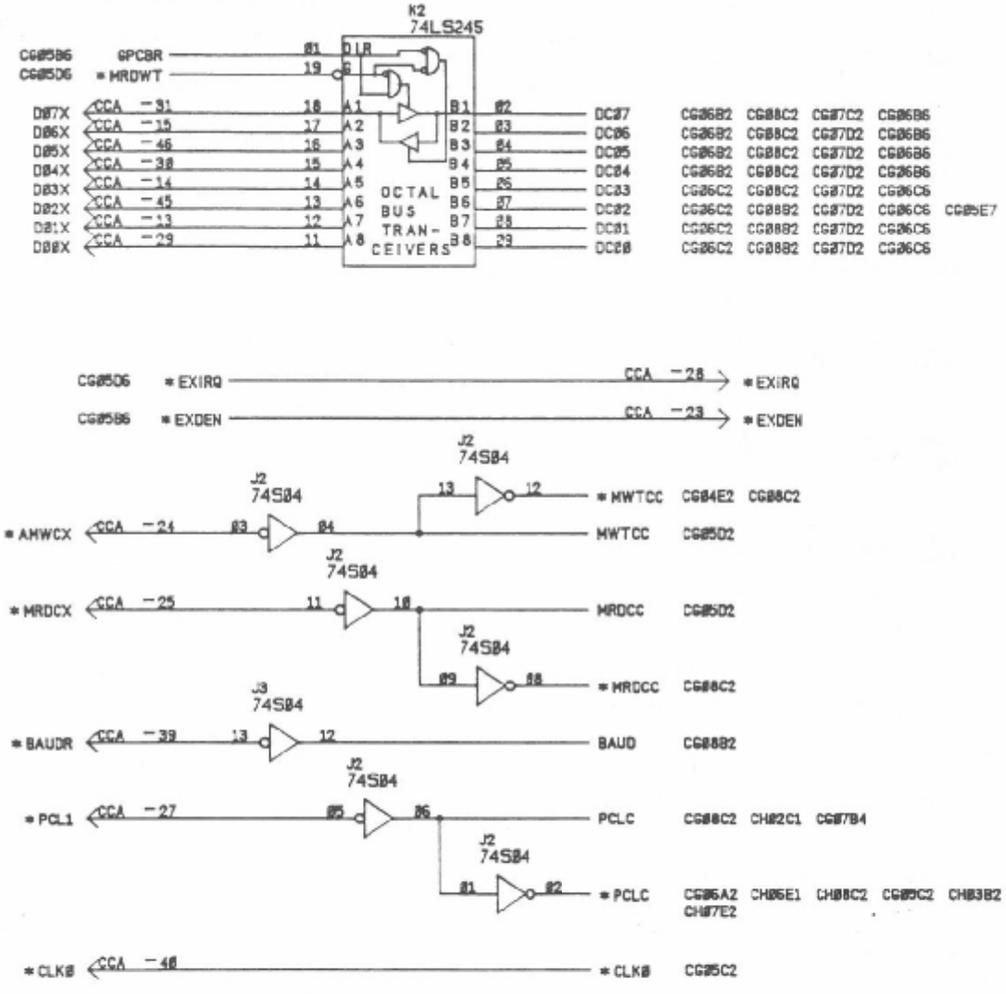
AW1-434962

82

AW1-434963





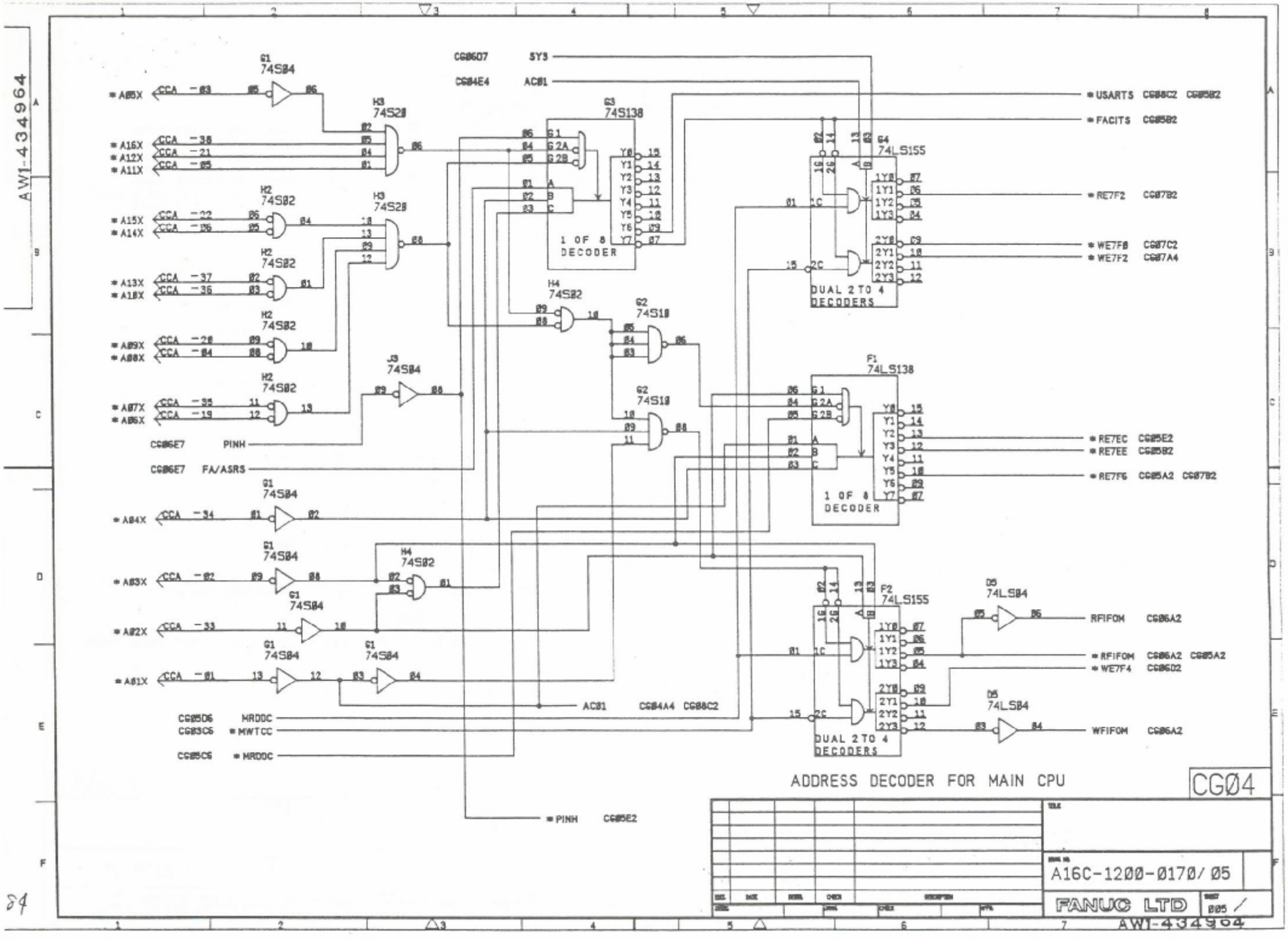


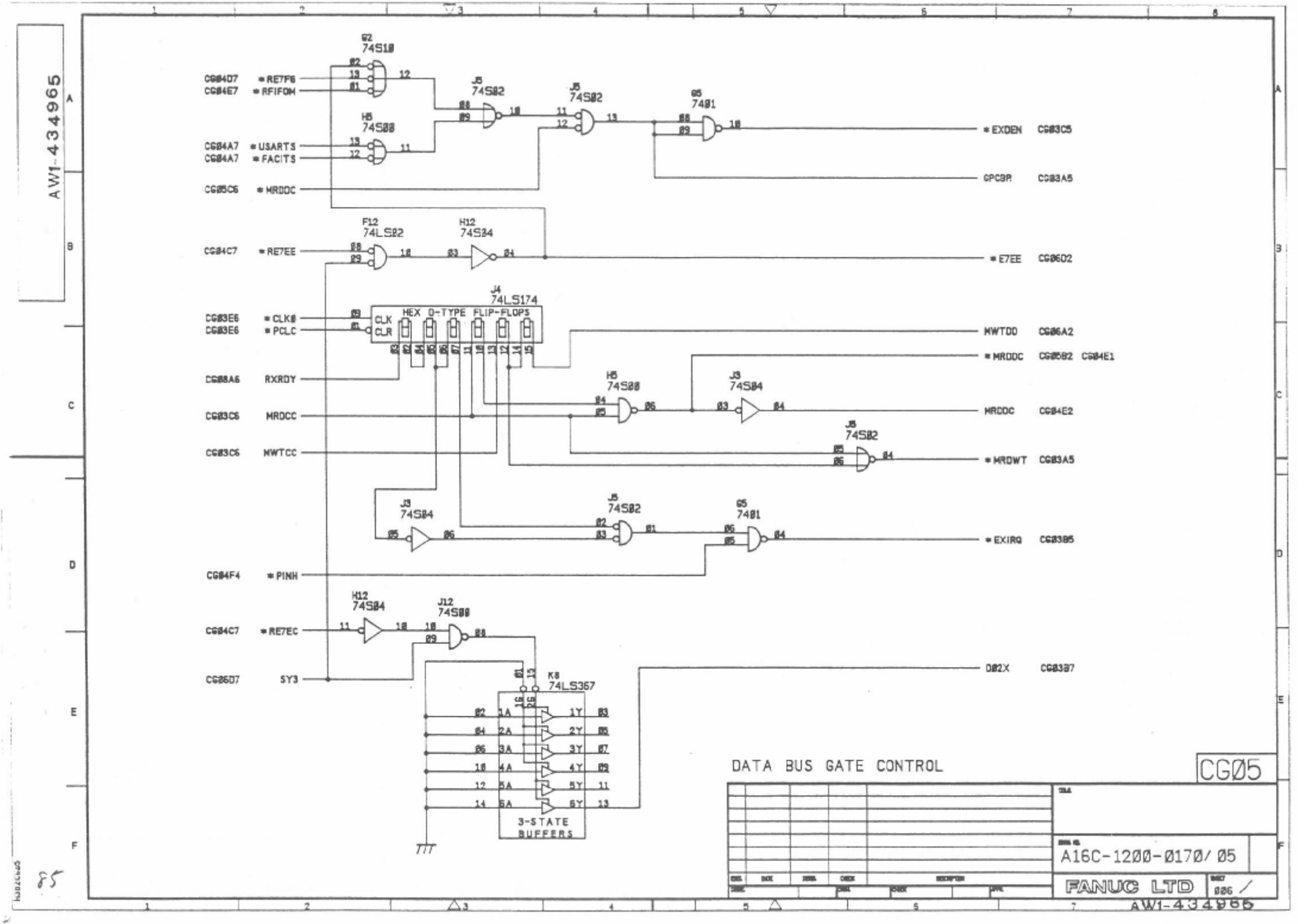
MAIN CPU INTERFACE

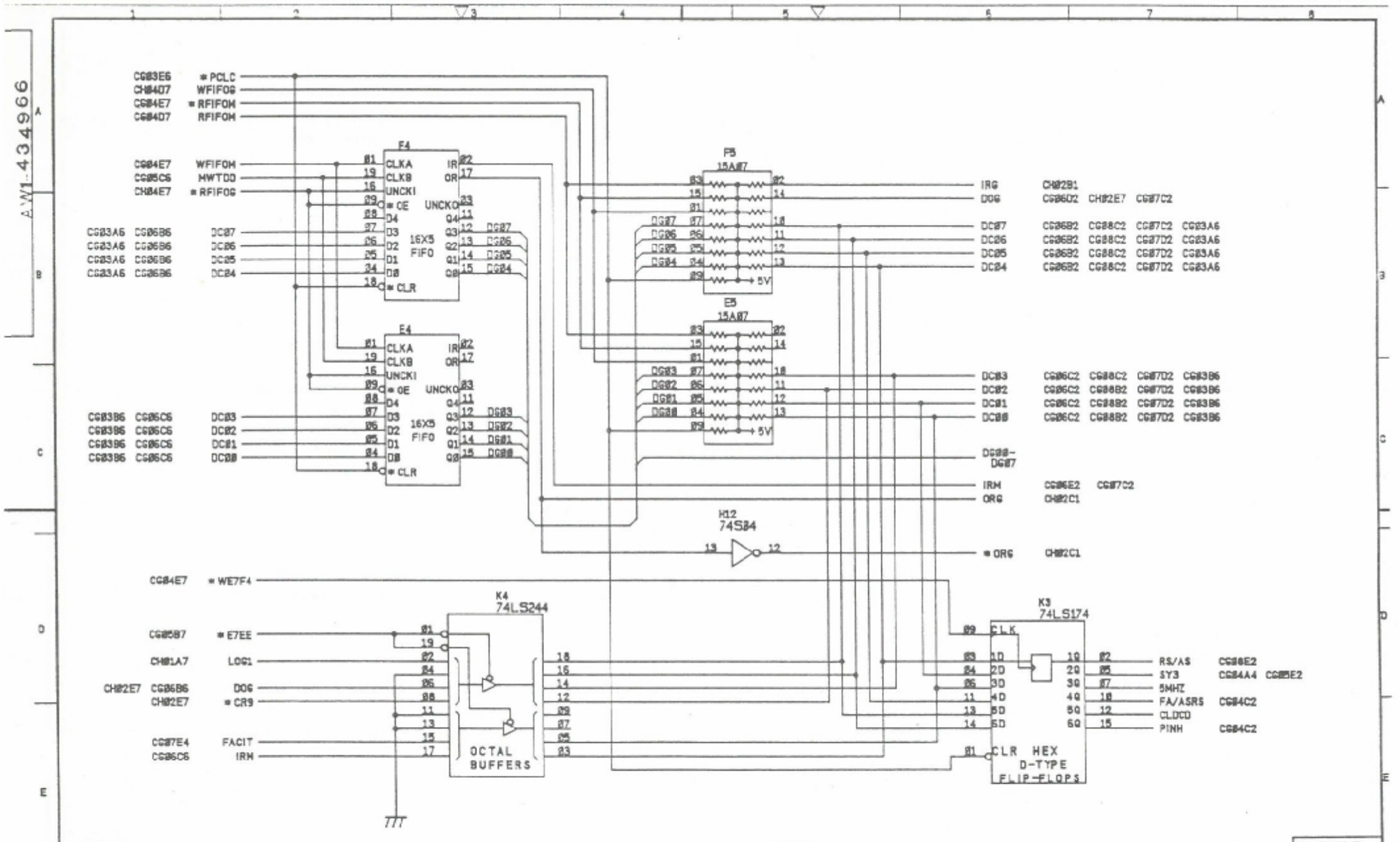
CG03

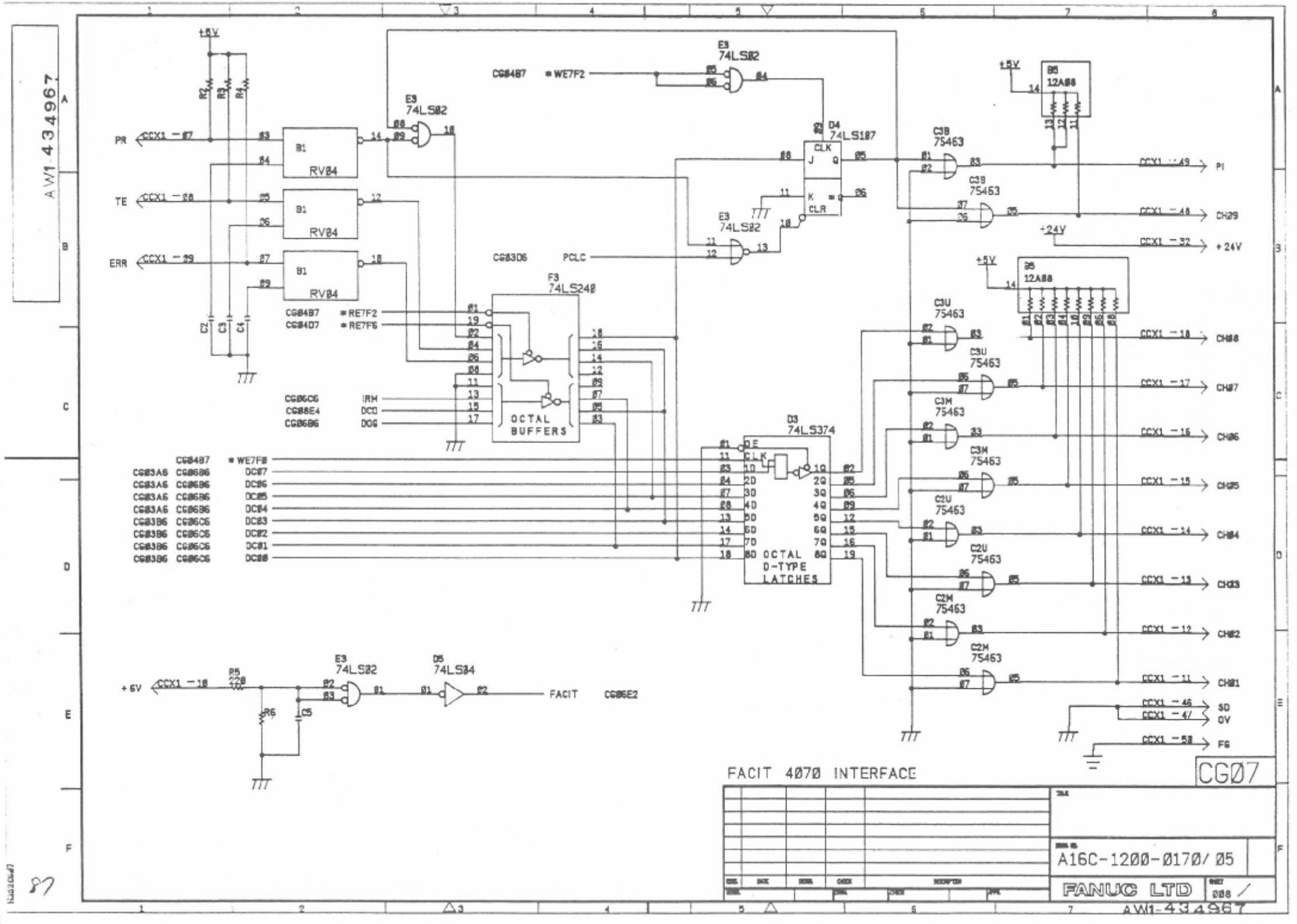
DWG NO.	A16C-1200-0170/05
FANUC LTD	SHEET 004 /

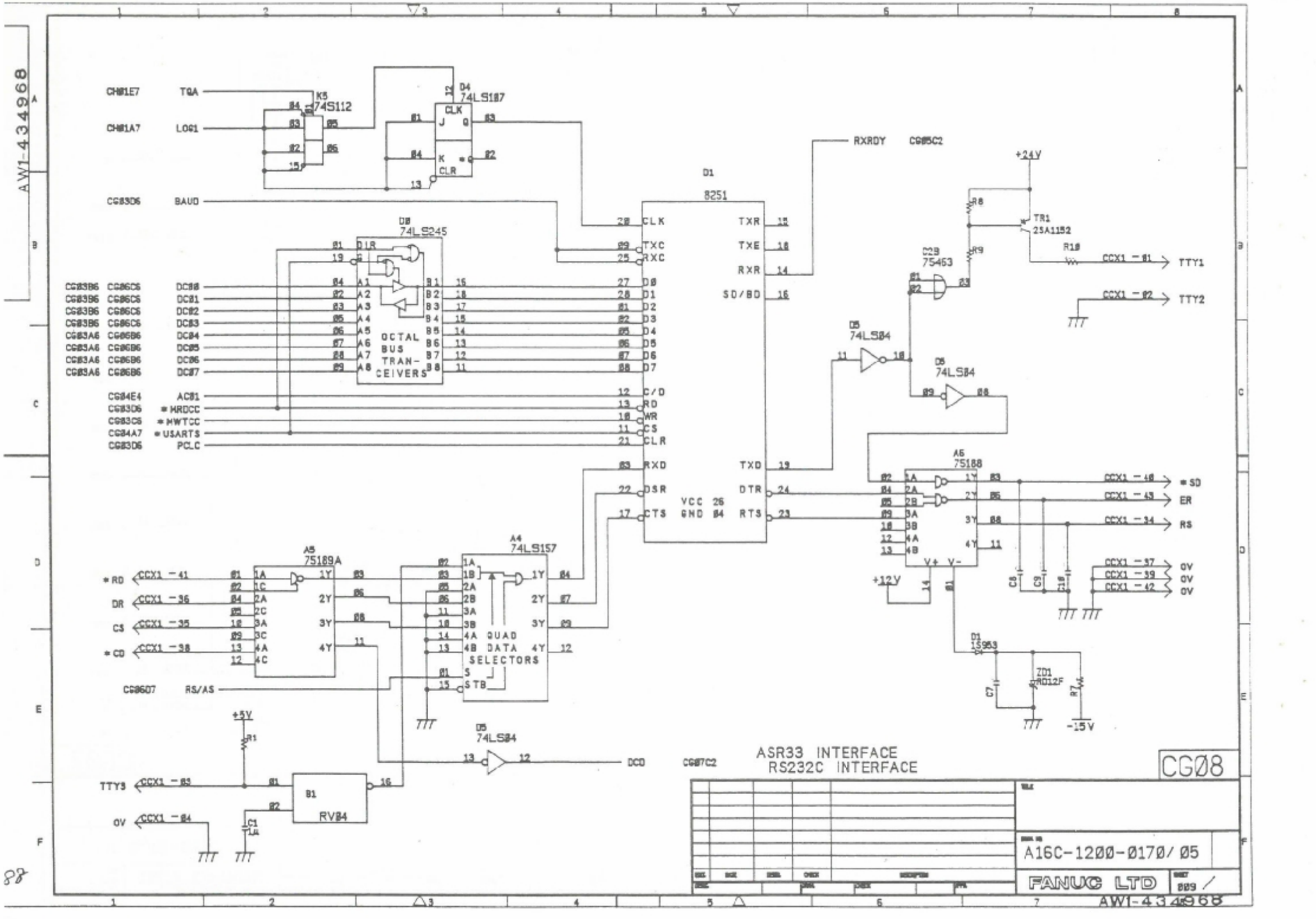
AW1-434963

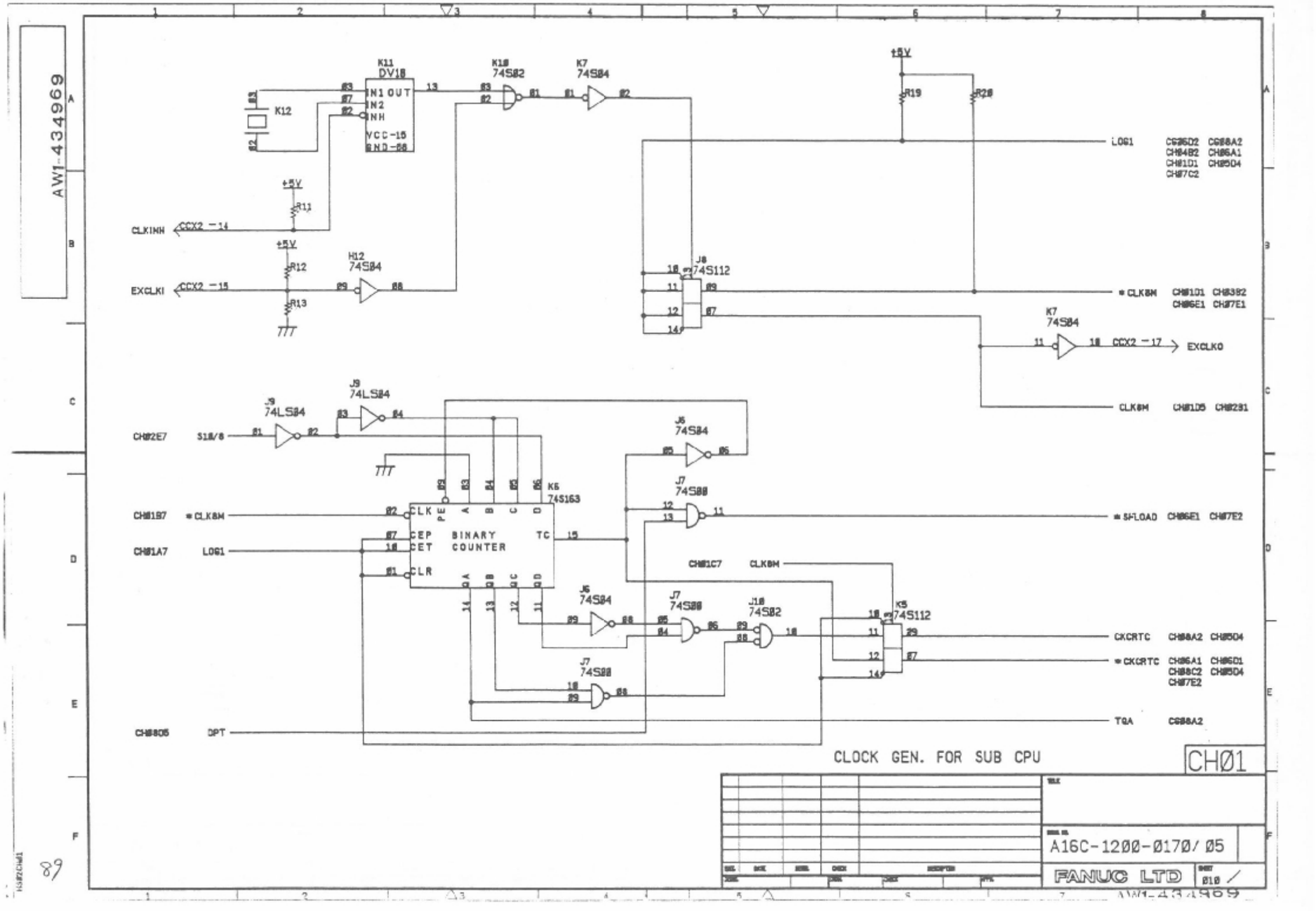

AW1-434964
G1 74S04
H3 74S28
H2 74S02
J3 74S04
H4 74S02
G2 74S10
G3 74S138
G4 74LS155
F1 74LS138
F2 74LS155
D5 74LS04
1 OF 8 DECODER
DUAL 2 TO 4 DECODERS
CG06E7 PINH
CG06E7 FA/ASRS
CG05D6 MRDDC
CG03C6 *MWTCC
CG05C6 *MRDDC
CG06D7 SY3
CG04E4 AC01
AC01 CG04A4 CG08C2
*PINH CG05E2
*USARTS CG08C2 CG05B2
*FACITS CG05B2
*RE7F2 CG07B2
*WE7F8 CG07C2
*WE7F2 CG07A4
*RE7EC CG05E2
*RE7EE CG05B2
*RE7F6 CG05A2 CG07B2
RFIFOM CG06A2
*RFIFOM CG06A2 CG05A2
*WE7F4 CG06D2
WFIFOM CG06A2
ADDRESS DECODER FOR MAIN CPU
CG04
A16C-1200-0170/05
FANUC LTD
AW1-434964

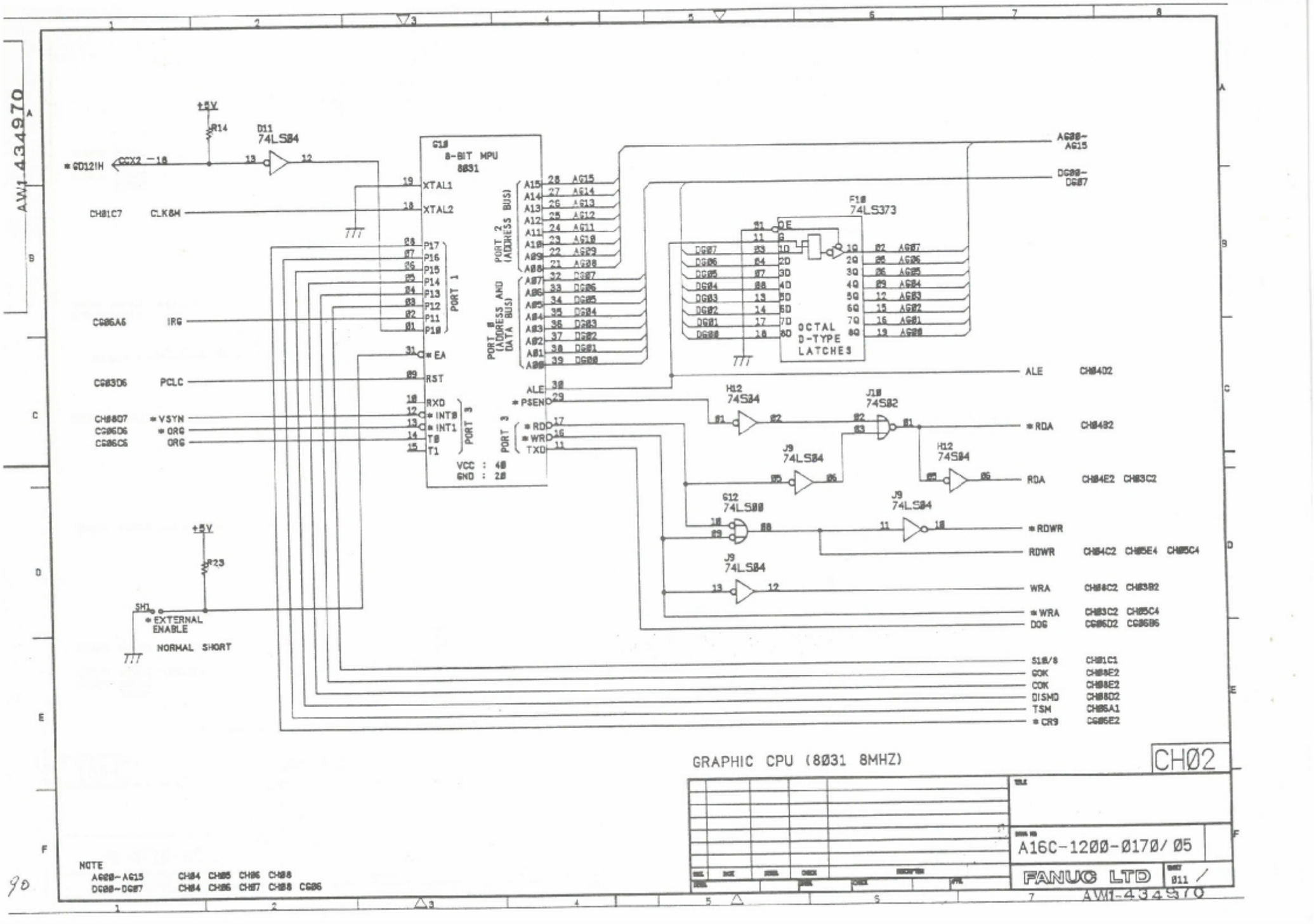

AW1-434965
G2 74S18
CG84D7 *RE7F6
CG84E7 *RFIFOM
J5 74S02
H5 74S08
CG84A7 *USARTS
CG84A7 *FACITS
CG85C6 *MRDDC
G5 74Ø1
*EXDEN CG83C5
GPC9R CG83A5
F12 74LS02
H12 74S34
CG84C7 *RE7EE
*E7EE CG8602
J4 74LS174
HEX D-TYPE FLIP-FLOPS
CG83E6 *CLK8
CG83E6 *PCLC
CLK
CLR
MWTDD CG86A2
*MRDDC CG85B2 CG84E1
CG88A6 RXRDY
CG83C6 MRDCC
CG83C6 MWTCC
J3 74S04
MRDDC CG84E2
*MRDWT CG83A5
*EXIRQ CG83B5
CG84F4 *PINH
J12 74S08
CG84C7 *RE7EC
CG86D7 SY3
K8 74LS367
3-STATE BUFFERS
D02X CG83B7
DATA BUS GATE CONTROL
CGØ5
A16C-1200-Ø170/Ø5
FANUC LTD
Ø26 /
AW1-434965


AW1-434966
CG03E6 * PCLC
CH04D7 WFIFOG
CG04E7 * RFIFOH
CG04D7 RFIFOH
CG04E7 WFIFOH
CG05C6 MWTDD
CH04E7 * RFIFOG
E4
CLKA
CLKB
UNCKI
* OE
UNCKO
D4
D3
D2
D1
D0
* CLR
IR
OR
16X5 FIFO
CG03A6 CG06B6 DC07
CG03A6 CG06B6 DC06
CG03A6 CG06B6 DC05
CG03A6 CG06B6 DC04
DG07
DG06
DG05
DG04
E4
CG03B6 CG06C6 DC03
CG03B6 CG06C6 DC02
CG03B6 CG06C6 DC01
CG03B6 CG06C6 DC00
DG03
DG02
DG01
DG00
F5
15A07
E5
15A07
+5V
IRG CH02B1
DOG CG06D2 CH02E7 CG07C2
DC07 CG06B2 CG08C2 CG07C2 CG03A6
DC06 CG06B2 CG08C2 CG07D2 CG03A6
DC05 CG06B2 CG08C2 CG07D2 CG03A6
DC04 CG06B2 CG08C2 CG07D2 CG03A6
DC03 CG06C2 CG08C2 CG07D2 CG03B6
DC02 CG06C2 CG08B2 CG07D2 CG03B6
DC01 CG06C2 CG08B2 CG07D2 CG03B6
DC00 CG06C2 CG08B2 CG07D2 CG03B6
DG00-DG07
IRM CG06E2 CG07C2
ORG CH02C1
H12
74S04
* ORG CH02C1
CG04E7 * WE7F4
K4
74LS244
CG05B7 * E7EE
CH01A7 LOG1
CH02E7 CG06B6 DOG
CH02E7 * CR9
CG07E4 FACIT
CG06C6 IRH
OCTAL BUFFERS
K3
74LS174
CLK
CLR
HEX D-TYPE FLIP-FLOPS
RS/AS CG06E2
SY3 CG04A4 CG05E2
5MHZ
FA/ASRS CG04C2
CLDCD
PINH CG04C2
NOTE
DG00-DG07 CH02 CH04 CH06 CH07 CH08
FIFO
CG06
A16C-1200-0170/05
FANUC LTD
AW1-434966

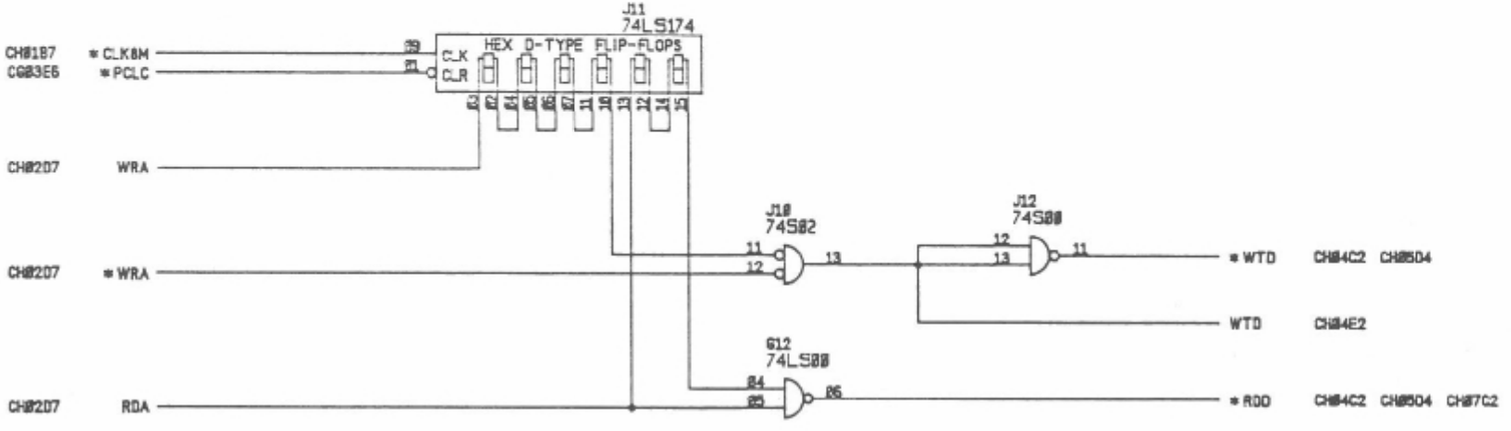

AW1 434967
FACIT 4070 INTERFACE
CG07
A16C-1200-0170/05
FANUC LTD
AW1-434967
OCTAL BUFFERS
OCTAL D-TYPE LATCHES
RV84
74LS82
74LS187
74LS248
74LS374
74LS84
75463
12A88
FACIT
+5V
+24V
0V
SD
FG


AW1-434968
CH01E7
TQA
CH01A7
LOG1
K5
74S112
D4
74LS187
CLK
CG03D6
BAUD
D8
74LS245
DIR
OCTAL BUS TRAN-CEIVERS
CG03B6 CG06C6 DC00
CG03B6 CG06C6 DC01
CG03B6 CG06C6 DC02
CG03B6 CG06C6 DC03
CG03A6 CG06B6 DC04
CG03A6 CG06B6 DC05
CG03A6 CG06B6 DC06
CG03A6 CG06B6 DC07
CG04E4 AC01
CG03D6 *HRDCC
CG03C6 *HWTCC
CG04A7 *USARTS
CG03D6 PCLC
D1
8251
CLK
TXC
RXC
TXR
TXE
RXR
SD/BD
C/D
RD
WR
CS
CLR
RXD
DSR
CTS
TXD
DTR
RTS
VCC 26
GND 04
RXRDY CG05C2
+24V
R8
TR1
2SA1152
R9
R10
CCX1 -01
TTY1
CCX1 -02
TTY2
C29
75453
D5
74LS04
D6
74LS04
A6
75188
CCX1 -40
*SD
CCX1 -43
ER
CCX1 -34
RS
CCX1 -37
0V
CCX1 -39
0V
CCX1 -42
0V
+12V
C6
C9
C10
D1
1S953
ZD1
RD12F
C7
R7
-15V
A5
75189A
*RD
CCX1 -41
DR
CCX1 -36
CS
CCX1 -35
*CD
CCX1 -38
A4
74LS157
QUAD DATA SELECTORS
CG06D7
RS/AS
D5
74LS04
DCD
CG07C2
+5V
R1
TTY3
CCX1 -03
0V
CCX1 -04
B1
RV04
C1
1μ
ASR33 INTERFACE
RS232C INTERFACE
CG08
A16C-1200-0170/05
FANUC LTD
009
AW1-434968


AW1-434969
K11 DV18
IN1 OUT
IN2
NH
VCC-15
GND-08
K18 74S82
K7 74S84
K12
+5V
R19
R20
LOG1
CS36D2 CS08A2 CH04B2 CH06A1 CH01D1 CH05D4 CH07C2
R11
CLKINH
CCX2 -14
R12
EXCLKI
CCX2 -15
H12 74S84
R13
J8 74S112
*CLK8M
CH01D1 CH03B2 CH06E1 CH07E1
K7 74S84
CCX2 -17
EXCLKO
CLK8M
CH01D5 CH02B1
J9 74LS84
CH02E7
S1B/8
J6 74S84
J7 74S08
K6 74S163
CH01B7
*CLK8M
CH01A7
LOG1
CLK
PE
CEP
CET
CLR
BINARY COUNTER
TC
*SFLOAD
CH06E1 CH07E2
CH01C7
CLK8M
J5 74S84
J7 74S08
J18 74S82
K5 74S112
CKCRTC
CH08A2 CH05D4
*CKCRTC
CH06A1 CH06D1 CH08C2 CH05D4 CH07E2
J7 74S08
TQA
CS08A2
CH08D5
DPT
CLOCK GEN. FOR SUB CPU
CHØ1
A16C-1200-Ø17Ø/Ø5
FANUC LTD
Ø1Ø /
AW1-434969


AW1-434970
+5V
R14
D11
74LS84
*GD12IH
CCX2 -18
CH81C7
CLK8M
XTAL1
XTAL2
G18
8-BIT MPU
8031
PORT 1
PORT 2 (ADDRESS BUS)
PORT 0 (ADDRESS AND DATA BUS)
PORT 3
CG86A6
IRG
CG83D6
PCLC
CH88D7
CG86D6
CG86C6
*VSYN
*ORG
ORG
*EA
RST
ALE
*PSEN
*INT0
*INT1
T0
T1
*RD
*WR
TXD
VCC : 40
GND : 20
F18
74LS373
OCTAL
D-TYPE
LATCHES
AG08-
AG15
DG08-
DG07
H12
74S04
J18
74S02
J9
74LS84
G12
74LS00
+5V
R23
SH1
*EXTERNAL
ENABLE
NORMAL SHORT
ALE
CH84D2
*RDA
CH84B2
RDA
CH84E2 CH83C2
*RDWR
RDWR
CH84C2 CH85E4 CH85C4
WRA
CH84C2 CH83B2
*WRA
CH83C2 CH85C4
DOG
CG86D2 CG86B6
S16/8
CH81C1
GOK
CH88E2
COK
CH88E2
DISMD
CH88D2
TSM
CH85A1
*CR9
CG86E2
NOTE
AG08-AG15 CH84 CH85 CH86 CH88
DG08-DG07 CH84 CH85 CH87 CH88 CG86
GRAPHIC CPU (8031 8MHZ)
CH02
A16C-1200-0170/05
FANUC LTD
011
AW1-434970

AW1-434971



READ/WRITE SIGNAL CONTROL

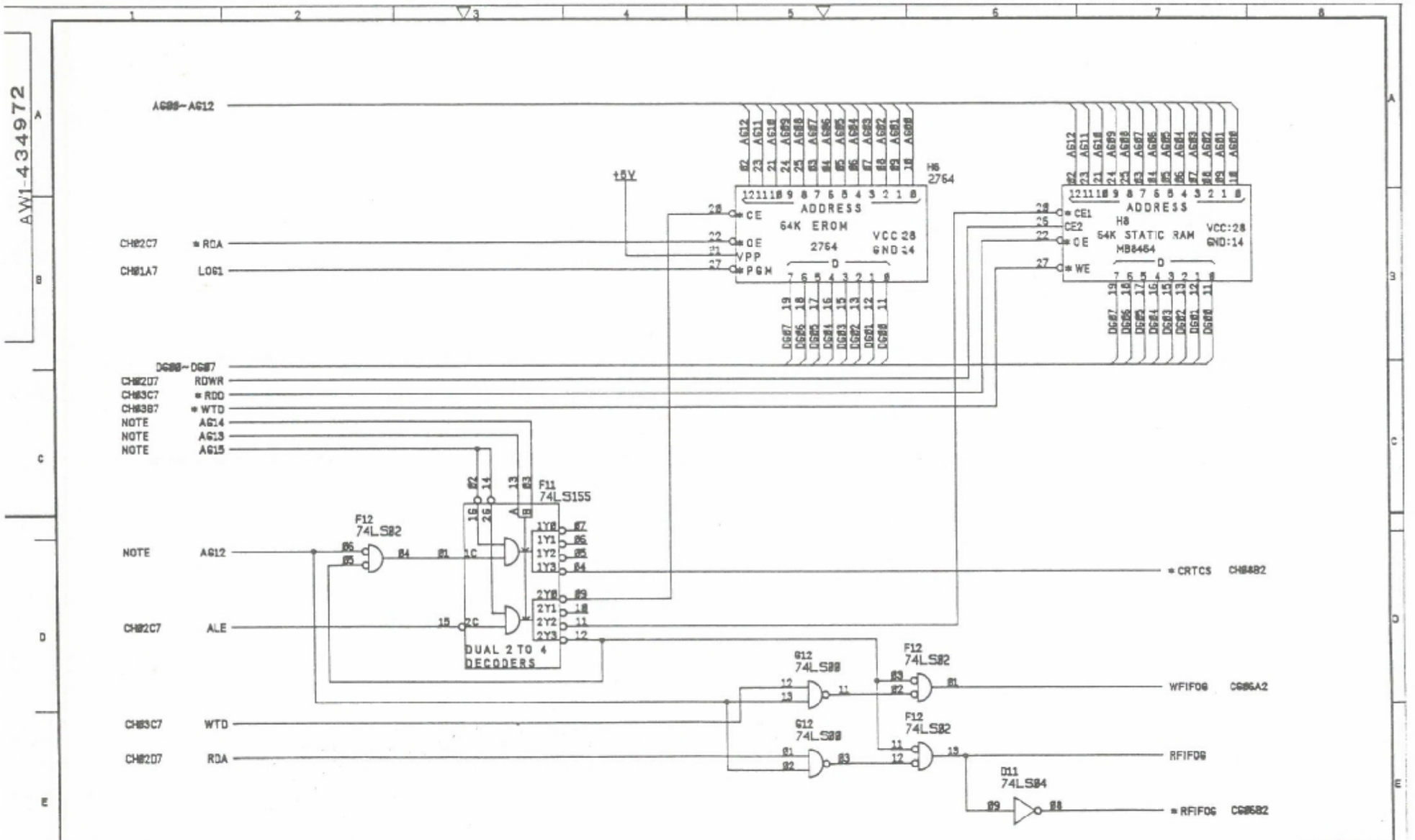
CH03

A16C-1200-0170/05

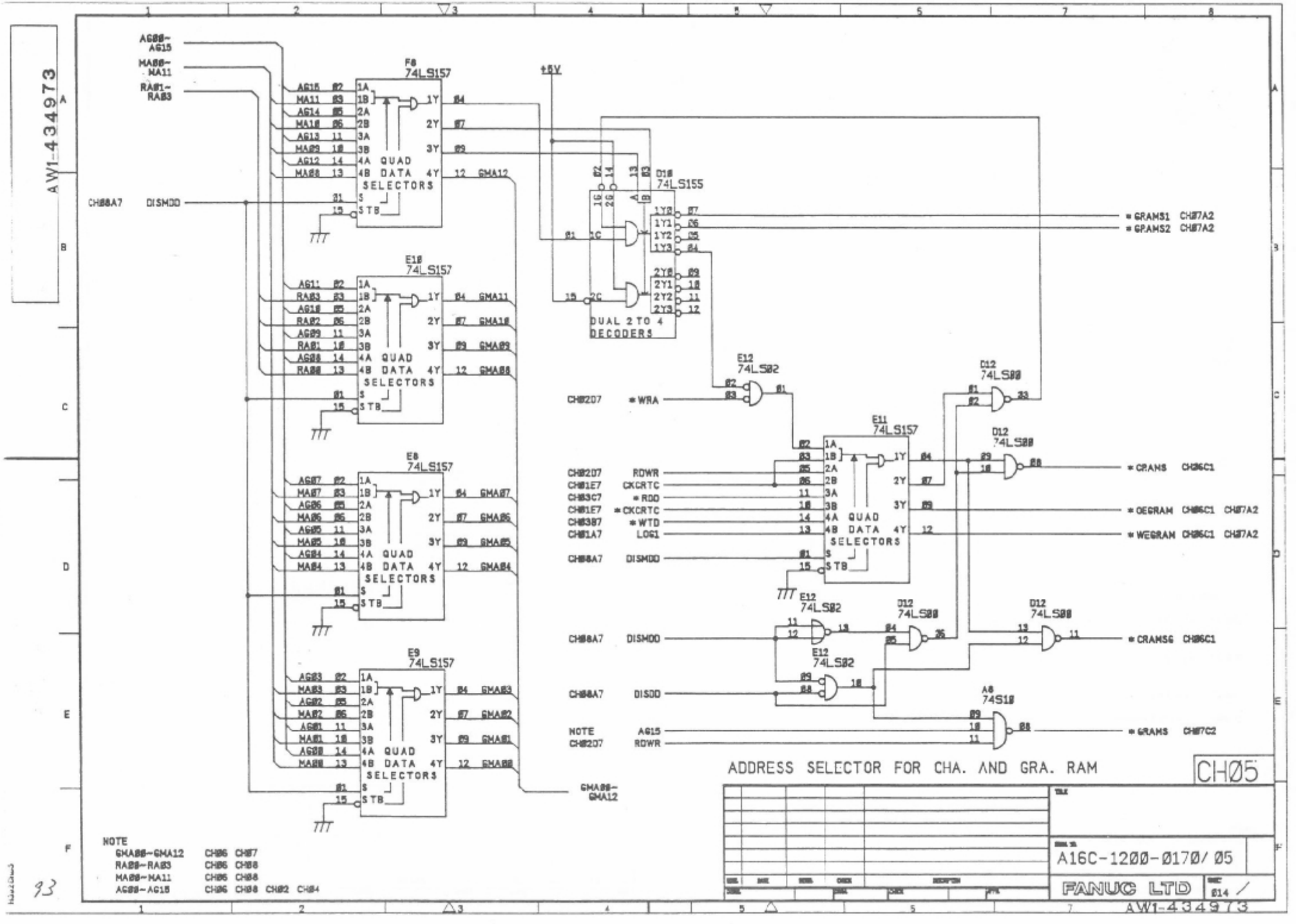
FANUC LTD

012

AW1-434971


AG08~AG12
+5V
H6
2764
ADDRESS
64K EROM
2764
VCC:28
GND:14
CE
OE
VPP
PGM
D
H8
64K STATIC RAM
MB8464
CE1
CE2
WE
CH02C7 * RDA
CH01A7 LOG1
DG00~DG07
CH02D7 RDWR
CH03C7 * RDD
CH03B7 * WTD
NOTE AG14
NOTE AG13
NOTE AG15
F11
74LS155
F12
74LS02
NOTE AG12
CH02C7 ALE
DUAL 2 TO 4
DECODERS
* CRTCS CH04B2
G12
74LS08
WFIFOG CG06A2
RFIFOG
D11
74LS04
* RFIFOG CG05B2
CH03C7 WTD
CH02D7 RDA
EROM . WORK RAM
CH04
A16C-1200-0170/05
FANUC LTD
NOTE
AG08~AG15 CH05 CH06 CH04 CH02
DG00~DG07 CH06 CH07 CH04 CG06 CH02

AW1-434972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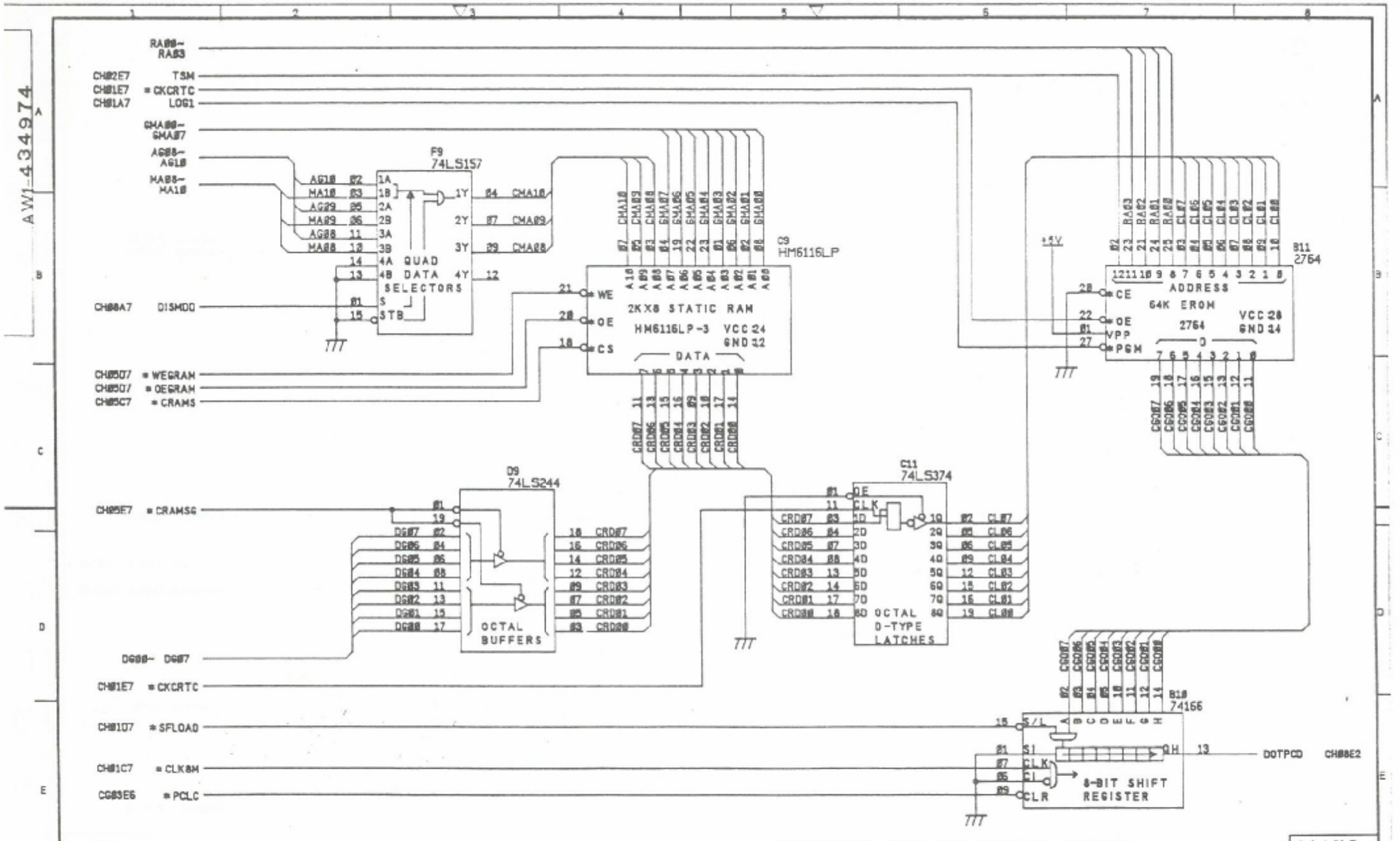
AG08~AG15
MA08~MA11
RA01~RA03
CH08A7 DISMOD
F8 74LS157
E10 74LS157
E8 74LS157
E9 74LS157
QUAD DATA SELECTORS
+5V
D10 74LS155
DUAL 2 TO 4 DECODERS
E12 74LS02
D12 74LS08
E11 74LS157
A8 74S10
CH02D7 *WRA
CH02D7 RDWR
CH01E7 CKCRTC
CH03C7 *RDD
CH01E7 *CKCRTC
CH03B7 *WTD
CH01A7 LOG1
CH08A7 DISMOD
CH08A7 DISDD
NOTE CH02D7 AG15 RDWR
*GRAMS1 CH07A2
*GRAMS2 CH07A2
*CRAMS CH06C1
*OEGRAM CH06C1 CH07A2
*WEGRAM CH06C1 CH07A2
*CRAMS6 CH06C1
*GRAMS CH07C2
GMA08~GMA12
NOTE
GMA08~GMA12 CH06 CH07
RA02~RA03 CH06 CH08
MA08~MA11 CH06 CH08
AG08~AG15 CH06 CH08 CH02 CH04
ADDRESS SELECTOR FOR CHA. AND GRA. RAM
CH05
A16C-1200-0170/05
FANUC LTD
AW1-434973



CHARACTER RAM AND DISPLAY CONTROL

CH06

NOTE

RA00~RA03	CH00 CH05
AG00~AG15	CH00 CH02 CH04 CH05
MA00~MA11	CH00 CH05
GMA00~GMA12	CH07 CH05
DG00~DG07	CH07 CH00 CG06 CH02 CH04

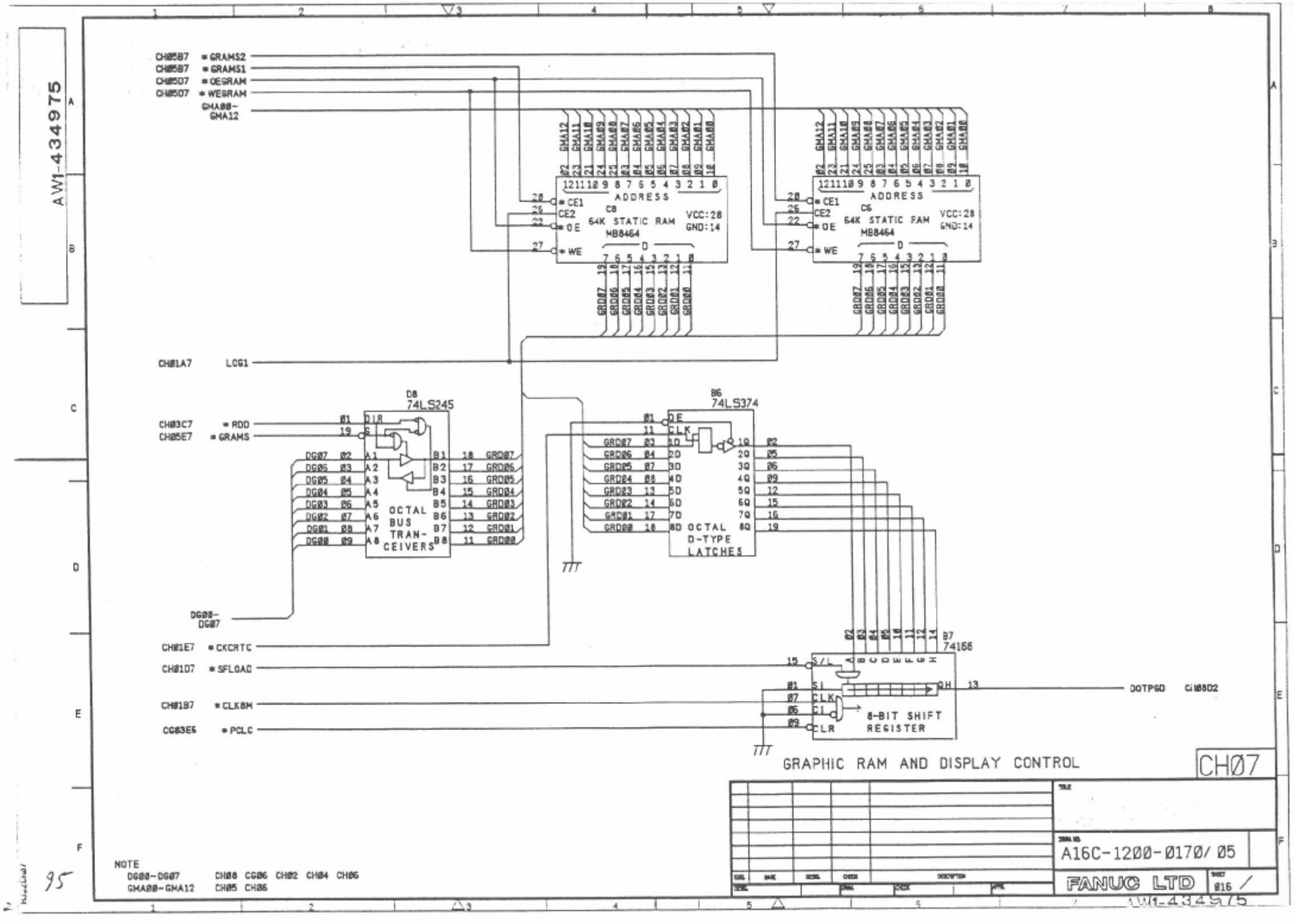
A16C-1200-0170/05

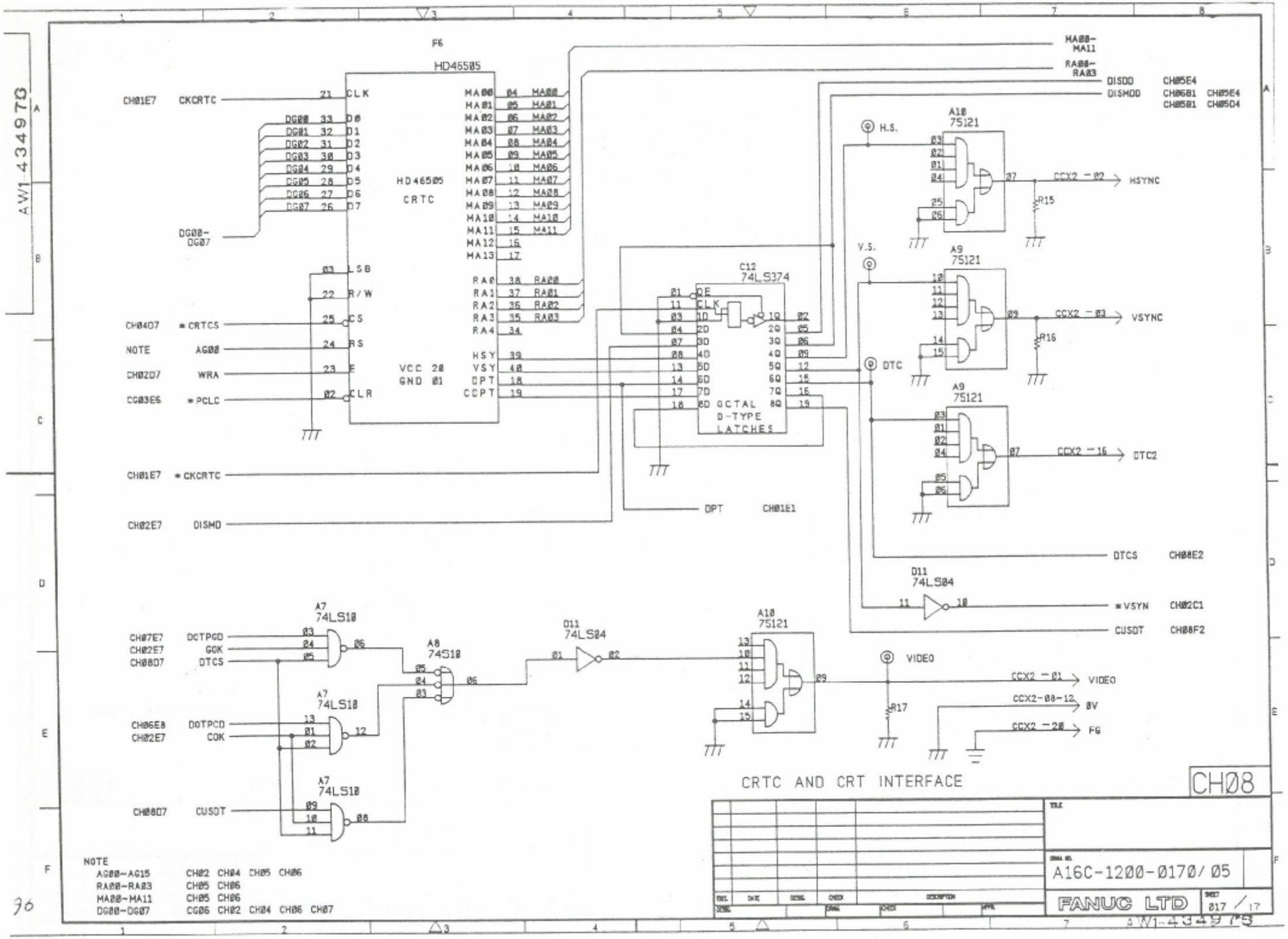
FANUC LTD

SHEET 015 /

AW1-434974

AW1-434974


AW1-434975
CH05B7 *GRAMS2
CH05B7 *GRAMS1
CH05D7 *OEGRAM
CH05D7 *WEGRAM
GMA00-GMA12
C8
64K STATIC RAM
MB8464
ADDRESS
VCC:28
GND:14
C6
64K STATIC RAM
MB8464
ADDRESS
VCC:28
GND:14
CH01A7 LOG1
D8
74LS245
OCTAL BUS TRAN-CEIVERS
CH03C7 *RDD
CH05E7 *GRAMS
DG00-DG07
B6
74LS374
OCTAL D-TYPE LATCHES
B7
74166
8-BIT SHIFT REGISTER
CH01E7 *CKCRTC
CH01D7 *SFLOAD
CH01B7 *CLK8M
CG03E5 *PCLC
DOTPGD CH08D2
GRAPHIC RAM AND DISPLAY CONTROL
CH07
NOTE
DG00-DG07 CH00 CG06 CH02 CH04 CH06
GMA00-GMA12 CH05 CH06
A16C-1200-0170/05
FANUC LTD
016/
AW1-434975


F6
HD46505
HD46505
CRTC
VCC 20
GND 01
CH01E7 CKCRTC
DG00 DG01 DG02 DG03 DG04 DG05 DG06 DG07
DG00-DG07
CH04D7 *CRTCS
NOTE AG00
CH02D7 WRA
CG03E6 *PCLC
CH01E7 *CKCRTC
CH02E7 DISMD
MA00-MA11
RA00-RA03
DISDD CH05E4
DISMDD CH06B1 CH05E4
CH05B1 CH05D4
H.S.
V.S.
DTC
A10 75121
A9 75121
A9 75121
CCX2 -02 HSYNC
CCX2 -03 VSYNC
CCX2 -16 DTC2
R15
R16
C12 74LS374
OCTAL D-TYPE LATCHES
DPT CH01E1
DTCS CH08E2
D11 74LS04
*VSYN CH02C1
CUSDT CH08F2
A7 74LS10
A8 74S10
D11 74LS04
A10 75121
CH07E7 DOTPGD
CH02E7 GDK
CH08D7 DTCS
CH06E8 DOTPCD
CH02E7 CDK
CH08D7 CUSDT
VIDEO
CCX2 -01 VIDEO
CCX2-08-12 8V
CCX2 -28 FG
R17
NOTE
AG00-AG15 CH02 CH04 CH05 CH06
RA00-RA03 CH05 CH06
MA00-MA11 CH05 CH06
DG00-DG07 CG06 CH02 CH04 CH06 CH07
CRTC AND CRT INTERFACE
CH08
A16C-1200-0170/05
FANUC LTD
017/17
A05B-4349-C170