

CONVERSION KIT MODEL 1US35k

Installation and Service Manual



DE DATA EAST USA, INC.
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780-0098-00
September, 1988

WARNING

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instructions manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.



WARNING

Federal law provides severe civil and criminal penalties for the unauthorized reproduction, distribution, or exhibition of copyrighted audiovisual works and video games.

The Federal Bureau of Investigation investigates allegations of criminal copyright infringement.

Atomic Runner

C H E L N O V tm

Video Game Conversion Kit

Model 1US35K

INSTALLATION AND SERVICE MANUAL

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SEPTEMBER, 1988

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WARRANTY INFORMATION

DATA EAST USA, INC. (Seller), warrants only to the original purchaser (Buyer) of its products that the items listed below are free from defects in material and workmanship under normal use and service for the period specified:

GAME LOGIC PRINTED CIRCUIT BOARD(S)

90 DAYS

No other parts of the Seller's products are warranted.

Warranty periods are effective from date of initial shipment from Seller to Buyer. Seller's sole liability shall be, at its option, to repair or replace products which are returned to Seller during the warranty periods specified, provided:

1. Seller is notified promptly upon discovery by buyer that stated products are defective.
- 2, Such products are properly packaged and then returned, freight prepaid, to a place specified by Seller.

This warranty does not apply to products damaged during shipment and/or due to improper handling, or due to improper installation or usage, or alteration. In no event shall Seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages, or any other losses incurred by the customer in connection with the purchase of a DATA EAST USA, INC. product.

EXCEPT AS SPECIFICALLY PROVIDED IN A WRITTEN CONTRACT BETWEEN SELLER AND BUYER, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

1. GENERAL INFORMATION

A. SPECIFIC REQUIREMENTS

The C H E L N O V game is a one player (at a time) video game conversion kit. It is intended to be installed into an existing video game cabinet, and comes with all the necessary components to make the converted game look and play like a new dedicated game.

THE GAME TO BE CONVERTED MUST MEET THE FOLLOWING REQUIREMENTS

MONITOR:	Horizontal, RGB, Negative Composite Sync. Input
POWER SUPPLY:	+5vdc @ 7 Amp, +12vdc @ 1 Amp

B. LIST OF MATERIALS

QTY	DESCRIPTION	PART NUMBER
1	PCB Set, C H E L N O V.....	510-0141-00
1	PCB, RFI Filter Adapter, DE 0239.....	520-0083-00
1	Main Harness, Generic Kit (44 pin).....	036-0013-02
1	Joystick Assy, 8 way.....	450-0003-00
2	Pushbutton, Short, Black	350-0001-00
2	Pushbutton, Short, Red.....	350-0001-02
1	Pushbutton, Short, Yellow.....	350-0001-04
2	Pushbutton, Short, Blue.....	350-0001-06
7	Pushbutton Holder, w/switch.....	185-0001-00
7	Pal Nut, Nylon.....	240-0001-01
1	Control Panel Overlay - Generic.....	800-0030-00
1	Monitor Underlay Card, Chelnov.....	810-0032-00
2	Decal, Side, Generic.....	820-0040-00
1	Plex, Marquee, Chelnov.....	830-0039-00
1	Plex, Clear, 23.75 X 7.6.....	660-0001-00
1	Manual, Chelnov Kit.....	780-0098-00
2	Label Set, Pushbutton ID.....	406-0085-00
1	Label, FCC Warning.....	406-0003-00

C. INSTALLATION INSTRUCTIONS

When selecting a game to convert, make sure that the Power Supply, the Monitor, and the Coin Acceptors are functional. There is nothing more frustrating than installing a conversion kit and having it not operate due to a faulty monitor or power supply. You should not expect the new logic PCB to be defective. It has been thoroughly tested and 'burned-in' at the factory.

It is mandatory that the cabinet be wired to conform with all National and Local electric codes before the conversion is attempted. The primary power input section must have adequate noise filtering on the AC line to prevent undesirable conducted radio frequency interference (RFI). "Adequate" is defined as a filter with both common mode and differential mode filtering and a minimum current capacity of 2.5 Amp.

The Federal Communications Commission (FCC), and other regulatory agencies, require that every video game be clearly labeled with the Name and Address of the Original Manufacturer, Date of Manufacture (or Serial Number), Power requirements, Suitability for indoor or outdoor use, and the Model number of the unit. DO NOT DESTROY OR DEFACE THE ORIGINAL GAME ID TAG. In addition, the FCC requires that, after conversion, the unit must be labeled with a suitable warning stating that radio frequency interference may result from use in a residential area. An acceptable label is included with this kit.

IT IS THE RESPONSIBILITY OF THE PERSON PERFORMING THE INSTALLATION TO COMPLY WITH ALL LABELING REQUIREMENTS.

TAKING IT APART

Performing a few simple tasks when preparing a game to be converted can save you much time and effort when you are installing the conversion kit.

Find the Wiring Diagram of the game to be converted. You will need to identify the required DC power supply output wires and the monitor video and sync wires. Note the color coding of these wires, or better yet, label them as to their function. This kit contains a new Main Harness, but you will need to splice it into the existing power supply and video wiring.

Remove the existing game harness parts that will not be used in this conversion. NOTE: You are modifying only the secondary (DC from power supply) and I/O (video, speaker, and controls) sections of the wiring. DO NOT MODIFY OR REMOVE THE PRIMARY AC WIRING. The original manufacturer should have designed and built it to comply with Local and National Electrical Codes and FCC regulations. It must not be altered.

C. INSTALLATION INSTRUCTIONS (cont.)

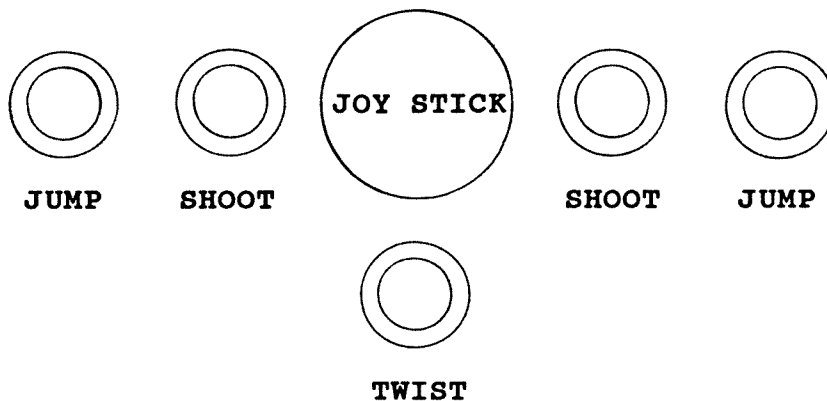
Remove the original game pcb from the cabinet. Remove all exterior decals, and repair any cabinet damage. Repaint the cabinet if necessary. Remove the monitor plex (or glass). If your plex has silkscreened art work on it, you will need to strip it off, or replace it with a new piece cut to the same size. Using the old Monitor Plex as a template, cut the Monitor Underlay card, supplied with this kit, to the same size as the old plex. NOTE: Be certain that the opening in the Underlay Card lines up with the monitor screen.

Remove the Marquee Plex from the game and use it as a template to cut the new Marquee Plex down to the correct size. Remove the control panel from the game and remove all controls and graphics from it. Drill and/or punch any required new holes for the control panel. Chelnov requires three "shoot" buttons. See the diagram below for a suggested control panel layout. If you are going to cover the control panel with clear plex (one piece provided with this kit), you should carefully cut it to fit the control panel at this time. Thoroughly clean the control panel so that the new control panel overlay will adhere to it aggressively.

PUTTING IT TOGETHER

Install the Control Panel Overlay by peeling off the paper backing and carefully laying the overlay down on the panel. Smooth it out starting in the center and working your way out to the edges, removing all of the trapped air pockets. If possible, cut the edges of the overlay oversize and fold the excess under the panel. Cut out the button and joy stick holes. Install the BUTTON ID labels supplied with the kit.

FIGURE 1. Suggested Control Panel Layout



C. INSTALLATION INSTRUCTIONS (cont.)

You may wish to cover the control panel overlay and button ID labels with clear plex at this time. Install the new buttons and joy stick at this time. Refer to Figure 1 on the previous page for recommended control layout.

GAME PCB: Mount the Game PCB to a convenient wall of the cabinet, using the mounting feet and hardware supplied with the pcb.

MAIN HARNESS: The main harness provided with this kit has a 44 pin connector. Refer to Figure 2, on page 7 for wire color and function information. It must mate with the RFI Filter/Adapter. The Game pcb has a 56 pin JAMMA connector. Refer to Figure 3, on page 8 for information pertaining to signals and function as they are found on the game pcb edge connector.

POWER SUPPLY WIRING: Plug the RFI Filter/Adapter (DE0239) onto the game pcb. This Filter/Adapter is mandatory, as undesirable Radio Frequency Interference will be generated if it is not used. Plug the main harness edge connector onto the RFI Filter/Adapter. Separate the DC power wires and route them through the cabinet to the Power Supply. Try to keep the length of these wires to a minimum for best results.

NOTE: Use a minimum of two (2) wires EACH for the +5 volts and the Ground lines between the power supply and the pcb. Terminate these wires at the power supply as required.

NOTE: IMPROPER WIRING WILL DAMAGE THE PCB SET AND VOID THE WARRANTY!

PLAYER CONTROL WIRING: Route the push button and joy stick wires up to their proper destinations, cut to length, and terminate as required.

MONITOR WIRING: The game outputs are Positive for the Red, Green and Blue signals, and Negative Composite Sync. If your monitor has separate Horizontal and Vertical sync inputs, hook the Composite sync to the negative Horizontal input. This method will work on most monitors. However, some model Electrohome's require that the Composite sync signal be hooked up to both the negative Horizontal and Vertical inputs. Contact your distributor for more information if you are uncertain as to how to hook up the monitor wires.

COIN DOOR: The coin counter(s) may be the 12 volt or the 6 volt type, as the game pcb utilizes an open collector drive circuit. Hook one coin counter wire to the required, positive voltage and the other wire to the coin counter signal wire from the main harness edge connector. Refer to the standard connection diagrams on page 9.

C. INSTALLATION INSTRUCTIONS (cont.)

GRAPHICS: The monitor underlay card is pre-printed with game instructions. Install the underlay card under a clean, clear plex or glass. Check any marquee lamps for proper operation. Replace any burned out lamps. Install the CHELNOV marquee on the game. Install the two DATA EAST side decals. **IMPORTANT: Install the "FCC Warning" label to the upper rear of the cabinet.**

THE BIG TEST!

Remove the RFI Filter/Adapter from the game pcb, but leave the main harness connected to the Filter/Adapter. Apply power. Measure the +5 volts at the edge connector of the Filter/Adapter (at the point where it would connect to the game pcb). Adjust to +5.15 VDC using a Digital volt meter. Measure the +12 volts and the -5 volts (if any) to ensure that they are connected properly and are on the correct terminals. **TURN THE POWER OFF!** Now reconnect the RFI Filter/Adapter to the game pcb, and apply power once again. The attract mode video should appear on the screen. Adjust the picture size and colors on the monitor to get the optimum appearance. Adjust the Sync and Hold controls on the monitor for a stable picture. Coin it up and give it a try! Test all the controls and check the sound for proper operation.

CONGRATULATIONS! You have successfully installed your DATA EAST conversion kit. We hope that it gives you may years of successful operation.

2. GAME INFORMATION

A. OPERATOR SELECTABLE OPTIONS

The CHELNOV game allows for operator adjustable pricing, bonus lives, difficulty, etc. These are accessed by the two 8 position dipswitches located on the main logic pcb. Tables 1 and 2 outline the available options.

TABLE 1 - DIPSWITCH 1

		1	2	3	4	5	6	7	8
Game Charge (right)	1 Coin = 1 Credit:	OFF	OFF						
	1 Coin = 2 Credit:	ON	OFF			A			
	COIN 1	1 Coin = 3 Credit:	OFF	ON		L			
	2 Coin = 1 Credit:	ON	ON			W			
Game Charge (left)	1 Coin = 1 Credit:			OFF	OFF	A			
	1 Coin = 2 Credit:			ON	OFF	Y			
	COIN 2	1 Coin = 3 Credit:		OFF	ON	S			
	2 Coin = 1 Credit:			ON	ON				
Attract mode sound?	YES:						OFF		
	NO:					O	ON		
Flip Screen?	YES:					F		ON	
	NO:					F		OFF	
	Cocktail Table:								OFF
	Upright game:								ON

TABLE 2 - DIPSWITCH 2

		1	2	3	4	5	6	7	8
Number of lives	3:	OFF	OFF						
	5:	ON	OFF				A		A
	1:	OFF	ON				L		L
	infinite:	ON	ON				W		W
Game Difficulty	Normal:			OFF	OFF		A		A
	Easy:			ON	OFF		Y		Y
	Hard:			OFF	ON		S		S
	Hardest:			ON	ON				
Continue Mode ?	Yes:					OFF	O		O
	No:					ON	F		F
FREEZE FRAME?	Off:						F	OFF	F
	On:							ON	

B. MAIN HARNESS CONNECTOR PIN-OUT

REMEMBER: In order to prevent undesirable radio frequency interference, the RFI Filter/Adapter must be used. Do not attempt to buypass it! Listed below are the game signals as they appear on the Main Harness (44 pin) connector which mates with the RFI Filter/Adapter.

FIGURE 2. MAIN HARNESS 036-0013-02

EDGE CONNECTOR WIRING

COMPONENT SIDE			SOLDER SIDE		
color	pin	signal	color	pin	signal
gn	1	1P Down		A	2P Down
yl	2	1P Up		B	2P Up
or	3	1P Left		C	2P Left
rd	4	1P Right		D	2P Right
pk	5	1P Shoot 3		E	
	6			F	
	7			H	
lt bu	8	Service		J	
bu	9	1P Shoot 1		K	2P Shoot 1
pu	10	1P Shoot 2		L	2P Shoot 2
bn	11	1P Game Select	rd/wh	M	2P Game Select
gn	12	Coin 1	rd	N	Coin 2
pu	13	Coin Count 1	sl	P	Coin Count 2
bu/wh	14	TV Blue	gn/wh	R	TV Green
wh/bk	15	Sync	rd/wh	S	TV Red
	16			T	
wh	17	Speaker (+)	bk/wh	U	Speaker (-)
or	18	+ 12 Volts		V	
rd	19	+ 5 Volts	rd	W	+ 5 Volts
rd	20	+ 5 Volts	rd	X	+ 5 Volts
bk	21	TV Ground	bk	Y	Ground
bk	22	Ground	bk	Z	Ground

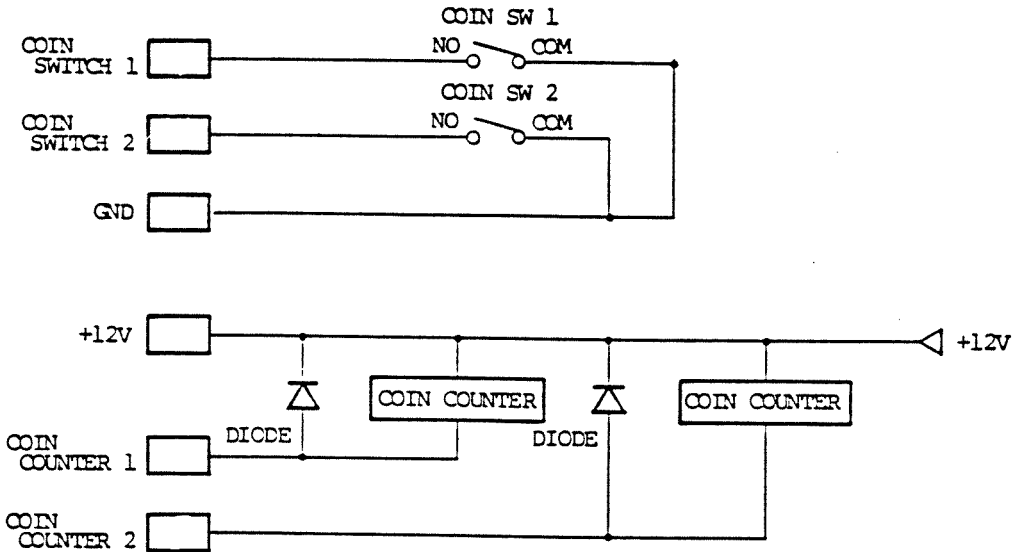
C. PCB EDGE CONNECTOR PIN-OUT

For your reference, these are the game signals as they appear on the edge connector of the game pcb.

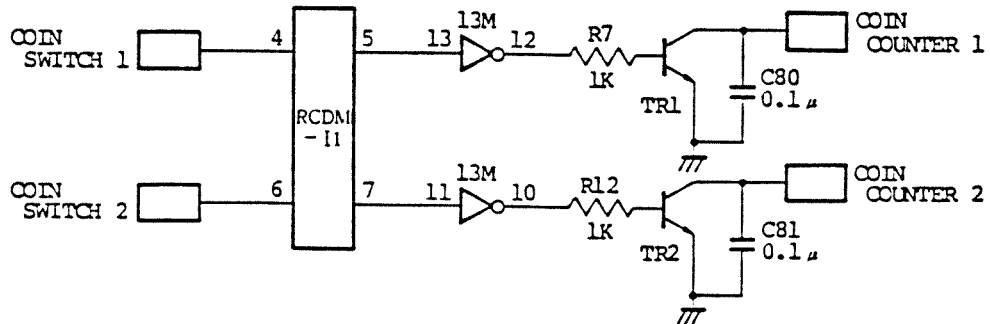
SOLDER SIDE	PIN #		PARTS SIDE
GND	A	1	GND
GND	B	2	GND
+5V	C	3	+5V
+5V	D	4	+5V
	E	5	
+12V	F	6	+12V
MISTAKEN INPUT PREVENTION	H	7	MISTAKEN INPUT PREVENTION
COIN COUNTER 2	J	8	COIN COUNTER 1
	K	9	
SPEAKER(-)	L	10	SPEAKER (+)
	M	11	
VIDEO GREEN	N	12	VIDEO RED
VIDEO SYNC	P	13	VIDEO BLUE
SERVICE SWITCH	R	14	VIDEO GND
	S	15	
COIN SWITCH 2	T	16	COIN SWITCH 1
START SWITCH 2	U	17	START SWITCH 1
2P CONTROL 1 UP	V	18	1P CONTROL 1 UP
2P CONTROL 2 DOWN	W	19	1P CONTROL 2 DOWN
2P CONTROL 3 LEFT	X	20	1P CONTROL 3 LEFT
2P CONTROL 4 RIGHT	Y	21	1P CONTROL 4 RIGHT
2P CONTROL 5 PUSH 1	Z	22	1P CONTROL 5 PUSH 1
2P CONTROL 6 PUSH 2	a	23	1P CONTROL 6 PUSH 2
2P CONTROL 7 PUSH 3	b	24	1P CONTROL 7 PUSH 3
	c	25	
	d	26	
GND	e	27	GND
GND	f	28	GND

D. STANDARD CONNECTION DIAGRAMS

COIN COUNTERS & COIN SWITCHES



COIN COUNTER/COIN SWITCH CIRCUIT



3. PCB SCHEMATICS

WARNING:

Due to the Multi-layer printed circuit boards used on this game, DATA EAST recommends service be performed only by qualified technicians with the equipment required for the servicing of multi-layer printed circuit boards.

Attempts to service multi-layer printed circuit boards using conventional de-soldering equipment may result in permanent damage to the printed traces and void your warranty.

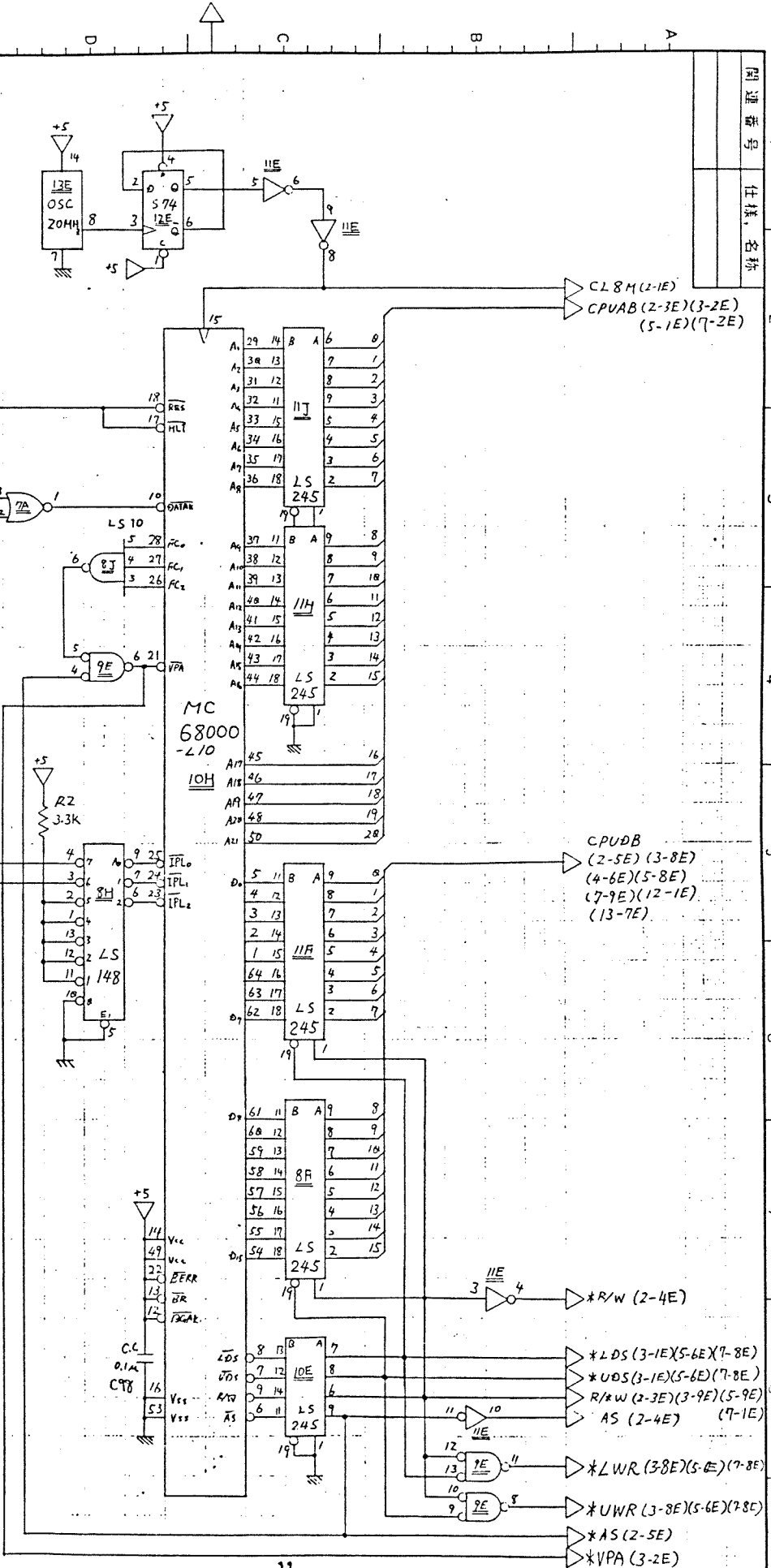
* REPLACEMENT PARTS AND SERVICE *

To obtain replacement parts or technical assistance, contact the DATA EAST distributor in your area. If you require referral or further technical assistance, contact DATA EAST'S Service Department during the hours of 8:00 AM to 5:00 PM, Pacific time, Monday through Friday, at (408) 286-7080.

"VOICE MAIL"

During off hours, you may leave a "voice mail" message on (408) 286-7074 Extension 236. It will be retrieved by the Service Department on the next business day. If you wish, you may also use this feature during the normal work day.

関連番号	仕様名称
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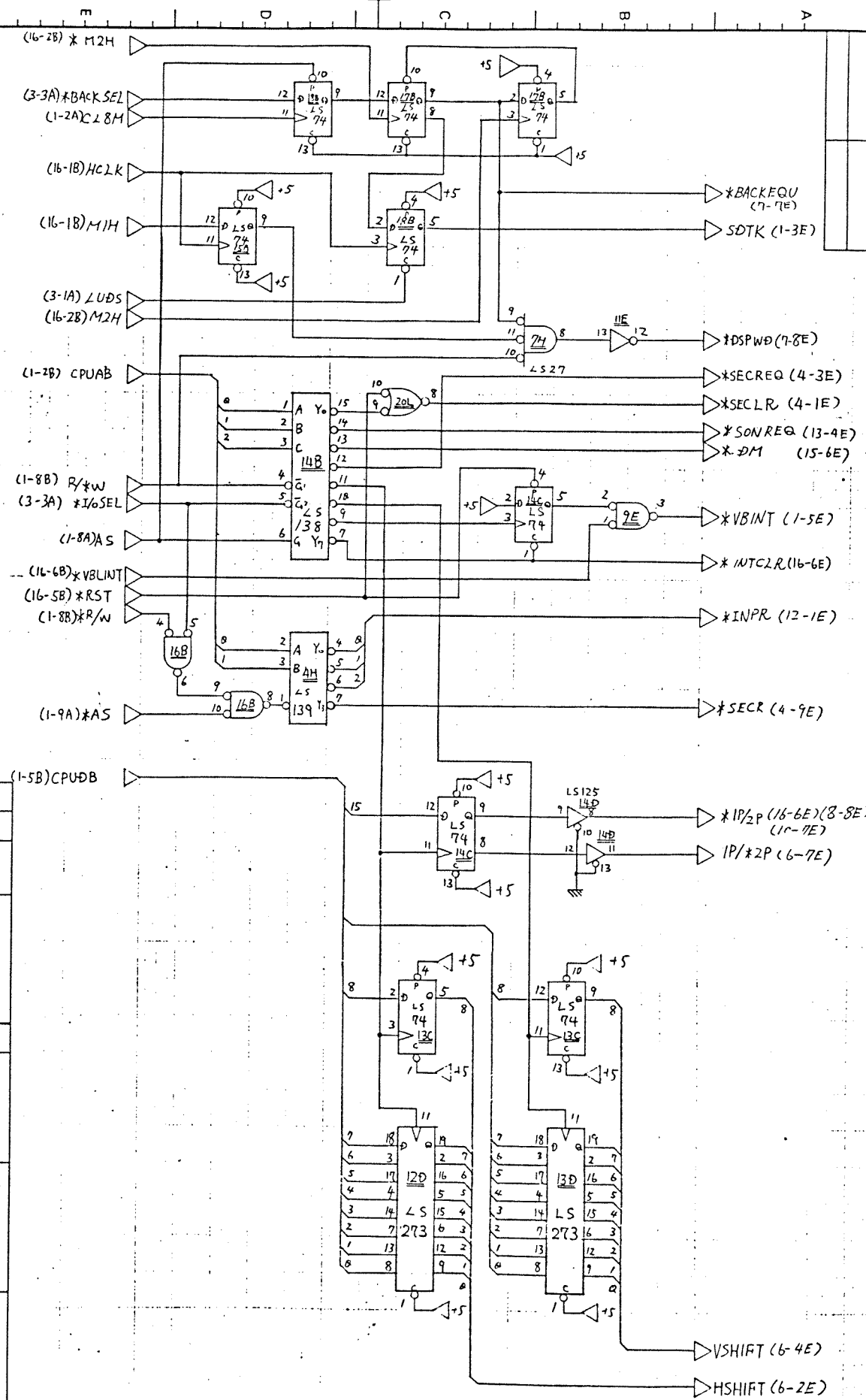
記事

記号	年月日	改訂箇所	符号	部品	図面番号	名称	仕様
材料		処理		公差		名称	仕様

CHELNOV
UPPER BOARD

第3角法

関連番号
仕様、名称

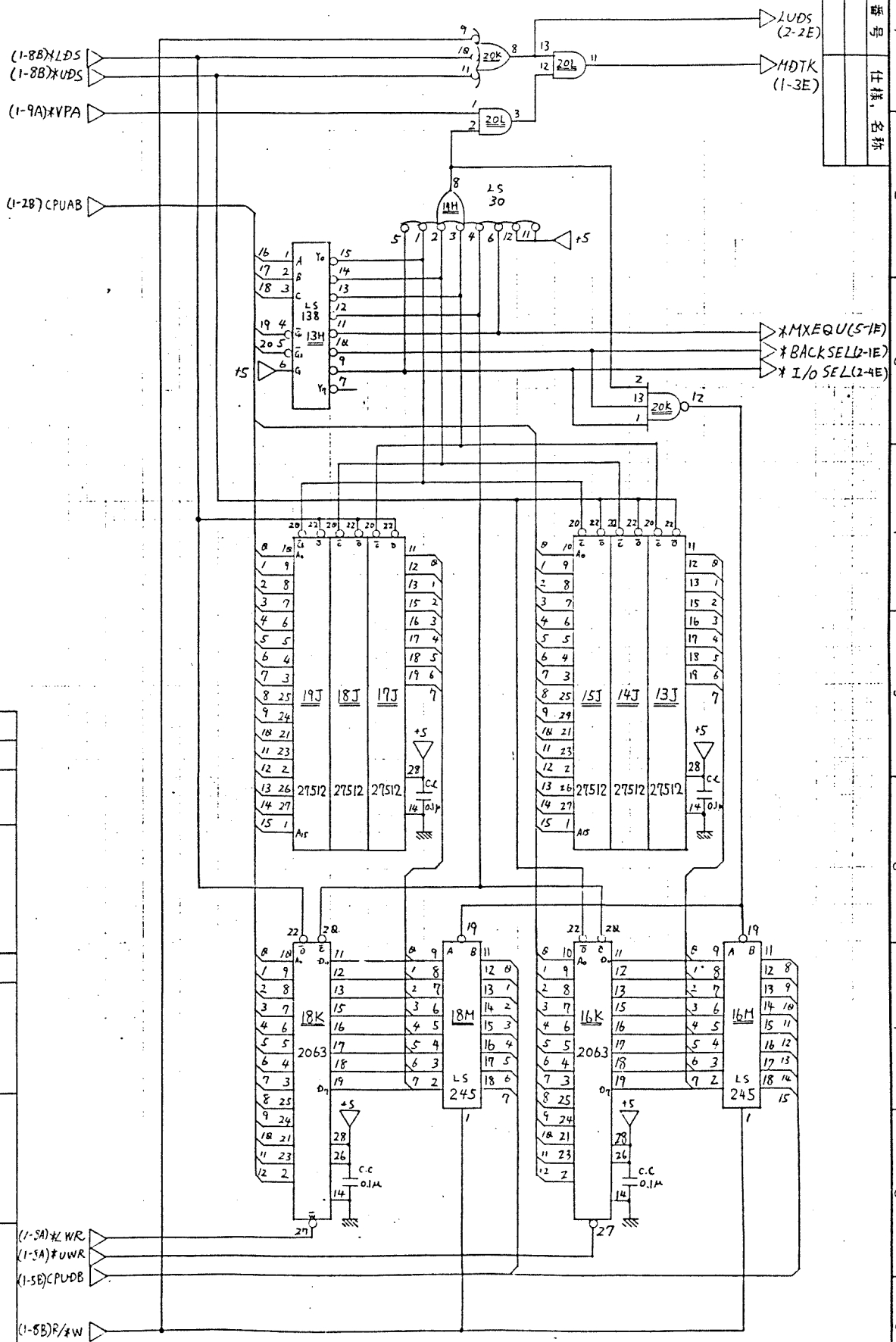


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第3角法

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仕様、名称

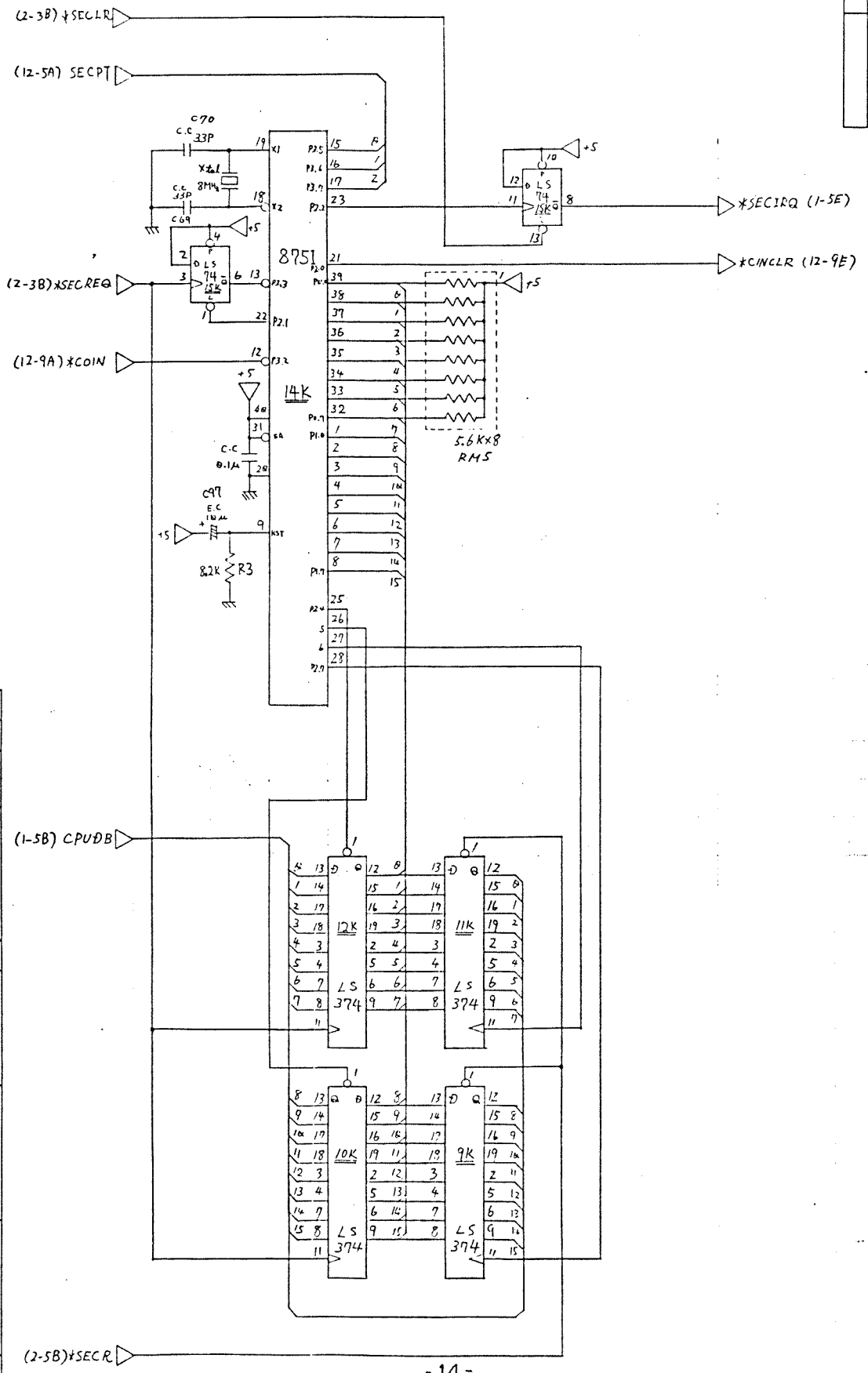


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第3角法

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仕様名称	2

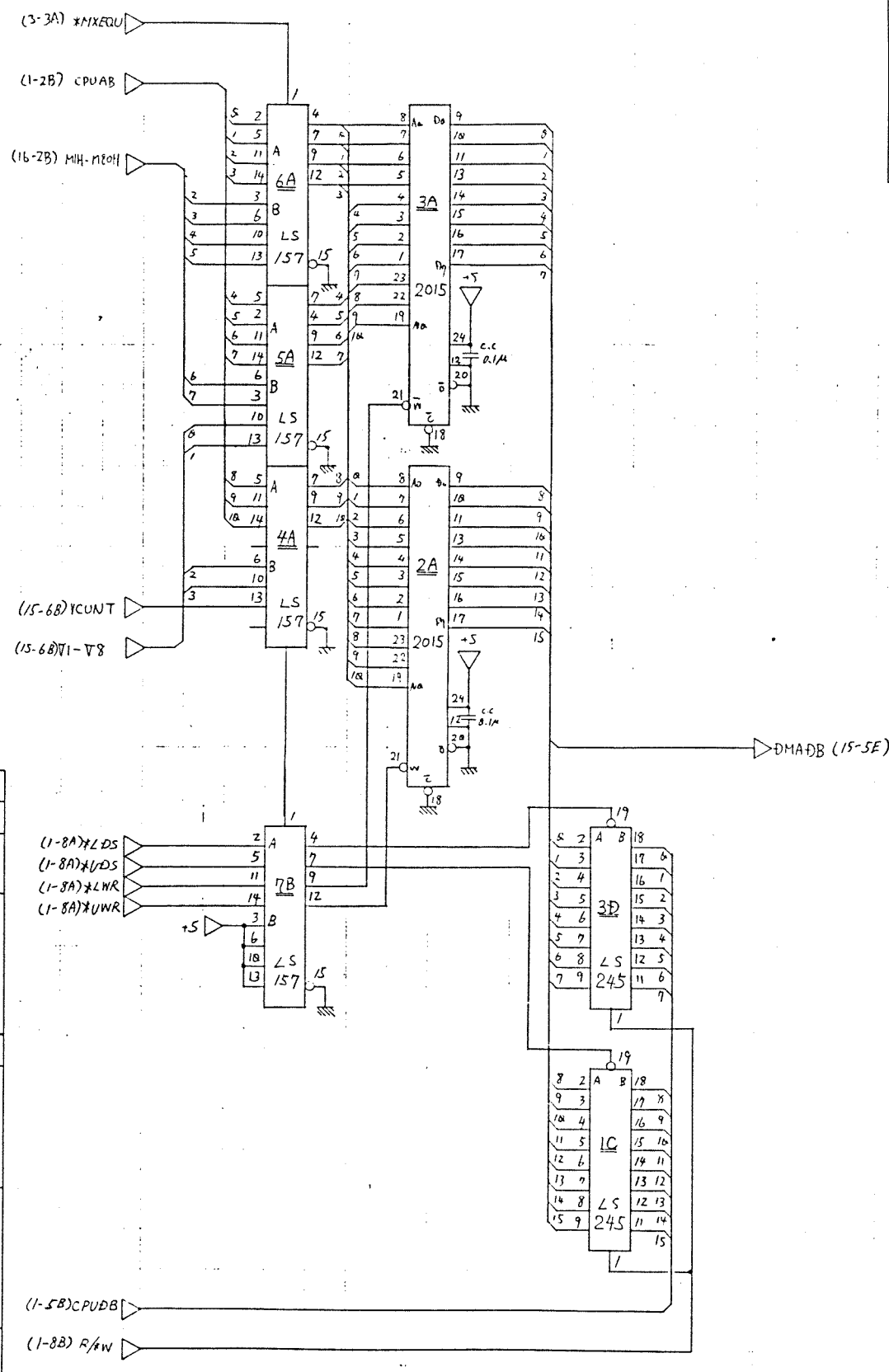


第3角法

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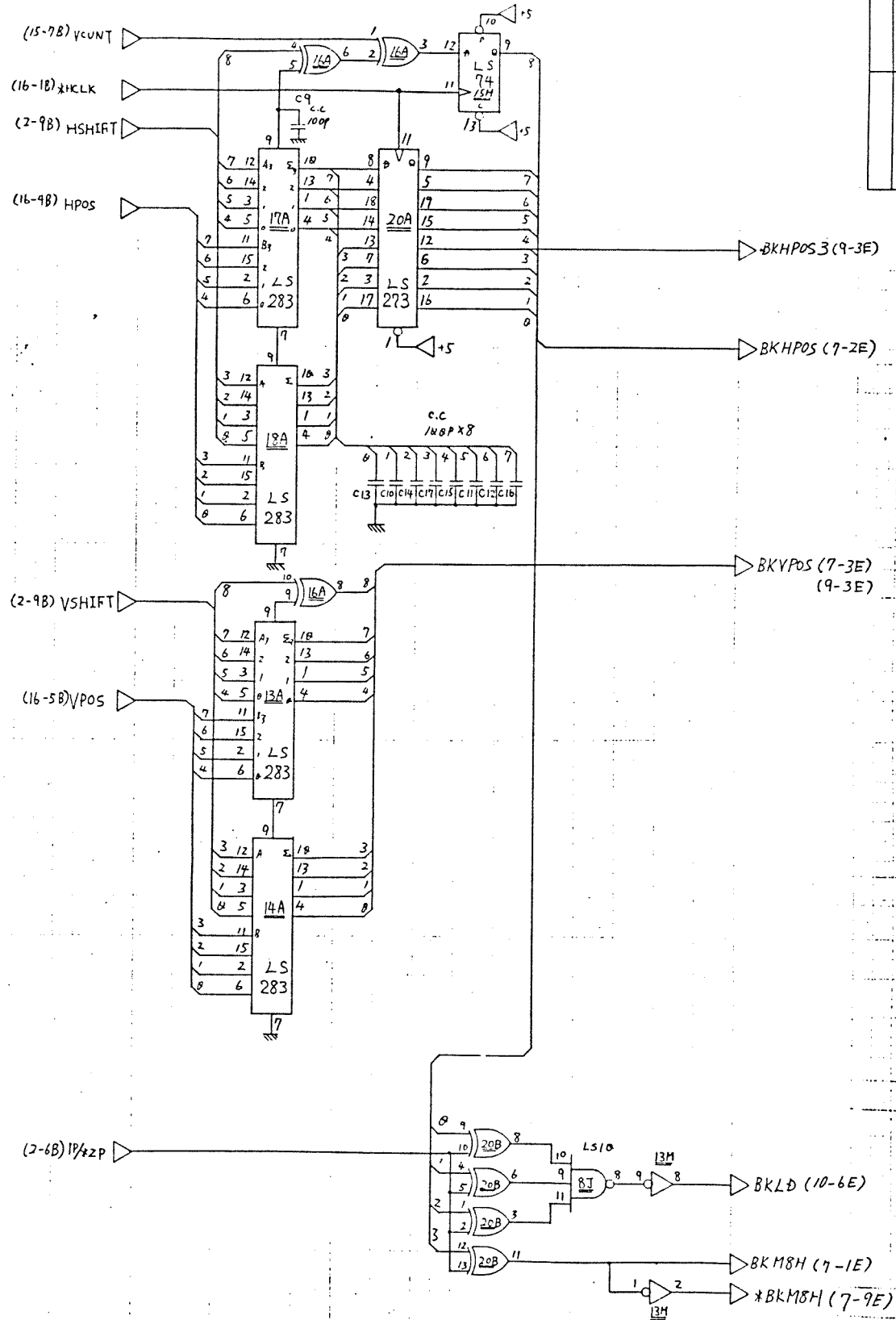
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第3角法

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仕様名称	



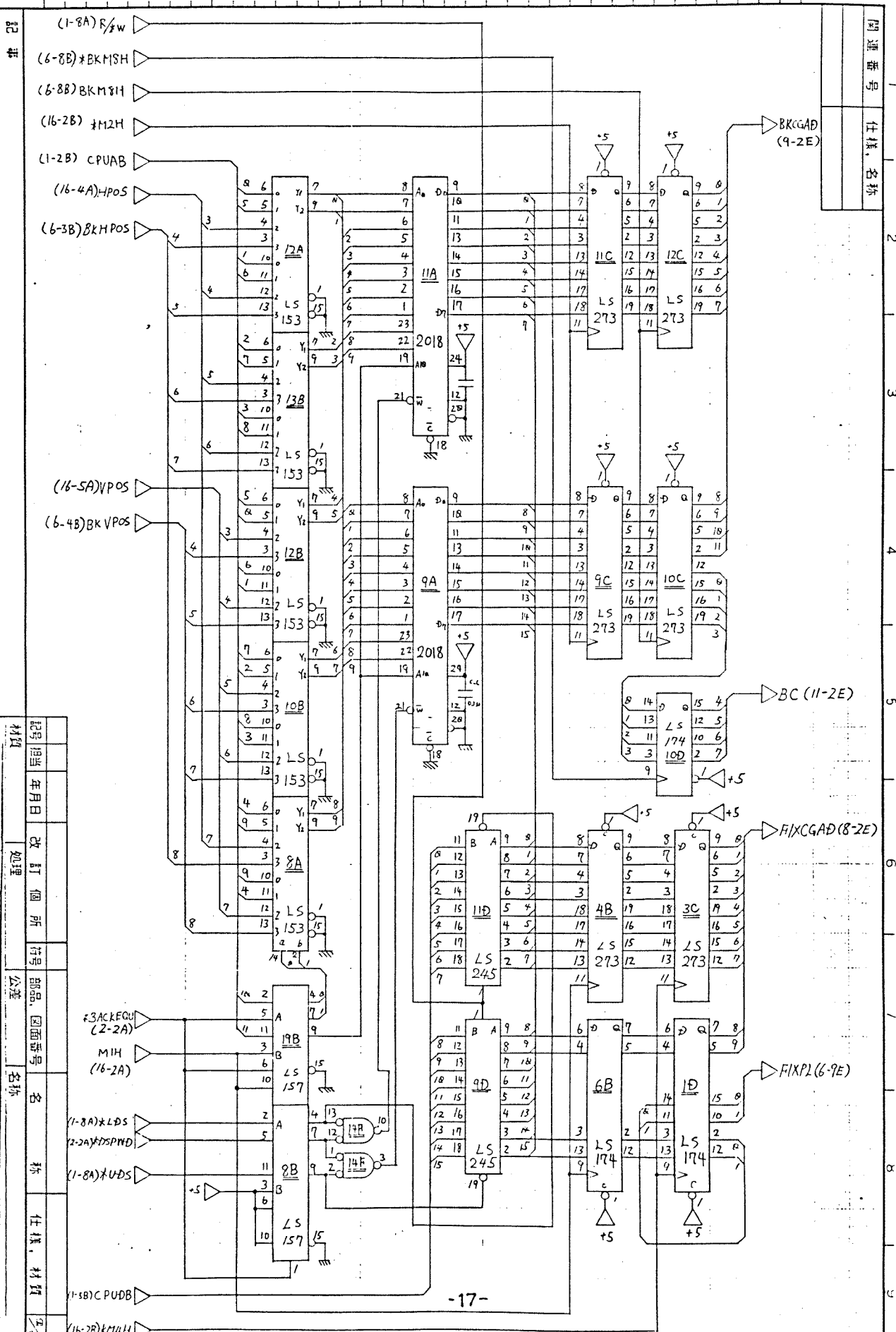
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第3角法

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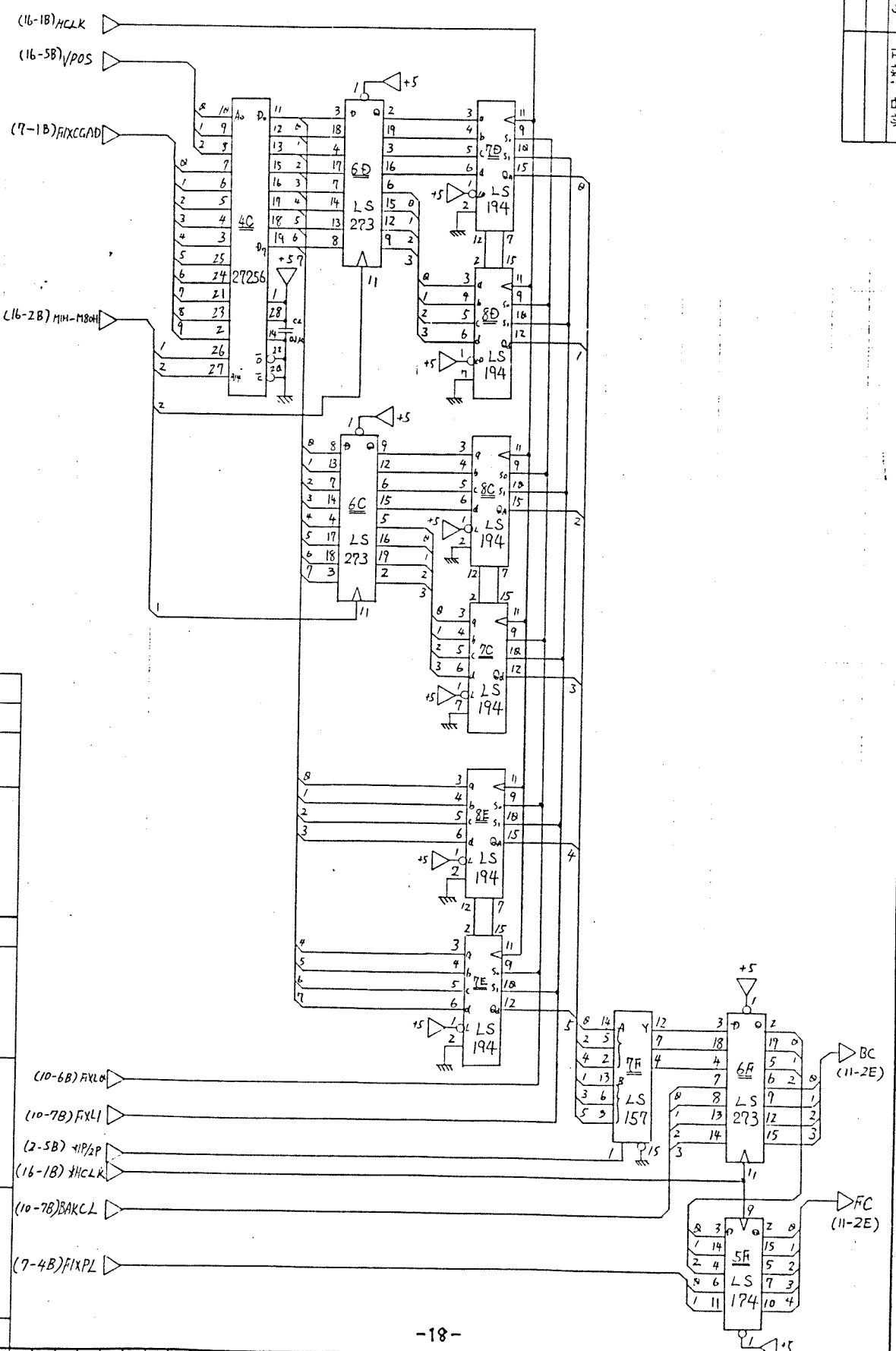
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閉連番号	仕様名称
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記事

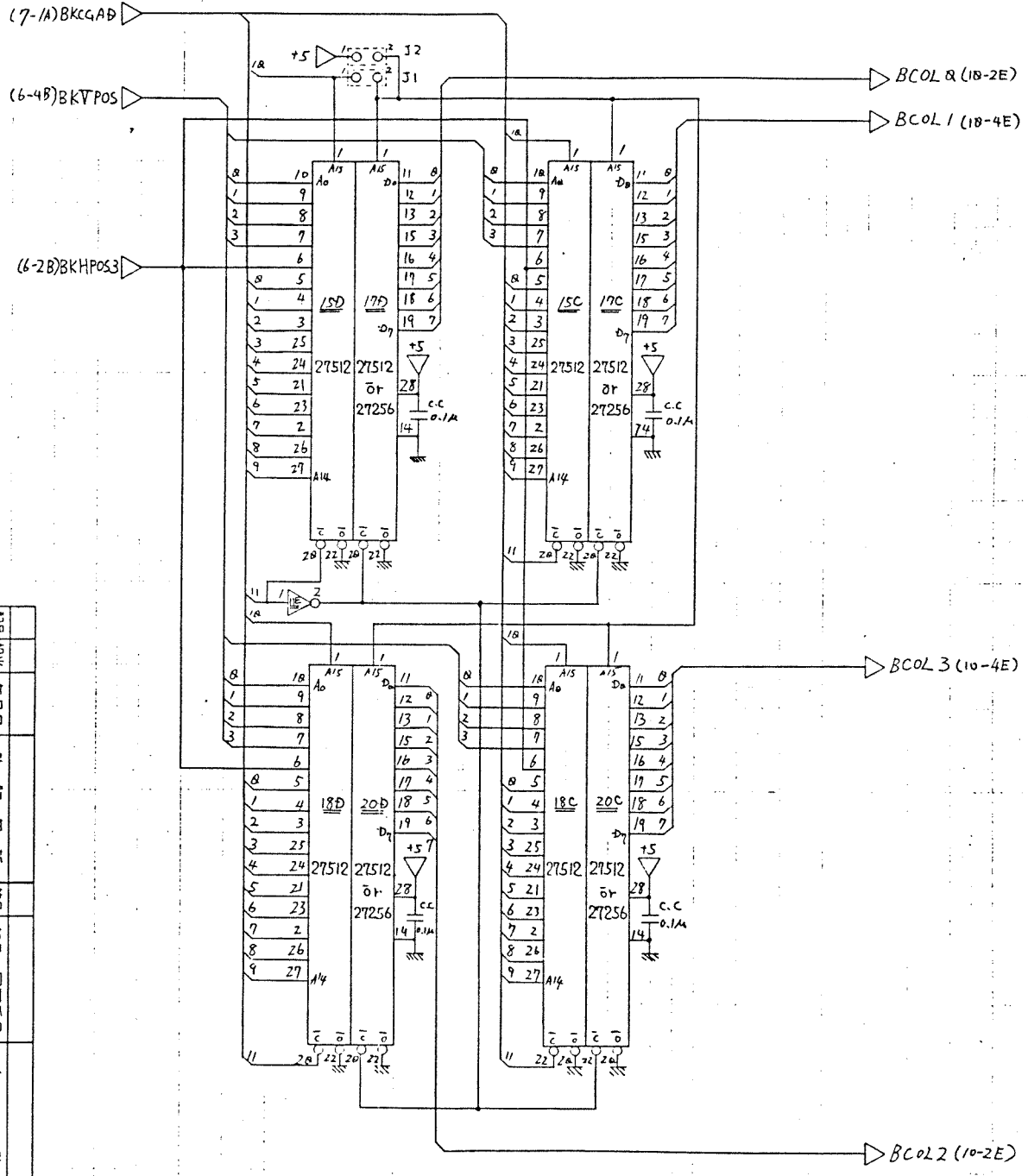


- (10-6B) FXLo
- (10-7B) FXLI
- (2-5B) VPOS
- (16-1B) HCLK
- (10-7B) BAKCL
- (7-4B) FIXPL

第3角法

記号	担当	年月日	改訂個所	符号	部品	図面番号	名称
材料			処理	公差			
							仕様, 材質

関連番号 仕様名称



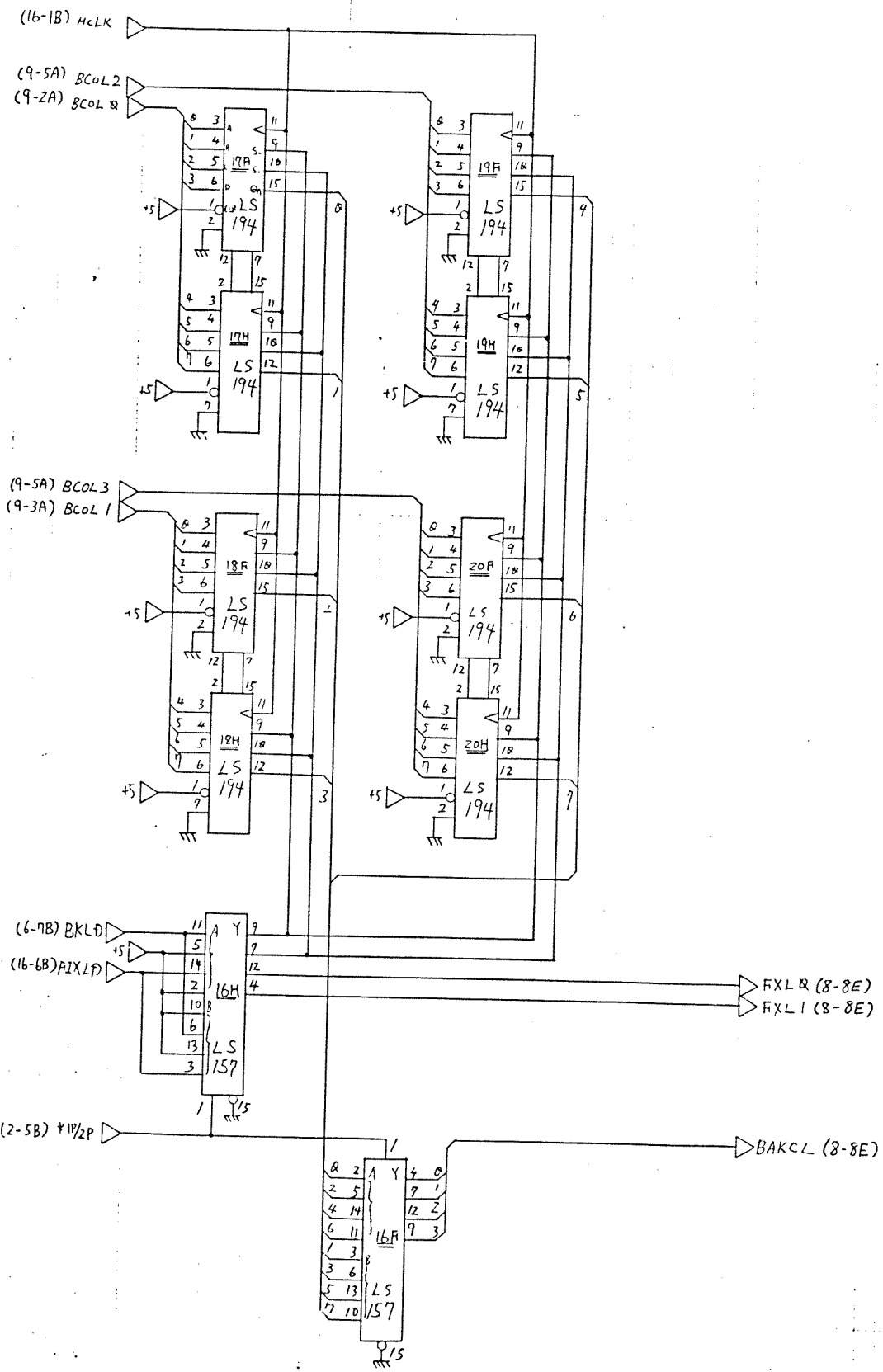
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第3角法

9/16

関連番号	仕様名称
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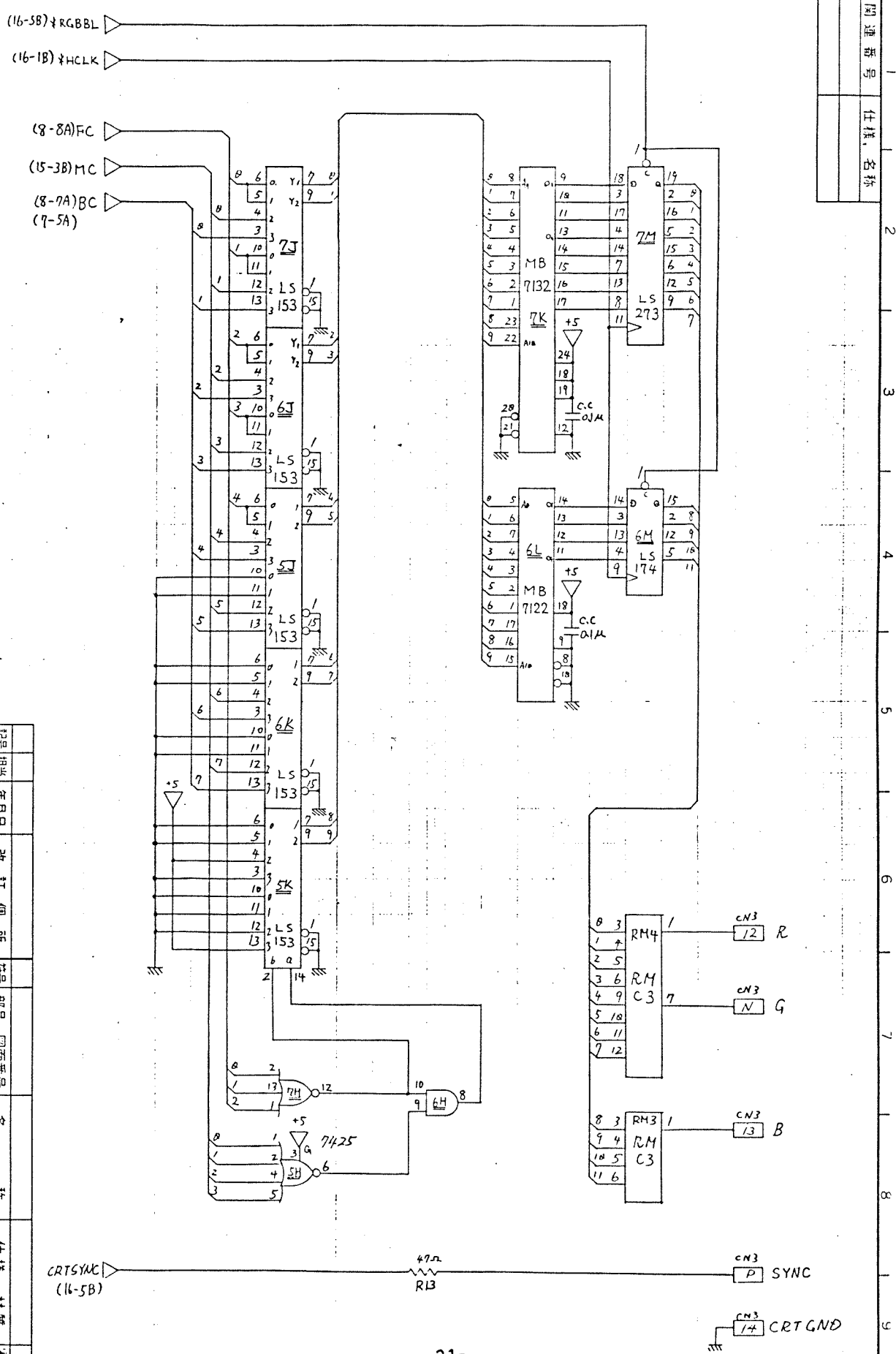


第3角法

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提出	年月日	改訂	個所
処理	部品	部品	図面番号
公差	名称	名称	仕様
名称	材料	名称	材料

社 1/16

関連番号	
仕様、名称	

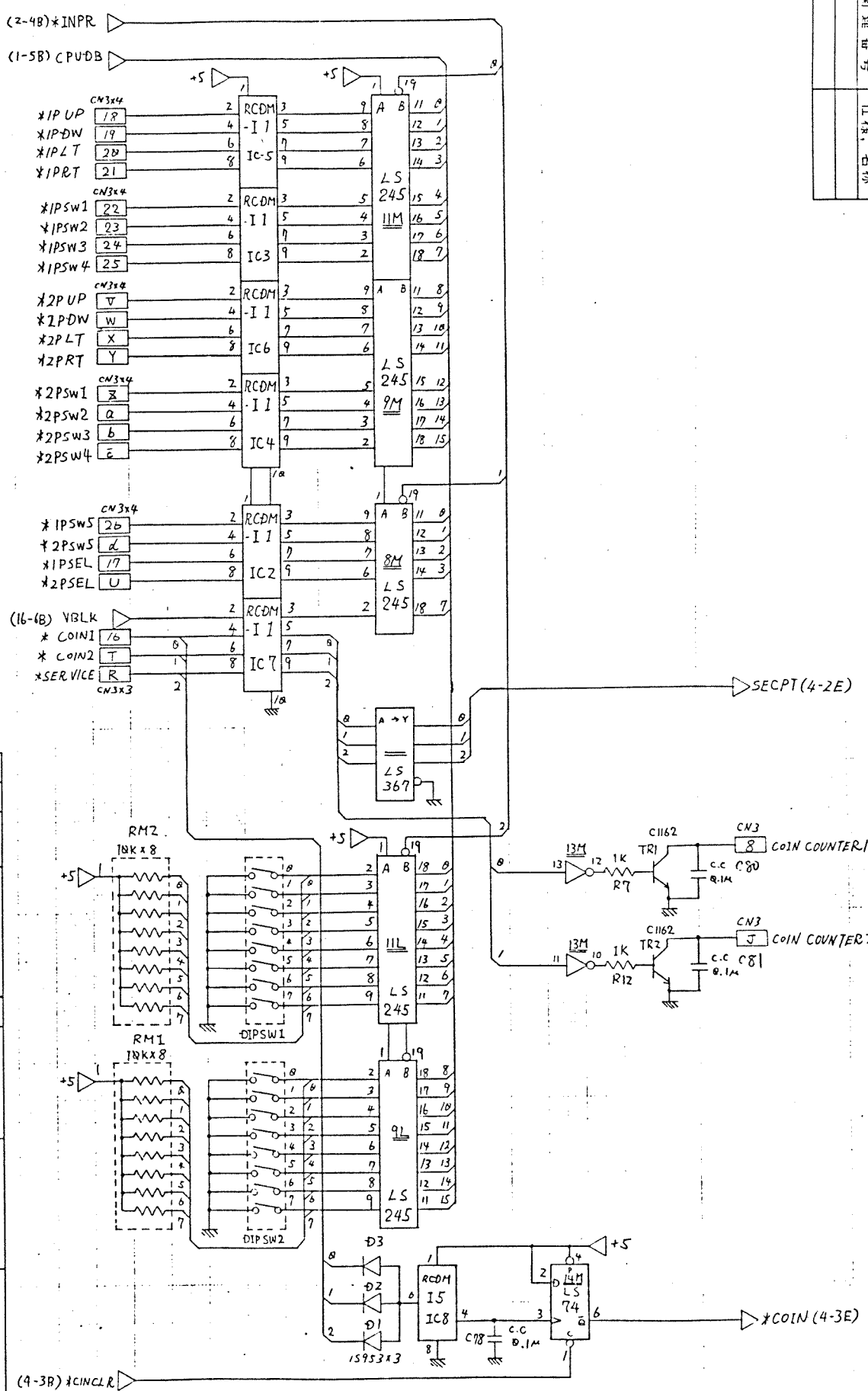


第3角法

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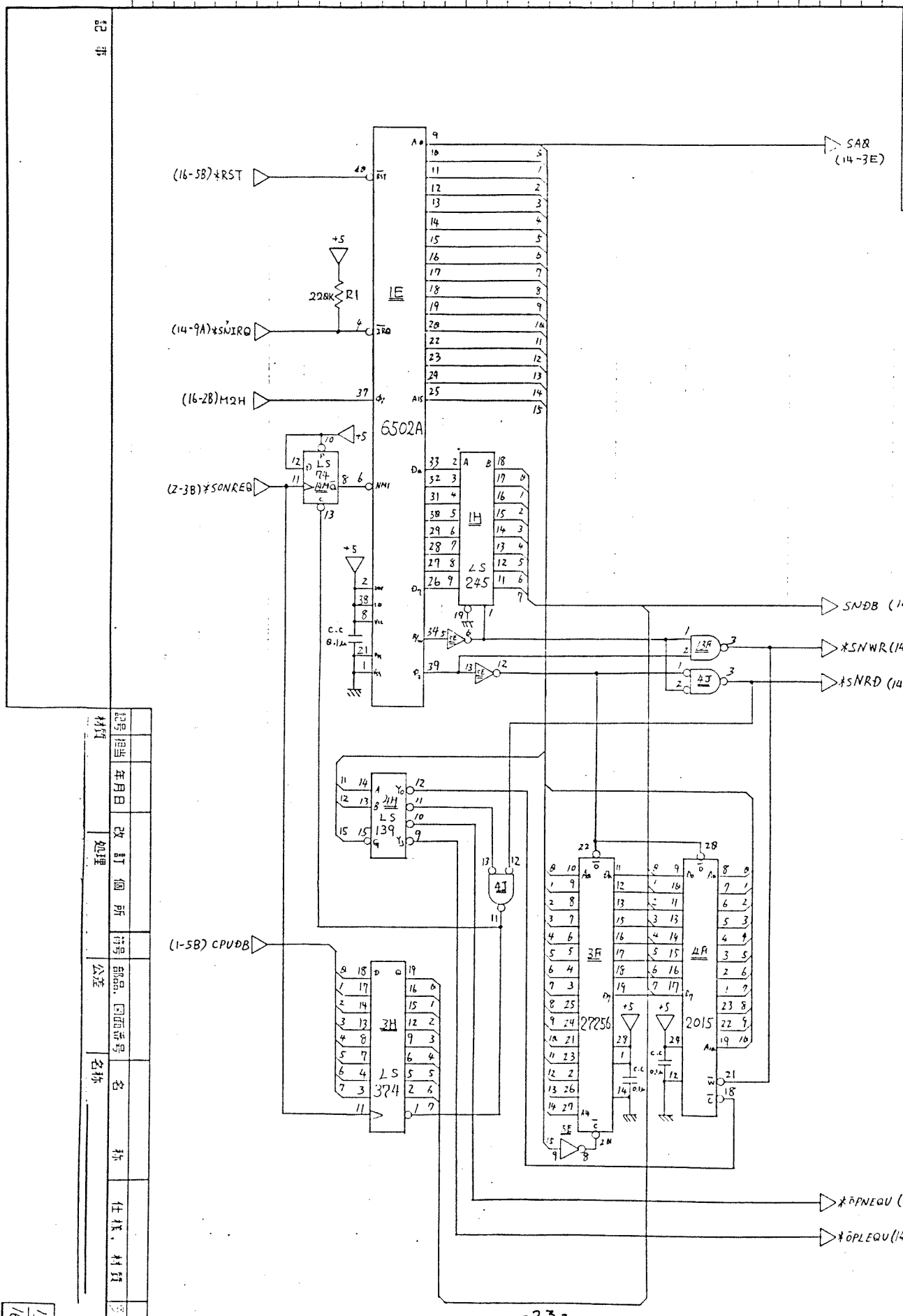
11/9

関連番号	
仕様、名称	



記号	年月日	改訂箇所	符号	部品、関連番号	名称	仕様、材質
材料		処理				

関連番号 仕様, 名称



第3角法

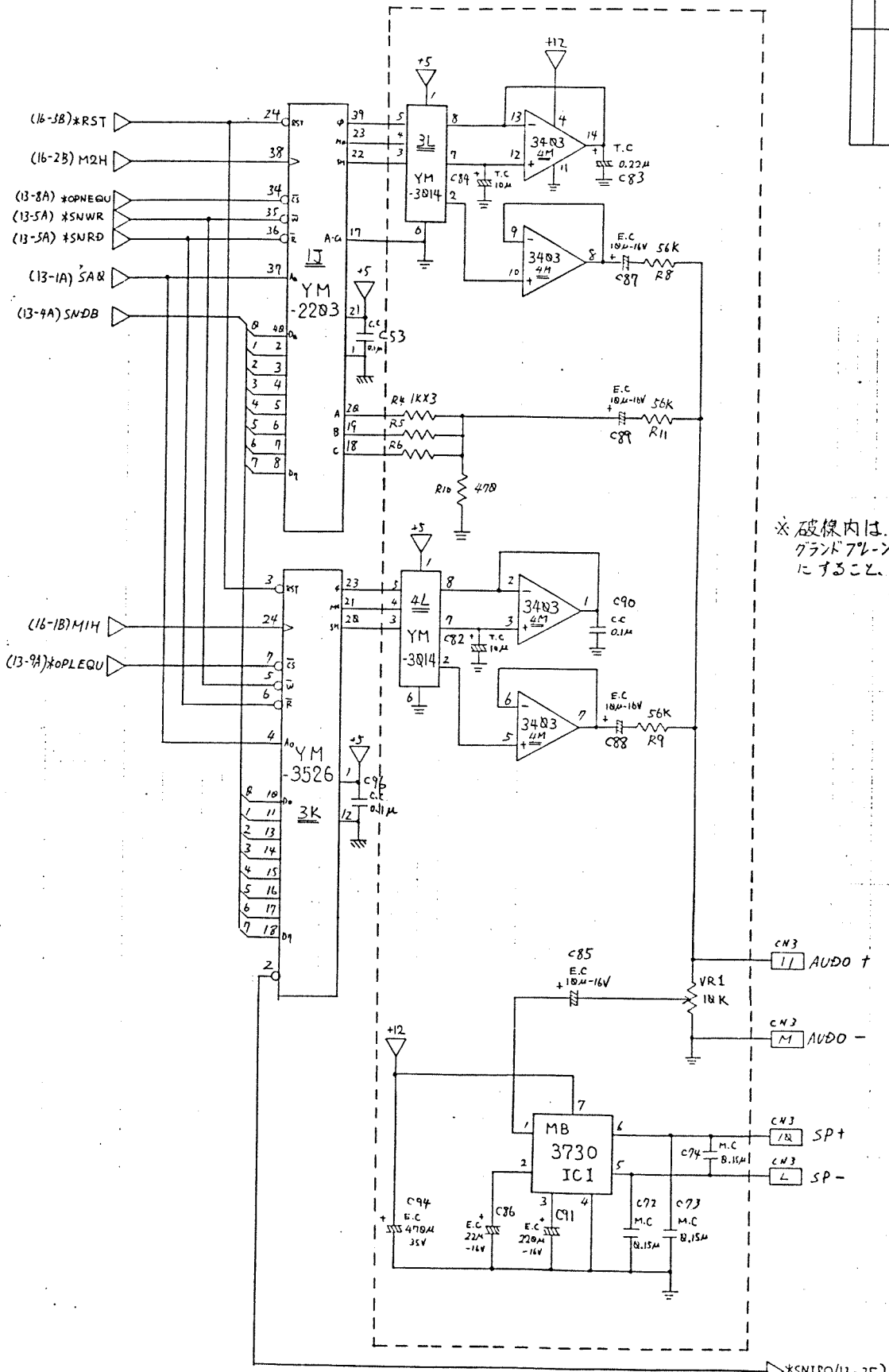
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13/16

記事

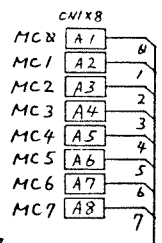
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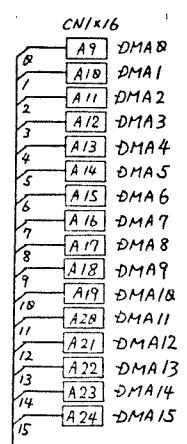


※破線内は、
グランドプレーン
にすること。

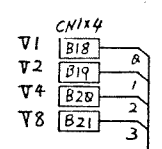
関連番号	1
仕様、名称	2



MC (11-2E)

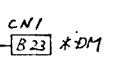


(5-5B) DMA DB



V1-V8 (5-5E)

(2-3B)*DM



VCUNT B25

VCUNT (5-7E)(6-1E)

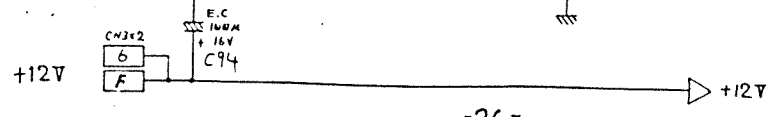
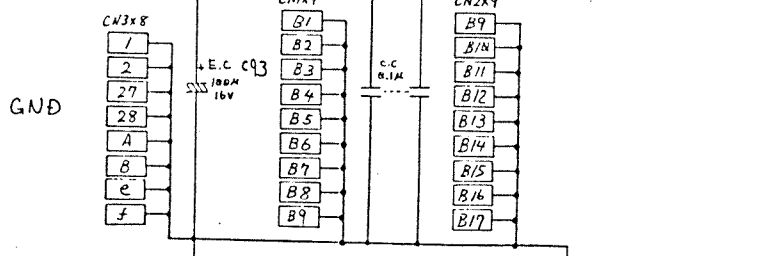
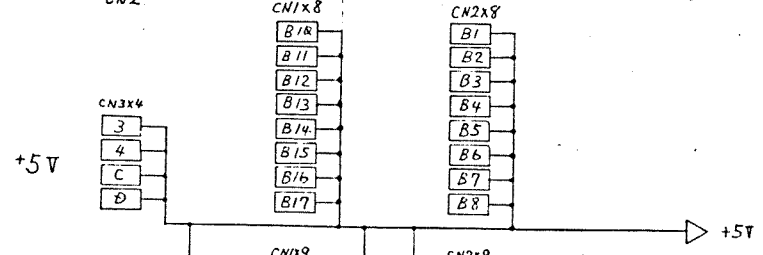
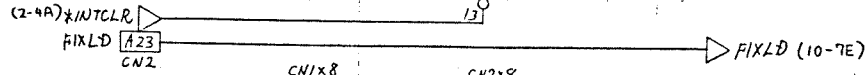
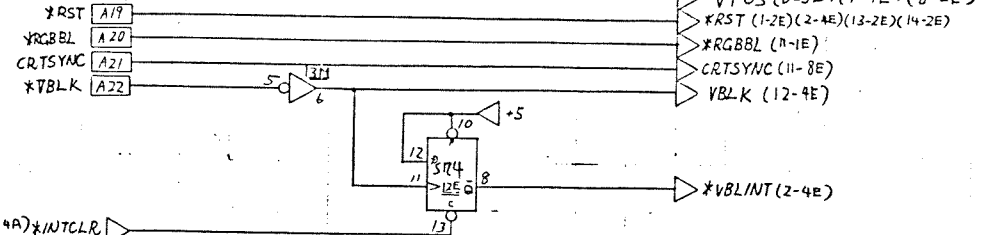
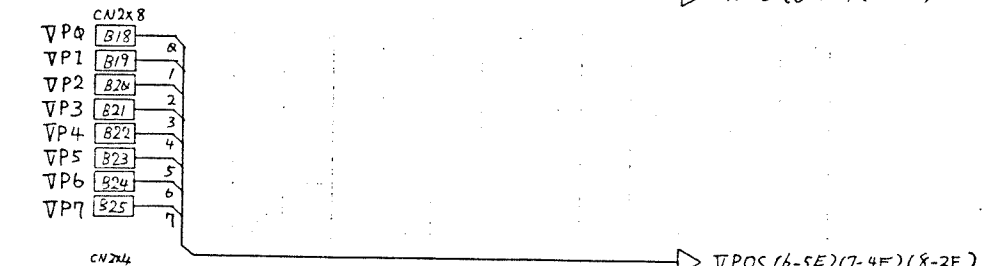
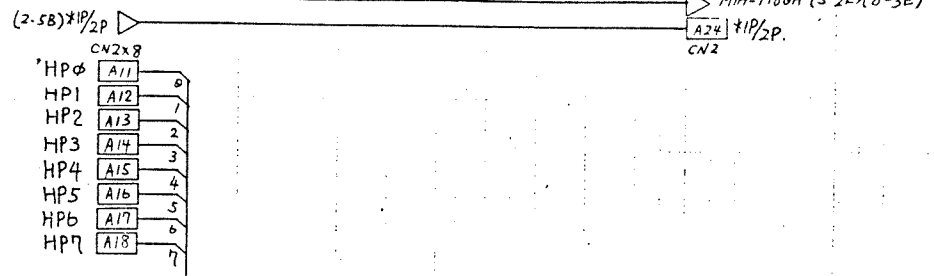
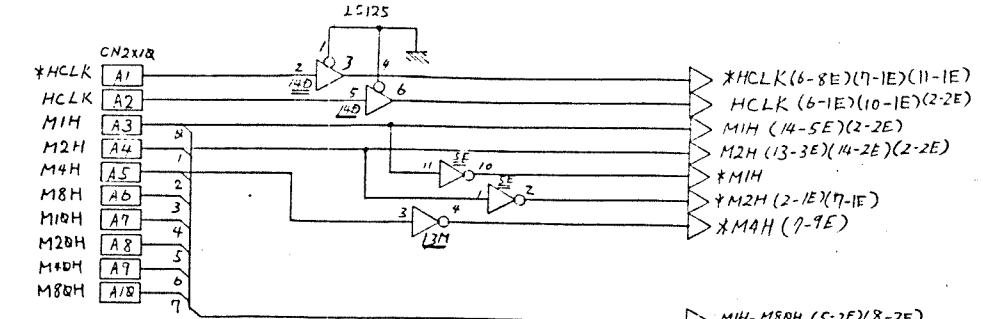
記事

記号担当	年月日	改訂箇所	符号	部品、図面番号	名称	仕様、材質	図面
材質		処理	公差				

第3角法

15/16

関連番号 仕様名称



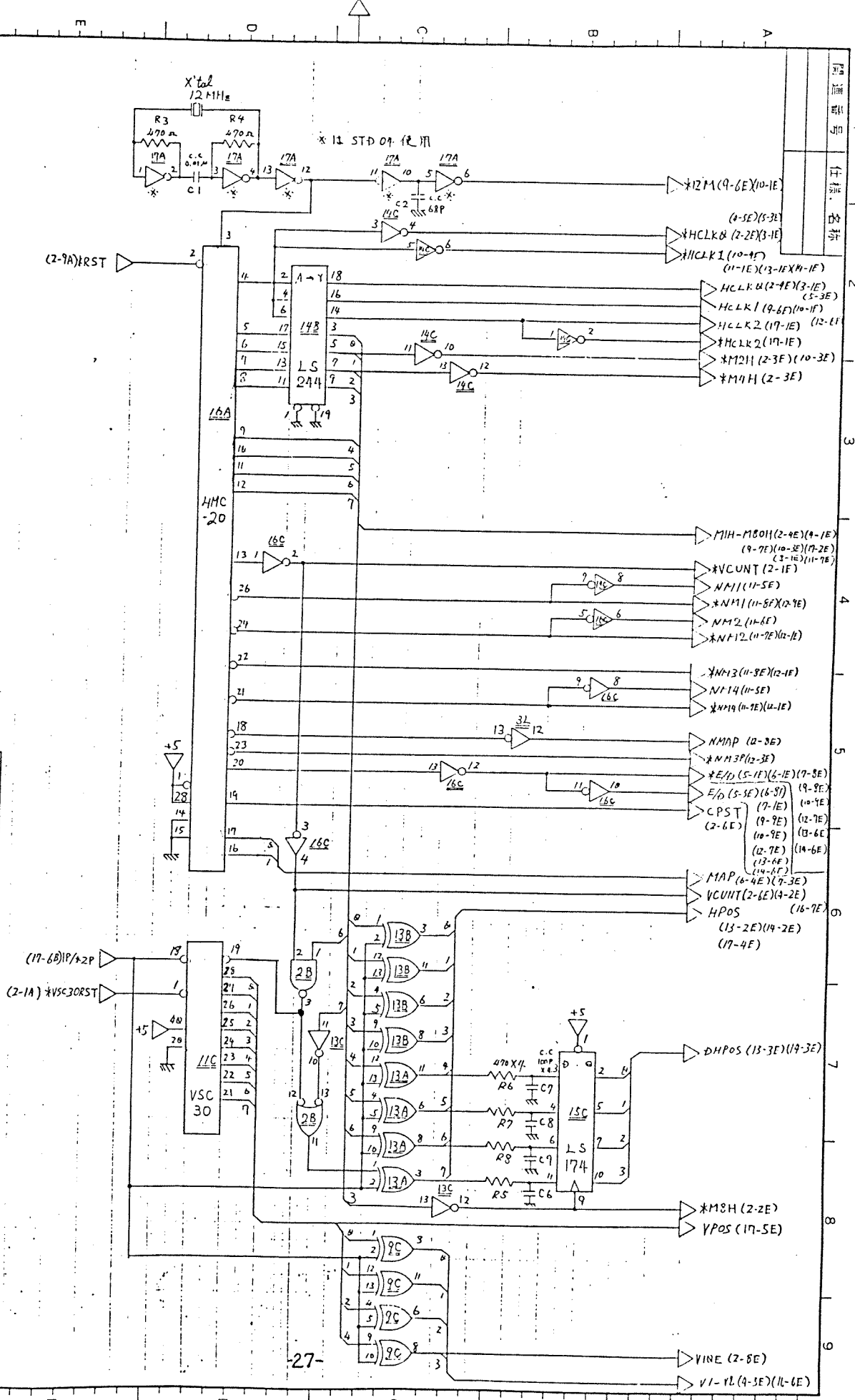
第3角法

記号担当	年月日	改訂箇所	番号	部品	図面番号	名称	仕様	材質
材料		処理	公差					

9/16

CHELNOV LOWER BOARD

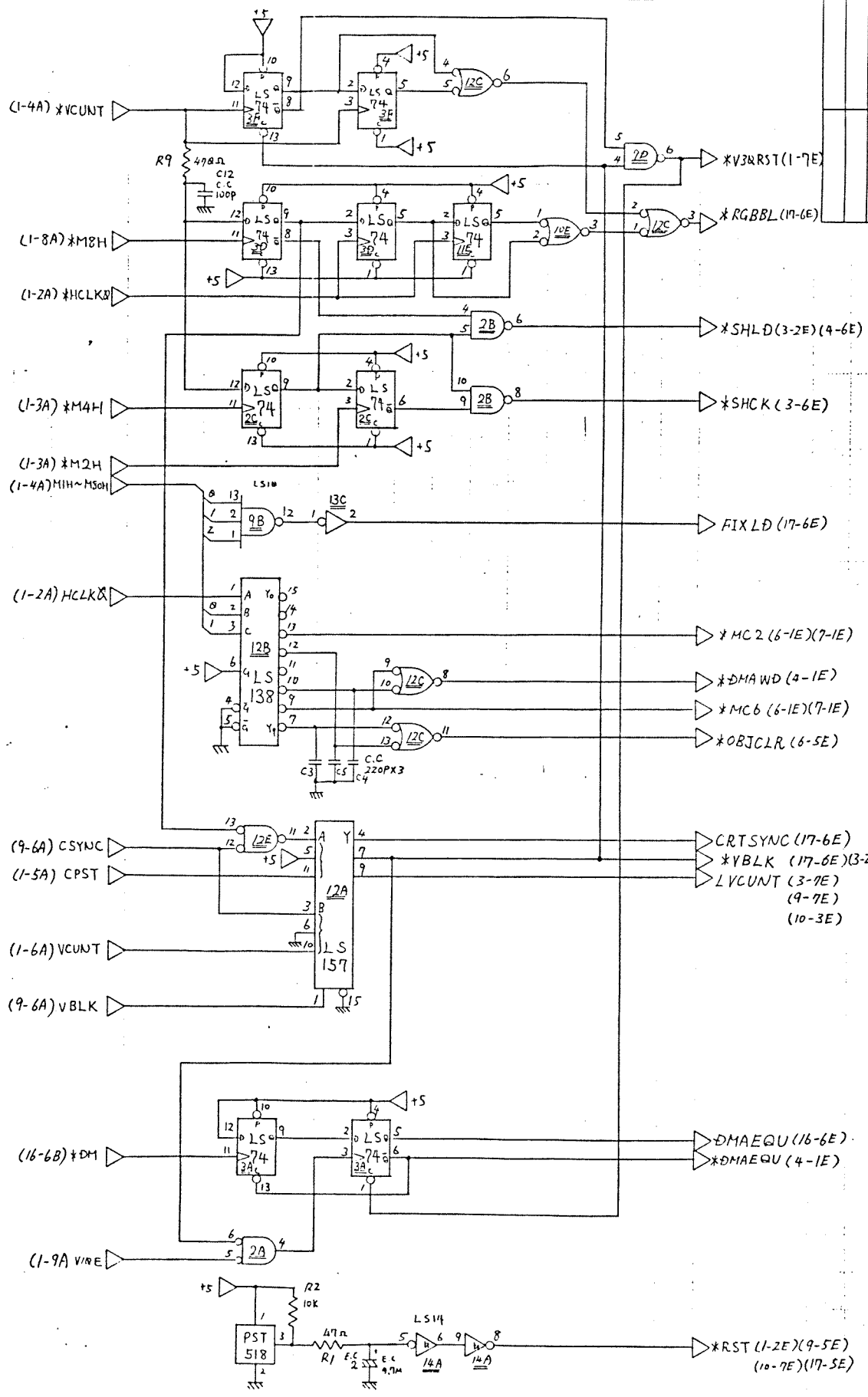
記号	年	月	日	改訂	個所	符号	部品	図面	番号	名	仕様	材質



第3角法

1/17

1 関連番号
 2 仕様名称
 3
 4
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 8
 9



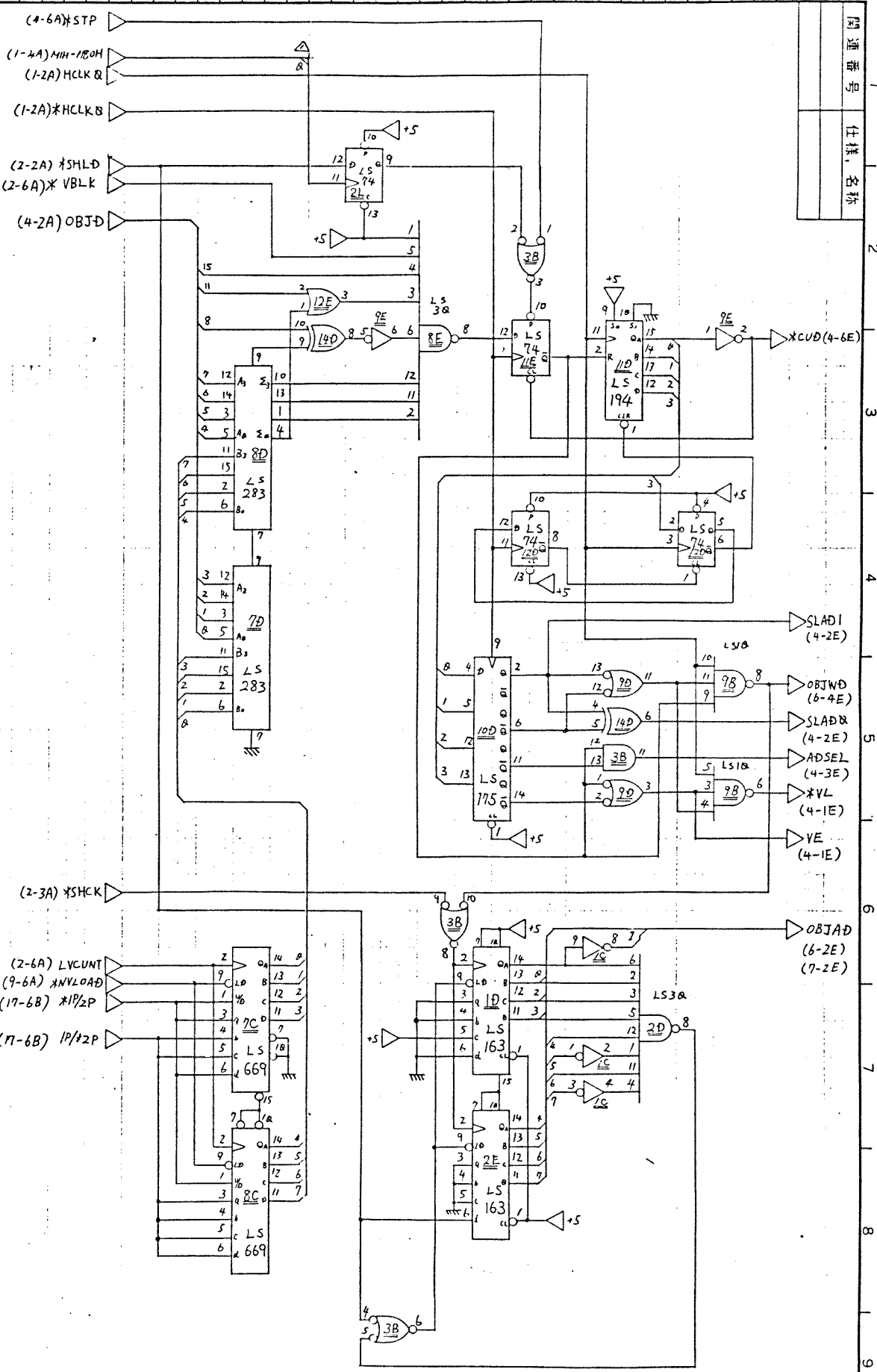
記事
 1
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 8
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記号	担当	年月日	改訂個所	符号	部品	図面番号	名称	仕様	材質

第3角法

17

関連番号	仕様、名称
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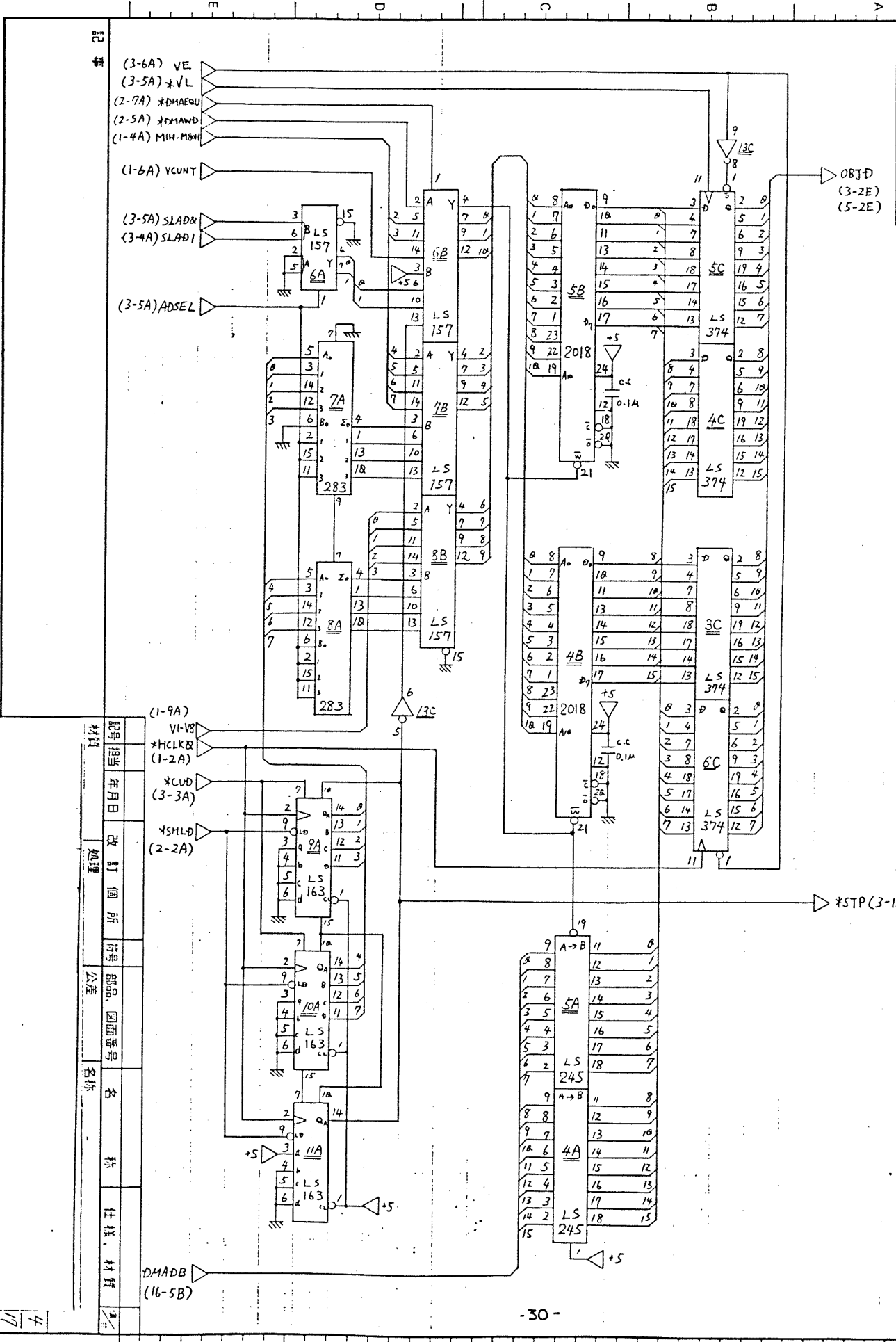
記事 Δ(1D), 610.15 條, 同, 回路変更後, 修正文

第3角法

記号	担当	年月日	改訂	個所	符号	部品、図面番号	名称	仕様、材質
			処理					

3/17

関連番号	
仕様、名称	



(3-6A) VE
 (3-5A) *VL
 (2-7A) *DMAEQU
 (2-5A) *DMAND
 (1-4A) *MIM-MSH
 (1-6A) *VCUNT
 (3-5A) *SLADN
 (3-4A) *SLAD1
 (3-5A) *ADSEL

OBJD
 (3-2E)
 (5-2E)

(1-9A) VI-VB
 *HCLK (1-2A)
 *CUD (3-3A)
 *SHPD (2-2A)

*STP (3-1E)

*DMADB
 (16-5B)

第3角法

記号	材料	記号	担当	年月日	改訂個所	符号	部品、図面番号	公差	名称	仕様、材料

関連番号	仕様、名称

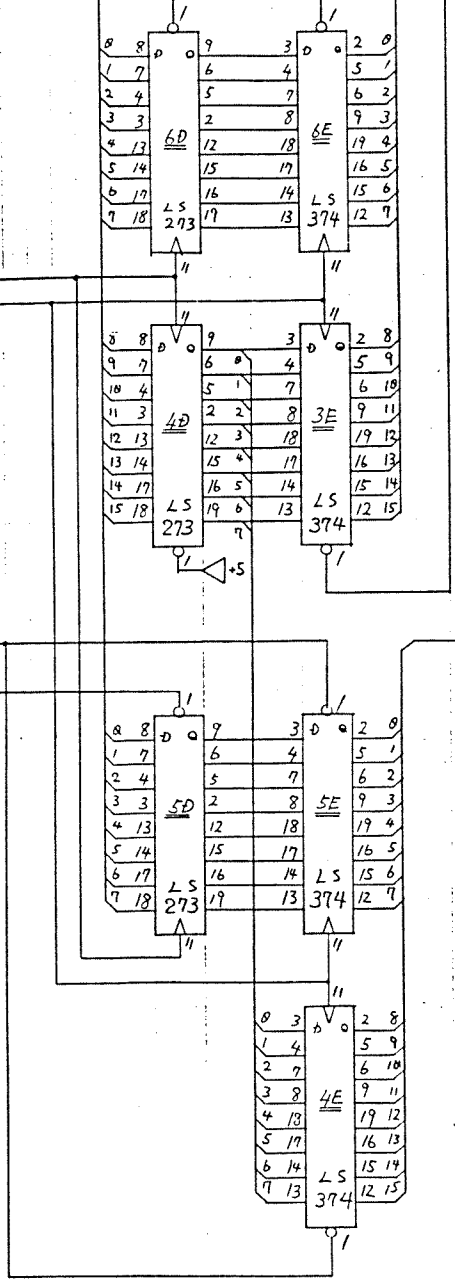
(6-5A) *WDEB
 (1-5A) F/D
 (4-2A) OBJDB

(1-2A) *HCLKB
 (1-2A) HCLKB

(6-5A) *WDEI
 (1-5A) *F/D

OBJDBR (6-6E)

OBJDBI (7-5E)

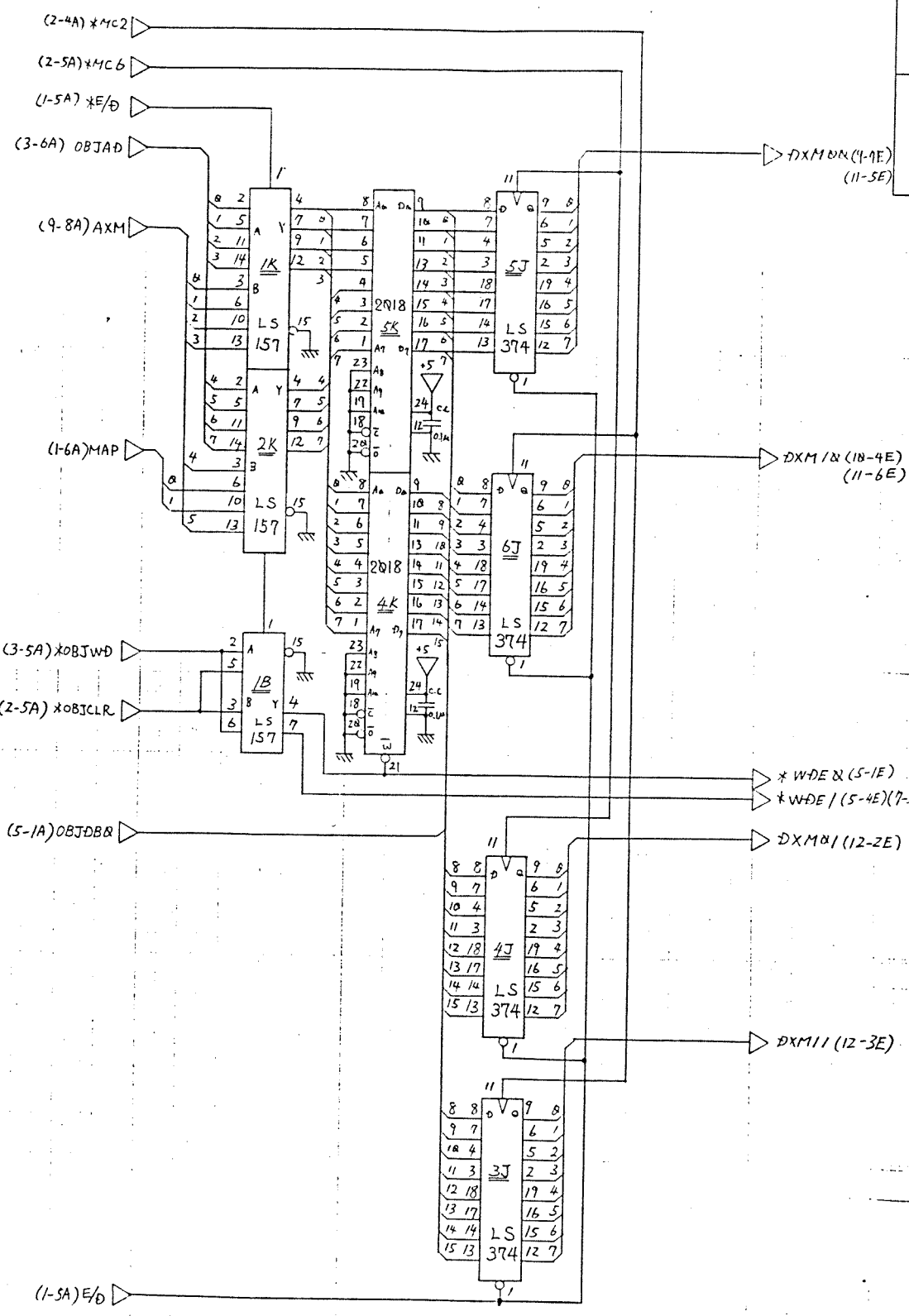


記事

記号	担当	年月日	改訂	箇所	番号	部品	図面番号	名称	仕様	材質

第3角法

図連番号
仕様、名称



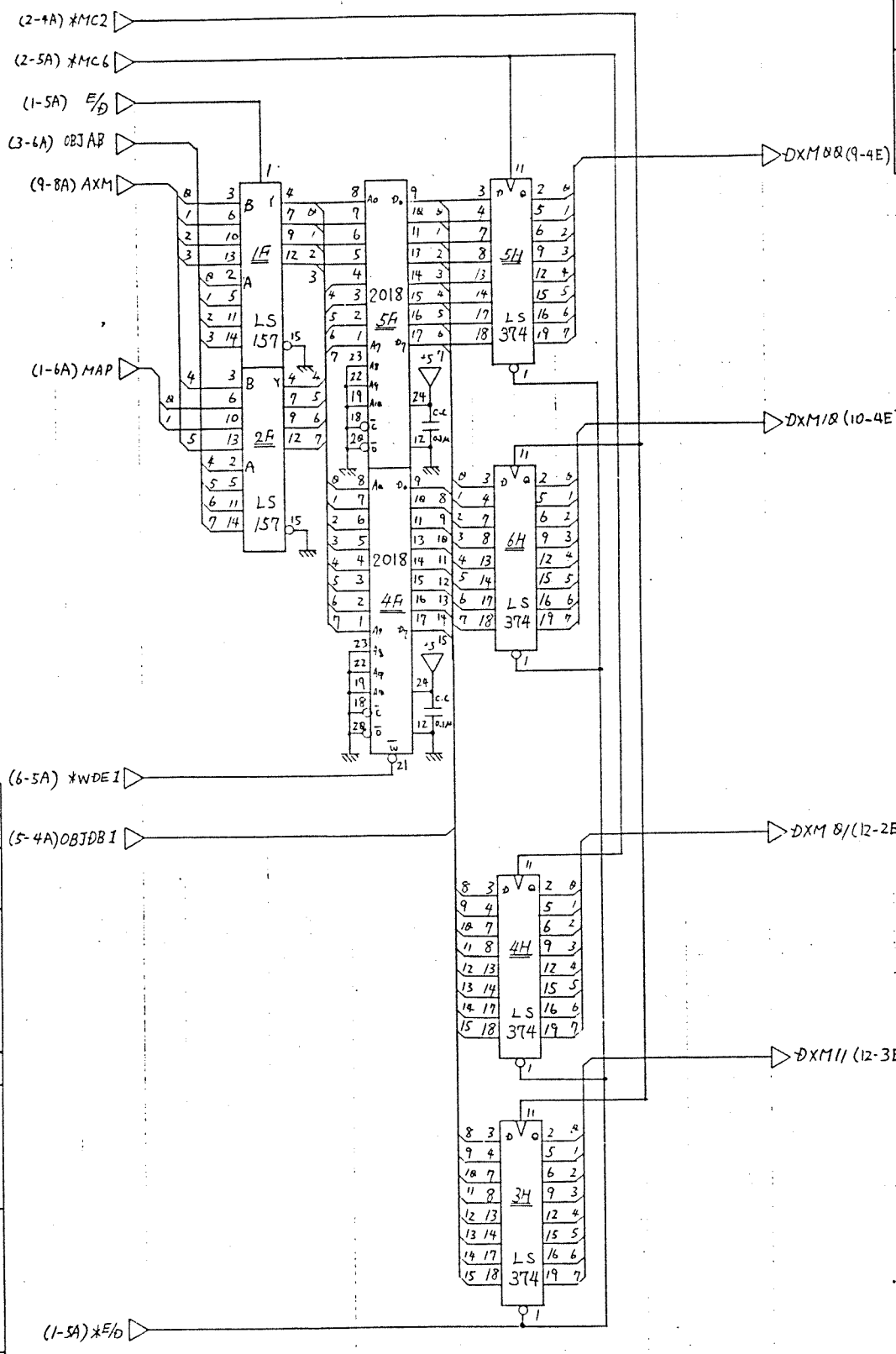
記号

第3角法

記号	担当	年月日	改訂箇所	符号	部品	図面番号	名称	仕様	材質	単位
			処理							

6
17

関連番号	
仕様、名称	

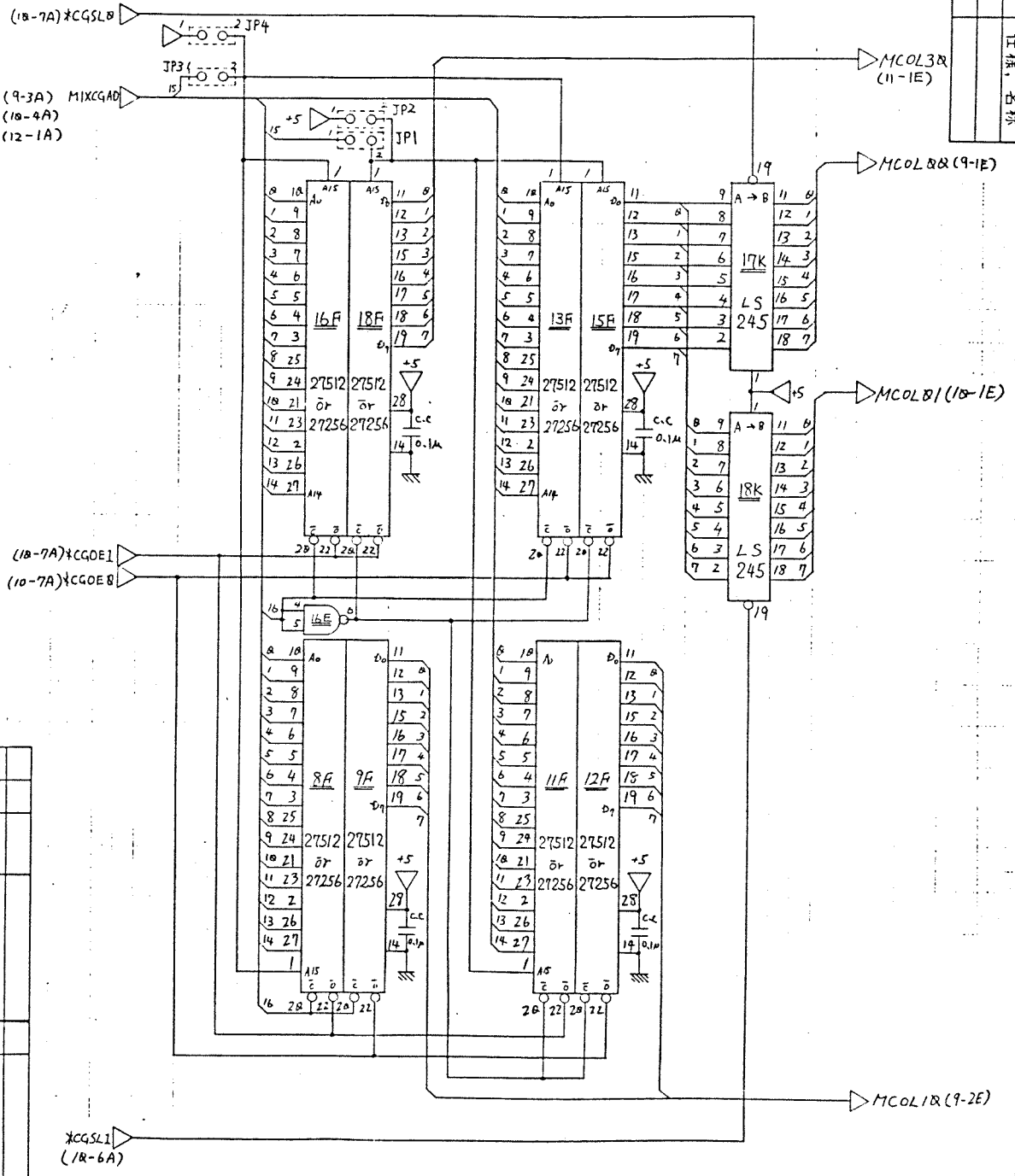


記事

第3角法

記号	材料	記号	材料
用途		用途	
年月日		年月日	
改訂	処理	改訂	処理
個所		個所	
符号		符号	
部品		部品	
図面番号		図面番号	
名称		名称	
仕様		仕様	
材料		材料	

関連番号
仕様、名称



記事

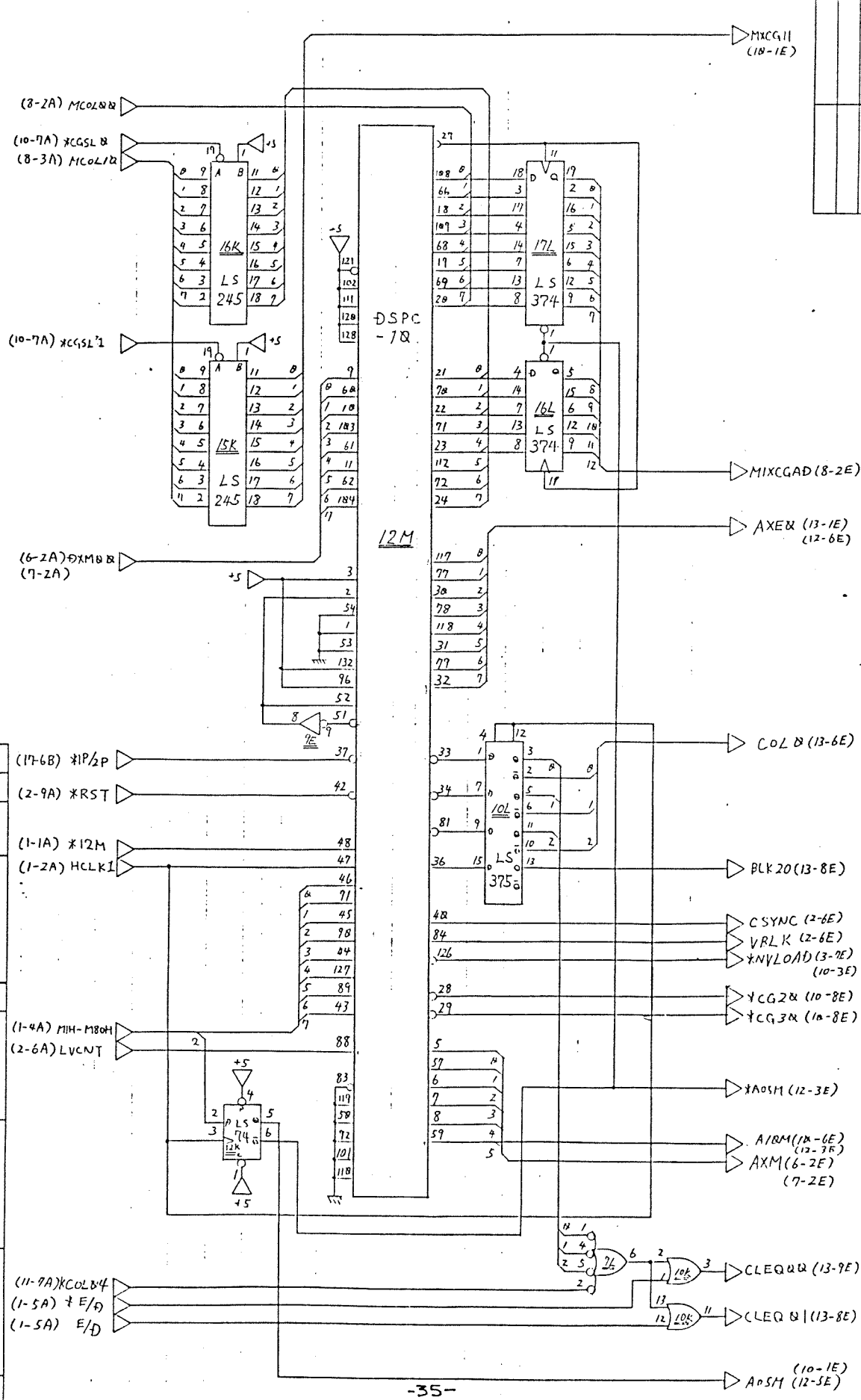
第3角法

記号	担当	年月日	改訂個所	符号	部品、図面番号	名称	仕様、材質
材料			処理				

社 17

第3角法

記号 17
 材料
 記号 17
 年月日
 改訂個所
 部品
 圖面番号
 名称
 仕様、材質

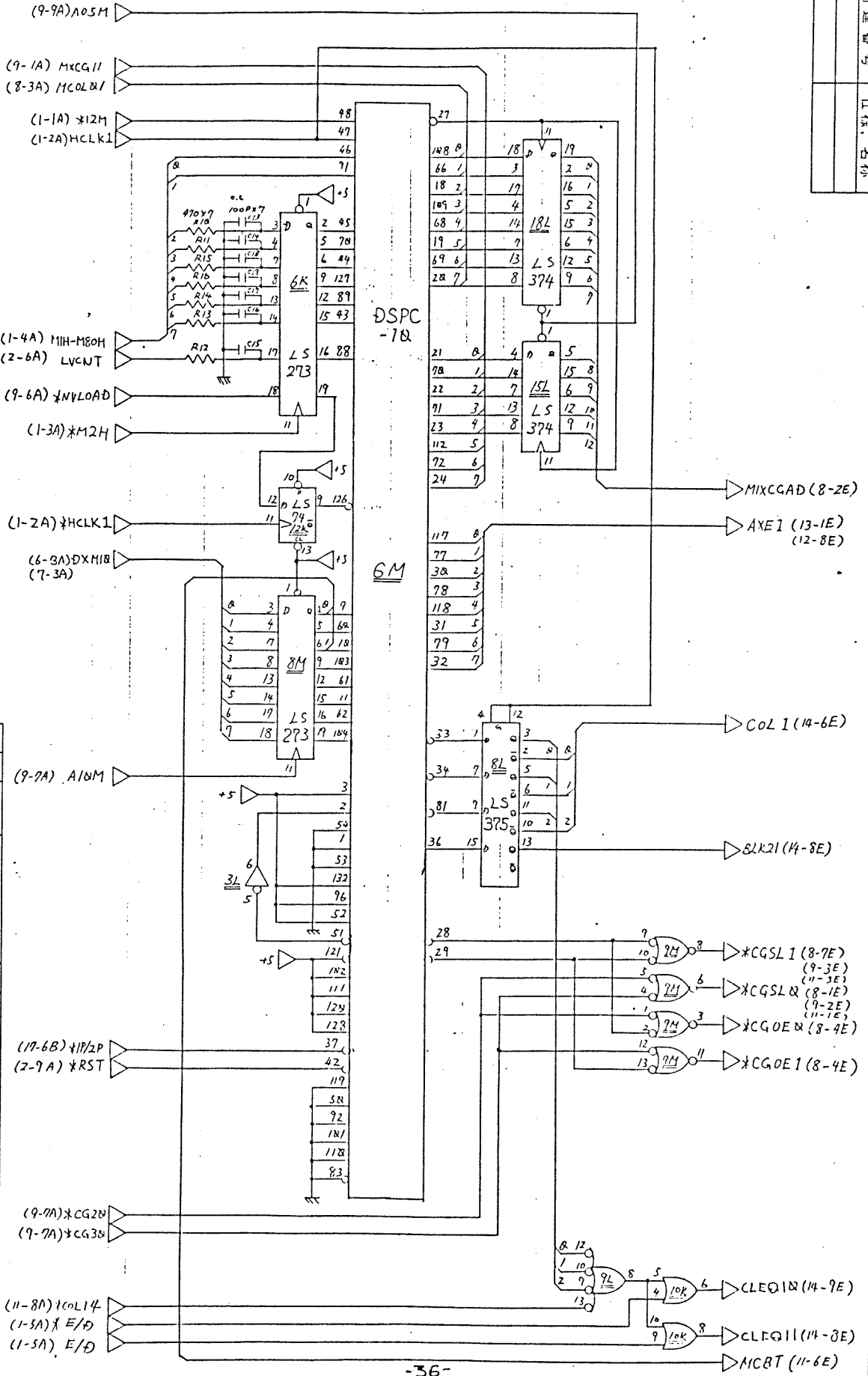


問題番号	
仕様、名称	

1
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圖通番号 仕様, 名称

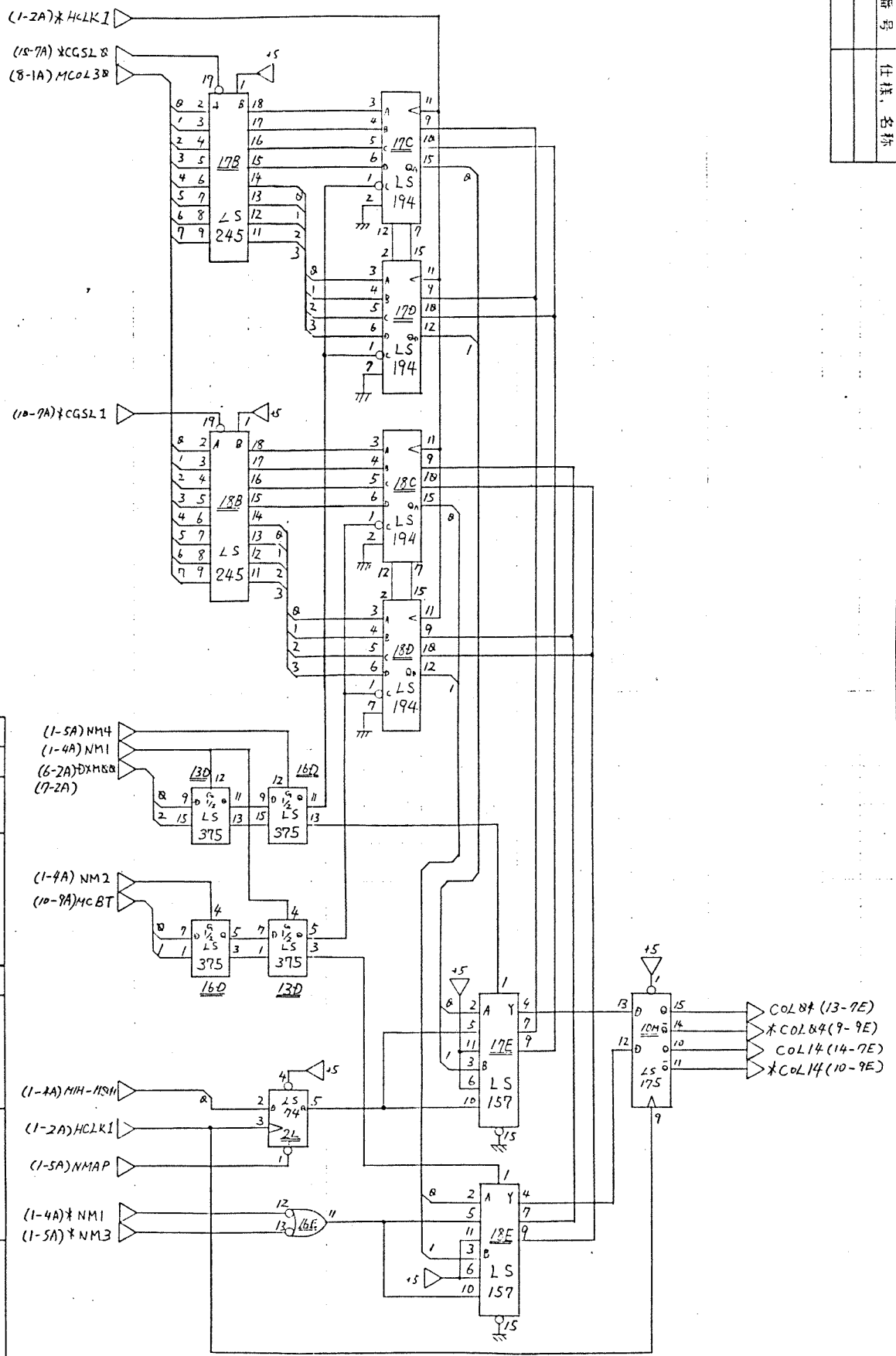
記号



第3角法

記号	担当者	年月日	改訂	個所	行号	部品	圖面番号	名称	仕様	材質

圖號: 17
 圖運番號: 17
 仕様: 名稱

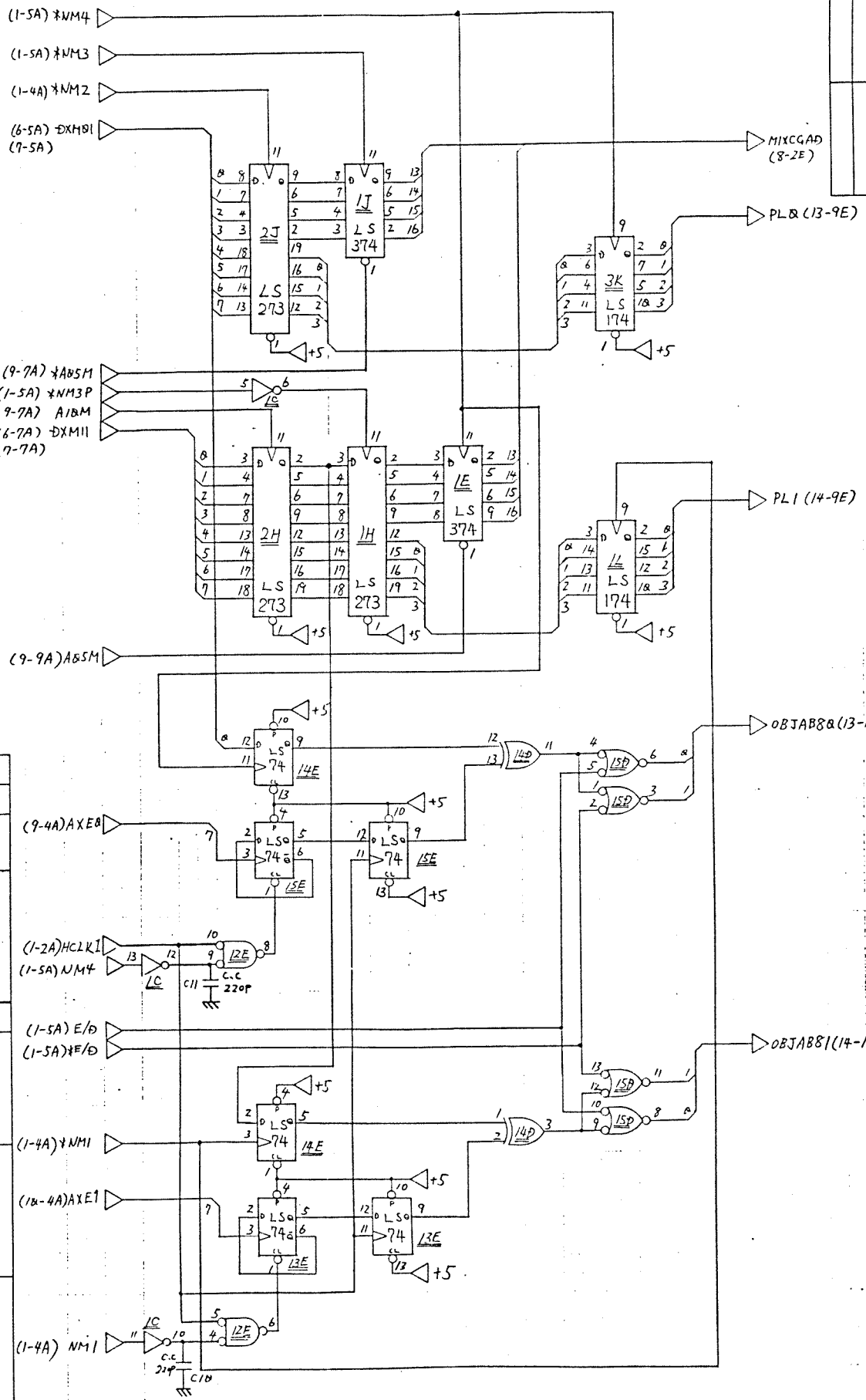


記事

第3角法

記号担当	年月日	改訂個所	符号	部品	圖面番號	名稱	仕様	材質
處理								
公差								
批								

圖號 任務, 名稱

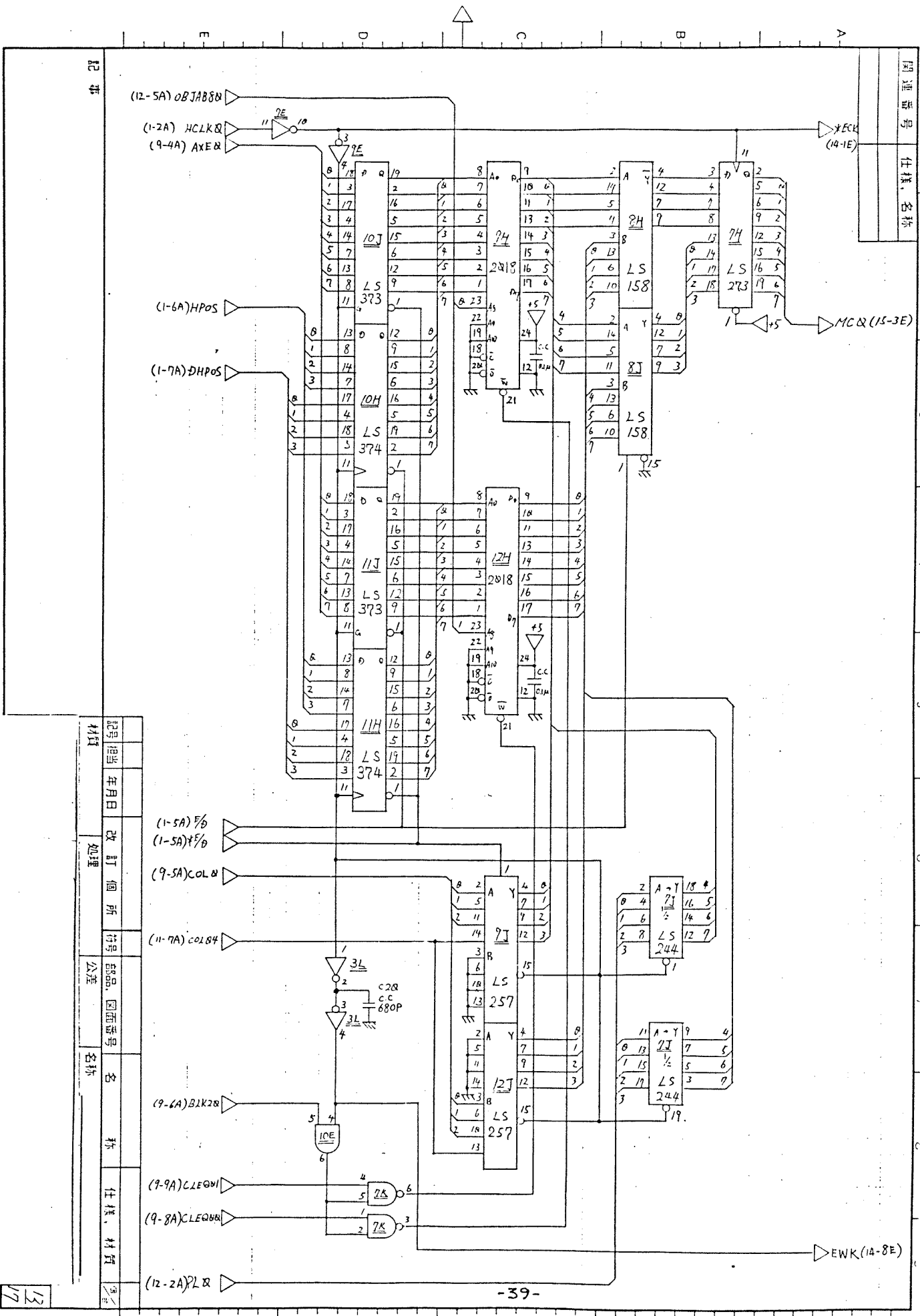


記事

記号担当	年月日	改訂個所	符号	部品	図面番号	名称	仕様	材料
材料		処理	公差					

第3角法

12/17



記号

回路番号
仕様名称

第3角法

材料	記号	用途	年月日	改訂箇所	部品	図面番号	名称	仕様	材料

(1-5A) F/B

(1-5A) F/B

(9-5A) COLB

(11-7A) COLB4

(9-6A) BLK2R

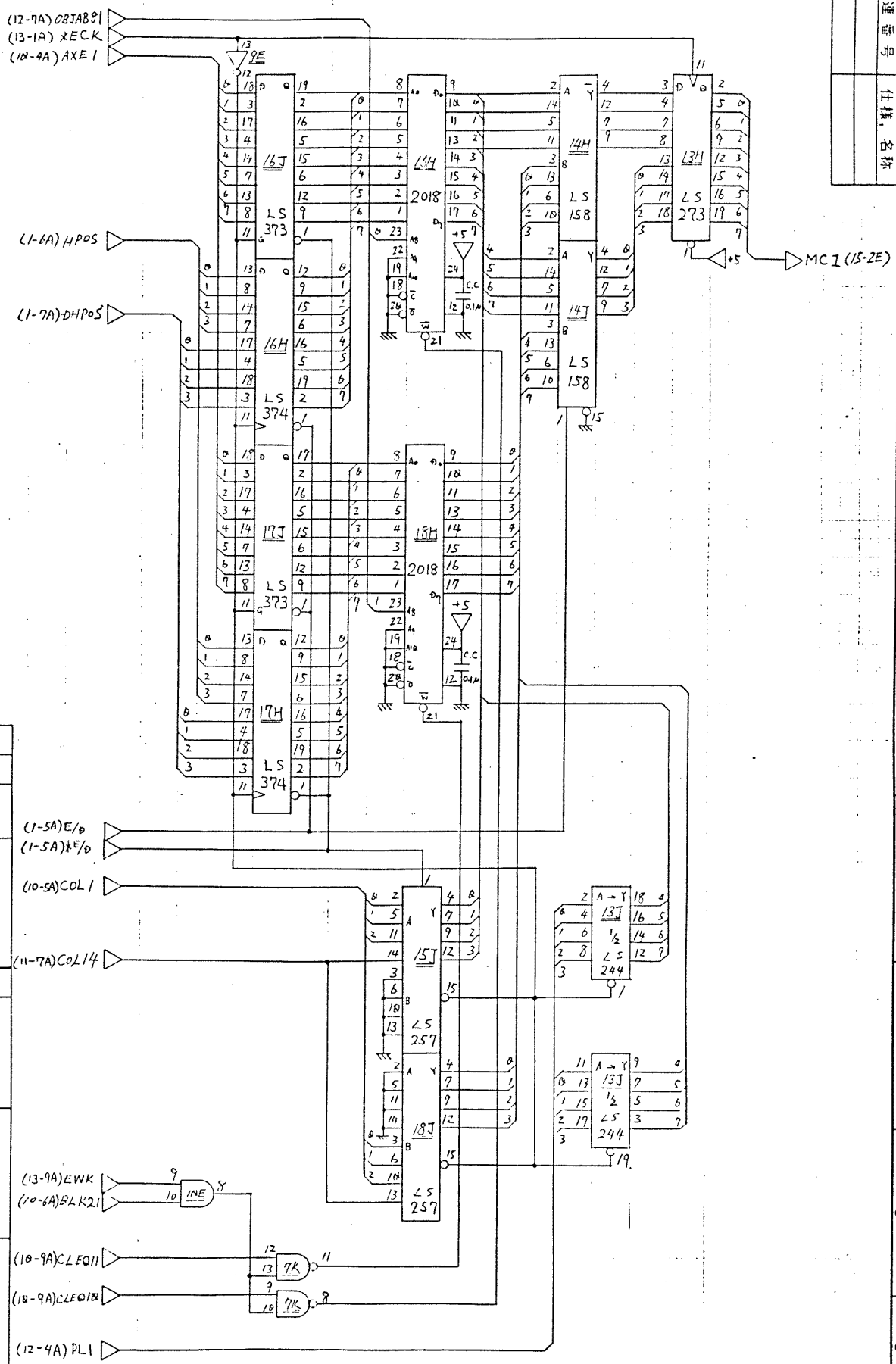
(9-9A) CLEQV1

(9-8A) CLEQV2

(12-2A) PL

13/17

関連番号	
仕様、名称	



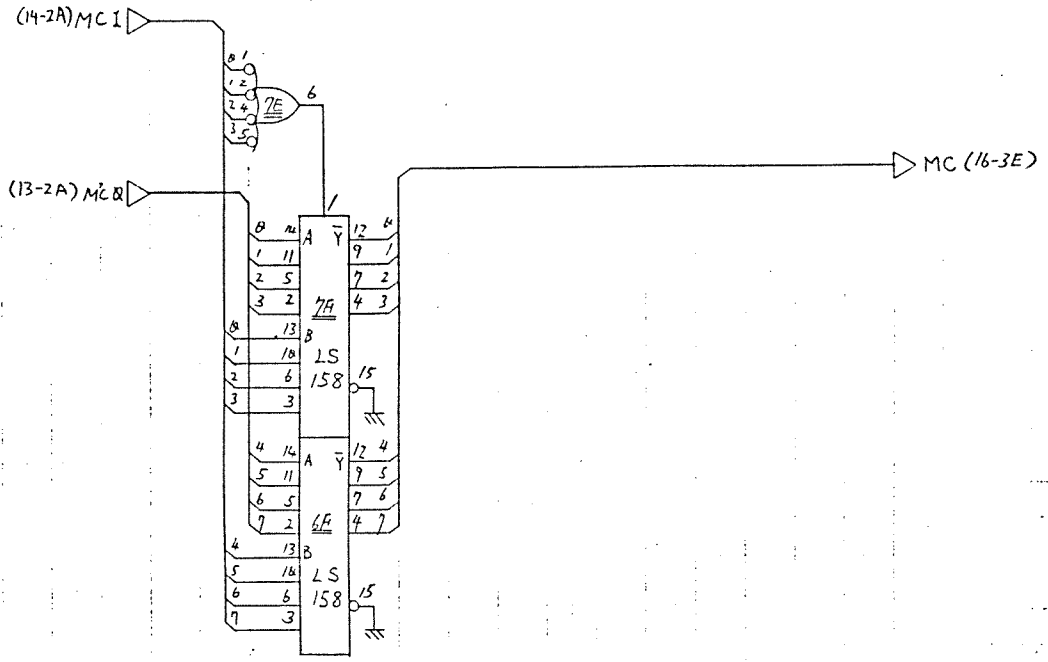
記号

第3角法

記号	相違	年月日	改訂箇所	符号	部品	図面番号	名称	仕様、材質
材料								
処理								
公差								
名称								
仕様、材質								

社 17/14

開運番号	仕様, 名称



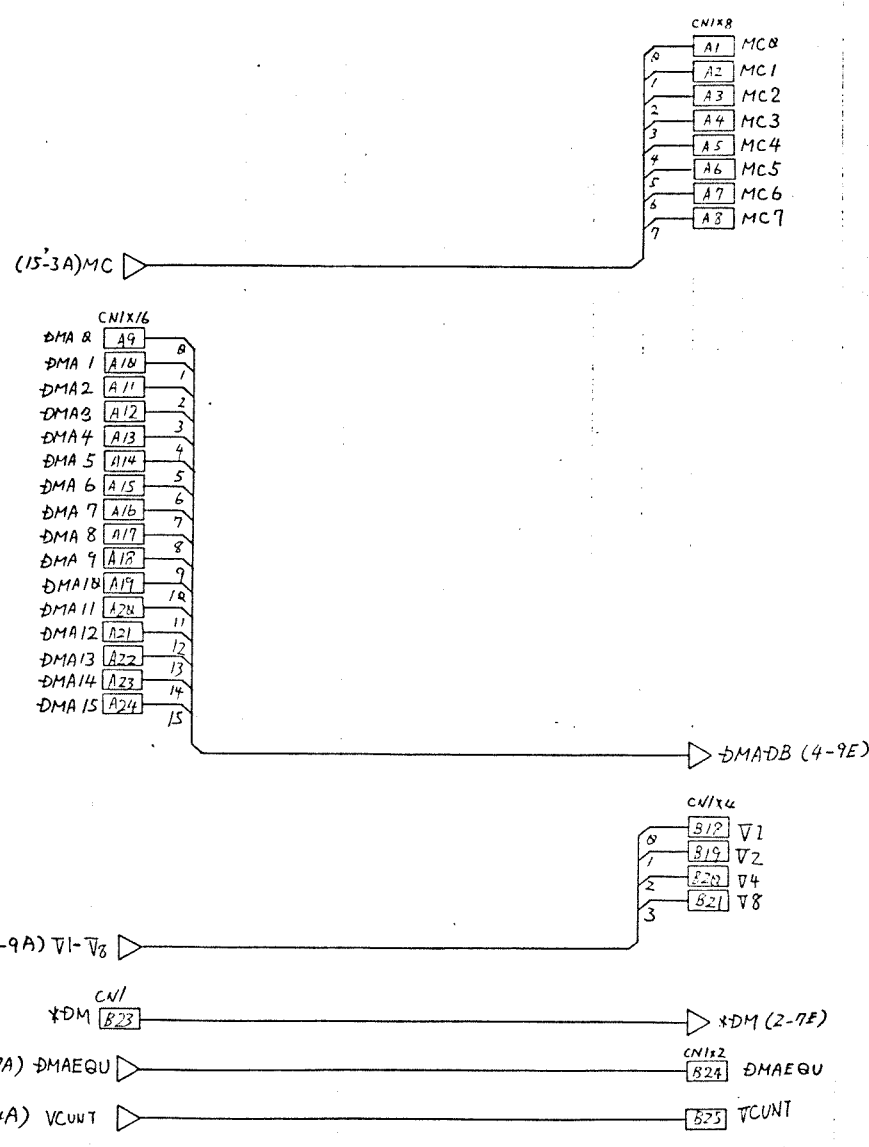
記事

第3角法

記号担当	年月日	改訂	箇所	符号	部品, 図面番号	名称	仕様, 材質

15/17

関連番号	仕様名称



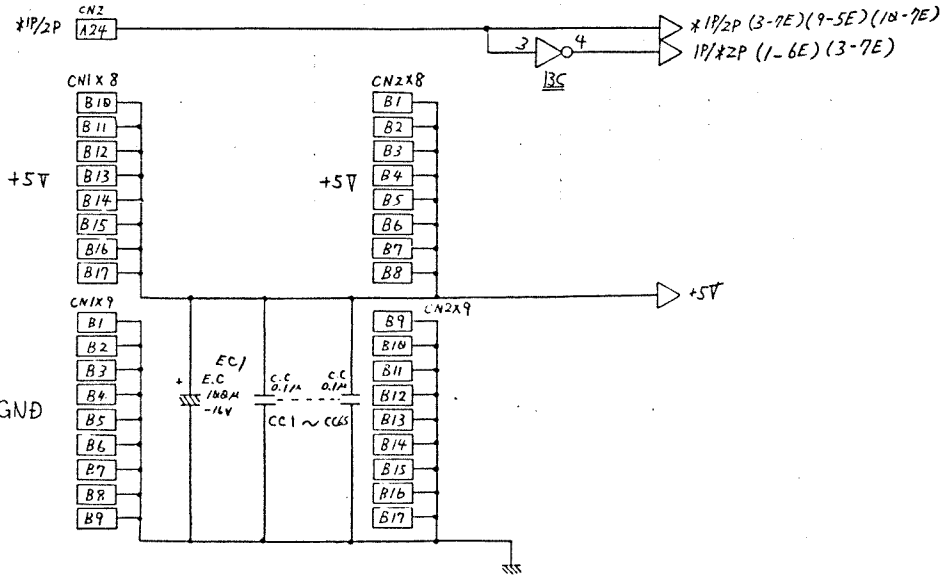
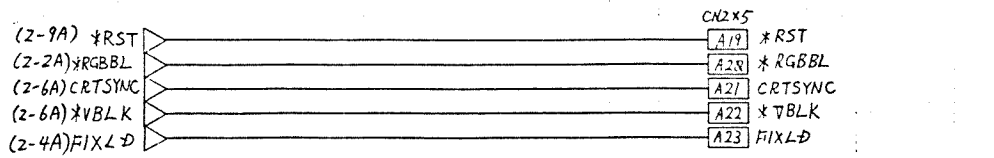
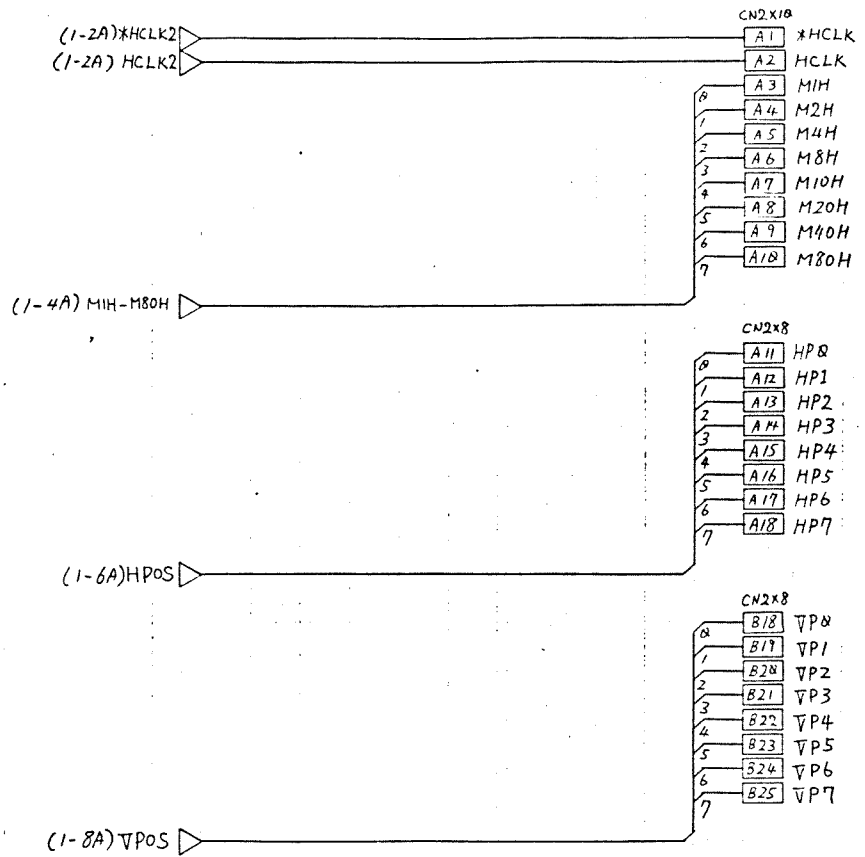
記事

記号	担当	年月日	改訂	個所	符号	部品	図面番号	名称	仕様	材質

第3角法

1/17

開通番号	
仕様名称	



記事	
材料	
記号担当	
年月日	
改訂個所	
符号	
部品	
図面番号	
名称	
仕様	
材料	

第3角法

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