

SYNERGISTIC PRODUCTS, INC.

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NEWER MACHINE

Model # 1405-0003  
N/c Type 1800  
SPI Serial # 1049  
N/c " # 1053  
110 volts 22 amps  
60Hz 1 phase

SYNERGISTIC PRODUCTS, INC.  
1800 CONTROLLER

Multimatic  
Drilling Machine

OLDER MACHINE

Model # 1500  
N/c TYPE 1800-511  
SPI SERIAL # 1043  
N/c " # 1024  
115 volts 60Hz 50 amps  
1 phase

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## GENERAL DESCRIPTION

The SPI 1800 is a two-axis point-to-point positioning system. The positioning is performed by closed loop servo systems using DC motors which are driven by SCR power amplifiers. The position of the device being controlled is sensed by incremental encoders which are attached to the lead screws of the machine being positioned. Some machines have been equipped with linear incremental encoders which measure the linear motion of the moving table. The motion of the moving part is measured with a resolution of .0001 inches per pulse.

The positioning system is absolute rather than incremental. That is, each positioning command is executed relative to a single 0 point rather than relative to the previous position of the machine. Incorporated into the 1800 are the capabilities to recognize, respond to and display numerous control codes which are necessary for the control of wire wrapping machines, drilling machines or I/C insertion machines. These features are the result of this controller's having been designed specifically for this type of usage.

The general logical configuration of the controller is shown in the block diagram (Fig. 1). At the top of the page are the input circuits. These circuits provide for taking information either from the paper tape reader or from the thumbwheel switches on the front panel of the controller, modifying that information and depositing it in one of the registers shown in the upper right-hand side of the diagram. Display register provides the capability to drive a 6-digit decimal display. The S register provides the capability to drive lamps used to control routing of wire in a wrapping machine. The M register provides the capability

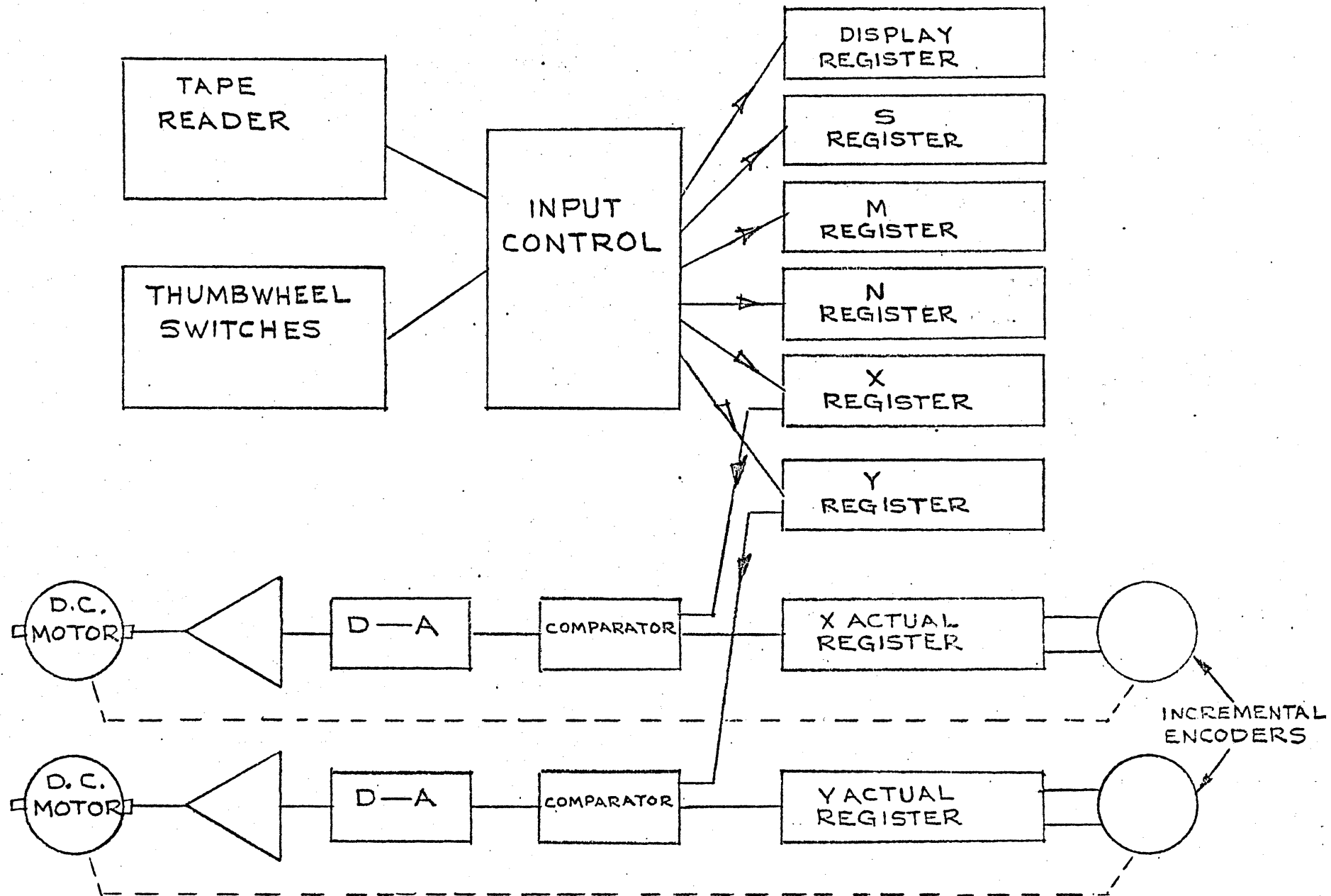


FIG 1

to recognize M functions which are used for control of automatic spindle wrapping machines and for control of the paper tape reader. The N register is used to drive lighted bin boxes for wrapping machines. The X desired and Y desired registers are used to store the position to which it is desired to move the machine. The input control circuits consist of control flip-flops for controlling the motion of the paper tape reader, sequencing circuitry, circuitry for checking the parity of incoming data and detecting particular control characters.

At the bottom of the page is shown the servo system which may be considered the output circuitry of the controller. The current position of the machine relative to the machine zero position is carried at all times in the X actual register and the Y actual register. The X and Y encoders cause these registers to be incremented or decremented as the table moves. The comparator compares the X desired position with the X actual position, feeds the difference between the two to a digital-to-analog converter which converts the position error into a DC voltage suitable to drive an SCR power amplifier which in turn drives the DC positioning motor. The encoder is mechanically coupled into the positioning motor so that the loop is closed. An identical loop is used for the Y position.

The general sequencing of operations is as follows: The completion of an operation, or a manual function by the tool operator, generates an index pulse to the controller to cause it to initiate a cycle. The tape reader is started, then it reads in tape until an end-of-block code is detected. When the tape reader starts, the servo system is disabled. While data is being read in, it is checked for parity and routed to the proper registers. An end-of-block code is detected -- then the inputting operation is complete, the paper tape reader

is stopped and the servo system is enabled. The servo system starts to move one or both motors as necessary to decrease the difference between the actual and desired positions. When the difference has been reduced to zero, the motors are turned off and an "in position" signal is sent to the tool being controlled, which allows that tool to complete its function.

All logic for the 1800 controller, with the exception of the Digital-to-Analog converter, is mounted on a single matrix board. This is located in the processor drawer. The DAC board, plugs into J17 inside the processor drawer.

Throughout this system logic 1 (true or high) is +3.0 volts or greater, and logic 0 (false or low) is +0.6 volts or less.

## DOCUMENTATION CONVENTIONS

1800 logic is documented on approximately 120 8-1/2 x 11 drawings. Several means have been provided to assist in locating the proper drawing:

- A. An index of drawing titles has been provided (Dwg. #100).
- B. A diagram depicting the flow of information through the system is provided in Fig. 2. The drawing numbers of each major function have been noted.
- C. A block diagram showing all machine functions and the numbers of the drawings which detail each function is provided in Fig. 3.

To assist in following signals from one drawing to another, signal traceability data has been included on all drawings. A page number contained in parentheses indicates the source of the signal.

Note that in some cases, drawing numbers differ only by a dash-number, for example, 115-2. The traceability data does not contain the dash-number. Use the index to verify that the drawing you are using is applicable to your system.

## MANUAL CONTROLS

(a) Power (Dwg. 195, sheet 2)

Two lighted, momentary pushbutton switches are provided.

POWER OFF is pushed to drop unit power and when illuminated

indicates AC power is applied to the controller but it is not powered

up. POWER ON is pushed to apply system power and when illuminated

indicates DC power is applied to the controller. This switch is also

a unit reset; it may be pushed to reset the unit at any time. If

pushed while the unit is moving, motion stops but zero is not lost.

The only way zero can be lost is to press POWER OFF (see SET ZERO, below).

(b) MODE SELECTOR (Dwg. 195, sheet 2) - four position rotary switch.

Selects unit mode of operation.

(1) SLOW JOG enables machine to jog at 1.5 ipm when JOG CONTROL switch is activated (see JOG CONTROL, below).

(2) MANUAL - Causes the Data Entry switches to be the sole source of input data.

(3) TAPE - Causes the tape reader to be the source of input data.

(4) EXT - Transfers operation of control functions to an external control panel.

(c) INDEX - (Dwg. 195, sheet 1) - Starts system operation - active only

in MANUAL or TAPE mode. Push to read in data from either tape

reader or manual data switches. INDEX light is on when machine

is in position and off when machine is moving.

(d) SET ZERO - (Dwg. 195, sheet 1) - Active in any mode but should

be set in MANUAL mode. When pressed, this switch causes the



present location of the machine to become the zero point to which all X and Y coordinate data are referred.

- (e) RETURN TO ZERO - (Dwg. 195, sheet 1). Active only in MANUAL mode; causes the machine to move to its zero point. The XD and YD registers are reset; this is equivalent to reading in X and Y coordinates of 0, 0.
- (f) RETURN TO LAST POINT - (Dwg. 195, sheet 1) - Active in MANUAL or TAPE modes. Used to return to a point after the operator has had to jog off a point (see JOG CONTROL, below).
- (g) BACKSPACE - (Dwg. 195, sheet 1) - Active only in tape mode; backs tape up one block each time it is pressed. No data is read in.
- (h) REWIND (Dwg. 195, sheet 1) - Causes tape to rewind until beginning-of-tape character is detected. Rewind is automatically started when an end-of-tape character is detected. Unit must be in TAPE mode.
- (i) EMERGENCY STOP - (Dwg. 195, sheet 1). Causes all machine motion to cease. POWER ON reset must then be pressed. Inputs from limit switches (Dwg. 148) will automatically apply a reverse drive to the limited axis, then bring up emergency stop.
- (j) JOG CONTROL (Dwg. 195, sheet 2). Active in any mode. In MANUAL or TAPE fast jog ensues (60 ipm). In SLOW JOG the rate is 1.5 ipm. When a jog switch is engaged the DAC's are held at zero and voltages are generated past them (see Dwgs. 147, 164, 165). While jogging the actual position registers follow the machine motion but the Desired Position registers are unaltered. Thus RETURN TO LAST POINT may be pressed and operation resumed.

(k) MANUAL DATA ENTRY (Dwg. 195, sheet 3)

These are two sets of thumbwheel switches. In MANUAL MODE, pressing the INDEX will cause the machine to move to the coordinates selected by these switches. The Digit Time Counter (Dwg. 183) scans these switches serially (Dwg. 187) and the data is gated into the desired registers in the same manner as tape data (Dwg. 113).

## THEORY OF OPERATION

### (1) SYSTEM CLOCK (Dwgs. 177 and 144)

The system clock provides all necessary synchronizing and clocking signals for the system. The basic oscillator is a three-gate ring circuit which oscillates at approximately 10 MHz (Dwg. 177). The exact frequency is not critical but must be somewhere between 6 and 12 MHz. The 10 MHz is divided down to 5 MHz.

The 5 MHz signal is fed into a 5-bit serial shift register with only one flip-flop set at a time. Two 1 MHz pulse trains, CK03 and CK05, are taken from this register. The pulses are approximately 200 nanoseconds wide and there is approximately a 400 nanosecond difference between the trailing edge of CK03 and the trailing edge of CK05. These signals are fed to buffer amplifiers and distributed throughout the system.

The Control Time Counter (Dwg. 144) can also be considered part of the system clock, since it is always running and the operations it controls are always being performed (see discussion under (4b), Tachometer Input and Control Time Counter).

The Control Time Counter is a four-bit, serial shift register with only one flip-flop set at a time. All flip-flop outputs, CT1 thru CT4, are used.

(2) INPUT LOGIC (Dwgs. 104 thru 113, 149, 185)

The input logic receives all eight tape channels (Dwg. 104). Either EIA or ASCII codes may be received and are selected by the ASCII/EIA switch (S4) located on the rear panel of the processor drawer. This switch also selects odd or even parity check (Dwgs. 105, 149). Since ASCII uses even parity and EIA uses odd parity, a two-pole switch performs both functions.

Sets of X and Y coordinates and other numeric data are punched on tape in groups called blocks. Each block is terminated by an end-of-block (EOB) character. Blocks are composed of fields of numeric data. Each field is preceded by a control character. The input logic determines whether a character is a number or a control character (Dwg. 112), and decodes (i. e. provides a single line output) the characters EOB, RWSTOP (rewind stop), RWCON (rewind control or end of tape), and the control characters M, N, S, X and Y (Dwgs. 109, 110); other characters are decoded but not used. To indicate polarity of X and Y coordinates, the minus character is also decoded (Dwg. 109); in the absence of this character, a number is assumed to be positive; hence no plus character is decoded and may be omitted from the tape.

Tape tracks 1, 2, 3 and 4 contain the numeric data in Binary Coded Decimal (BCD) form. This data is not decoded but is sent unchanged to the Display, M, N, S and desired input registers, each of which is enabled by its corresponding control character.

### (3) FUNCTION REGISTERS

#### (a) M Register

The M function flip-flop (Dwg. 185 ) is set by the M control character and generates clock pulses MCK, - one pulse is generated for each numeric character received. The M register (Dwg. 114 ) holds a two-digit BCD number, Most Significant Digit (MSD) first. If the M field contains more than two digits, only the last two digits will be preserved in the M register. The outputs from the M register are fed to eight relays (Dwg. 192 ) which are used to perform special display or other functions.

#### (b) N Register

The processing of the N field for energizing bin lights is almost identical to the M field processing. The N function flip-flop (Dwg. 185 ) is set by the N control character and generates clock pulses NCK; one pulse is generated for each character received. The N register (Dwg. 118 ) holds a two-digit BCD number, MSD first; thus, only the last two digits of the N field will be preserved in it. The outputs from this register drive eight relays (Dwg. 193) which are encoded to energize the bin lights.

#### (c) Display Register

The display register is operated by the N field and is actually a second register for it. The N function flip-flop (Dwg. 185) generates clock pulses which are used to shift the N-field digits into the display register. This register is six digits long; each digit is represented by seven flip-flops. Each digit passes through

a BCD-to-seven-segment decoder (Dwg. 167 ) before entering the display register. Data enters MSD first from the Least Significant Digit (LSD) end of the register. The N control character sets this register to all zeros; thus the register is completely reset before new data starts shifting in. This makes the register automatically right justified if the N field is fewer than six characters. Each flip-flop in the register feeds a high current driver which goes to the display connector J06. This connector mates with a six digit, seven-segment mosaic indicator panel.

(d) S Register

The S function clock (Dwg. 103 ) is set by the S control character; this develops a single pulse to enter the following numeric character into the S function register. The output of this single-digit, four-bit register is decoded, sent to display connector J06, and used to energize the wire route lights.

#### (4) X AND Y FUNCTIONS

##### (a) Input, Conversion, and Desired Registers

The X and Y fields are each processed in an identical manner. Data are read from the tape one digit at a time, MSD first. If the Dial Offset Switch (DOS) on the rear panel is on, the data from the manual entry switches is added to each coordinate after it is read from the tape.

Four registers are involved:

Input Register (Dwg. 121 ),

Conversion Register (Dwg. 122, 123, 124),

X Desired Register (XD) (Dwg. 127, 128, 131),

Y Desired Register (YD) (Dwg. 129, 130, 131).

Although tape and manual data are in BCD, all internal data processing is in binary. Therefore, BCD to binary conversion is necessary. This conversion is controlled by the Digit Time Counter (Dwg. 186 ) a six-bit flip-flop ring (DT1-DT6) that indicates which digit is being processed. It is usually held to all zeros. An X or Y control character sets DT1; at the same time, a sign flip-flop, IR5, (Dwg. 126 ) is set to indicate PLUS. If the next character on tape is a minus sign, IR5 is reset to indicate MINUS: if the character following the X or Y control character is a plus sign or a number character (the plus sign may be omitted) the flip-flop remains set. When a number character is received, a modulo 24 binary counter (the Bit Time Counter, Dwg. 184 ) is allowed to count. When it reaches 24

(BC24) it causes DT1 to be reset and DT2 to be set. This condition remains static until the next digit is read (approximately 6.6 milliseconds for a typical tape reader), at which time BC24 is again allowed to count. At count 24, DT2 is reset and DT3 is set. This repeats down through DT6. At count 24 of DT6, the entire X or Y coordinate field has been processed. The X- or Y- Data Bits Tape flip-flop (Dwg. 186), which was set by the X or Y control character, is reset by the combination of DT6 and BC 24. This combination also sets the X- or Y- Dials Time flip-flop (Dwg. 186 ) and causes the Bit and Digit Time counters to repeat the above process. This time the appropriate X or Y set of manual data switches is read. The DT ring counts but does not stop at each BC24 count, since the data from all switches are immediately available. If the DOS switch is on, the data will be read as indicated by the switch settings; if DOS is off the logic will go through the motions and read as if all switches were set to zero.

The BCD to binary conversion is done serially, MSD first. As a number character is read, it is parallel loaded into the Input Register (IR) (Dwg. 121 ). IR is a four-bit parallel-in, serial-out shift register. The Bit Time Counter (Dwg. 184 ) causes IR and the Conversion Register (CR) (Dwg.124, 123, 122) to start shifting (CR is initially set to zero). The output of IR (IR1) is added to the output of CR (CR01) in a serial binary adder (Dwg. 125 ). Each BCD digit from IR is added to the binary output of CR as though it



were a binary number. The answer is multiplied by ten in binary by passing the output of the adder through a three-bit shift register. Each flip-flop of the register delays the data by one clock time. It is the property of serial binary numbers that a stage of delay doubles the number; hence the output of the first stage (2X) is two times the sum and the output of the third stage (8X) is eight times the sum. The terms 2X and 8X are added together in a second serial binary adder. The output of this adder (SUM2) is then ten times the output of the first adder and is shifted back into CR. When the second BCD character is received, the above process is repeated and continues until DT6 time. At DT6 time the output of the first adder is gated to the input of the X Desired Register (XD), (Dwg. 127, 128, 131), if an X field is being processed, or to the Y Desired Register (YD) if a Y field is being processed (Dwg. 129, 130, 131).

When the input data contains a MINUS sign, the first adder's input becomes the inverse of  $\overline{IR}$  plus 1. This produces the two's complement of the input number and is the way negative binary numbers are processed in this system.

If trailing zeros are omitted from a tape coordinate (which is permitted) it is detected by the recognition of a control character before DT6 has been processed. When this happens the Digit Time and Bit Time counters continue to cycle without stopping until BC24 count of DT6. The worst case is five trailing zeros



CT3:  $XD-XA = \Delta X$  is calculated.

CT4:  $YD-YA = \Delta Y$  is calculated.

(c) Actual Registers and Adder Logic

The XA and YA registers (Dwgs. 137 thru 142) are each 24 bits long (23 magnitude bits and one sign bit). These registers are gated into the B- inputs of a 24-bit parallel binary adder/subtractor (Dwgs. 137 thru 142). The outputs of the desired registers are gated with CT3 and CT4 (Dwgs. 132 thru 135) and gated into the A- inputs of the adder, along with the DOWN pulses from the tachometers (AGG Dwg. 143 ). The UP pulses from the tachometers are fed to the carry input of the adder (Dwg. 142 ). Since the Control Time Counter is always running, the operations controlled by it (Para. (b) above) are always current. At CT3 and CT4 the output of the parallel adder represents the values of  $\Delta X$  and  $\Delta Y$  respectively, which indicate the distance left to travel to the desired stopping point.

(d) Digital-To-Analog Converters

One Digital-to-Analog Converter (DAC) is used for each axis (Dwgs. 155 thru 165). The  $\Delta X$  and  $\Delta Y$  values are each 24-bit numbers but only ten bits are fed to the DAC's: 1 thru 5 (LSBs) 9 thru 12 (MSBs) and the 24th, or sign bit.

When the distance to travel is between 0.0031 and 0.4095 inch, the MSB's decrement each 0.0256 inch of travel while the LSB's are held full scale. From 0.0031 inch to the stopping point, the

LSB's decrement each 0.0001 inch of travel. Treating the DAC's in this fashion generates a non-linear deceleration profile. If the machine overshoots the stopping point, the  $\Delta$ value will change signs, causing the sign of the DAC to change, resulting in a reverse motor drive signal.

Due to the non-linear input and the fact that there are various manually controlled digital inputs to the system, the DAC's require some gating and timing (Dwgs. 147, 153, 154, 175) to control these functions. The MSB's and LSB's are clocked into the DAC's separately (Dwg. 154).

A ten-bit input storage register is used on each DAC (Dwgs. 155 thru 158). The output of each register is fed to a precision summing network through transistor switches. These switches are NPN transistors and are deliberately installed upside-down (i. e. emitter to + and collector grounded). This results in a very low gain factor (2 to 3-1/2 typically) but also a very low saturation voltage (60 millivolts or less). This greatly reduces errors caused by differences in saturation voltages between transistors. Since the summing points are fed to high input impedance amplifiers, gain of switching stages is not important here.

(5) MOTOR CONTROL

The DAC outputs are fed to motor control amplifier circuits (Dwg. 115; one required for each axis) where the DAC signal is combined with the tachometer pulses to provide the proper firing angle to SCR's on the power amplifiers (Dwg. 116 & 117). A Motor Inhibit Circuit (Dwg. 148, 199 ) is provided to prevent machine motion under specified conditions: e.g. if the spindle is down and data is being shifted in.

(6) MOTOR INHIBIT

In order to prevent an annoying audible buzz from the motors due to the power line frequency supplied to them by the SCR drive, the motors are turned off whenever they are not needed. This is referred to as inhibiting the motors. (Refer to Page 148). The two signals leaving the right of the page, INHY and INHX, inhibit the motors at all times, except when the move flop is set, which causes the servo to be enabled and the signal DACZ is not true, which means that the servo system has not gotten into position, or a jog switch right - left or in-out has been depressed or the signal AMS is true. AMS stands for any microswitch but could be better expressed as any limit switch. These are the three conditions which can keep the motors on. Note that depressing the left-right jog switch enables only the X motor and does not disturb the inhibit signal which is applied to the Y motor. Following these two signals to Page 199, they are further processed. S5 shown on this page and physically located at the back of the processor is labeled "inhibit override". Actuating this switch completely defeats the inhibiting system and causes the servo to remain active at all times. The input signal to the OR gates located at 14R called Z-SAFE comes indirectly from the machine being controlled by the processor. This signal inhibits both motors whenever the Z axis, normally the up and down spindle motion of a tool, is such that it would not be safe for the table to move. In the case of most machines, the Z axis is not safe at any time the tool is not in the uppermost position. Also, on Page 199, the RC network, comprised of C14 and R105 and the two gates and one transistor associated with those

components, provide a signal stretching network which delays the application of the inhibit signal for approximately 100 milliseconds without delaying the removal of the inhibit signal. Delay is necessary because the signal DACZ goes true as soon as the servo system comes into the error zone. It is necessary to delay the application of the inhibit signal a sufficient length of time to allow the servo system to completely settle within the error zone before inhibit is applied.

It should be noted that should the inhibit signal be applied to the motors while the table is moving by the failure of the Z safe signal, no dynamic braking is applied to the motors and the table will coast to a stop.

## ADJUSTMENTS

This procedure is applicable to controllers using motor amp board, Part Number

### A. DAC BALANCING PROCEDURE

This is a simple procedure which is used to correct small drifts which occur within the DAC system.

1. Turn on system, allow to warm up for 1/2 hour, preferably longer. Open the back door, over-ride the interlock by pulling on the plunger.
2. Place the INHIBIT OVERRIDE switch UP.
3. Jog the machine to the approximate center of the available travel.
4. Adjust the X DAC BALANCE and Y DAC BALANCE potentiometers which are located on the DAC board and identified by screening on the chassis for either of the following balance criteria:
  - a. Balance indicated by motor pulley remaining stationary. Observing the table or the head is not good enough. If necessary, use two people, one observing the pulley, and the other turning the pot. If the pot can be turned more than a few degrees between the points where the motor moves in opposite directions, set the pot approximately half way between these two points. If you can turn the pot 1/2 turn without the motor moving, something is wrong.



- b. Balance indicated by zero volts on a meter connected between the RED and BLACK test jacks (current test, ground) on the back of the motor drive chassis (not on DAC board). Any meter with a sensitivity of approximately 1 volt full scale will do fine. It need not be a zero-center meter, although that is a convenience. The procedure is straight forward. Adjust the appropriate balance pot for zero reading on the meter. With some controllers, there is a tendency for the meter to "pop" from one polarity to the other, rather than passing through zero smoothly.
5. When both axes have been balanced, place the INHIBIT OVERRIDE switch in the DOWN position and verify proper operation of the servo by setting move distance into the X and Y manual entry switches and exercising the servo by use of the INDEX and RETURN to ZERO switches. Exercise the servo with moves of 10 inches, 1 inch, 0.1 inch, 0.01 inch. The servo should settle smoothly without buzzing, hunting or hesitation for all moves. The servo is "in position" when the light in the index switch comes on.

## B. SERVO ADJUSTMENT PROCEDURE

This procedure adjusts the balance, overlap and speed of the servo system. It is intended to be used whenever parts are replaced on the DAC board or the motor control boards or the power supplies associated with either, and as a PM procedure, approximately monthly.

1. Open the back door, defeat the interlock, turn the system on and allow it to warm up for at least 1/2 hour, preferably longer.
2. Place the INHIBIT OVERRIDE switch UP.
3. Jog the machine to the approximate center of its available travel.
4. Open the MOTOR ARMATURE BREAKERS, CB 2 and CB 5.
5. Connect a sensitive meter between the RED and BLACK test points on the DAC board (REPEAT -- DAC BOARD). A voltmeter with a full scale indication of 0.6 volts or a current 250 micro amps FS or less will be suitable.
6. Adjust the X DAC BALANCE or Y DAC BALANCE pot on the DAC board near the center to bring the meter to zero. Balance both X and Y using the appropriate test points and pot.
7. If the meter will not quite zero, back the pot away from the end of its travel by two turns and leave it there. Some DAC boards gradually acquire so much offset that they will not balance. This can be compensated for in the motor amp board, however.
8. Connect a dual trace oscilloscope using 10 to 1 probes to the YELLOW BALANCE/OVERLAP test jacks for the X axis. Ground the scope to the black test jack (Fig. 1). Do not use 3rd wire ground on scope. Adjust the scope for a presentation like Fig. 3; use line synchronization. If unable to get at least one ramp,

as shown in Fig. 3, verify that INHIBIT OVERRIDE is up and momentarily depress any jog switch.

9. Adjust the balance potentiometer on the motor control board (Fig. 1) to bring the firing time on the two waveforms into coincidence.
10. Adjust the OVERLAP potentiometer (Fig. 1) for overlap = 0.4 millisecond  $\pm$  0.1 millisecond. If necessary, touch up the balance.
11. Repeat steps 8 through 10 for the Y axis.
12. Return the inhibit override switch to the down position. Return the circuit breakers to their normal position.
13. Exercise the system in one axis at a time, using alternate INDEX and RETURN TO ZERO commands and 16 inch moves. The move should be completed within 3 seconds. The overshoot should not exceed 0.1 inch. Note that this is 1/2 revolution of the motor pulley.
14. If the speed is not satisfactory, it may be adjusted using the VELOCITY FEEDBACK pot (Fig. 1). This adjustment is a compromise between speed and overshoot. If the VELOCITY FEEDBACK is moved, check steps 9 and 10. This completes the adjustment procedure.

### C. JOG SPEED ADJUSTMENTS

The machine provides two independent jog speeds; FAST JOG with the rotary selectro switch in MANUAL, SLOW JOG with the selector switch in SLOW JOG.

These speeds may be adjusted over a wide range to suit the needs or preferences of the individual user. There are a total of 8 potentiometers on the DAC board which control these speeds. Each axis, speed, direction has its own pot.

X slow -

X slow +

X fast -

X fast +

Y slow -

Y slow +

Y fast -

Y fast +

Adjustment of the jog speeds will not affect the servo positioning speeds.

Adjustment of the servo positioning speed will affect the jog speeds.

Velocity Feedback Adjust R43

Overlap Adjust R13

Gain Adjust R46

Bal. Adj. R12

Stability Adjust R47

Motor Control Card

Balance/Overlap Test (Yel)

Balance/Overlap Test (Yel)

Motor Armature Ckt. Brkr. CB3

Motor Armature Ckt. Brkr. CB2

AC Input Ckt. Brkr CB1

Y AXIS

Balance/Overlap Test (Yel)

Balance/Overlap Test (Yel)

AC Input Ckt. Brkr CB4

Motor Armature Ckt. Brkr. CB

Motor Armature Ckt. Brkr. CB

DAC, Feedback, DC Volts J2

Motor Connector J4

Not Used (Org)

Current Test (Red)

Gnd Test (Blk)

AC Power Input Motor Trans. J1

Motor Connector J6

Gnd Test (Blk)

Current Test (Red)

Not Used (Org)

Velocity Feedback Adj R43

Overlap Adjust R13

Gain Adjust R46

Bal. Adjust R12

Stability Adjust R47

Motor Control Card

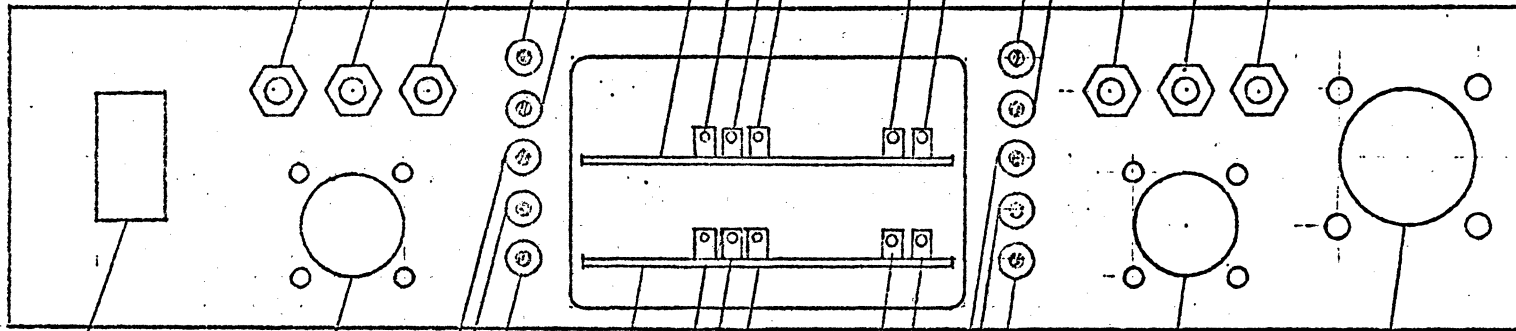


Fig. 1

Motor Drive Chassis

Rear View

## PREVENTIVE MAINTENANCE

The 1800 controller requires little preventive maintenance. It is our experience however, that regular performance of the following checks and adjustments will materially reduce the occurrence of field failures.

Weekly perform the following:

1. Perform the DAC balancing procedures. Note that this procedure should not be performed until the machine has warmed up for 1/2 hr., preferably longer.
2. While the rear door is open, check to see that the fans in the bottom of the controller and the fan which blows air on the processor logic panel and the fan which cools the motor control drawer are all operating.
3. Check front panel control switches for normal operation.
4. Check lamps and indicators for normal operation.

Monthly:

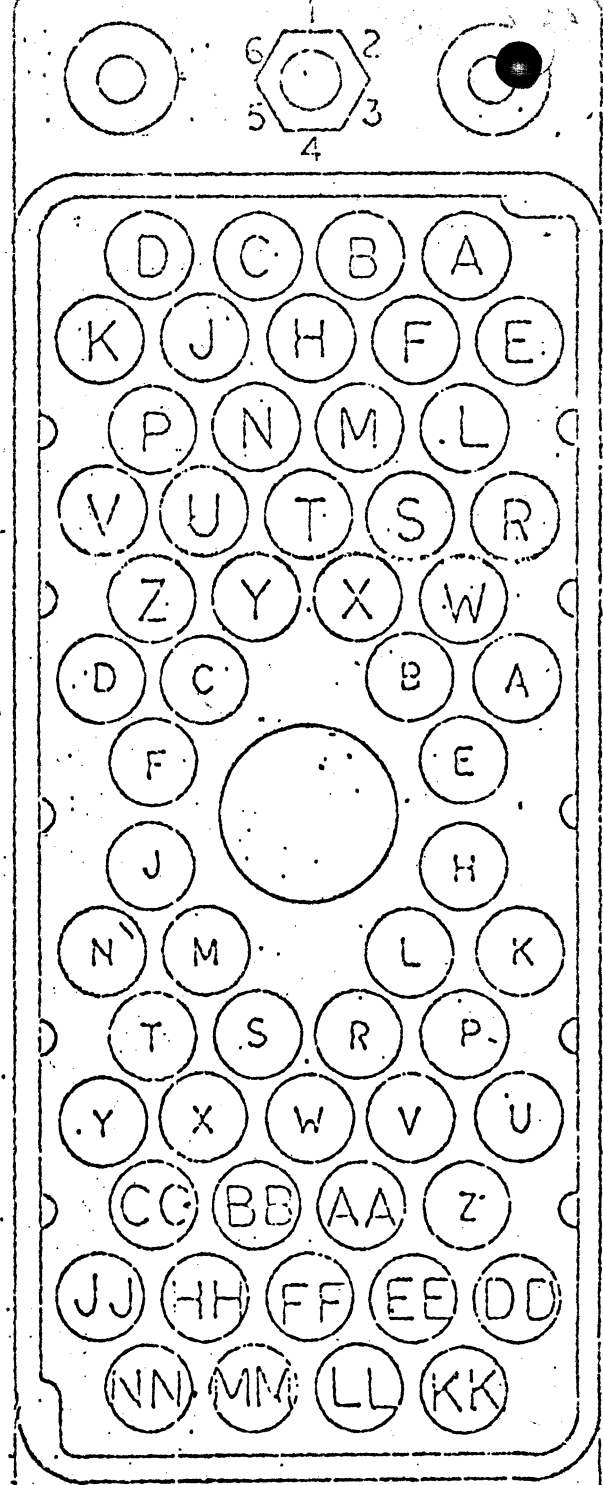
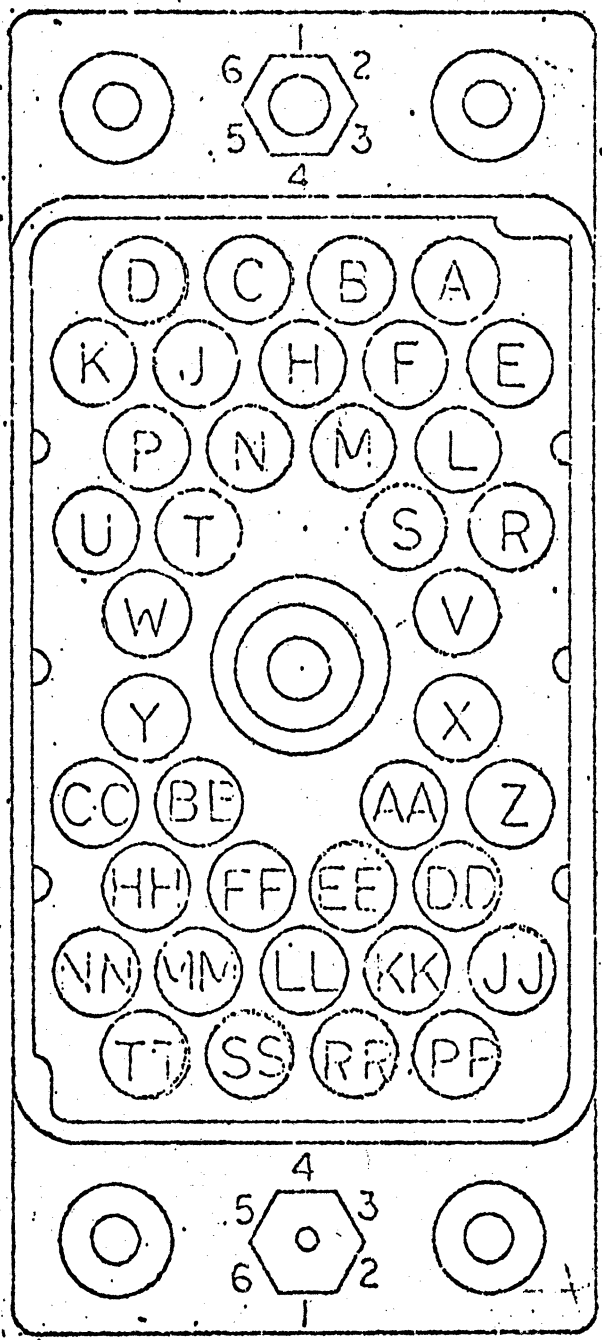
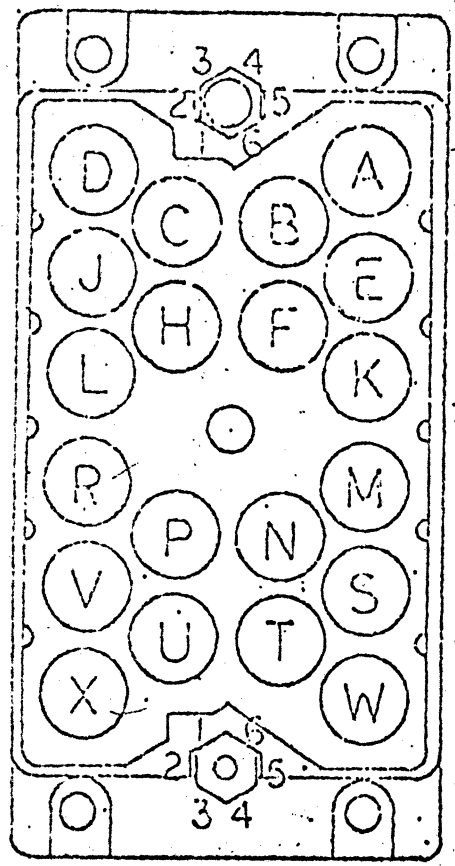
1. Check the five volt logic supply voltage on the logic panel. Use a meter with a working accuracy of 1% at 5 volts on the scale which you are using. The supply voltage is required to be 5.0 volts  $\pm$  0.1 volt. If the voltage is found to be outside of this range, before adjusting the power supply, check the connections

in the supply lines to the logic panel: The screws in the terminal boards in the bottom of the processor, the connectors at the back of the processor, and the screws on the terminal board of the power supply. A surprising number of field calls have resulted from improper supply voltages due to poor connections at these points. If you don't find the problem at one of these points, then readjust the power supply voltage to provide 5 volts at the logic panel. Approximately 5.4 volts will be required at the power supply to provide 5.0 volts at the logic panel. There is approximately 0.2 volt drop in the supply line to the logic panel and the same in the return line.

2. While the logic drawer is open, inspect the IC's for excessive dirt build-up underneath the fan. If significant dirt is present, remove it with a soft brush and a vacuum cleaner.
3. With a soft brush, clean the dirt from around the read head of the paper tape reader.
4. Perform the Servo Adjustment Procedure.

FRONT VIEW  
38 PIN ELCO

FRONT VIEW  
20 PIN ELCO



PANICD  
PENICD



69  
11  
28





### Toggle Switches

All switches, except ASC11/E1A, are active in the up position. ASC11/E1A is active in both positions.

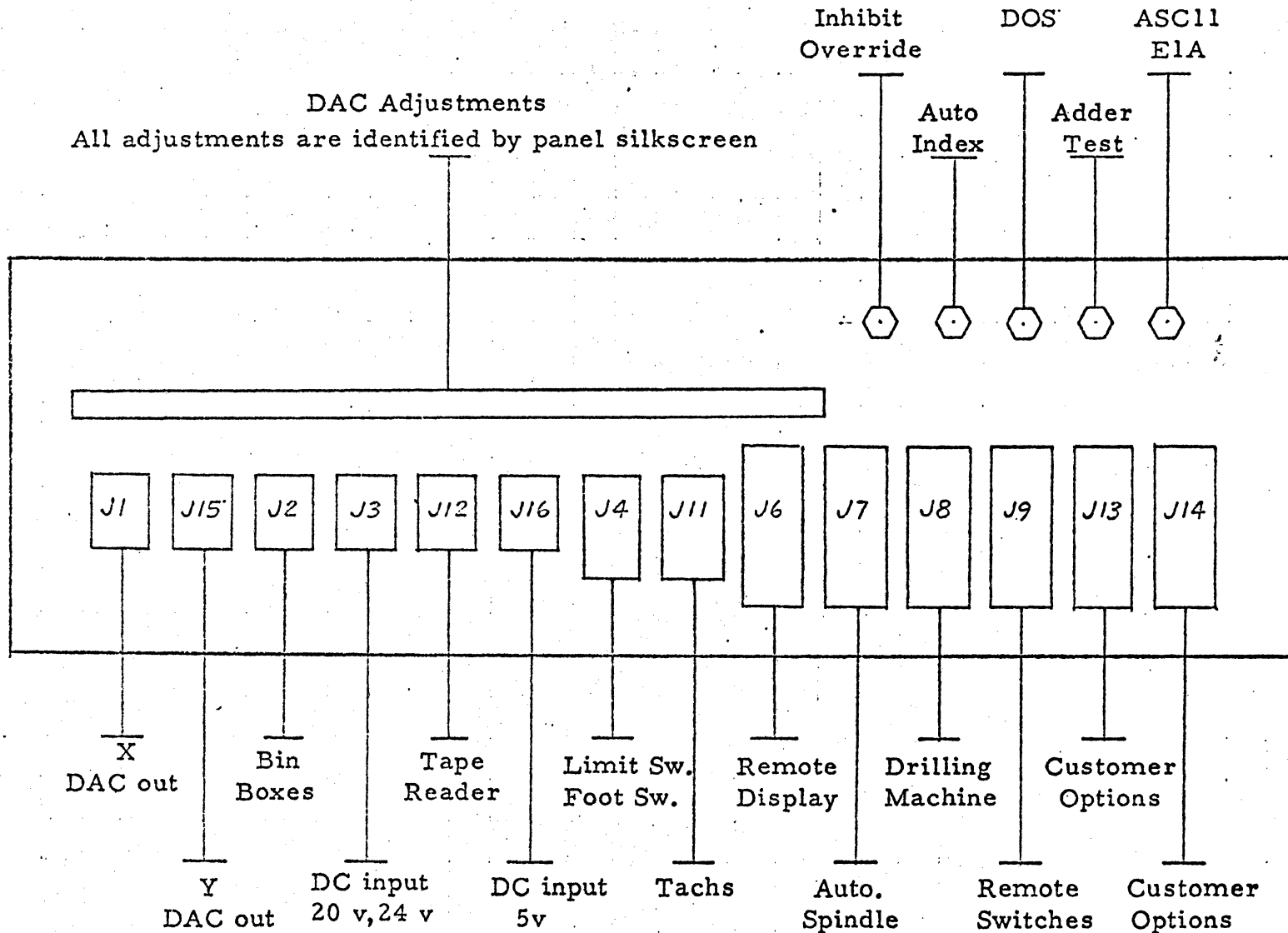


Fig. 2

PROCESSOR DRAWER - REAR VIEW

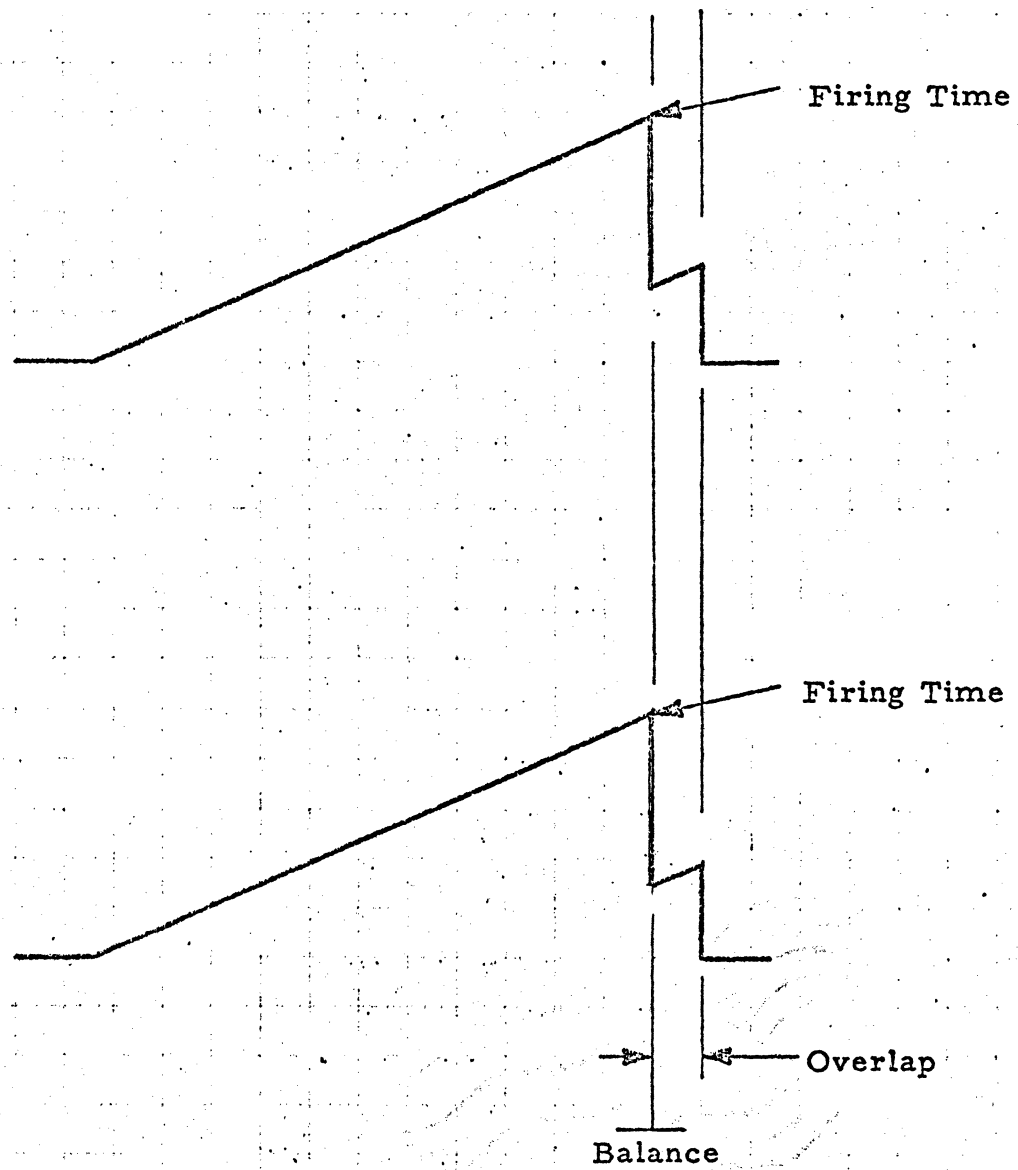
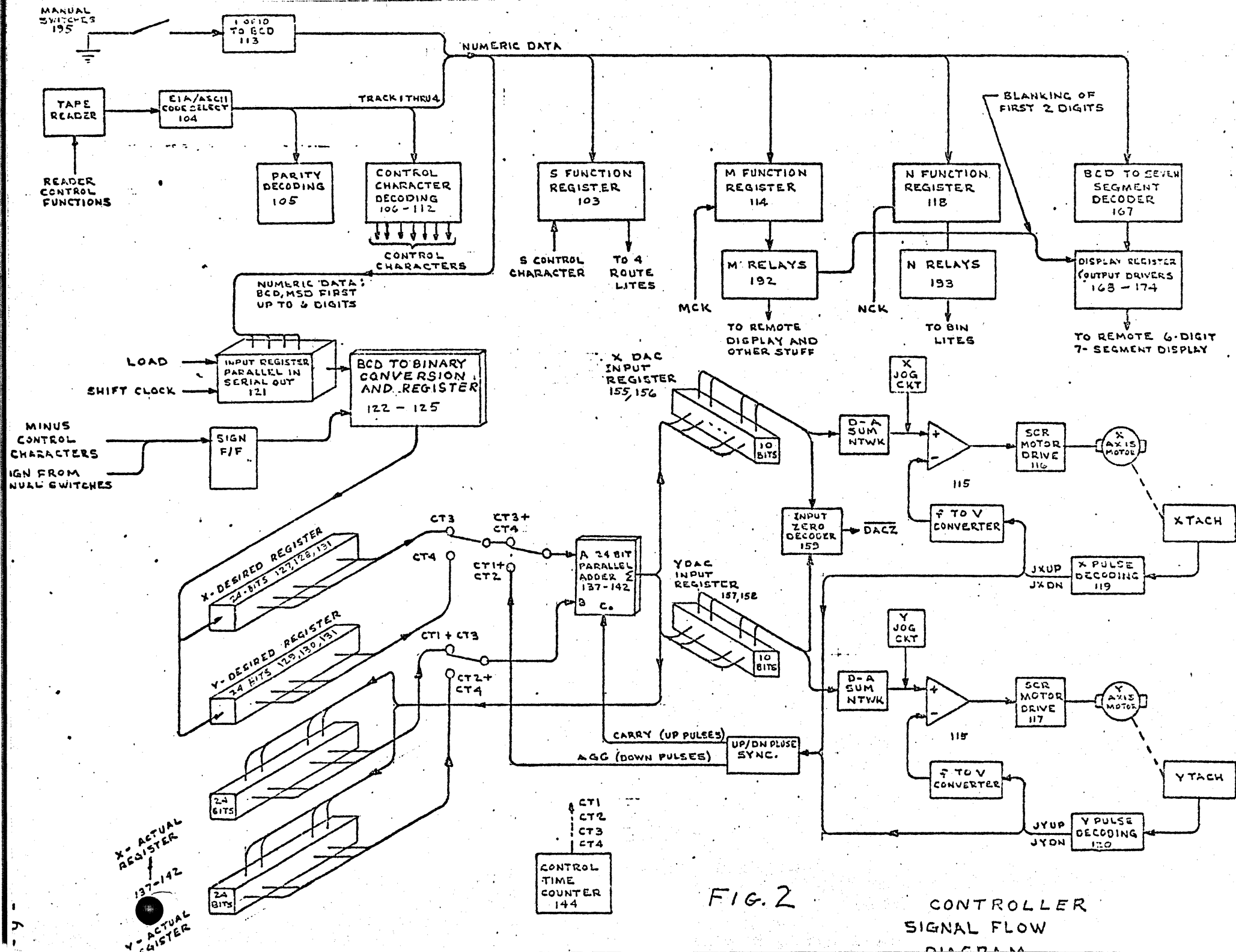


Fig. 3

MOTOR CONTROL WAVEFORMS





1800-0101	(IN)	1800-0139	ACTUAL REGISTER AND ADDER BITS 13-16	00-0177	SYSTEM CLOCK GENERATION
0102	TR.	0140	ACTUAL REGISTER AND ADDER BITS 9-12	0178	MANUAL SWITCH INPUT NO. 1
0103	S FUNCTION REGISTER WIRE ROUTE DISPLAY	0141	ACTUAL REGISTER AND ADDER BITS 5-8	0179	MANUAL SWITCH INPUT NO. 2
0104	READER TRACK GATING AND ASCII-EIA CONV.	0142	ACTUAL REGISTER AND ADDER BITS 1-4	0180	MANUAL SWITCH INPUT NO. 3
0105	READER TRACK PARITY DECODER	0143	TACH PULSE SYNCHRONIZATION	0181	INDEX, AXIS SAFE, SSI AND SSR F/F
0106	TRANSLATOR NO. 1-3 TO 1 OUT OF 8	0144	CONTROL TIME COUNTER	0182	RESET PULSE GENERATION
0107	TRANSLATOR NO. 2-3 TO 1 OUT OF 8	0145	ACTUAL REGISTER CLOCKING	0183	DIGIT TIME COUNTER
0108	CONTROL CHARACTER DECODER NO. 1	0146	ACTUAL REGISTER CLEAR	0184	BIT TIME COUNTER
0109	CONTROL CHARACTER DECODER NO. 2	0147	JOG SWITCH GATING	0185	M AND N FUNCTION AND READER STROBE F/F
0110	CONTROL CHARACTER DECODER NO. 3	0148	JOG OR MOVE SYNC. AND MOTOR INHIBIT	0186	DIALS AND TAPE DATA TIME F/F
0111	TAPE READER DATA TRACK VERIFICATION	0149	START MOVE OR PARITY FAILURE	0187	DIALS INTERROGATION GATING
0112	ALPHA AND NUMERIC CHARACTER DECODER	0150	INDEX, REWIND AND STOP INDICATOR DRIVERS	0188	RETURN TO REF. AND STOP F/F SWITCH SINGLE PULSE
0113	TRANSLATOR NO. 3-9 TO 1 OUT OF 4	0151	COARSE RANGE DECODER	0189	TEST AND XY STOPPED F/F
0114	M FUNCTION REGISTER	0152	FINE RANGE DECODER	0190	SHIFT F/F AND LOAD
0115	MOTOR CONTROL (2 SHEETS)	0153	DAC INPUT DIRECT SET-RESET ENABLE	0191	READER CONTROL F/F
0116-2	X-AXIS MTR. DR.	0154	DAC INPUT CLOCKING	0192	PROCESSOR M RELAYS
0117-2	Y-AXIS MTR. DR.	0155	DAC INPUT REGISTER X SIGN AND MSB	0193	PROCESSOR M RELAYS
0118	M FUNCTION REGISTER	0156	DAC INPUT REGISTER X LSB	0194	POWER CONTROL
0119	TACH PULSE DECODING X-AXIS	0157	DAC INPUT REGISTER Y SIGN AND MSB	0195	CONTROL PANEL (3 SHEETS)
0120	TACH PULSE DECODING Y-AXIS	0158	DAC INPUT REGISTER Y LSB	0196	(NOT USED)
0121	4-BIT DESIRED THROT REGISTER	0159	DAC INPUT ZERO DECODER	0197	(NOT USED)
0122	CONVERSION REGISTER BITS 1-4	0160	DAC REFERENCE VOLTAGES	0198	(NOT USED)
0123	CONVERSION REGISTER BITS 5-14	0161	DAC NEGATIVE REFERENCE SUPPLY	0199	MOTOR INHIBIT DELAY
0124	CONVERSION REGISTER BITS 15-24	0162	DAC X AXIS AMPLIFIER		
0125	BCD TO BINARY AND DESIRED ARITHMETIC	0163	DAC Y AXIS AMPLIFIER		
0126	DESIRED REGISTER SIGN	0164	DAC X AXIS JOG CIRCUIT		
0127	X-DESIRED REGISTER BITS 15-24	0165	DAC Y AXIS JOG CIRCUIT		
0128	X-DESIRED REGISTER BITS 5-14	0166	(NOT USED)		
0129	Y-DESIRED REGISTER BITS 15-24	0167	BCD TO 7 SEGMENT DECODER		
0130	Y-DESIRED REGISTER BITS 5-14	0168	DISPLAY REGISTER SEGMENT 3		
0131	X AND Y DESIRED REGISTER BITS 1-4	0169	DISPLAY REGISTER SEGMENT 4		
0132	DESIRED REGISTER OUTPUT GATING BITS 1-6	0170	DISPLAY REGISTER SEGMENT 5		
0133	DESIRED REGISTER OUTPUT GATING BITS 7-12	0171	DISPLAY REGISTER SEGMENT 6		
0134	DESIRED REGISTER OUTPUT GATING BITS 13-18	0172	DISPLAY REGISTER SEGMENT 7		
0135	DESIRED REGISTER OUTPUT GATING BITS 19-24	0173	DISPLAY REGISTER SEGMENT 8		
0136	X AND Y DESIRED REGISTER CLOCKING	0174	DISPLAY REGISTER SEGMENT 9		
0137	ACTUAL REGISTER AND ADDER BITS 21-24	0175	DAC INPUT DIRECT SET-RESET GATING		
0138	ACTUAL REGISTER AND ADDER BITS 17-20	0176	TIME DELAY COUNTER		

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR USED AS TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED HOLE .001 ANGLES 1:8 1:20 1:30 CONCENTRICITY AND OUT OF ROUND T.R. .04		BY <b>LYBARRA</b> DATE		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1802 McIver, Santa Ana, California
REMOVE SQUARE AND BREAK ALL SHARP EDGES		APPROVED		TITLE
FINISH		MATERIAL		SCALE
NEXT ASSY		USED ON		1800-0100-

REVISIONS

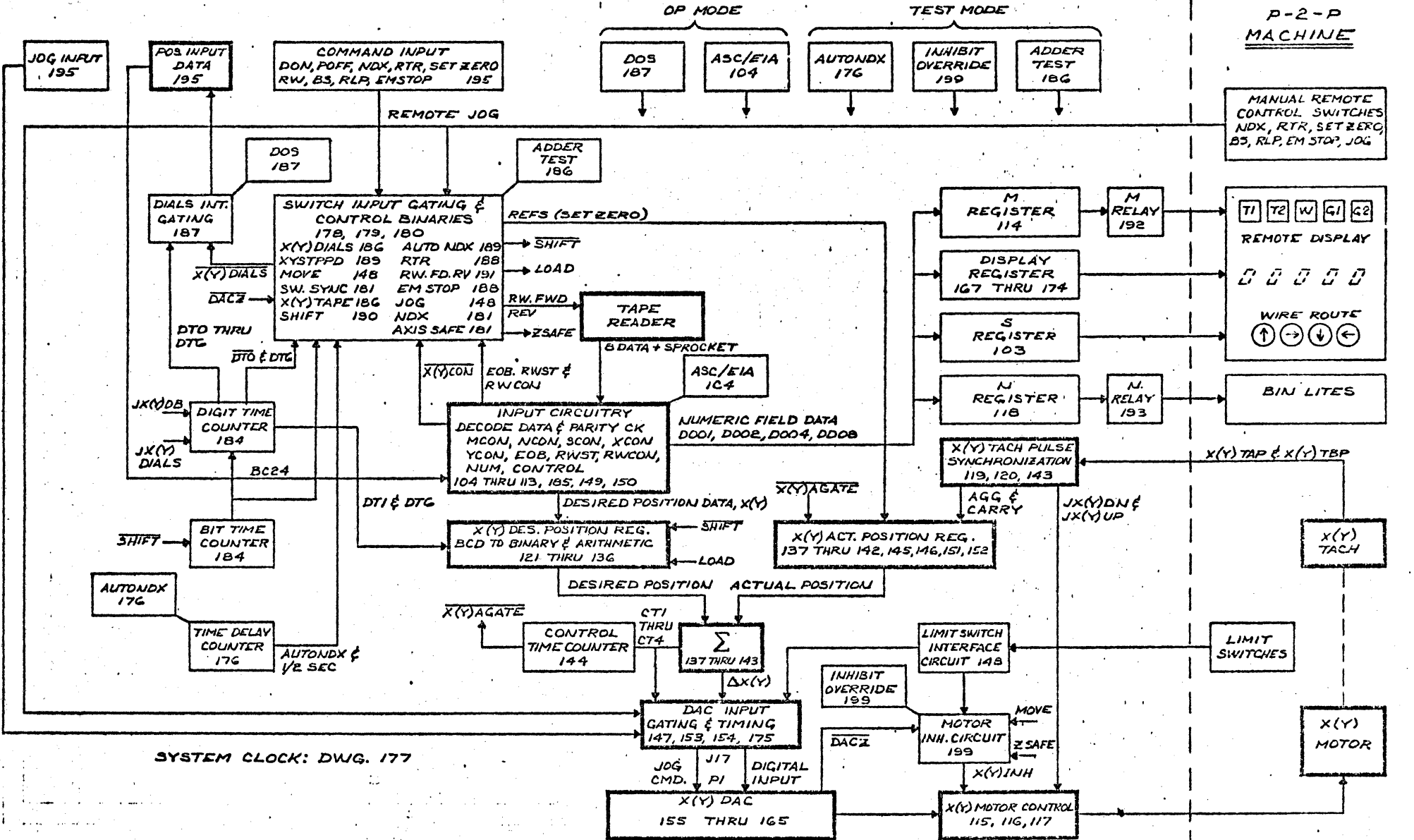
SYMBOL	DESCRIPTION	REV. BY	DATE & APPROVAL
E	REDRAWN		DPF 3-30-71

**1800 CONTROLLER**

MANUAL CONTROL PANEL

PROCESSOR TOGGLE SWITCHES

P-2-P MACHINE



SYSTEM CLOCK: DWG. 177

REF.	DESCRIPTION	REV. NO.	DATE	PART NUMBER
<p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.</p>				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY ALLISON SMITH	DATE 7-2-72	<p>SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavinton Corporation 1502 TACOMA, SANTA ANA, CALIFORNIA</p>
	CONCENTRICITY AND OUT OF ROUND T.I.A. 528	APPROVED	DATE 1-19-71	
	4401 VERTICAL TABLE			TITLE 1800 CONTROLLER MACHINE FUNCTION DIAGRAM
	1800 CONTROLLER			

NOTES: UNLESS OTHERWISE SPECIFIED.

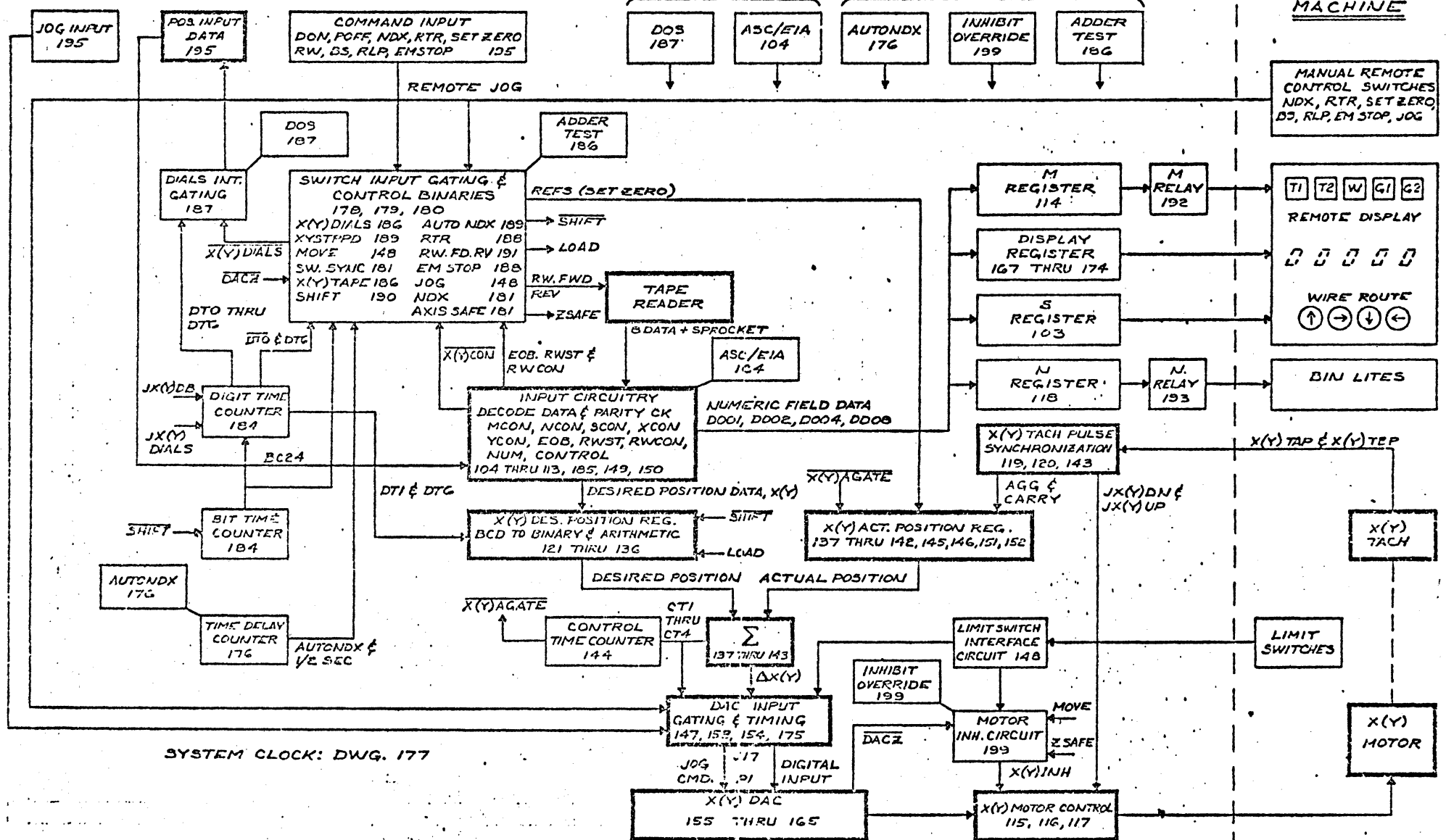
SYMBOL	DESCRIPTION	DATE & APPROVAL
C	KEDRAWN	OFF 3-30-71

### 1800 CONTROLLER

MANUAL CONTROL PANEL

PROCESSOR TOGGLE SWITCHES  
OP MODE TEST MODE

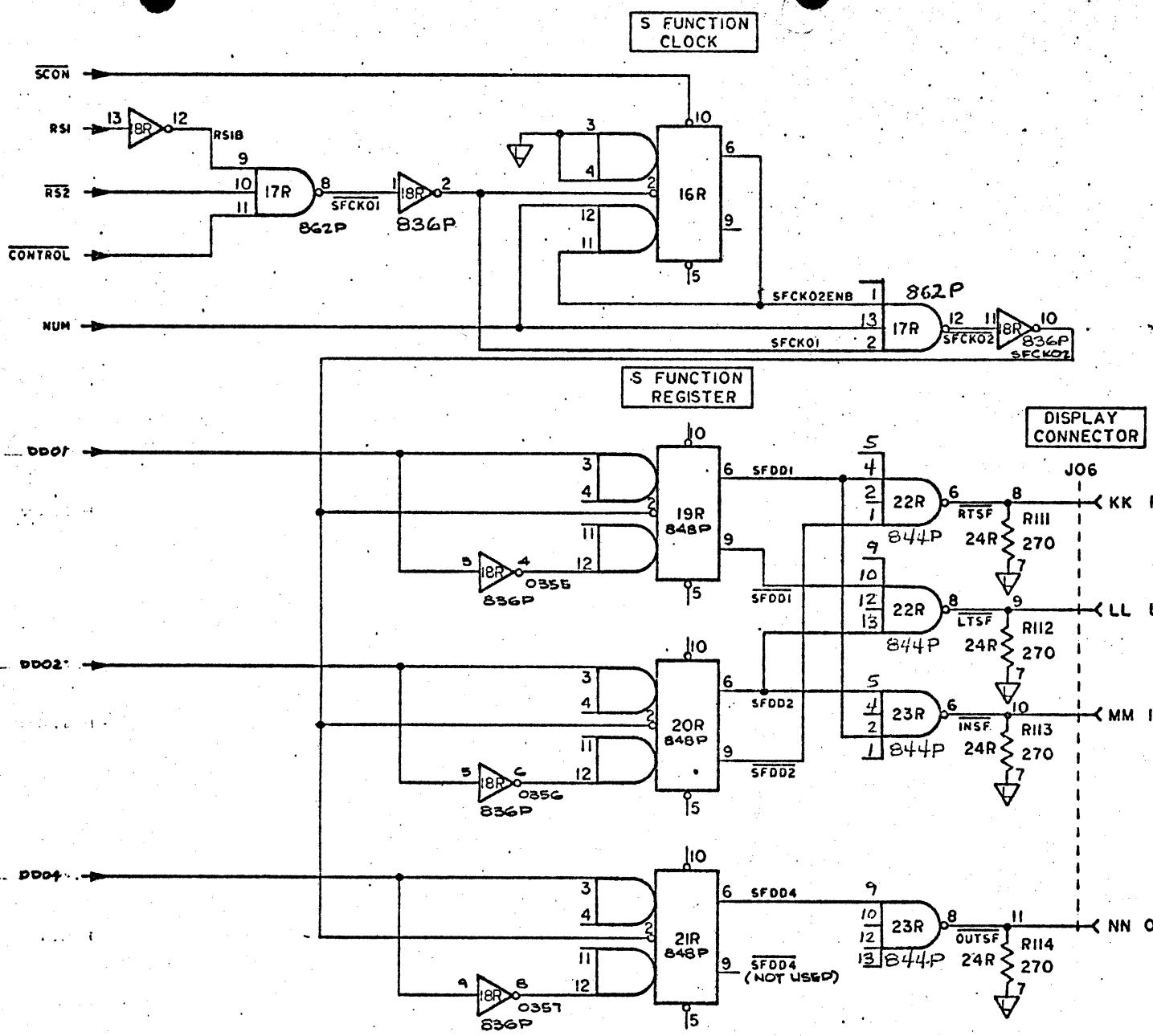
P-2-P MACHINE



SYSTEM CLOCK: DWG. 177

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
<p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.</p>				
<p>TOLERANCES UNLESS OTHERWISE SPECIFIED ARE AS SHOWN</p>		<p>ALLISON SMITH CHECKED DATE</p>		
<p>CONCENTRICITY AND DUAL OF HOLE DIA. 11.0</p>		<p>APPROVED DATE</p>		
<p>REMOVE BURRS AND SHARP EDGES</p>		<p>MATERIAL</p>		
<p>FINISH</p>		<p>SYNERGISTIC PRODUCTS, INC. A Subsidiary of Chrysler Corporation 1802 Macomber, Southfield, Mich. 48033</p>		
<p>11/01 VERTICAL TABLE</p>		<p>TITLE 1800 CONTROLLER MACHINE FUNCTION DIAGRAM</p>		
<p>1800 CONTROL LEA</p>		<p>SCALE</p>		
<p>HERE ANY USED ON</p>		<p>DATE</p>		

SYMBOL	REV PER ECO	DATE
A	REV PER ECO 412	10/22/72
B	REV PER ECO 867	10/25/72



SIGNAL	SOURCE	ADDITIONAL LOADS
CONTROL	112	185
DDO1	113	114, 118, 121, 167
DDO2	113	114, 118, 121, 167
DDO4	113	114, 118, 121, 167
NUM	112	190
RS1	185	108, 149, 190
RS2	185	108, 149
SCON	110	112

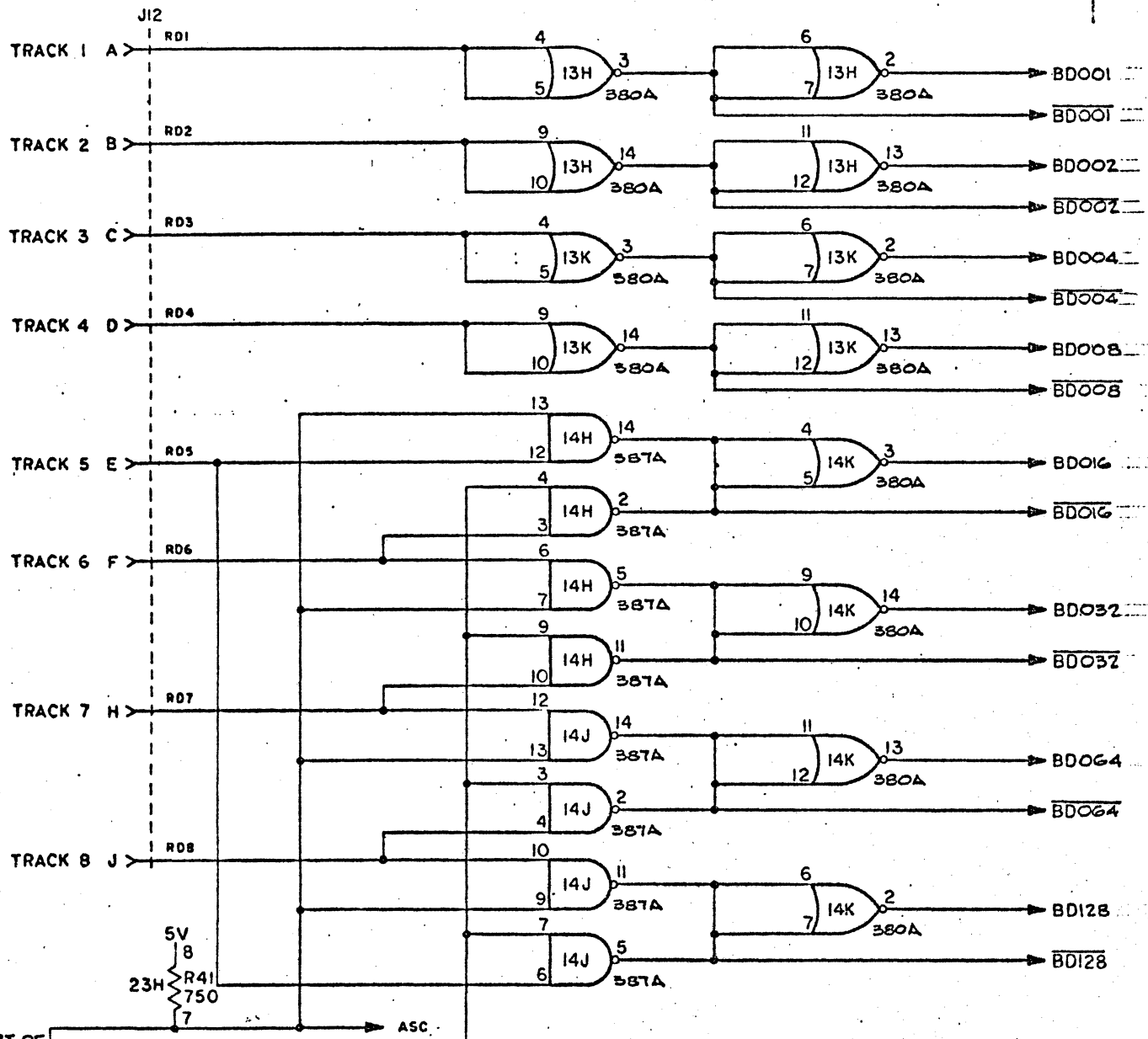
NOTE: UNLESS OTHERWISE SPECIFIED  
 1. RESISTORS ARE RATED IN OHMS, ±5% AND ARE 1/4 WATT.  
 2. I.C.'S ARE MOTOROLA DTL MC SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .25" .0005" .001" .002" .005" .010" .015" .030" .045" .060" .075" .100" .150" .200" .250" .300" .375" .450" .500" .625" .750" .875" 1.000" 1.250" 1.500" 1.750" 2.000" 2.500" 3.000" 3.500" 4.000" 4.500" 5.000" 5.500" 6.000" 6.500" 7.000" 7.500" 8.000" 8.500" 9.000" 9.500" 10.000"		R. MONTAGUE		10/25/72
CHECKED		DATE		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevcon Corporation 1902 McGraw, Santa Ana, California
APPROVED		DATE		TITLE: LOGIC DIAGRAM - S FUNCTION REGISTER WIRE ROUTE DISPLAY
MATERIAL		SCALE		DWG # 1800-0103
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
NEXT ASSY	USED ON			



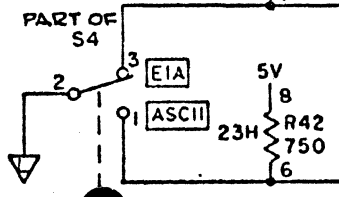
READER CONNECTOR

STAGE	REV PER ECO 412	DATE & APPROVAL
A		



SIGNAL TRACEABILITY	
SIGNAL	ADDITIONAL LOADS
BDOO1	105, 106, 113
BDOO2	105, 106
BDOO4	105, 106, 113
BDOO8	105, 106
BDO16	105, 106, 113
BDO32	105, 106
BD128	105, 107, 113
ASC	105, 107
BDO16	105, 107
BDO32	105, 107
BDO64	105, 107
BDO64	105, 107
BD128	105, 108, 111
BD128	105, 108, 111, 112
BD128	105, 111
ASC	108, 112
ASC	108, 112

NOTE: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTORS ARE RATED IN OHMS  
 #5% AND ARE 1/4 WATT  
 2. I.C.'S ARE SIGNETICS UTILOSIC 11,  
 SP SERIES OR EQUIV.

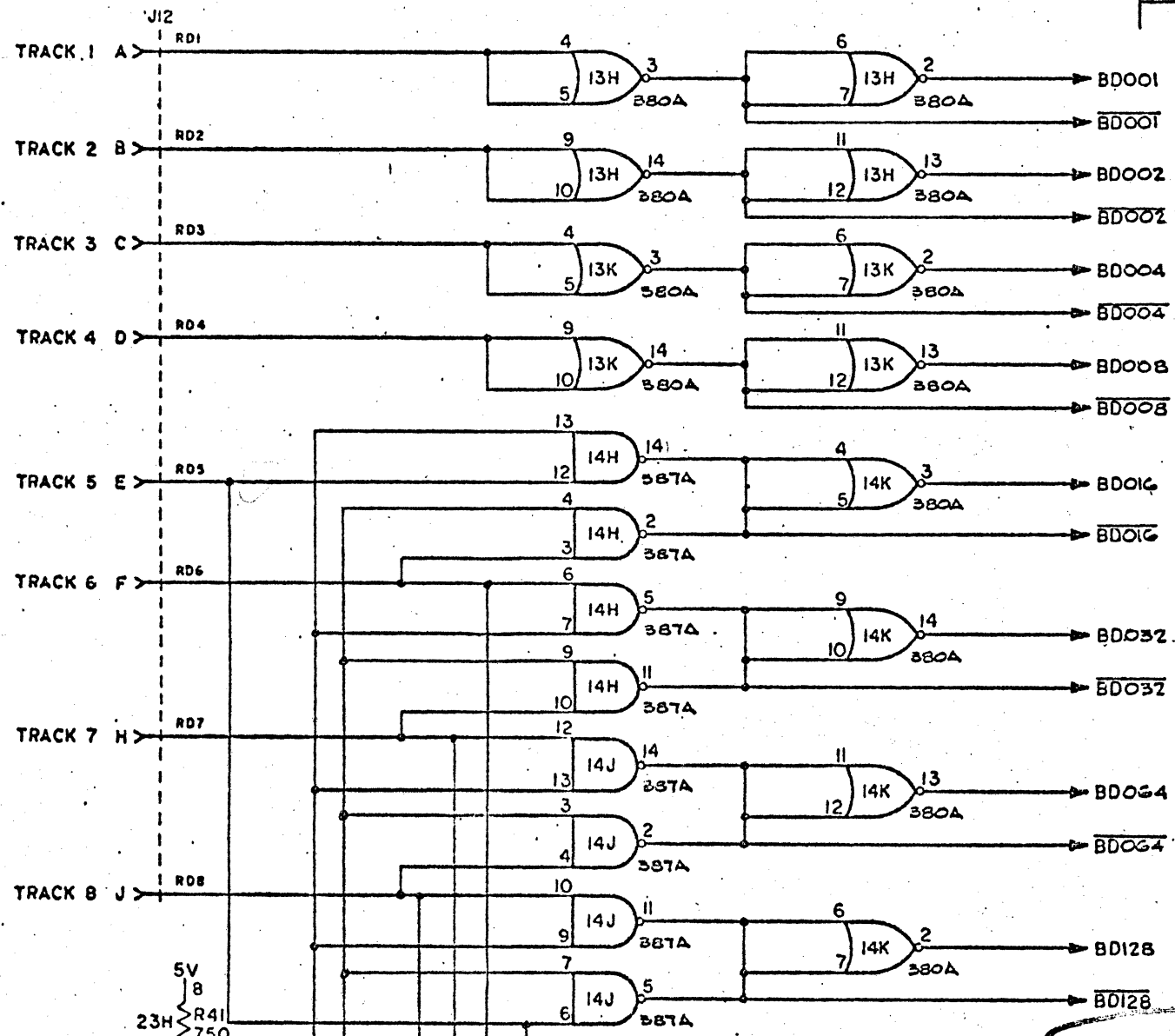


REMAINDER ON 149

REF.	DESCRIPTION	QTY. ASSY.	QTY. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSES WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED DIM. ANGLES 2.01 2.008 2.012 CONCENTRICITY AND OUT OF ROUND Y.N. .005	BY <i>[Signature]</i> CHECKED APPROVED	DATE 1/2 1/2 1/2 DATA	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Civicon Corporation 1007 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL	TITLE LOGIC DIAGRAM READER GATING AND ASCII- SCALE		
FINISH				
NEXT ASSY	USED ON			

READER CONNECTOR

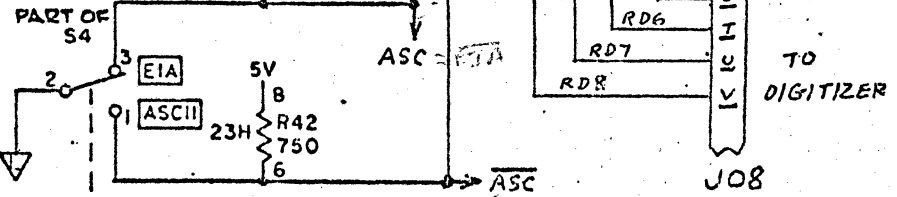
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL



SIGNAL TRACEABILITY	
SIGNAL	ADDITIONAL LOADS
BDO01	105, 106, 113
BDO02	105, 106
BDO03	105, 106, 113
BDO04	105, 106
BDO05	105, 106, 113
BDO06	105, 106
BDO07	105, 107, 113
BDO08	105, 107
BDO09	105, 107
BDO10	105, 107
BDO11	105, 107
BDO12	105, 108, 111
BDO13	105, 108, 111, 112
BDO14	105, 111
BDO15	105, 111
BDO16	108, 112
BDO17	108, 112

NOTE: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTORS ARE RATED IN OHMS ±5% AND ARE 1/4 WATT  
 2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

**DRILLING MACHINE**



54 REMAINDER ON 149

REF.	DESCRIPTION	QTY. ASBY.	QTY. MACH.	PART NUMBER

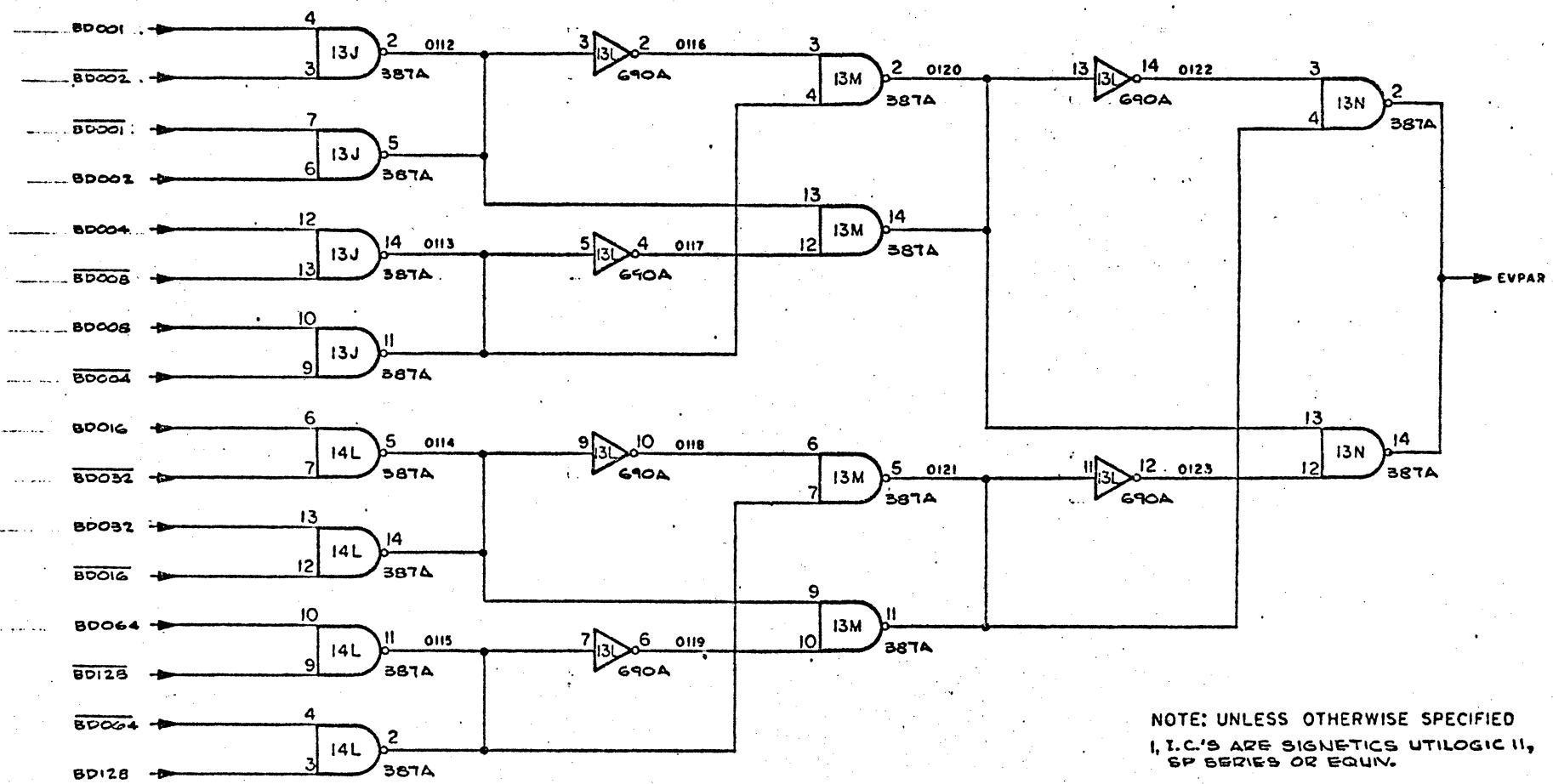
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER PERSONS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.

TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Rohan</i>	DATE
OR MAX ANGLE		
1.81 1.88 1.93		
CONCENTRICITY AND OUT OF ROUND 1.1. .005		
REMOVE BURRS AND BREAK ALL SHARP EDGES		
FINISH		

SYNERGISTIC PRODUCTS, INC.  
 A Subsidiary of Centron Corporation  
 1902 McLean, Santa Ana, California

TITLE LOGIC DIAGRAM  
 READER TRACK GATING AND  
 ASCII-EIA CONVERSION

REVISION			
SYMBOL	DESCRIPTION	DATE	BY
A	REV PER ECO 412	10/27/72	W. J. ...



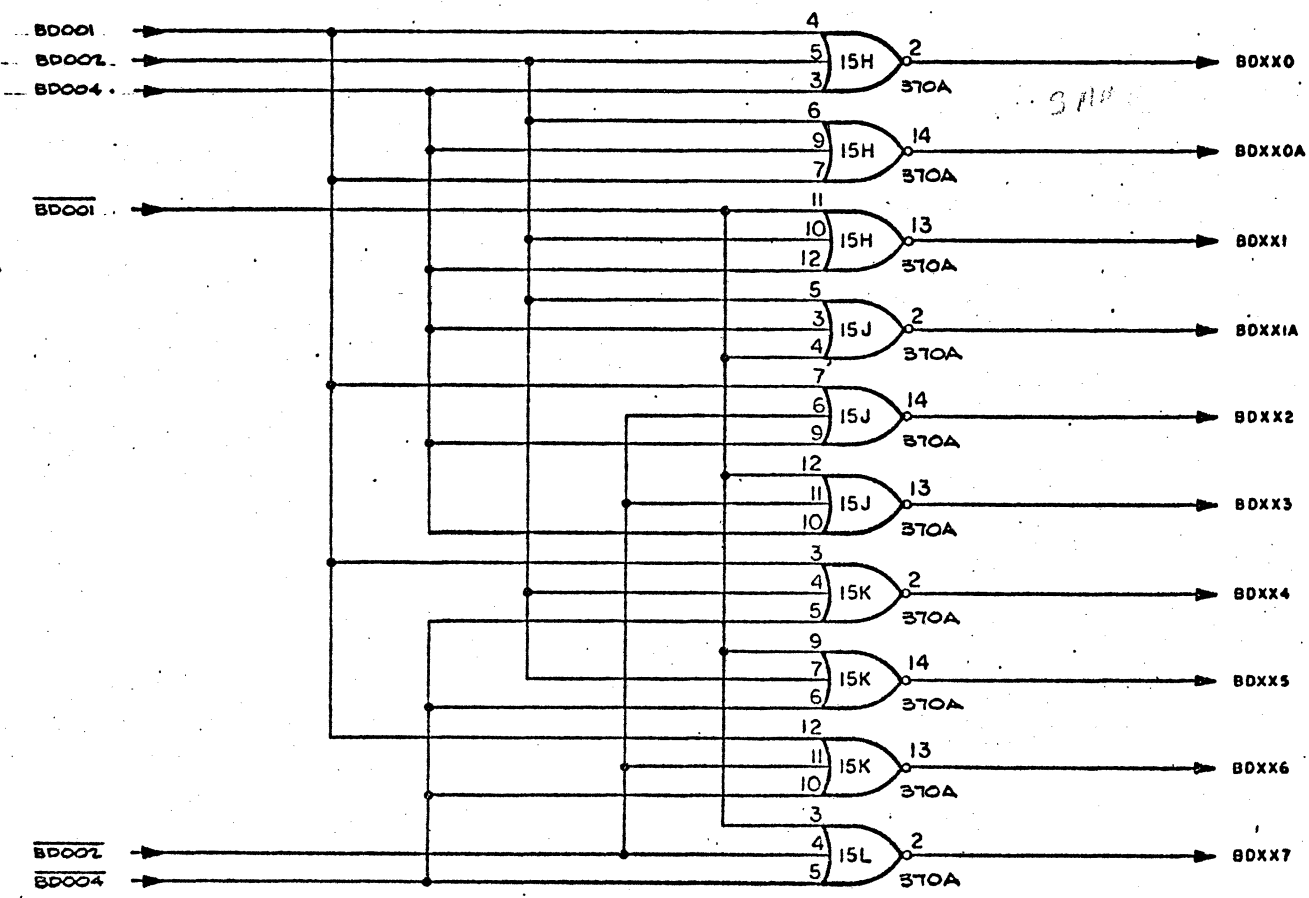
NOTE: UNLESS OTHERWISE SPECIFIED  
I. C.'S ARE SIGNETICS UTILIGIC 11,  
SP SERIES OR EQUIV.

SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
B0001	104	106, 113
B0001	104	106
B0002	104	106, 113
B0002	104	106
B0004	104	106, 113
B0004	104	106
B0008	104	107, 113
B0008	104	107

B0016	104	107
B0016	104	107
B0032	104	107
B0032	104	107
B0064	104	108, 111
B0064	104	108, 111, 112
B0128	104	111
B0128	104	111
EVPAR	---	149

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING IN ANY OTHER MANNER WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLES 2.01 2.001 2.020		DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 Mc Graw, Santa Ana, California	
CONCENTRICITY AND OUT OF ROUND Y.R. .005		DATE	TITLE LOGIC DIAGRAM - READER TRACK PARITY DC COVER	
REMOVE BURRS AND BREAK ALL SHARP EDGES		DATE	SCALE 1/8" = 1" UWO # 1800-0105	
FINISH		DATE		
NEXT ASSY	USED ON			

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	

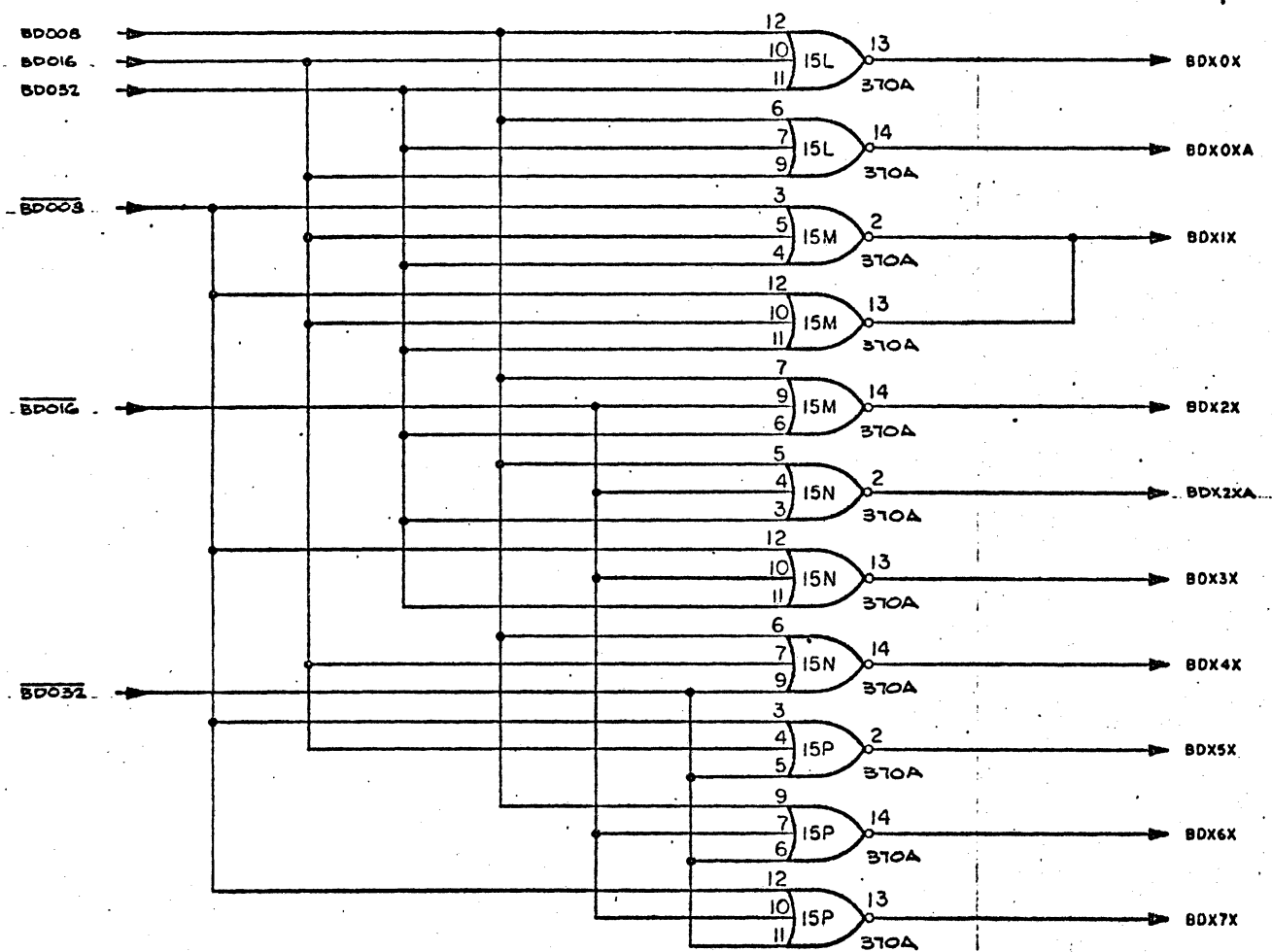


SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
BD001	104	105, 113
BD001	104	105
BD002	104	105, 113
BD004	104	105
BD008	104	105, 113
BD008	104	105
BDXX0	—	108, 109, 0111
BDXX0A	—	112
BDXX1	—	108, 109, 112
BDXX1A	—	110
BDXX2	—	109, 110
BDXX3	—	108, 110
BDXX4	—	109, 110
BDXX5	—	108, 109
BDXX6	—	109, 110
BDXX7	—	109, 110, 111

- NOTES: UNLESS OTHERWISE SPECIFIED.
1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. BD001, BD002, BD004 REPRESENT TAPE READER TRACKS 1, 2, AND 3 RESPECTIVELY

REF.	DESCRIPTION	QTY. REQ. ASSY.	QTY. REQ. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE 3.33 2.008 1.0"25" CONCENTRICITY AND OUT OF ROUND T.R..005	BY <i>Rehn</i>	DATE 17-06-77	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1802 M. C. Ave., Santa Ana, Cal. 92704
	REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	
	FINISH	APPROVED	DATE	
NEXT ASSY	USED ON	MATERIAL		TITLE LOGIC DIAGRAM - TRANSLATOR NO. 1 3 TO 1 OUT OF 8
				SCALE 1" = 1500-0106

REVISIONS			DATE & APPROVAL
SYMBOL	DESCRIPTION		
A	REV PER ECO 412		

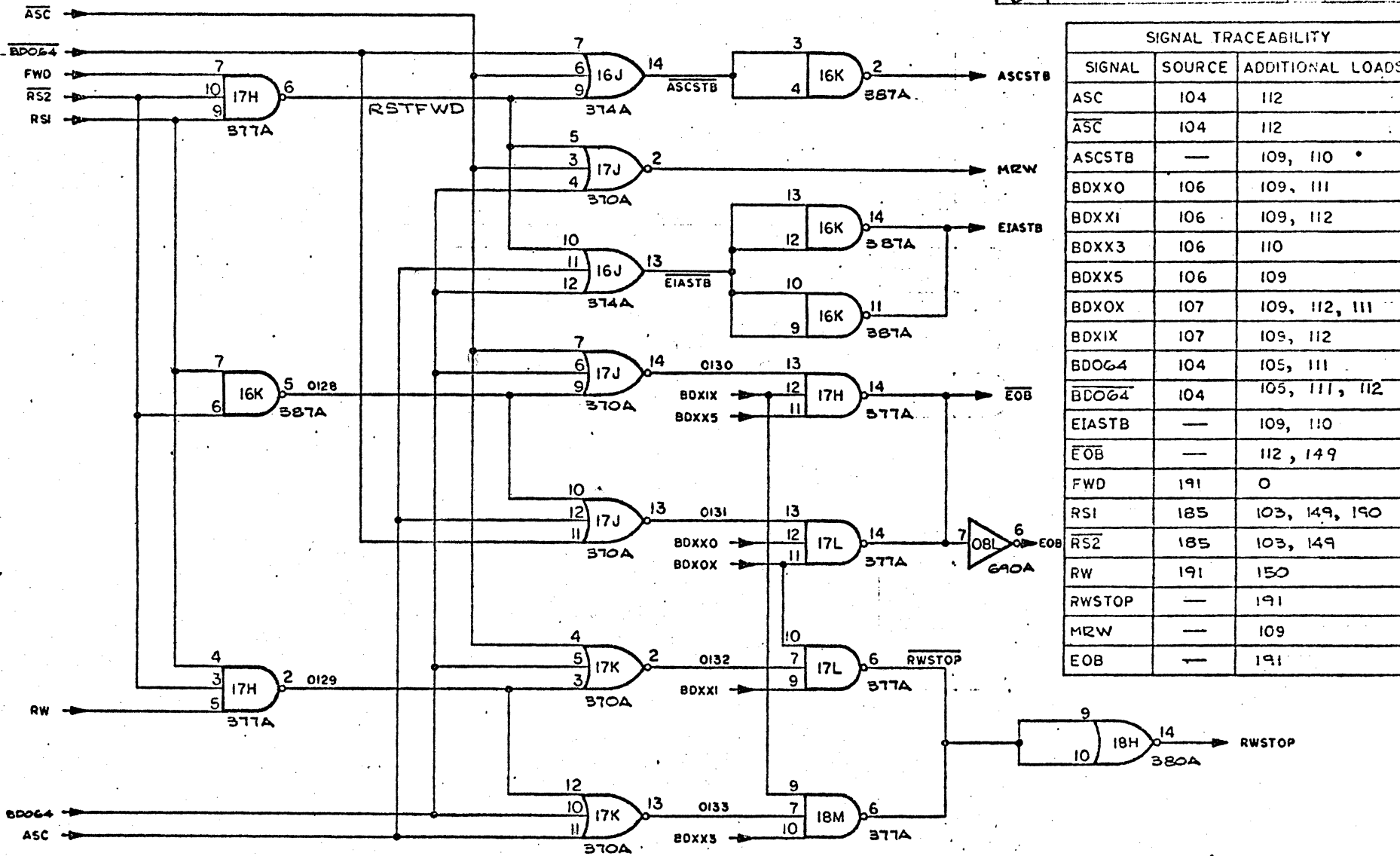


SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
BDO08	104	105, 113
BDO16	104	105
BDO32	104	105
BDO32	104	0105
BDX0X	—	108, 109, 111, 112
BDX0XA	—	110
BDXIX	—	108, 109, 112
BDX2X	—	109, 110
BDX2XA	—	110, 112
BDX3X	—	109, 110
BDX4X	—	109
BDX5X	—	109
BDX6X	—	110, 112
BDX7X	—	111, 112

- NOTES: UNLESS OTHERWISE SPECIFIED.
1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. BDO08 REPRESENTS TAPE READER TRACK 4
  3. BDO16 & BDO32 REPRESENT TAPE READER TRACKS 5 AND 6 RESPECTIVELY FOR ASCII CODE ONLY
  4. BDO16 & BDO32 REPRESENT TAPE READER TRACKS 6 AND 7 RESPECTIVELY FOR EIA ONLY

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXX ANGLES 1.01 1.001 3° 30' CONCENTRICITY AND OUT OF ROUND 0.005		BY <i>Kolm</i> CHECKED APPROVED MATERIAL FINISH	DATE 11/28/77 DATE DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation McGee, Santa Ana, California
NEXT ASSY		USED ON		TITLE LOGIC PROGRAM TRANSLATOR NO. 2 3 TO 1 OUT OF 8 SCALE 1:100-0107

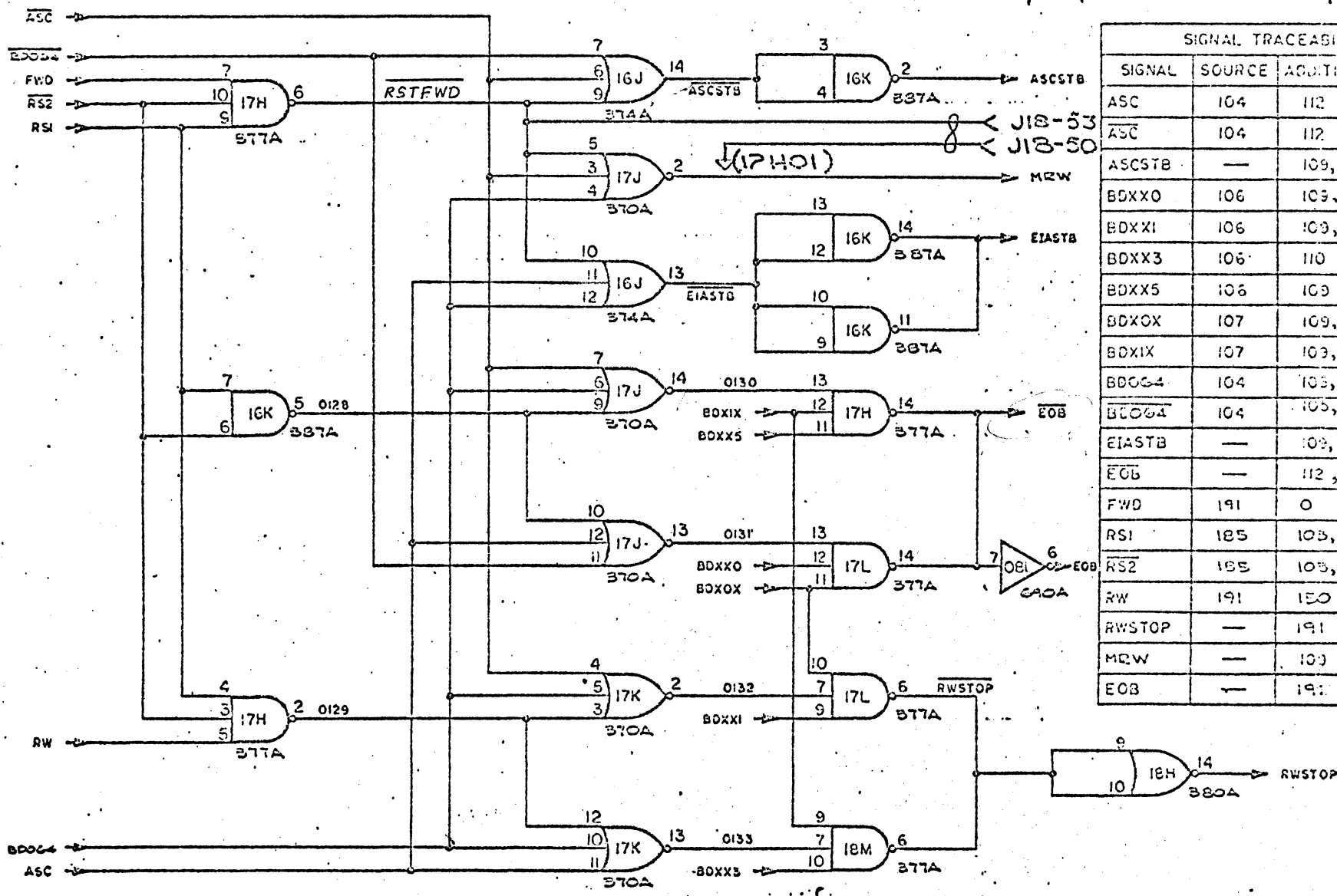
SYMBOL	DESCRIPTION	DATE
A	REV PER ECO 412	1/27/73
B	REV PER ECO 887	1/11/73



SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ASC	104	112
ASC	104	112
ASCSTB	—	109, 110
BDO64	106	109, 111
BDO64	106	109, 112
BDO64	106	110
BDO64	106	109
BDO64	107	109, 112, 111
BDO64	104	105, 111
BDO64	104	105, 111, 112
EIASTB	—	109, 110
EOB	—	112, 149
FWD	191	0
RSI	185	103, 149, 190
RS2	185	103, 149
RW	191	150
RWSTOP	—	191
MRW	—	109
EOB	—	191

NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS' UTILOGIC II,  
 SP SERIES OR EQUIV.

REP.	DESCRIPTION	REV. PER ASBY	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OF ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
THIS DRAWING UNLESS OTHERWISE SPECIFIED WAS MADE BY DATE AS SHOWN IN THE DRAWING 1/11/73 CONCENTRICITY AND OUT OF ROUND T.Y. 438	BY CHECKED APPROVED	DATE 1/11/73 DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calspan Corporation 1602 Muller, Santa Ana, California	
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH	MATERIAL	TITLE LOGIC DIAGRAM - CONTROL CHARACTER DECODER NO. 1		
NEXT ASSY	USED ON	SCALE	1800-0108 B	



SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ASC	104	112
ASC	104	112
ASCSTB	—	109, 110
BOXX0	106	109, 111
BDXX1	106	109, 112
BDXX3	106	110
BDXX5	106	109
BDXX0X	107	109, 112, 111
BDXXIX	107	109, 112
BDC64	104	109, 111
BDC64	104	109, 111, 112
EIASTB	—	109, 110
EOB	—	112, 149
FWD	191	0
RS1	185	109, 149, 190
RS2	185	109, 149
RW	191	150
RWSTOP	—	191
MRW	—	109
EOB	—	191

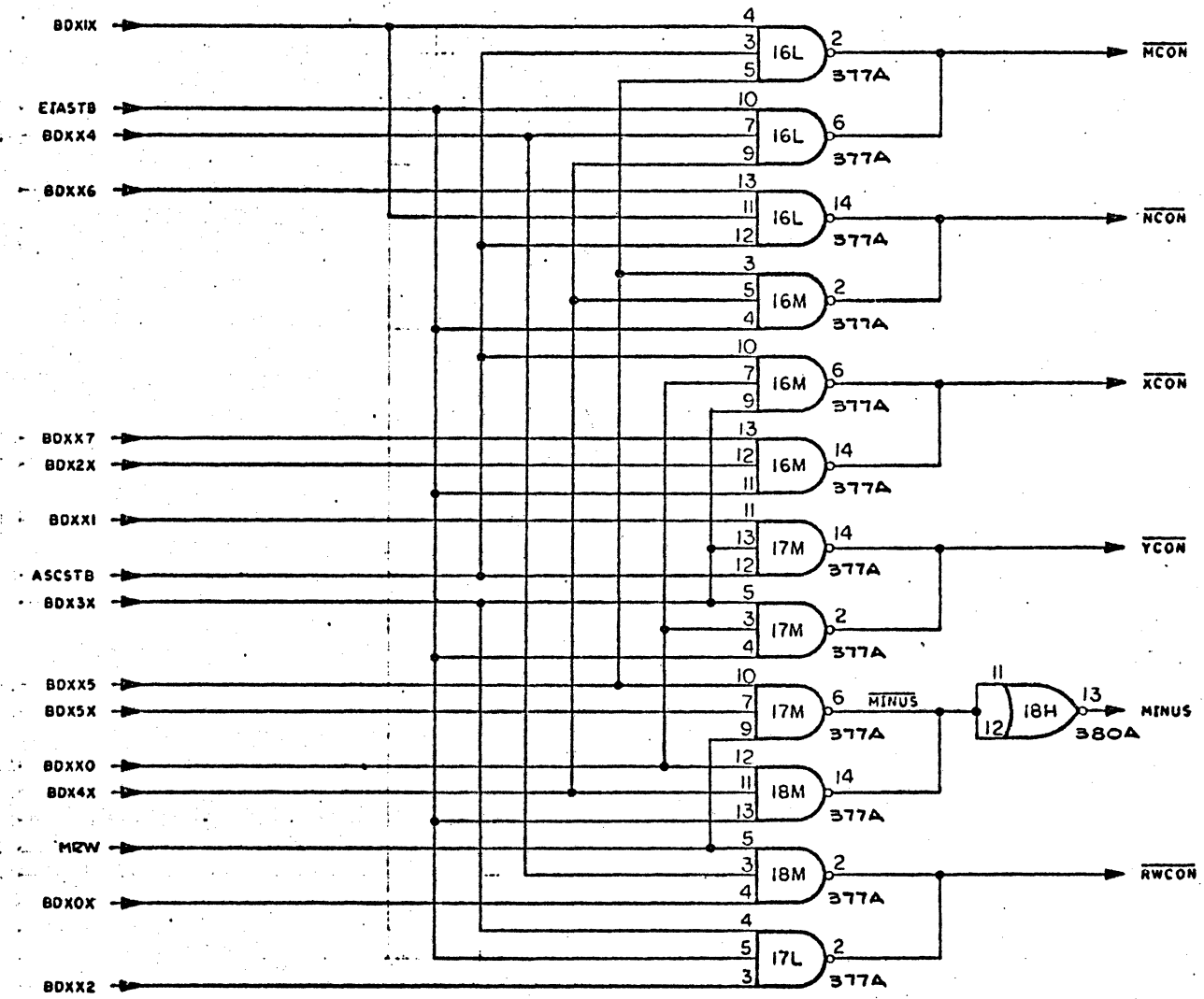
NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC 11,  
 EP SERIES OR EQUIV.

### DRILLING MACHINE

REP.	DESCRIPTION	REV.	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM THE COMPANY.				
DESIGNED BY	SYNTHETIC INDUSTRIES, INC.	DATE	A Division of General Electric	
APPROVED BY	WILSON, JOHN R. JR.	DATE	10/15/64	
MATERIAL	CONTROL CHARACTER	100-01082		
FINISH				

REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	12/22/55

SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ASCSTB	108	110
BDXX0	106	108, 111
BDXX1	106	108, 112
BDXX2	106	110
BDXX4	106	110
BDXX5	106	108
BDXX6	106	110
BDXX7	106	110, 111
BDXX7	106	110, 111
BDX0X	107	108, 111, 112
BDX1X	107	108, 112
BDX2X	107	110
BDX3X	107	110
BDX4X	107	0
BDX5X	107	0
EIASTB	108	110
MCON	—	112, 185
MINUS	—	126
MCON	—	112, 185
NCON	—	112, 174, 185
XCON	—	112, 186
YCON	—	112, 186
RWCON	—	191
MRW	108	0

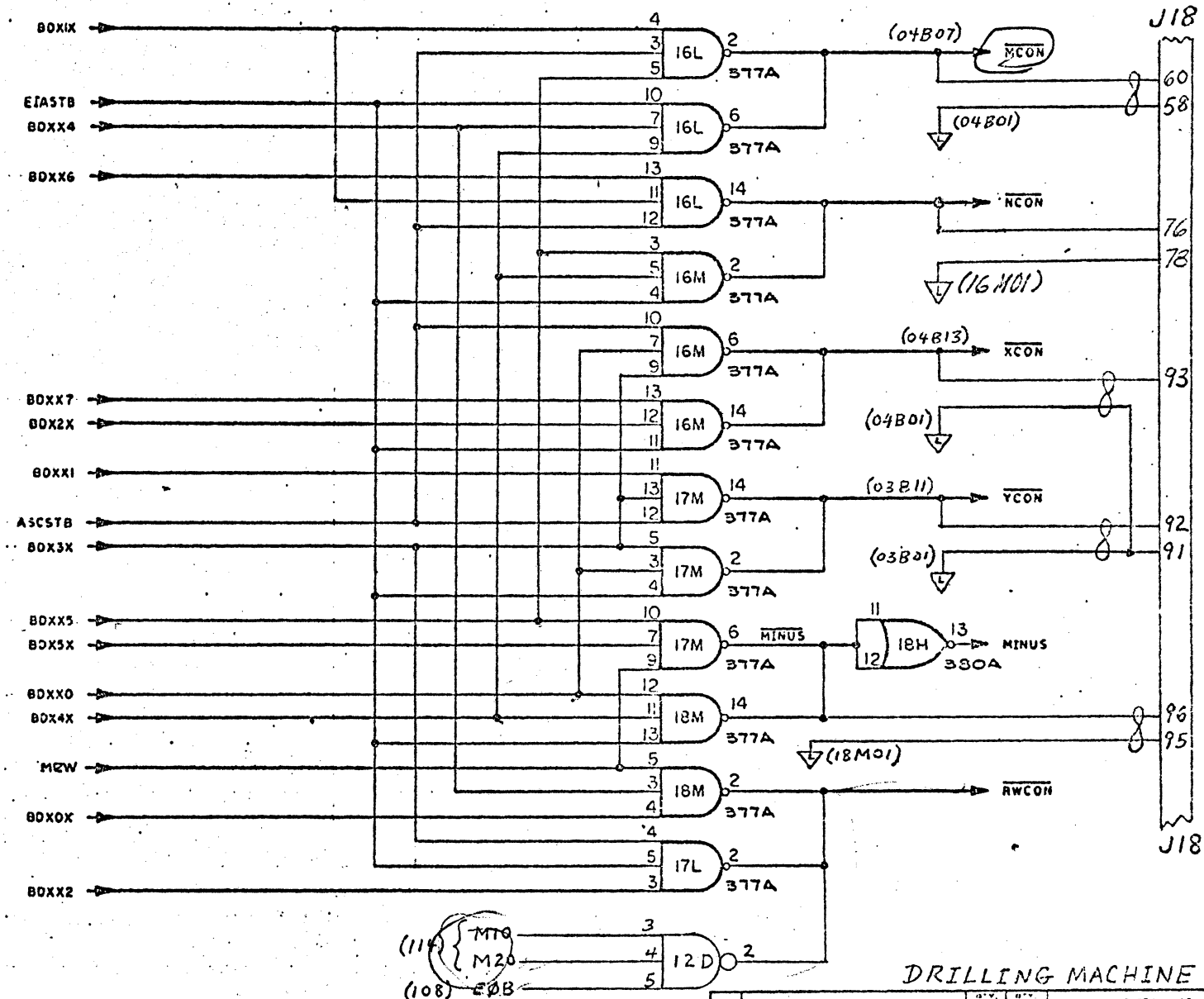


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

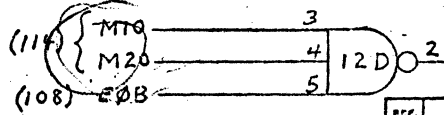
REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE	SYNERGISTIC PRODUCTS, INC.	
.XX .XXX ANGLE	CHECKED	DATE	A Subsidiary of Calspan Corporation	
1/16 1/32 1/8 1/4	APPROVED	DATE	1907 14th Ave, Santa Ana, California	
CONCENTRICITY AND OUT OF ROUND T.I.R., .005	MATERIAL	DATE	TITLE	
REMOVE BURRS AND BREAK ALL SHARP EDGES	FINISH	DATE	LOGIC DIAGRAM - CONTROL CHARACTER DECODER NO 2	
NEXT ASSY	USED ON	DATE	SCALE	
			1800-0109	



SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ASCSTB	108	110
BDXX0	106	108, 111
BDXX1	106	108, 112
BDXX2	105	110
BDXX4	106	110
BDXX5	106	108
BDXX6	106	110
BDXX7	106	110, 111
BDXX8	107	108, 111, 112
BDXX9	107	108, 112
BDXX0	107	110
BDXX1	107	0
BDXX2	107	0
EIASTB	108	110
MCON	—	112, 185
MINUS	—	126
MCON	—	112, 185
NCON	—	112, 174, 185
XCON	—	112, 186
YCON	—	112, 186
RWCON	—	191
M2W	103	0



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILIGIC 11,  
 5P SERIES OR EQUIV.  
 2. J18 IS STEP AND REPEAT  
 CONNECTOR.



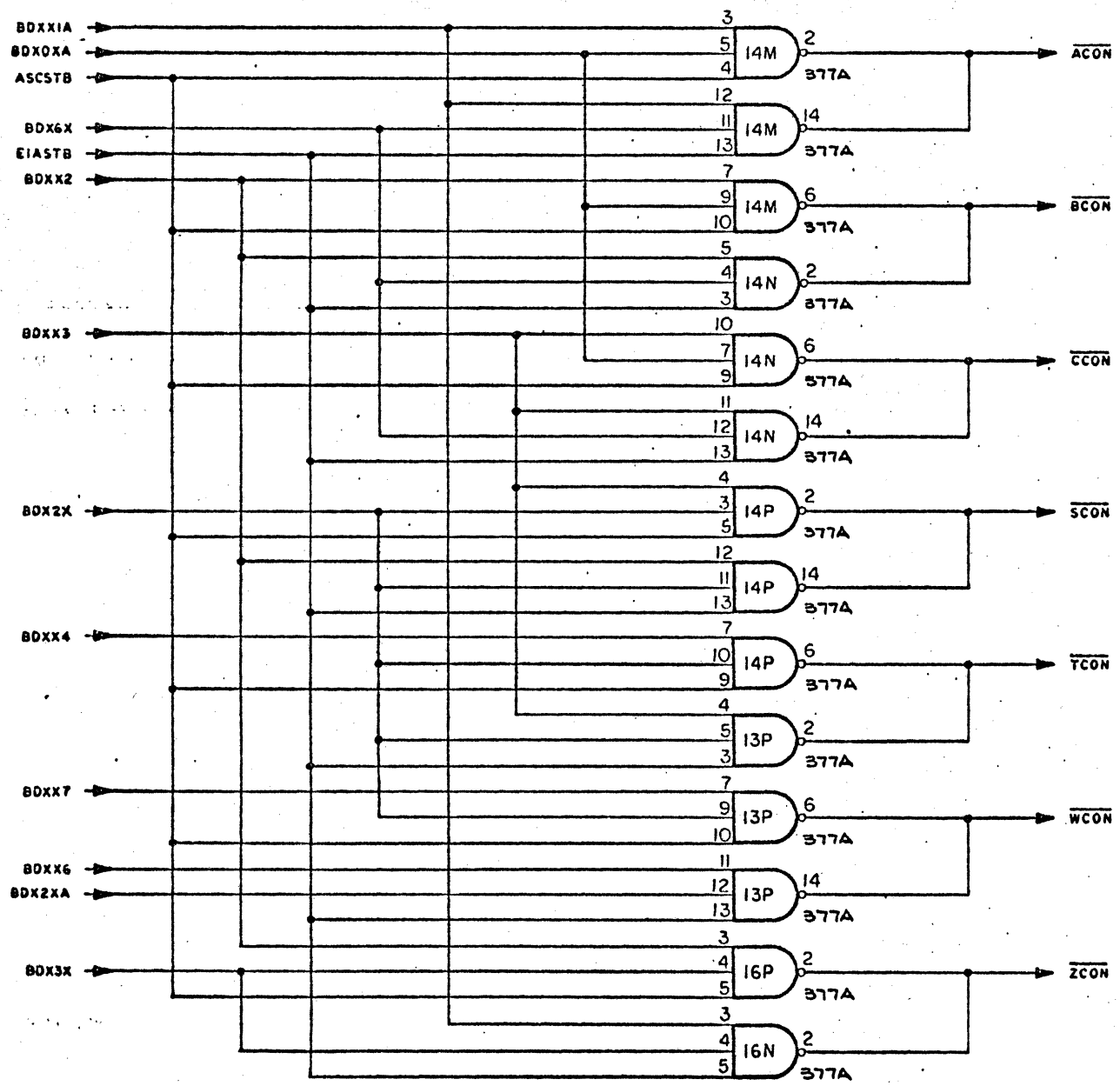
DRILLING MACHINE

REF.	DESCRIPTION	REV.	DATE	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXK ANGLE 1.5X 1.00X 1.00X CONCENTRICITY AND OUT-OF-ROUND .015, .015			
	REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH			
NEXT ASSY	USED ON			

SYNERGETIC PRODUCTS, INC.  
 A Subsidiary of Clevite Corporation  
 10225 W. 13th, Santa Ana, Calif. 92704

SYMBOL: LUNG DIAGRAM - CONTROL CHARACTER  
 SCALE: 1:1  
 1800-0109-2

SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	2/17/57 SCL

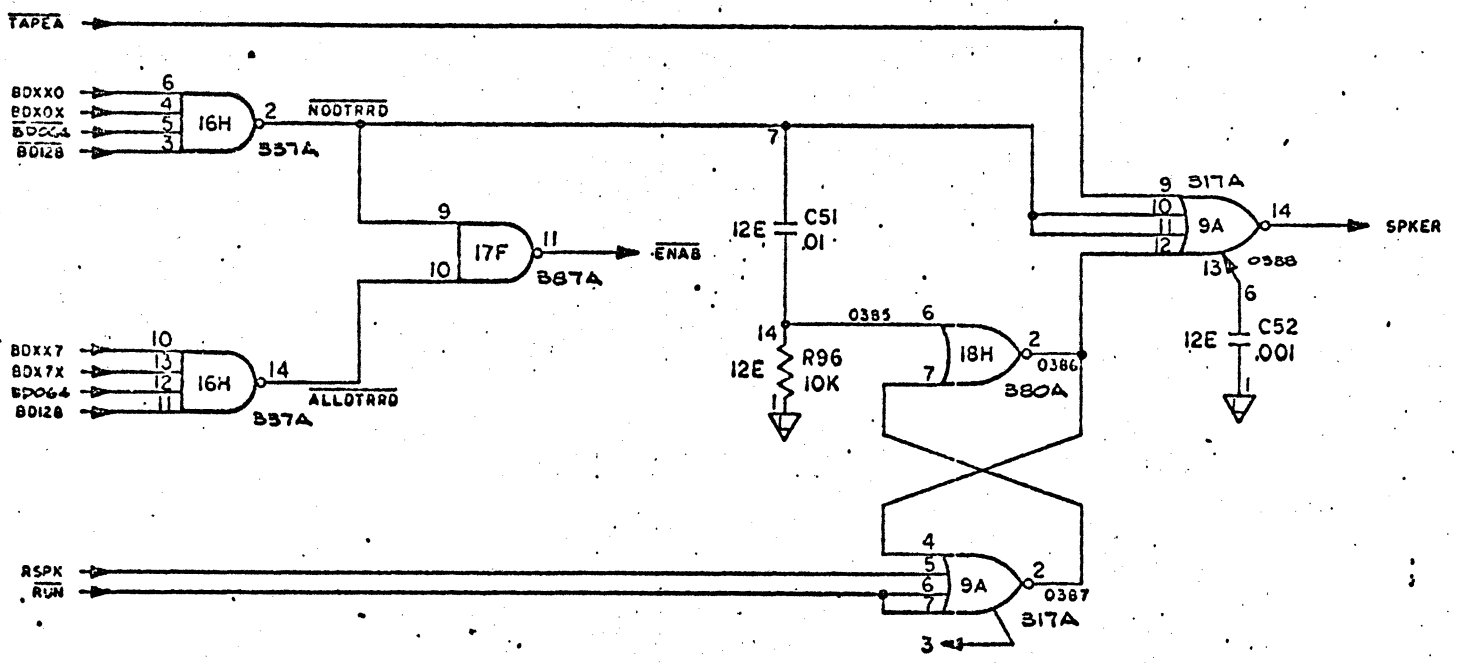


SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ACON	—	0
ASCSTB	108	109
BCON	—	0
BDXX1A	106	
BDX2X	106	109
BDXX3	106	108
BDXX4	106	109
BDXX6	106	109
BDXX7	106	109, 111
BDX0XA	107	0
BDX2X	107	109
BDX2XA	107	112
BDX3X	107	109
BDX6X	107	112
CCON	—	0
EIASTB	108	109
SCON	—	103, 112
TCON	—	112
WCON	—	0
ZCON	—	112

NOTE: UNLESS OTHERWISE SPECIFIED  
1. I.C.'S ARE SIGNETICS UTILOGIC II,  
SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER MACHINE	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 1.01 2.005 16-30"	BY <i>Rehn</i>	DATE 11-16-57	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cleviton Corporation 1902 McGow, Santa Ana, California	
CONCENTRICITY AND OUT OF ROUND T.I.R. .005	CHECKED	DATE	TITLE LOGIC DIAGRAM - CONTROL CHARACTER DECODER NO 3	
REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	SCALE 1/8" = 1" 100-010	
FINISH	MATERIAL			
NEXT ASSY	USED ON			

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	REV PER ECO 412		



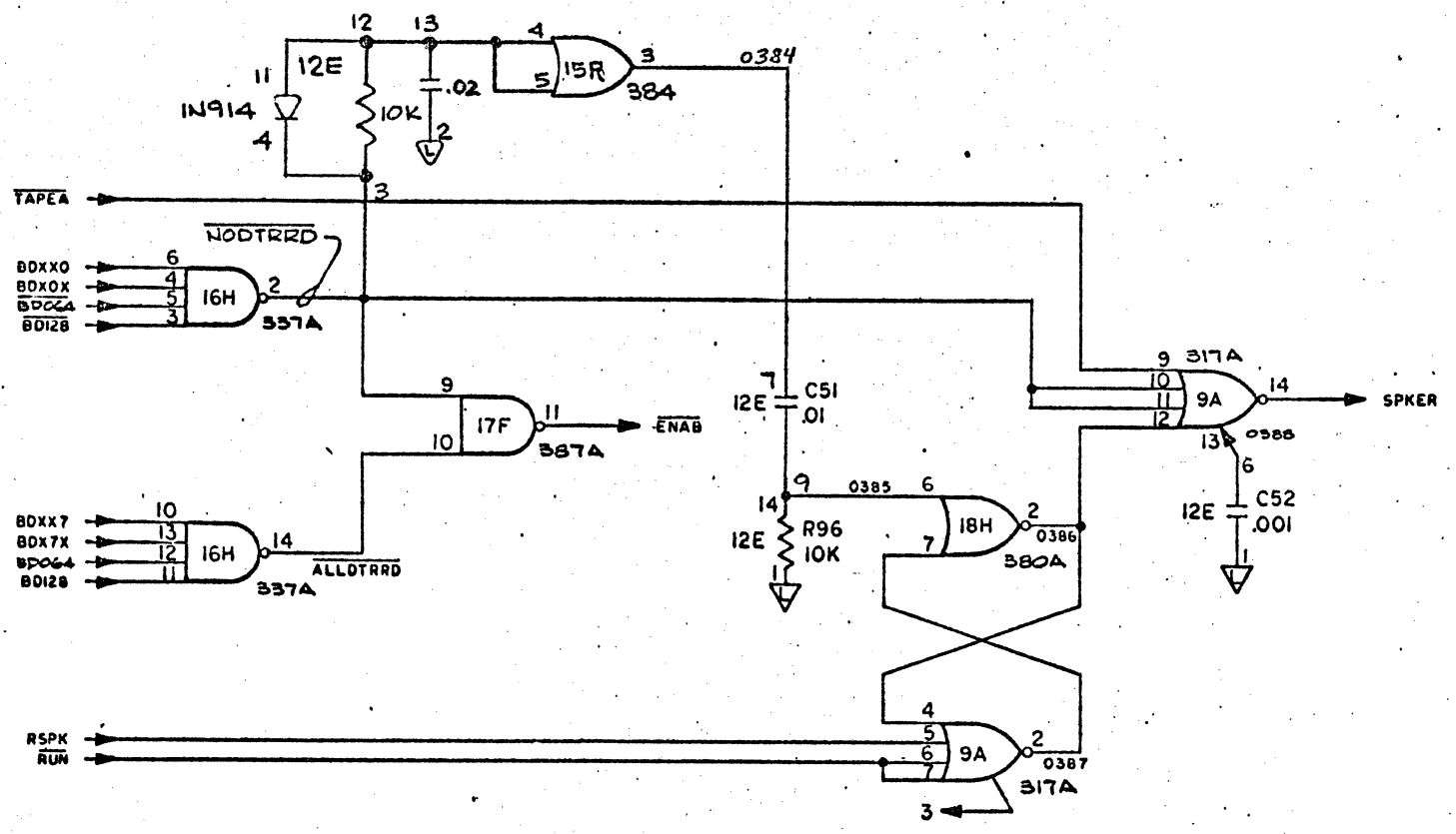
SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
BDX00	106	108, 109
BDX7	106	109, 110
BDX0X	107	108, 109, 112
BDX7X	107	112
BDI28	104	105
BDI28	104	105
BDO64	104	105, 108
BDO64	104	105, 108, 112
ENAB	—	185
RSPK	185	176
RUN	191	176, 185
TAPEA	189	191
SPKER	—	149

- NOTE: UNLESS OTHERWISE SPECIFIED
- CAPACITORS ARE RATED IN MICROFARADS 20% AND ARE 100 VOLTS
  - RESISTORS ARE RATED IN OHMS ±5% AND ARE 1/4 WATT
  - I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED X.X .XXX ANGLE 2.51 2.488 1°30' CONCENTRICITY AND OUT OF ROUND Y.N .001		MONTAGUE UNCREG APPROVED		6-28-77 DATE
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL		TITLE LOGIC DIAGRAM - TAPE READER DATA TRACK VERIFICATION
NEXT ASSY	USED ON	SCALE		1800-0111

SYNERGISTIC PRODUCTS, INC.  
A Subsidiary of Centron Corporation  
1162 McCabe, Santa Ana, California

REVISIONS			DATE & APPROVAL
SYMBOL	DESCRIPTION	DATE	APPROVAL
Δ	REL PER ECO 893	4/27/73	JRF



SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
BDXX0	106	108, 109
BDXX7	106	109, 110
BDXOX	107	108, 109, 112
BDX7X	107	112
BDI28	104	105
BDOG4	104	105, 108
BDOG4	104	105, 108, 112
ENAB	—	185
RSPK	185	176
RUN	191	176, 185
TAPEA	189	191
SPKER	—	149

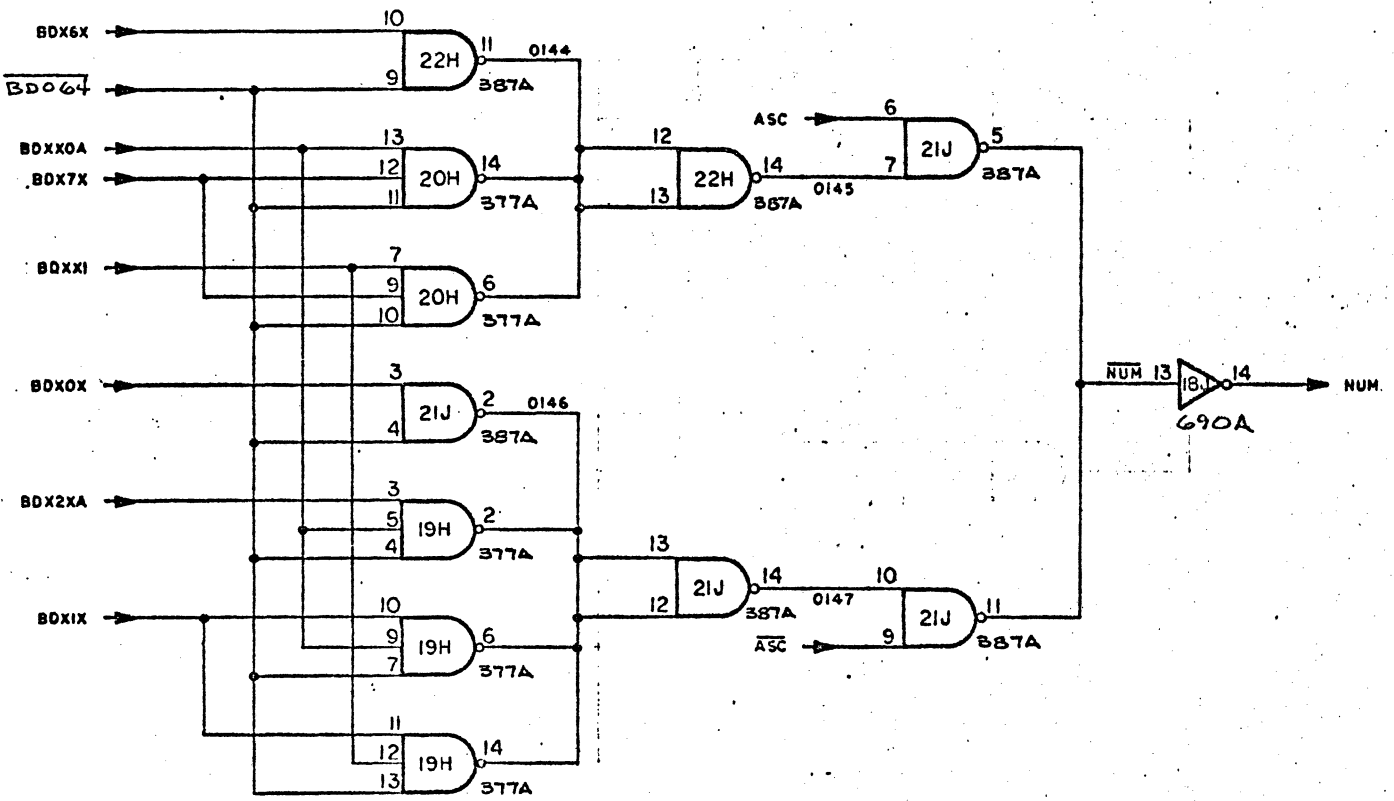
- NOTE: UNLESS OTHERWISE SPECIFIED
- CAPACITORS ARE RATED IN MICROFARADS 20% AND ARE 100 VOLTS
  - RESISTORS ARE RATED IN OHMS ±5% AND ARE 1/4 WATT
  - I.C.'S ARE SIGNETICS UTILOGIC 11, 8P SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED X.X .X.XX .X.XX 1.81 2.00 2.50		BY: MONIAGUTE	DATE: 10-23-73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1902 Alhambra, Santa Ana, California
CONCENTRICITY AND OUT OF ROUND T.R. .003		APPROVED:	DATE:	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL:		TITLE: LOGIC DIAGRAM - TAPE READER DATA TRACK VERIFICATION
FINISH:				SCALE: 1:1
NEXT ASSY	USED ON	1800-011-2		

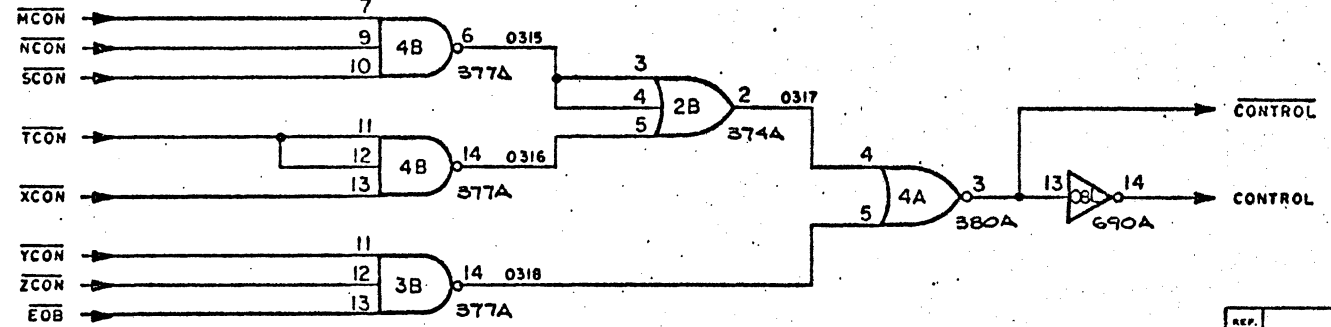
REVISIONS

SYMBOL	REV PER	CO	DATE & APPROVAL
A	REV PER	CO 412	05/27/73
B	REV PER	ECO 867	OS GPF 4-27-73

SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ASC	104	108
$\overline{ASC}$	104	108
BDXX0A	106	0
BDXXI	106	108, 109
BDX0X	107	108, 109, 111
BDXIX	107	108, 109
BDX2XA	107	110
BDX6X	107	110
BDX7X	107	111
$\overline{BDX0A}$	104	105, 108, 111
$\overline{CONTROL}$	—	103, 135
$\overline{EOB}$	108	149
$\overline{MCON}$	109	112, 135
$\overline{NCON}$	109	174, 135
NUM	—	103, 190
$\overline{SCON}$	110	103
$\overline{TCON}$	—	0
$\overline{XCON}$	109	136
$\overline{YCON}$	109	136
$\overline{ZCON}$	—	0
CONTROL	—	190

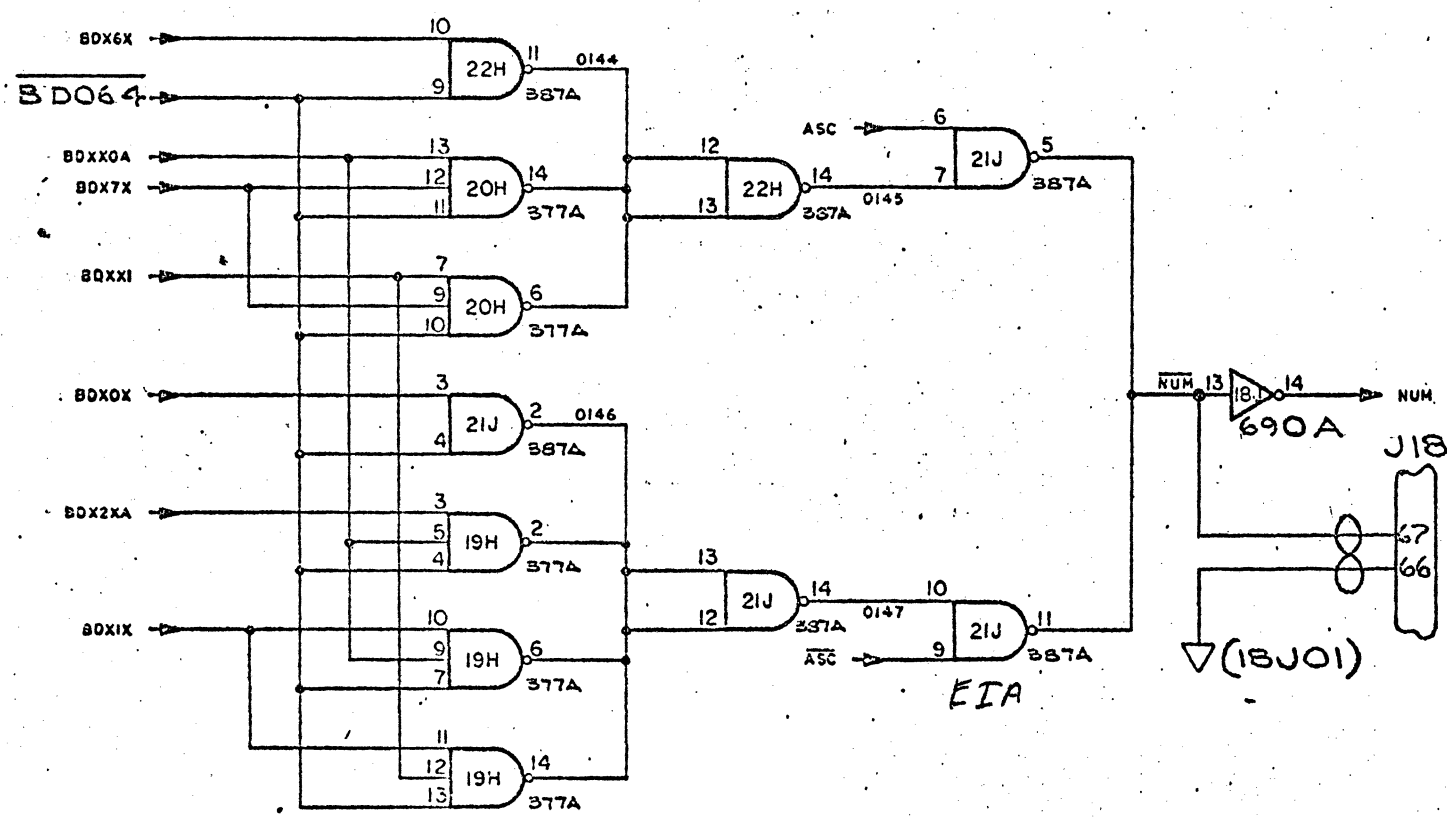


ALPHA CHARACTER



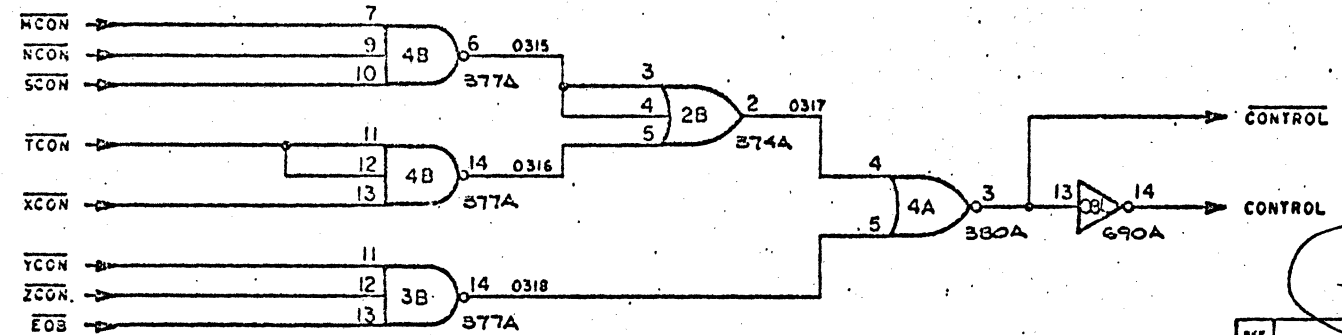
NOTE: UNLESS OTHERWISE SPECIFIED  
1. I.C.'S ARE SIGNETICS UTILOGIC 11,  
SP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE ±.01 ±.005 ±.00" CONCENTRICITY AND OUT OF ROUND T.I.R. .05		BY <i>Kel</i>	DATE 10/27/73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1902 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSY		USED ON		MATERIAL
SCALE		TITLE LOGIC DIAGRAM AND NUMERIC CHARACTER DECODES		1800-0112



SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
ASC	104	108
ASC	104	108
BDO64	106	0
BQXXI	106	108, 109
BDX0X	107	108, 109, 111
BDXIX	107	108, 109
BDX2XA	107	110
BDX6X	107	110
BDX7X	107	111
BDO64	104	105, 108, 111
CONTROL	—	103, 135
EOB	108	149
MCON	109	112, 185
NCON	109	174, 185
NUM	—	103, 190
SCON	110	103
TCON	—	0
XCON	109	186
YCON	109	186
ZCON	—	0
CONTROL	—	190

ALPHA CHARACTER

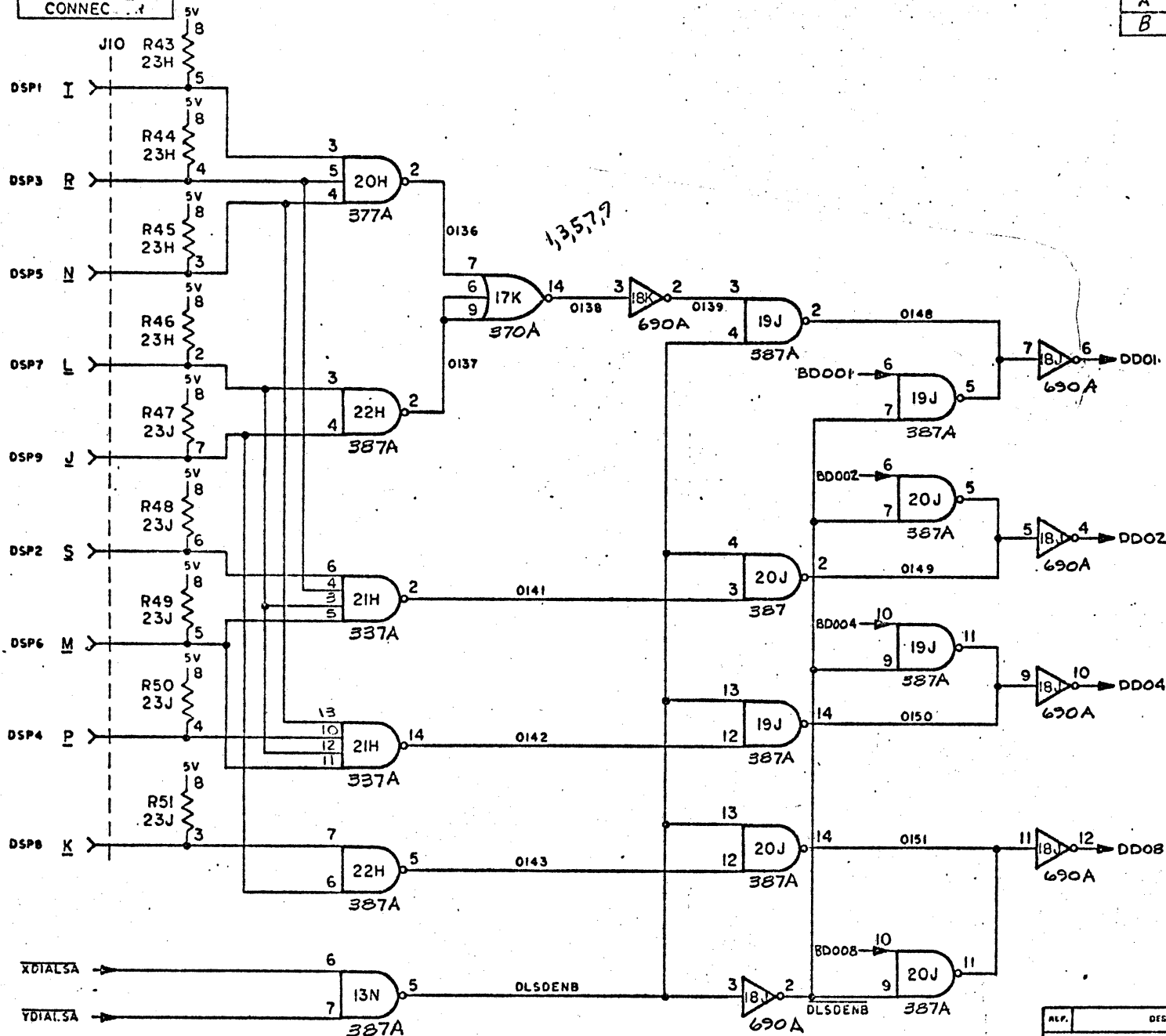


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC 11,  
 2P SERIES OR EQUIV.

2. J18 IS STEP AND REPEAT  
 CONNECTOR

DRILLING MACHINE

REP.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER MACHINE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS .005 DECIMALS .005 CONCENTRICITY AND OUT OF ROUND .005	BY DATE	DATE	DATE	DATE
APPROVED	DATE	DATE	DATE	DATE
REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL	TITLE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corvium Corporation 12724A Ave., Santa Ana, Ca. 92704	
FINISH		LOGIC DIAGRAM ALPHA AND NUMERIC CHARACTER RECORDS		
NEXT ASSY	USED ON	SCALE	DATE	

DWG. 1  
 CONTROL  
 CONN. EL

 REVISIONS  
 SIGNAL TRACEABILITY

SIGNAL	SOURCE	ADDITIONAL LOADS
BD001	104	105 106
BD002	104	105 106
BD004	104	105 106
BD008	104	105 107
DD01	---	103,114,113,121,167
DD02	---	103,114,118,121,167
DD04	---	103,114,112,121,167
DD08	---	114,118,121,167
XDIALSA	186	131
YDIALSA	186	131

NOTES: 1. IC'S ARE SIGNETICS UTILOGIC II, SP

 2. RESISTORS ARE 750 OHMS  $\pm 5\%$ 

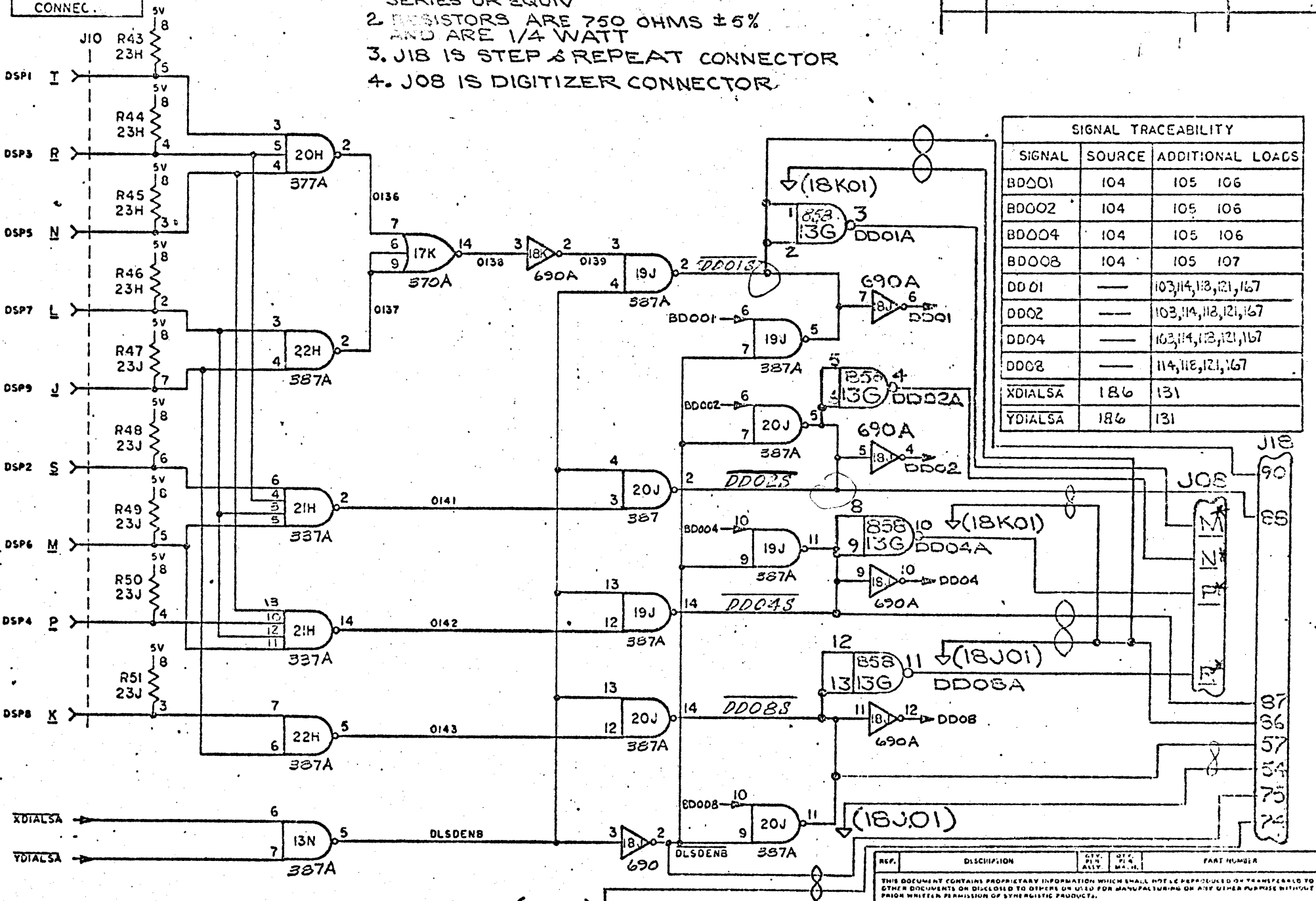
AND ARE 1/4 WATT

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE X.X1 X.XX 2" 30" CONCENTRICITY AND OUT OF ROUND T.I.R..005		R. MONTAGUE 7-16-71		DATE
APPROVED		DATE		TITLE
REMOVE SQUARE AND BREAK ALL SHARP EDGES		MATERIAL		LOGIC DIAGRAM TRANSLATOR NO. 3 9 TO 1 OUT OF 4
FINISH		SCALE		1:500-013
NEXT ASSY		USED ON		A

NOTES: UNLESS OTHERWISE SPECIFIED

1. IC'S ARE SIGNETICS UTIL IC II, SP SERIES OR EQUIV
2. RESISTORS ARE 750 OHMS ± 5% AND ARE 1/4 WATT
3. J18 IS STEP & REPEAT CONNECTOR
4. J08 IS DIGITIZER CONNECTOR

SYMBOL	DESCRIPTION	DATE & APPROVAL



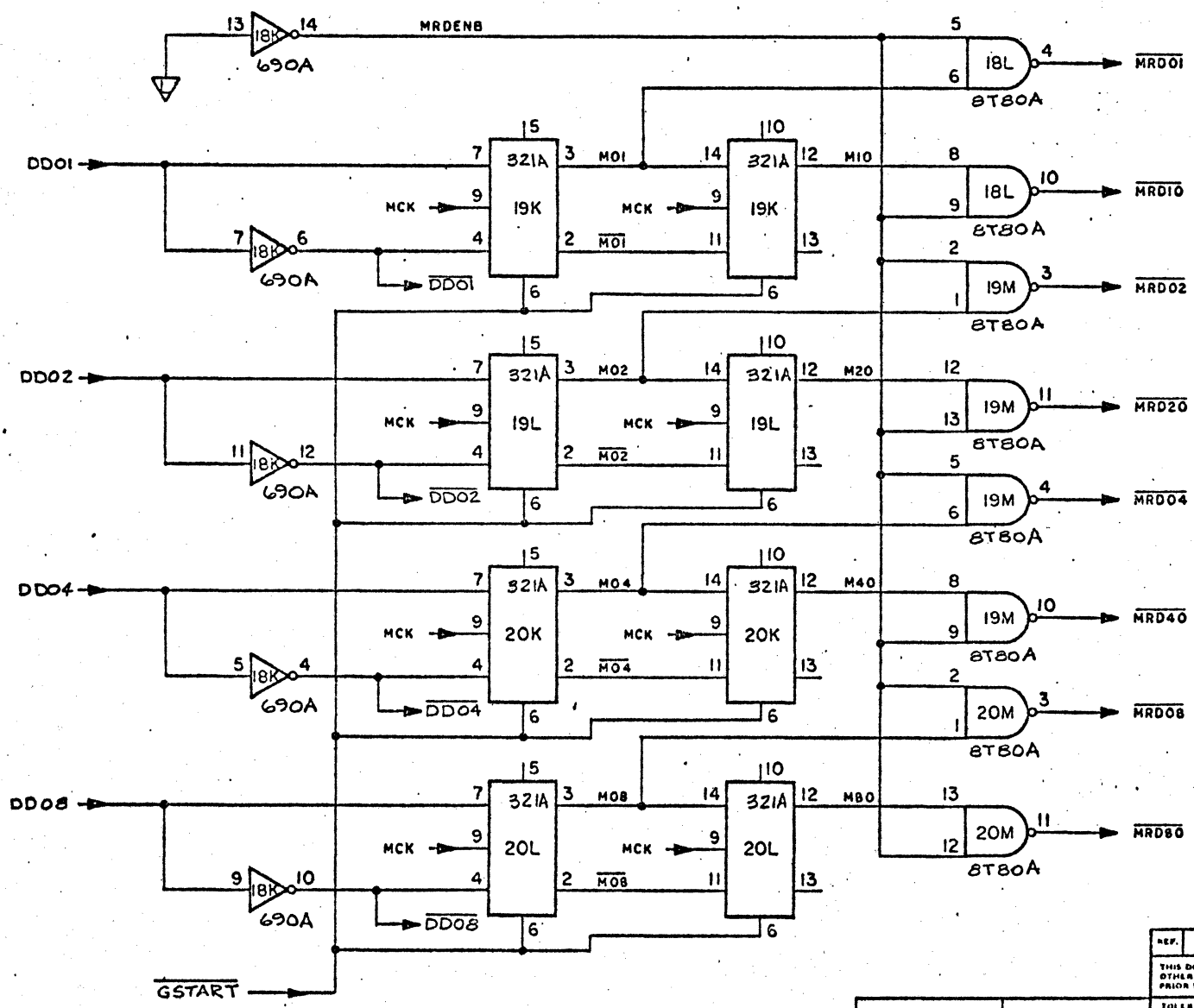
SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
BD001	104	105 106
BD002	104	105 106
BD004	104	105 106
BD008	104	105 107
DD01	---	103,114,118,121,167
DD02	---	103,114,118,121,167
DD04	---	103,114,118,121,167
DD08	---	114,118,121,167
XDIALSA	186	131
YDIALSA	186	131

DRILLING MACHINE

REF.	DISPOSITION	CHK'D	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED				
±.001 MAX ANGLE				
±.001 MAX. SURF. CONCENTRICITY AND OUT OF ROUND ±.001				
REMOVE BURRS AND BREAK ALL SHARP EDGES				
FINISH				
NEXT ASSY	USED ON			
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corbin Corporation 1001 N. 1st St., Santa Ana, California				
TITLE LOGIC DIAGRAM TRANSLATOR NO 3 9 TO 1000000				
SCALE 1/8" = 1"				



SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
DD01	113	103,118,121,167
DD01	---	118
DD02	113	103,118,121,167
DD02	---	118
DD04	113	103
DD04	---	118
DD08	113	118,121,167
DD08	---	118
GSTART	181	118
MCK	185	0
MRD01	---	192
MRD02	---	192
MRD04	---	192
MRD08	---	192
MRD10	---	192
MRD20	---	192
MRD40	---	192
MRD80	---	192

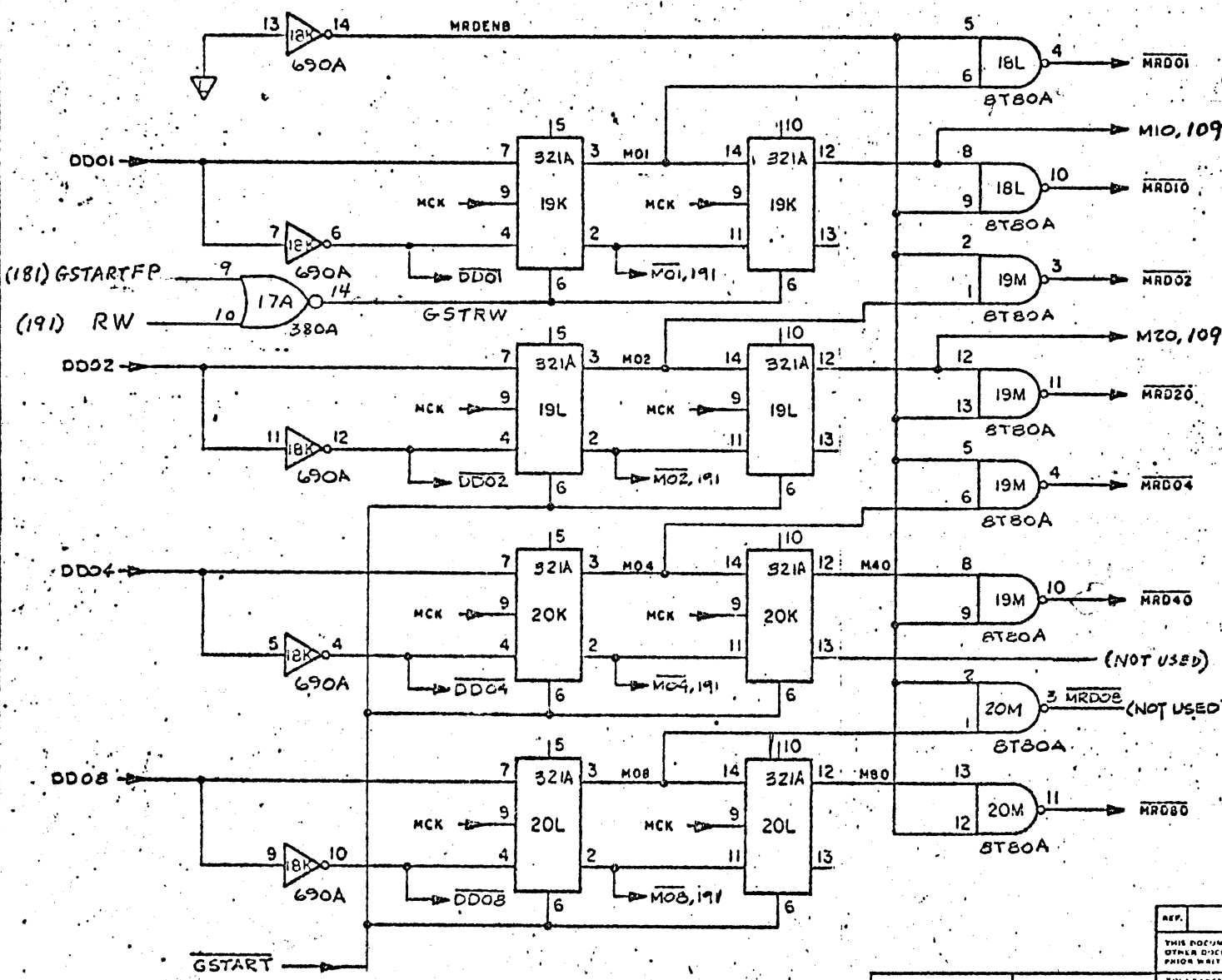


NOTE UNLESS OTHERWISE SPECIFIED  
 1. BT80A ARE SIGNETICS DCL, OR EQUIV  
 2. 321A & 690A ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV

REF.	DESCRIPTION	QTY. ASSY.	QTY. MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED HOLE ±.001 CONCENTRICITY AND OUT OF ROUND T.I.M. .002		R. MONTAGUE 7-16-71		DATE
CHECKED		DATE		DATE
APPROVED		DATE		DATE
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE
FINISH		SCALE		LOGIC DIAGRAM - M FUNCTION REGISTER
NEXT ASSY	USED ON	SCALE		1800-0114

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL

SIGNAL TRACEABILITY		
SIGNAL	SOURCE	ADDITIONAL LOADS
DD01	113	103, 118, 121, 167
DD01	---	118
DD02	113	103, 118, 121, 167
DD02	---	118
DD04	113	103
DD04	---	118
DD08	113	118, 121, 167
DD08	---	118
GSTART	181	118
MCK	185	0
MRD01	---	192
MRD02	---	192
MRD04	---	192
MRD08	---	192
MRD10	---	192
MRD20	---	192
MRD40	---	192
MRD80	---	192

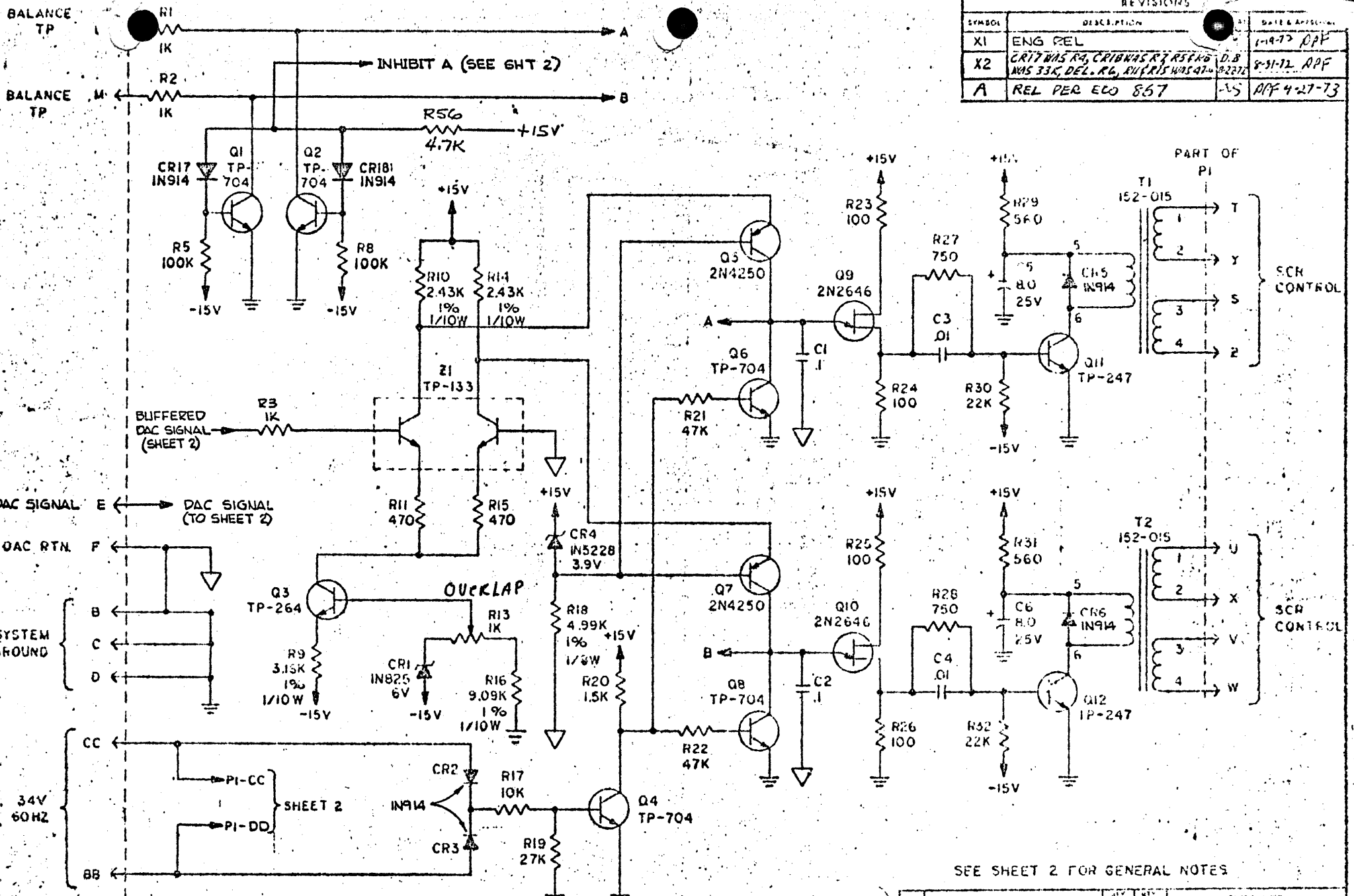


NOTE UNLESS OTHERWISE SPECIFIED  
 1. 8T80A ARE SIGNETICS DCL. OR EQUIV  
 2. 321A & 690A ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV

DRILLING MACHINE

REF.	DESCRIPTION	QTY	REV	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED .0005 .001 .002 .005 .010 .015 .030 .050 .100 .150 .300 .500 .750 1.000 .001 .002 .005 .010 .015 .030 .050 .100 .150 .300 .500 .750 1.000 .001 .002 .005 .010 .015 .030 .050 .100 .150 .300 .500 .750 1.000 .001 .002 .005 .010 .015 .030 .050 .100 .150 .300 .500 .750 1.000	#2 MONTAGUE	1	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cushman Corporation 1712 Alameda, Berkeley, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		TITLE LDC CUSHMAN M FUNCTION RECTIFIER
	FINISH			SCALE
	NEXT ASSY	USED ON		0114-3

SYMBOL	DESCRIPTION	DATE & APPROVAL
X1	ENG REL	1-19-72 APF
X2	CR17 WAS R4, CR18 WAS R7, R56 WAS D.B. WAS 33K, DEL. R6, R11, R15 WAS 47K, R22, R27	8-31-72 APF
A	REL PER ECO 867	AS APF 4-27-73



BALANCE TP  
BALANCE TP

DAC SIGNAL E  
DAC RTN F

SYSTEM GROUND  
B  
C  
D

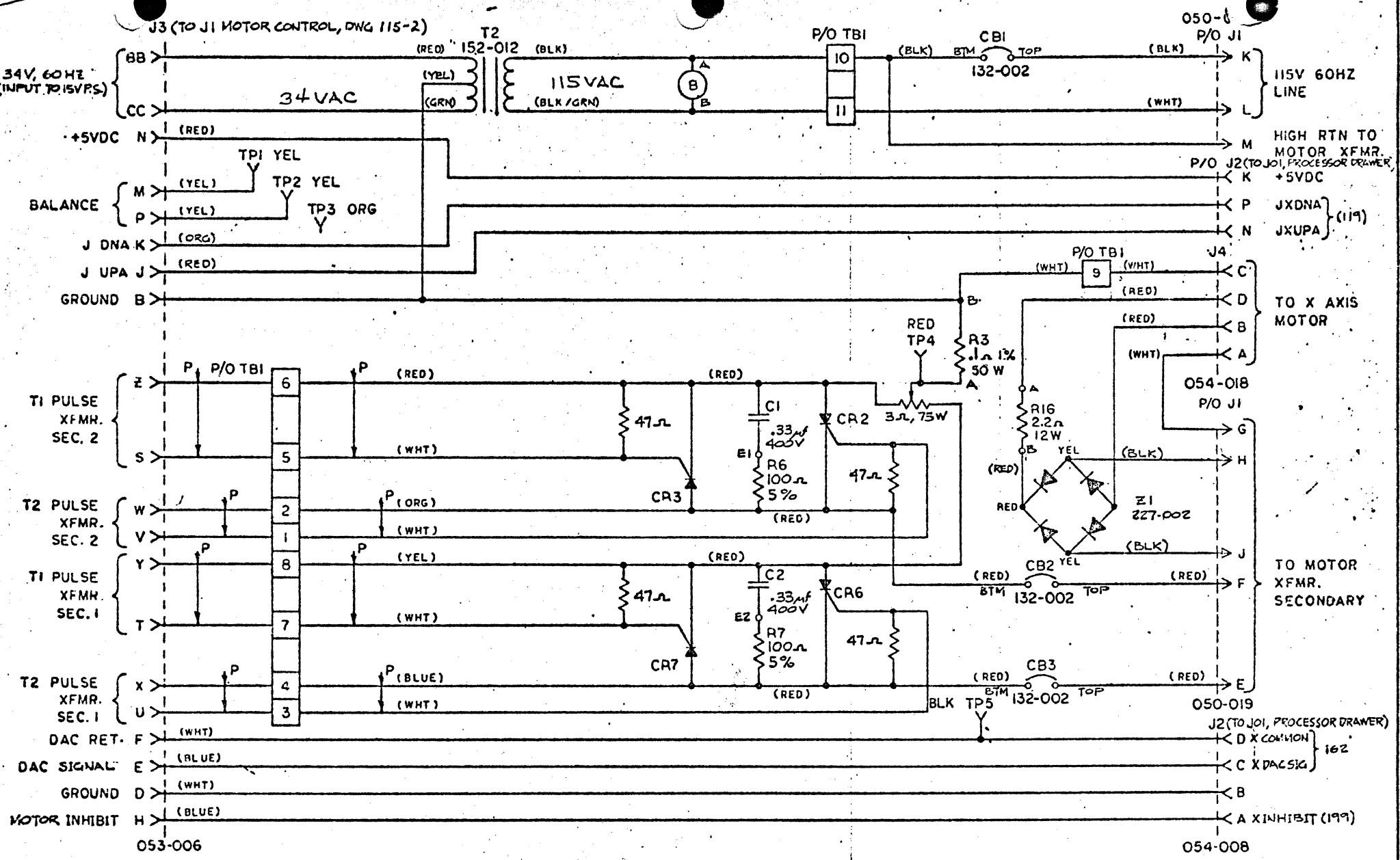
34V  
60HZ

TO MOTOR DRIVE ASSY.  
J3 FOR X-AXIS (DWG 116)  
OR J5 FOR Y-AXIS (DWG 117)  
(TWO OF THESE MOTOR CONTROLS  
REQD FOR EACH 1800 SYSTEM)

SEE SHEET 2 FOR GENERAL NOTES

REF	DESCRIPTION	REV	DATE	PART NUMBER
1	THE DRAWING IS THE PROPERTY OF MONIA CORP. IT IS TO BE USED ONLY FOR THE MANUFACTURE OF THE PRODUCT SPECIFIED HEREIN. IT IS TO BE KEPT IN CONFIDENTIALITY AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.			
1803-2000-504	1800 CONTROLLER			SYNTHETIC PRODUCTS, INC. A Subsidiary of DeLaval Corporation 10000 W. 10th Ave. Golden, CO 80401
				SCHEMATIC - MOTOR CONTROL



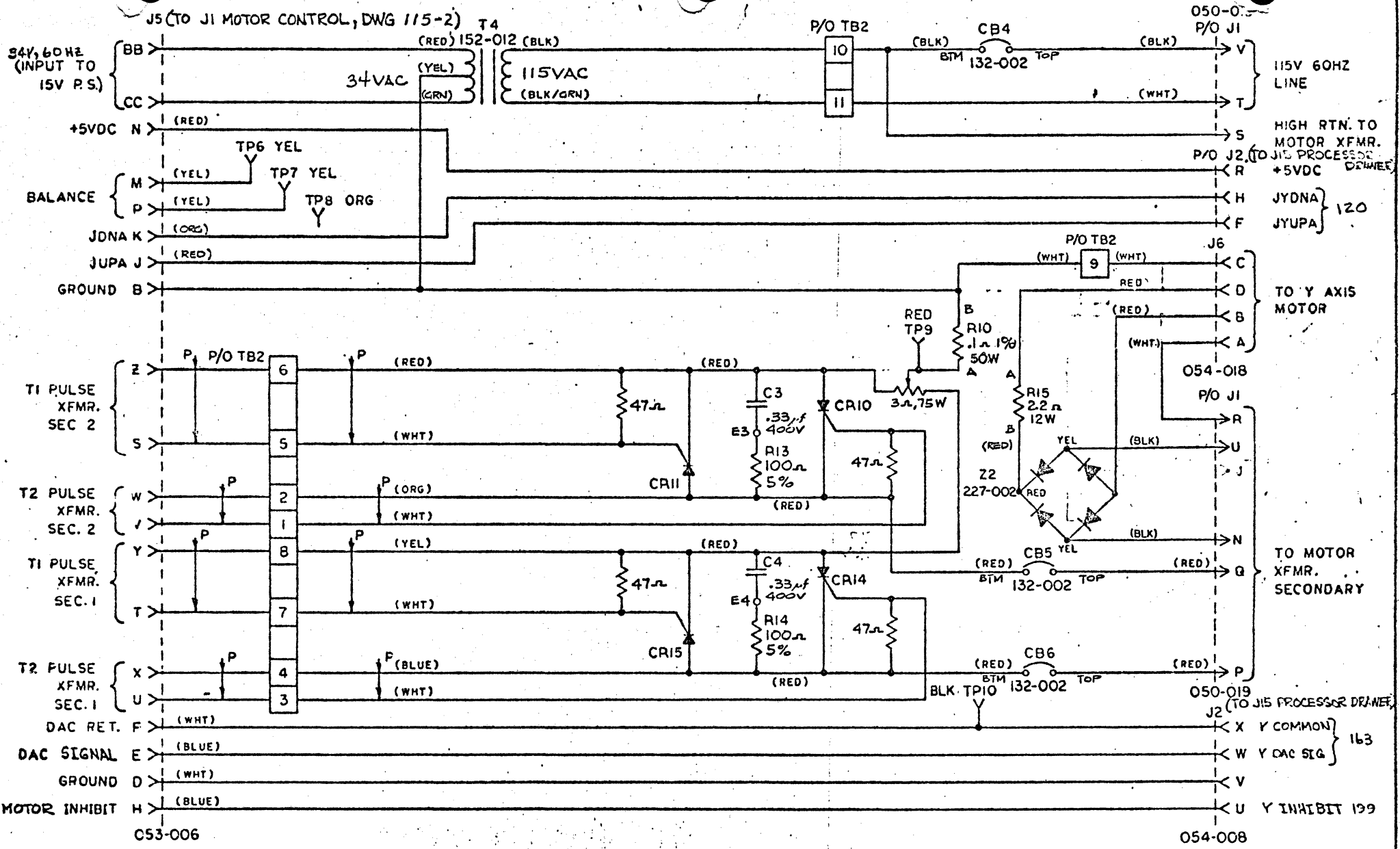


NOTE: UNLESS OTHERWISE SPECIFIED  
 I. SCR'S ARE 2Z8-003

REV	DESCRIPTION	DATE	APPROVED
C	REV PER ECO 867	AS	DPF 4-27-73
B	REV PER ECO 498	AS	DPF 3-30-72
A	REVISION PER ECO 429	AS	DPF 3-1-72

REF.	DESCRIPTION	QTY PER ASSY	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR INCLUDED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX MM ANGLE .001 IN. 90° CONCENTRICITY AND OUT OF ROUND 1/16 IN. DIA.		DATE 5-27-73 CHECKED APPROVED	DATE 5-27-73 DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 19-12 McCurtain, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL	TITLE SCHEMATIC - X AXIS MOTOR DRIVE SCALE 1/8" = 1"	
NEXT ASSY	USED ON			

J-0116-2 C



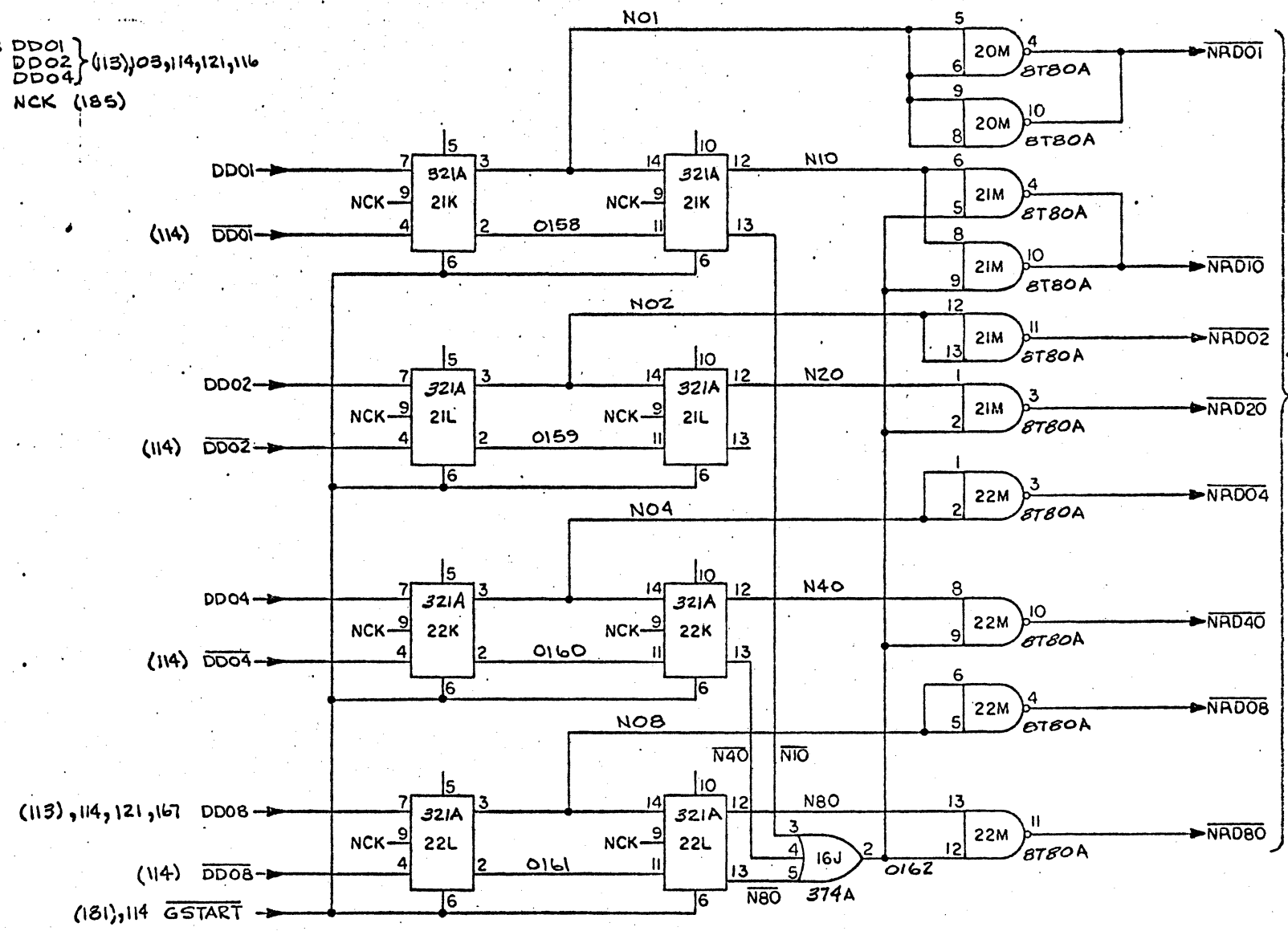
NOTE: UNLESS OTHERWISE SPECIFIED  
 1. SCR'S ARE Z38-003

REV	DESCRIPTION	DATE	BY	APP
C	REV PER ECO 267	as	BP	4-27-73
B	REV PER ECO 498	3-27-72	BP	3-30-72
A	REVISED PER ECO 429	8-17-72	BP	3-1-72

REF	DESCRIPTION	QTY PER ASSEMBLY	QTY PER MACHINE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY: <i>R. E. L.</i> DATE: 5/1/73		
.015 ANGLES		CHECKED: DATE:		
CONCENTRICITY AND OUT OF ROUND T.I.R. .005		APPROVED: DATE:		
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL:		
FINISH:		SCALE:		
NEXT ASSY	USED ON	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1902 McCreary, Santa Ana, California		
		TITLE: SCHEMATIC - Y AXIS MOTOR DRIVE		
		SCALE: 0-0117-2 C		

REVISED PER ECO 412	DATE APPROV. 11-27-73
REV PER ECO 867	DATE APPROV. 11-27-73

SIGNAL TRACEABILITY: DDO1 } (113), 103, 114, 121, 116  
 DDO2 }  
 DDO4 }  
 NCK (185)



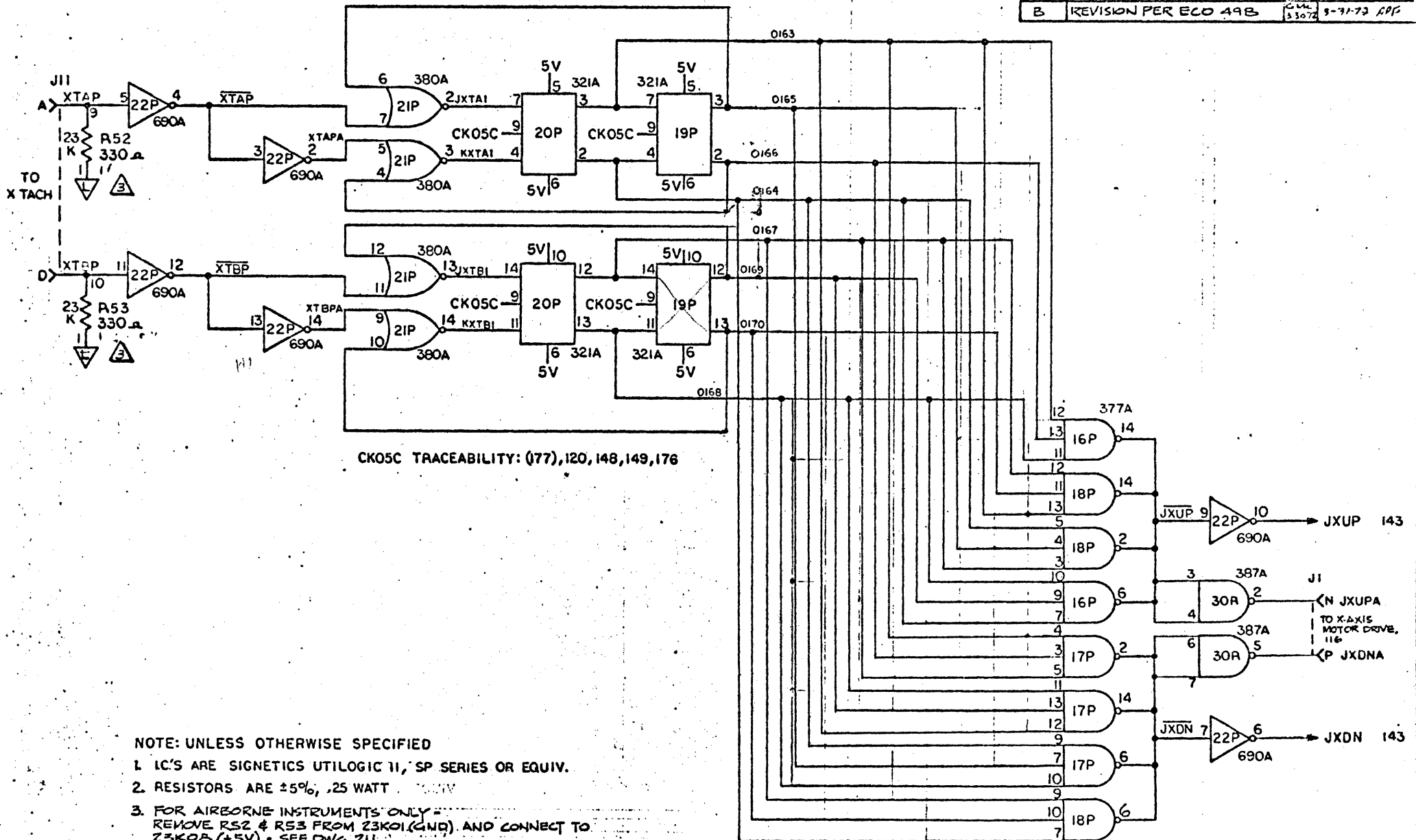
193

NOTE UNLESS OTHERWISE SPECIFIED  
 1. 321A & 374A ARE SIGNETICS UTILOGIC II SP SERIES OR EQUIV.  
 2. BT80A IS SIGNETICS DCL OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE .01 .005 30° 30° CONCENTRICITY AND OUT OF ROUND TLR .005		BY CHECKED	DATE DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1907 Alameda Drive, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
FINISH		MATERIAL		TITLE LOGIC DIAGRAM - N FUNCTION REGISTER
NEXT ASSY		USED ON		SCALE DWS # 1800-0118 B

REVISIONS

SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REVISED PER ECO 412	1-27-72 RPF
B	REVISION PER ECO 498	3-30-72 RPF

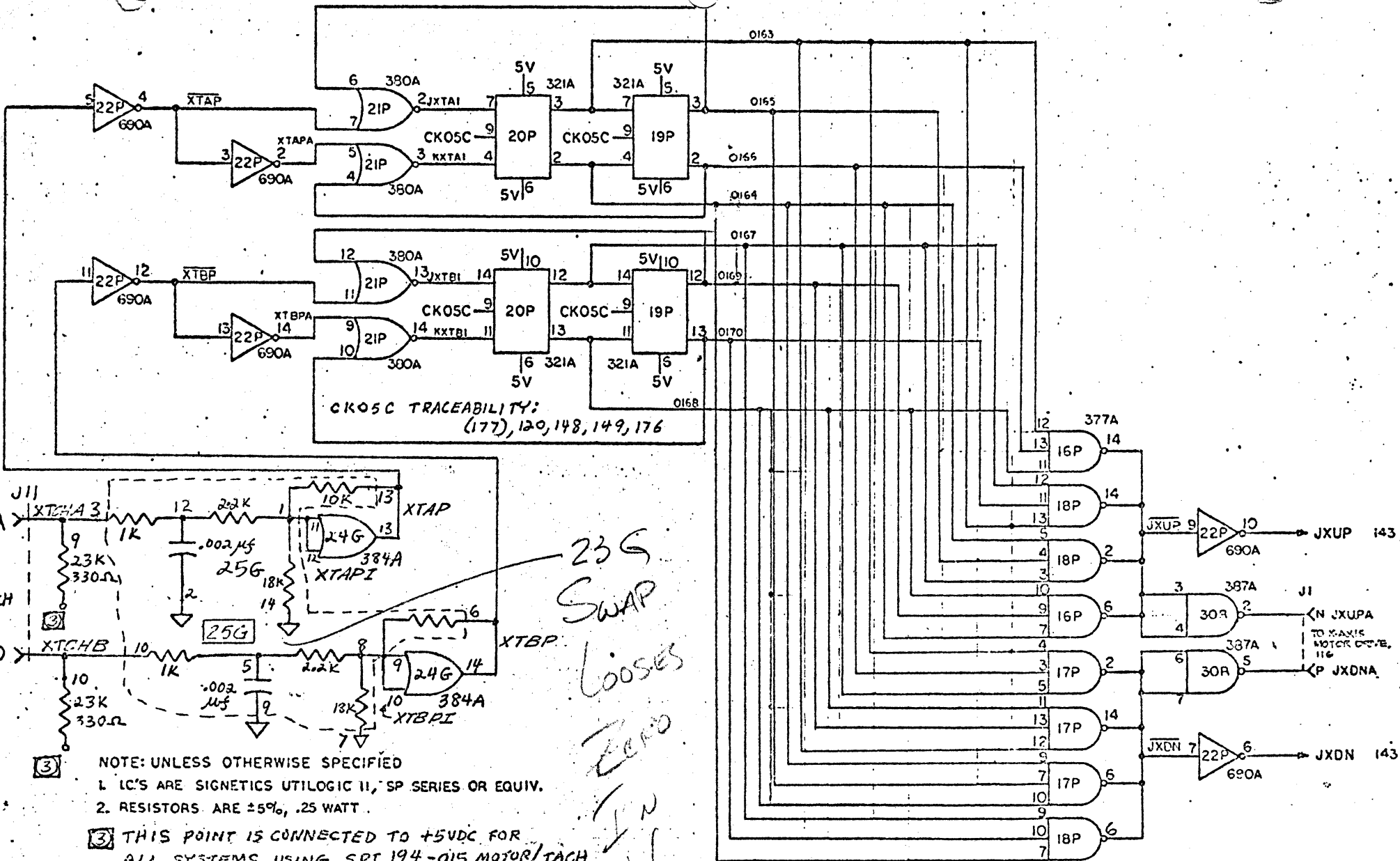


NOTE: UNLESS OTHERWISE SPECIFIED

1. IC'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.
2. RESISTORS ARE ±5%, .25 WATT
3. FOR AIRBORNE INSTRUMENTS ONLY - REMOVE R52 & R53 FROM 23K01(GND) AND CONNECT TO 23K08 (+5V) - SEE DWG 211.

REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED ARE .001 INCHES FOR DIMENSIONS IN INCHES AND .015 MM FOR DIMENSIONS IN MILLIMETERS. CONCENTRICITY AND OUT OF ROUND T.Y.R. .005		APPROVED		DATE
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		DATE
FINISH		FINISH		DATE
NEXT ASSY		USED ON		DATE
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Convair Corporation 1512 Main St., Santa Ana, California				TITLE LOGIC DIAGRAM - TACH PULSE DECODING X-AXIS
SCALE				1800-0119





CKOSC TRACEABILITY:  
(177), 120, 148, 149, 176

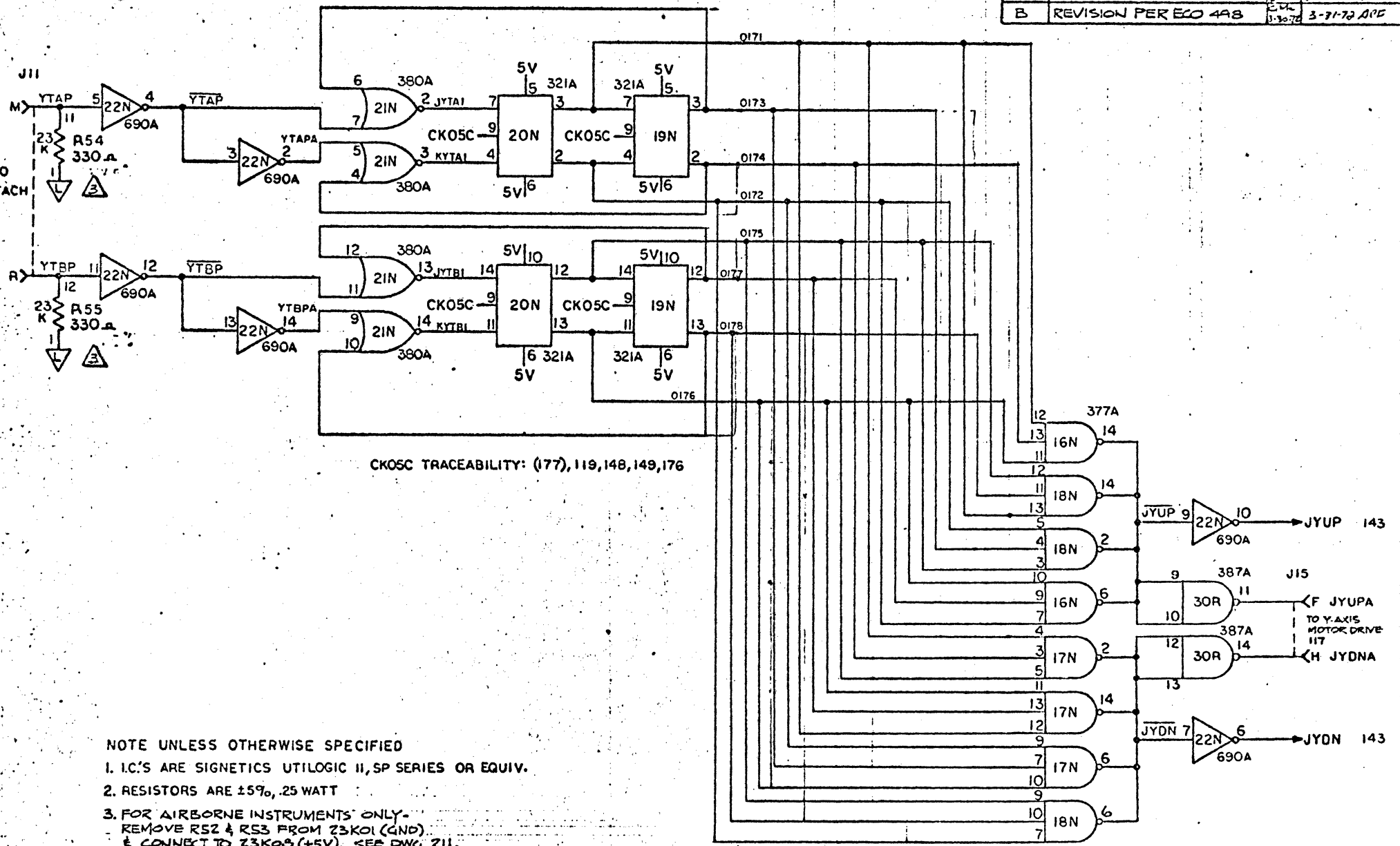
23G SWAP  
LOOSES  
ECO 967  
IN Y

- NOTE: UNLESS OTHERWISE SPECIFIED
1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. RESISTORS ARE ±5%, .25 WATT.
  3. THIS POINT IS CONNECTED TO +5VDC FOR ALL SYSTEMS USING SPI 194-015 MOTOR/TACH ASSY (INERTIAL MOTORS CORP.). THIS POINT GND = PIN 1; +5V = PIN 8.

DRILLING MACHINE

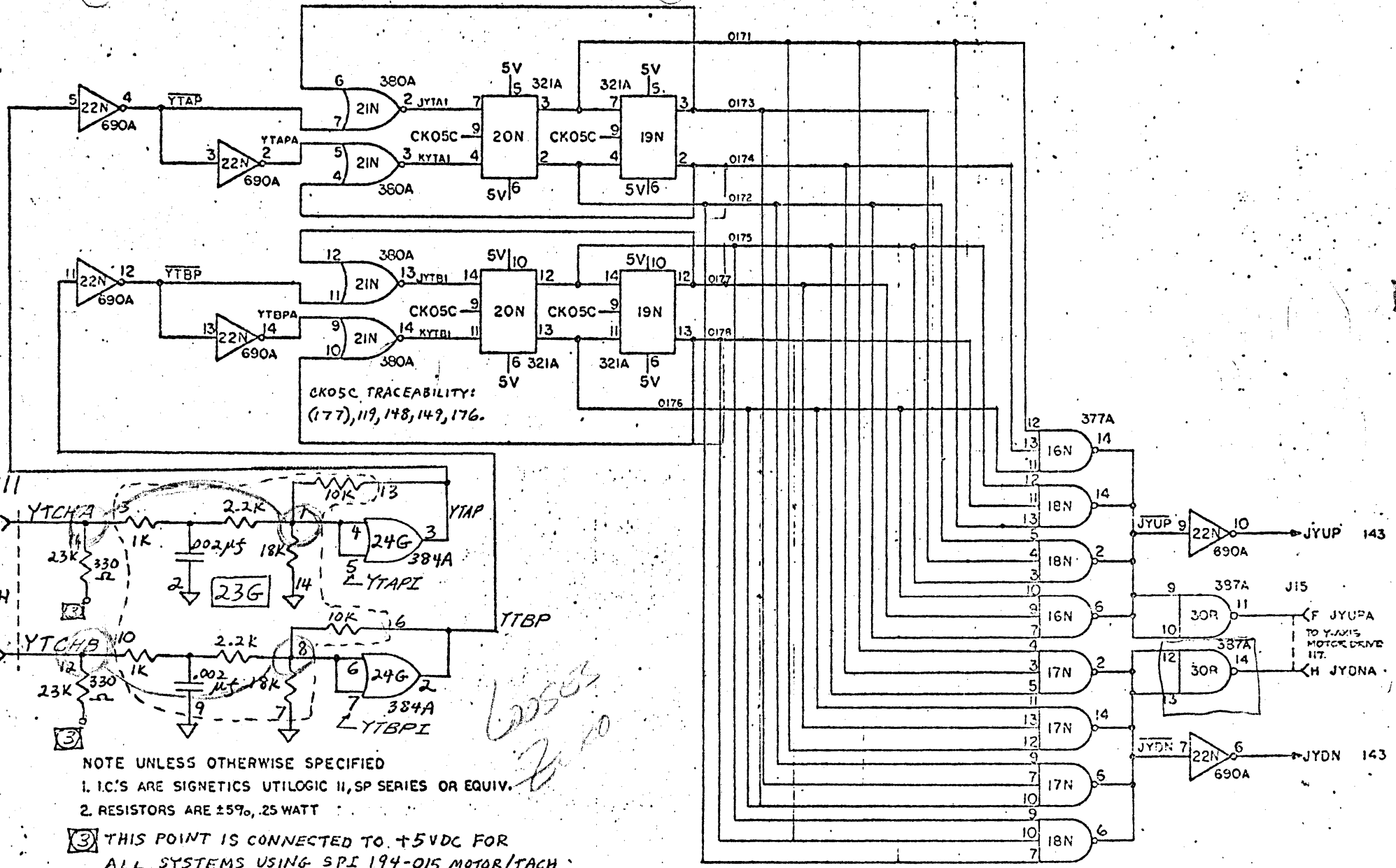
REF.	DESCRIPTION	QTY PER ASY	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED R. MAX. ANGLE ±.01 1.000 1.000 CONCENTRICITY AND OUT OF ROUND .010 .030		BY: <i>Colin</i> CHECKED: <i>ADP</i> APPROVED: _____ DATE: _____	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Coulson Construction 1202 Madison, Santa Ana, California	
REMOVE BURRS AND BREAK ALL SHARP EDGES		TITLE: LOGIC DIAGRAM - TACH PULSE DECODING K AXIS		DATE: _____
PREPARED BY: _____	DATE: _____	DRAWN BY: _____		SCALE: _____
REVISED BY: _____	DATE: _____	CHECKED BY: _____		NO. 1800-0119-2

REVISION			
SYMBOL	DESCRIPTION	DATE	DATE & APPROVAL
A	REVISED PER ECO 412	2-25-72	2-27-72 APF
B	REVISION PER ECO 448	3-30-72	3-21-72 ARE



- NOTE UNLESS OTHERWISE SPECIFIED
1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. RESISTORS ARE  $\pm 5\%$ , .25 WATT
  3. FOR AIRBORNE INSTRUMENTS ONLY - REMOVE R52 & R53 FROM Z3K01 (GND) & CONNECT TO Z3K05 (+5V). SEE DWG. Z11.

REF.	DESCRIPTION	QTY. REQ. ASSY.	QTY. REQ. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE 2:1 2:50 1:10 CONCENTRICITY AND OUT OF ROUND T.Y. 0.1		BY <i>John</i> CHECKED	DATE 2-25-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 1902 54th Ave., Santa Ana, California
REMOVE BURRS AND SPEAR ALL SHARP EDGES		APPROVED	DATE	
FINISH		MATERIAL	TITLE LOGIC DIAGRAM - TACH PULSE DECODING Y AXIS	
NEXT ASSY		USED ON	SCALE	DWG # 1800-0120 3



CK05C TRACEABILITY:  
(177), 119, 148, 149, 176.

- NOTE UNLESS OTHERWISE SPECIFIED
1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. RESISTORS ARE ±5%, .25 WATT
- ③ THIS POINT IS CONNECTED TO +5VDC FOR ALL SYSTEMS USING SPI 194-015 MOTOR/TACH ASSY (INERTIAL MOTORS CORP). THIS POINT IS G-ROUNDED FOR ALL OTHER SYSTEMS. GND = PIN1; +5V = PIN8.

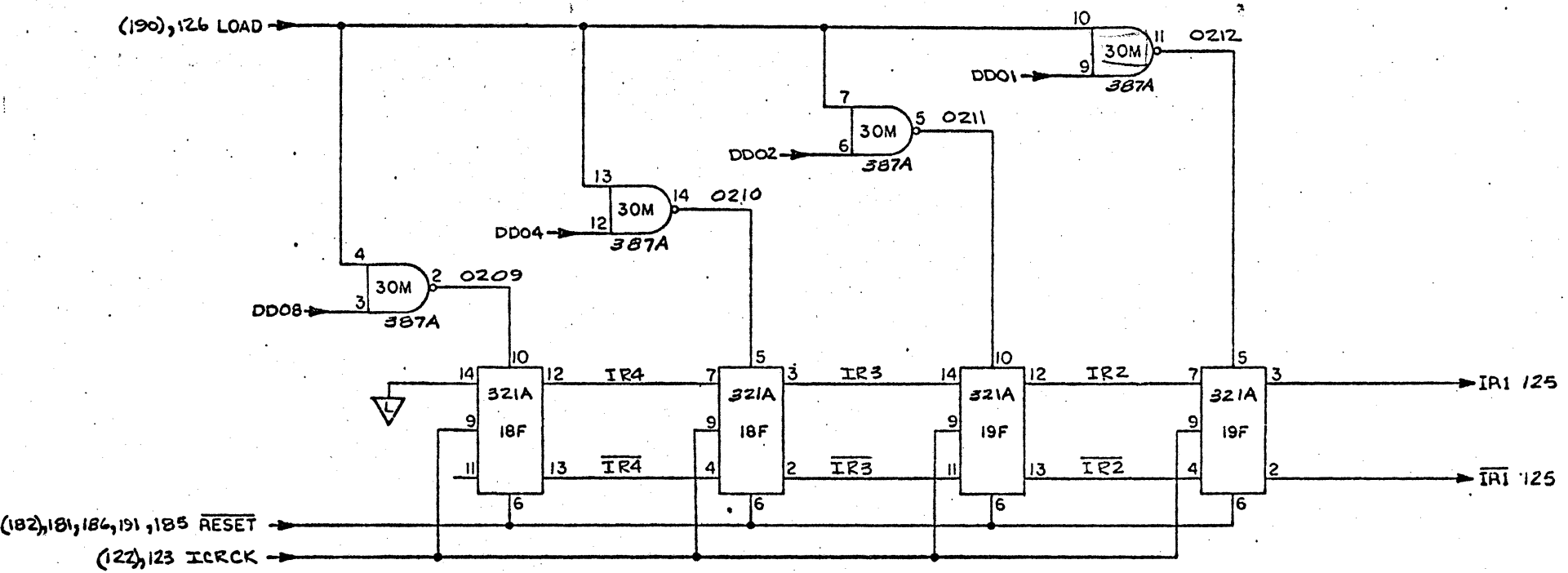
DRILLING MACHINE

REF.	DESCRIPTION	REV.	DATE	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNCHRONIC PRODUCTS, INC.			
	TOLERANCES UNLESS OTHERWISE SPECIFIED: DIM. SIZE ANGLE ±.01 2.00 2.00 CONCENTRICITY AND OUT OF ROUND TIR, ALL	BY C. L. ... DATE APPROVED B.P.F.	DATE	SYNCHRONIC PRODUCTS, INC. A Subsidiary of Corning Corporation 1000 Madison Avenue, Corning, NY 14850
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		TITLE LOGIC CIRCUIT - TACH PULSE DECODING
	FINISH			SCALE 1/800-0120-2
	NEXT ASSY	USED ON		

SIGNAL TESTABILITY:

DDO1 }  
 DDO2 } (113), 103, 114, 118, 167  
 DDO4 }  
 DDO8 (113), 114, 118, 167

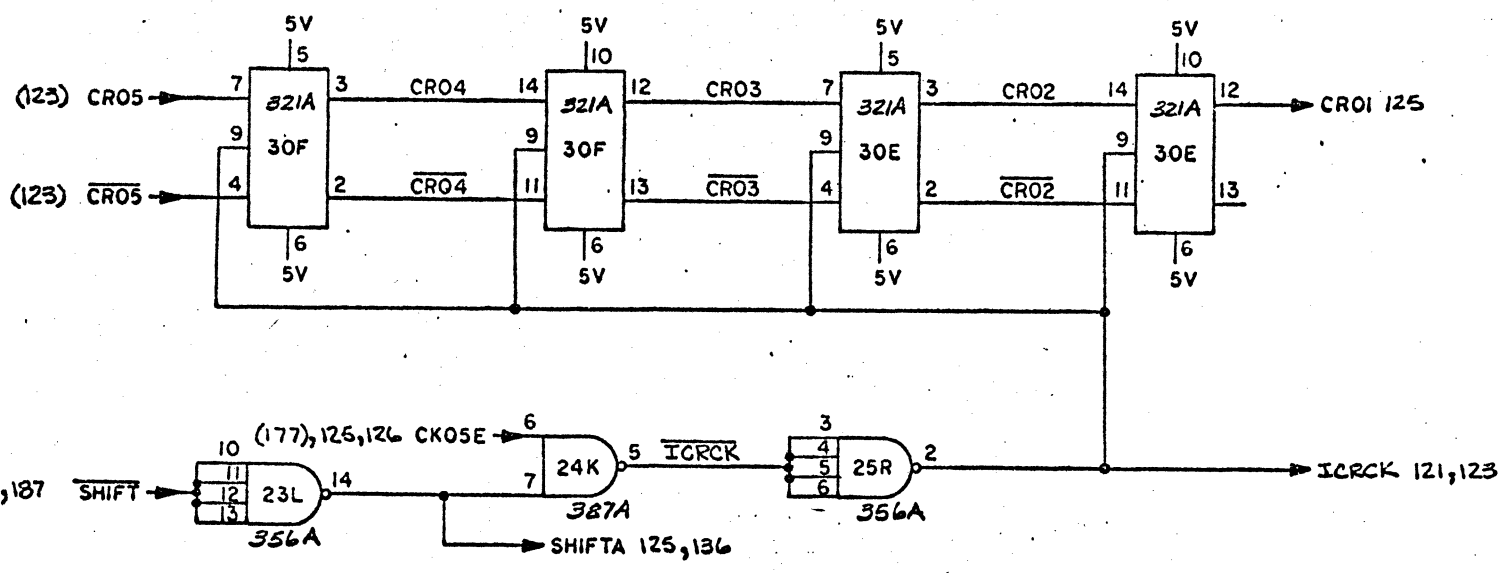
REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
A	REVISED PER ECO 412	11/2/72 -55-72 APF



NOTE UNLESS OTHERWISE SPECIFIED

1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

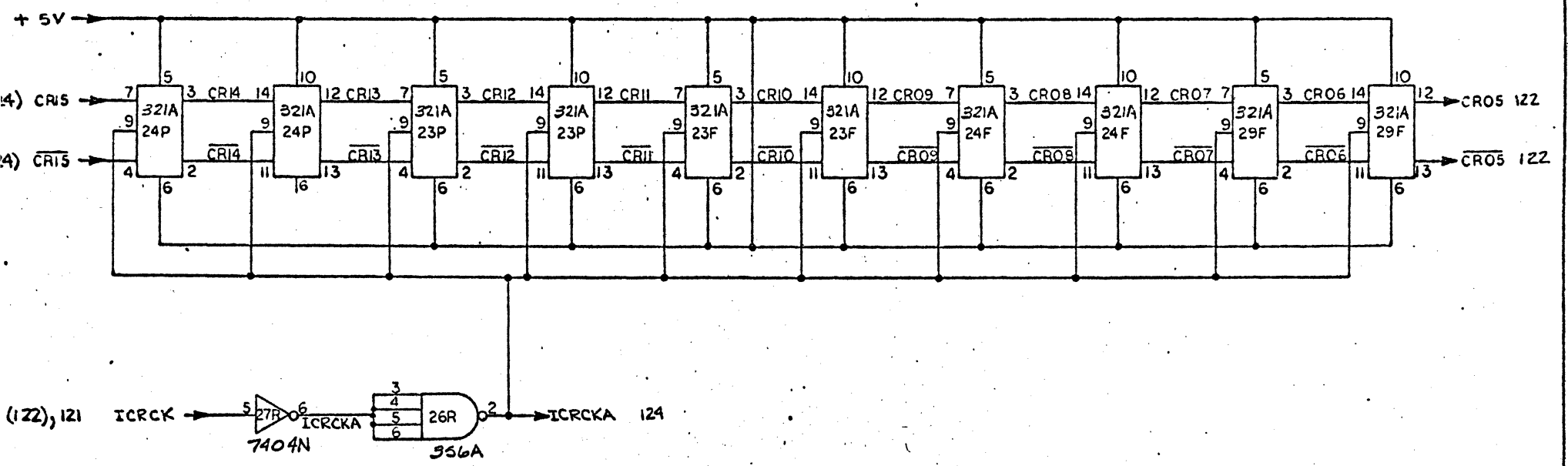
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>[Signature]</i>	DATE 7-22-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Caverton Corporation 1922 McGraw, Santa Ana, California
	IN ANGLE	CHECKED	DATE	
	CONCENTRICITY AND OUT OF ROUND T.R. .005	APPROVED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		
	FINISH			TITLE LOGIC DIAGRAM - 4 BIT DESIRED INPUT REGISTER
NEXT ASSY	USED ON			SCALE 1800-0121 A



NOTES: UNLESS OTHERWISE SPECIFIED.  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	REV. PER ASSY.	DEV. ICA MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX SEE ANGLE E.S.T 1.005 20-30' CONCENTRICITY AND OUT OF ROUND 71R.105		R. MONTAGUE 7-17-71 CHECKED DATE		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McGee, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED DATE		
FINISH		MATERIAL		TITLE LOGIC DIAGRAM - CONVERSION REGISTER BITS 1-4
NEXT ASSY	USED ON	SCALE		DWG # 1800-0122 A

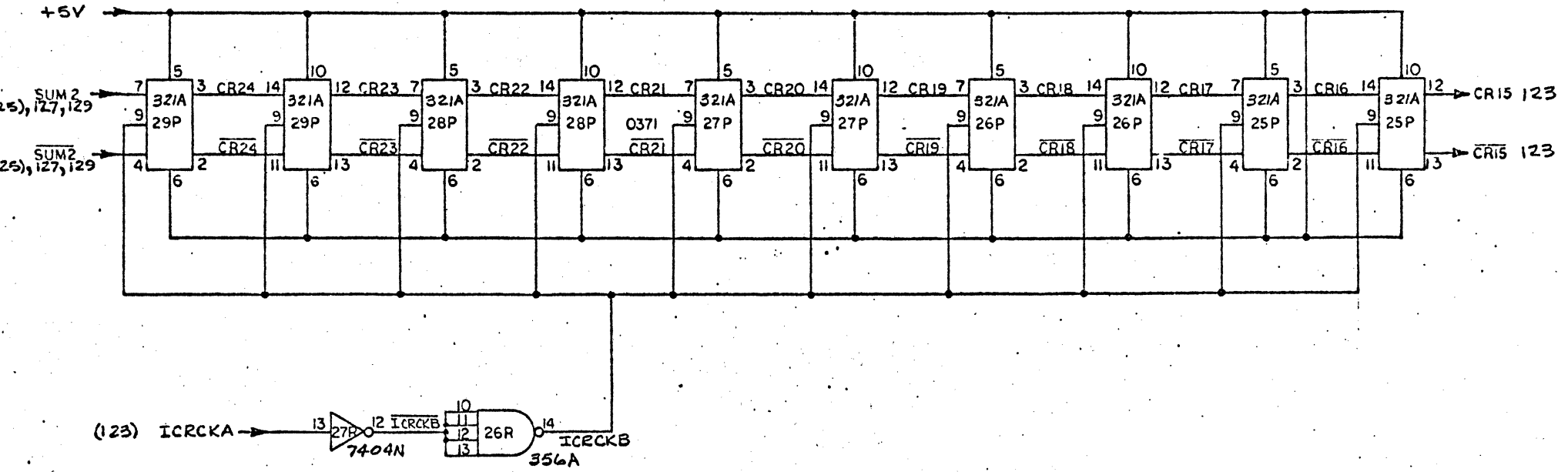
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REVISED PER ECO 412	2-28-72 JPF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 1.41 3.00 1P 3P CONCENTRICITY AND OUT OF ROUND T.I.R. .005	BY <i>McLean</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cevitron Corporation 1907 McGraw, Foster Ave, California
		CHECKED	DATE	
		APPROVED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH	MATERIAL	DATE	
NEXT ASSY	USED ON			TITLE CONVERSION REGISTER BITS 5-14
			SCALE	DWG. NO. 1800-0123

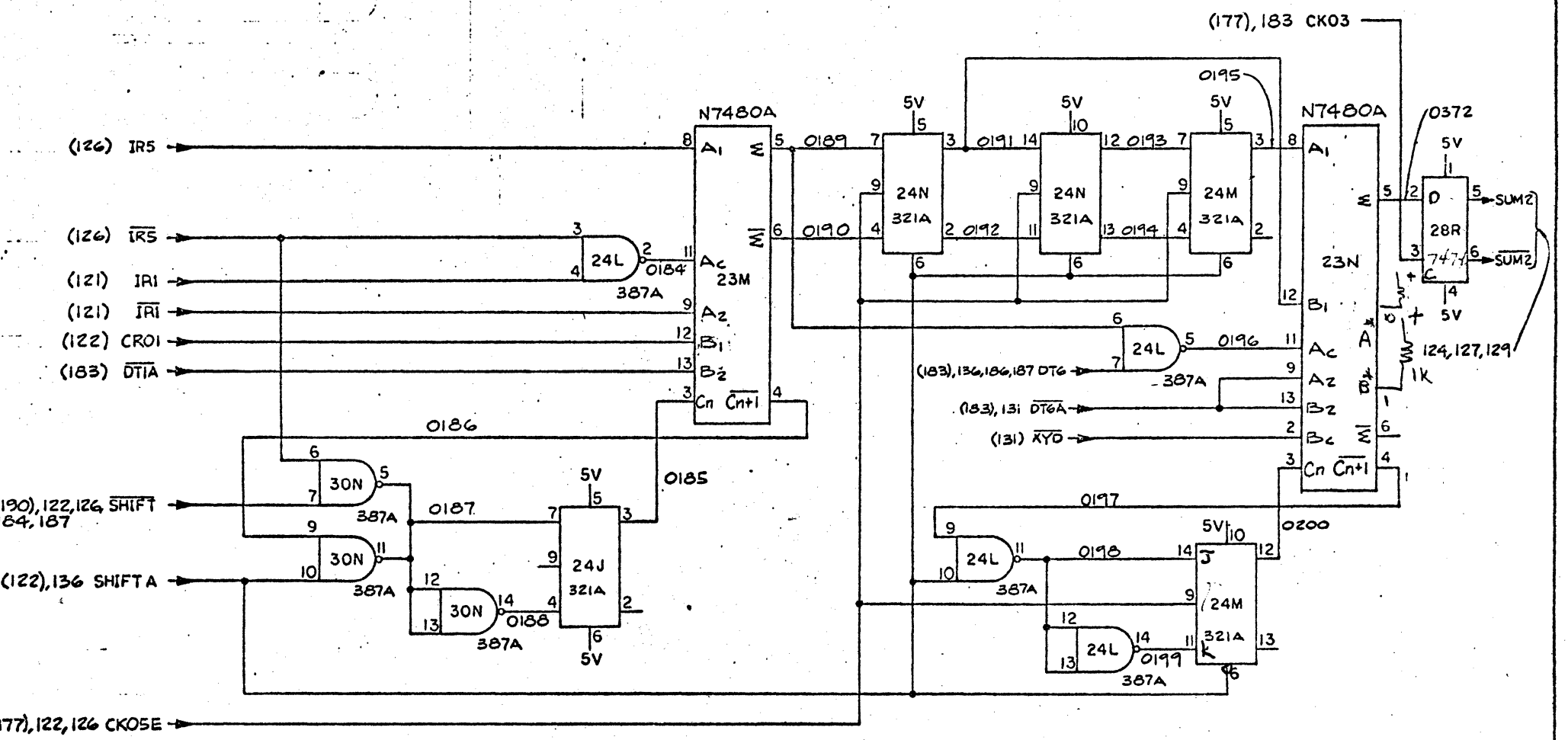
REVISIONS		DATE & APPROVAL
SIMBOL	REV. NO.	
A	REVISED PER ECO 412	2-29-74



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. 7404N ARE SIGNETICS TTL OR EQUIV.  
 2. 321A & 356A ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXK ANGLE 1.01 1.005 1P.30' CONCENTRICITY AT OD/OUT OF POUND 11.003		BY: <i>Polina</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevron Corporation 1502 McDev. Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE LOGIC DIAGRAM CHECKED BY REGISTER
NEXT ASSY	USED ON	SCALE		DWG NO. 100-0124

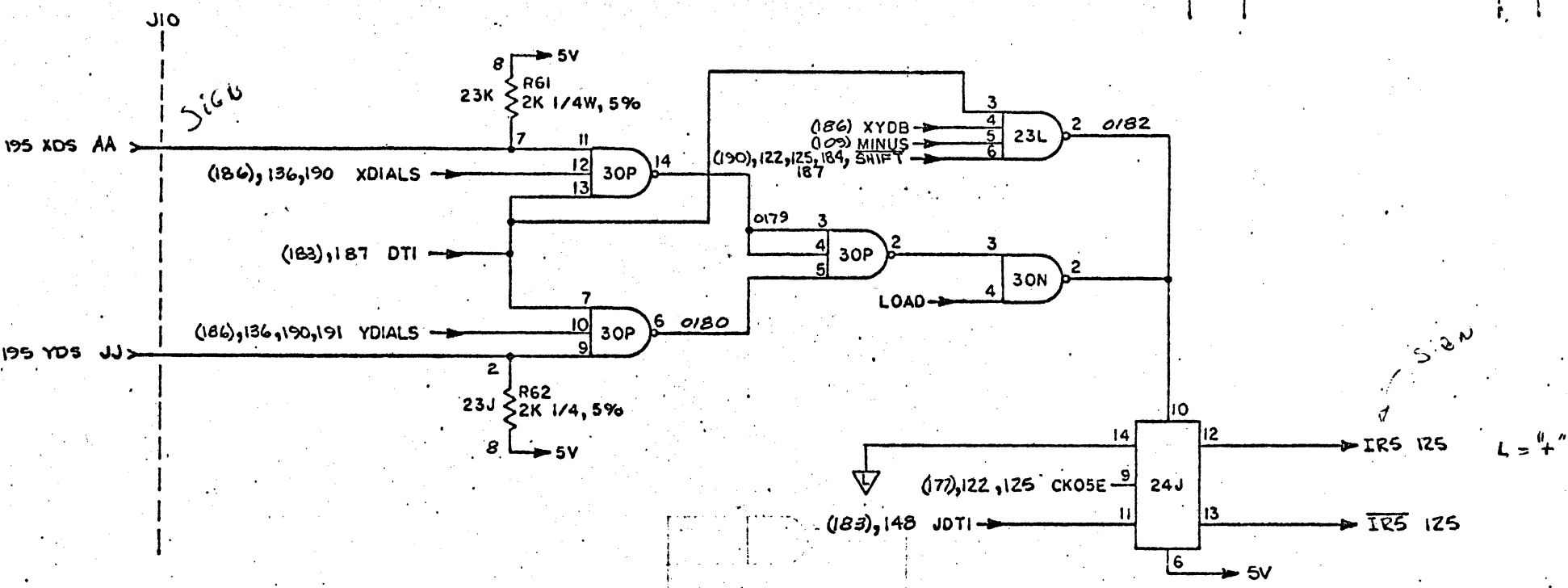
REVISIONS		DATE & APPROV.
STUDY:	DATE:	
A	REVISION PER ECO 412	10 APR 29 72
B	REV PER ECO 867	25 APR 4 73



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

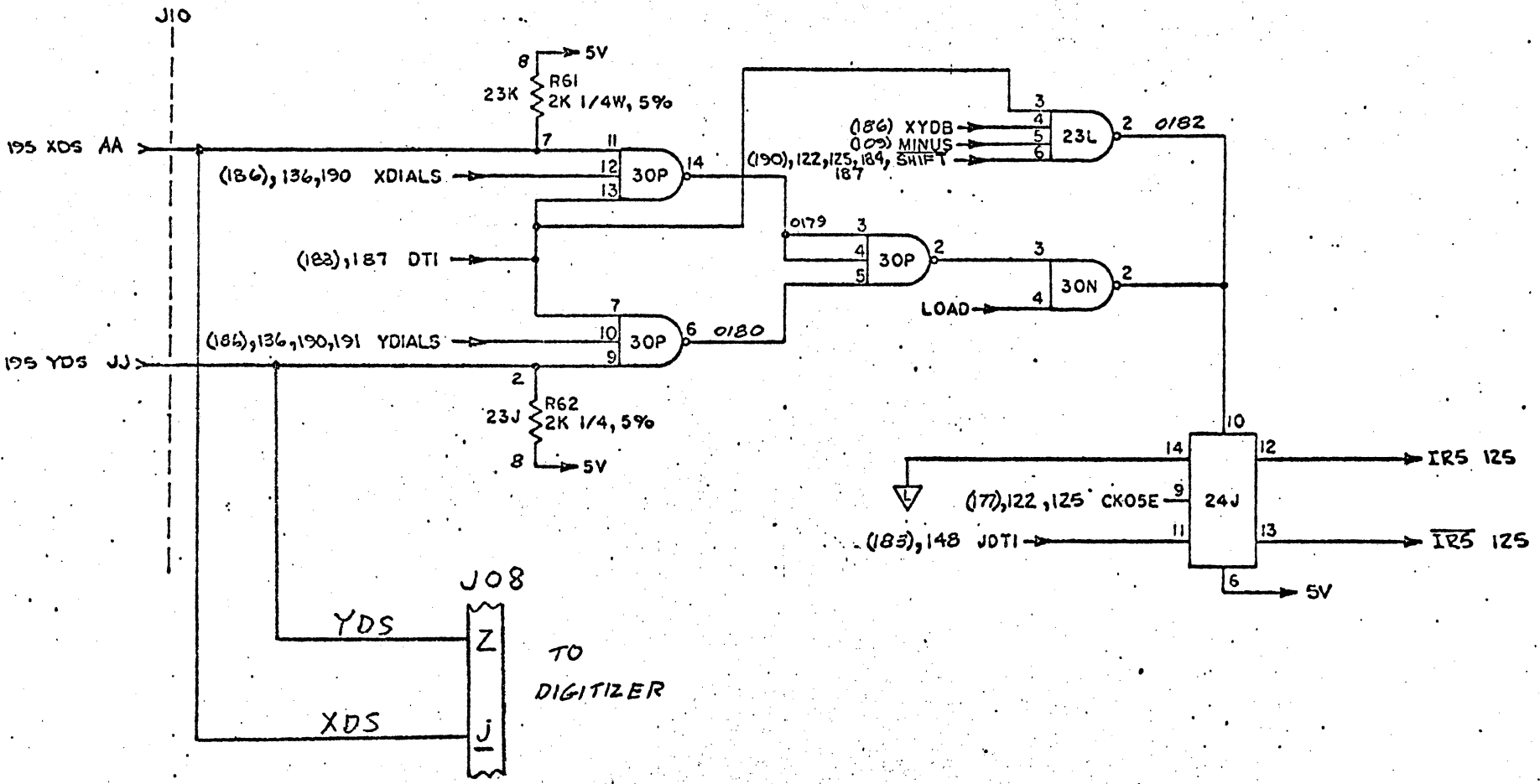
REF.	DESCRIPTION	QTY. REQ.	QTY. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXX ANGLE 1:21 2.001 10° 30'	BY <i>[Signature]</i>	DATE <i>[Date]</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1202 McGraw, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND T.I.R. .005	APPROVED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		TITLE LOGIC DIAGRAM - BCD TO BINARY AND DESIRED ARITHMETIC
	FINISH			SCALE DWB #
	NEXT ASSY	USED ON		1800-0125 <b>E</b>





NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES  
 OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED IN. HOLE ANGLE 2.01 3.05 3.0 30°		BY CHECKED	DATE (1/11/77)	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calspan Corporation 1902 Marine, Santa Ana, Calif 92704
CONCENTRICITY AND OUT OF ROLL T.I.R. .002		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE LOGIC DIAGRAM - DESIRE REGISTER SIGN
FINISH	NEXT ASSY	USED ON		SCALE DRAW # 1800-0126 A

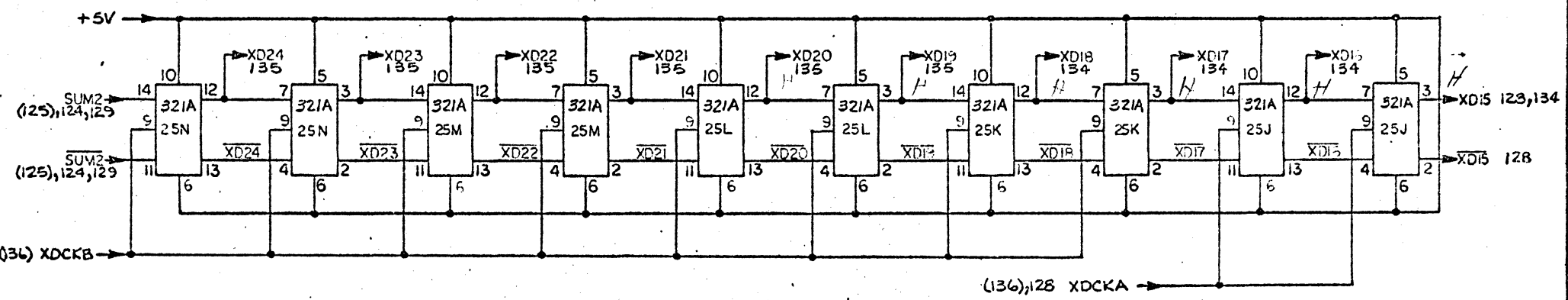


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES  
 OR EQUIV.

DRILLING MACHINE


REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER PACK	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>K. Cohen</i>	DATE <i>6-2-71</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carboron Corporation	
.XK .XK ANGLE	CHECKED	DATE	1912 McGraw, Santa Ana, California	
±.01 .250 10-16°	APPROVED	DATE	GRAM - REGISTER	
CONCENTRICITY AND OUT OF ROUND T.I.R. .005	MATERIAL		TITLE	
REMOVE BURRS AND BREAK ALL SHARP EDGES	FINISH		100-0139-2	

REVISIONS		
SYMBOL	DESCRIPTION	DATE & TIME
A	REVISED PER ECO 412	12-20

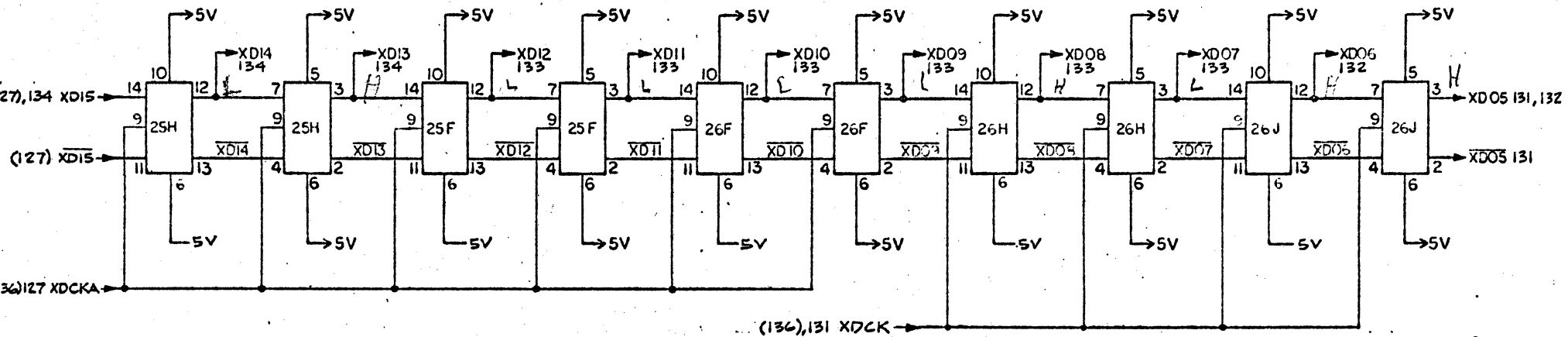


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II  
 SP SERIES OR EQUIVALENT

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .05 .08 .125 .150 .200 .250 .300 .375 .500 .625 .750 .875 1.000 1.250 1.500 1.750 2.000 2.500 3.000 3.500 4.000 5.000 6.000 7.500 10.000 12.500 15.000 20.000 25.000 30.000 37.500 50.000 62.500 75.000 100.000 125.000 150.000 200.000 250.000 300.000 375.000 500.000 625.000 750.000 1000.000 CONCENTRICITY AND OUT OF ROUND .015 .025 REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		BY: <i>W. J. ...</i> CHECKED: _____ APPROVED: _____ MATERIAL: _____	DATE: 11/27/72 DATE: _____ DATE: _____	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calspan Corporation 1902 McGehee, Santa Ana, Cal 92705
NEXT ASSY		USED ON		TITLE: <i>...</i> SCALE: <i>...</i>

A

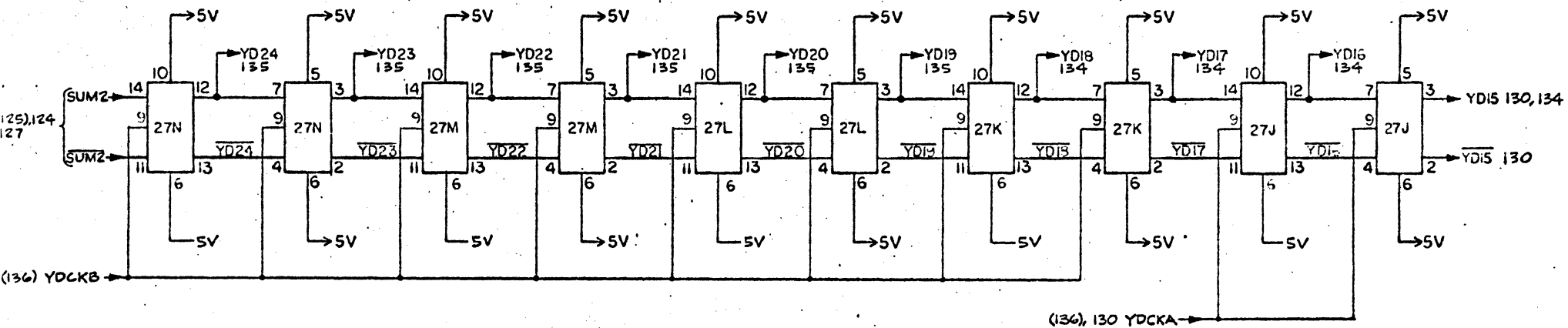
REVISIONS		
SYM BOL	DESCRIPTION	DATE & APP
A	REVISION PER ECO 412	11-12 APF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. FLIP-FLOPS ARE LU321A OR EQUIV.

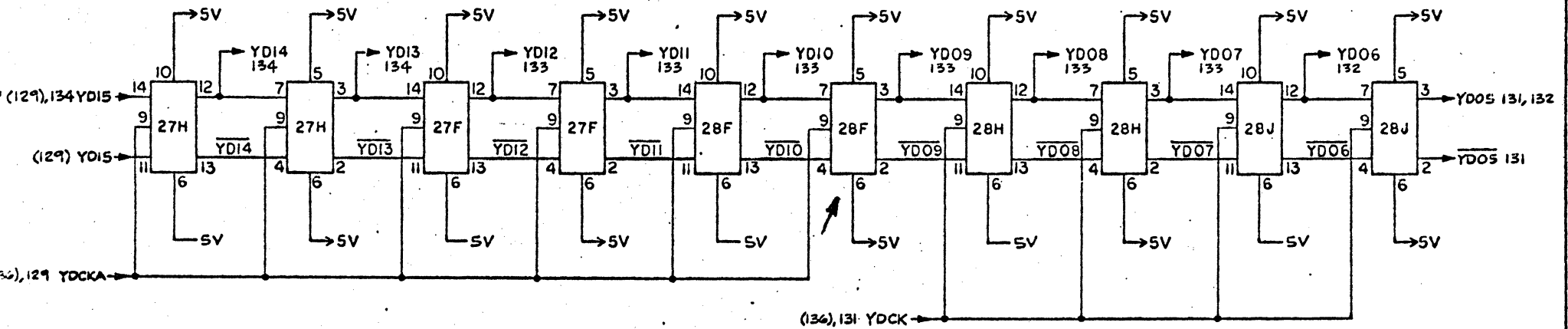
REF.	DESCRIPTION	QTY PER ASSY	QTY PER WASH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Hoban</i>	DATE 11/17/77	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevite Corporation 1902 McLean, Santa Ana, California
	FINISH	CHECKED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	
	FINISH	MATERIAL	TITLE	
NEXT ASSY	USED ON			SCALE 0.001

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REVISION PER ECO 412	12-28-72 RPF



NOTE: UNLESS OTHERWISE SPECIFIED  
 L FLIP-FLOPS ARE LU321A OR EQUIV.

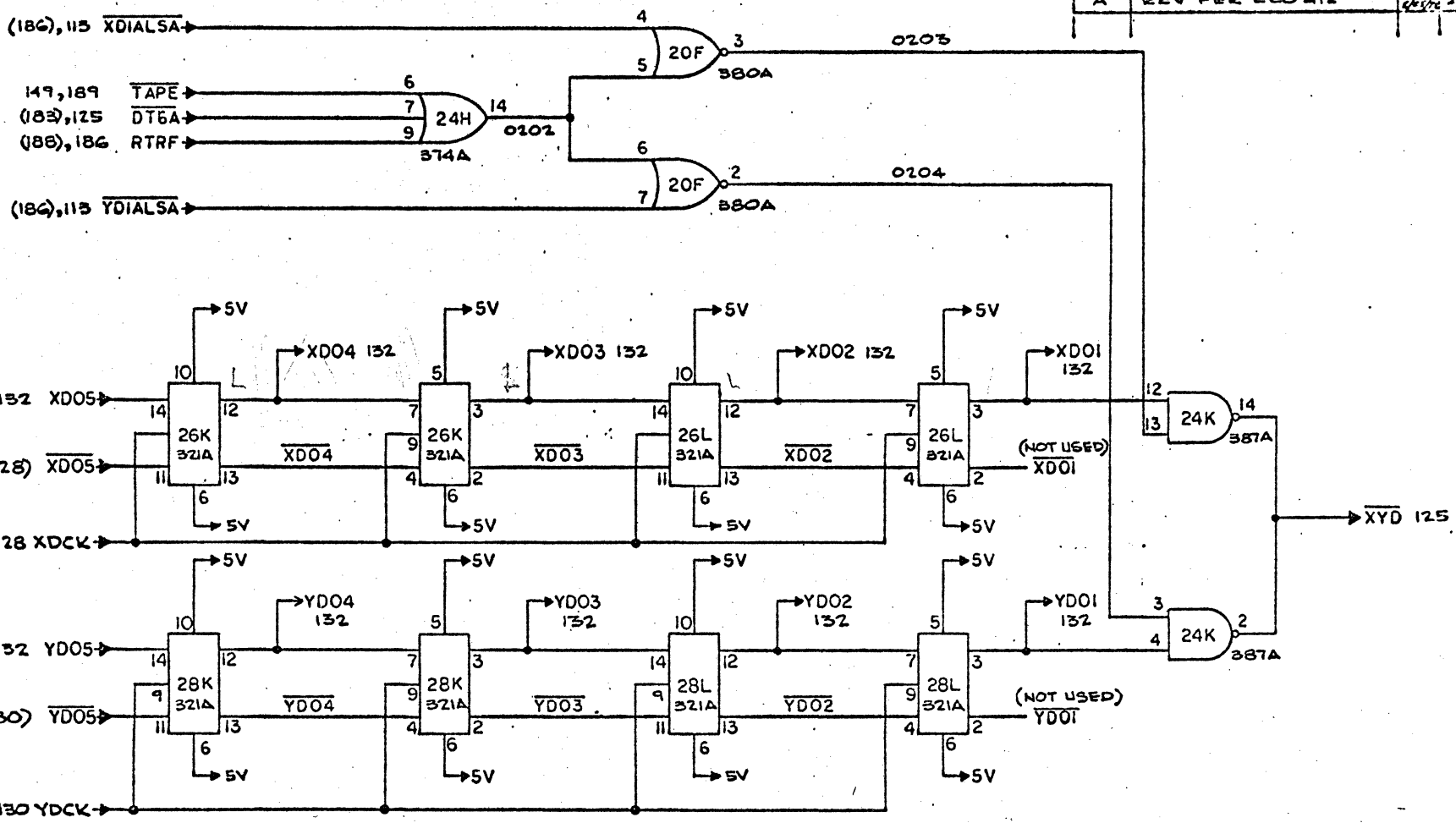
REF.	DESCRIPTION	QTY. PPR ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE 1:31 1:208 10° 30'	BY <i>McL...</i>	DATE 12/27/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corning Corporation 1932 McGraw, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND T.Y.R. .005	CHECKED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	TITLE LUMIN. REGISTER PITS 15-24
	FINISH	MATERIAL	DATE	SCALE ONE 1/2"
NEXT ASSY	USED ON			1502-0129



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. FLIP-FLOPS ARE LU321A OR EQUIV

REP.	DESCRIPTION	QTY. PER ASSY.	STD. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Kobu</i>	DATE 18 APR 72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cotron Corporation 1902 Mc Gray, San Jose, Calif 95131
	.XX .XXX ANGLE	CHECKED	DATE	
	CONCENTRICITY AND OUT OF ROUND T.I.R. .015	APPROVED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		
	FINISH			TITLE LOGIC DIAGRAM - DESIRED REGISTER BITS 5-14
	NEXT ASSY	USED ON		SCALE 1800-0130 A

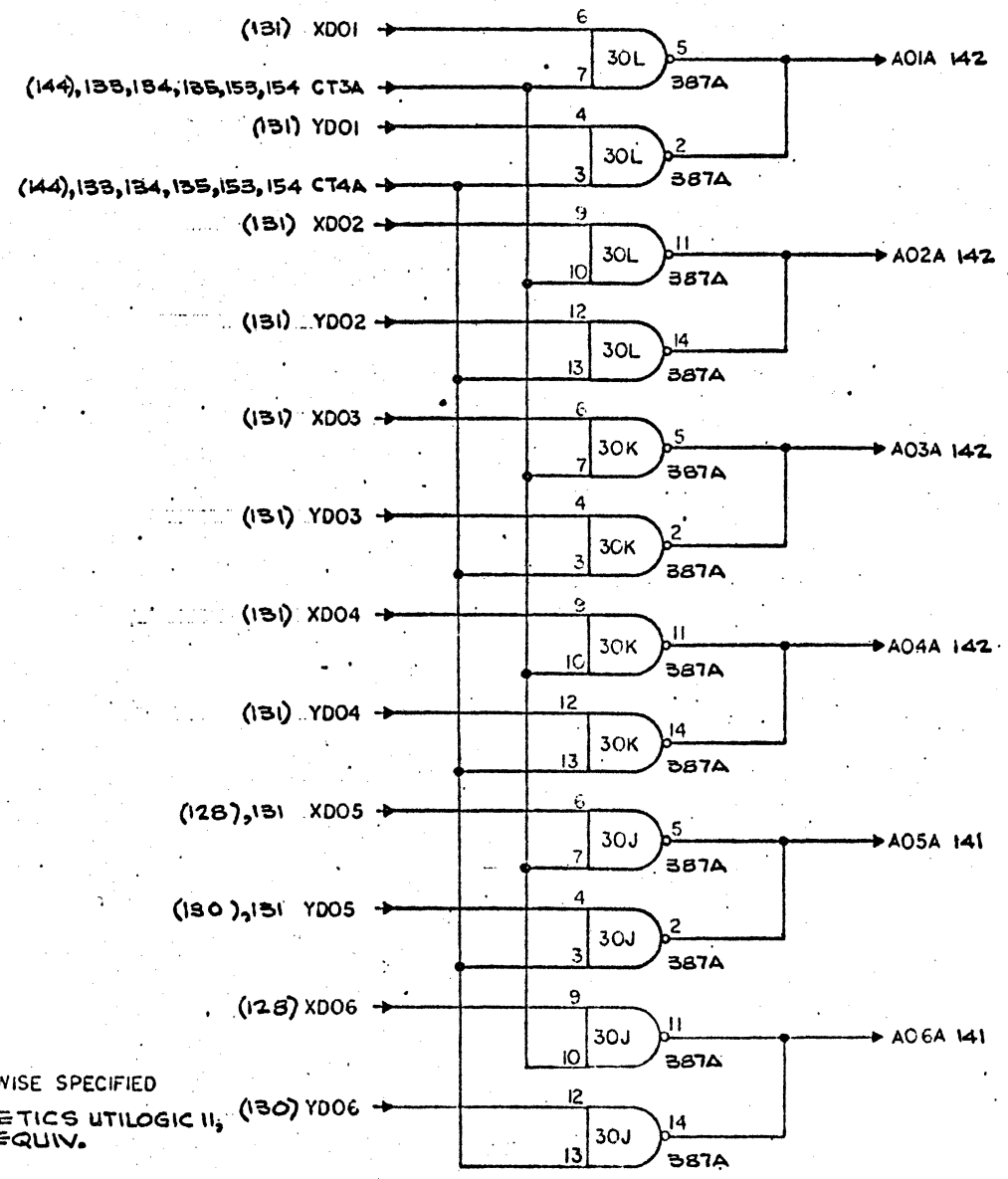
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	2-28-72 RPF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER INCH	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED Ø MAX HOLE 1.01 2.00 10.00	BY <i>R.C.H.</i>	DATE 1/12/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Geontron Corporation 1702 N. Dow, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND I.R. .005	APPROVED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		FILE LOGIC DIAGRAM X AND Y DESIRED-REGISTER PINS 1-4
	FINISH			
	NEXT ASSY	USED ON		SCALE 0/000
				1800-0131

SYMBOL		DESCRIPTION		DATE & BY
A		REV PER ECO 412		12/28/72 RPF

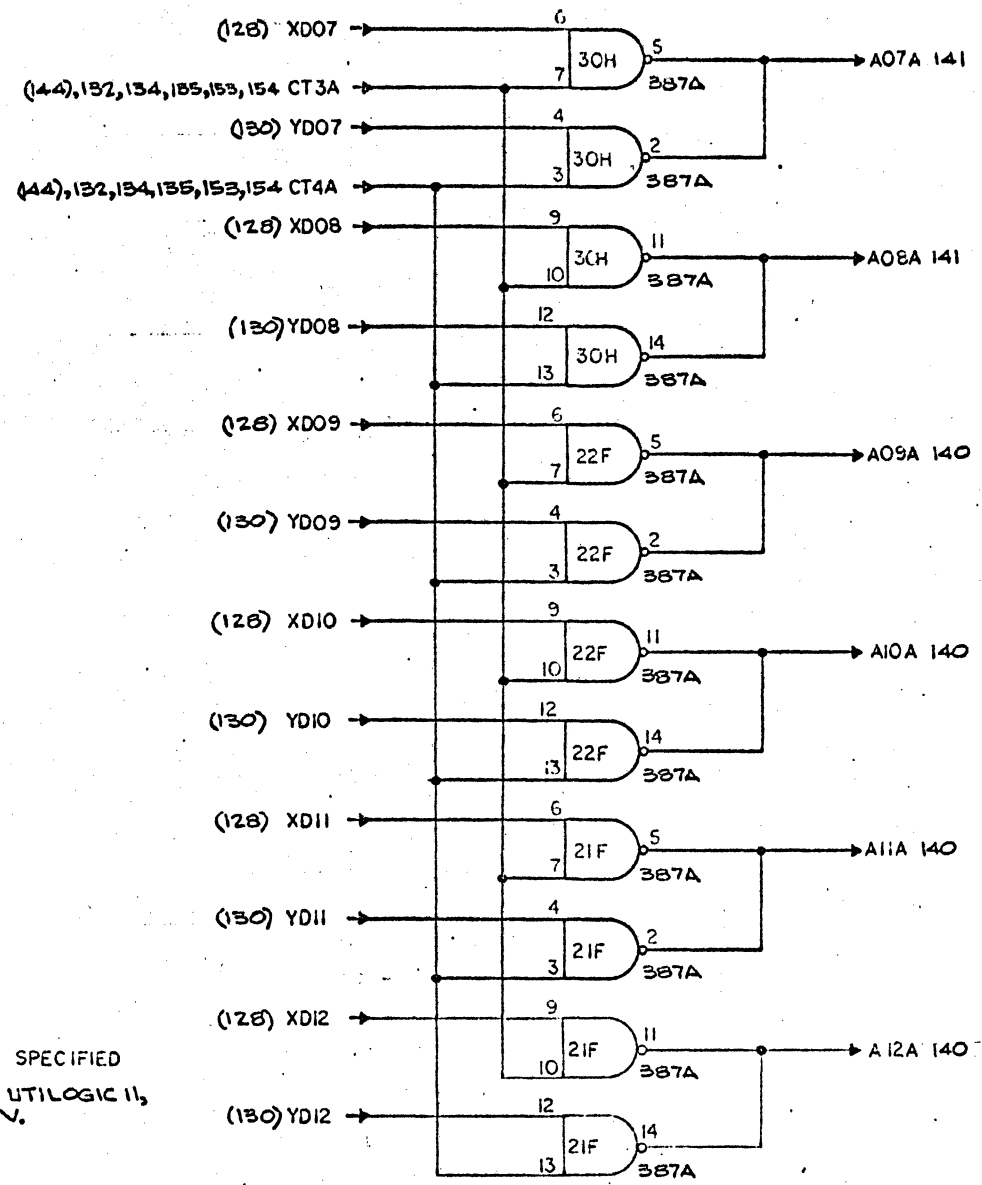


NOTE: UNLESS OTHERWISE SPECIFIED  
 I.C.'S ARE SIGNETICS UTILIC 11, (130) YD06  
 SP SERIES OR EQUIV.

REF.	DESCRIPTION	REV. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE .001 .002 .003 CONCENTRICITY AND OUT OF ROUND T.R. .005		BY <i>Kohn</i>	DATE <i>12/28/72</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McGee, Santa Ana, California
		CHECKED	DATE	
		APPROVED	DATE	TITLE LOGIC DIAGRAM DISTALD SYSTEM OUTPUT PART 141
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		SCALE
FINISH				QTY. # 120-012
NEXT ASSY	USED ON			



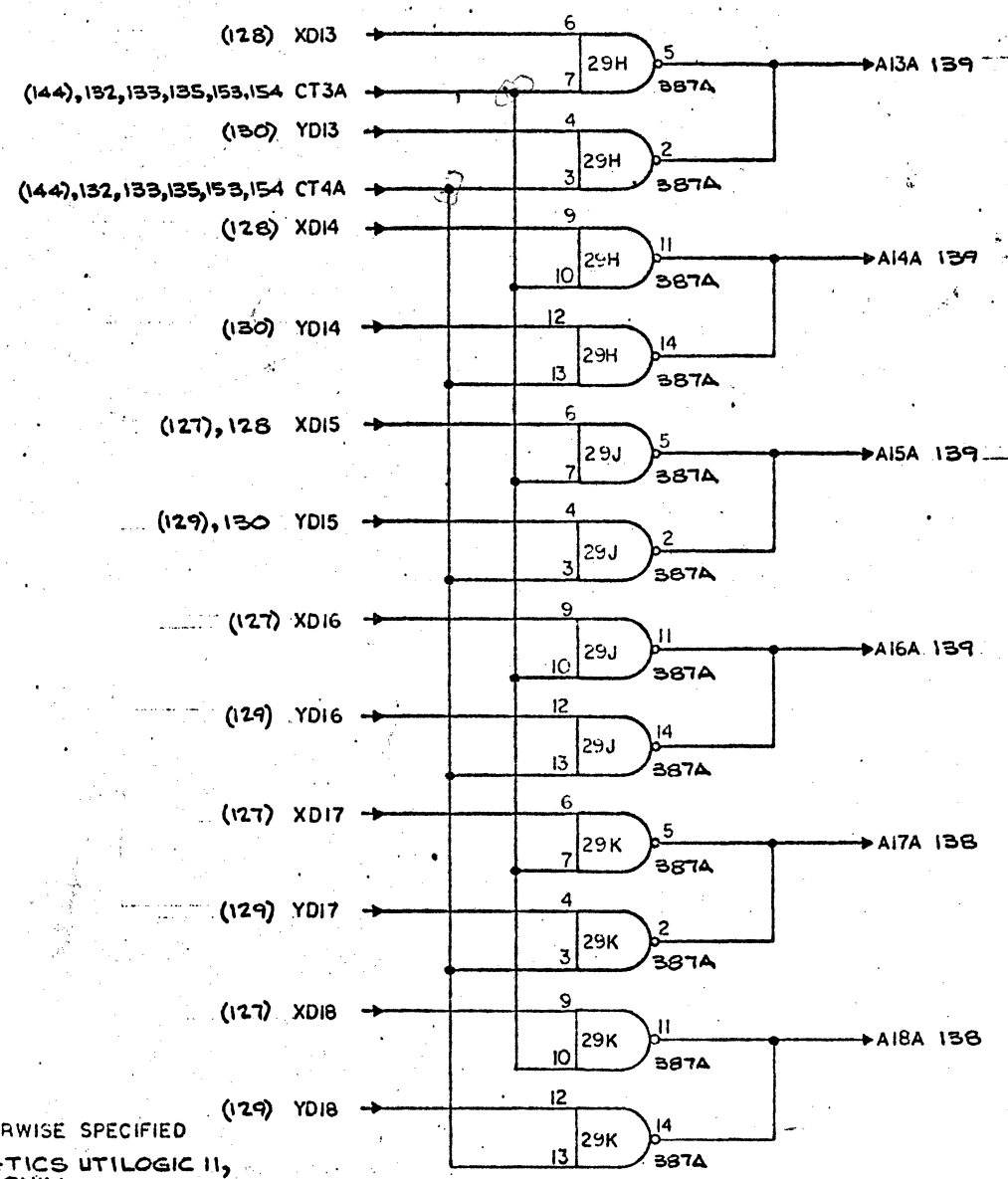
REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
A	REV PER ECO 412	3-20-72 RPF



NOTE: UNLESS OTHERWISE SPECIFIED  
I. I. C.'S ARE SIGNETICS UTILIGIC II,  
SP SERIES OR EQUIV.

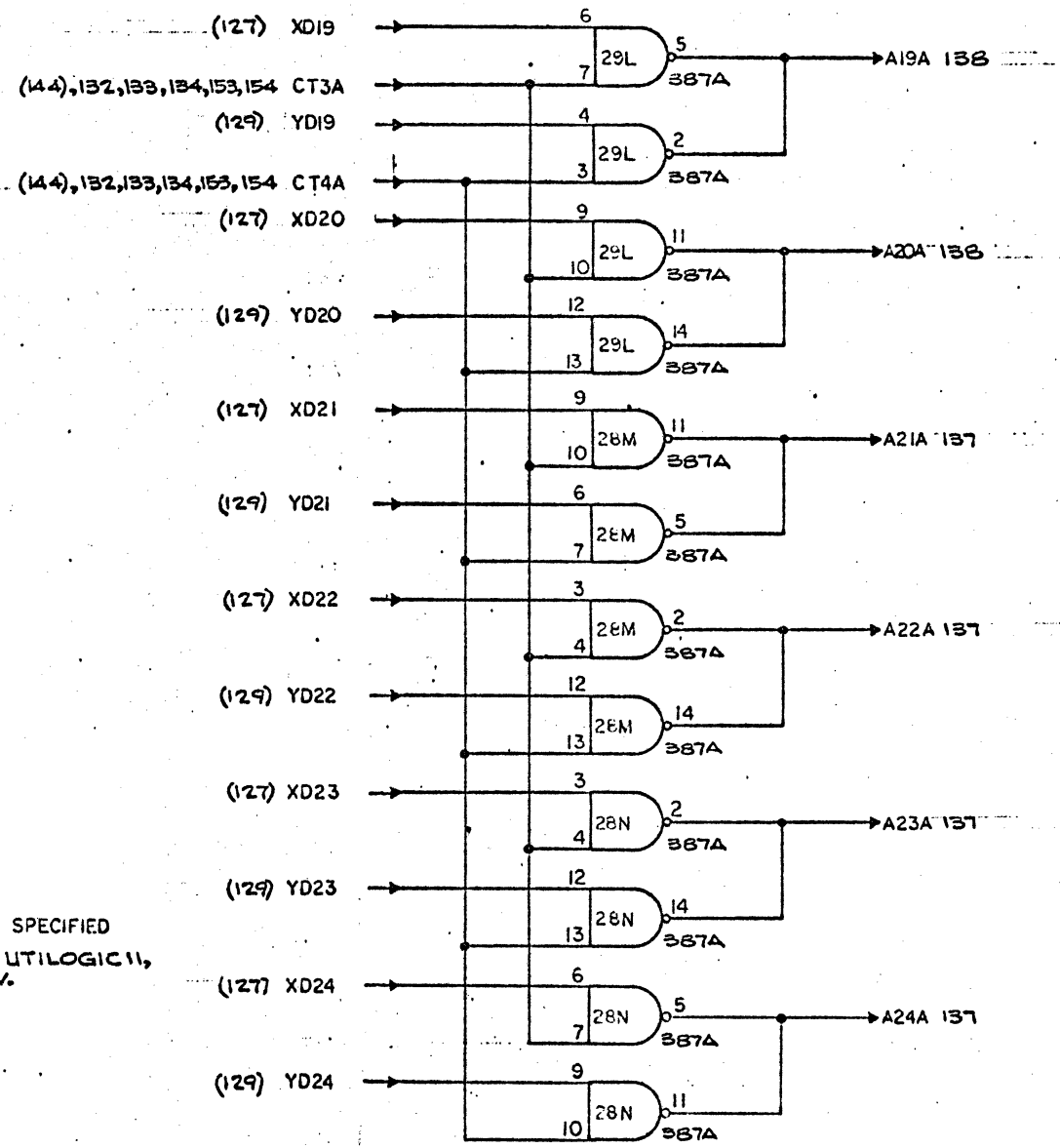
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>Kahn</i> DATE <i>6-2-72</i>		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1502 N. Gate, Santa Ana, California
.XX .XXX ANGLE		CHECKED		
±.01 ±.005 ±P .38"		APPROVED		TITLE
CONCENTRICITY AND OUT OF ROUND Y.R. .051		MATERIAL		DESIGNED BY <i>W. J. ...</i> CENTER OUTPUT DATE <i>6-2-72</i>
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		SCALE
NEXT ASSY		USED ON		QTY. 6 P.O. NO. 100-013

SYNOPSIS	REV PER ECO 412	DATE & APPROVAL
A		2-28-72 RRF



NOTE: UNLESS OTHERWISE SPECIFIED  
 I. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

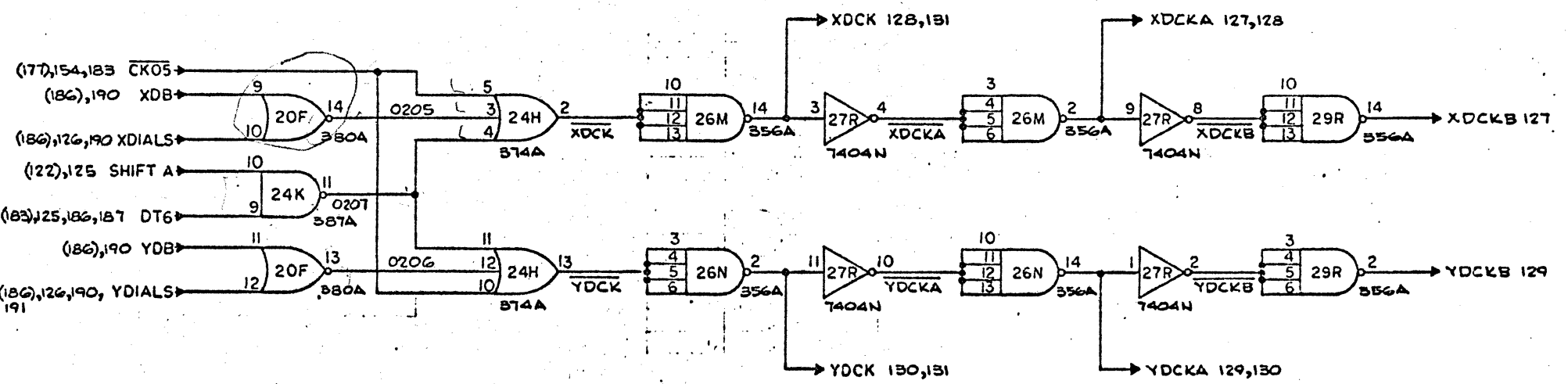
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Kelm</i>	DATE <i>CMA 777</i>	<b>SYNERGISTIC PRODUCTS, INC.</b> A Subsidiary of Cavtron Corporation 1302 McGraw, Santa Ana, California
	XX .XX ANGLE	CHECKED	DATE	
	1.91 2.00 19.99	APPROVED	DATE	
	CONCENTRICITY AND OUT OF ROUND I.R. .005			
	REMOVE BURR AND BREAK ALL SHARP EDGES	MATERIAL		TITLE <b>DESIGN TRANSFER OUTPUT</b> 28-111-13-19
	FINISH			SCALE DWS 8 <b>100-0134</b>
	NEXT ASSY	USED ON		



NOTE: UNLESS OTHERWISE SPECIFIED  
 I.C.'S ARE SIGNETICS UTILOGIC 11,  
 SP SERIES OR EQUIV.

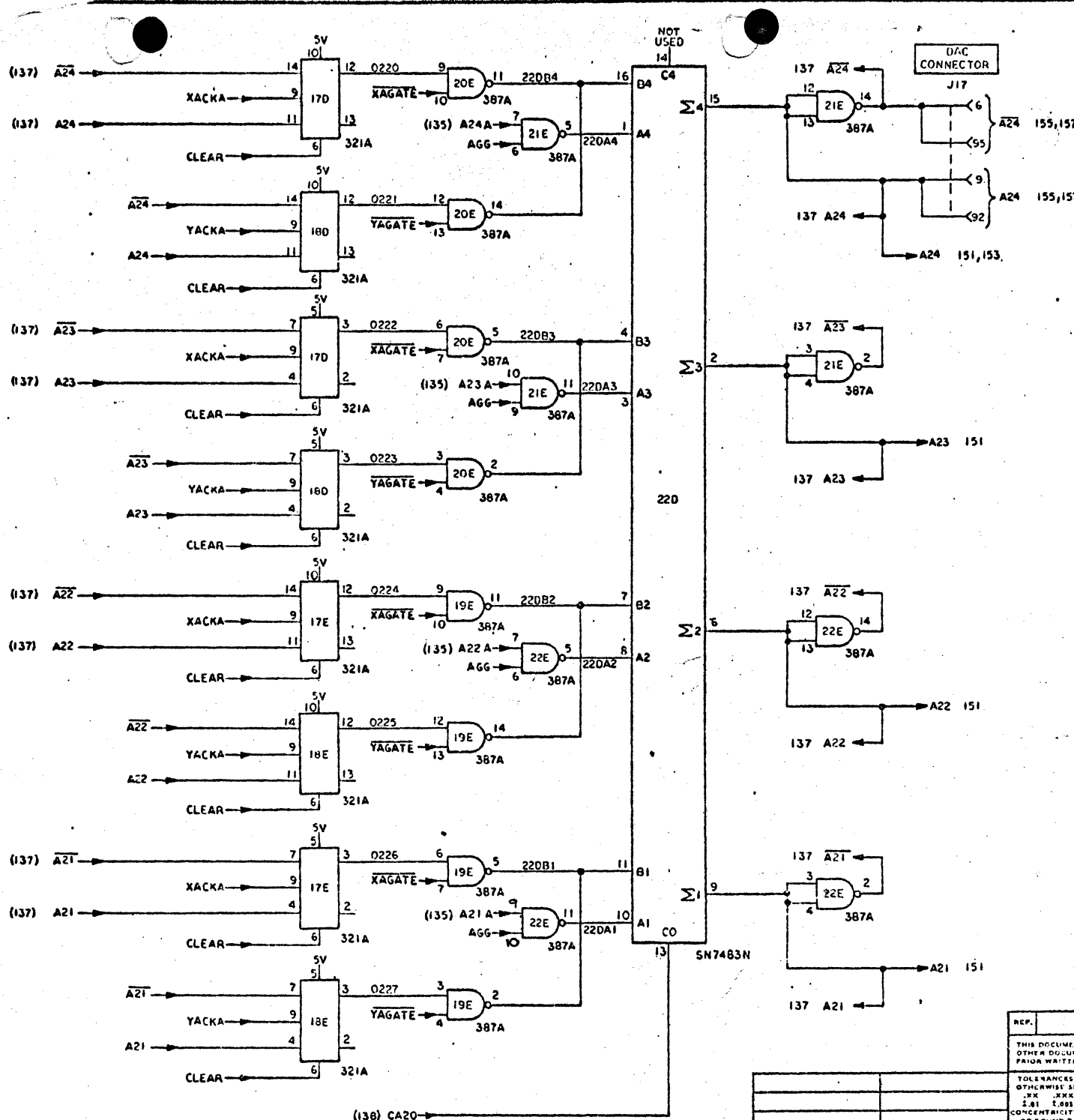
REF.	DESCRIPTION	QTY PER ASSY	QTY PER MACH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING IN ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE (MM/YY)		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Contron Corporation 1502 McGee, Santa Ana, California
.XX .XX ANGLE		CHECKED	DATE	
.125 .005 .005		APPROVED		TITLE: LEADS FOR 1000 PACKED: MASTER OUTPUT DATE: 10/24
CONCENTRICITY AND OUT OF ROUND 1/1000		DATE		
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		SCALE: 1/16" = 1"
FINISH		FINISH		
NEXT ASSY	USED ON	DATE		1570-0135

SYMBOL	DESCRIPTION	REV	DATE	BY
A	REV PER ECO 412		2-28-72	A.P.F.



NOTE UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS' UTILOGIC II,  
 SP SERIES OR EQUIV.  
 2. INVERTERS ARE SIGNETICS' DIGITAL  
 54/74, TTL SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER Assy.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE ±.01 ±.005 1P/30° CONCENTRICITY AND OUT OF ROUND T.I.R..005		BY <i>Robert</i> CHECKED DATE	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1902 1/2 Ave., Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
FINISH		MATERIAL	TITLE LOGIC DIAGRAM - X AND Y DESIRED REGISTER CLOCKING	
NEXT ASSY		USED ON	SCALE	DWG # 1800-0136



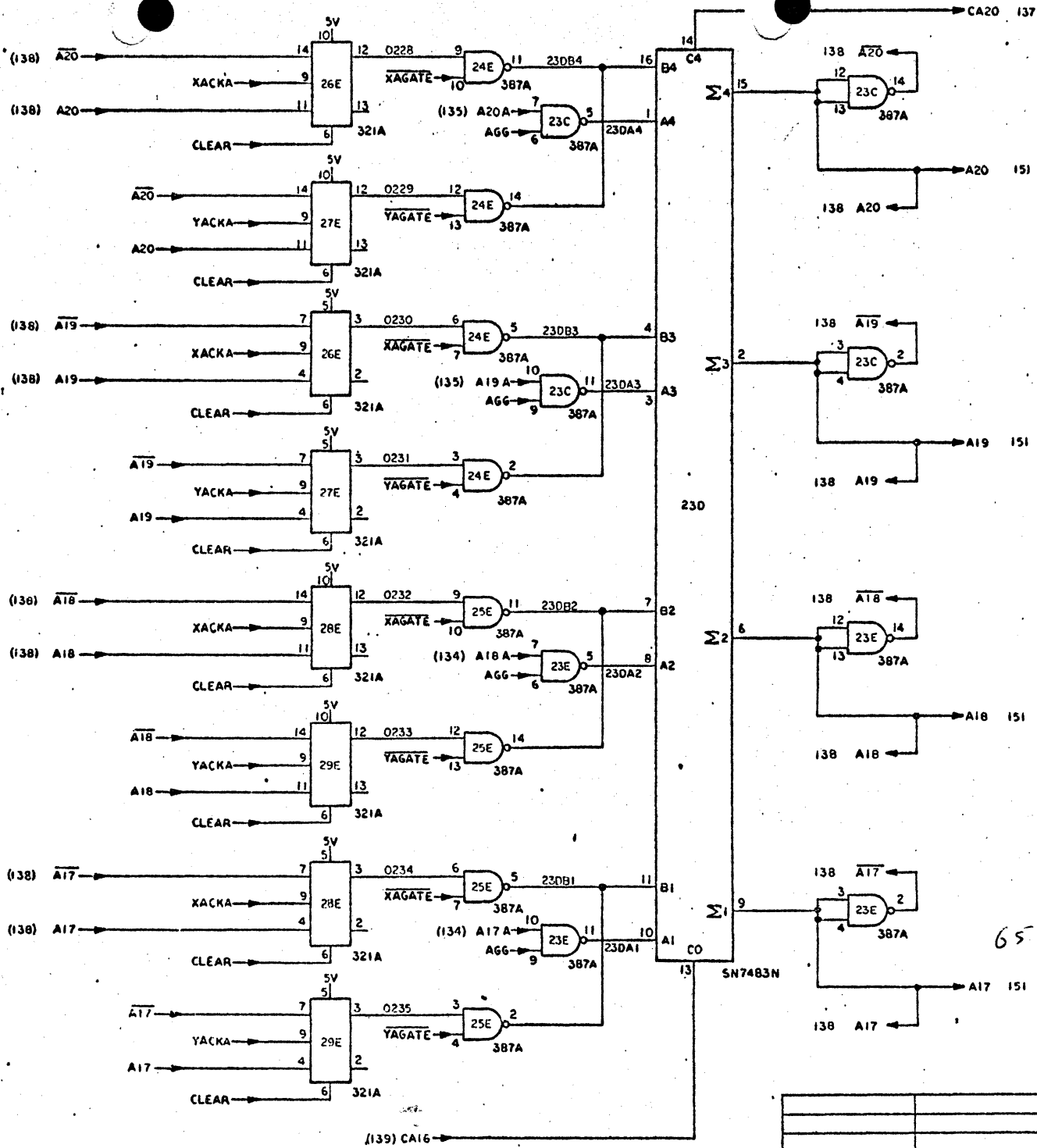
SYMBOL	DESCRIPTION	DATE & REV.
B	REV PER ECO 412	2-23-72 KPF

SIGNAL TRACEABILITY:  
 AGG (143), 138, 139, 140, 141, 142  
 CLEAR: (146), 139, 139, 140, 141, 142  
 XACKA: (145), 138B  
 XAGATE: (144), 138, 139, 140, 141, 142  
 YACKA: (145), 138B  
 YAGATE: (144), 138, 139, 140, 141, 142

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY PER ASSY	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	0.005	0.005	0.005	0.005
APPROVED	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corvair Corporation 1507 McGraw, Santa Ana, California		
REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL	TITLE LOGIC DIAGRAM ACTUAL POSITION REGISTER AND ADDER - BITS		
FINISH	SCALE	DWS # 1800-0137 B		

NEXT ASSY	USED ON
-----------	---------

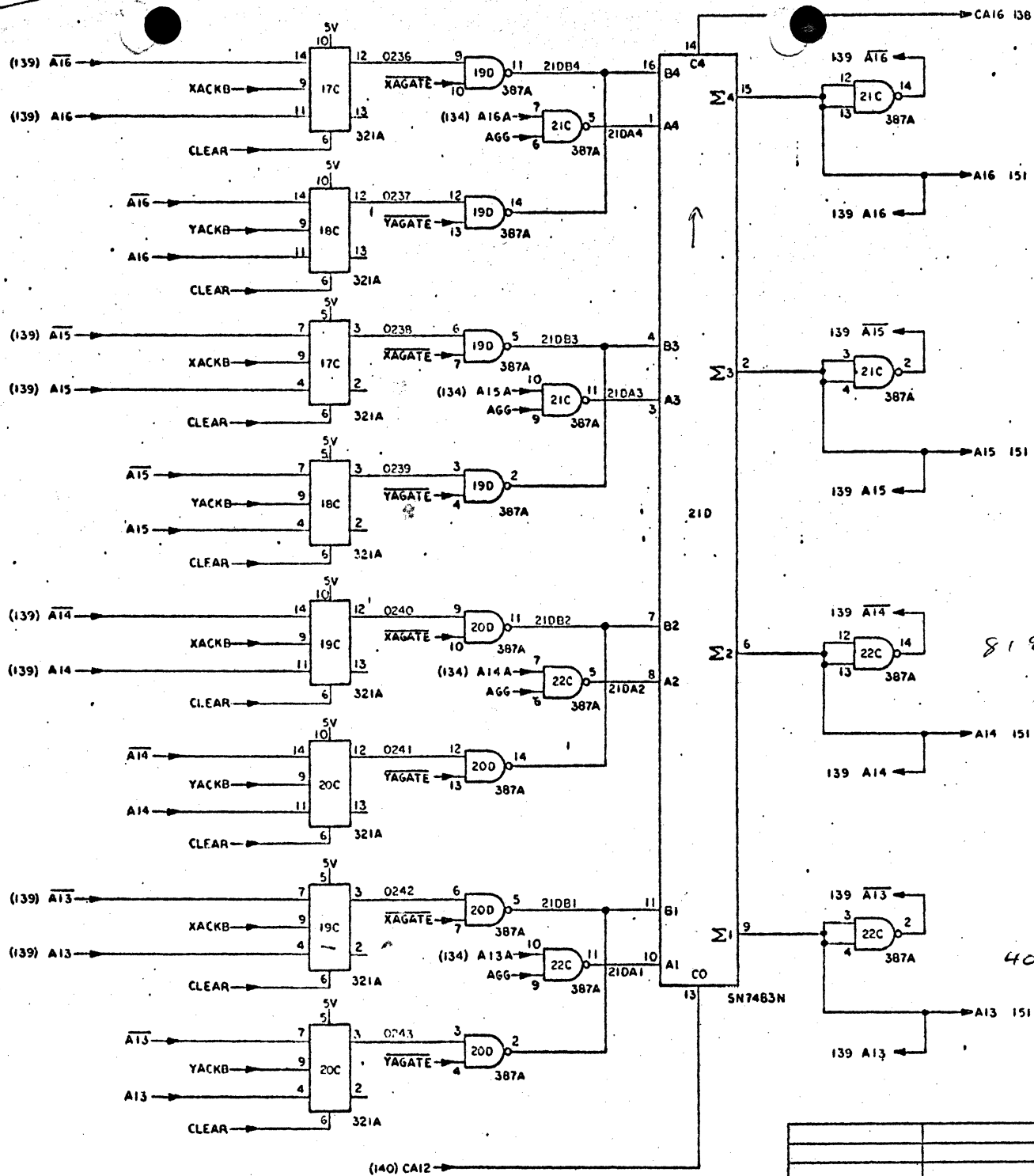


SIGNAL TRACEABILITY:  
 AGG: (143), 137, 139, 140, 141, 142  
 CLEAR: (146), 137, 139, 140, 141, 142  
 XACKA: (145), 137  
 XAGATE: (144), 137, 139, 140, 141, 142  
 YACKA: (145), 137  
 YAGATE: (144), 137, 139, 140, 141, 142

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. IC'S ARE SIGNETICS UTILOGIC II, 5P SERIES OR EQUIV.

65 536

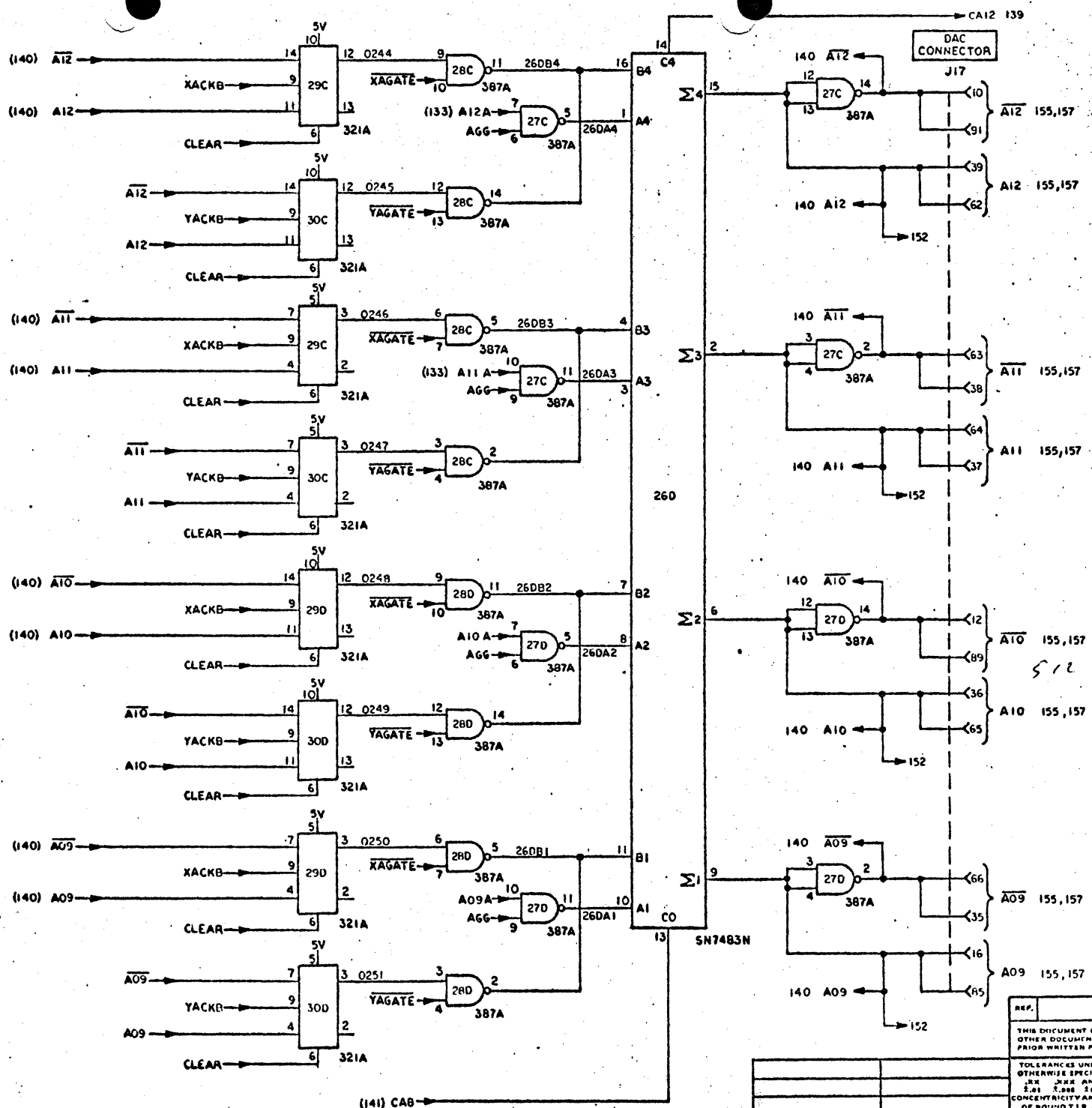
REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	BY GALVAN	9-27-71	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carboron Corporation 1912 McGee, Santa Ana, California
	CHECKED		DATE	
	APPROVED		DATE	
	MATERIAL			
	FINISH			
	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLES P.81 2.33 2P.81 CONCENTRICITY AND OUT OF ROUND I.R. .001 REMOVE BURRS AND BREAK ALL SHARP EDGES			
NEXT ASSY	USED ON			
TITLE				LOGIC DIAGRAM ACTUAL POSITION REGISTER AND ADDER - BITS
SCALE				DWG # 1800-0138



SIGNAL TRACEABILITY:  
 AGG: (143), 137, 138, 140, 141, 142  
 CLEAR: (146), 137, 138, 140, 141, 142  
 XACKB: (145), 140  
 XAGATE: (144), 137, 138, 140, 141, 142  
 YACKB: (145), 140  
 YAGATE: (144), 137, 138, 140, 141, 142

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER PACK.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED HOLE SIZE ANGLE 2.51 3.000 2° 30'	BY GALVAN	9-27-71	DATE
	CONCENTRICITY AND OUT OF ROUND T.I. & .005	CHECKED		
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED		DATE
	FINISH	MATERIAL		
	NEXT ASSY	USED ON		
				SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carbon Corporation 1507 McGraw, Santa Ana, California
		FILE LOW LEVEL DIAGRAM ACTUAL POSITION REGISTER AND REFER - 0177 11-11		SCALE 1000 X 1800-0139

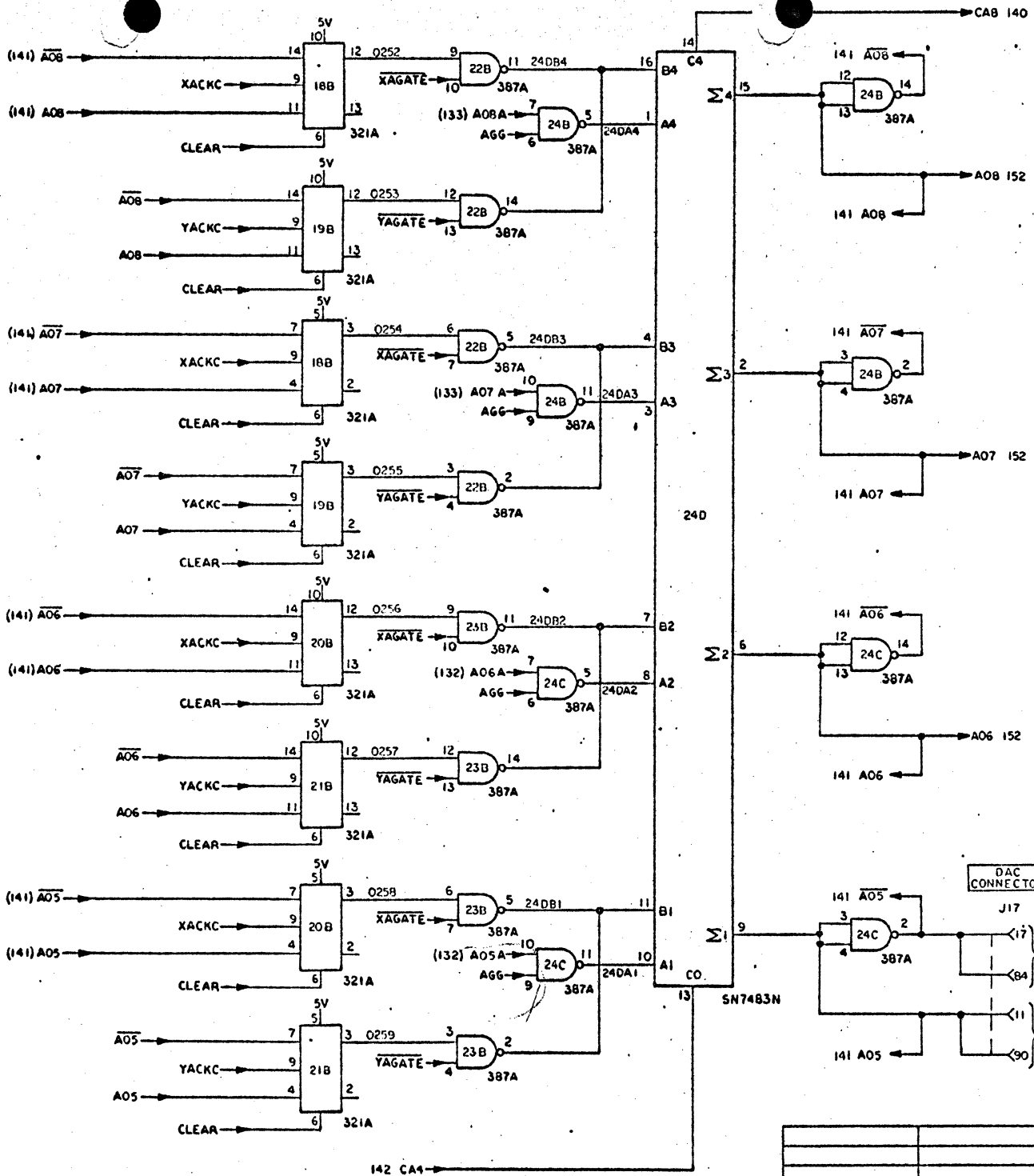


SIGNAL TRACEABILITY:  
 AGG: (143), 137, 138, 139, 141, 142  
 CLEAR: (146), 137, 138, 139, 141, 142  
 XACKB: (145), 139  
 YACKB: (145), 139  
 YAGATE: (144), 137, 138, 139, 141, 142

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. L.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MAT'L.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE ±.01 ±.005 ±.010 CONCENTRICITY AND OUT OF ROUND T.R. .005		BY GALVAN	9-27-71	SYNGETIC PRODUCTS, INC. A Subsidiary of Clevicon Corporation 1932 N. Cowi, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES!		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE ACTUAL POSITION REGISTER AND AFTER - FITS
NEXT ASSY		USED ON		SCALE DWS P. 1800-0140



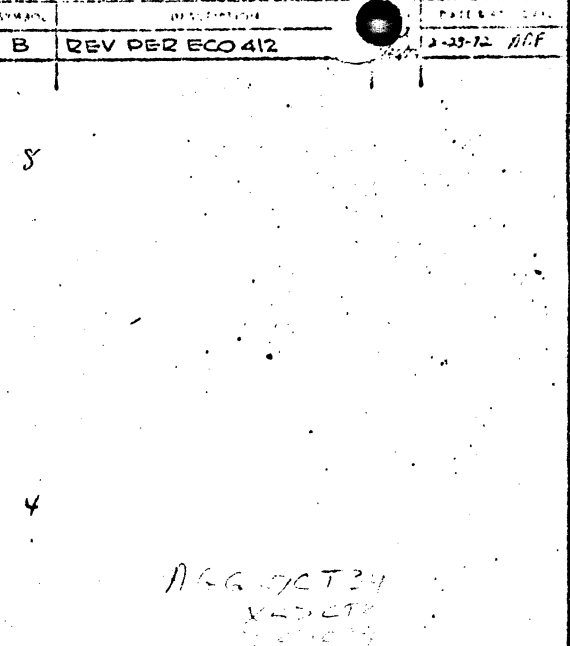
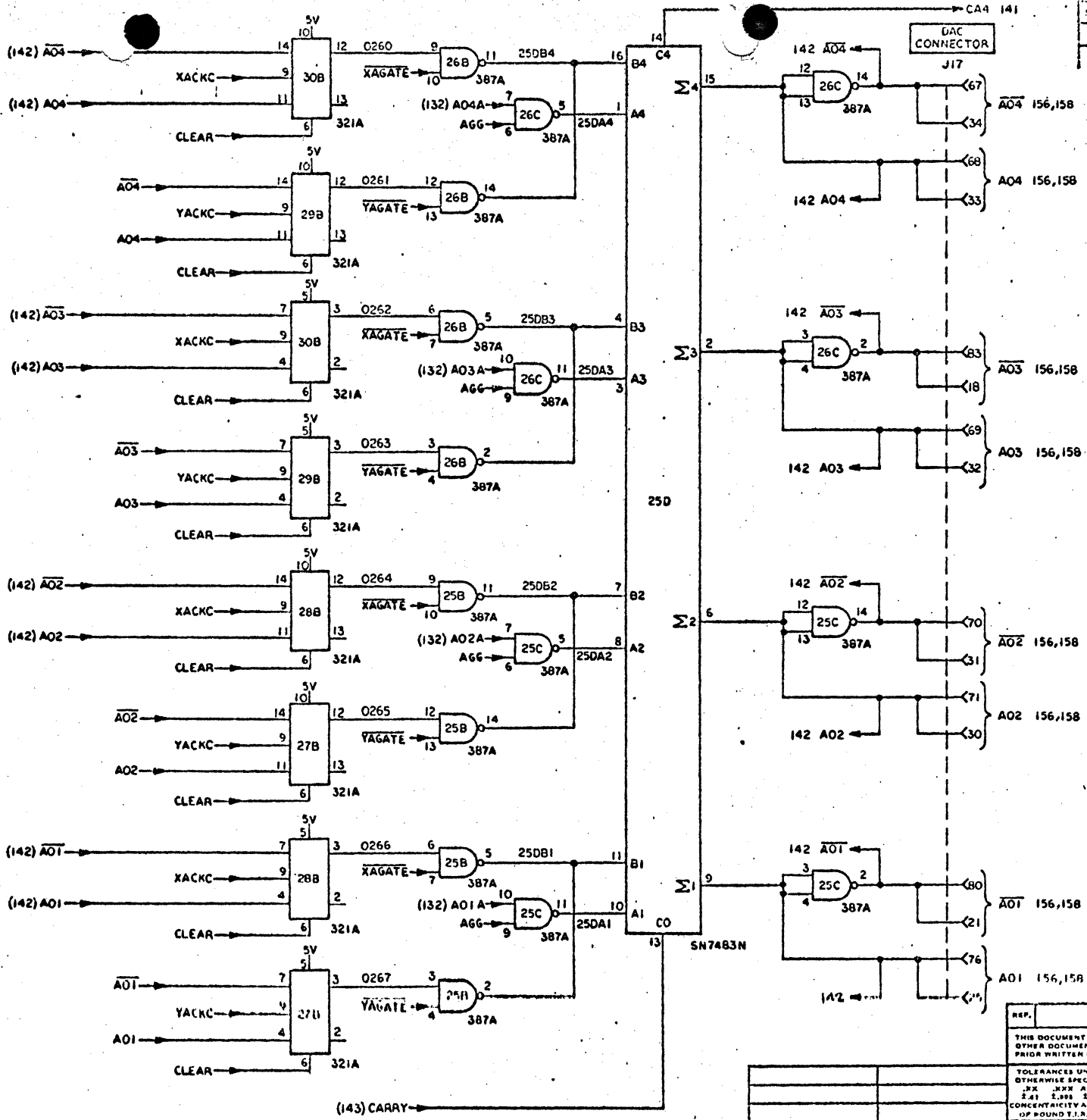


SWAP  
24D  
22D

SIGNAL TRACFABILITY:  
 AGG: (143), 137, 138, 139, 140, 142  
 CLEAR: (116), 137, 138, 139, 140, 142  
 XACKC: (145), 142  
 XAGATE: (144), 137, 138, 139, 140, 142  
 YACKC: (145), 142  
 YAGATE: (144), 137, 138, 139, 140, 142

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

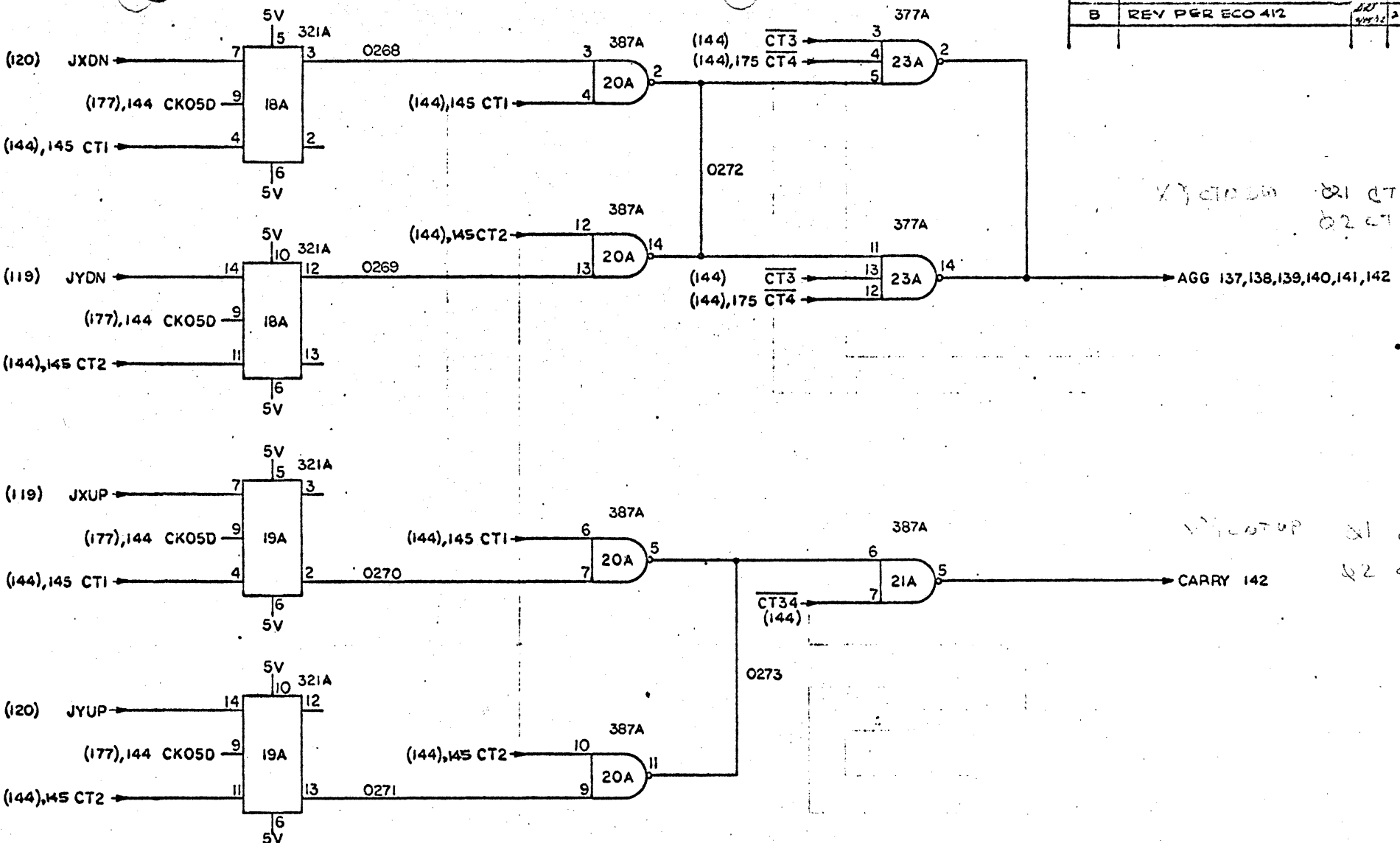
REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED	BY GALVAN	DATE	9-27-71	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corvair Corporation 1902 Mc Caw, Santa Ana, California
DRILL ANGLE	CHECKED	DATE		
CONCENTRICITY AND OUT OF ROUND T.I.R. .015	APPROVED	DATE		
REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL			
FINISH				TITLE ACTUAL POSITION REGISTER AND ADDER - BITS
NEXT ASSY	USED ON			SCALE DWG # 1800-0141



*AGG 137, 138, 139, 140, 141*  
*XACKC 145, 141*  
*YAGATE 144, 137, 138, 139, 140, 141*  
*YACKC 145, 141*  
 SIGNAL TRACEABILITY:  
 AGG: (143), 137, 138, 139, 140, 141  
 CLEAR: (146), 137, 138, 139, 140, 141  
 XACKC: (145), 141  
 XAGATE: (144), 137, 138, 139, 140, 141  
 YACKC: (145), 141  
 YAGATE: (144), 137, 138, 139, 140, 141

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX .XX ANGLE ±.01 ±.005 ±.020 CONCENTRICITY AND OUT OF POUND T.I.R. .001		BY GALVAN	9-27-71	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1902 Mission, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSY		USED ON		TITLE: LOGIC DIAGRAM ACTUAL POSITION REGISTER AND ADDER - BITS 1-4 SCALE: DIMS # 1800-0142

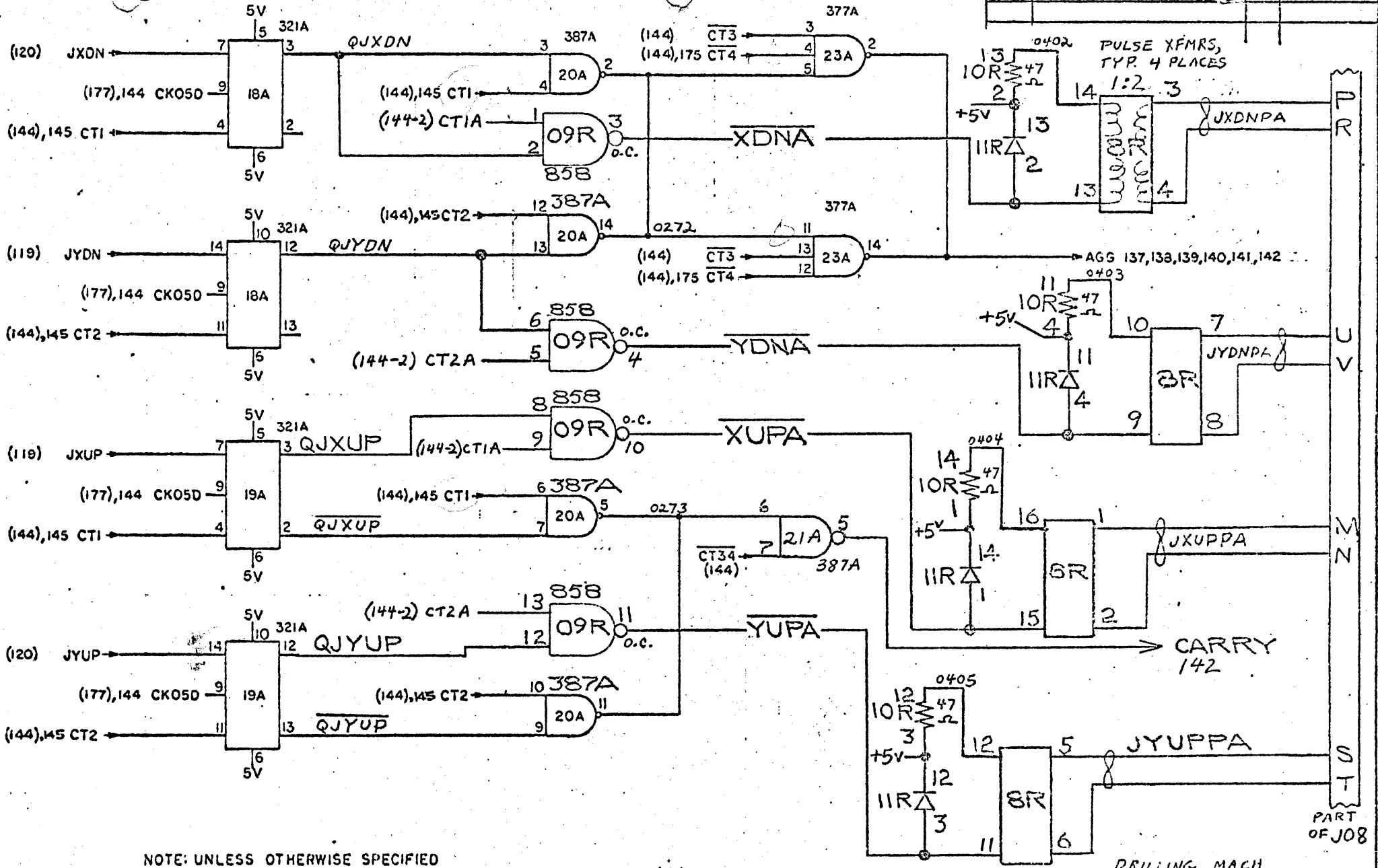


REVISIONS			DATE & APPROVAL
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
B	REV PGR ECO 412	221 4/18/72	2-28-72 APF

NOTE: UNLESS OTHERWISE SPECIFIED  
 I. IC'S ARE SIGNETICS UTILIC 11, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SYNTECTIC PRODUCTS, INC.				
<small>THIS DRAWING IS THE PROPERTY OF SYNTECTIC PRODUCTS, INC. IT IS TO BE USED ONLY FOR THE MANUFACTURE OF THE EQUIPMENT SPECIFIED HEREON. IT IS TO BE KEPT IN A SAFE PLACE AND NOT TO BE LOANED, REPRODUCED, COPIED, OR IN ANY MANNER DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SYNTECTIC PRODUCTS, INC.</small>		<small>DATE</small> <small>APPROVED</small>	<small>DATE</small>	<b>SYNECTIC PRODUCTS, INC.</b> <small>A Subsidiary of Cavtron Corporation</small> <small>1902 M. Way, Santa Ana, California</small>
<small>REVISIONS</small> <small>REVISION NUMBER AND DATE</small> <small>REVISION DESCRIPTION</small>		<small>MATERIAL</small>	<small>TITLE</small> LOGIC DIAGRAM - <small>TABLE FOUR'S SYSTEM ORGANIZATION</small> <small>AND ASSOCIATED LOGIC</small>	
<small>SCALE</small>		<small>DATE</small>		<small>PART NUMBER</small> <b>1800-0143</b>

NEXT ASSY	USED ON
-----------	---------

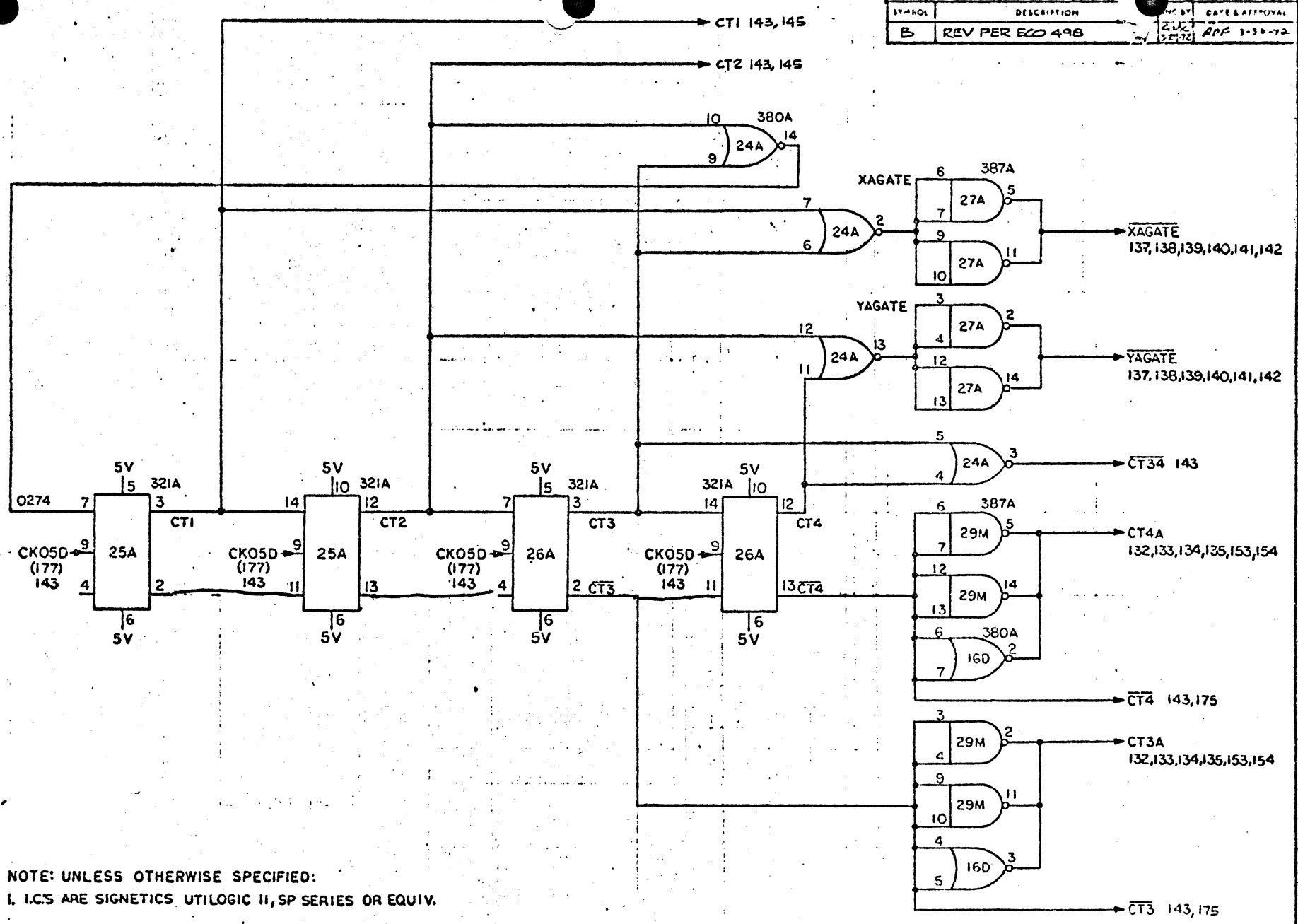


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.  
 2. JOB IS DIGITIZER CONNECTOR.  
 3. DIODES ARE IN914.

DRILLING MACH.

REF.	DESCRIPTION	REV.	DATE	PART NO 4018
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED, COPIED OR TRANSMITTED TO OTHER DOCUMENTS OR TO OTHER PERSONS UNLESS SO AUTHORIZED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SIGNETICS, INC.				
	DESIGNED BY	DATE		
	CHECKED BY	DATE		
	APPROVED BY	DATE		
	MATERIAL			
	REMOVED WIRING ALL			
	AND ALL SHARD BOND			
	CHECK			
	DRILLING MACH.			
	NEXT ASSY			
	USED ON			
		BY SIGNETICS PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1222 McCloud, Santa Ana, California		
		TITLE LOGIC DIAGRAM - MACH PULSE AMPLIFICATION AND LOGIC		
1900-0143-2				

REVISION			
SYMBOL	DESCRIPTION	DATE	BY
B	REV PER ECO 498	2/22/72	APF
		3-30-72	



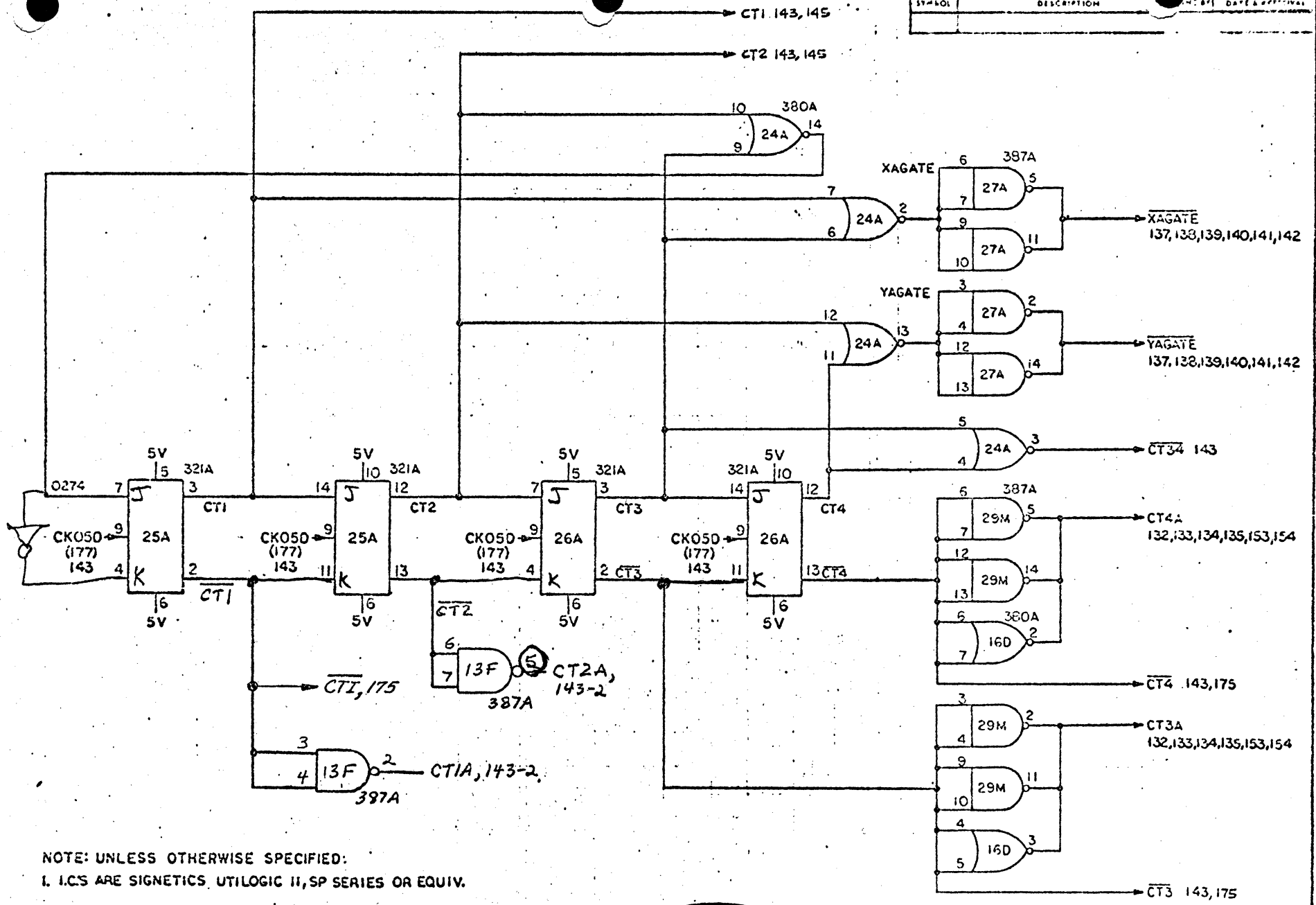
NOTE: UNLESS OTHERWISE SPECIFIED:  
 1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE 2.01 1.00 2.00 CONCENTRICITY AND OUT OF ROUND T.I.R..005	BY <i>Relm</i>	DATE <i>2/22/72</i>	 SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1202 McCune, Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	
	FINISH	APPROVED	DATE	
		MATERIAL		
NEXT ASSY	USED ON	TITLE LOGIC DIAGRAM - CONTROL TIME COUNTER AND ADDER GATING ENABLE		SCALE 1/8" = 1"

1800-0144

REVISIONS

SYMBOL	DESCRIPTION	DATE	APPROVAL



NOTE: UNLESS OTHERWISE SPECIFIED:  
 I. I.C.S ARE SIGNETICS, UTILOGIC II, SP SERIES OR EQUIV.

DRILLING MACHINE

REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER BATCH	PART NUMBER

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.

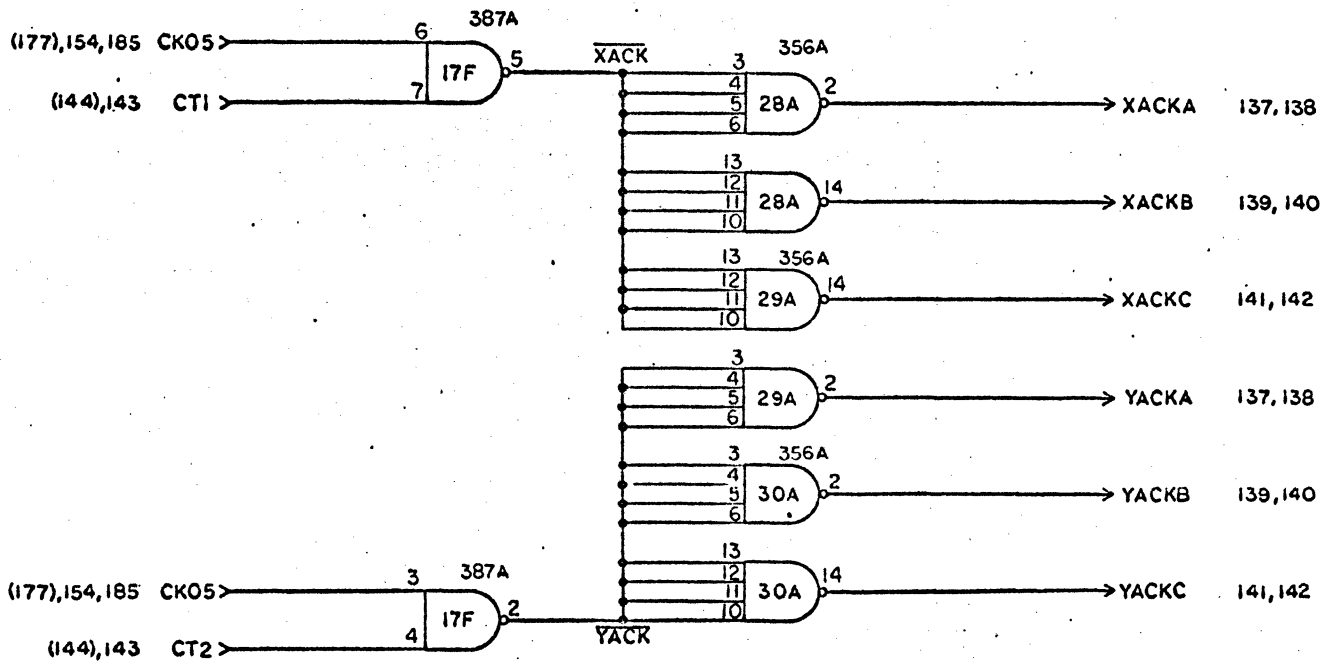
TOLERANCES UNLESS OTHERWISE SPECIFIED: XX RAX ANGLE ALL DIMS ±.015" CONCENTRICITY AND OUT OF ROUND ±.005"	BY: <i>R. C. ...</i> CHECKED: <i>DPF</i> APPROVED: <i>[Signature]</i>	DATE: <i>11/27/72</i> DATE: <i>[Blank]</i> DATE: <i>[Blank]</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Centron Corporation 1032 McGraw Street, San Jose, California
--------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------	-----------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------

TITLE: LOGIC DIAGRAM - CONTROL TIME COUNTER AND ADDRESS COUNTERS

SCALE: *1/800 - 0144 - 7*

NEXT ASSY	USED ON

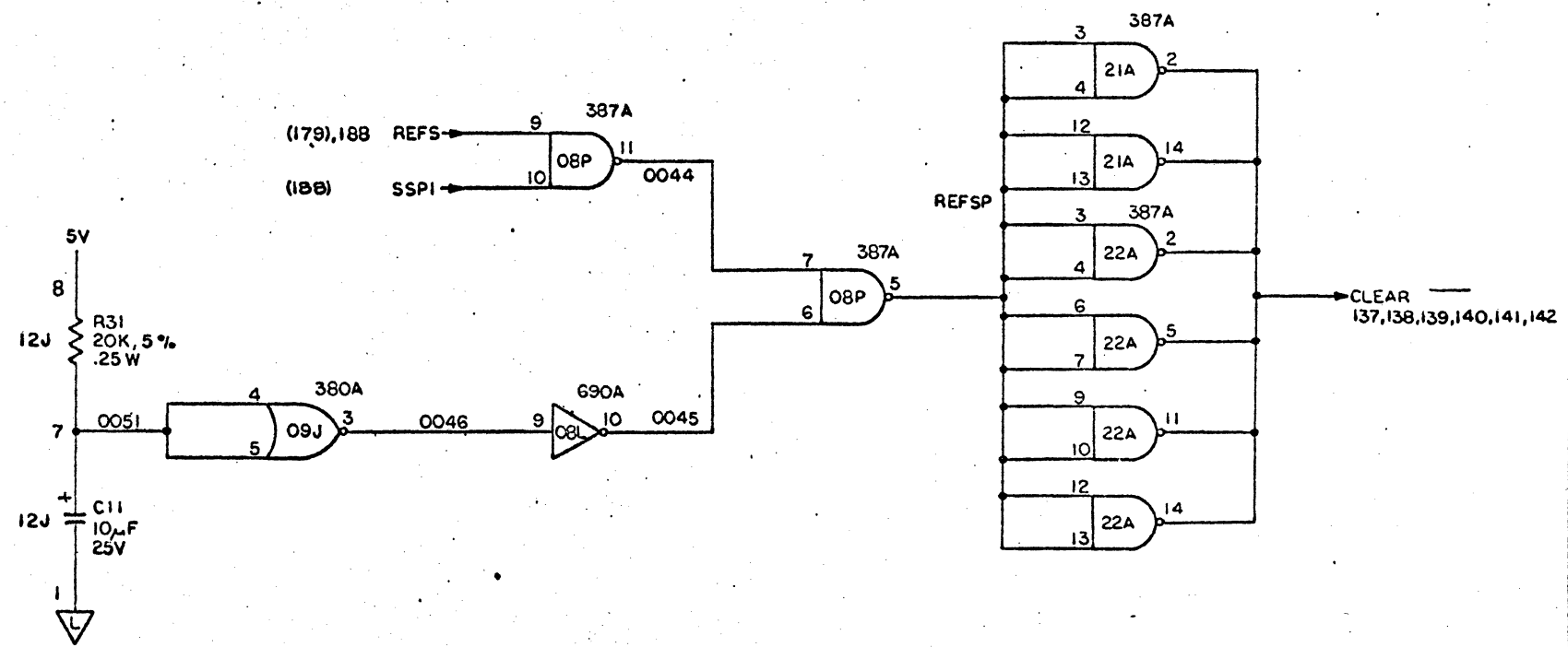
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
B	REV PER ECO 412	2-28-72 APF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 2.0 .005 2.0 .01 CONCENTRICITY AND OUT OF ROUND Y.R. .001	BY LHECKRO	DATE 4-15-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Caricon Corporation 1902 Foothill, Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH	APPROVED	DATE	
	NEXT ASSY	USED ON	TITLE LOGIC DIAGRAM - ACTUAL REGISTER CLOCKING	
			SCALE	DWS B 1800-0145 B

REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
B	REV PER ECO 412	2-28-72 DPF

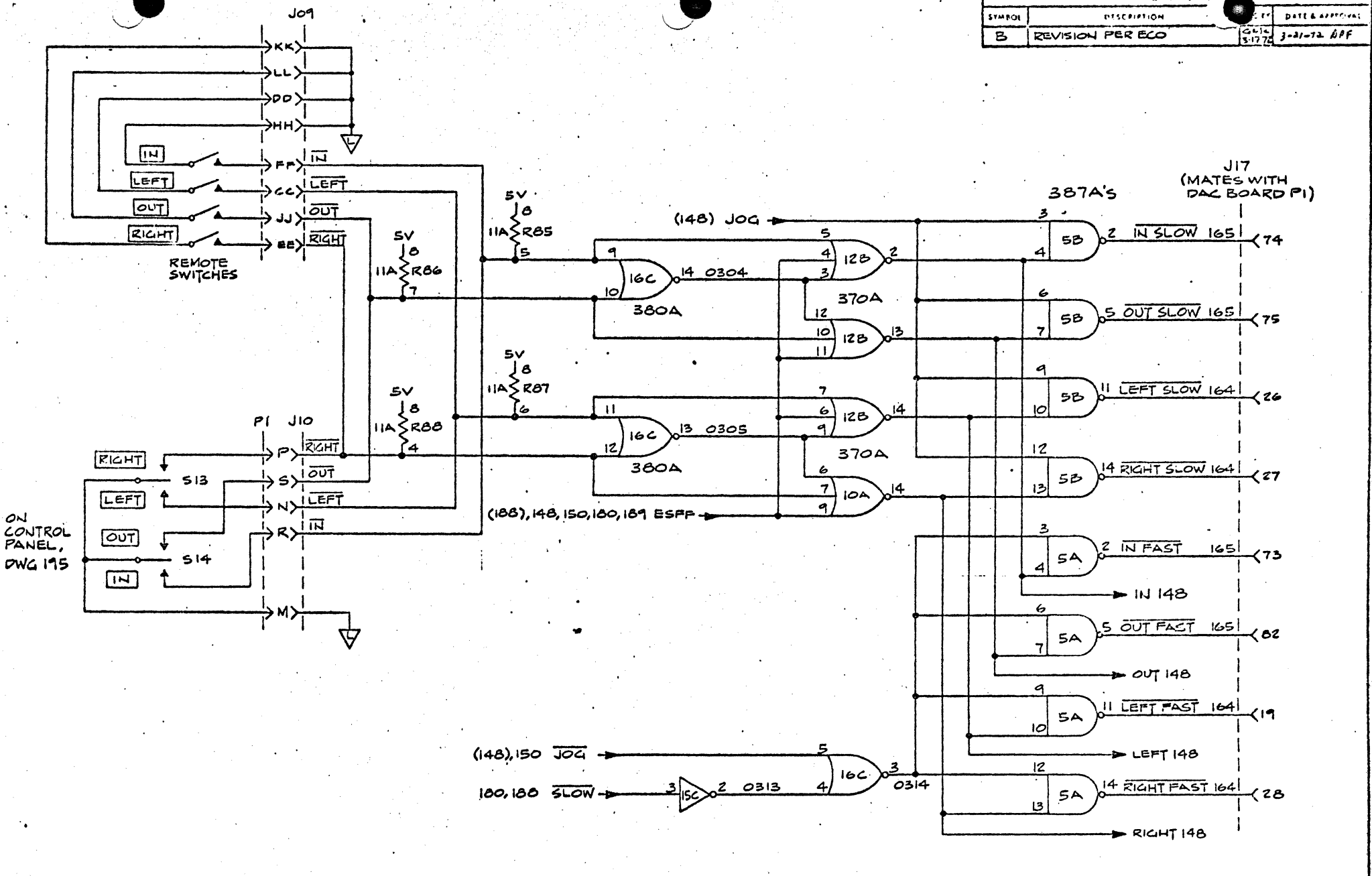


NOTE: UNLESS OTHERWISE SPECIFIED  
 I. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .0008 .0015 .0025 .0050 .0100 .0150 .0300 .0500 .1000 .1500 .3000 .5000 .7500 1.0000 1.5000 2.0000 3.0000 5.0000 7.5000 10.0000		BY GALVAN	DATE 2/12/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calsion Corporation 1902 McGraw, Santa Ana, California
CHECKED		DATE	TITLE LOGIC DIAGRAM - ACTUAL REGISTER CLEAR	
APPROVED		MATERIAL	DATE	SCALE D716 B
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
NEXT ASSY	USED ON	1800-0146		



REVISIONS			
SYMBOL	DESCRIPTION	DATE	DATE & APPROVAL
B	REVISION PER ECO	5-17-72	3-21-72 BFF

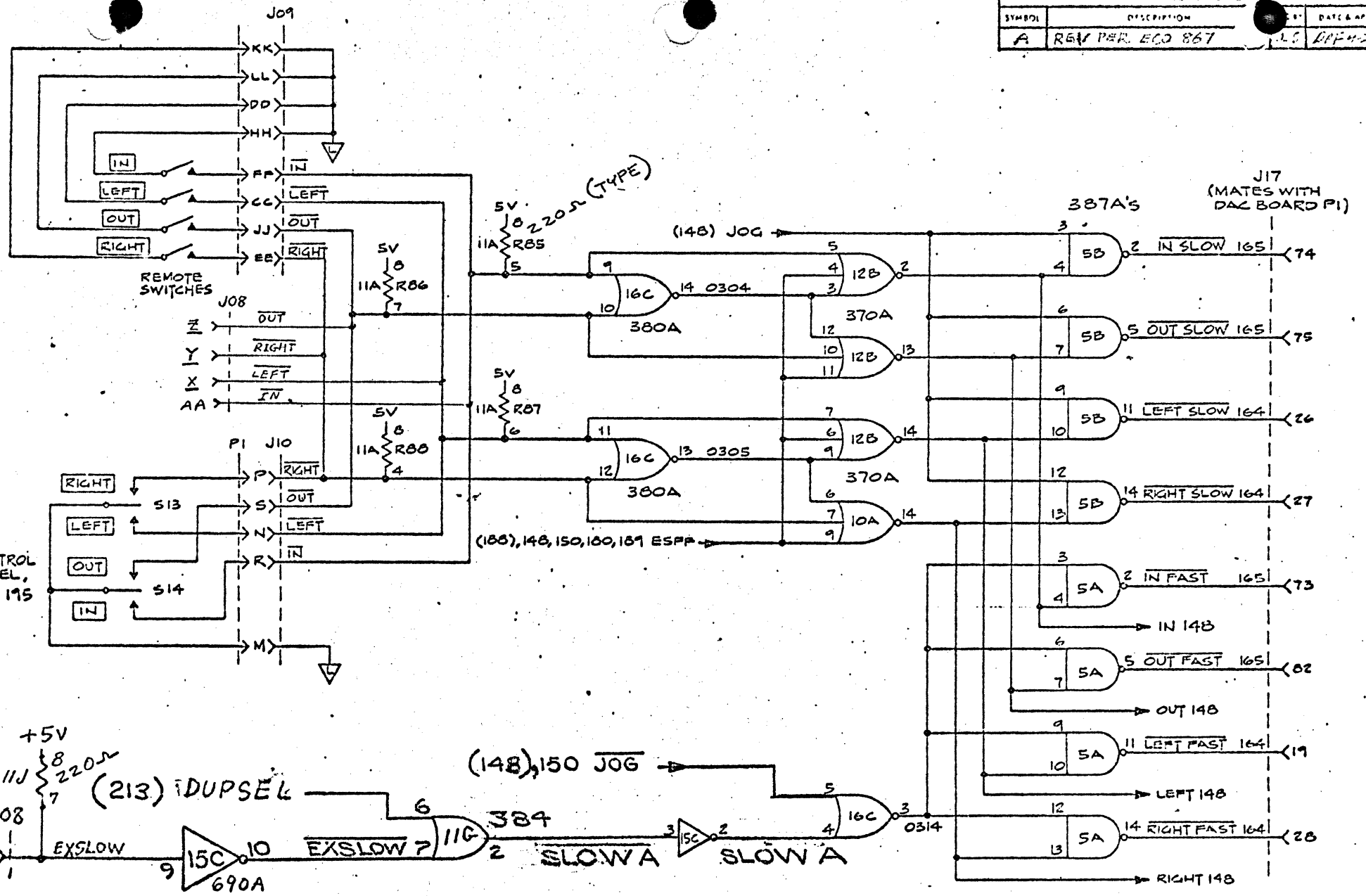


ON CONTROL PANEL, DWG 195

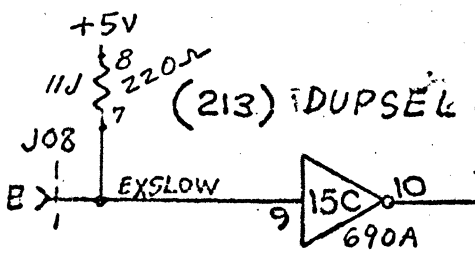
2 I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 1. RESISTORS ARE 2K ±5%, 1/4W.  
 NOTES: UNLESS OTHERWISE SPECIFIED.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXX ANGLE 2.01 2.000 2"±.005 CONCENTRICITY AND OUT OF ROUND Y.R..005		BY McGUIRE	DATE 5-17-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Gen-Tran Corporation 1902 F. Gen, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE LOGIC DIAGRAM JOG SWITCH GATING
NEXT ASSY	USED ON	MATERIAL		SCALE DRAWN BY 1300-0147

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	REV PER ECO 867	1.0	DPF 4-2-73



ON CONTROL PANEL, DWG 195



3. J08 IS DIGITIZER CONNECTOR.

2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

1. RESISTORS ARE 220 OHM, 5%, 1/4 W

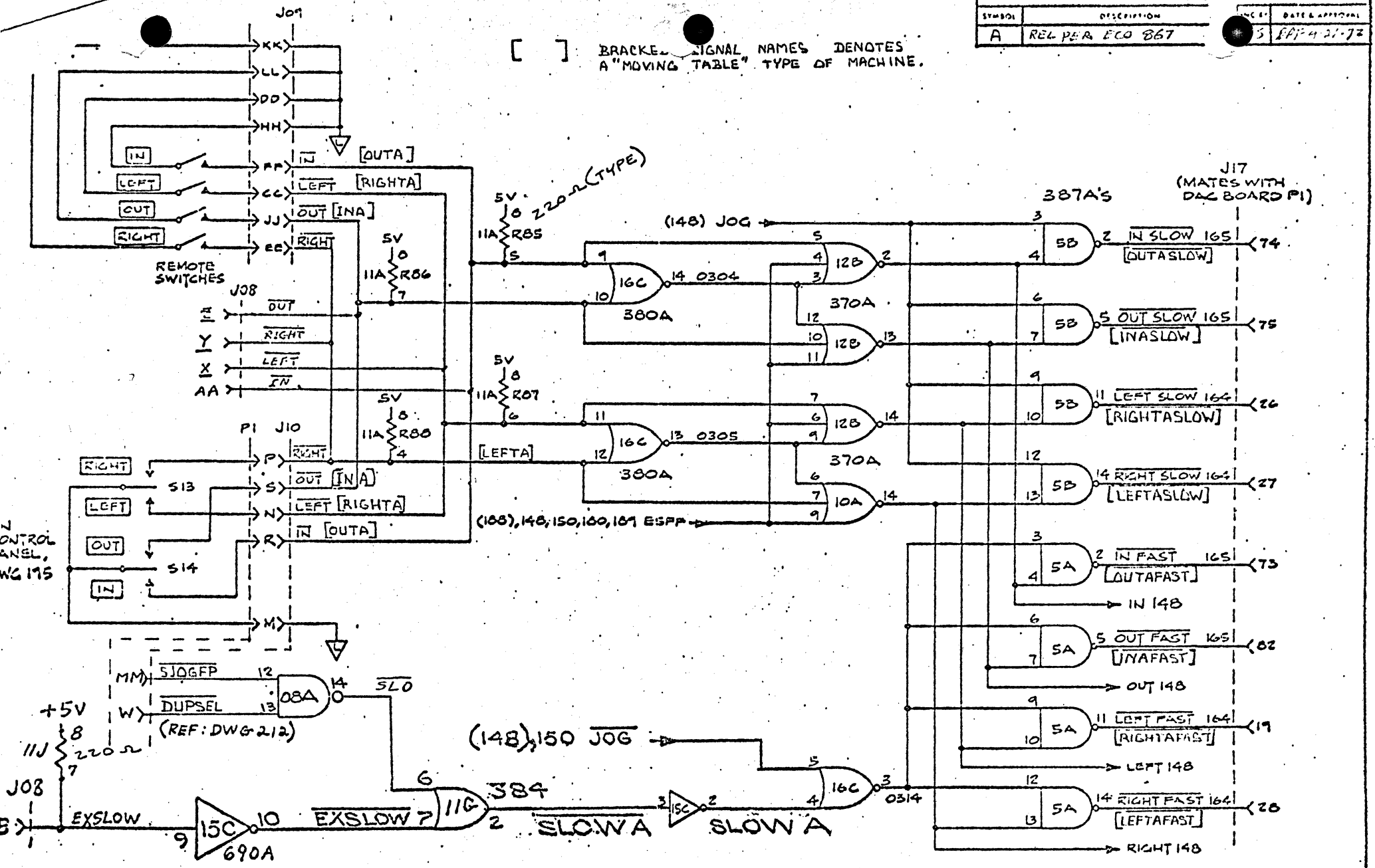
NOTES UNLESS OTHERWISE SPECIFIED.

DRILLING MACHINE

REP.	DESCRIPTION	QTY. REQ. ASSY.	QTY. REQ. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER INDIVIDUALS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED X.R. ±.005 ANGLE ±.002 2.000 2.000 CONCENTRICITY AND OUT OF ROUND T.I.R. .005	APPROVED	DATE	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Contron Corporation 1932 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH	MATERIAL	TITLE LOGIC DIAGRAM JOG SWITCH GATING		
NEXT ASSY	USED ON	SCALE	UNITS	1500-0147-21A

REVISIONS		DATE	APPROVAL
SYMBOL	DESCRIPTION		
A	REL PER ECO 867	5	8/14/72

[ ] BRACKET SIGNAL NAMES DENOTES A "MOVING TABLE" TYPE OF MACHINE.



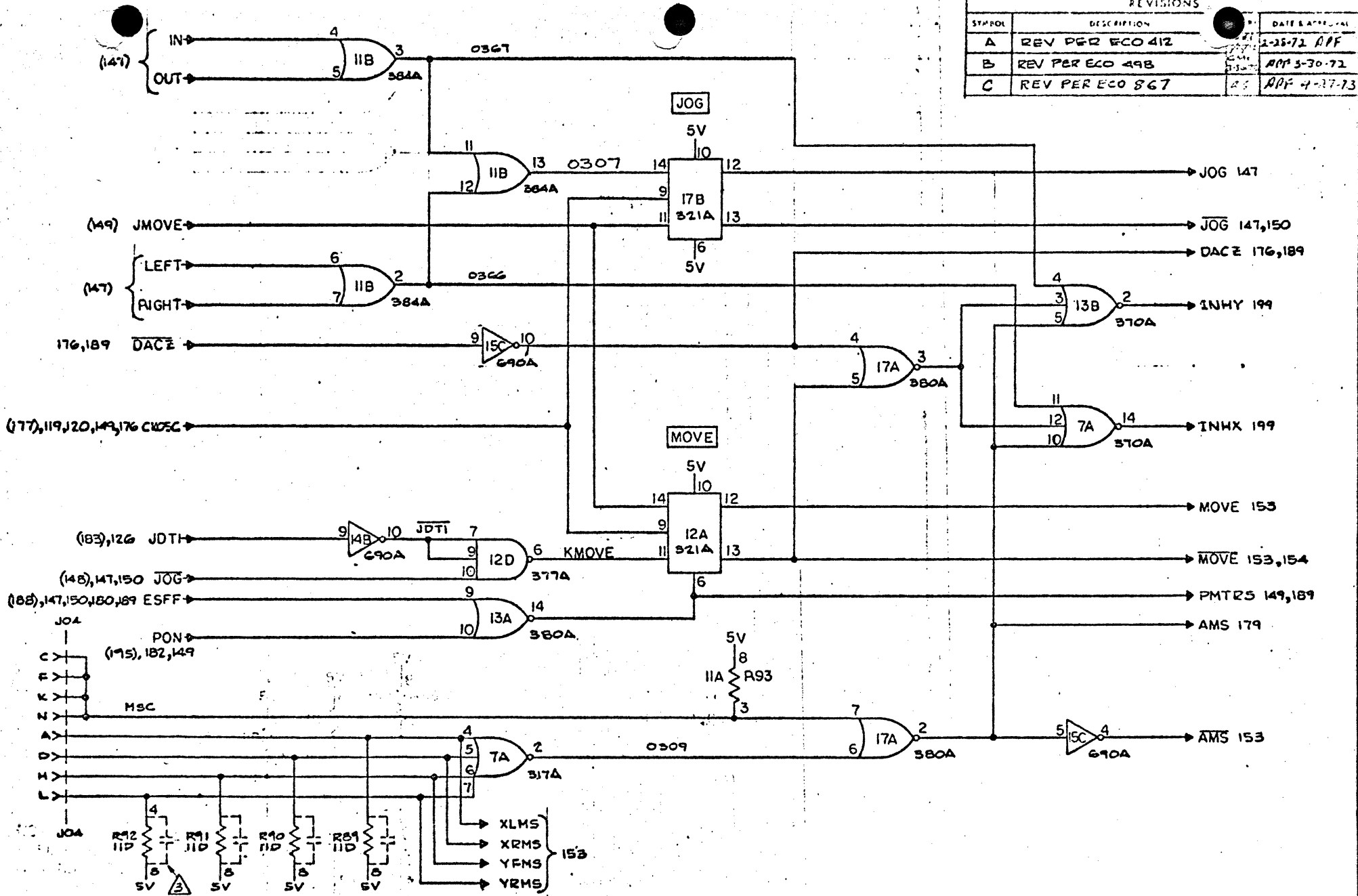
J08 IS DIGITIZER CONNECTOR.

1. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 2. RESISTORS ARE 220  $\Omega$ , 5%, 1/4 W  
 UNLESS OTHERWISE SPECIFIED.

DRILLING MACHINE & MARK IV

REP	DESCRIPTION	REV	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER EMPLOYEES OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNCHROSTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS IN INCHES: FRACTIONS 1/16, 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8 DECIMALS .015, .030, .045, .060, .075, .090, .105, .120, .135, .150, .165, .180, .195, .210, .225, .240, .255, .270, .285, .300, .315, .330, .345, .360, .375, .390, .405, .420, .435, .450, .465, .480, .495, .510, .525, .540, .555, .570, .585, .600, .615, .630, .645, .660, .675, .690, .705, .720, .735, .750, .765, .780, .795, .810, .825, .840, .855, .870, .885, .900, .915, .930, .945, .960, .975, .990, 1.000		BY JY DATE 9/22/72	SYNCHROSTIC PRODUCTS, INC. A Subsidiary of Conlon Corporation 1922 McGraw, Santa Ana, California	
APPROVED DATE		WATERING	TITLE LOGIC DIAGRAM JOB SWITCH CATING	
REMOVE SURFS AND BREAK ALL SHARP EDGES FINISH		SCALE	1800-0147-3	
NEXT ASSY	USED ON			

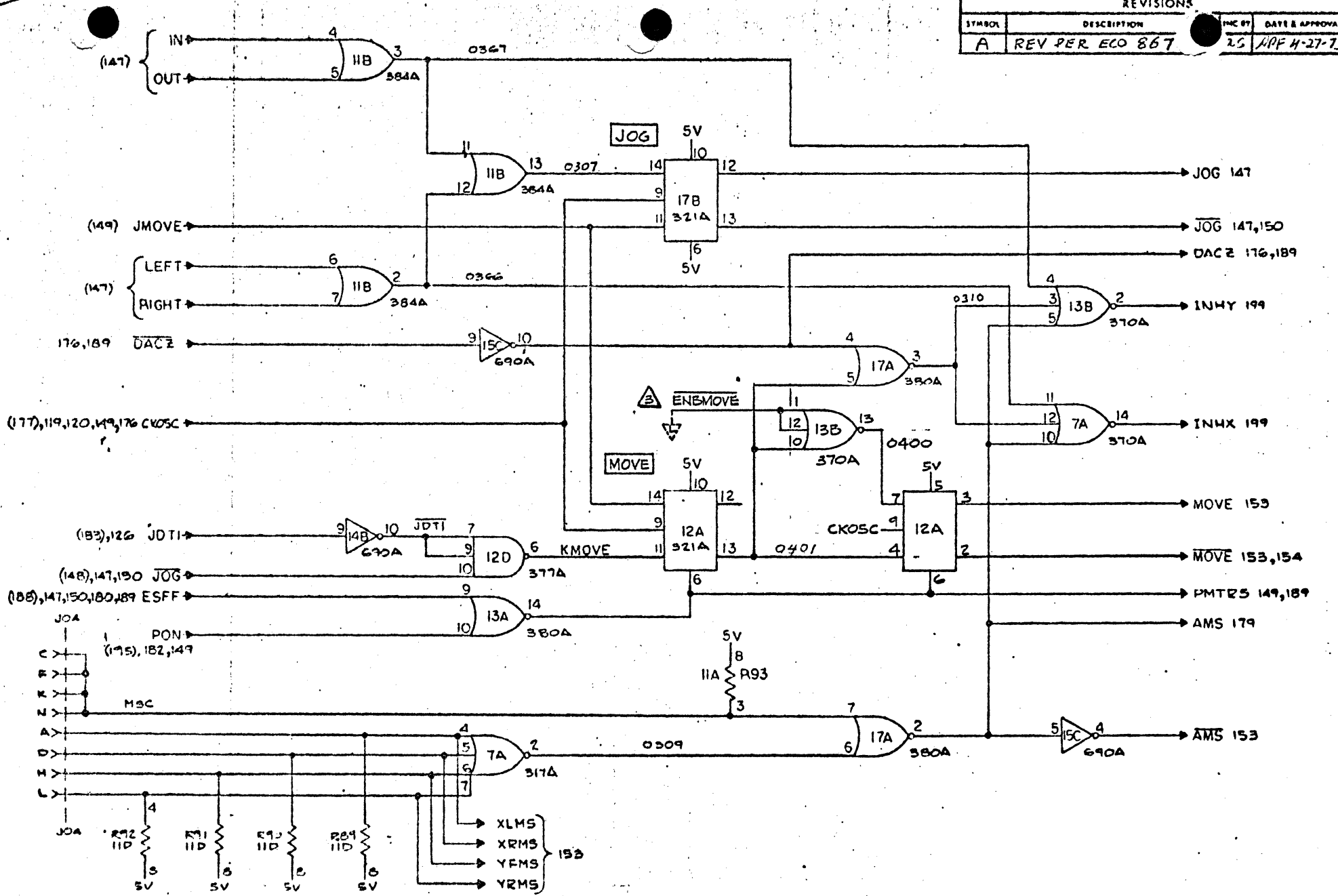
REVISIONS			
SYMBOL	DESCRIPTION	DATE	BY
A	REV PER ECO 412	2-25-72	APF
B	REV PER ECO 498	APR 3-30-72	
C	REV PER ECO 867	APR 4-27-73	



NOTES: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTORS ARE 2K ± 5%, 1/4 W.  
 2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 3. DISC CAPACITORS, .1 MFD, 200V ON AIRBORNE SYSTEM ONLY

REF.	DESCRIPTION	QTY. PER ASSY.	BY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE .01 .005 10-30° CONCENTRICITY AND OUT OF ROUND TIR .005		BY: <i>Relin</i>	DATE: _____	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1902 McGraw, Santa Ana, CA 92706
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED: _____	DATE: _____	
FINISH		APPROVED: _____	DATE: _____	TITLE LOGIC DIAGRAM — JOG OR MOVE SYNCHRONIZATION AND MOTOR INHIBIT
NEXT ASSY	USED ON	MATERIAL		SCALE: _____ DWG # 1800-0148 C

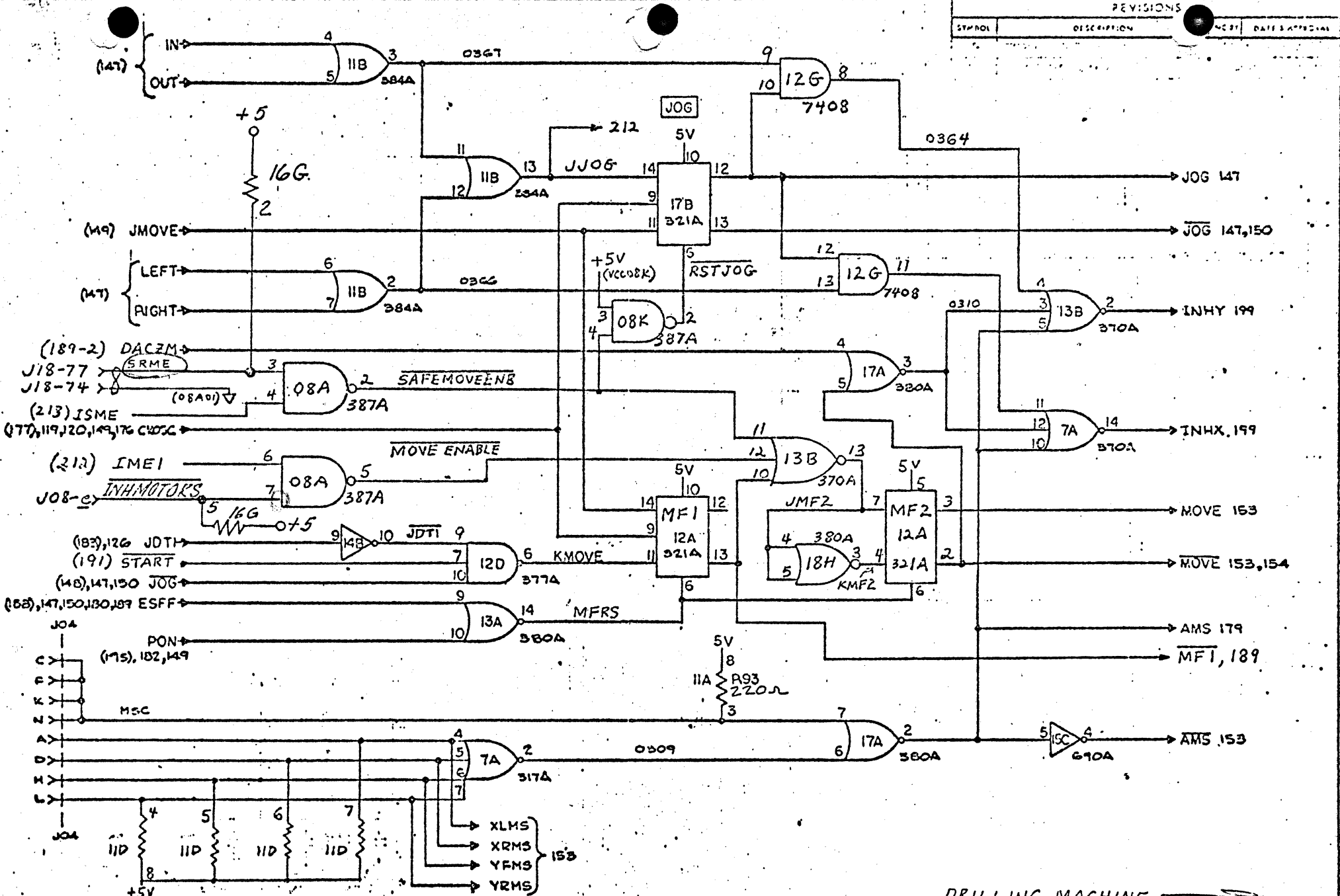
REVISIONS			
SYMBOL	DESCRIPTION	TIME	DATE & APPROVAL
A	REV PER ECO 867	25	APR 4-27-73



NOTES: UNLESS OTHERWISE SPECIFIED.  
 1. RESISTORS ARE 2K ± 5%, 1/4 W.  
 2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 ⚠ ENMOVE IS USED ON DRILLING MACHINE ONLY.

REF.	DESCRIPTION	QTY PER ASSY	QTY PER BALM	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>Kelvin</i>		DATE
REF	PER ANGLE	CHECKED		DATE
PER	PER ANGLE	APPROVED		DATE
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH				
NEXT ASSY	USED ON	MATERIAL		SCALE
				SYNERGISTIC PRODUCTS, INC. A Subsidiary of Caltron Corporation 1902 McLean, Santa Ana, California
				TITLE: LOGIC DIAGRAM - JOG OR MOVE SYNCHRONIZATION AND MOTOR INHIBIT
				1800-0148-2

SYMBOL	DESCRIPTION	DATE	APPROVAL

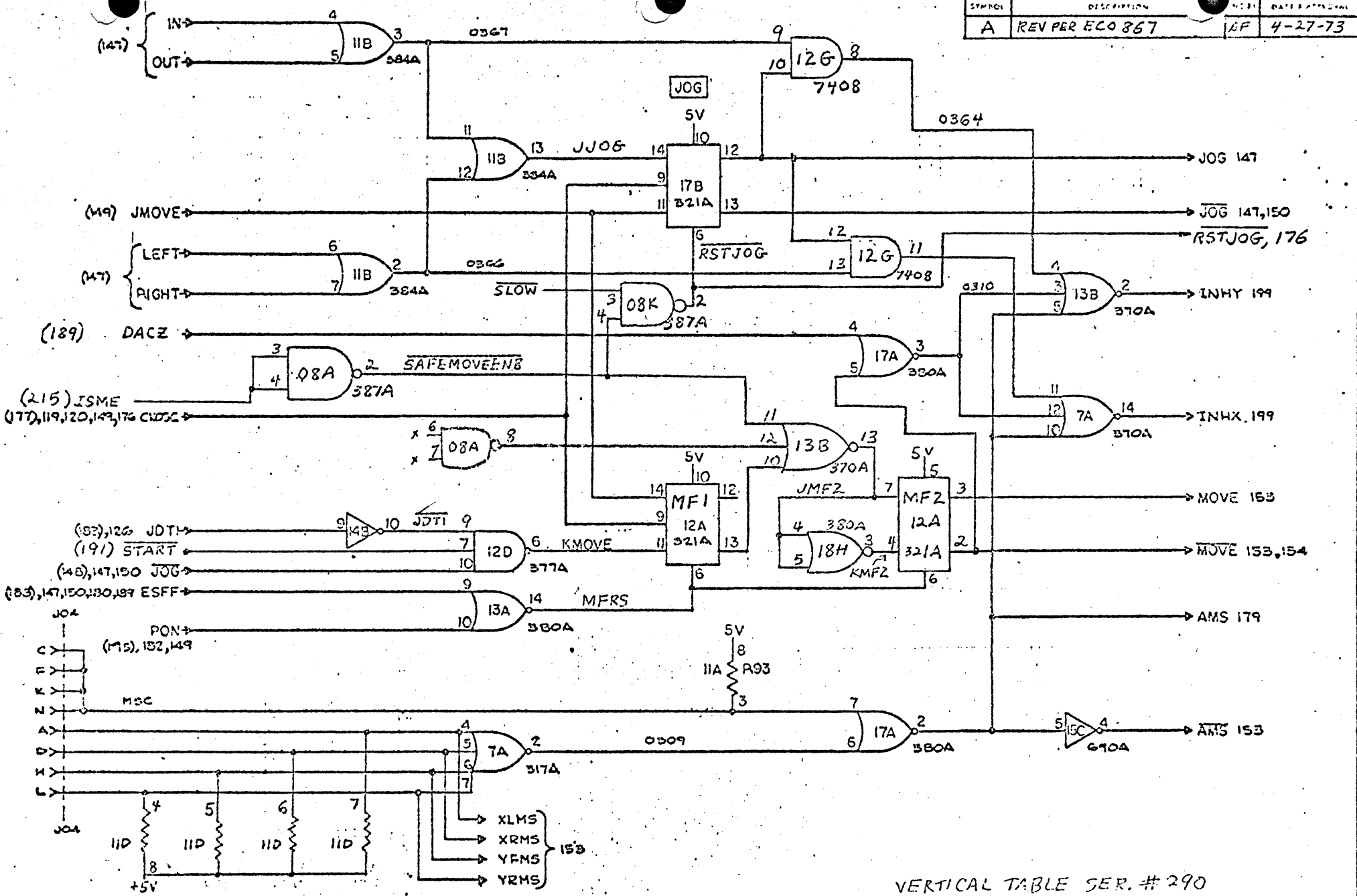


NOTES: UNLESS OTHERWISE SPECIFIED,  
 1. RESISTORS ARE 220Ω, 5%, 1/4 W.  
 2. I.C.'S ARE SIGNETICS UTILIGOC II, SP SERIES OR EQUIV.  
 3. JOG IS DIGITIZER CONNECTOR.  
 4. J18 IS STEP & REPEAT CONNECTOR.

DRILLING MACHINE

REP.	DESCRIPTION	REV.	DATE	PART NUMBER
<p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNCRONIC PRODUCTS, INC.</p>				
<p>TOLERANCES UNLESS OTHERWISE SPECIFIED:                  .001 IN. OR SMALLER SHALL BE .001 IN. CONCENTRICITY AND RUN OUT OF ROUND 0.001 IN.</p>		<p>DATE: 1/15/68                  CHECKED: [Signature]                  APPROVED: [Signature]</p>		<p>SYNCRONIC PRODUCTS, INC.                  A Subsidiary of Corbin Corporation                  1202 N. Tower, Santa Ana, California</p>
<p>REMOVE BURRS AND BREAK ALL SHARP EDGES</p>		<p>MATERIAL</p>		<p>TITLE LOG: DIAGRAM - JOG OR MOVE SYNCHRONIZATION AND MOTOR INPUT</p>
<p>FINISH</p>		<p>SCALE</p>		<p>1800-0143-3</p>

REVISION			
SYMBOL	DESCRIPTION	DATE	DATE APPROVAL
A	REV PER ECO 867	6F	4-27-73



NOTES: UNLESS OTHERWISE SPECIFIED.  
 L RESISTORS ARE 220Ω, 5%, 1/4 W.  
 Z.I.C.'S ARE SIGNETICS UTILIGIC 11, SP SERIES OR EQUIV.

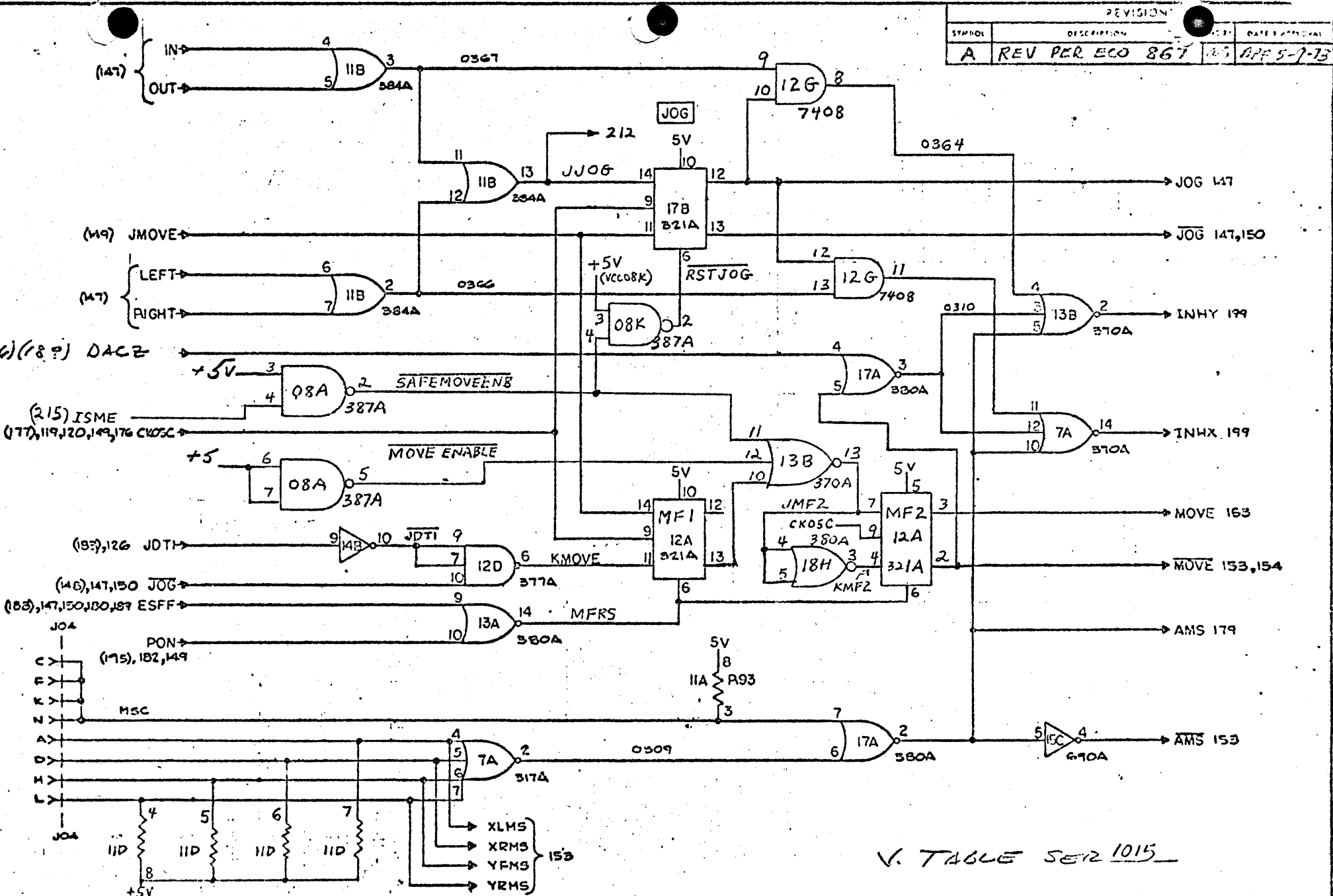
VERTICAL TABLE SER. # 290

REP.	DESCRIPTION	REV.	DATE	PART NUMBER

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHERS IN ANY MANNER OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.	
TOLERANCES UNLESS OTHERWISE SPECIFIED: DIM. ANGLES 2 OR 3 DIGIT CONCENTRICITY AND OUT OF ROUND 1/100	CHECKED DATE APPROVED DATE MATERIAL FINISH
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlson Corporation 1402 N. Coe, Santa Ana, California	
TITLE: JOG OR MOVE SYNCHRONIZATION DATE: 11/10/72	

REVISION			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	REV PER ECO 867	10/5	DPF 5-7-75



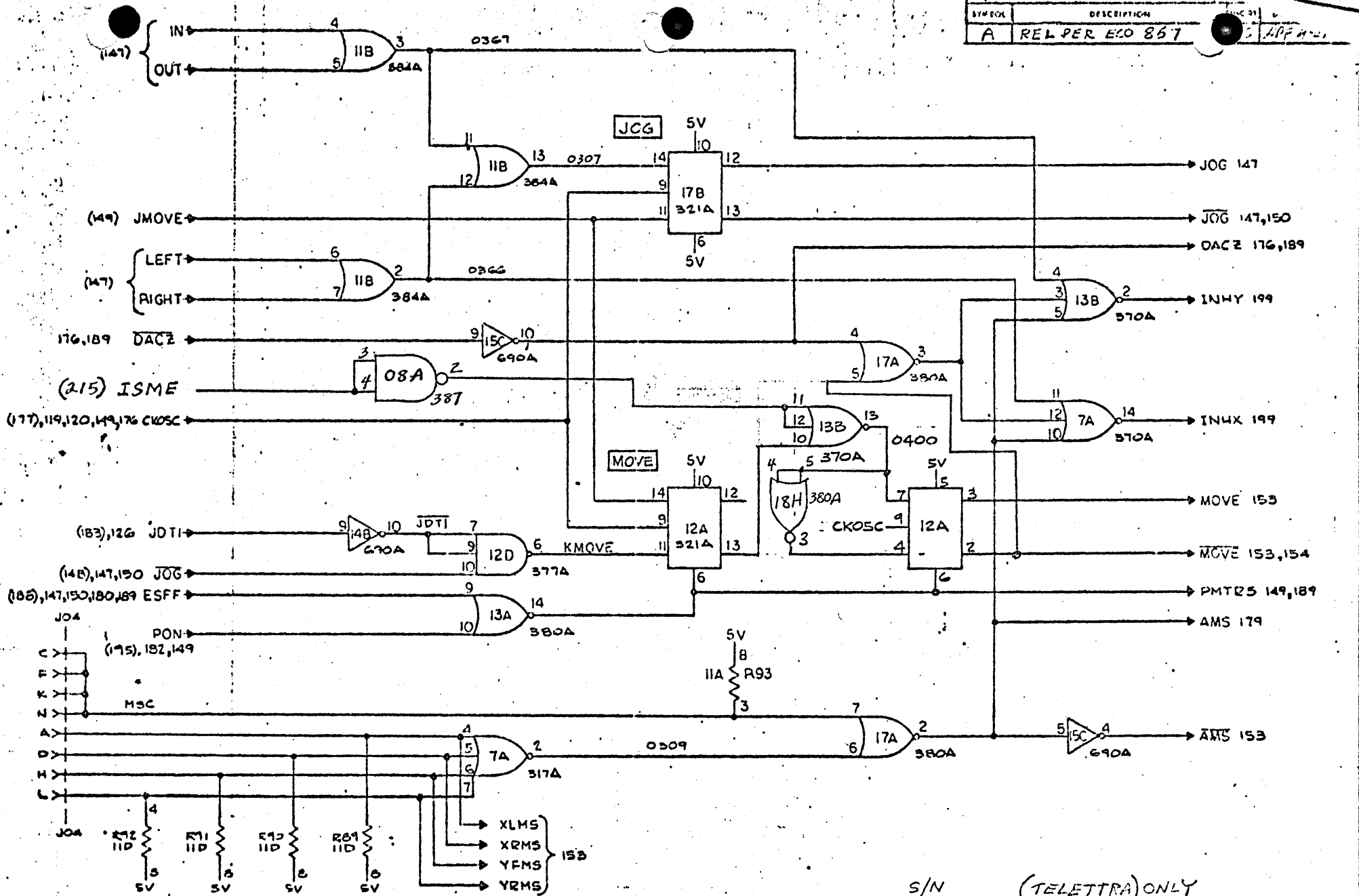
NOTES: UNLESS OTHERWISE SPECIFIED.  
 1. RESISTORS ARE 220Ω, 5%, 1/4 W.  
 2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

V. TABLE SER 1015

REF.	DESCRIPTION	REV.	DATE	BY	CHKD.	DATE	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OF ANY OTHER PRODUCT WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.						
	TOLERANCES UNLESS OTHERWISE SPECIFIED HOLE DIA ANGLE 2.01 2.00 3°30' CONCENTRICITY AND QUI CP ROUND 0.10	BY	DATE	DPF			SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carson Corporation 14025 Ave. Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH						
NEXT ASY	USED ON						TITLE LOGIC DIAGRAM - JOG OR MOVE SYNTHESIS AND SYNTHESIS SCALE 1:1 100-0143-5



REVISIONS		DATE	BY
SYMBOL	DESCRIPTION		
A	REL PER ECO 857		



NOTES: UNLESS OTHERWISE SPECIFIED.  
 1. RESISTORS ARE 2K ± 5%, 1/4 W.  
 2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 △ ENDBYTE IS USED ON DRILLING MACHINE ONLY.

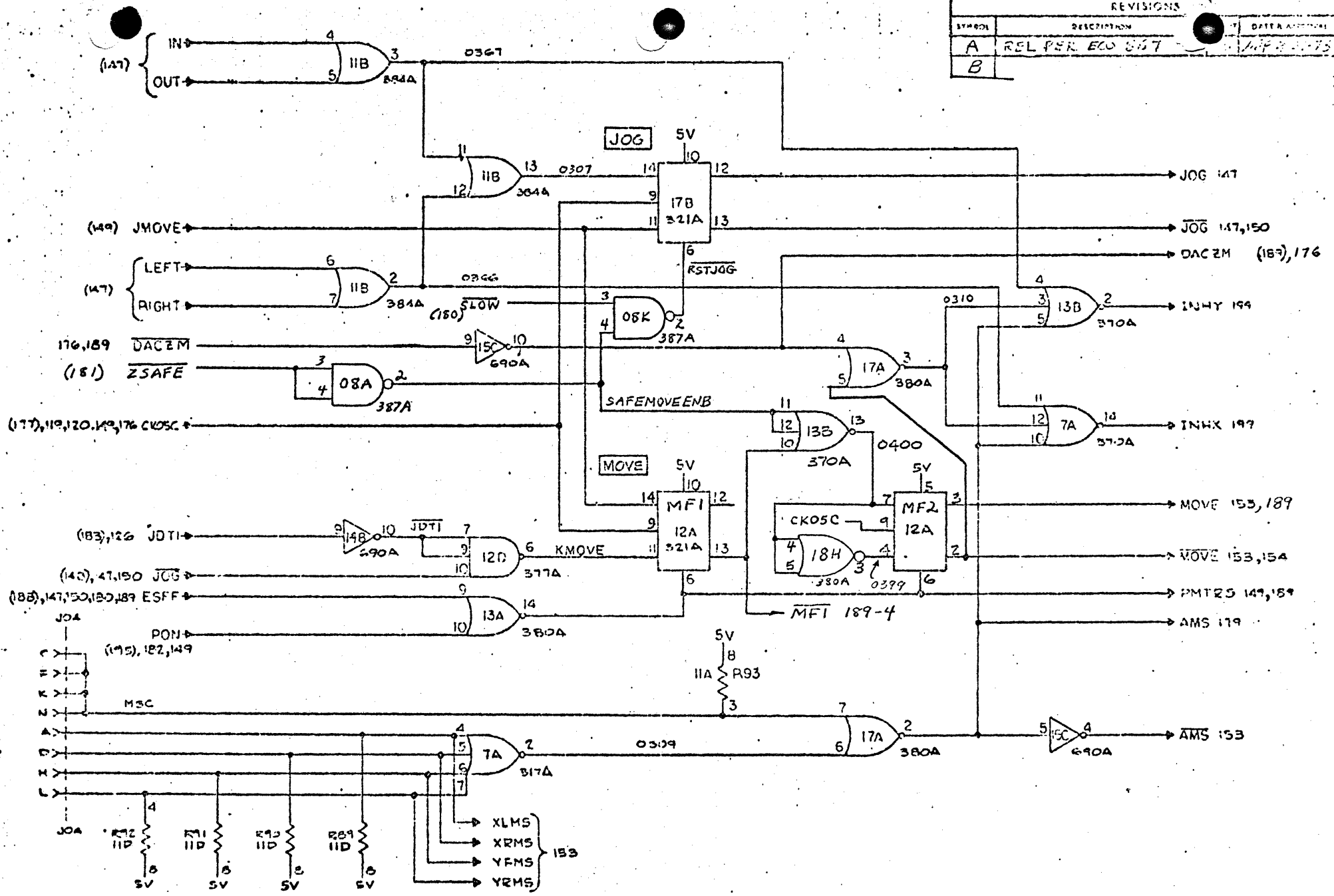
S/N (TELETTA) ONLY

REF	DESCRIPTION	REV. NO.	DATE	PAGE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.					
	TOLERANCES UNLESS OTHERWISE SPECIFIED BY THIS DRAWING:	APPROVED	DATE		
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1800-0148-5

REVISIONS

SYMBOL	DESCRIPTION	DATE	INITIALS
A	REL PFR ECO 827		
B			



NOTES: UNLESS OTHERWISE SPECIFIED.

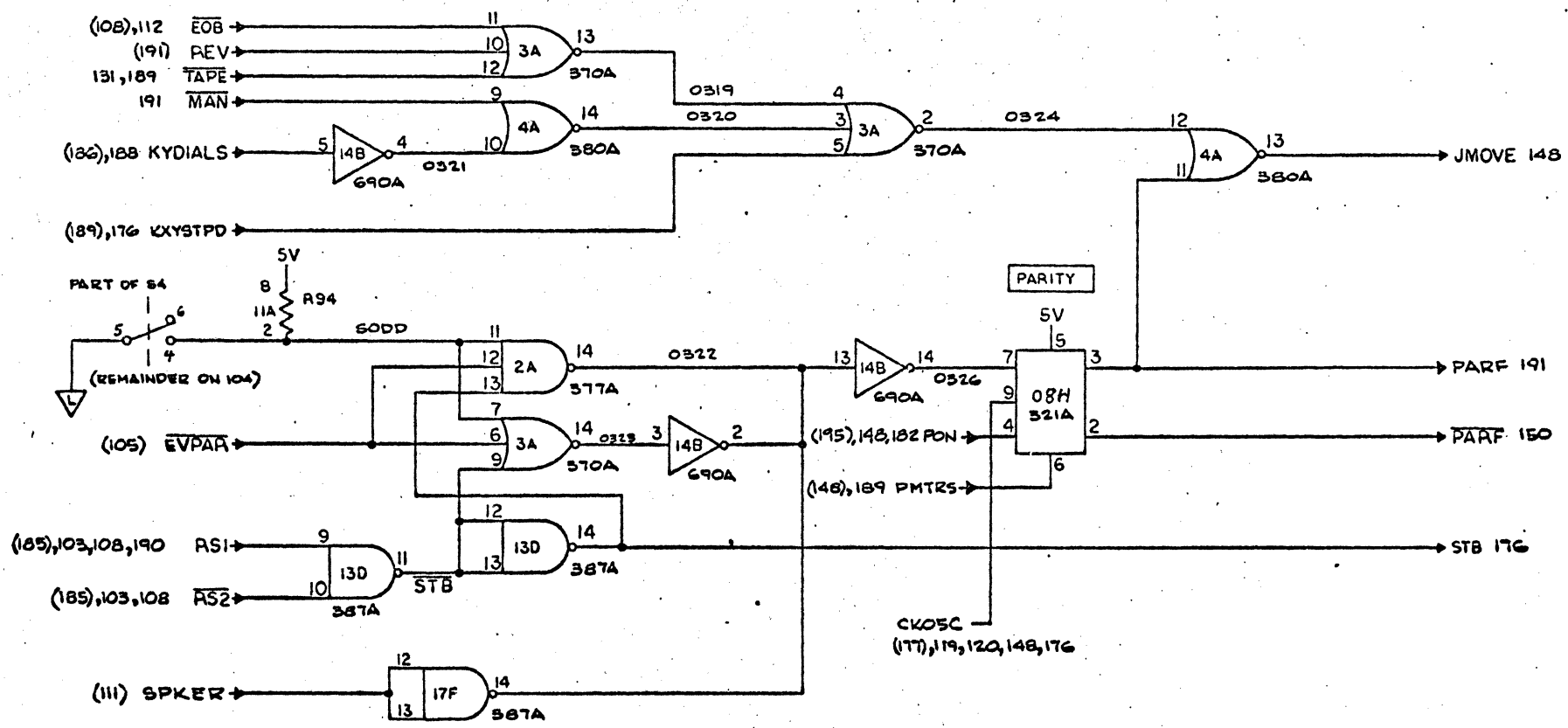
1. RESISTORS ARE 2K ± 5%, 1/4 W.

2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

P/P DYNAMIC BRAKING MOD

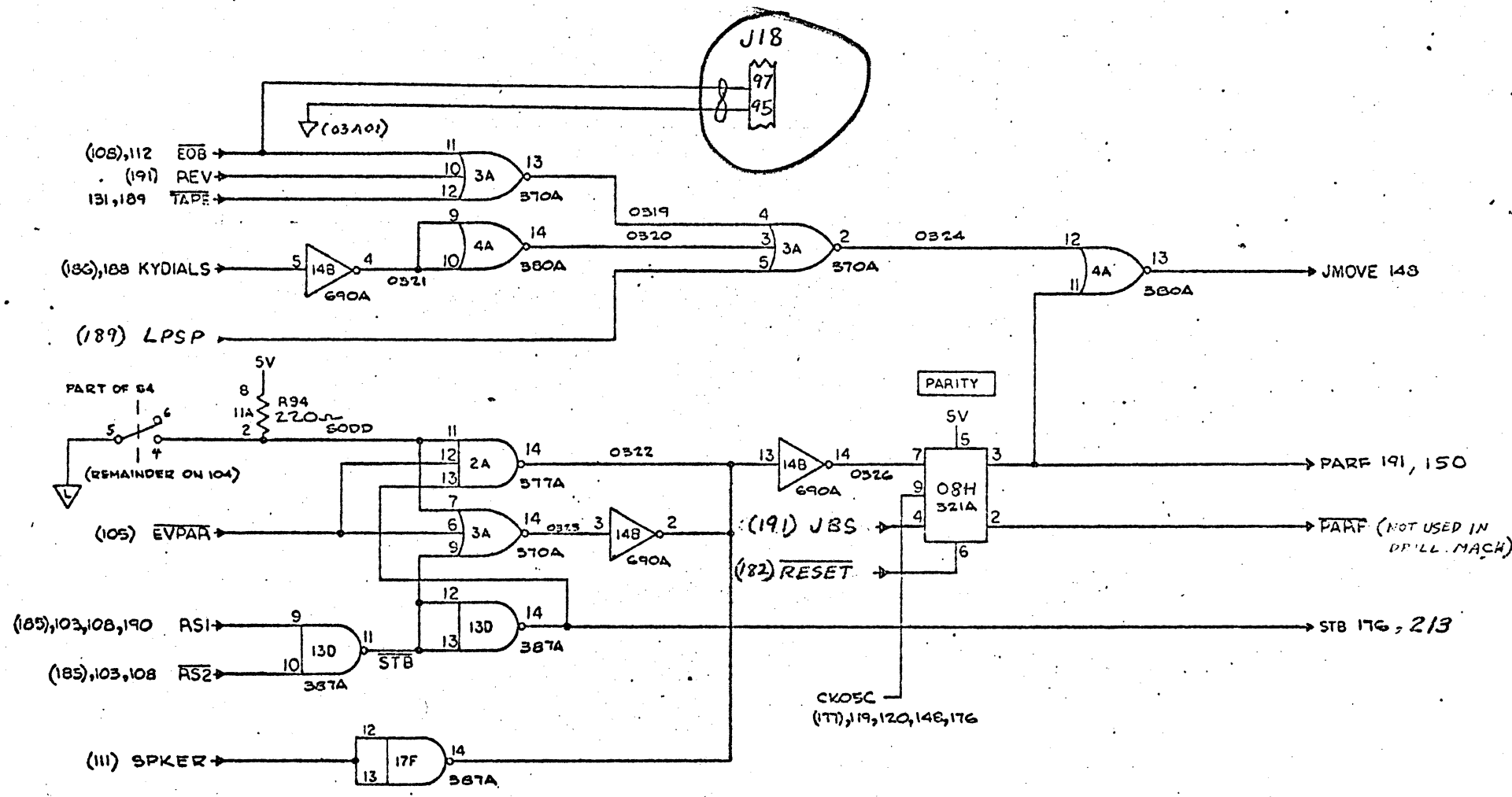
REF	DESCRIPTION	QTY	UNIT	PART NUMBER
	<small>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM WITHOUT THE EXPRESS PERMISSION OF SYNERGISTIC PRODUCTS, INC.</small>			
	<small>TOLERANCES UNLESS OTHERWISE SPECIFIED:                  RES - 1% OR 5%                  ANGLES - 90° ± 0.5°                  DIMENSIONS AND DRILL SIZES - AS SHOWN                  UNLESS OTHERWISE SPECIFIED</small>	<small>DATE</small>	<small>DATE</small>	<small>SYNERGISTIC PRODUCTS, INC.</small>
	<small>APPROVED</small>	<small>DATE</small>	<small>DATE</small>	<small>SYNERGISTIC PRODUCTS, INC.</small>
	<small>REWORK BURST AND REPAIR ALL SHARP EDGES</small>	<small>MATERIAL</small>		<small>SYNERGISTIC PRODUCTS, INC.</small>
<small>NEXT ASSY</small>	<small>USED ON</small>			<small>SCALE</small>

REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
Δ	REV PER ECO 412		2-10-72 BPF



- NOTES: UNLESS OTHERWISE SPECIFIED.
- RESISTORS ARE 2K 5% AND ARE 1/4 WATT
  - I.C.'S ARE SIGNETICS UTILOGIC 11, 6P SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX - DEG ANGLE 1.01 ±.005 2° 30'		BY <i>R.C. Co.</i>	DATE 20 MAR 72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 1902 McGraw, Santa Ana, California
CONCENTRICITY AND OUT OF ROUND T.I.R. .008		CHECKED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	TITLE LOGIC START MOVE OR PARITY FAILURE
FINISH		MATERIAL		SCALE DWS 1800-0149-2
NEXT ASSY	USED ON			



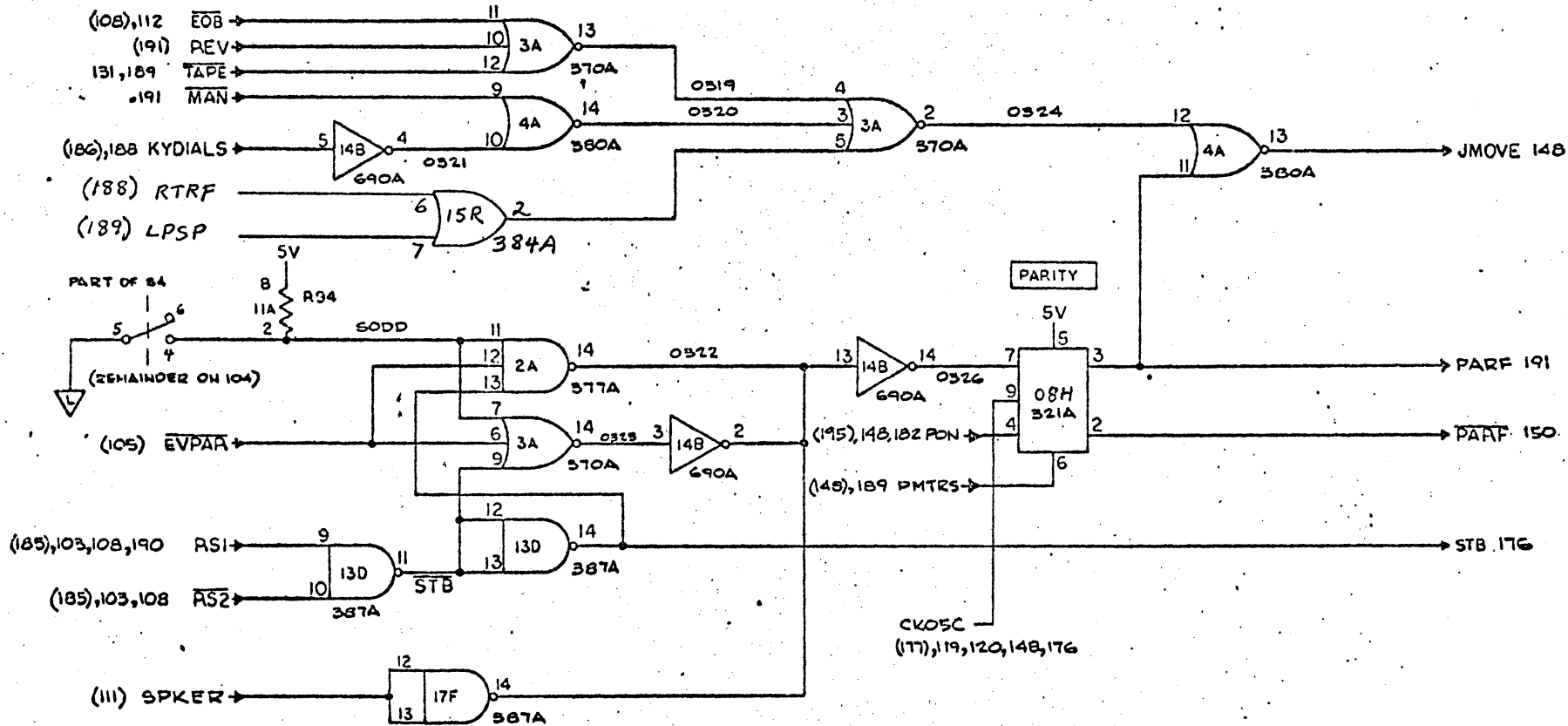
- NOTES: UNLESS OTHERWISE SPECIFIED,
1. RESISTORS ARE 2K 5% AND ARE 1/4 WATT
  2. I.C.'S ARE BIGNETICS UTILOGIC 11, 8P SERIES OR EQUIV.
  3. J18 IS STEP 4 REPEAT CONNECTOR

### DRILLING MACHINE

QTY	DESCRIPTION	QTY PER ASSY	QTY PER MACH	PART NUMBER

TOE: 30° (45°) UNLESS OTHERWISE SPECIFIED DR: 30° (45°) UNLESS OTHERWISE SPECIFIED F: 0.0025" (0.005") UNLESS OTHERWISE SPECIFIED CONCENTRICITY: 0.0025" UNLESS OTHERWISE SPECIFIED SURF. FINISH: 32 RMS UNLESS OTHERWISE SPECIFIED DIMENSIONS IN PARENTHESES ARE PERMITTED TOLERANCES	CHECKED: _____ DATE: _____ APPROVED: _____ DATE: _____	SYNCRISTIC PRODUCTS, INC. A Subsidiary of General Dynamics 10020 Millway, Saugus, MA, U.S.A. TITLE: START MOVE OR PARITY FEATURE SCALE: _____ PART NO: 1800-0149-3
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

NEXT ASSY	USED ON

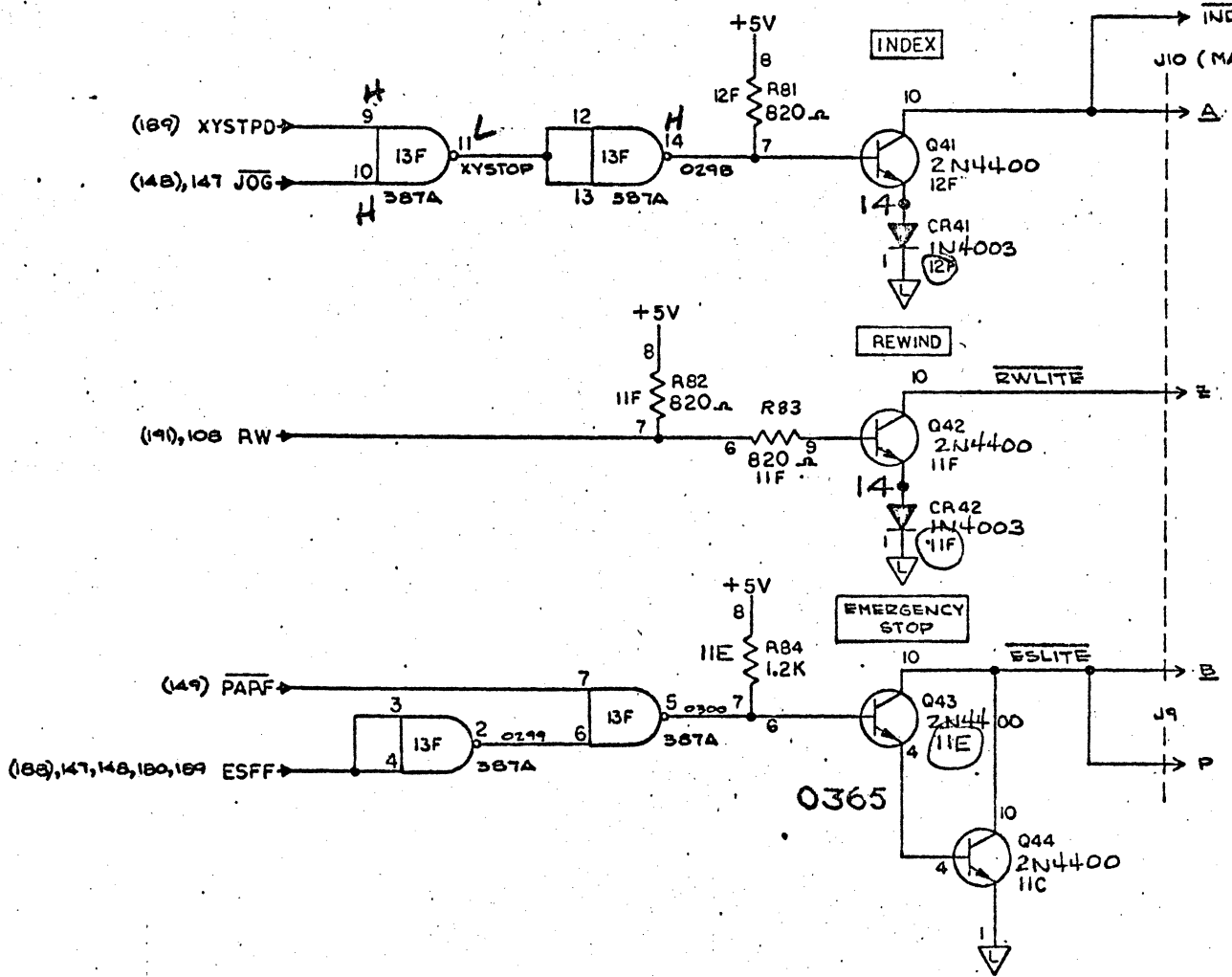


NOTES: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTORS ARE 2K 5% AND ARE 1/4 WATT  
 2. I.C.'S ARE SIGNETICS UTILOGIC II,  
 5P SERIES OR EQUIV.

VERTICAL TABLE SER.# 230

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED DIM - .001 ANGLE 2.51 2.000 3° 30' CONCENTRICITY AND QUOT OF ROUND TO .010	BY <i>ReCom</i>	DATE 20 MAR 72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1902 Alameda, Santa Ana, California
	CHECKED	DATE	TITLE START MOVE ON PARITY PAGE ONE	
	APPROVED	DATE	MATERIAL	SCALE
	REMOVE BURR AND BREAK ALL SHARP EDGES			OWN # 1800-0149-4
	FINISH			
	NEXT ASSY	USED ON		

SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	1-28-72 APF
B	REVISED	JY 9/7/72 APF
C	REV PER ECO 867	25 GPF 4/30/73



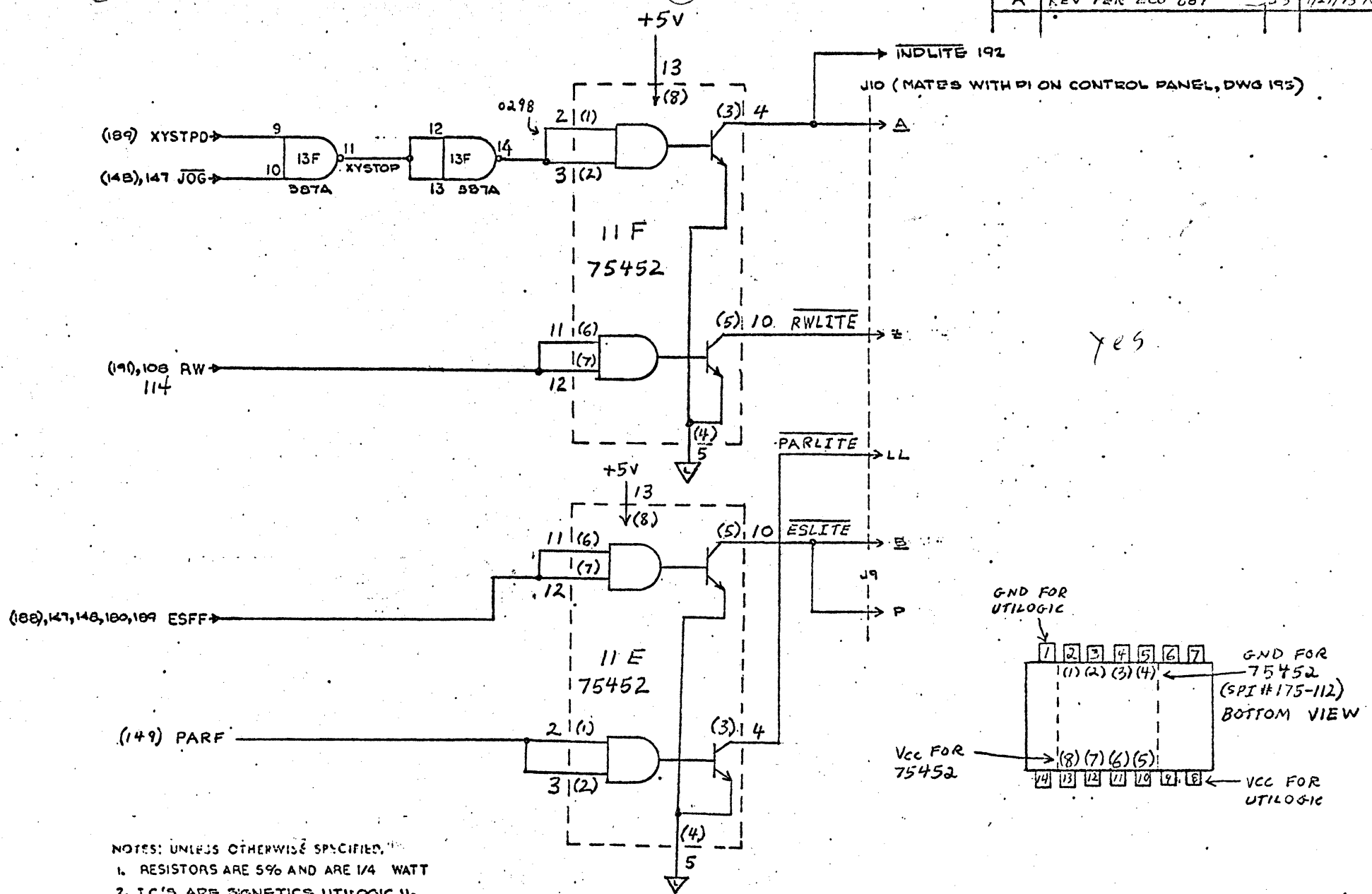
(NO)

ESLITE  
DRIVES G.E. # 356 LAMP  
ON VERTICAL TABLE --- C143-023  
I = 0.17A

- NOTES: UNLESS OTHERWISE SPECIFIED:
1. RESISTORS ARE 5% AND ARE 1/4 WATT
  2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

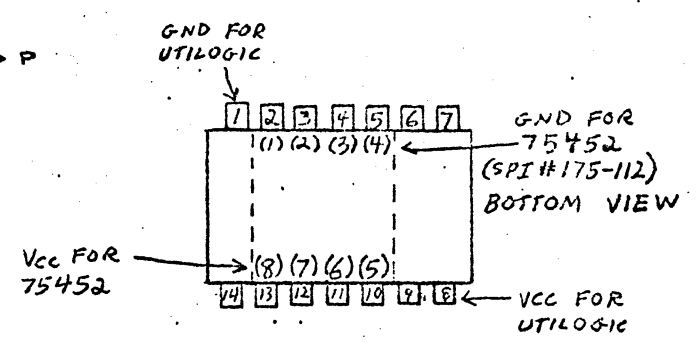
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX .XXX ANGLE ±.01 ±.002 ±.030 CONCENTRICITY AND OUT OF ROUND T.R., .005		BY <i>R. E. Brown</i>	DATE 11-24-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavinton Corporation 1902 McJannet, Santa Ana, California
		CHECKED	DATE	
		APPROVED	DATE	
		MATERIAL		
REMOVE BURRS AND BREAK ALL SHARP EDGES				TITLE LOCAL DIAGRAM
FINISH				INDEX REWIND AND STOP INDICATOR DRIVERS
NEXT ASSY		USED ON		SCALE DWG # 1500-0150

REVISIONS			
SYMBOL	DATE	BY	DATE & APPROVAL
A	REV PER ECU 867	J.S.	4/27/73 NFE



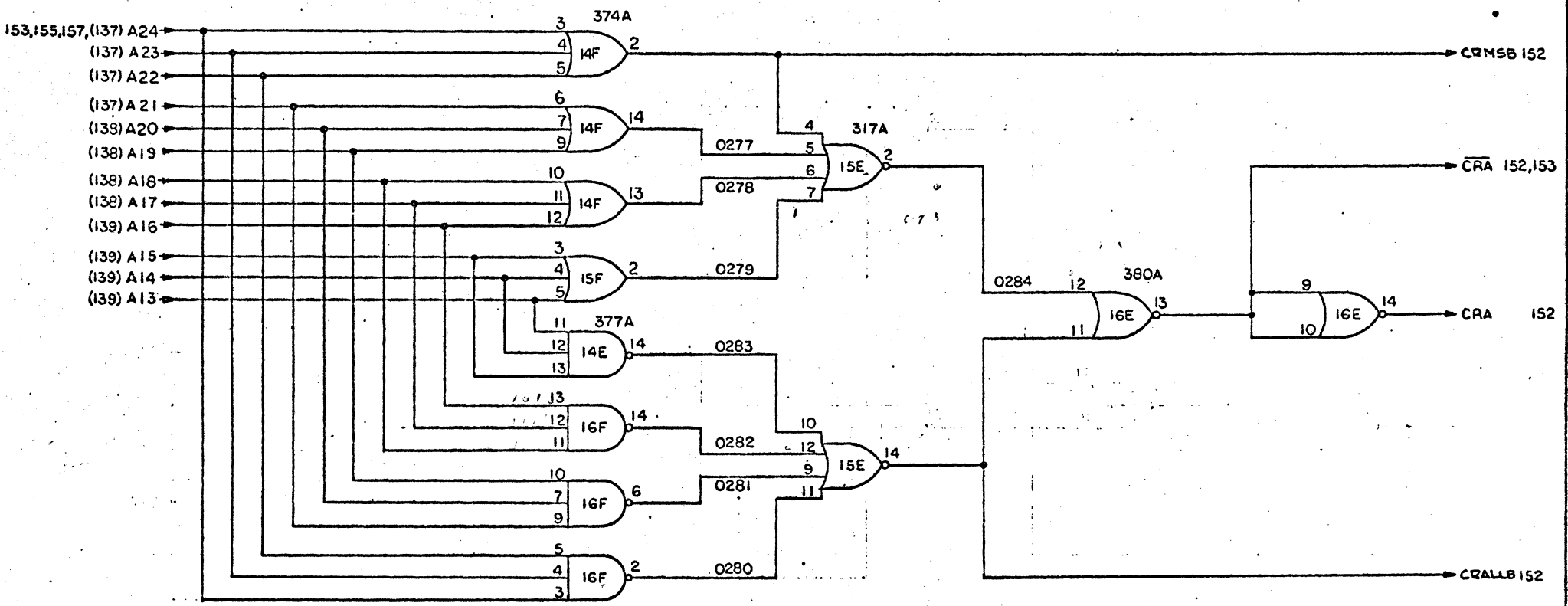
yes

- NOTES: UNLESS OTHERWISE SPECIFIED:
1. RESISTORS ARE 5% AND ARE 1/4 WATT
  2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.
  3. 75452 IS AN 8-PIN DIP IN A 14-PIN SOCKET. PIN NUMBERS GIVEN ARE VALID FOR A 14-PIN SOCKET WHEN PIN 1 OF THE DIP IS PLUGGED INTO PIN 2 OF THE SOCKET.
  4. THIS DWG APPLIES TO SERIAL NOS. 1015 & SUBS.



REP.	DESCRIPTION	DTY. ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OF ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 2.00 2.00 2.00 CONCENTRICITY AND OUT OF ROUND .R .001 REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		DESIGNED BY D. FERGUSON	DATE 7-12-72	SYNERTIC PRODUCTS, INC. A Division of General Dynamics 1800 Wilshire, Torrance, California
MATERIAL		APPROVED BY	DATE	TITLE LOGIC DIAGRAM INDEX REV'S AND STOP INDICATOR DRIVERS
NEXT ASSY	USED ON	SCALE		100-0150-2 A

SYMBOL	DESCRIPTION	DATE	DATE & APPROVAL
B	RSV PER ECO 412	12-28-72	DPF

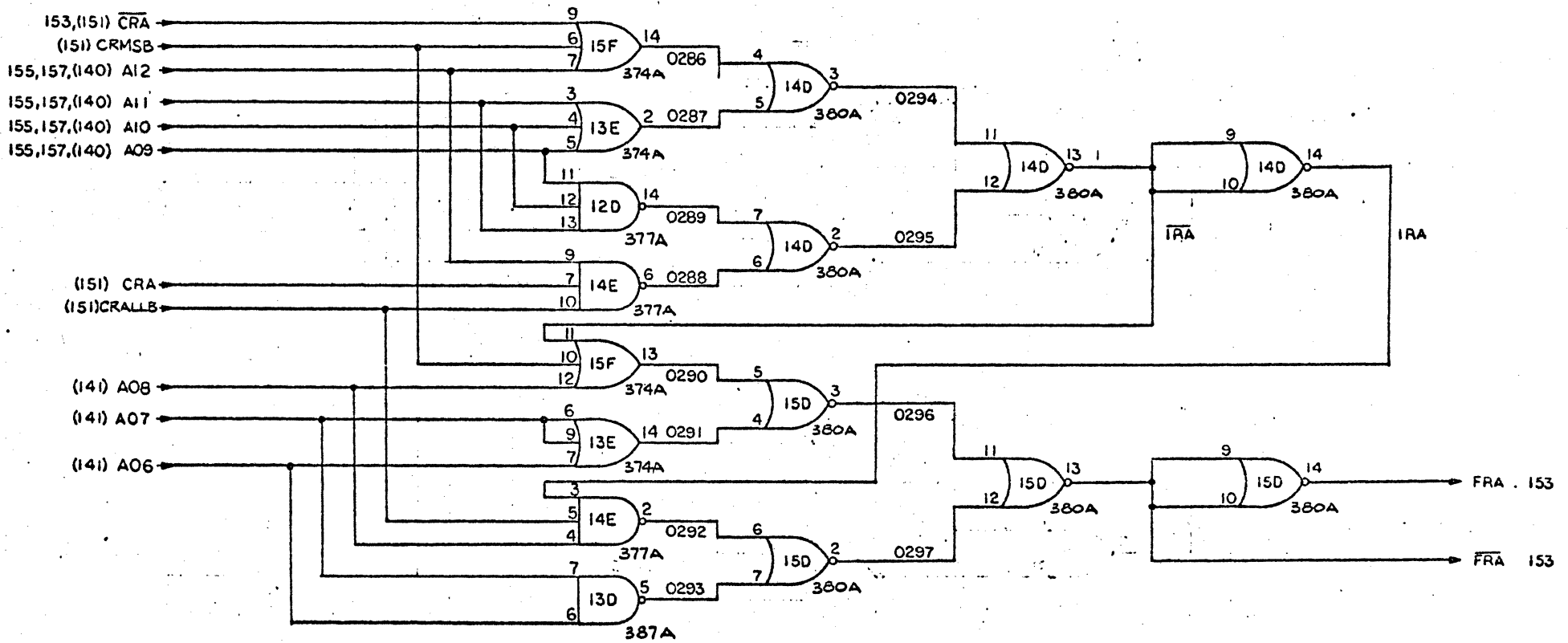


NOTE: UNLESS OTHERWISE SPECIFIED  
 I. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS .01 DECIMALS .005 ANGLES 10° 30' CONCENTRICITY AND DIA. OF HOLES .001	BY CHECKED	DATE	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1932 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	DATE	
FINISH	MATERIAL	TITLE LOGIC DIAGRAM COARSE RANGE DECODER		SCALE
NEXT ASSY	USED ON	DWS #		1800-0151



REVISIONS		DATE	APP
STMBOL	DESCRIPTION		
B	REVISION PER ECO 412	3-28-72	APP

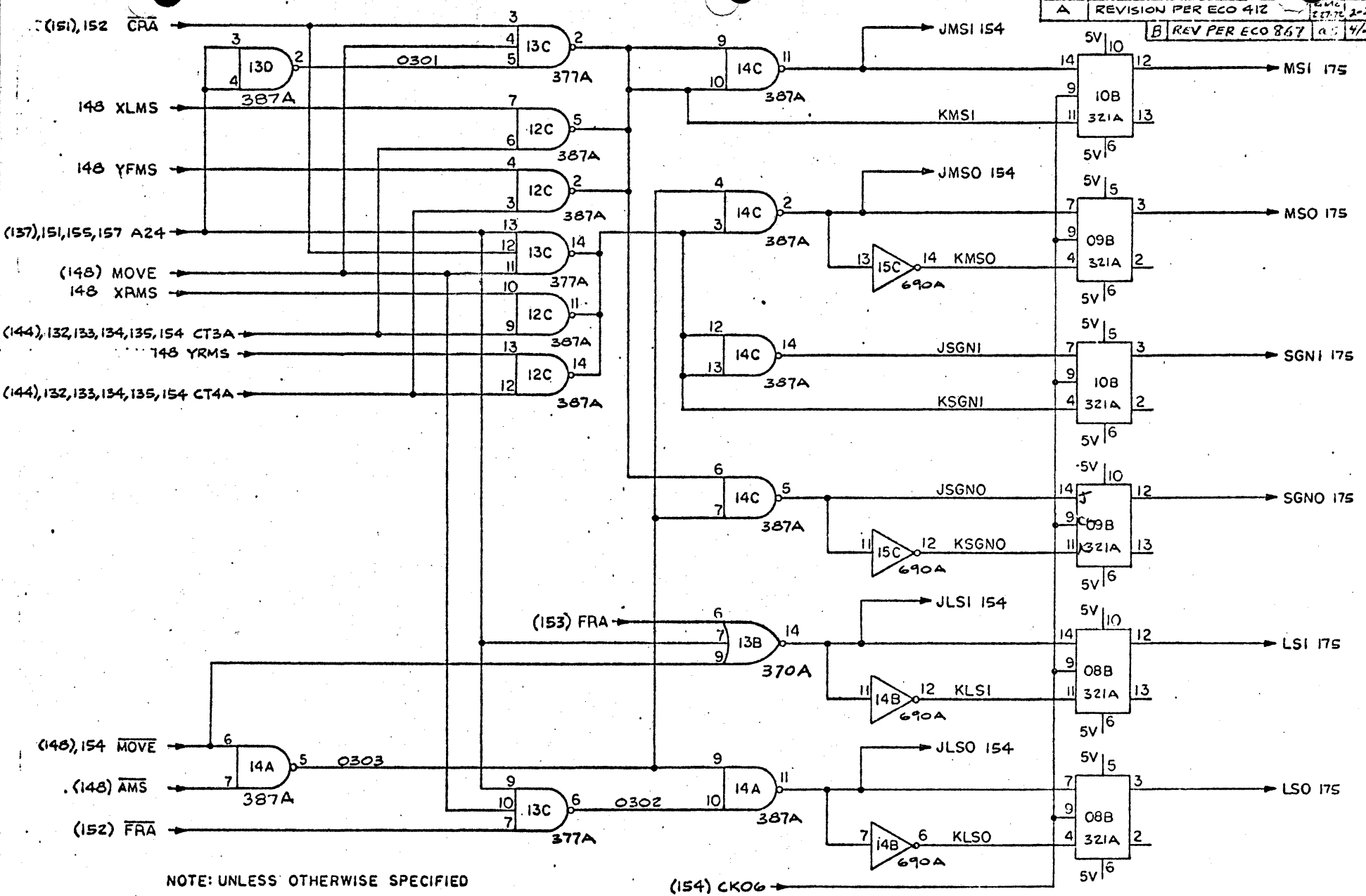


NOTE: UNLESS OTHERWISE SPECIFIED  
 I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Robin</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Ceytron Corporation 1902 McGraw, Santa Ana, California	
.XX .XX ANGLES	CHECKED	DATE	TITLE LOGIC DIAGRAM - FINE RANGE DECODED	
1.01 1.99 0.30	APPROVED	DATE	SCALE DWG # 1800-0152	
CONCENTRICITY AND OUT OF ROUND T.Y. .01	MATERIAL			
REMOVE BURRS AND BREAK ALL SHARP EDGES				
FINISH				
NEXT ASSY	USED ON			

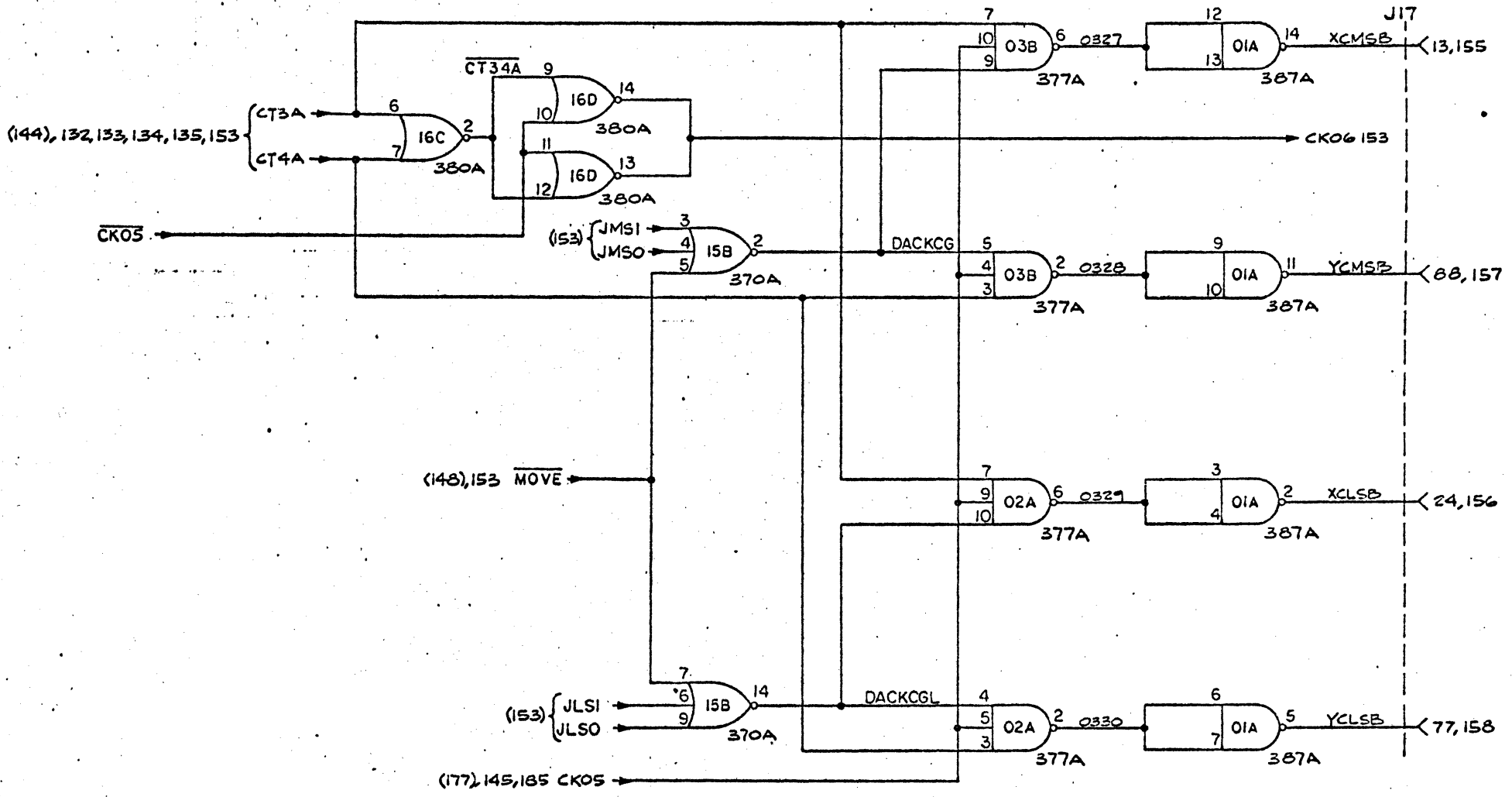
B

SYMBOL	DESCRIPTION	DATE	DATE & APPROVAL
A	REVISION PER ECO 412	2-28-72	APP
B	REV PER ECO 867	4/27/73	KDF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, 5P SERIES OR EQUIV.

REF.	DESCRIPTION	QTY PER ASSY	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXX ANGLE 3.01 ±.005 30°30' CONCENTRICITY AND OUT OF ROUND TYPICAL		BY <i>R. Colman</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1902 Alamo, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSY		USED ON		TITLE LOGIC DIAGRAM - DAC INPUT DIRECT SET- RESET ENABLE
				SCALE 1800-0.153

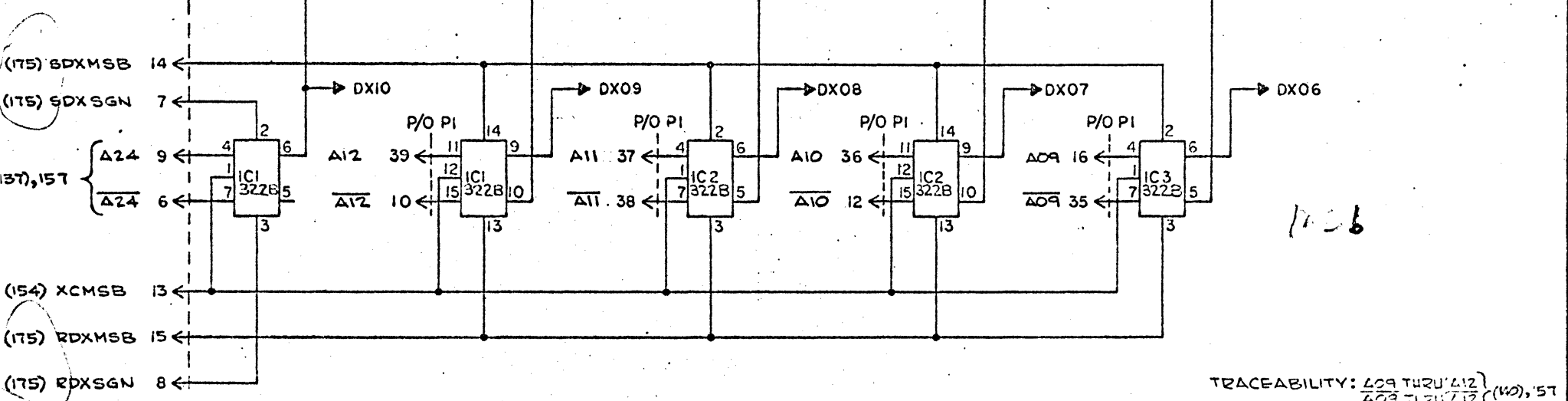
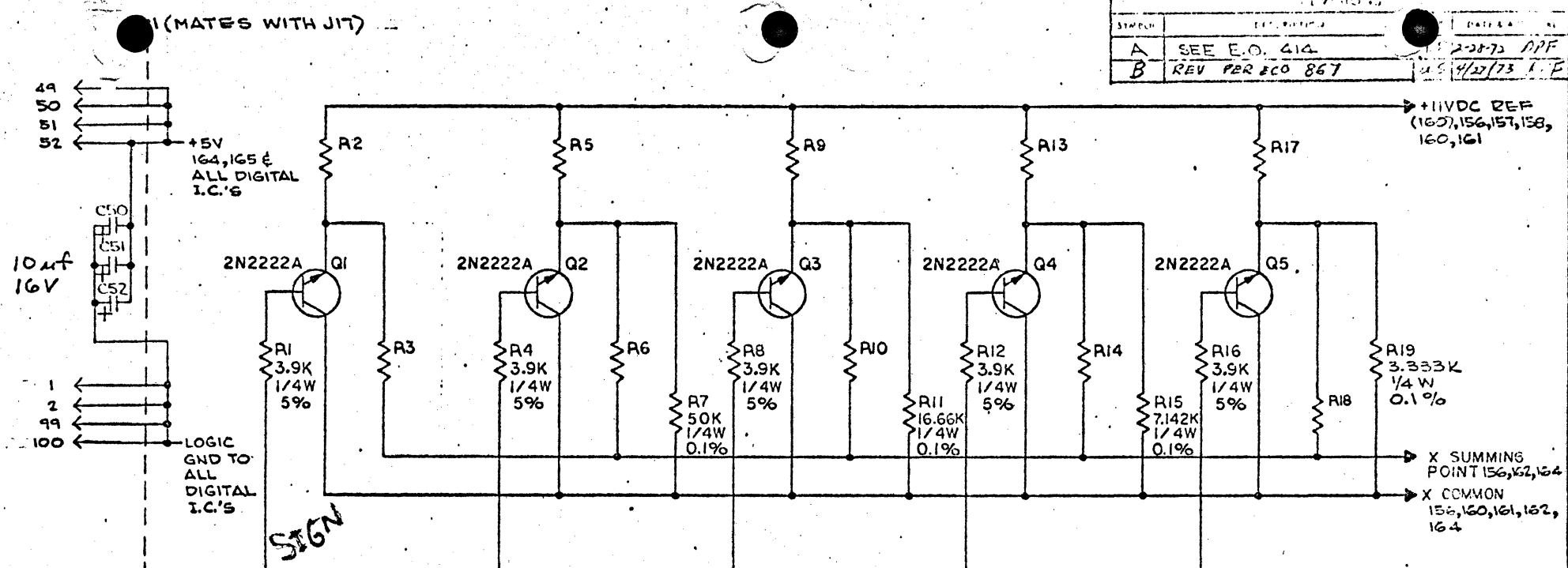


NOTE: UNLESS OTHERWISE SPECIFIED

I.C.'s ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. OF ASSY.	QTY. OF MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE ±.01 ±.012 2° 30' CONCENTRICITY AND OUT OF ROUND T.I.A. .003		BY <i>Kela</i>	DATE <i>3/23/72</i>	<b>SYNERGISTIC PRODUCTS, INC.</b> A Subsidiary of Cavitron Corporation 1902 McGraw Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSY	USED ON	MATERIAL		TITLE <b>LOGIC DIAGRAM - DAC INPUT CLOCKING</b> SCALE <b>DWG # 1800-0154 A</b>

STEP	DATE	BY
A	SEE E.O. 114	2-28-73 APF
B	REV PER ECO 867	4/27/73 L.F.

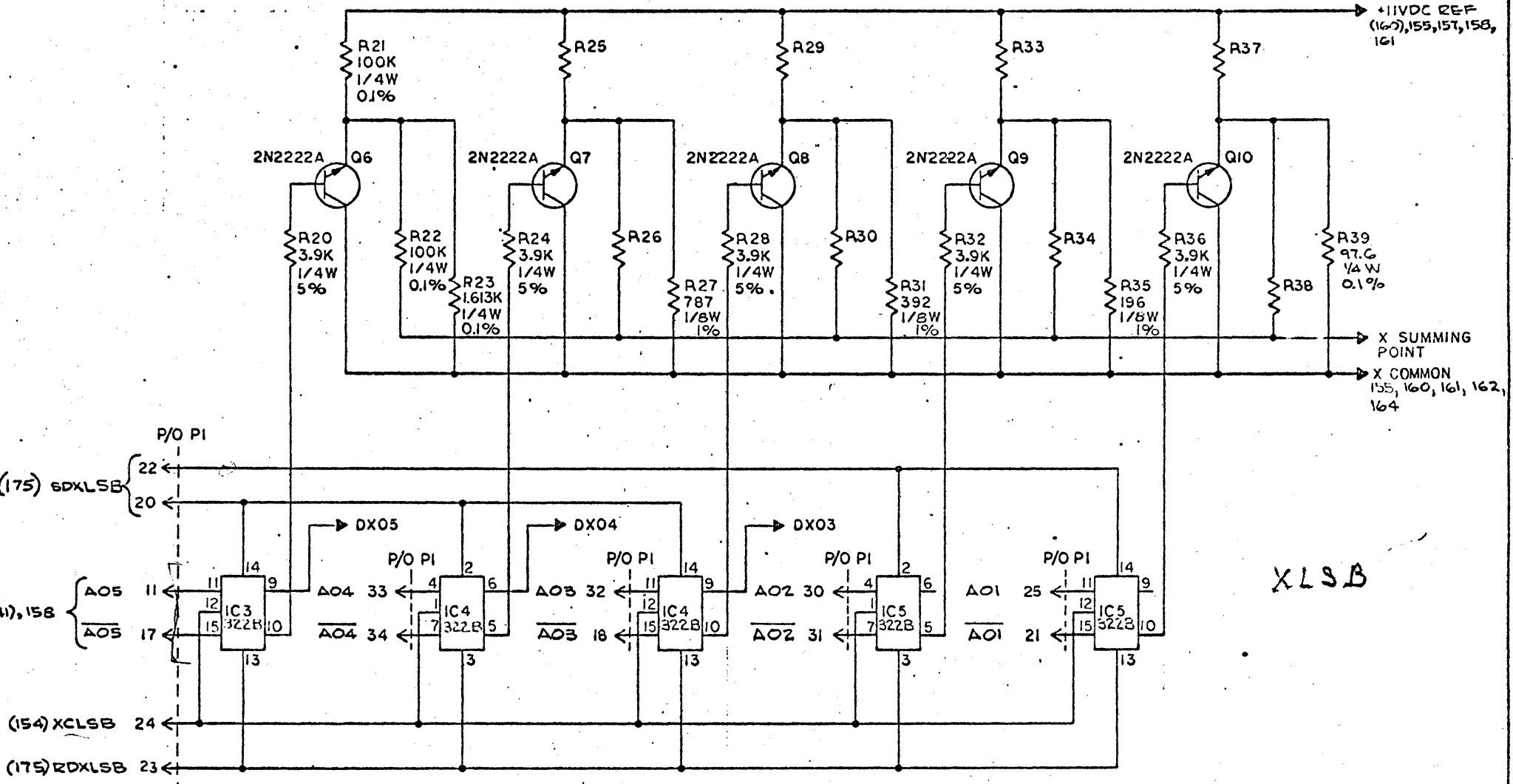


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. FLIPS-FLOPS ARE LU322B OR EQUIV  
 2. RESISTORS ARE 100K, 1/4W ±1%

TRACEABILITY: A09 THRU A12 } (150), 157  
 A09 THRU A12 }  
 DX06 THRU DX10: 159

REF.	DESCRIPTION	QTY. REQ. ASSEMBLY	QTY. REQ. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>Robert</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 1952 McGraw, Santa Ana, California
.01 .005 .003		CHECKED	DATE	
CONCENTRICITY AMOUNT OF ROUND TO .005		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		
FINISH				
NEXT ASSY		USED ON		TITLE: SCHEMATIC - DAC INPUT REGISTER X SIGN AND MSB
				SCALE: DWG # 1800-0155 B

SYMBOL	REV PER ECO	DATE	DATE & APPROVAL
A	SEE E.O. 414	2-28-73	APF
B	REV PER ECO 867	05	4/27/73 APF



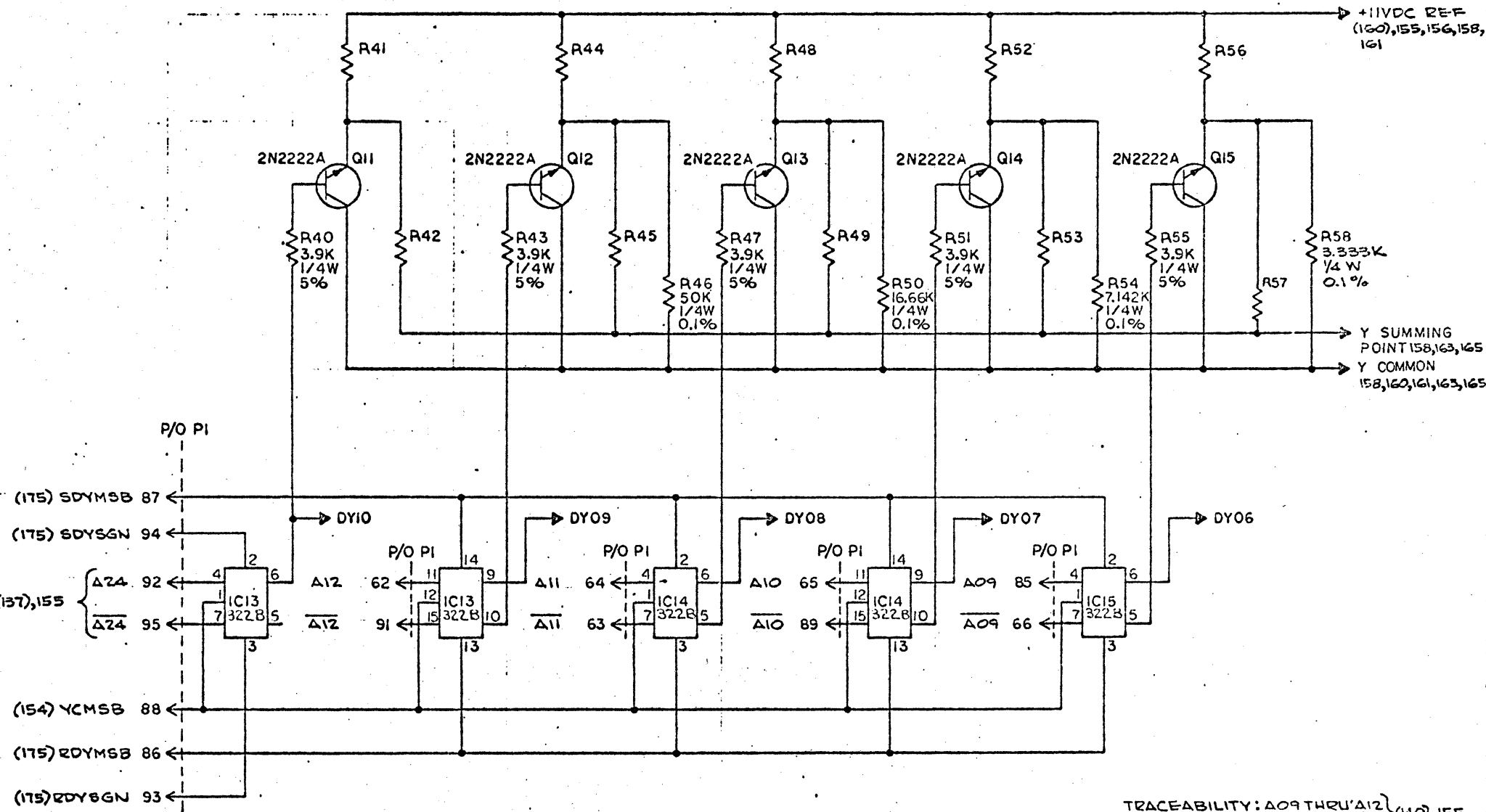
XLSB

TRACEABILITY: A01 THRU A04 (142), 158  
DX03 THRU DX05: 159

- NOTE: UNLESS OTHERWISE SPECIFIED
1. FLIP-FLOPS ARE LU322B OR EQUIV
  2. RESISTOR ARE 100K, 1/8W ±1%

REF.	DESCRIPTION	BY	DATE	QTY	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLEANCES UNLESS OTHERWISE SPECIFIED	BY <i>C. L. ...</i>	DATE 7/2/73		
	XX .XX WHOLE	CHECKED	DATE		
	CONCENTRICITY AND OUT OF ROUND T.I.N. .002	APPROVED	DATE		
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL			
	FINISH				
	NEXT ASSY	USED ON			
			SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1902 McCombs, Santa Ana, California		
			TITLE SCHEMATIC DAC INPUT REGISTER YEAR		
			SCALE		
			Dwg # 1800-0156		

SYMBOL	DESCRIPTION	REV	DATE
A	SEE E.O. 414	1	2-28-73 RPF

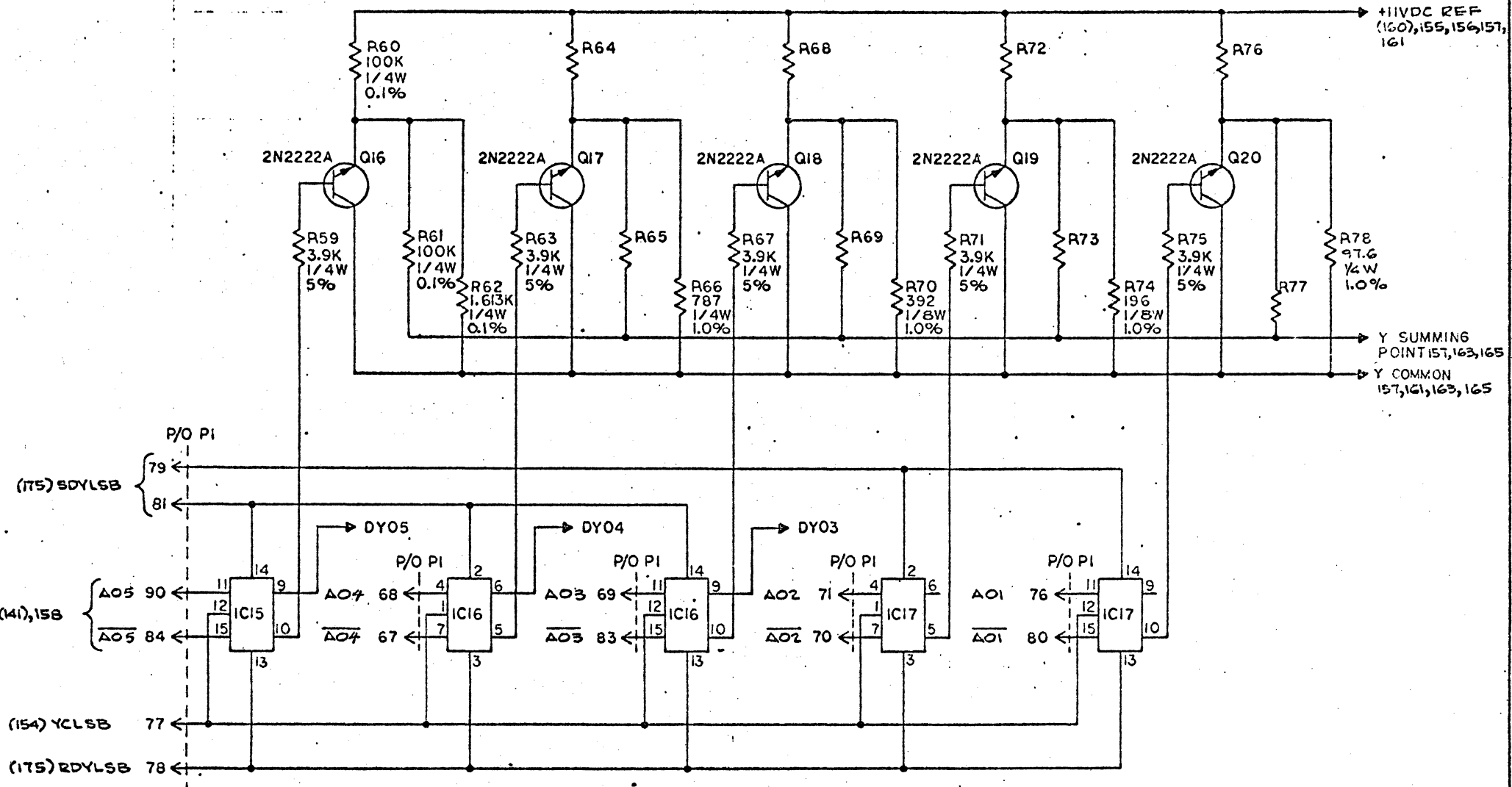


TRACEABILITY: Δ09 THRU Δ12 } (140), 155  
 Δ09 THRU Δ12 }  
 DY06 THRU DY10: 159

- NOTE: UNLESS OTHERWISE SPECIFIED
1. FLIP-FLOPS ARE LU322B OR EQUIV
  2. RESISTORS ARE 100K 1/4W ±1%

REF.	DESCRIPTION	QTY PER ASSY.	REV. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>R. Rubin</i>	DATE <i>2/28/73</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McIlwain, Santa Ana, California
	XX XXX ANGLE	CHECKED	DATE	
	CONCENTRICITY AND OUT OF ROUND F.I.R. .001	APPROVED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		
	FINISH			TITLE DAC INPUT REGISTER Y SIGN AND MSB
	NEXT ASSY	USED ON		SCALE DWG # 1800-0157

SYMBOL	DATE	BY	DATE
A	SEE E.O. 414	...	2-22-72 JJP
B	REV PER ECO 867	...	4/27/73 LJP

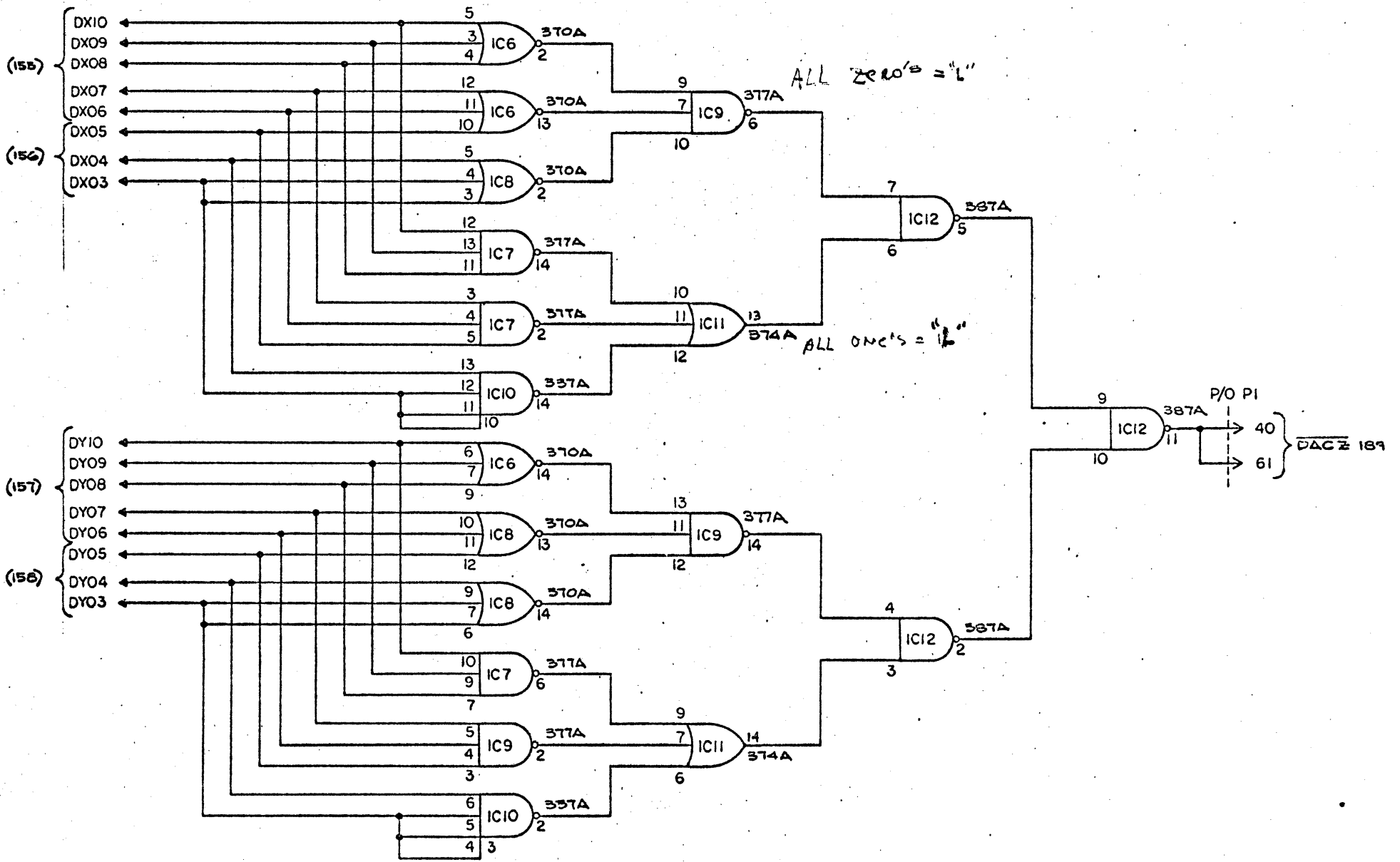


TRACEABILITY: A01 THRU A04 (142), 15B  
 A01 THRU A02  
 DY03 THRU DY05 : 15A

- NOTE: UNLESS OTHERWISE SPECIFIED
1. FLIP-FLOPS ARE LU322B OR EQUIV
  2. RESISTORS ARE 100K, 1/8W ±1%

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED .25 .30 .40 .50 .60 .70 .80 .90 .95 .01 .02 .03 .04 .05 .06 .07 .08 .09 .10 CONCENTRICITY AND DUTY OF ROUND T.I.R. .01		BY <i>[Signature]</i> CHECKED	DATE 1/10/73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calspan Corporation 1902 McGraw, Santa Ana, California
REMOVE BURR AND BREAK ALL SHARP EDGES FINISH		APPROVED	DATE	
NEXT ASSY		USED ON		TITLE SCHEMATIC - DAC INPUT REGISTER Y1.50
SCALE				QWS # 100-0158 B

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	E.O. 414		AME 2-25-73 DMF



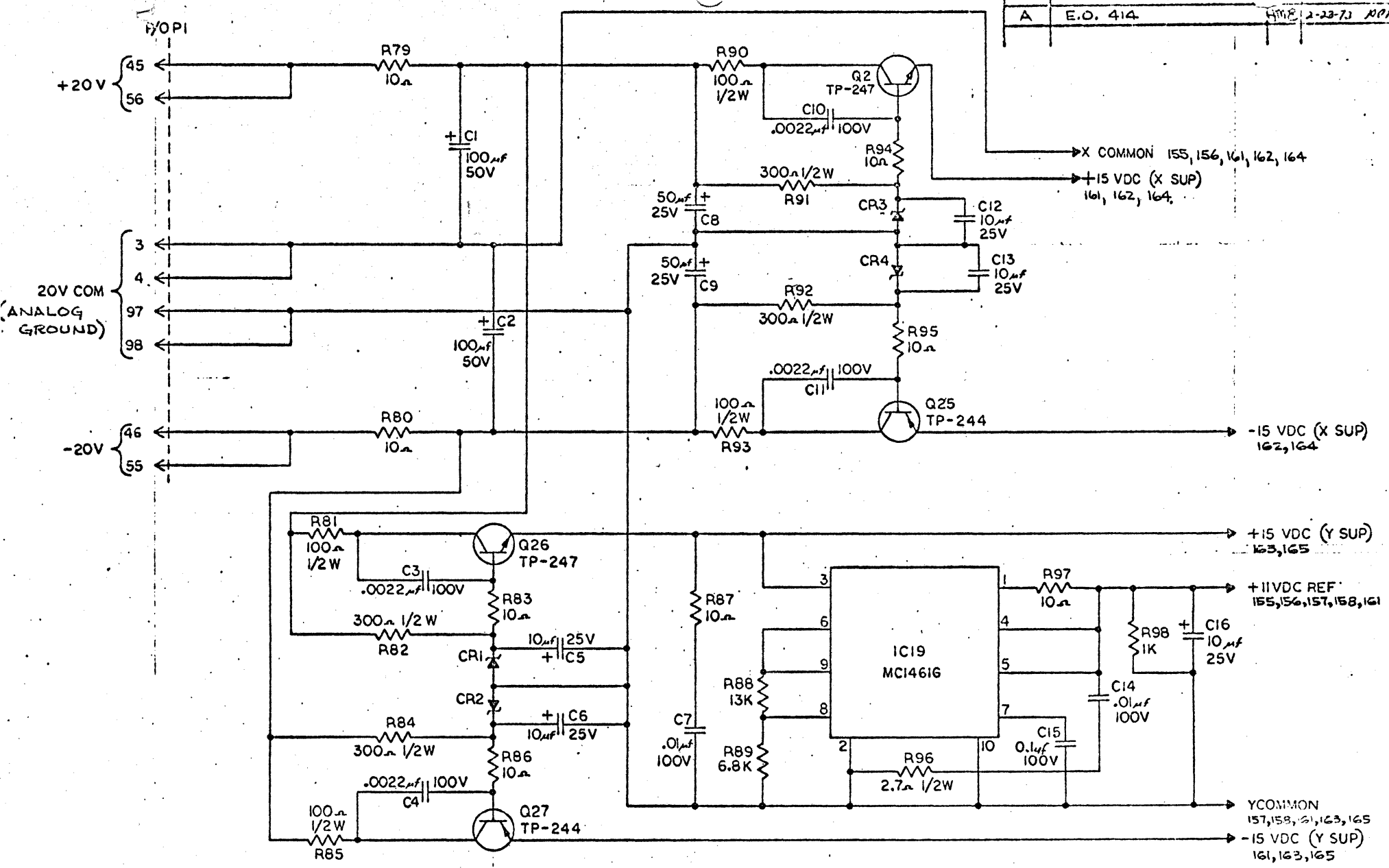
NOTE: UNLESS OTHERWISE SPECIFIED  
 I. C.'S ARE SIGNETICS UTILOGIC II, SP  
 SERIES OR EQUIV.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>Robin</i>	DATE <i>1/28/71</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 15027 McGraw, Santa Ana, California
.XX .XXX ANGLE		CHECKED	DATE	
1:50 1:200 2P 30°		APPROVED	DATE	
CONCENTRICITY AND OUT OF ROUND T.I.R. .001		MATERIAL		TITLE LOGIC DIAGRAM - DAC INPUT ZERO DECODER
REMOVE BURS AND BREAK ALL SHARP EDGES		FINISH		SCALE
NEXT ASSY		USED ON		DWG # 1800-0159

A



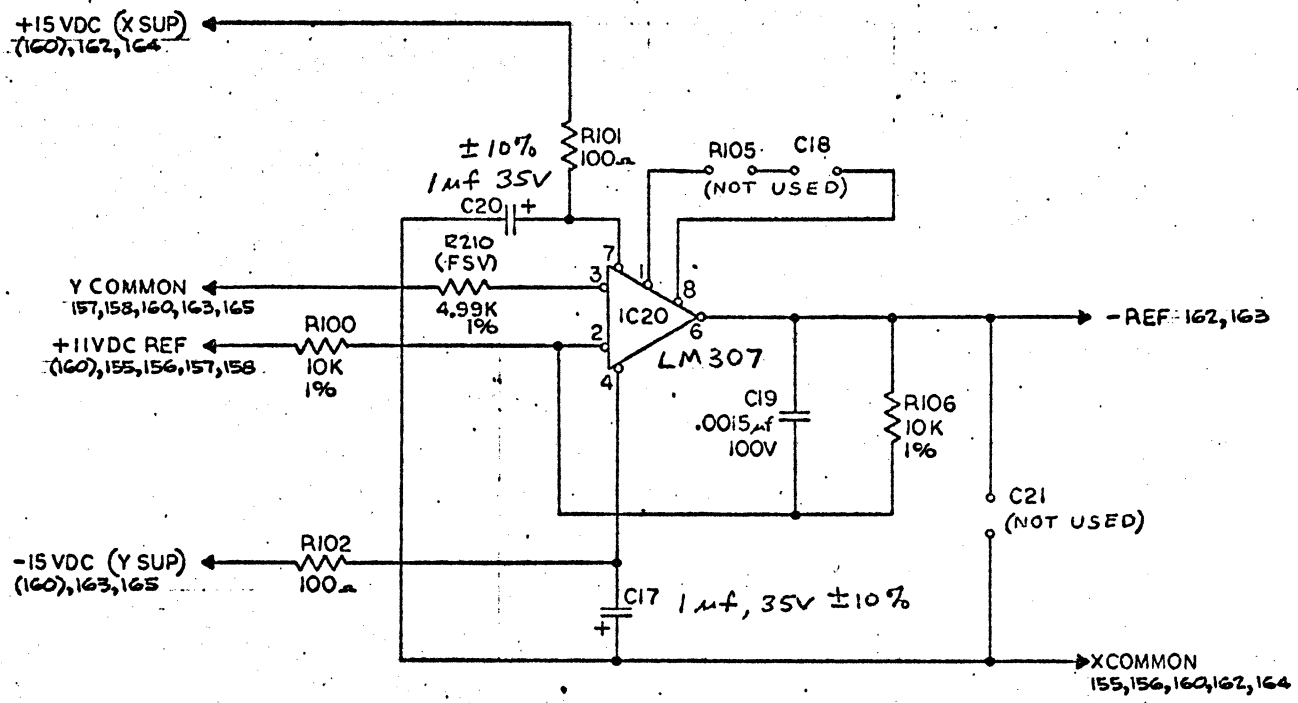
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	E.O. 414	4/18/73 JOF



NOTE UNLESS OTHERWISE SPECIFIED  
 1. RESISTORS ARE RATED IN OHMS ±5% AND ARE 1/4 WATT.  
 2. DIODES ARE IN5246.

REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER MACH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>R.C.B.</i>	DATE <i>4/18/73</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1902 M. Ave., San Jose, California
XX .005 ANGLE 1.01 2.008 3°-30'		CHECKED	DATE	
CONCENTRICITY AND OUT OF ROUND T.I.R. .005		APPROVED	DATE	TITLE SCHEMATIC - DAC REFERENCE VOLTAGES
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		SCALE DWG # 1800-0160
FINISH		NEXT ASSY		USED ON

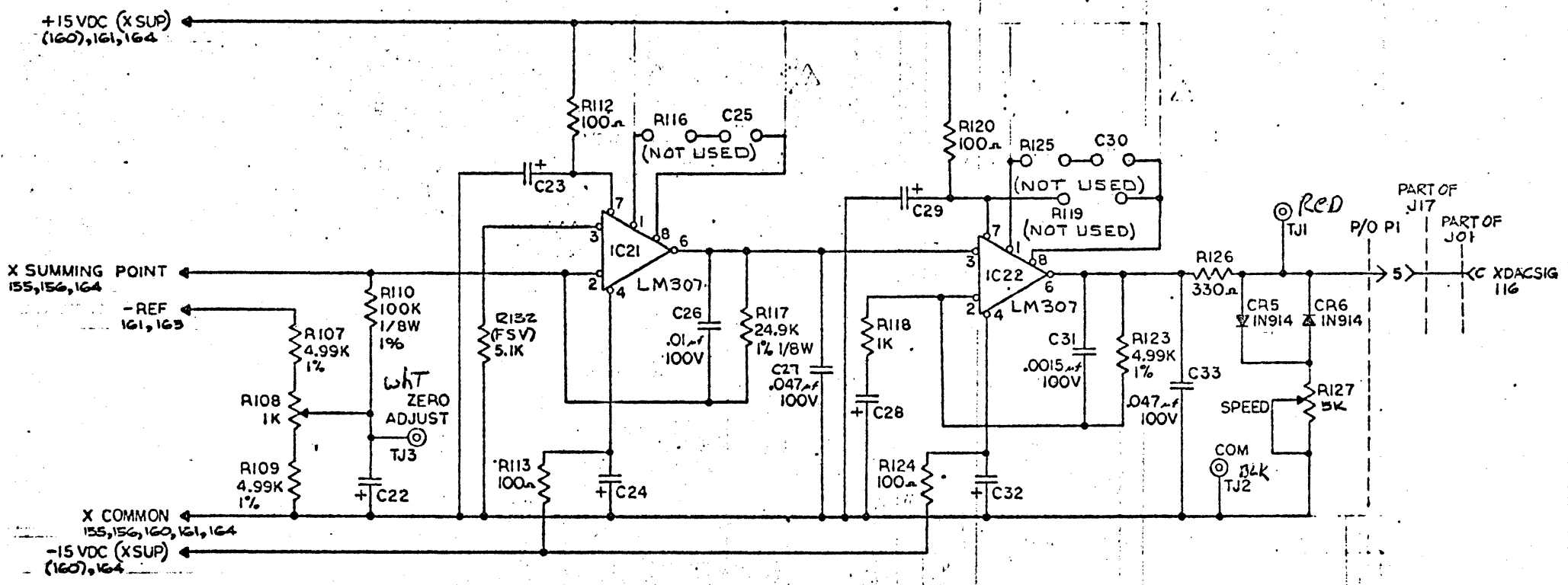
REVISION			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	E.O. 414	2-28-72	ADP
B	E.O. 519	4-20-72	ADP
C	REV PER ECO 867	4/27/73	ADP



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. RESISTORS ARE RATED IN OHMS ±5%  
 AND ARE 1/4 WATT


REF.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>Reba</i>	DATE <i>5/19/73</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1702 McNew, Santa Ana, California
.XX .XXX ANGLE		CHECKED	DATE	
.01 .003 3° 30'		APPROVED	DATE	TITLE SCHEMATIC - DAC NEGATIVE REFERENCE SUPPLY
CONCENTRICITY AND OUT OF ROUND TYP .005		MATERIAL		SCALE DWG # 1800-0161
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
NEXT ASSY	USED ON			

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	E.O. 414	APR 2-28-72	DPF
B	INCORP E.O. 524	APR 4-24-72	EM

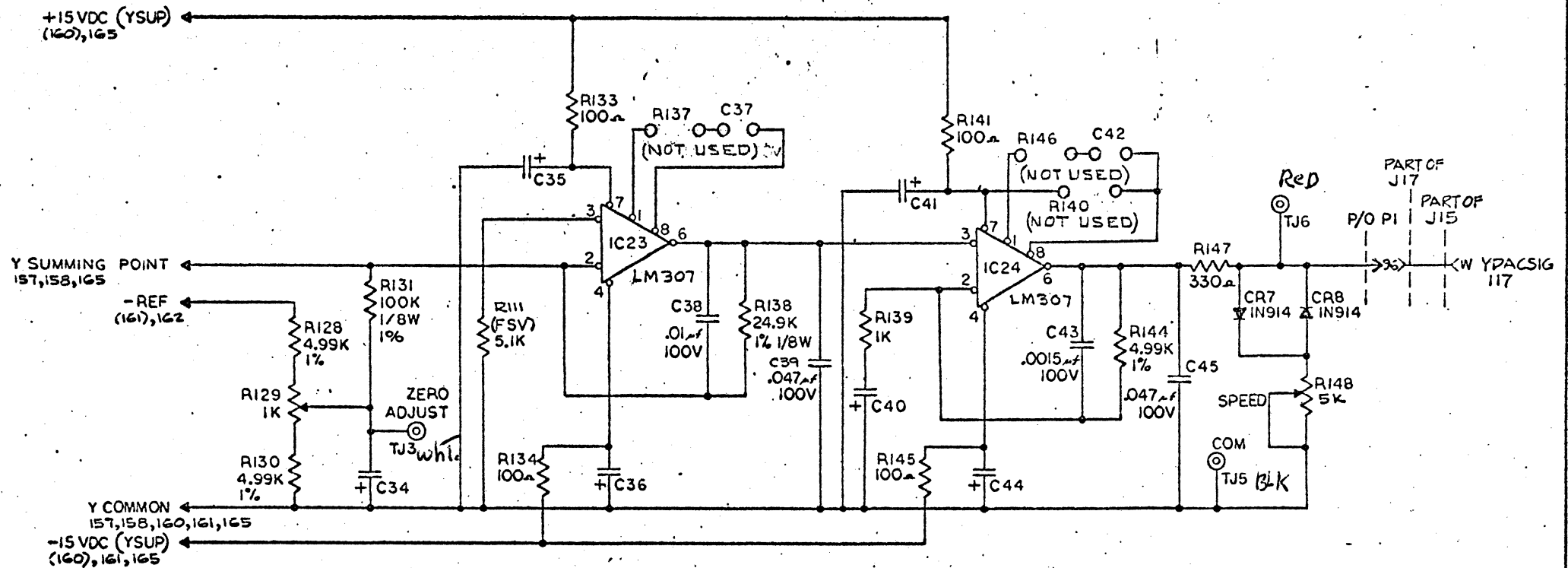


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. RESISTORS ARE RATED IN OHMS ±5% AND ARE 1/4 WATT  
 2. CAPACITORS ARE 1 MICROFARAD, 35WVDC, 10%

REF.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				

TOLERANCES UNLESS OTHERWISE SPECIFIED R .XX ANGLE 1.31 7.88 19.25 CONCENTRICITY AND OUT OF ROUND TYP. .005	BY: <i>Reber</i> CHECKED: _____ APPROVED: _____ MATERIAL: _____ FINISH: _____	DATE: 5/2/72 DATE: _____ DATE: _____	 <b>SYNERGISTIC PRODUCTS, INC.</b> A Subsidiary of Cavitron Corporation 1802 McLean, Santa Ana, California
TITLE: <b>SCHEMATIC - DAC X AXIS AMPLIFIER</b>			SCALE: _____ DWS 1000-0162

SYMBOL	REV. #	DATE	APPROVAL
A	E.O. 414	12-28-72	ADF
B	INCORP ELO 524	4-29-72	EXL

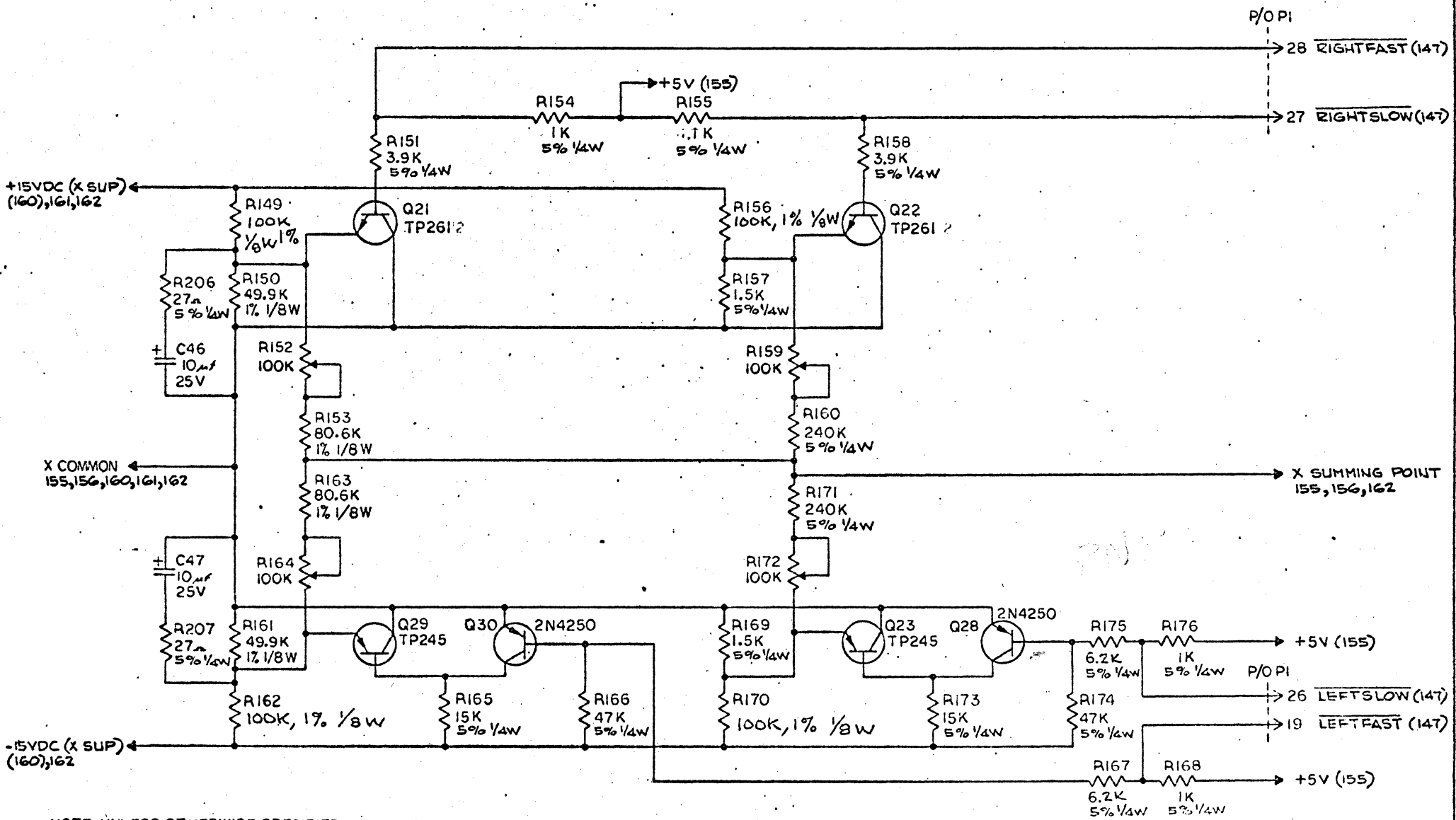


NOTE: UNLESS OTHERWISE SPECIFIED

- RESISTORS ARE RATED IN OHMS  $\pm 5\%$  AND ARE 1/4 WATT
- CAPACITORS ARE 1 MICROFARAD, 35WVDC, 10%

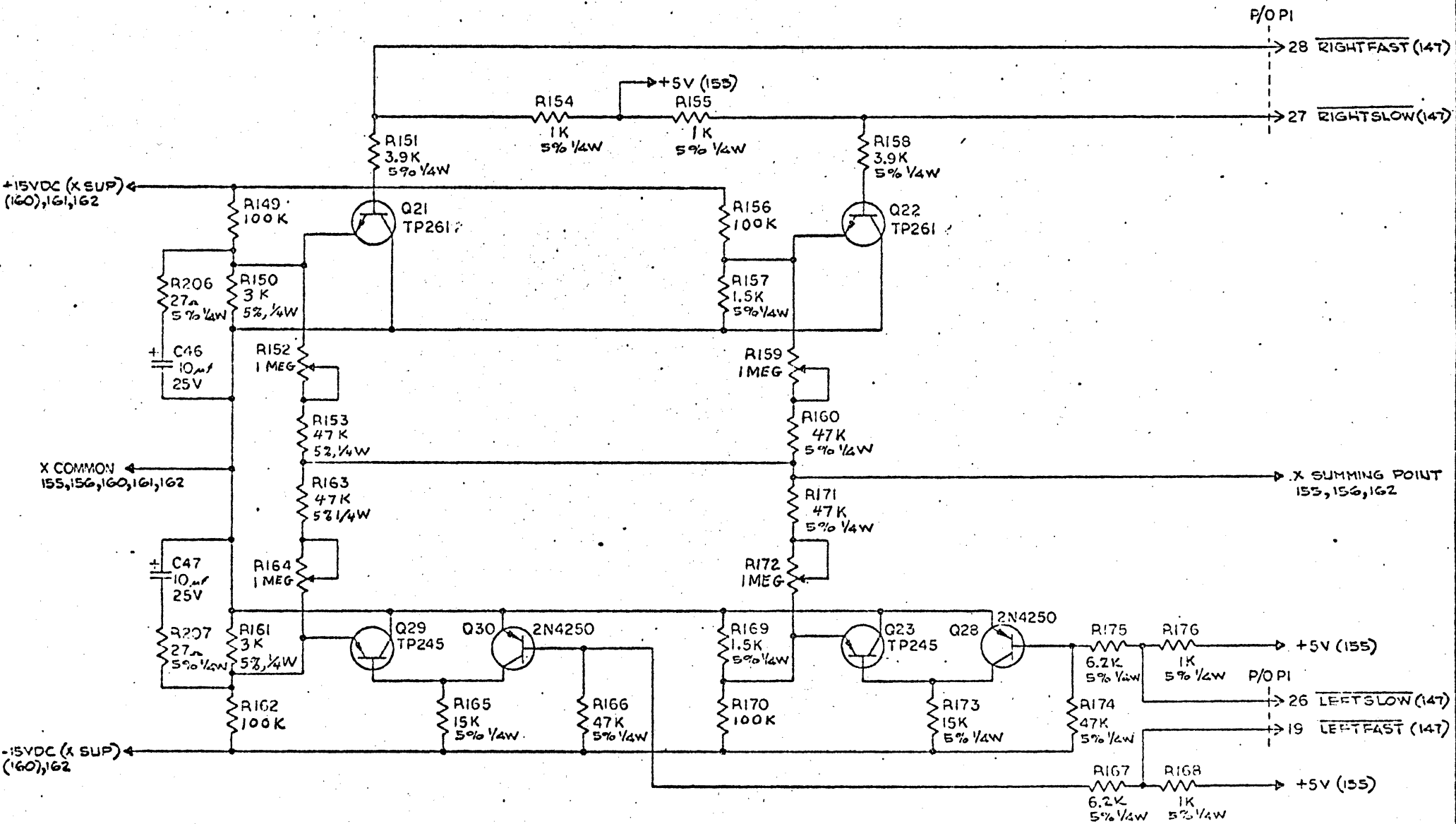
REP.	DESCRIPTION	QTY. REQ. ASSY.	QTY. REQ. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXX ANGLE 2.01 2.05 2.30 CONCENTRICITY AND OUT OF ROUND 1.0 .05		BY: <i>Reber</i>	DATE: 3/2/73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Caeltron Corporation 1902 McGee, Santa Ana, California
		CHECKED:	DATE:	
		APPROVED:	DATE:	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE SCHEMATIC - DAC Y AXIS AMPLIFIER
FINISH				SCALE: 1800-0163
NEXT ASSY		USED ON		

REV. 1-13		DATE	BY
SYMBOL	DESCRIPTION	DATE	BY
A	E.O. 414	11/28/72	DPF
B	REV FOR ECO 867	1/27/73	DPF



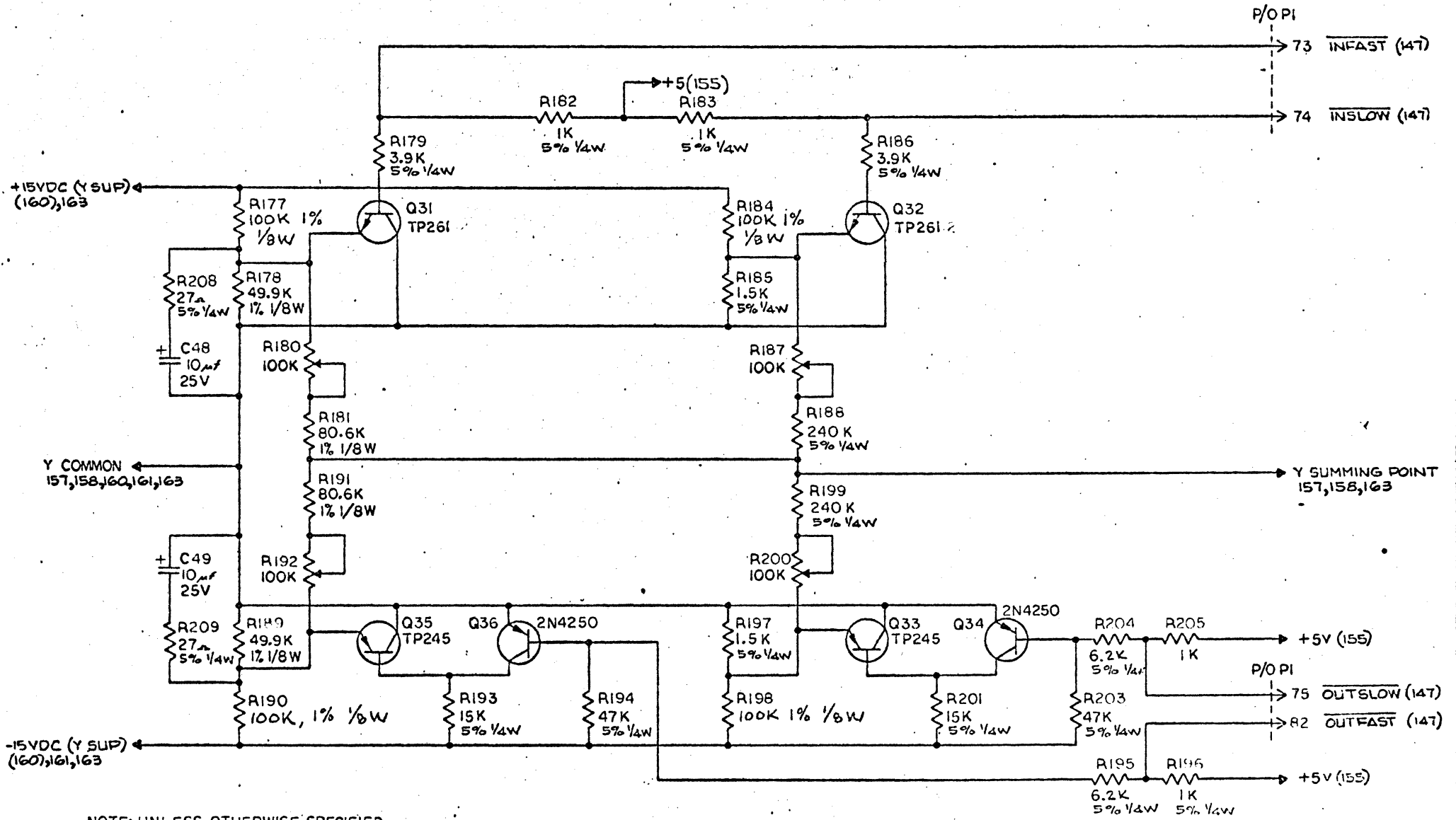
NOTE: UNLESS OTHERWISE SPECIFIED

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCE UNLESS OTHERWISE SPECIFIED	BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1502 McGraw, Santa Ana, California	
.1K .1KX ANGLE	CHECKED	DATE	TITLE SCHEMATIC - DAC X-AXIS JOG CIRCUIT	
.125 .005 .015"	APPROVED	DATE	SCALE	
CONCENTRICITY AND OUT OF ROUND T.I.R. .05	MATERIAL		DWF # 1800-0164	
REMOVE BURS AND BREAK ALL SHARP EDGES	FINISH		B	
NEXT ASSY	USED ON			



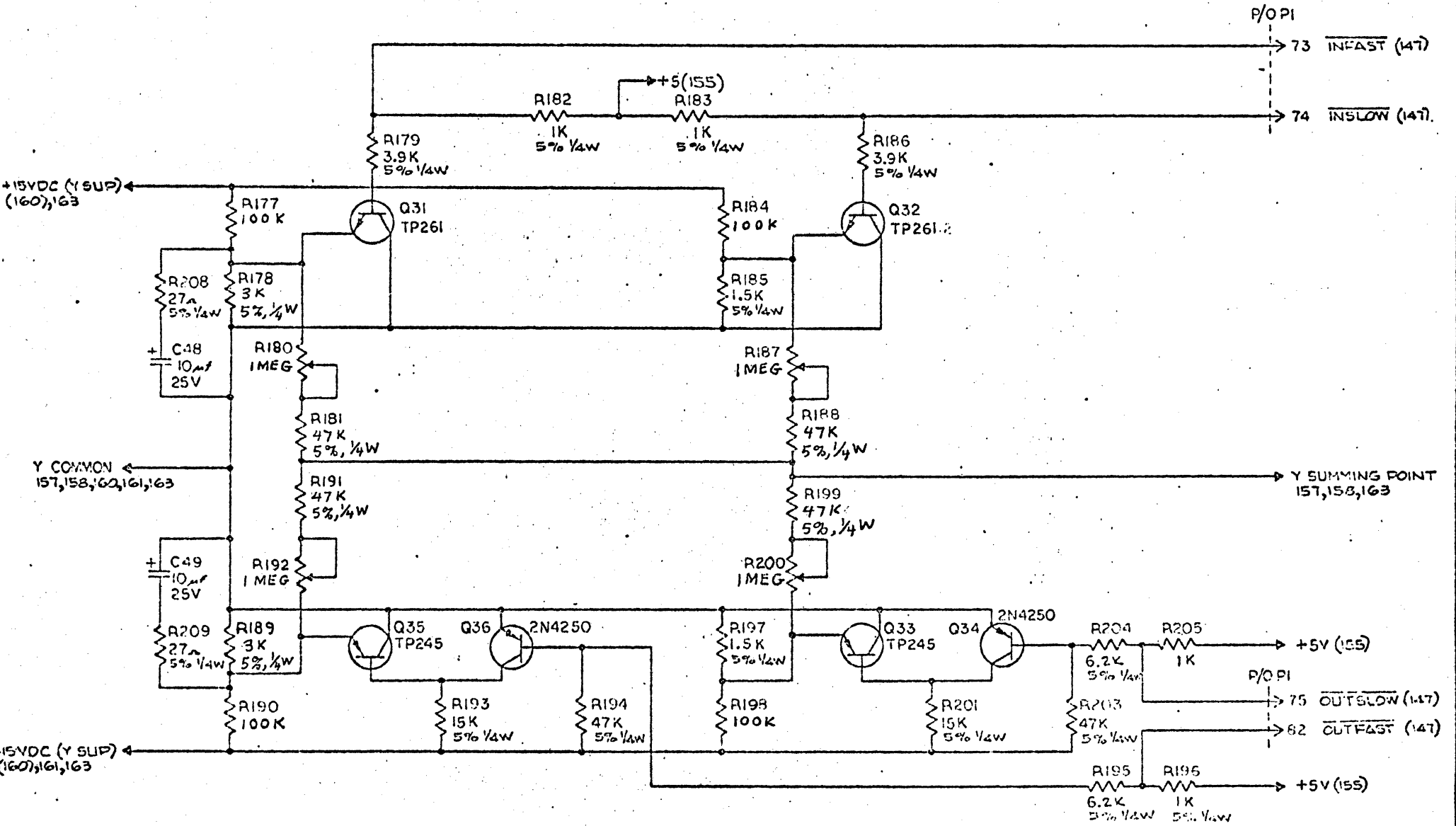
REP.	DESCRIPTION	REV.	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
<b>DRILLING MACHINE</b>		BY <i>[Signature]</i> DATE	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavimex Corporation 1002 McQueen, Santa Ana, California
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX .XX ANGLE .01 .005 .10 .10" CONCENTRICITY AND OUT OF ROUND 1/4 .005		APPROVED	DATE	TITLE <b>SCHEMATIC - DMC X-AXIS            JOG CIRCUIT</b>
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL		SCALE <b>1/800 - 0164 - 2</b>
NEXT ASSY	USED ON			

SYMBOL	DESCRIPTION	DATE	APPROVAL
A	E.O. 414	2-28-72	APF
B	ECO 867	4/27/73	APF



NOTE: UNLESS OTHERWISE SPECIFIED

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McGraw, Santa Ana, California
.XX .XX ANGLE		CHECKED	DATE	
CONCENTRICITY AND OUT OF ROUND .001		APPROVED	DATE	TITLE
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		SCHMATIC - DAC Y-AXIS JAG CIRCUIT
FINISH				SCALE
NEXT ASSY		USED ON		DWG # 1500-0165



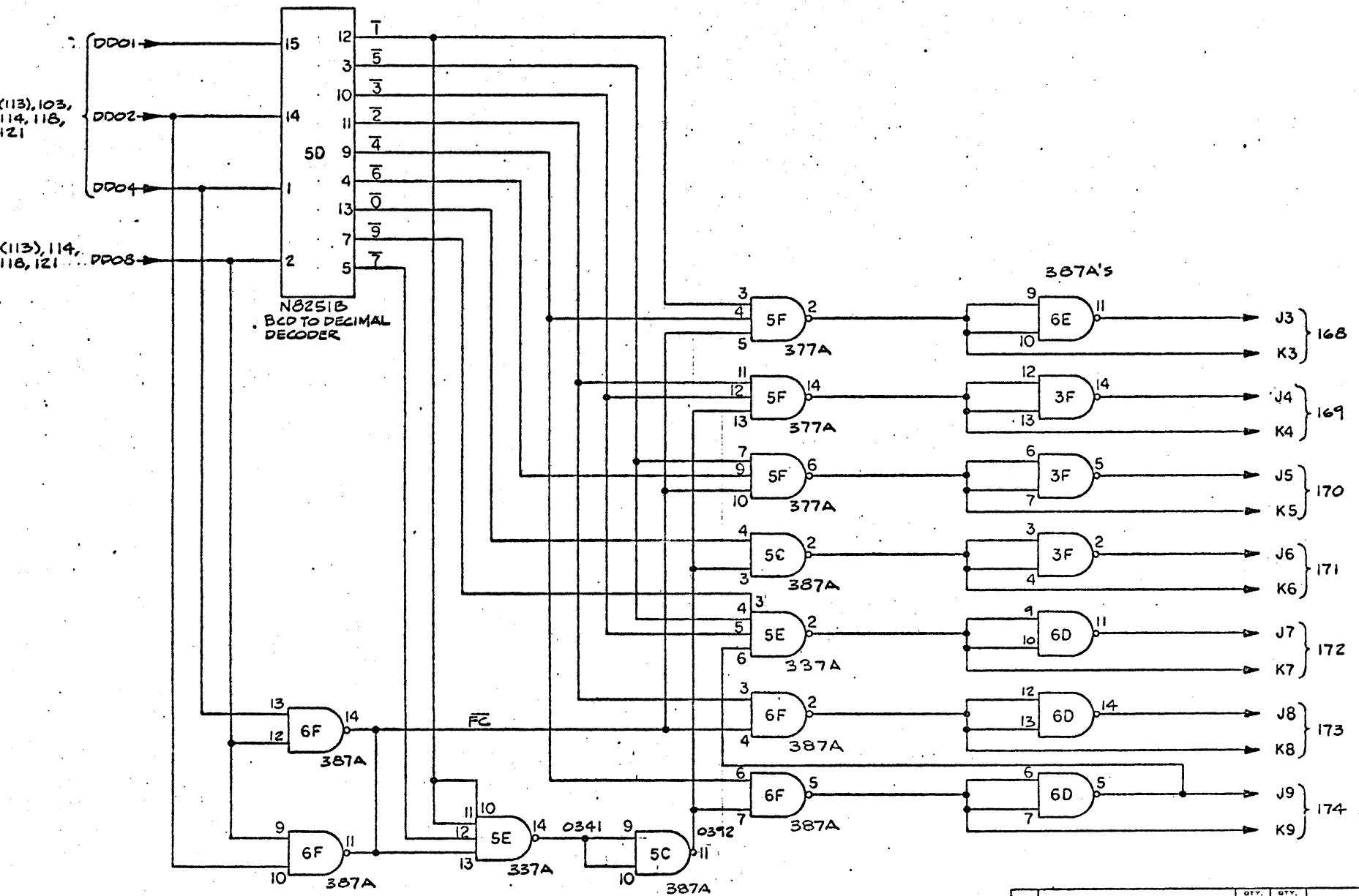
DRILLING- MACHINE

REF	DESCRIPTION	BY	DATE

REF	DESCRIPTION	BY	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PRICE ESTIMATE INFORMATION WHICH SHALL NOT BE RETRIEVED OR TRANSMITTED TO OTHER DEPARTMENTS OR USED FOR OTHER THAN THE MANUFACTURING OF AND OTHER PURPOSES WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED			SYNERGISTIC PRODUCTS, INC.
	1/16" RES. ANGLE			A Subsidiary of Caltron Corporation
	± 0.1 ± 0.05 ± 0.25			1102 N. Main, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND 1/16" OR			TITLE SCHEMATIC - DAC Y-AXIS
	REMOVE BURRS AND BREAK ALL SHARP EDGES			JOG CIRCUIT
	FINISH			SCALE
				1800-0165-2

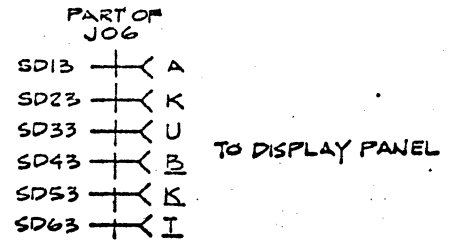
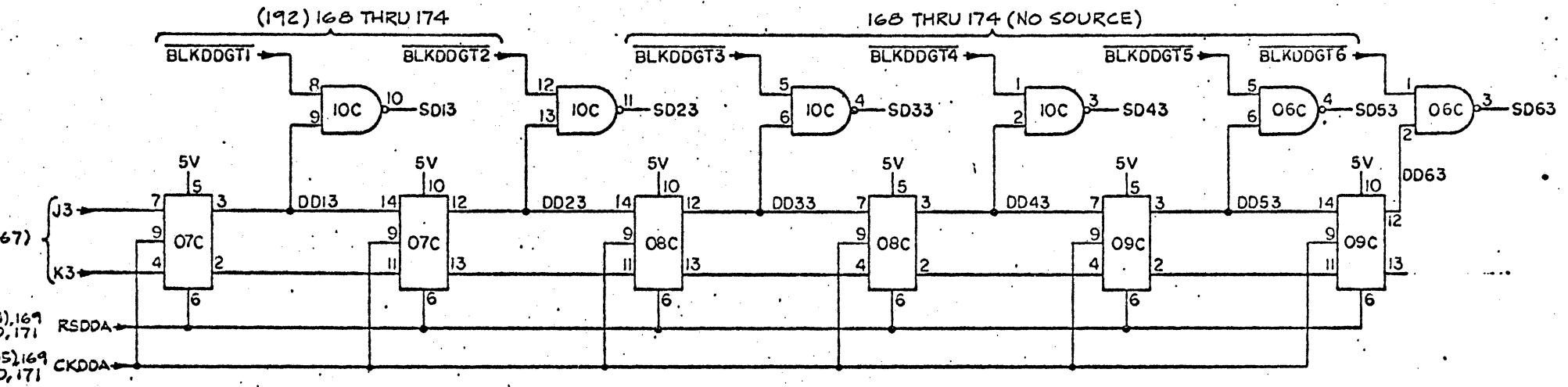


REVISION			
SYMBOL	DESCRIPTION	DATE	APP. & APPROVAL
A	REVISION PER ECO 412	2-21-73	APF
B	ECO 867	4/27/73	A-PF



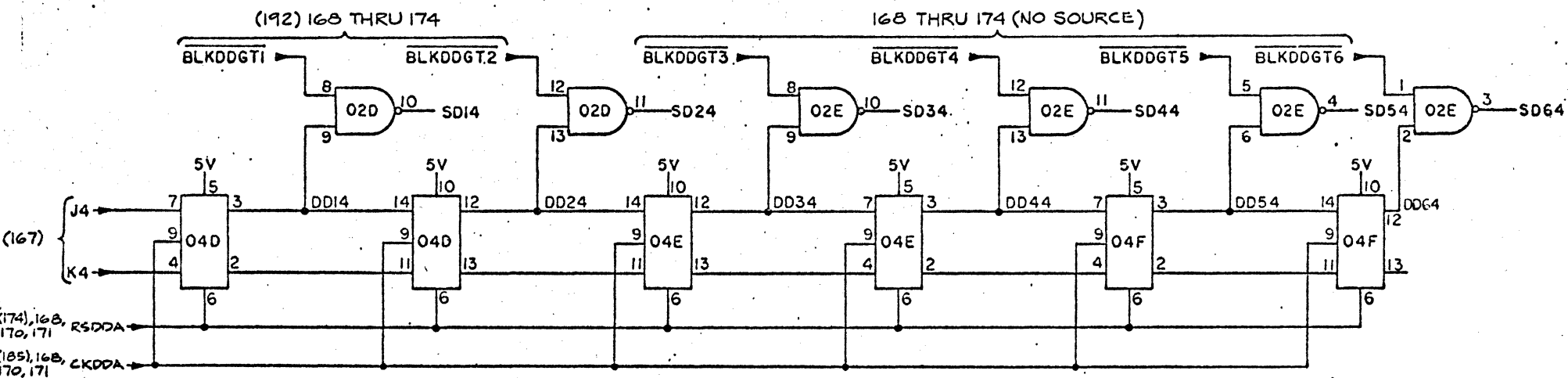
NOTE UNLESS OTHERWISE SPECIFIED  
 I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES  
 OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MALM.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE ±.01 ±.005 ±.015" CONCENTRICITY AND OUT OF ROUND T.R. .005		BY <i>Robert</i> CHECKED	DATE 13/2/73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Captron Corporation 1807 MacGregor, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
FINISH		MATERIAL	TITLE LOGIC DIAGRAM - BCD TO 7 SEGMENT DECODER	
NEXT ASSY		USED ON		SCALE DWS # 1800-0167 5



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. FLIP-FLOPS ARE LU321A OR EQUIV.  
 2. NAND GATES ARE MC658P OR EQUIV.

REF.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>H. Chan</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Contron Corporation 1907 Alameda, Santa Ana, California
	.R .R .R ANGLE	CHECKED	DATE	
	2.00 2.000 10.00	APPROVED	DATE	
	CONCENTRICITY AND OUT OF ROUND T.R. .002	MATERIAL		
	REMOVE BURRS AND BREAK ALL SHARP EDGES			TITLE
	FINISH			LOGIC BOARD - DISPLAY BOARD SEGMENT A
	NEXT ASSY	USED ON		SCALE
				DWG # 10-016-A



PART OF JOB

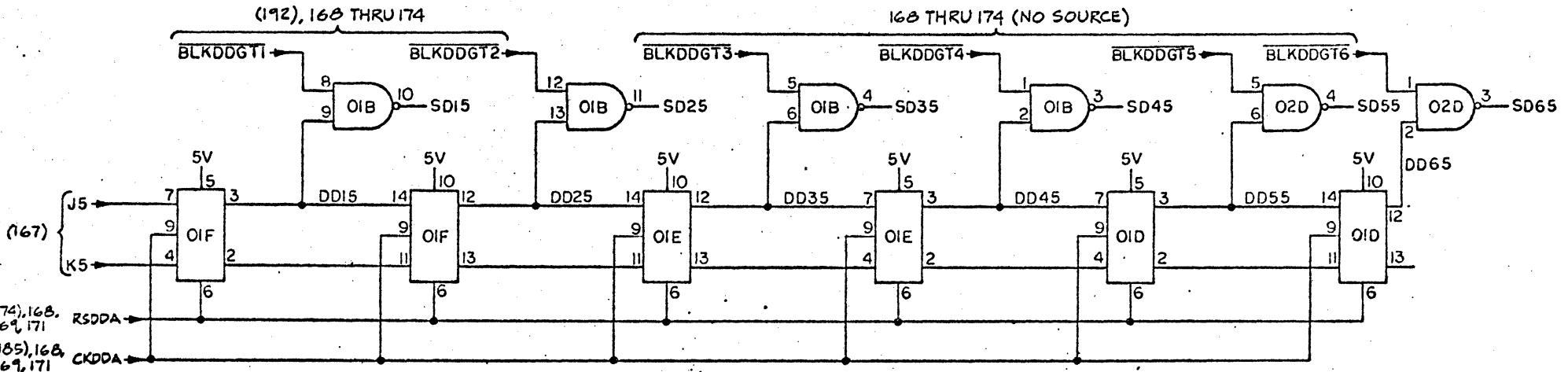
SD14 — B  
SD24 — L  
SD34 — V  
SD44 — E  
SD54 — F  
SD64 — U

TO DISPLAY PANEL

NOTE: UNLESS OTHERWISE SPECIFIED  
1. FLIP-FLOPS ARE LU321A OR EQUIV  
2. NAND GATES ARE MC858P OR EQUIV

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		BY: <i>R. Baker</i>	DATE: 11/6/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1907 Mc Geer, Santa Ana, California
.XX .XX .ANGLE		CHECKED:	DATE:	
CONCENTRICITY AND OUT OF ROUND T.O. .001		APPROVED:	DATE:	TITLE: LOGIC DIAGRAM - DISPLAY REGISTER SEGMENT A
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL:		SCALE: DWD # 1800-0169 A
FINISH:		NEXT ASSY:		USED ON:

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REVISION PER ECO 412	12-13-72 2-28-73 PPF



(167)  
74, 168, 69, 171  
85, 168, 69, 171  
RSDDA  
CKDDA

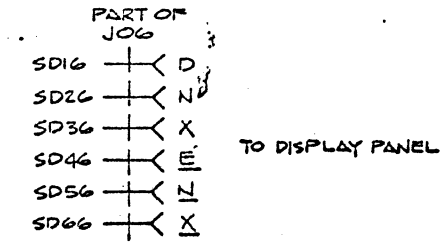
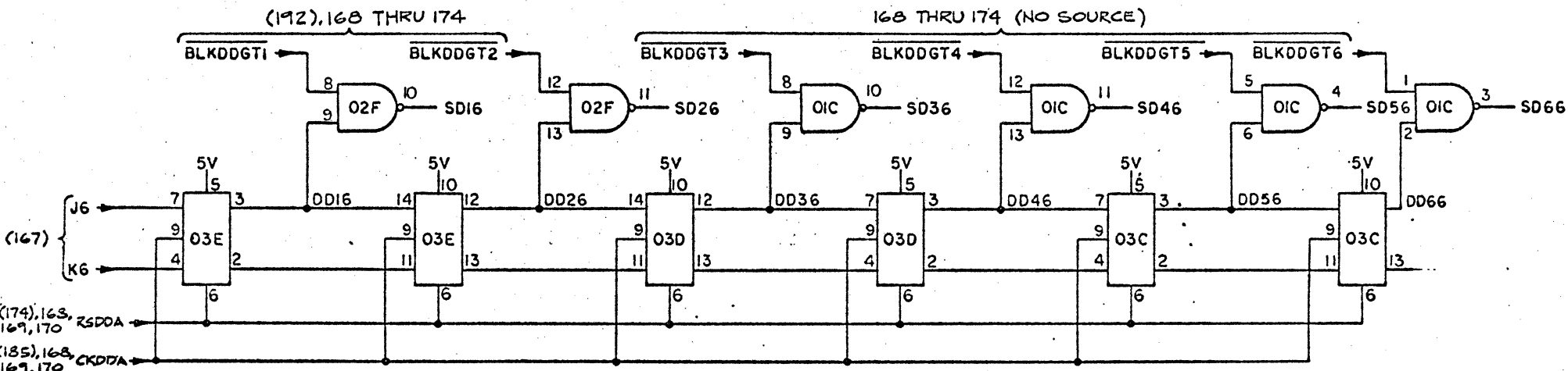
PART OF JOB

SD15 — C  
SD25 — M  
SD35 — W  
SD45 — D  
SD55 — M  
SD65 — Y

TO DISPLAY PANEL

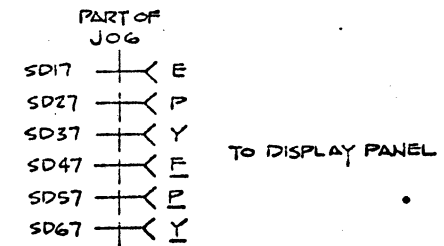
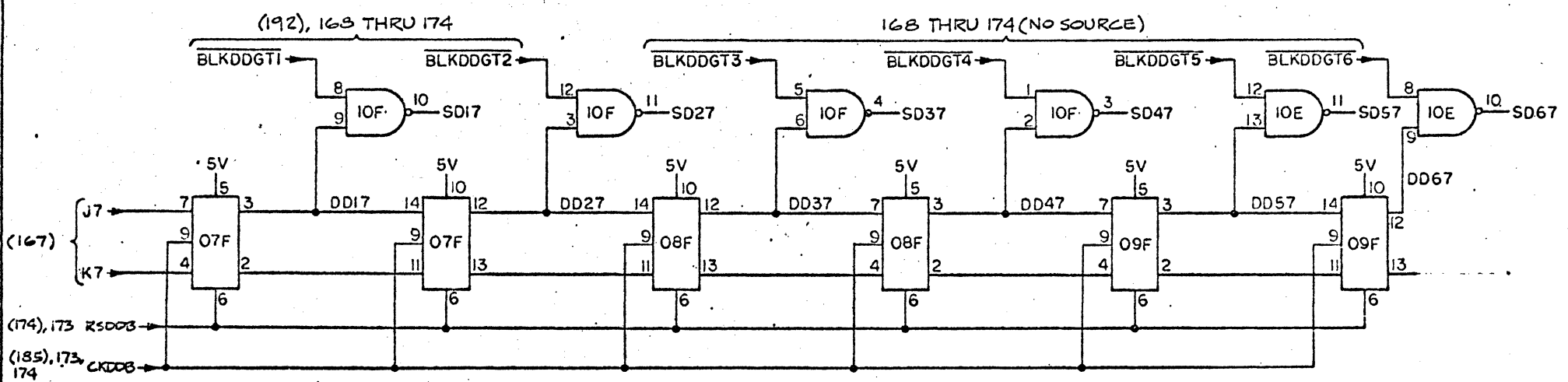
NOTE: UNLESS OTHERWISE SPECIFIED  
1. FLIP-FLOPS ARE LU321A OR EQUIV.  
2. NAND GATES ARE MC858P OR EQUIV.

REF.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 1.01 2.005 10-30"	BY <i>Rehm</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cevtron Corporation 1902 McGeary, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND T.I.R..005	CHECKED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	TITLE LOGIC DIAGRAM - DISPLAY REGISTER SEGMENT 5
	FINISH	MATERIAL		SCALE DWB 1500-0170
	NEXT ASSY	USED ON		A



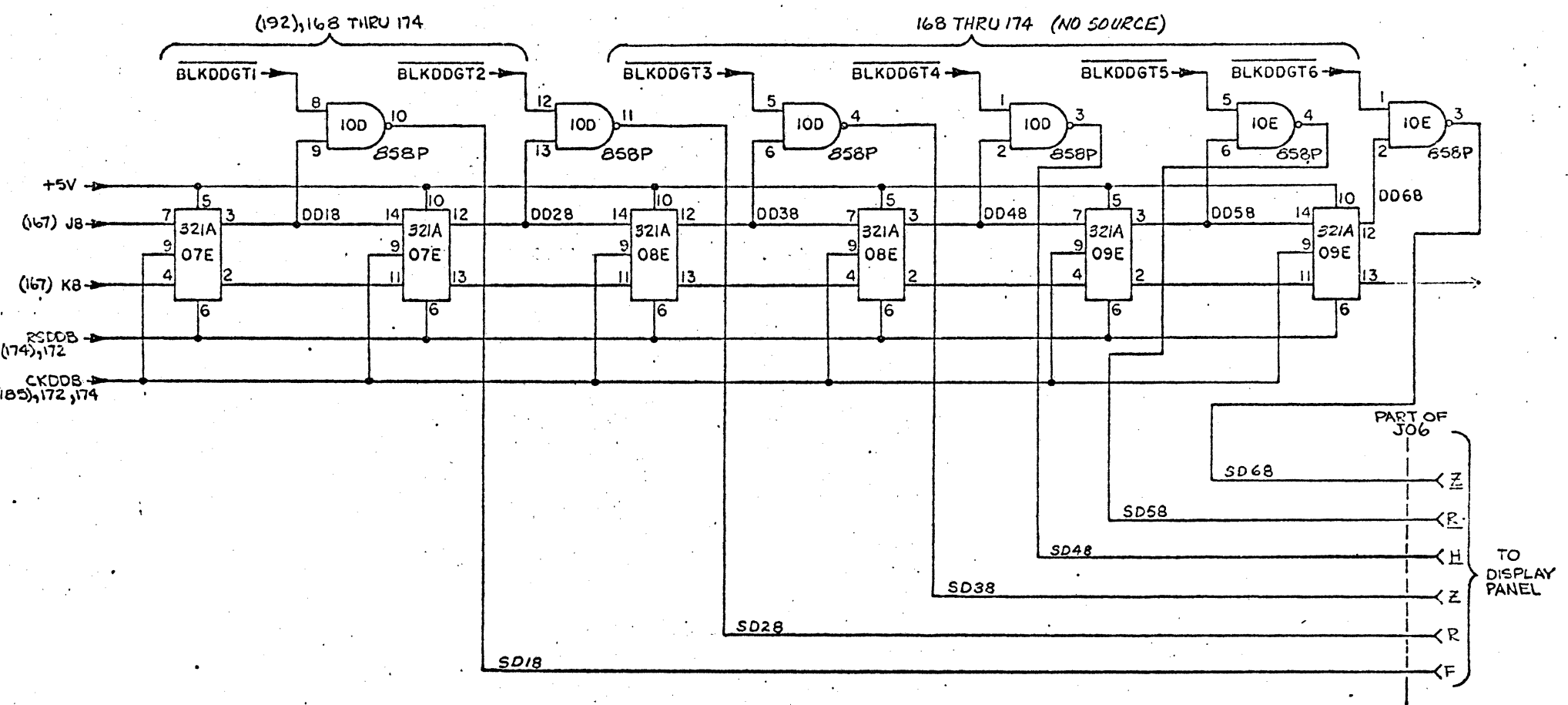
NOTE: UNLESS OTHERWISE SPECIFIED  
 1. FLIP-FLOPS ARE LU321A OR EQUIV  
 2. NAND GATES ARE MC858P OR EQUIV

REP.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER MACHINE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .005 .01 .03 .05 .10 .15 .20 .30 .40 .50 .60 .70 .80 .90 1.00 1.50 2.00 3.00 4.00 5.00 6.00 8.00 10.00		BY <i>Reber</i>	DATE <i>11/20/71</i>	<p>SYNERGISTIC PRODUCTS, INC.          A Subsidiary of Cotron Corporation          1602 McGraw, Santa Ana, California</p>
CONCENTRICITY AND OUT OF ROUND (I.R. .001)		CHECKED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
FINISH	MATERIAL	TITLE LOGIC DIAGRAM - DISPLAY REGISTER SEGMENT A		SCALE
NEXT ASSY	USED ON	DWG # 1800-0171		A



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. FLIP-FLOPS ARE LU321A OR EQUIV.  
 2. NAND GATES ARE MC688P OR EQUIV.

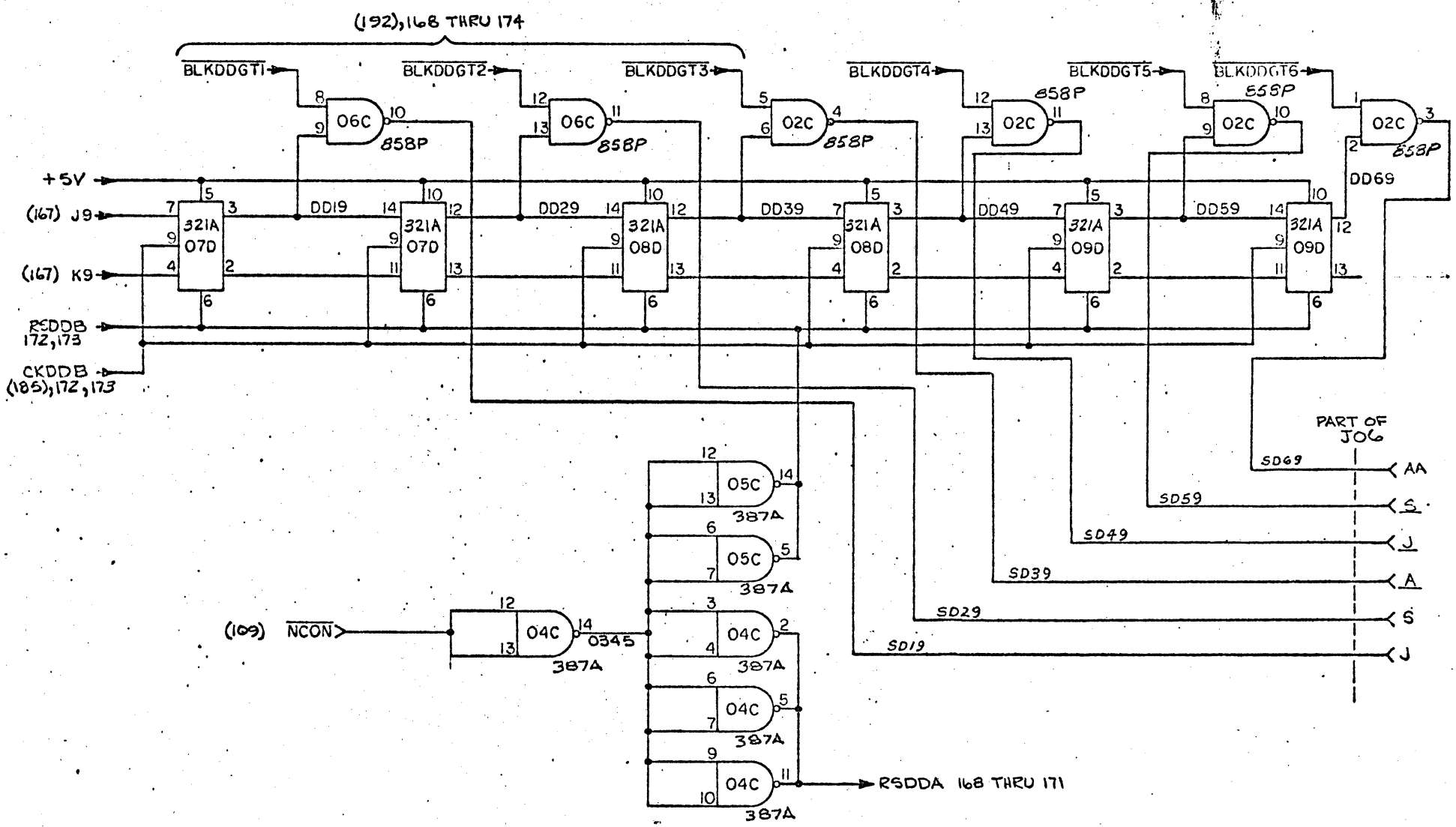
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER PANEL	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 1.01 1.005 1P-31 CONCENTRICITY AND OUT OF ROUND T.R. .05	BY <i>K. H. H.</i> CHECKED	DATE 12/25/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1502 Mc Geer, Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	
	FINISH	MATERIAL	TITLE LOGIC DIAGRAM - DISPLAY REGISTER SEGMENT 7	SCALE DWS #
	NEXT ASSY	USED ON		1800-0172



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES  
 OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>R. Egan</i> DATE		
.005 ANGLES		CHECKED DATE		
1.01 ±.005 10°-30°		APPROVED DATE		
CONCENTRICITY AND OUT OF ROUND 1/16 .005		MATERIAL		
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
NEXT ASSY		USED ON		
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McLean, Santa Ana, California				TITLE LOGIC DIAGRAM - DISPLAY REGISTER ELEMENT 0
SCALE				DWG # 1000-0173 A

SYMBOL	REVISION	DATE
A	REVISED PER ECO 41Z	07F 2-20-73
B	ECO 867	AS 4/27/73

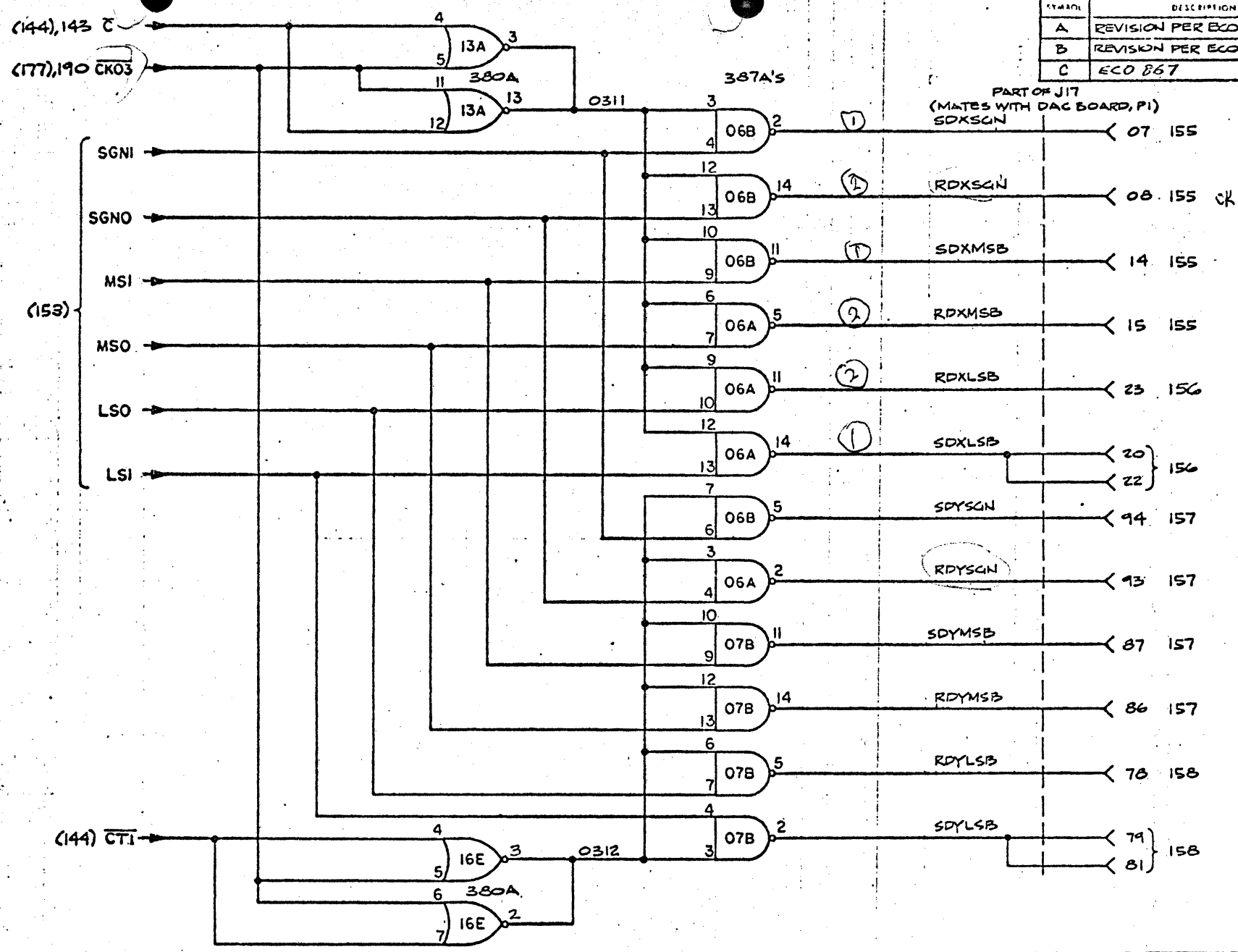


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 2.00 2.00 2.00 CONCENTRICITY AND OUT OF ROUND T.I.R. .005		BY <i>Reber</i>	DATE (1/20/73)	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevcon Corporation 1902 McCar, Santa Ana, California
		CHECKED	DATE	
		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL		TITLE LOGIC DIAGRAM - DISPLAY REGISTER SEGMENT 9
NEXT ASSY	USED ON			SCALE DWS # 1500-0174



SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REVISION PER ECO 412	PPP 2-29-72
B	REVISION PER ECO 498	PPP 3-30-72
C	ECO 867	45 PPP 4/27/73



PART OF J17  
(MATES WITH DAC BOARD, P1)  
SDXSGN < 07 155

RDXSGN < 08 155 CK

SDXMSB < 14 155

RDXMSB < 15 155

RDXLSB < 23 156

SDXLSB < 20 } 156  
< 22 }

SPYSGN < 94 157

RDYSGN < 93 157

SDYMSB < 87 157

RDYMSB < 86 157

RDYLSB < 78 158

SDYLSB < 79 } 158  
< 81 }

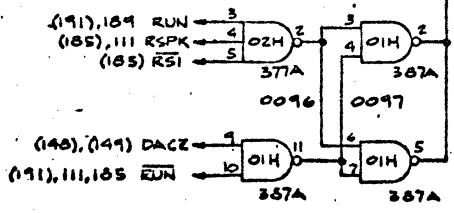
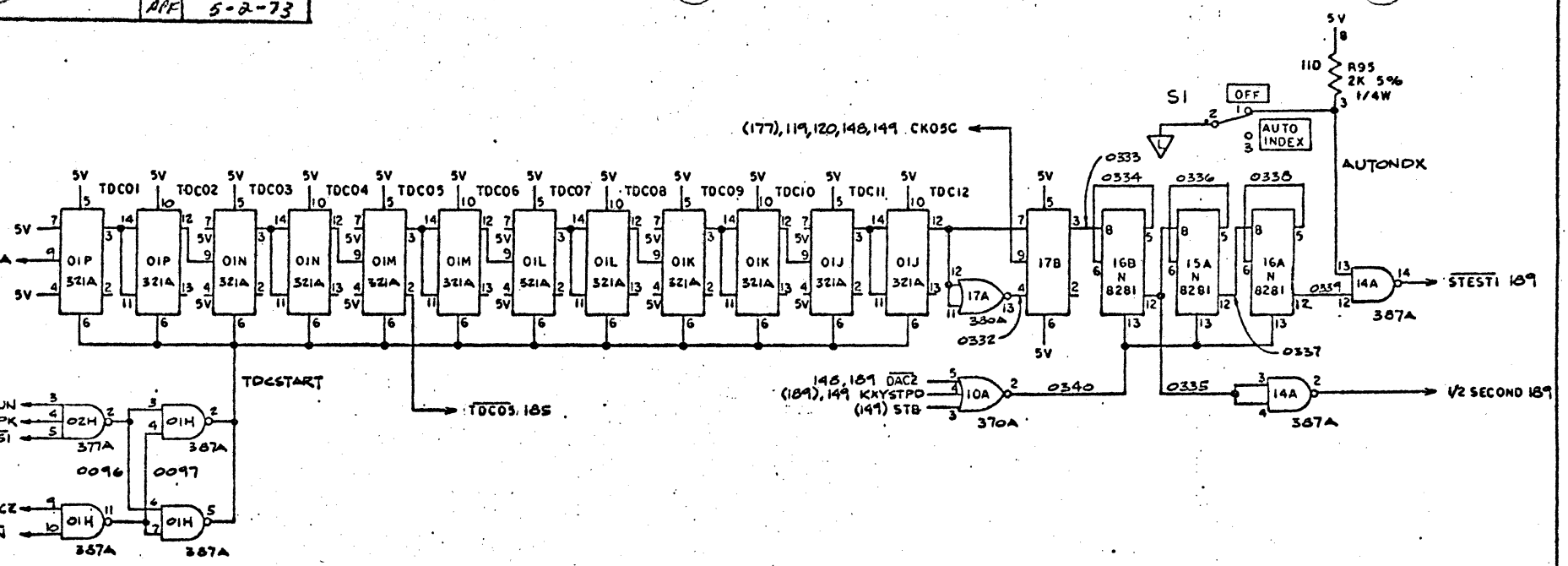
NOTE: UNLESS OTHERWISE SPECIFIED  
1. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE ±.01 1.000 ±.010 CONCENTRICITY AND OUT OF ROUND T.R. .012		BY <i>R. Chen</i>	DATE 10/27/71	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Caribon Corporation 1932 W. Geary, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSY	USED ON	MATERIAL		TITLE LOGIC DIAGRAM - DAC INPUT DIRECT SET RESET GATING
				SCALE: 1/2" = 1" DRAWING # 1300-0175 C

REVISIONS

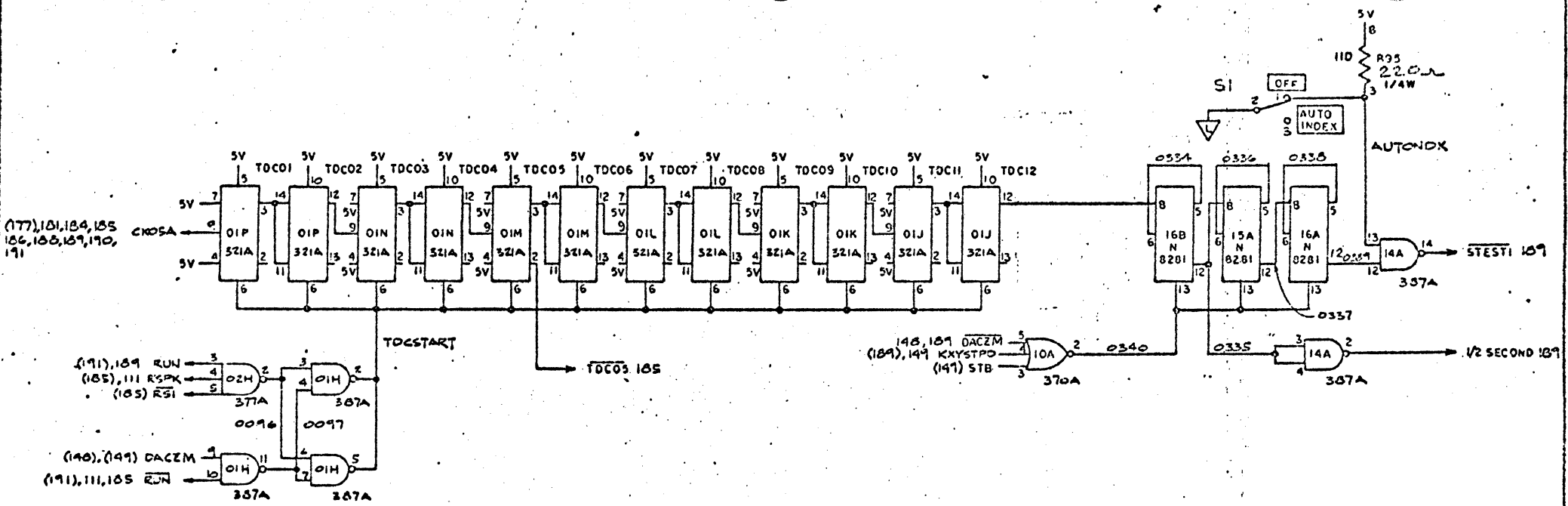
REV	REVISION	DATE	BY	DATE & APPROVAL
A	REVISION 412		APF	2-21-72
B	ECO 867		APF	5-2-73

(177), 181, 184, 185  
86, 188, 189, 190,  
191



NOTE: UNLESS OTHERWISE SPECIFIED  
I.C.'S ARE SIGNATICS UTILOGIC II, SP SERIES  
OR EQUIV.

REF.	DESCRIPTION	QTY. PAK. ASSY.	QTY. IN MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX .XXL ±.01 ±.005 ±.030 CONCENTRICITY AND OUT OF ROUND T.R. .05		BY <i>Robin</i>	DATE 3-24-77	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevtron Corporation 1902 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED <i>Robin</i>	DATE	
FINISH		APPROVED	DATE	TITLE LOGIC DIAGRAM - TIME DELAY COUNTER
NEXT ASSY	USED ON	MATERIAL		SCALE DWG # 1800-0176 B



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

P/2/P DYNAMIC BRAKING MOD  
 & DRILLING MACHINE

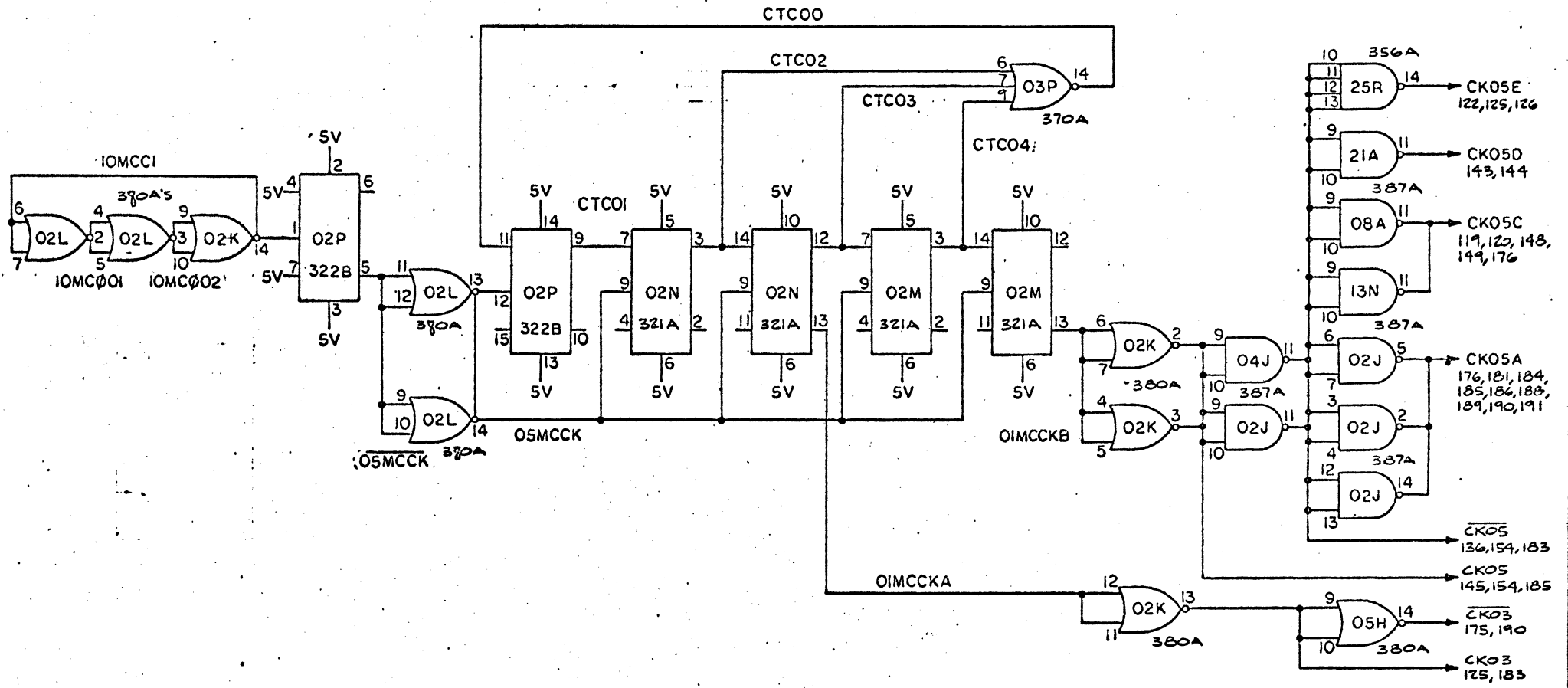
REP.	DESCRIPTION	QTY PER ASSY	QTY PER MACH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER P.C.A. CITY WITHOUT PRIOR WRITTEN PERMISSION OF SYNTECTIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE		SYNTECTIC PRODUCTS, INC. A Subsidiary of Centron Corporation 1107 Alameda, Santa Ana, Calif 92701
FINISH		DATE		
NEXT ASSY		USED ON		TITLE LOGIC BRKING - TIME DELAY
				SCALE 17500-0176-2



5 MC OSCILLATOR

CLOCK TIMING COUNTER

SYSTEM CLOCK GATING

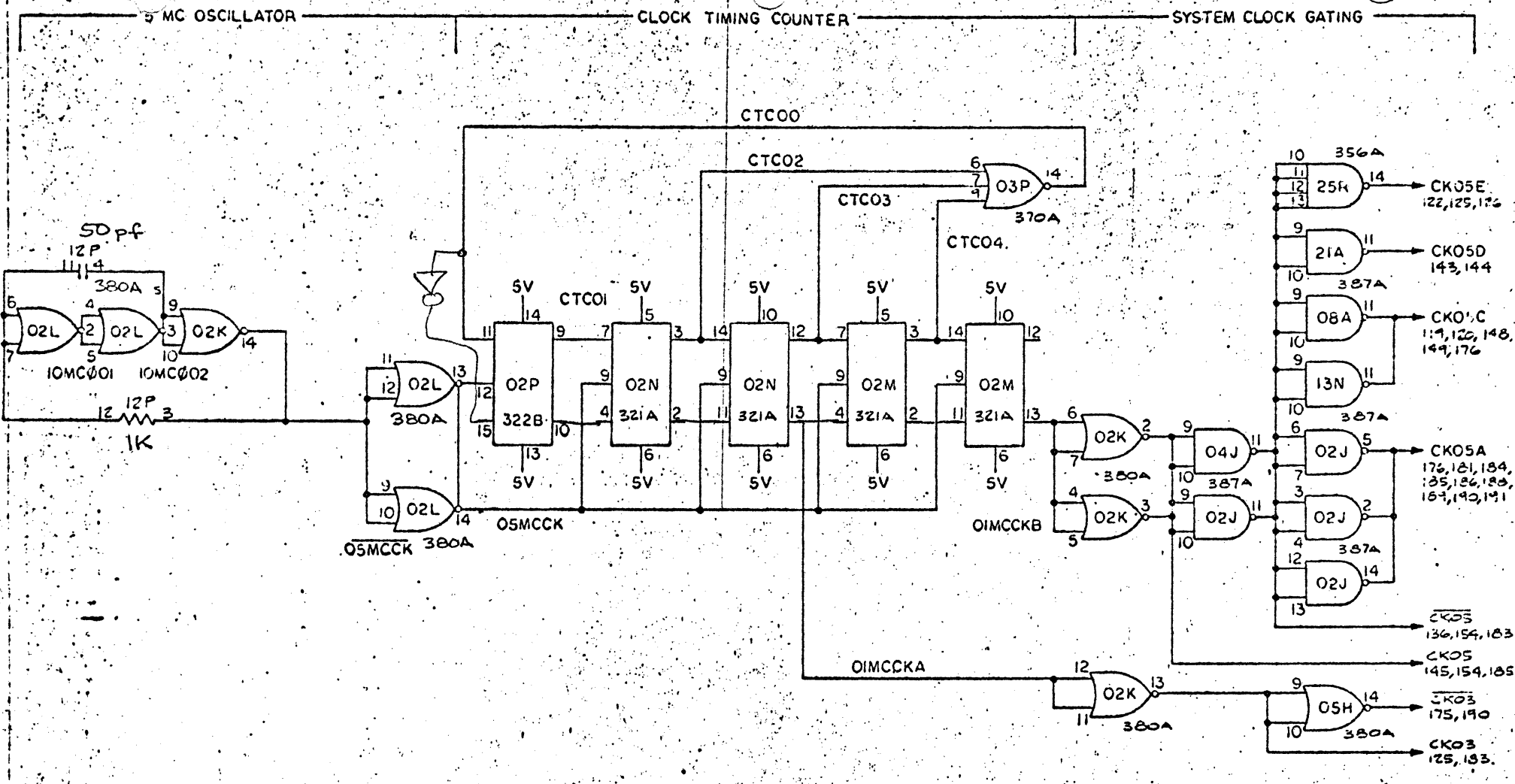


NOTE: UNLESS OTHERWISE SPECIFIED

I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REV	DESCRIPTION	ENG	DATE	APPROVAL
A	REVISION PER ECO 412	6/63-72	8/29-72	
	DESCRIPTION	ING BY	DATE	APPROVAL
REVISIONS				

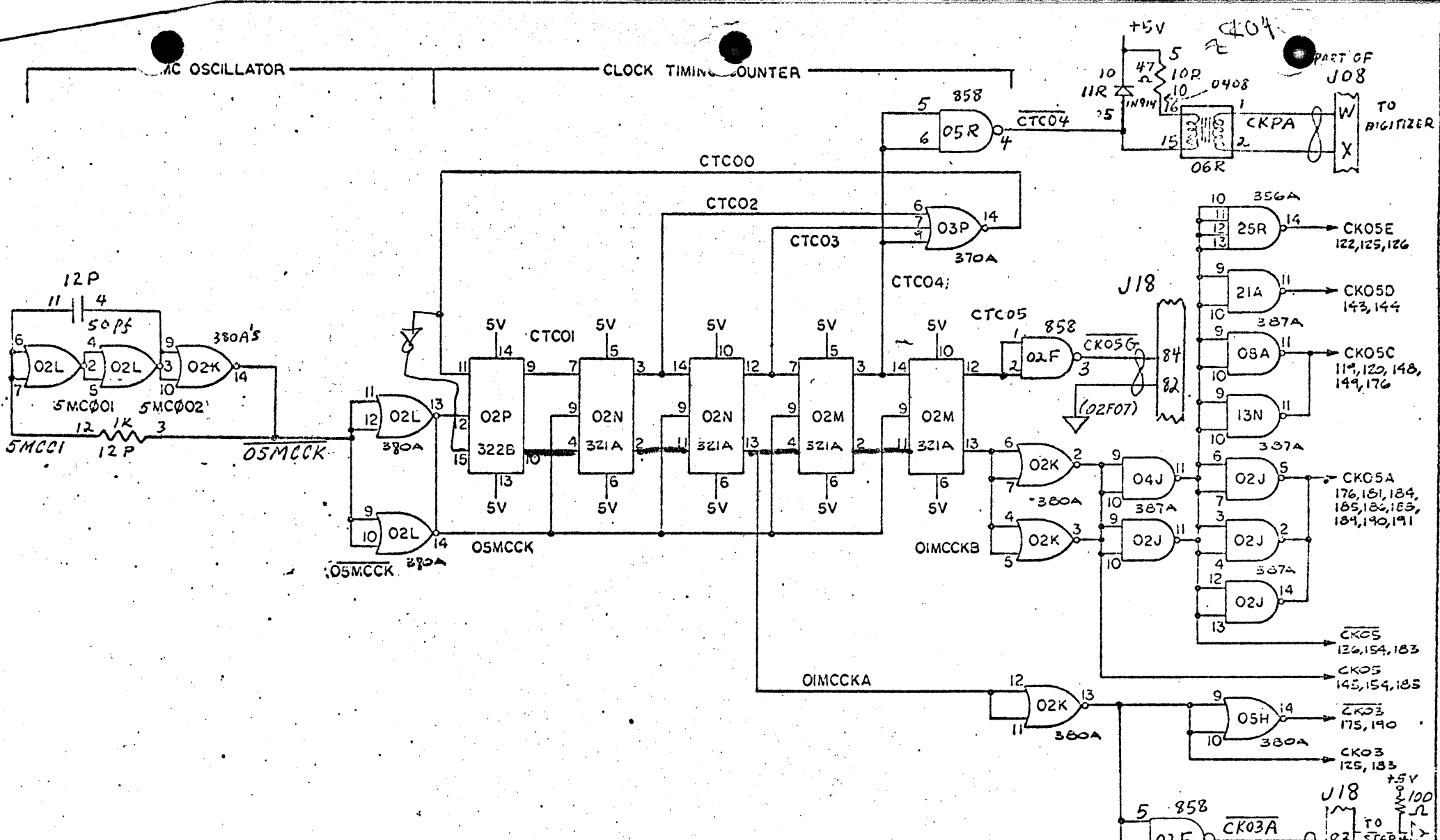
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MATCH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>[Signature]</i>	DATE	SYNERGISTIC PRODUCTS, INC.	
XX .001 ANGLE	CHECKED	DATE	A Subsidiary of Carbon Corporation	
CONCENTRICITY AND OUT OF ROUND .001-.005	APPROVED	DATE	1967 Mod. - Santa Ana, California	
REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL	TITLE LOGIC DIAGRAM - SYSTEM CLOCK GENERATION		
FINISH	SCALE	DWG # 1800-0177 A		
NEXT ASSY	USED ON			



NOTE: UNLESS OTHERWISE SPECIFIED  
 I.C.'S ARE SIGNETICS UTILOCIC II, SP SERIES  
 OR EQUIV.

REV PER ECO 867	AS	DPF 4/27/73
DESCRIPTION	ING BY	DATE & APPROVAL
REVISIONS		

REF.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>Lebe</i>	DATE 12 MAR 73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1922 McGraw, Santa Ana, California
.XX .XX ANGLE		CHECKED	DATE	
2.01 2.00 2.00 CONCENTRICITY AND OUT OF ROUND .001		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE LOGIC DIAGRAM - SYSTEM CLOCK GENERATION
FINISH		SCALE		DWG # 1800-0177-2 A
NEXT ASSY		USED ON		

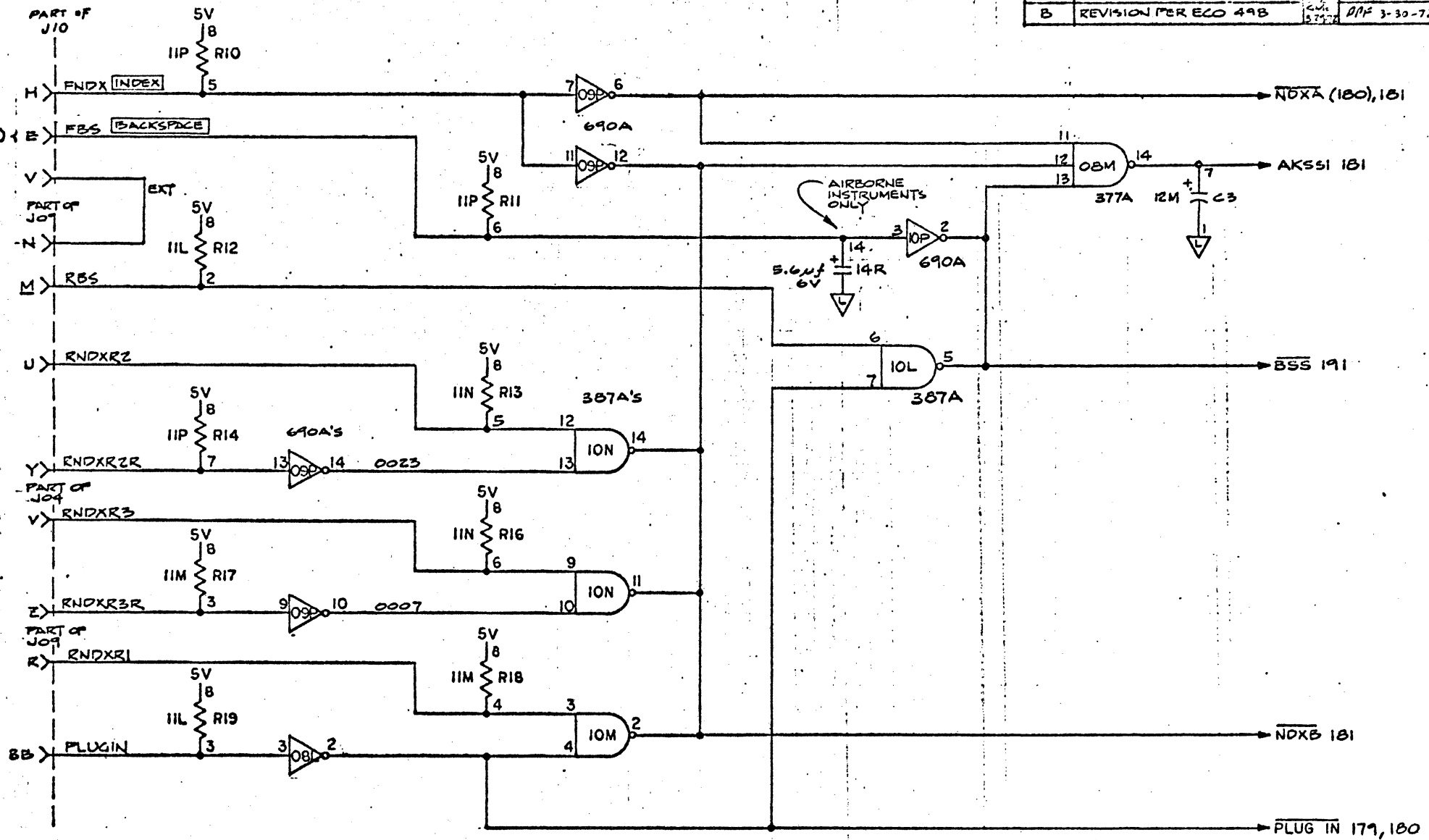


NOTE: UNLESS OTHERWISE SPECIFIED  
 IC'S ARE SIGNETICS UTILOGIC II, SP SERIES  
 OR EQUIV.

DRILLING MACHINE

REF.	DESCRIPTION	QTY REQ. ASLY	QTY REQ. MACH	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS			
	TOLEANCES UNLESS OTHERWISE SPECIFIED X.X .008 1/32" CONCENTRICITY AND OUT OF ROUND 1/32"	BY <i>R. G. ...</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cullum Corporation 1400 S.W. 1st St., Suite 400, Ft. Lauderdale, FL 33304
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	
	FINISH			
	NEXT ASSY	USED ON		TITLE LOGIC DIAGRAM - SYSTEM CLOCK GENERATION SCALE 1/8" = 1"
				1800-0177-3

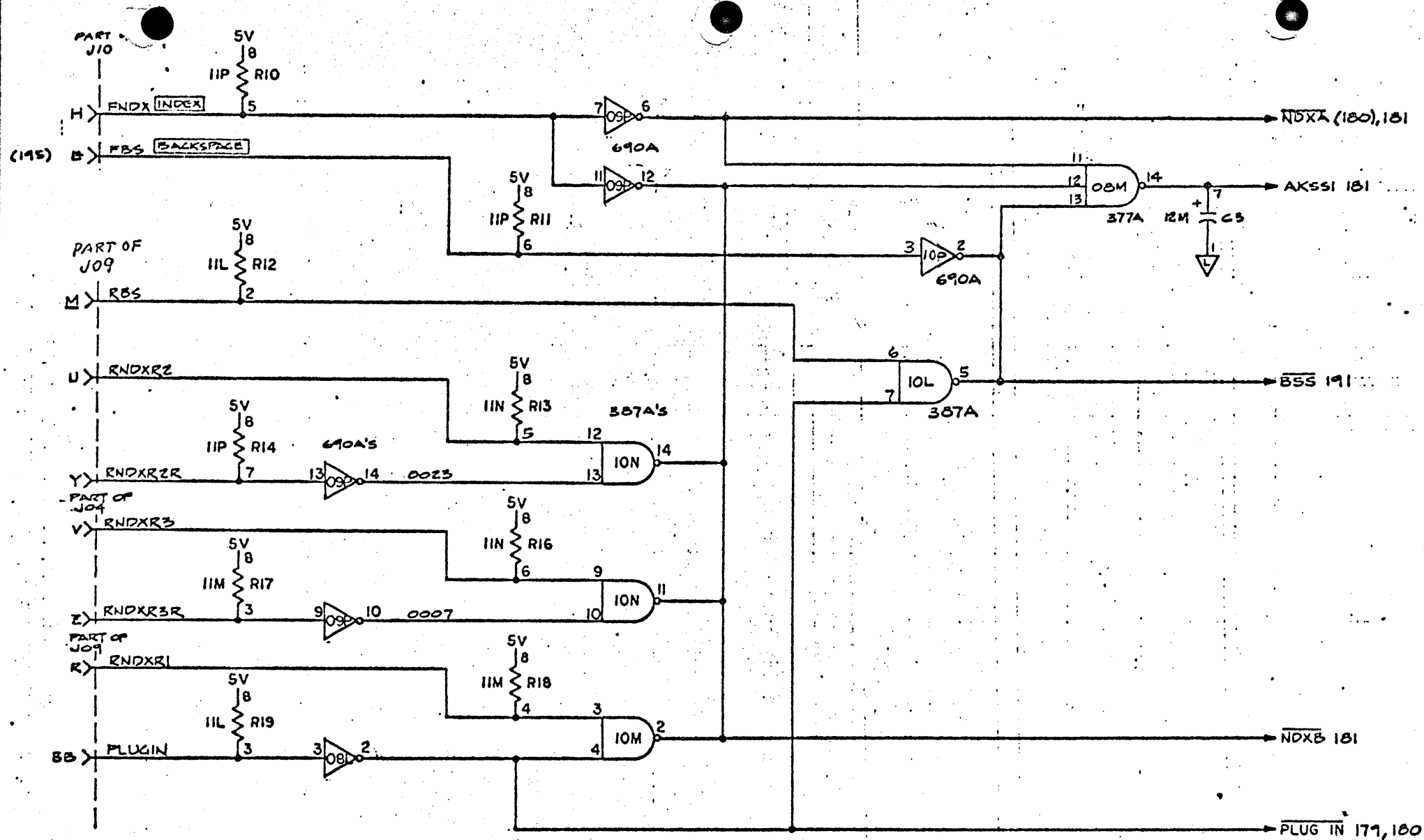
REVIS-CNC		
SYMBOL	DESCRIPTION	DATE & SPECIAL
A	REVISION PER ECO 412	2-29-72
B	REVISION PER ECO 49B	3-30-72



- NOTES: UNLESS OTHERWISE SPECIFIED.
1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. RESISTORS ARE 2K ±5% AND ARE 1/4 WATT
  3. CAPACITORS ARE 1 MICROFARAD, 35V, 10%

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE ±.01 ±.008 ±.015" CONCENTRICITY AND OUT OF ROUND T.I.R. .008		BY CHECKED <i>Kohler</i>	DATE 10/2/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Centron Corporation 1902 McLean, Santa Ana, Cal. Furne
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
FINISH		MATERIAL	TITLE LOGIC DIAGRAM MANUAL SWITCH INPUT NO. 1	
NEXT ASSY	USED ON	SCALE		1800-0178 B





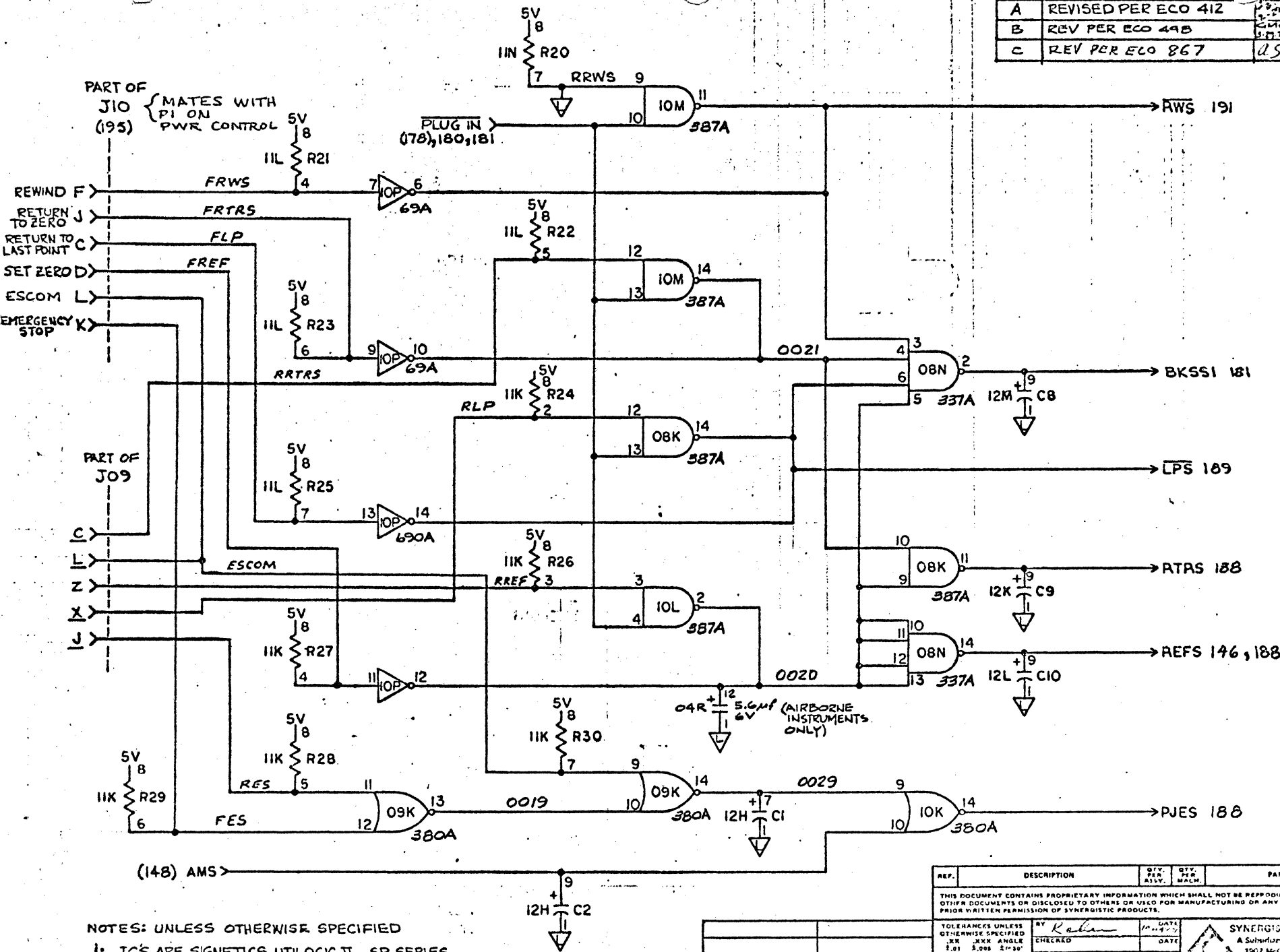
NOTES: UNLESS OTHERWISE SPECIFIED.

1. IC'S ARE SIGNETICS UTILOGIC VI, SP SERIES OR EQUIV.
2. RESISTORS ARE 2K ±5% AND ARE 1/4 WATT
3. CAPACITORS ARE 1 MICROFARAD, 35V, 10%

DRILLING MACHINE

REP.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER MACHINE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Kohler</i>	DATE <i>10-27-73</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Centron Corporation 1902 McGehee, Santa Ana, California	
2K ±5% ANGLE	ENTERED	DATE	TITLE LOGIC DIAGRAM MANUAL SWITCH INPUT NO 1	
±.01 ±.000 ±.010"	APPROVED	DATE	SCALE 1/8" = 1"	
CONCENTRICITY AND OUT OF ROUND I.S.D.S.	MATERIAL		1800-0178-2	
REMOVE BURRS AND BREAK ALL SHARP EDGES				
FINISH				
NEXT ASSY	USED ON			

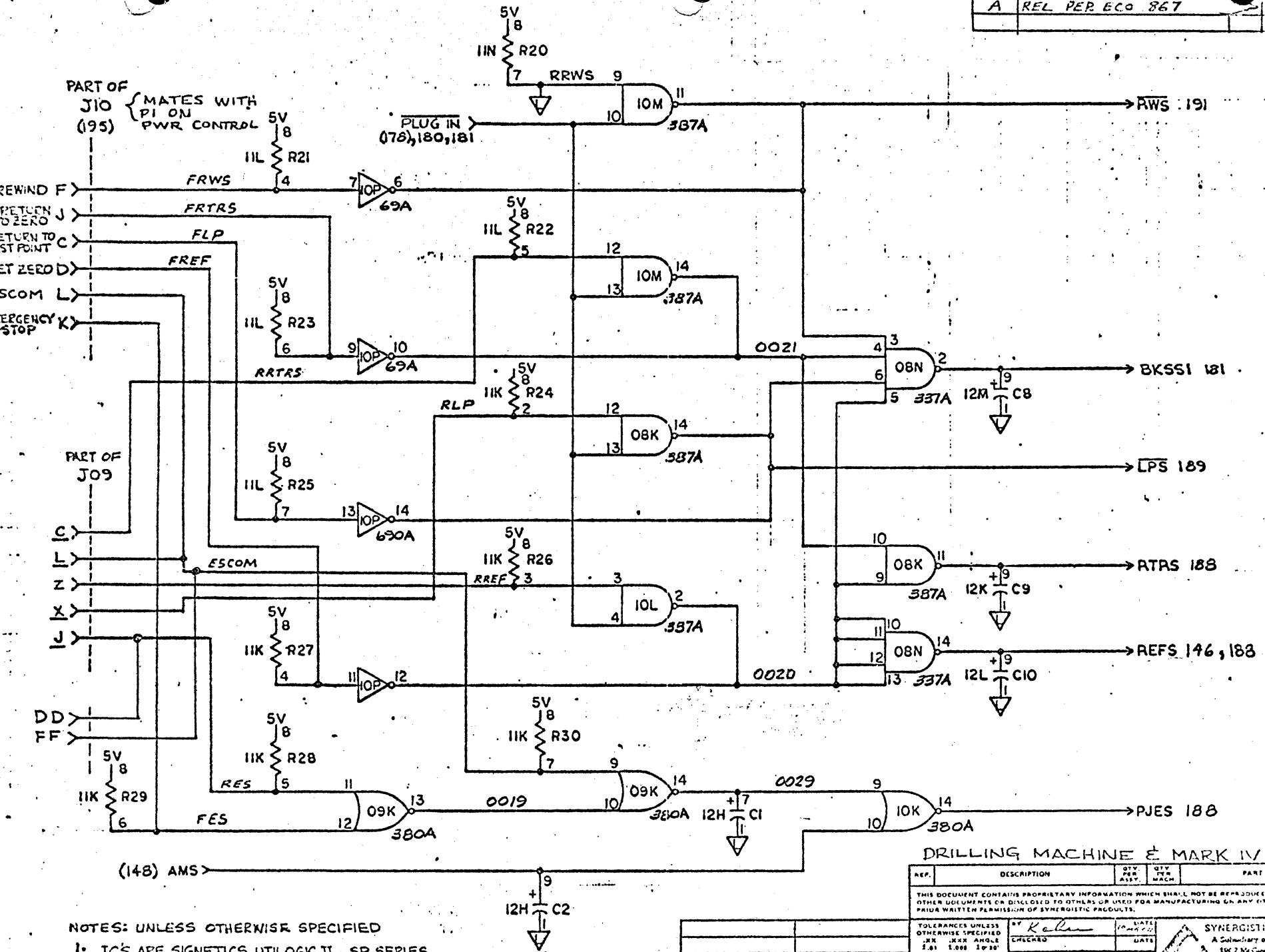
REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REVISED PER ECO 412	APF	2-29-72
B	REV PER ECO 498	APF	3-30-72
C	REV PER ECO 867	AS	APF 4-27-73



- NOTES: UNLESS OTHERWISE SPECIFIED
1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. RESISTORS ARE 2K ±5% AND ARE 1/4 WATT
  3. CAPACITORS ARE 1 MICROFARAD 35WVDC 10%

REF.	DESCRIPTION	QTY. PER ASLY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED DIM. ANGLE 1.01 3.008 2'-30"		BY Checked	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1902 McCaw, Santa Ana, California
CONCENTRICITY AND OUT OF ROUND T.I.R. .005		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL	TITLE LOGIC DIAGRAM - MANUAL SWITCH INPUT NO 2	
FINISH		SCALE		DWG NO 1800-0179 C
NEXT ASSY		USED ON		

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REL PER ECO 867	80F 4-27-73

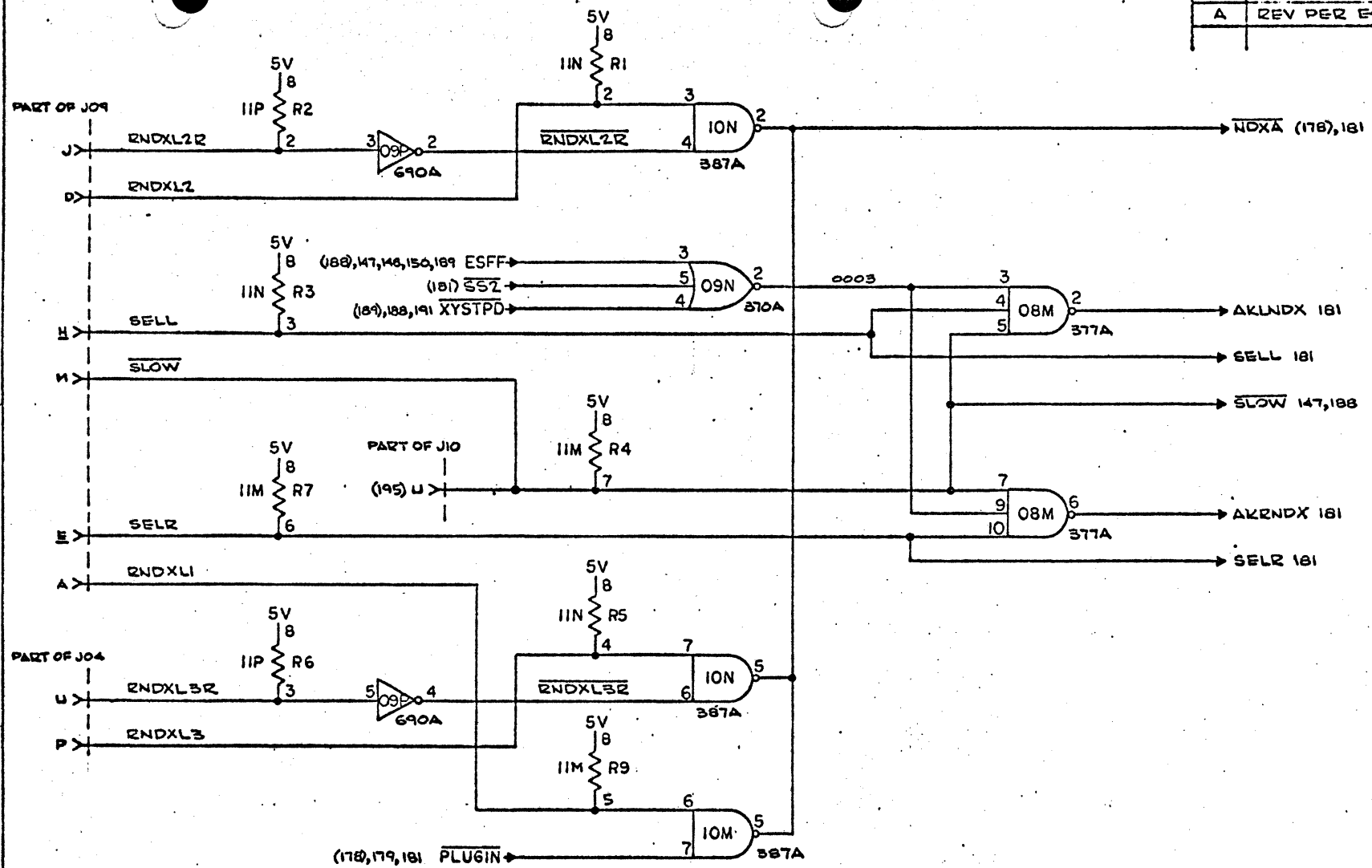


- NOTES: UNLESS OTHERWISE SPECIFIED
1. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV. 220Ω
  2. RESISTORS ARE ±5% AND ARE 1/4 WATT
  3. CAPACITORS ARE 1 MICROFARAD 35WVDC 10%

DRILLING MACHINE & MARK IV

REF.	DESCRIPTION	QTY PER ASSY	QTY PER MACH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED -XK -XKX ANGLE 2.01 1.008 10°30' CONCENTRICITY AND OUT OF ROUND TIR. .05		BY <i>Kelen</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cameron Co. portion 1947 McCune, Santa Ana, California
CHECKED		DATE	TITLE LOGIC DIAGRAM - MANUAL SWITCH INPUT NO 2	
APPROVED		DATE		
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		SCALE 1800-0179-2 A
FINISH				
NEXT ASSY		USED ON		

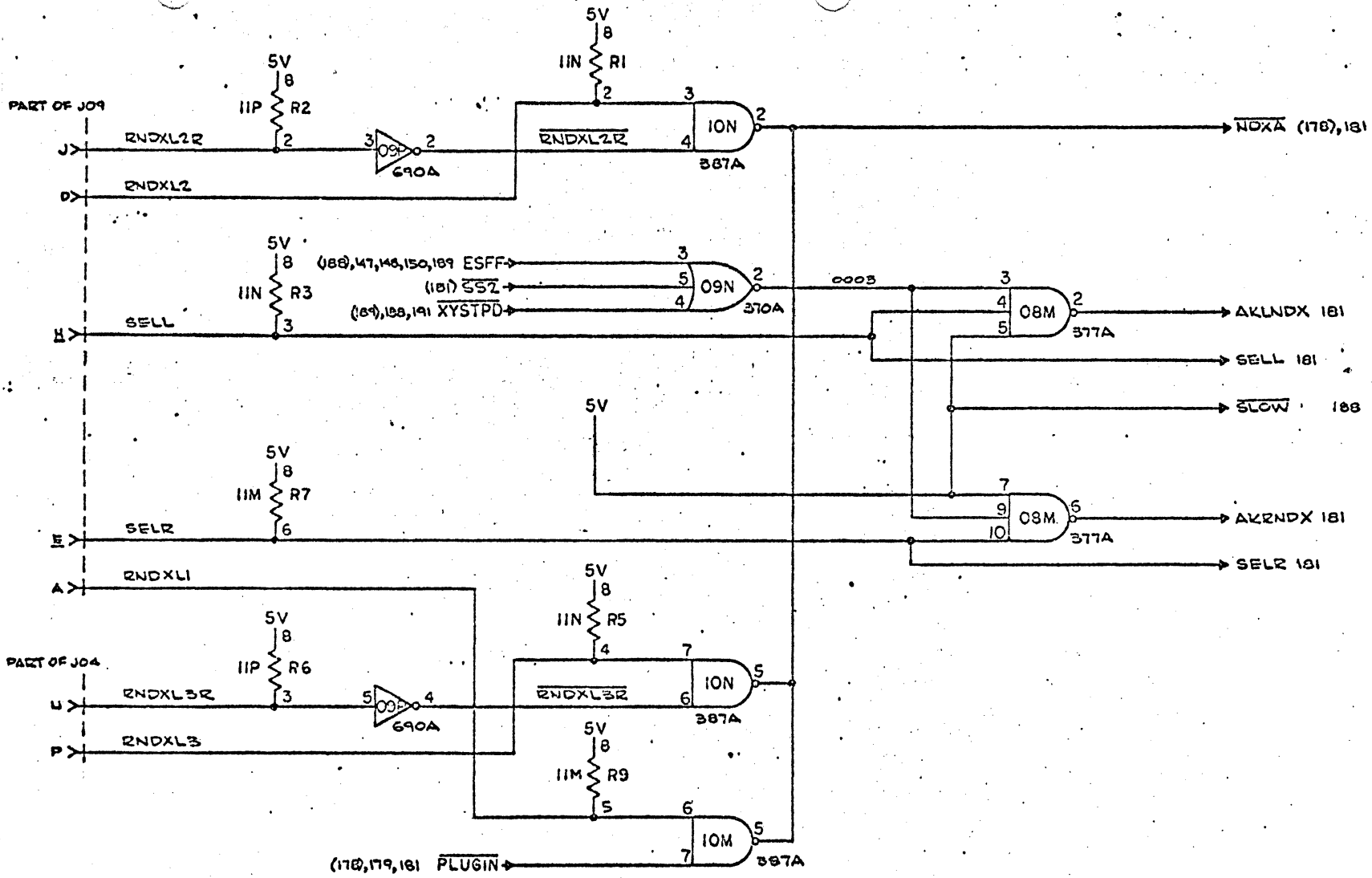
SYMBOL	DESCRIPTION	REV	DATE & APPROVAL
A	REV PER ECO 412	20	08/29/72



NOTE: UNLESS OTHERWISE SPECIFIED:

- RESISTORS ARE 2K ±5% AND ARE 1/4 WATT
- I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE 2.01 ±.009 2°±20' CONCENTRICITY AND OUT OF ROUND T.R. .005		BY <i>K. L. ...</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1902 McCaw, Santa Ana, California
REMOVE BURRS AND BREAM ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSY		USED ON		
TITLE				LOGIC DIAGRAM - MANUAL SWITCH INPUT NO 3
SCALE				DWG # 1800-0180

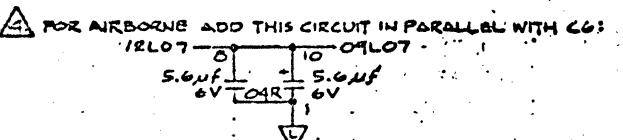
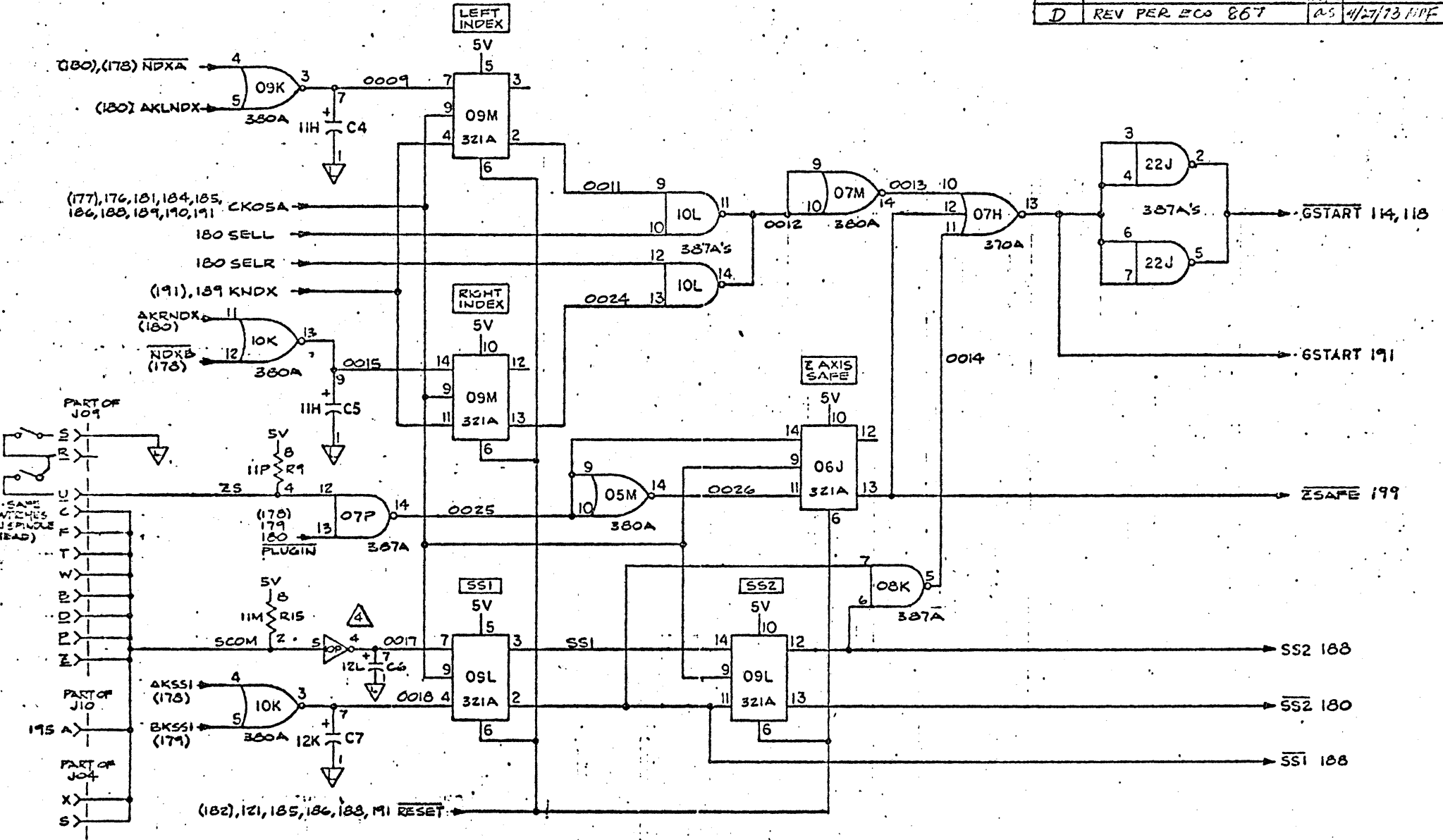


- NOTE: UNLESS OTHERWISE SPECIFIED:
- RESISTORS ARE 2K ±5% AND ARE 1/4 WATT
  - I.C.'S ARE SIGNETICS UTILIGIC 11, SP SERIES OR EQUIV.

DRILLING MACHINE

REP.	DESCRIPTION	REV. TO DATE	REV. TO DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED:	BY <i>[Signature]</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Collins Components 2032 Milling, Santa Ana, California	
DRILL	DATE	TITLE LOGIC DIAGRAM - MANUAL SWITCH INPUT NO. 3		
CONCENTRICITY AND OUT OF ROUND TIR .001	DATE			
REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL	PART NO. 1800-0180-2		
FINISH				
NEXT ASSY	USED IN			

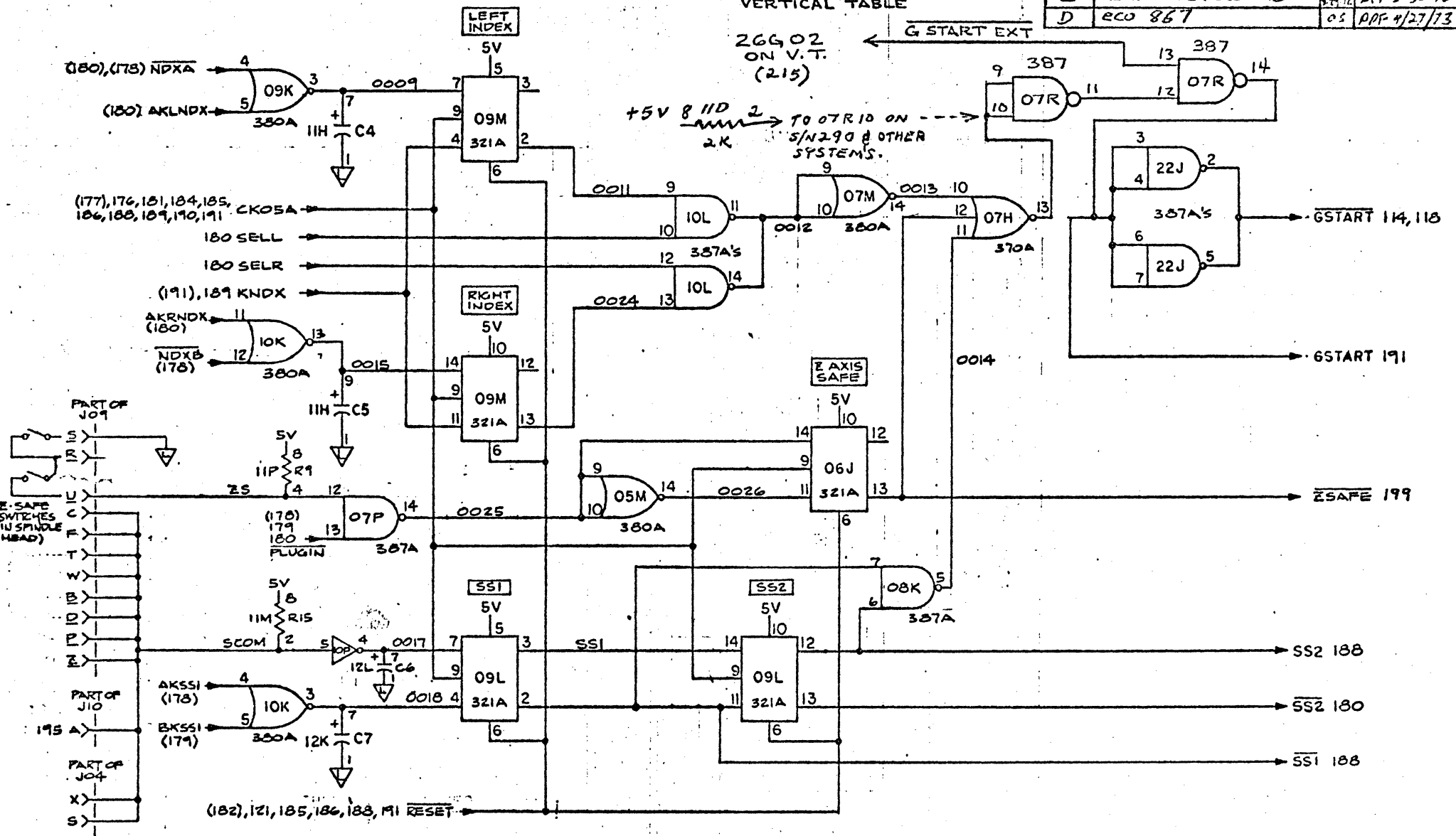
REVISIONS			DATE & APPROVAL
A	REVISION PER ECO 412	11/27/72	EPF 3-24-72
B	REVISION PER ECO	12/14/72	APF 3-24-72
C	REVISION PER ECO 498	12/14/72	APF 3-24-72
D	REV PER ECO 867	AS	4/27/73 EPF



3. CAPACITORS ARE 1uF 35WVDC 10%  
 2. RESISTORS ARE 2K 5% 1/4W  
 1. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 NOTES: UNLESS OTHERWISE SPECIFIED.

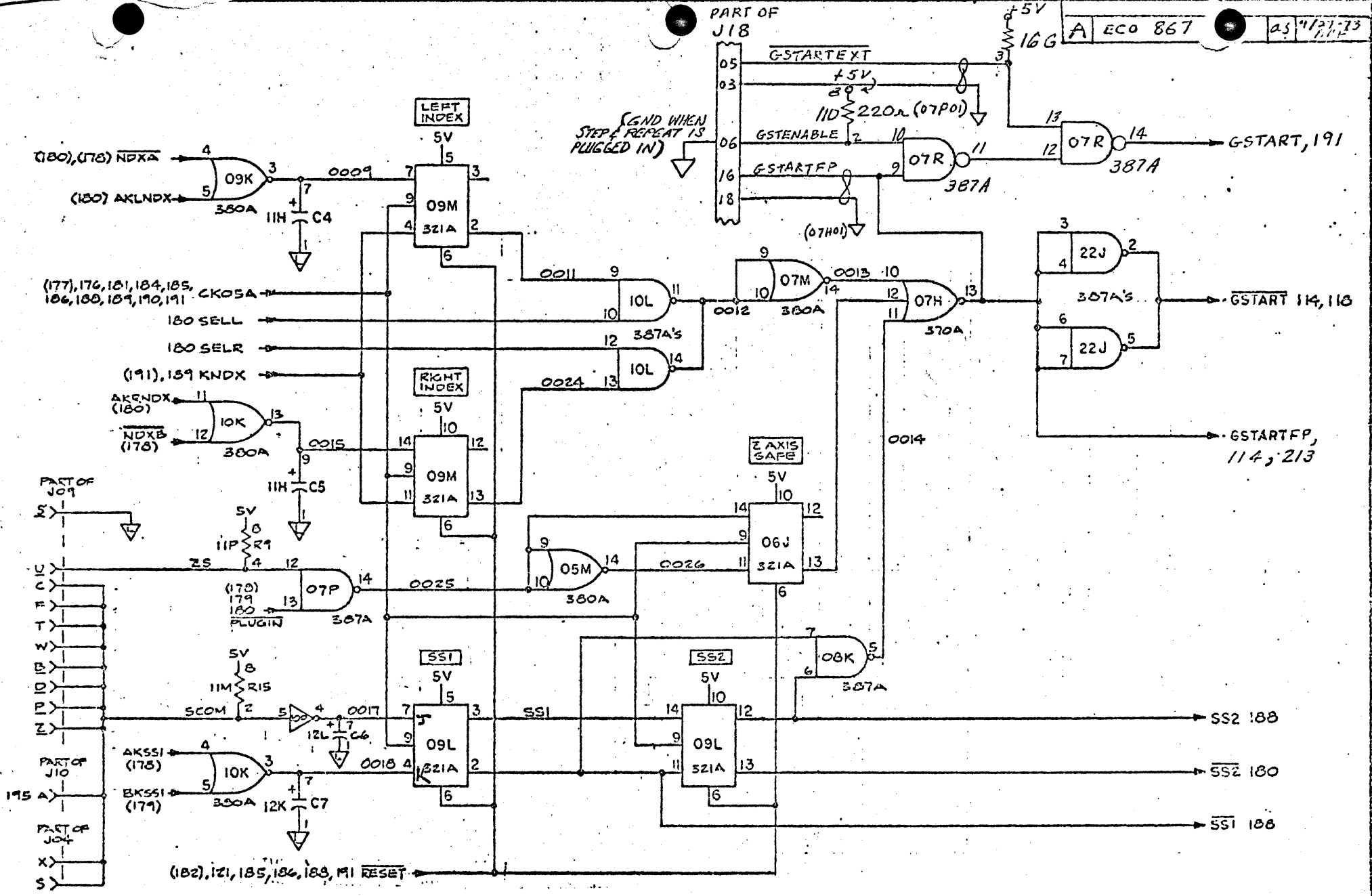
REF.	DESCRIPTION	QTY. PER ASSY.	BY PER WASH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED IN. DIM. ANGLES 2.01 2.006 1P.35 CONCENTRICITY AND OUT OF ROUND T.I.R. .005		BY <i>Rela</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Curtiss-Wright Corporation 19123 K. Cole, Davis Ave., Columbus, Ohio
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE LOGIC DIAGRAM - INDEX, AXIS SAFE SSI AND SSI F/F
NEXT ASSY	USED ON	MATERIAL		SCALE 1800-0181

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REVISION PER ECO 412	DPF 3-29-72
B	REVISION PER ECO	DPF 3-24-72
C	REVISION PER ECO 498	DPF 3-30-72
D	ECO 867	OS DPF 4/27/73



3. CAPACITORS ARE 1/2 35WVDC 10%  
 2. RESISTORS ARE 2K 5% 1/4W  
 1. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.  
 NOTES: UNLESS OTHERWISE SPECIFIED.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED XK XK ANGLE 1.01 2.00 3.00	BY CHECKED	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1002 McGow, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND T.I.R. REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	
	FINISH	MATERIAL		TITLE LOGIC DIAGRAM - INDEX, AXIS SAFE SSI AND ZSAFE F/F
	NEXT ASSY	USED CN		SCALE 1800-0181-1



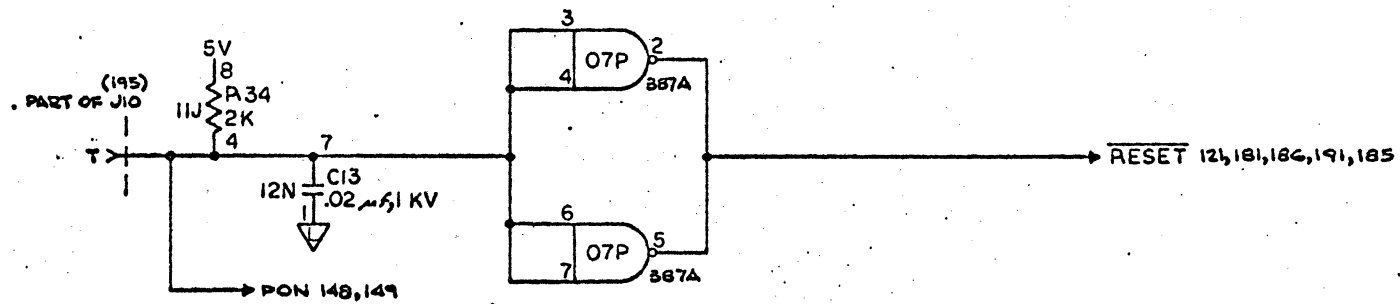
- 4. J18 IS STEP AND REPEAT CONNECTOR.
- 3. CAPACITORS ARE 1/2 35WVDC 10%
- 2. RESISTORS ARE 220Ω
- 1. I.C.'S ARE SYNERGISTIC UTILOGIC II, SP SERIES OR EQUIV.

DRILLING MACHINE

REF.	DESCRIPTION	REV.	DATE	PART NUMBER
<p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR USED FOR OTHER THAN MANUFACTURING OF ANY OTHER PARTS WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.</p>				
<p>TOLERANCES UNLESS OTHERWISE SPECIFIED:                  .XX .XX ANGLES                  .01 .005 .015                  CONCENTRICITY AND OUT OF ROUND .01, .005</p>		<p>BY: <i>Robert</i>                  CHECKED:                  APPROVED:                  REMOVE WORDS AND DRAW ALL SHARP POINTS</p>	<p>DATE:                  DATE:                  MATERIAL:</p>	<p>SYNERGISTIC PRODUCTS, I.C.                  A Subsidiary of Eastern Corporation                  1902 W. 10th, Suite 400, Des Moines, IA</p>
<p>TITLE: LOGIC CIRCUIT - Z AXIS SAFE SS1 AND SS2</p>		<p>100-0181-2</p>		



REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
A	REV PER ECO 412	02/09/72 RPF
B	ECO 867	05/21/73 RPF

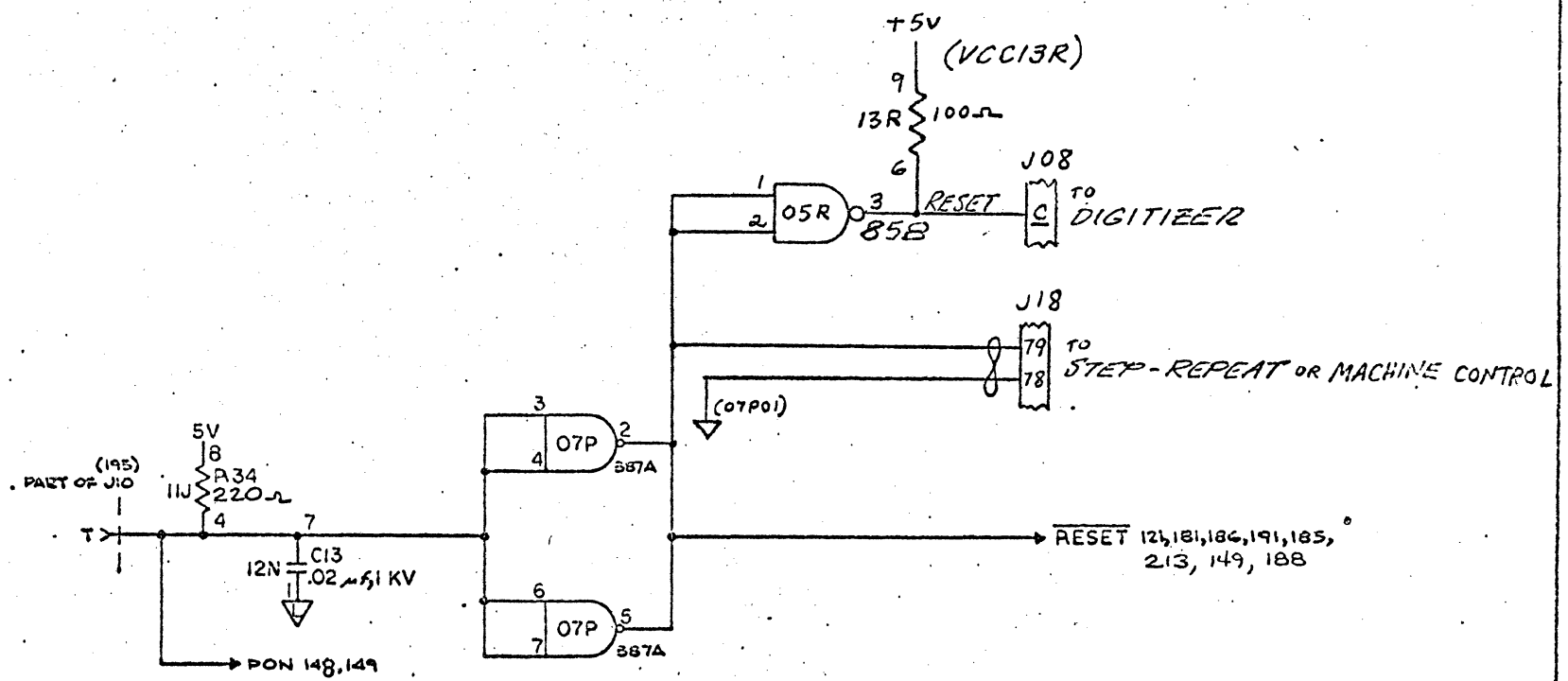


NOTES: UNLESS OTHERWISE SPECIFIED.

1. RESISTORS ARE 5%, 1/4 W.

2. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

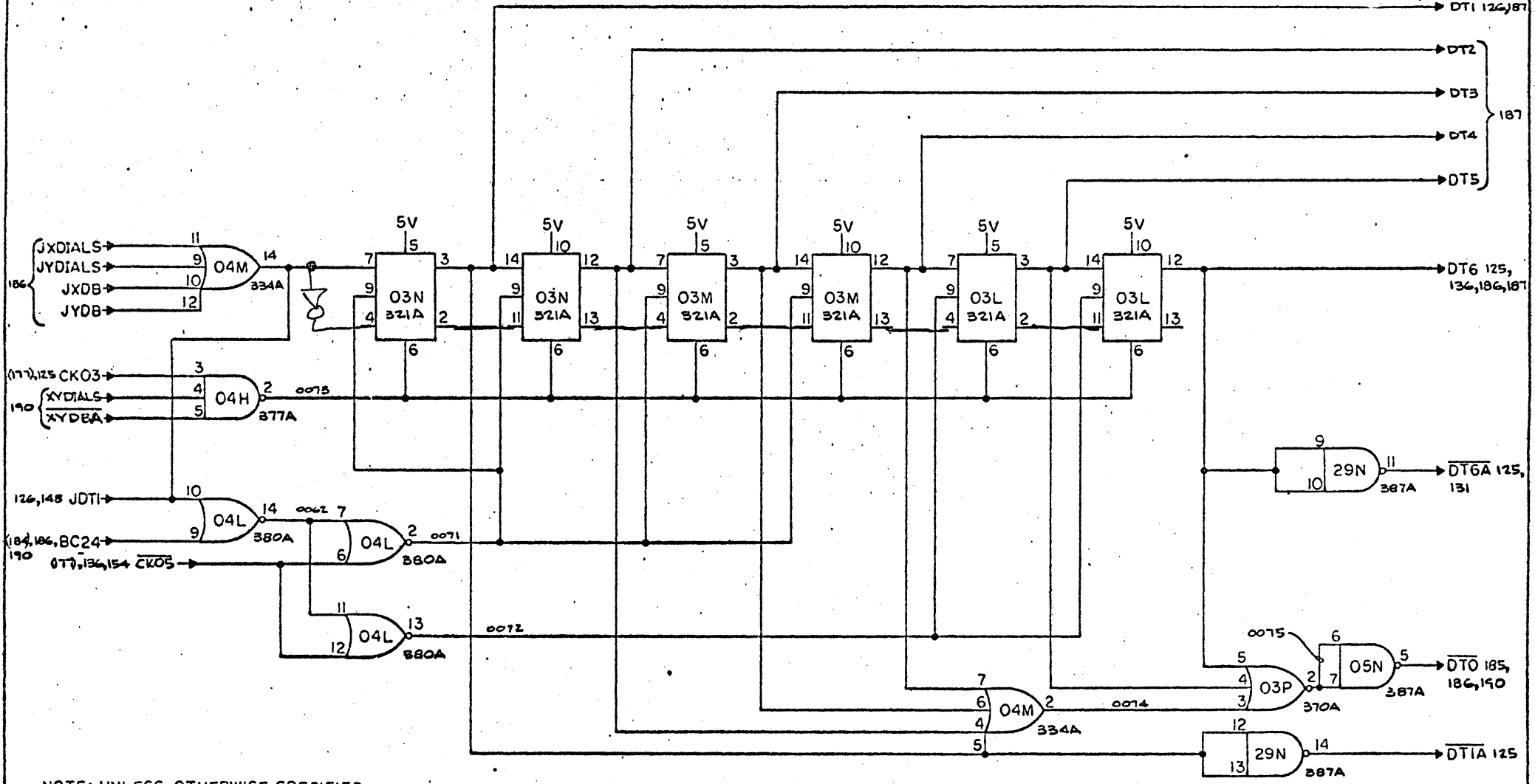
REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>R. Wilson</i>	DATE 11/10/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carson Corporation 1902 McGraw, Santa Ana, California
.XX .XXX ANGLES		CHECKED	DATE	
.01 .005 10°-20°		APPROVED	DATE	TITLE LOGIC DIAGRAM -
CONCENTRICITY AND OUT OF ROUND T.I.R. .005		MATERIAL		RESET PULSE GENERATION
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		SCALE
NEXT ASSY		USED ON		DWG # 1800-0182



NOTES: UNLESS OTHERWISE SPECIFIED.  
 1. RESISTORS ARE 5%, 1/4 W.  
 2. IC'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

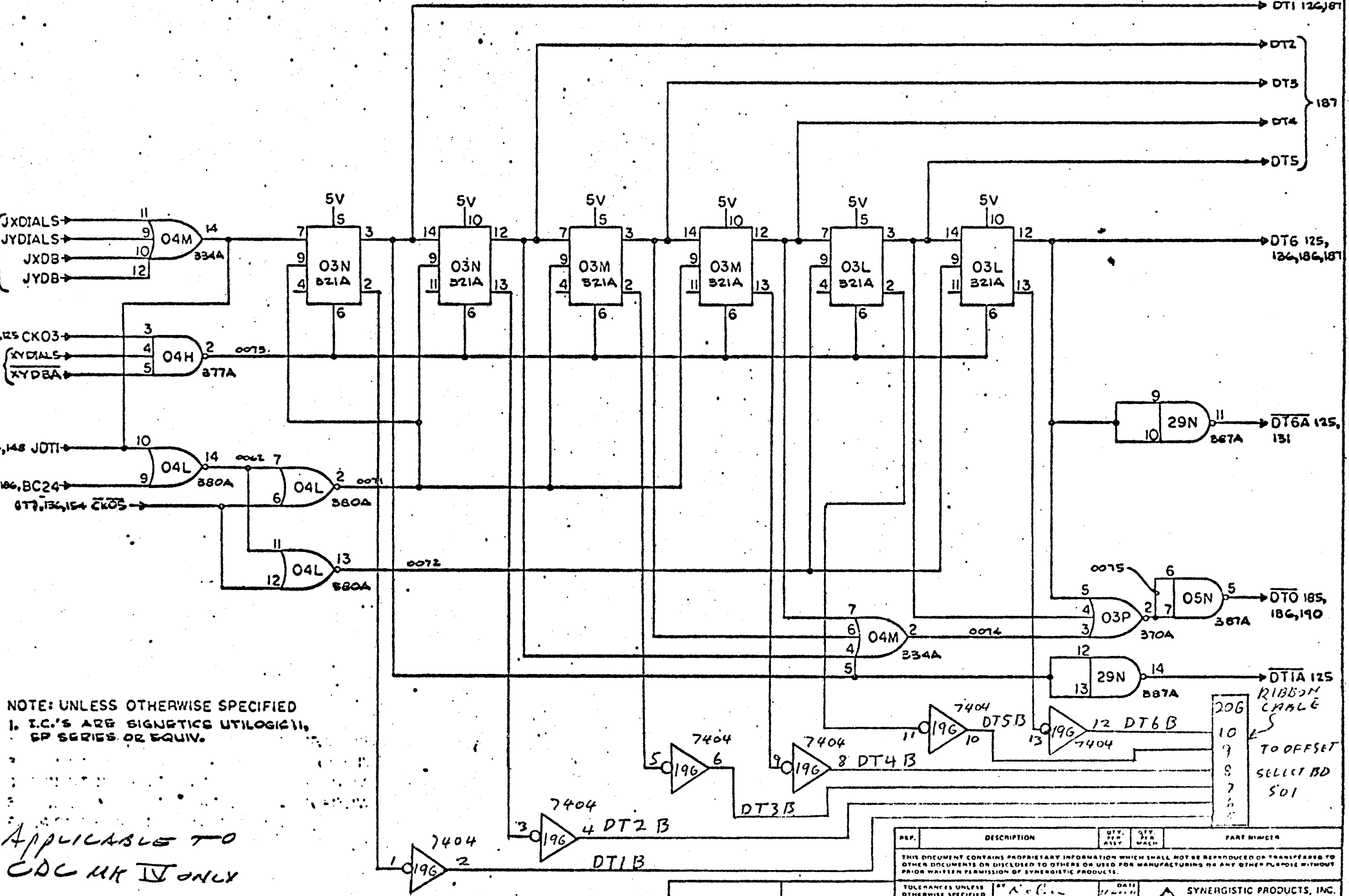
DRILLING MACHINE

REF.	DESCRIPTION	QTY. REQ.	DIV. OF MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING ON ANY LIKE PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>R. J. [Signature]</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 10721 E. Santa Ana, Orange, CA
.001 .005 .010 .015 .020 .030 .040 .050 .060 .070 .080 .090 .100 .125 .150 .175 .200 .250 .300 .375 .450 .500 .625 .750 .875 .900 .950 .990 .995 .999		CHECKED	DATE	
CONCENTRICITY AND OUT OF ROUND T.Y.M.		APPROVED	DATE	TITLE LOGIC DIAGRAM - RESET PULSE GENERATION
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		SCALE 1/8" = 1" - 182-2
FINISH		NEXT ASSY		USED ON



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC11,  
 SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE .01 .005 10-30° CONCENTRICITY AND OUT OF ROUND T.R. .03		BY: <i>[Signature]</i> CHECKED: _____ APPROVED: _____	DATE: 11/21/87 DATE: _____ DATE: _____	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cleviton Corporation 1902 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL: _____ TITLE: LOGIC DIAGRAM - DIGIT TIME COUNTER		SCALE: DWG # 1300-0183
NEXT ASSY	USED ON			



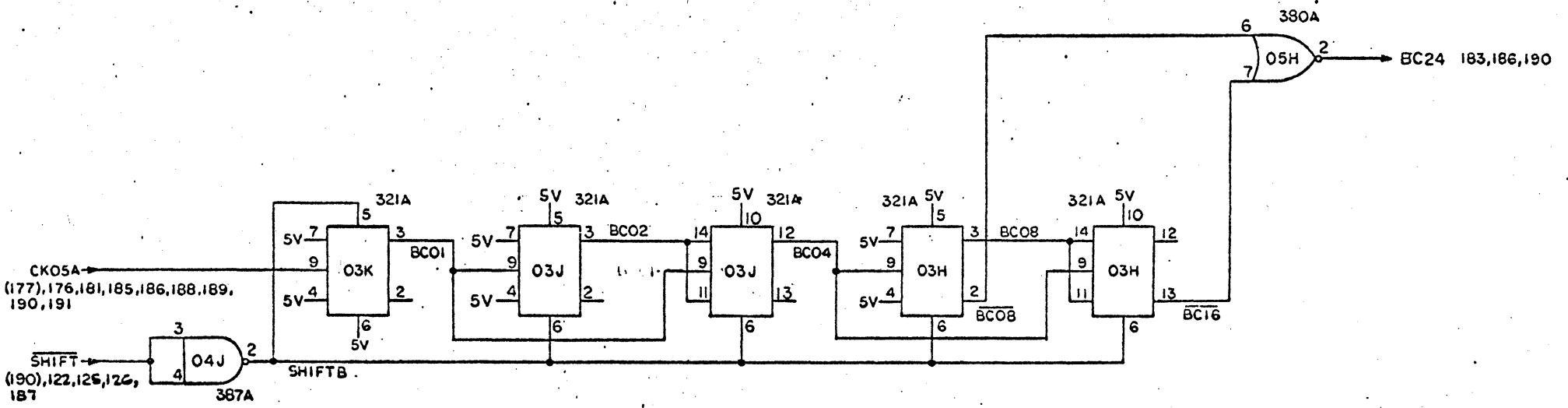
NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC11,  
 EP SERIES OR EQUIV.

APPLICABLE TO  
 CDC MK IV ONLY

1800-0183-1

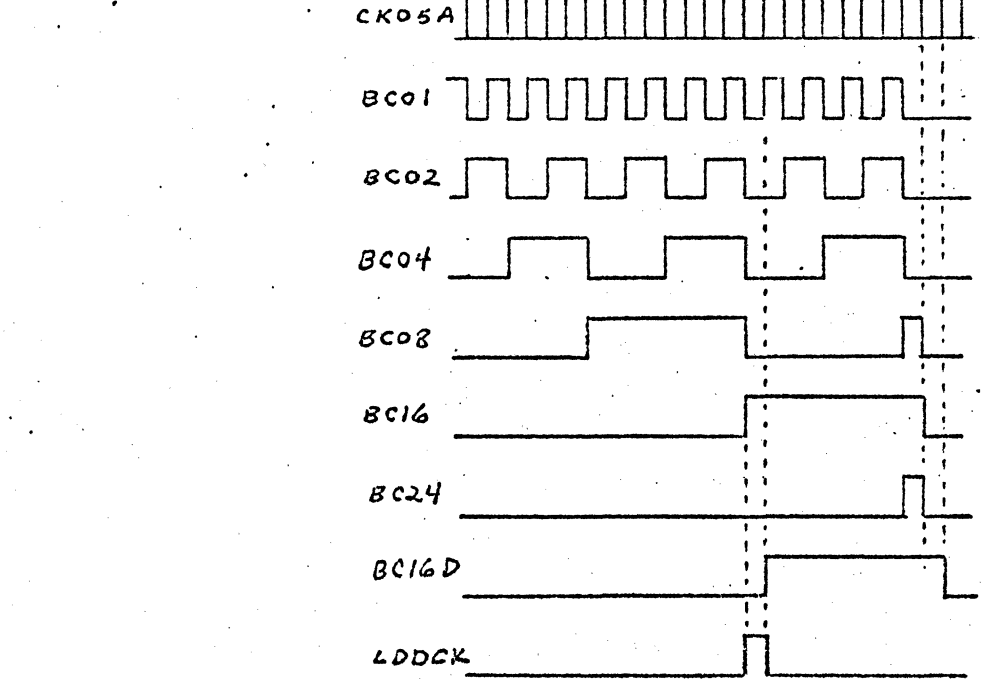
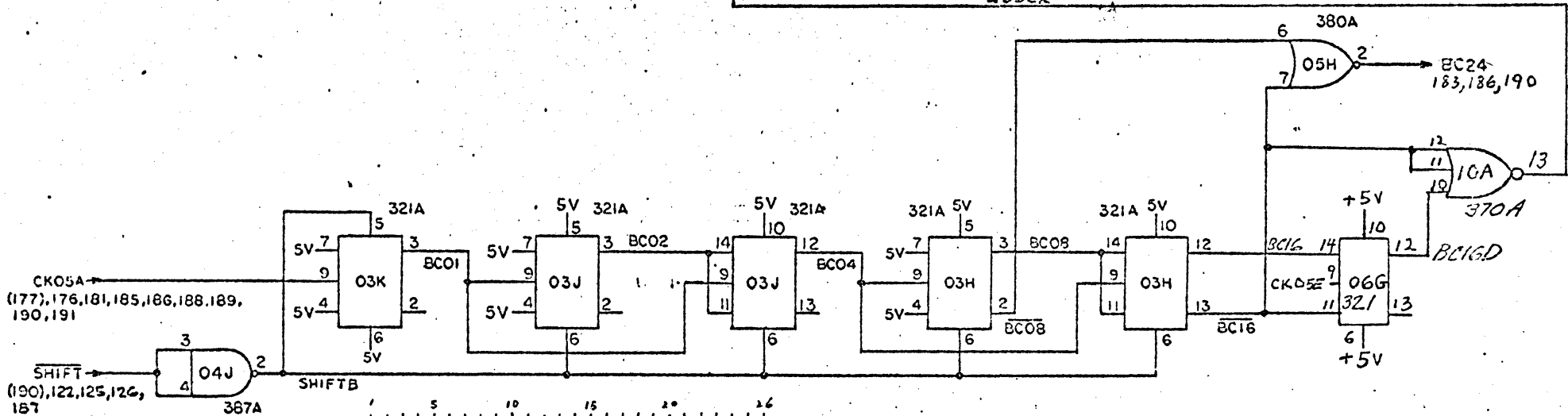
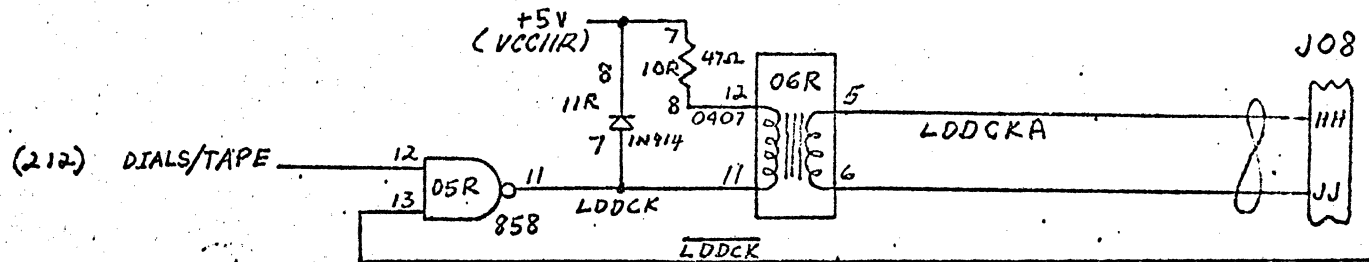
REF.	DESCRIPTION	QTY.	QTY.	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.			
	TOLERANCES UNLESS OTHERWISE SPECIFIED			
	.100 ANGLES			
	CONCENTRICITY AND OUT OF ROUND TYP. .005			
	REMOVE BURRS AND BREAK ALL SHARP EDGES			
	FINISH			
	DATE			
	CHECKED			
	APPROVED			
	MATERIAL			
SYNERGISTIC PRODUCTS, INC.		A Subsidiary of Corvair Corporation		
1802 McCaw, Santa Ana, California		TITLE		
		LOGIC DIAGRAM -		
		DIGIT TIME COUNTER		

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
B	REV PER ECO 412	PPF 2-29-72



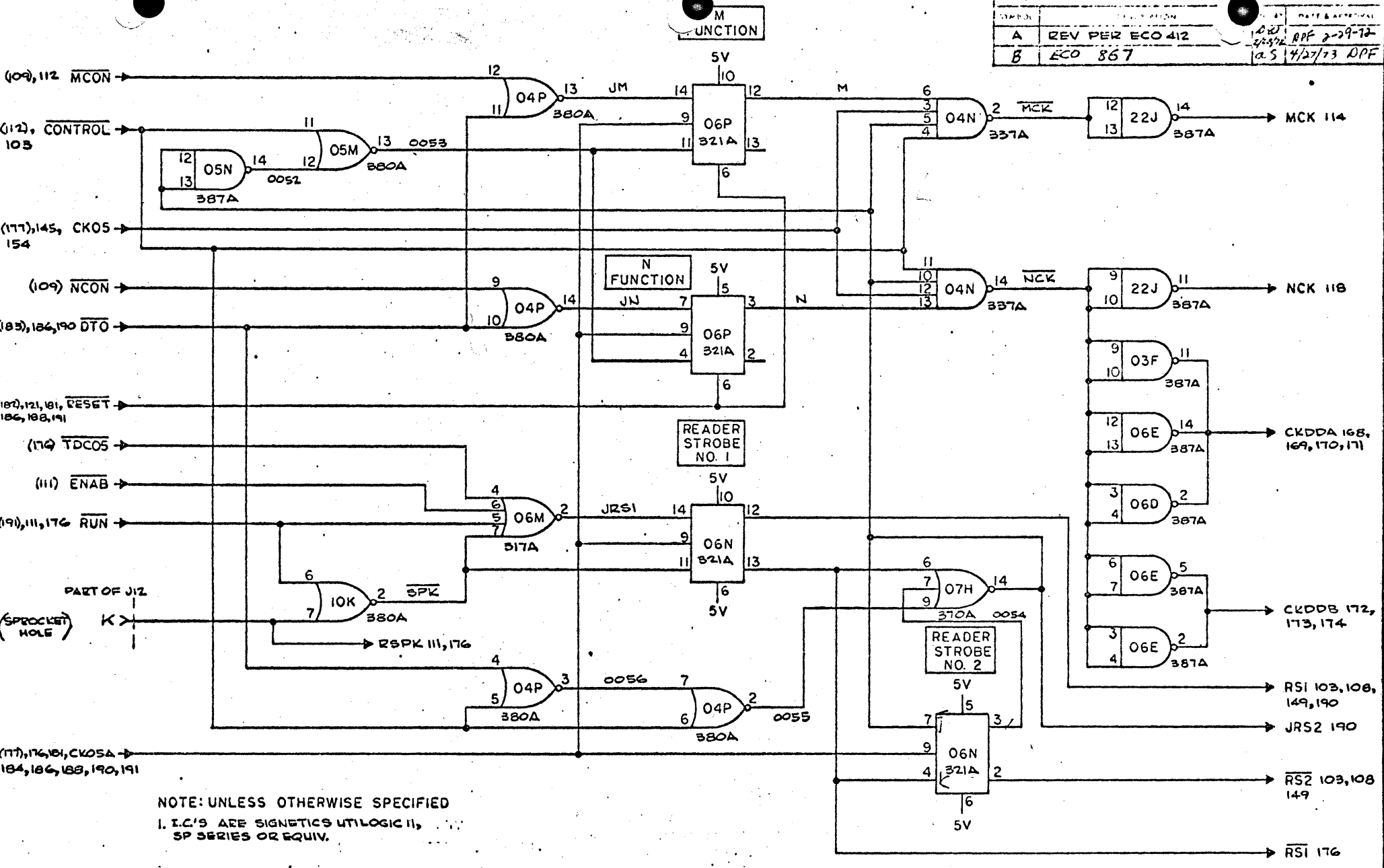
NOTE UNLESS OTHERWISE SPECIFIED  
 I. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE 2.01 ±.003 2 OF 20 CONCENTRICITY AND OUT OF ROUND T.I.P. .005	BY <i>[Signature]</i>	DATE 12/12/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevison Corporation 1502 McGee, Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	
	FINISH	APPROVED	DATE	TITLE LOGIC DIAGRAM - BIT TIME COUNTER
NEXT ASSY	USED ON	MATERIAL	SCALE	1800-0184 B



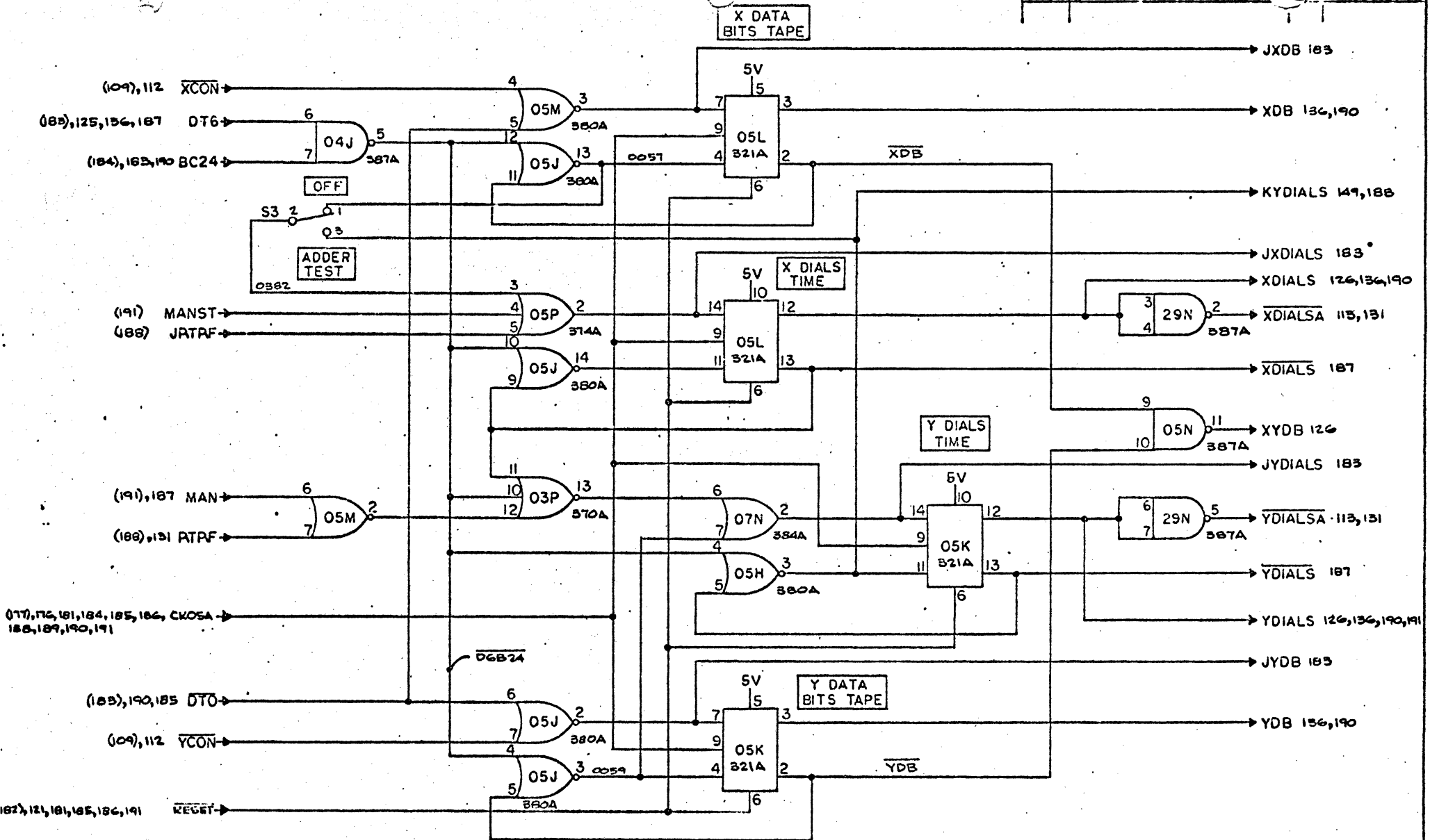
REF.	DESCRIPTION	QTY. PER Assy.	QTY. PER WASH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR EMPLOYED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSES WITHOUT PRIOR WRITTEN PERMISSION OF SYNFACIFIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED ARE .005 ANGLES .251 .250 .250 CONCURRENTLY AND OUT OF ROUND TYP. .005		BY <i>K. L.</i>	DATE <i>12-15-58</i>	SYNFACIFIC PRODUCTS, INC. A Subsidiary of Control Corporation 1002 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		APPROVED	DATE	
NEXT ASSY	USED ON	MATERIAL		THIS LOGIC DIAGRAM - BIT TEST CIRCUIT
		REELS		7000-0184-2

SYMBOL	REVISION	DATE & APPROVAL
A	REV PER ECO 412	02/27/73 RPF 2-29-72
B	ECO 867	02/27/73 RPF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE .251 .250 .250 CONCENTRICITY AND OUT OF ROUND I.L.S..005		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavcon Corporation 1707 McGee, Santa Ana, California		DATE
CHECKED		DATE		
APPROVED		DATE		TITLE LOGIC DIAGRAM - M AND N JUNCTION AND READER STROBE F/F
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		
FINISH		SCALE		1800-0185
NEXT ASSY	USED ON			



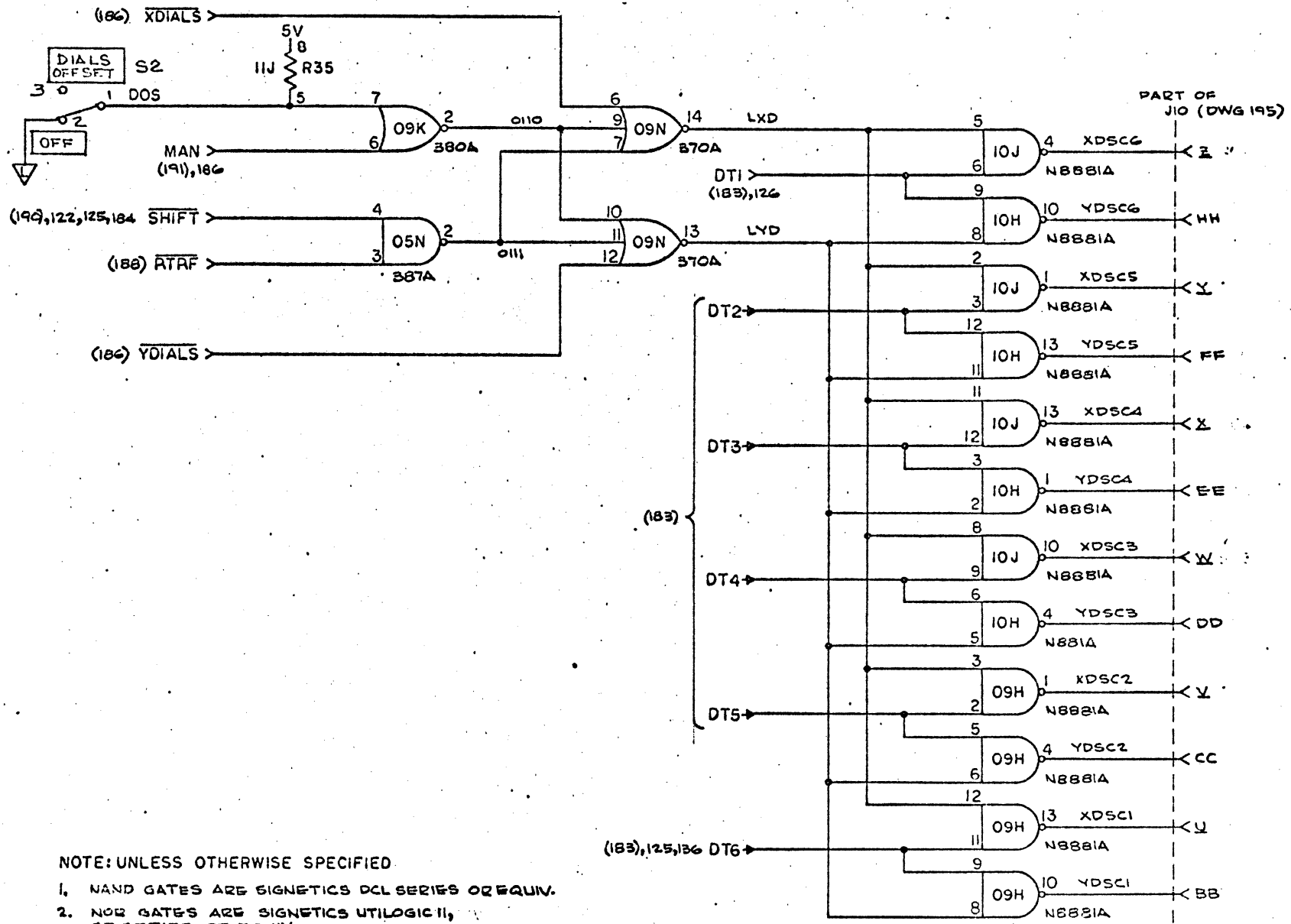
NOTE: UNLESS OTHERWISE SPECIFIED

- I.C.'S ARE SIGNETICS UTILOGIC II, GP SERIES OR EQUIV.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>R. C. ...</i>	14-0000	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1902 McGraw, Santa Ana, California
PER .0005 ANGLES 1st 1.000 1st 20"	CHECKED	DATE	DATE	
(DIMENSIONS UNLESS INDICATED OTHERWISE)	APPROVED	MATERIAL	TITLE LOGIC DIAGRAM DIALS AND TAPE DATA TIME F/P	
REMOVE BURRS AND BREAK ALL SHARP EDGES	FINISH	SCALE		
NEXT ASSY	USED ON	1800-0186 A		



REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
A	REV PER ECO412	1/25/72 DRF 2-29-72
B	ECO 867	2-5 DRF 4/21/73

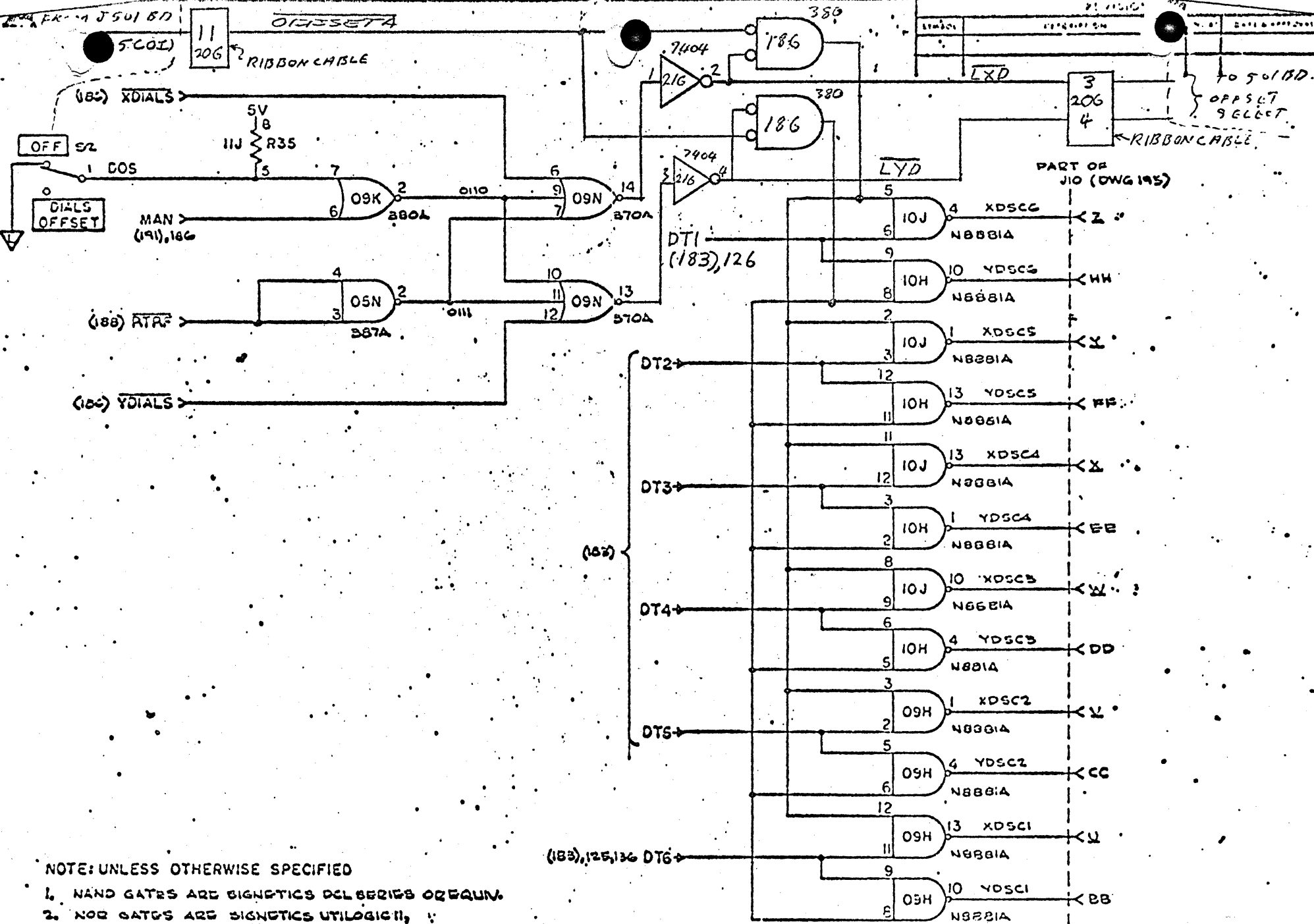


- NOTE: UNLESS OTHERWISE SPECIFIED.
1. NAND GATES ARE SIGNETICS DCL SERIES OR EQUIV.
  2. NOR GATES ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

(183)

(183), 125, 136 DT6

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE 1.01 1.008 10-30' CONCENTRICITY AND OUT OF ROUND T. R. .005		BY <i>K. Chen</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1502 McDev. Santa Ana, California
		CHECKED	DATE	
		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE LOGIC DIAGRAM - DIALS INTERROGATION GATING
FINISH				SCALE DWG # 1800-0187 B
NEXT ASSY		USED ON		



NOTE: UNLESS OTHERWISE SPECIFIED

1. NAND GATES ARE SIGNETICS DEL SERIES OR EQUIV.
2. NOR GATES ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.

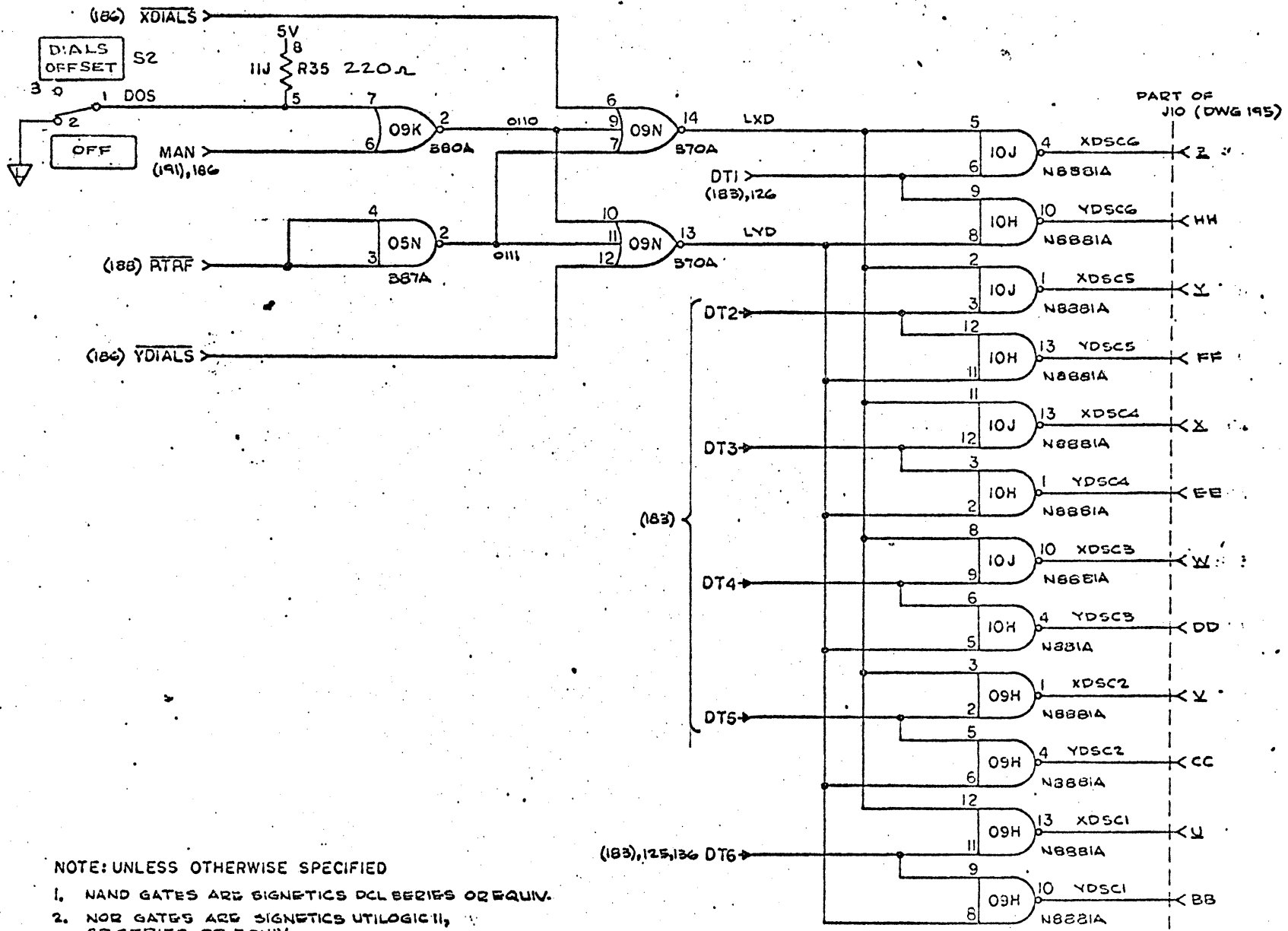
APPLICABLE TO  
ECC MK IV ONLY

1800-0187-1

WIRING DIAG

REF.	DESCRIPTION	REV.	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED OR REPRODUCED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SYNETIC PRODUCTS, INC.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>R. K. ...</i>	DATE	SYNETIC PRODUCTS, INC. A Subsidiary of Conquest Corporation 1707 N. 1st St., Suite 200, Grand Rapids, MI 49503
	OR AS SHOWN	APPROVED	DATE	
	CONCEPTS AND DESIGN			
	DESIGN AND DRAWING			

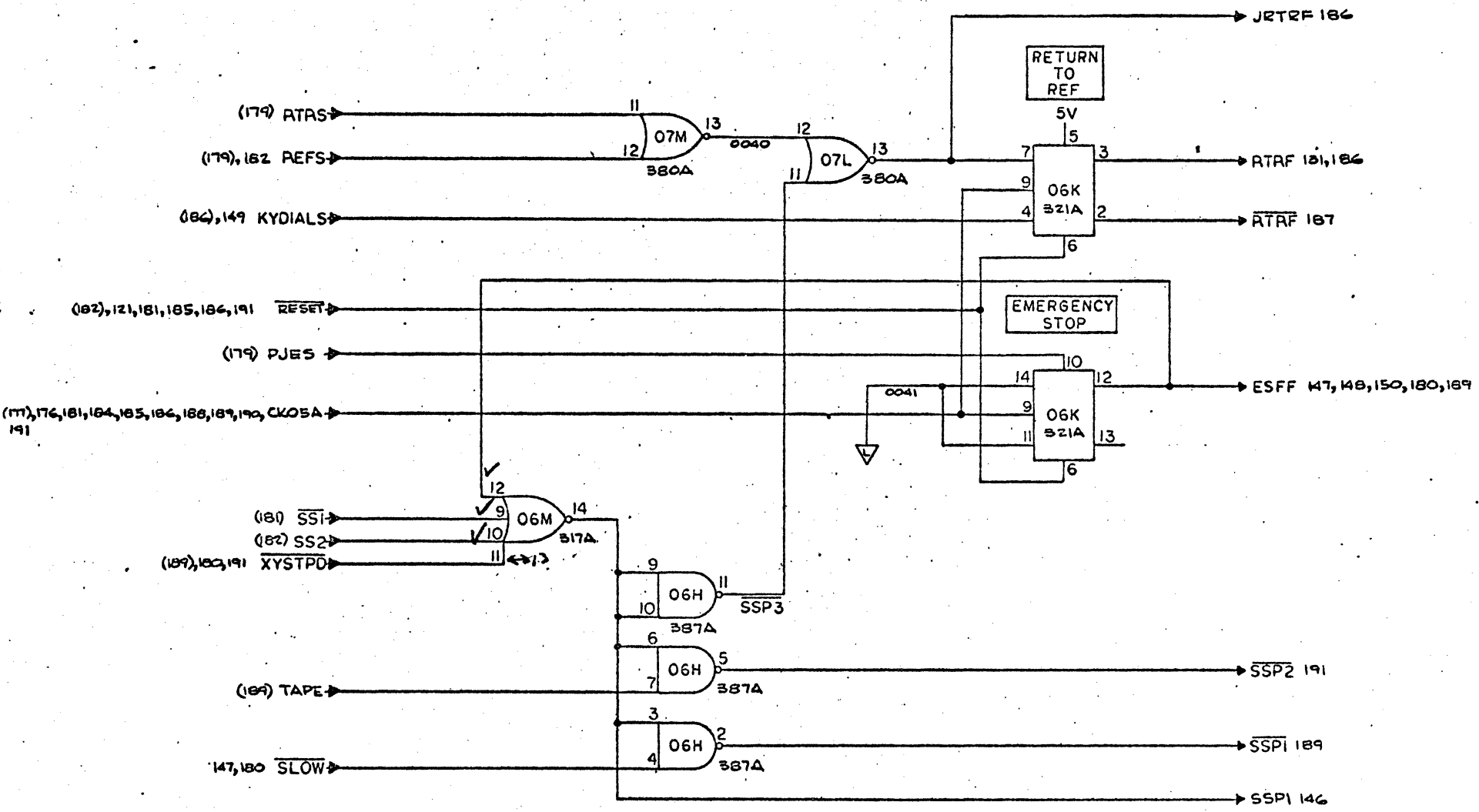
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	ECO 867	1/5/77 RPP 4-27-77



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. NAND GATES ARE SIGNETICS DCL SERIES OR EQUIV.  
 2. NOR GATES ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.

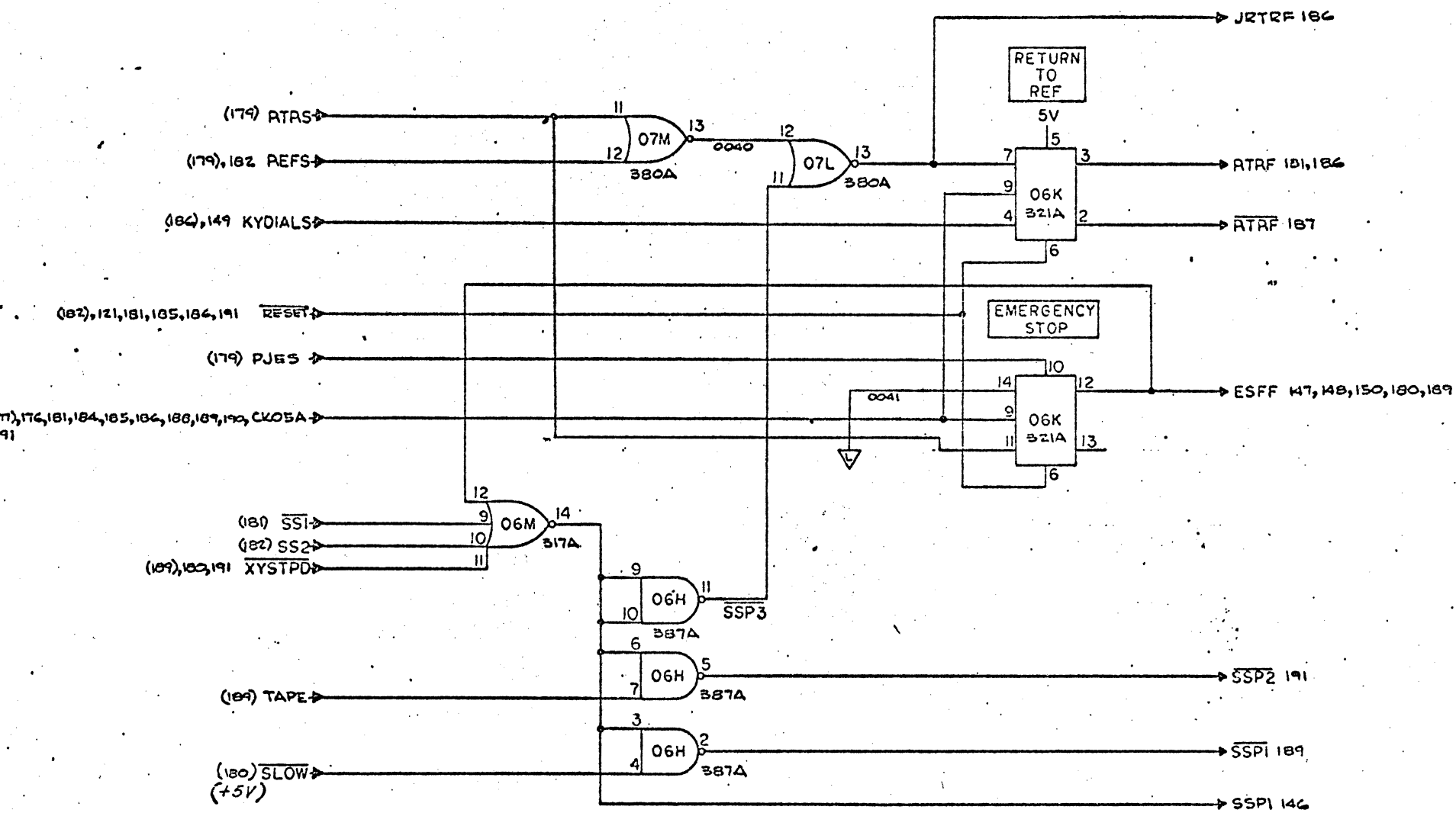
DRILLING MACH

REF.	DESCRIPTION	QTY PER ASSY	MFG PER MACH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OF ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS				
TOLERANCES UNLESS OTHERWISE SPECIFIED BY DIM AND/OR 1.81 1.80 1.78 CONCENTRICITY AND OUT OF ROUND 1/8 .005		BY <i>K. Chan</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlsam Corporation 102 Valley Drive, Andover, MA 01810
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
FINISH		MATERIAL		TITLE LOGIC DIAGRAM - DIALS INTERROGATION CIRCUIT
NEXT ASSY	USED ON	SCALE		UNSP 1800-0187-2 A



NOTE UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX .MM .1 .15 .2 .3 .5 .7 .1		BY <i>R. Chen</i>	DATE 1/24/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carleton Corporation 1932 McGraw, Santa Ana, California
CONCENTRICITY AND OUT OF ROUND .1 .05		CHECKED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	TITLE LOGIC DIAGRAM - RETURN TO REF. AND STOP P/P SWITCH SINGLE PULSE
FINISH		MATERIAL		SCALE
NEXT ASSY	USED ON			DWG # 1800-0188

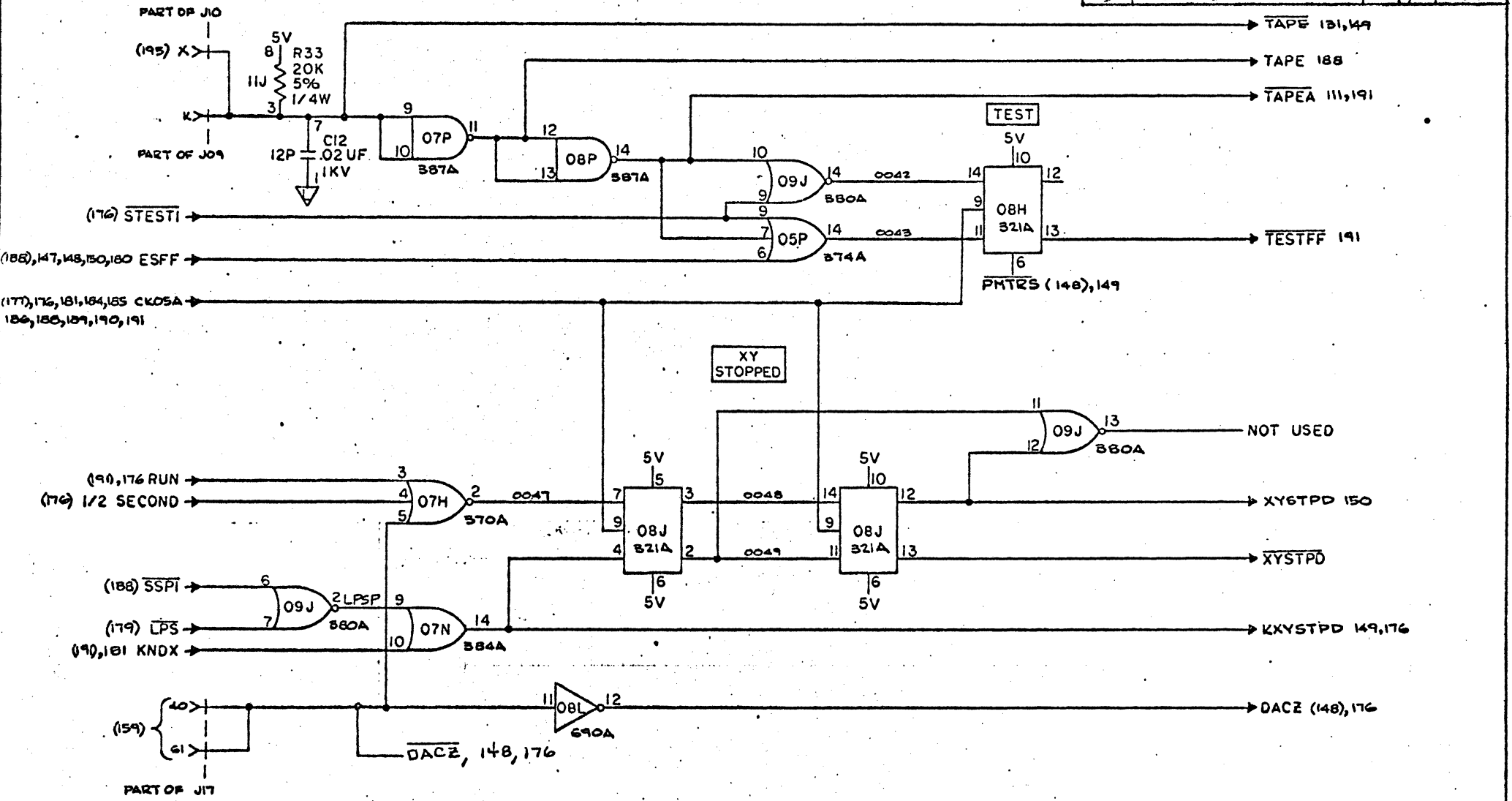


NOTE UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

### DRILLING MACHINE

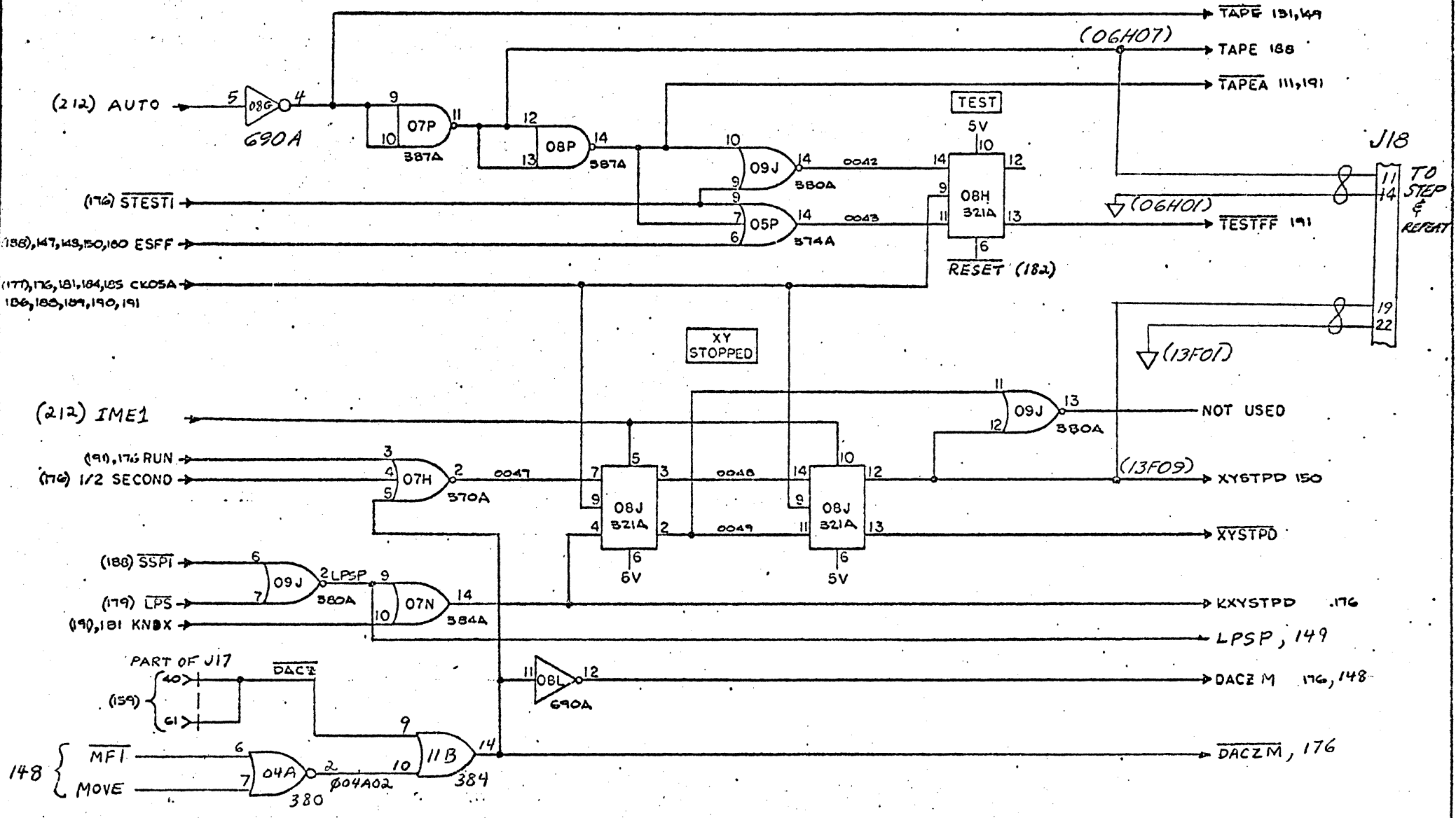
REF.	DESCRIPTION	QTY. REQD.	QTY. IN STOCK	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE ± .01 ± .005 ± .004 CONCENTRICITY AND OUT OF ROUND .1 IN. DIA.		BY <i>R. Chen</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1700 - 17th Ave., Camarillo, California
APPROVED		CHECKED <i>OPF</i>	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL	DATE	TITLE: LOGIC CONTROL - RETURN TO REF. AND STOP E/F SINGLE PULSE
NEXT ASSY	USED ON			SCALE: 1:1 1200-0185-2

REVISION		DATE & APPROVAL
A	REV PER ECO 412	2-29-72 APF
B	ECO 867	4/27/73 DPF



NOTES: UNLESS OTHERWISE SPECIFIED:  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 6P SERIES OR EQUIV.

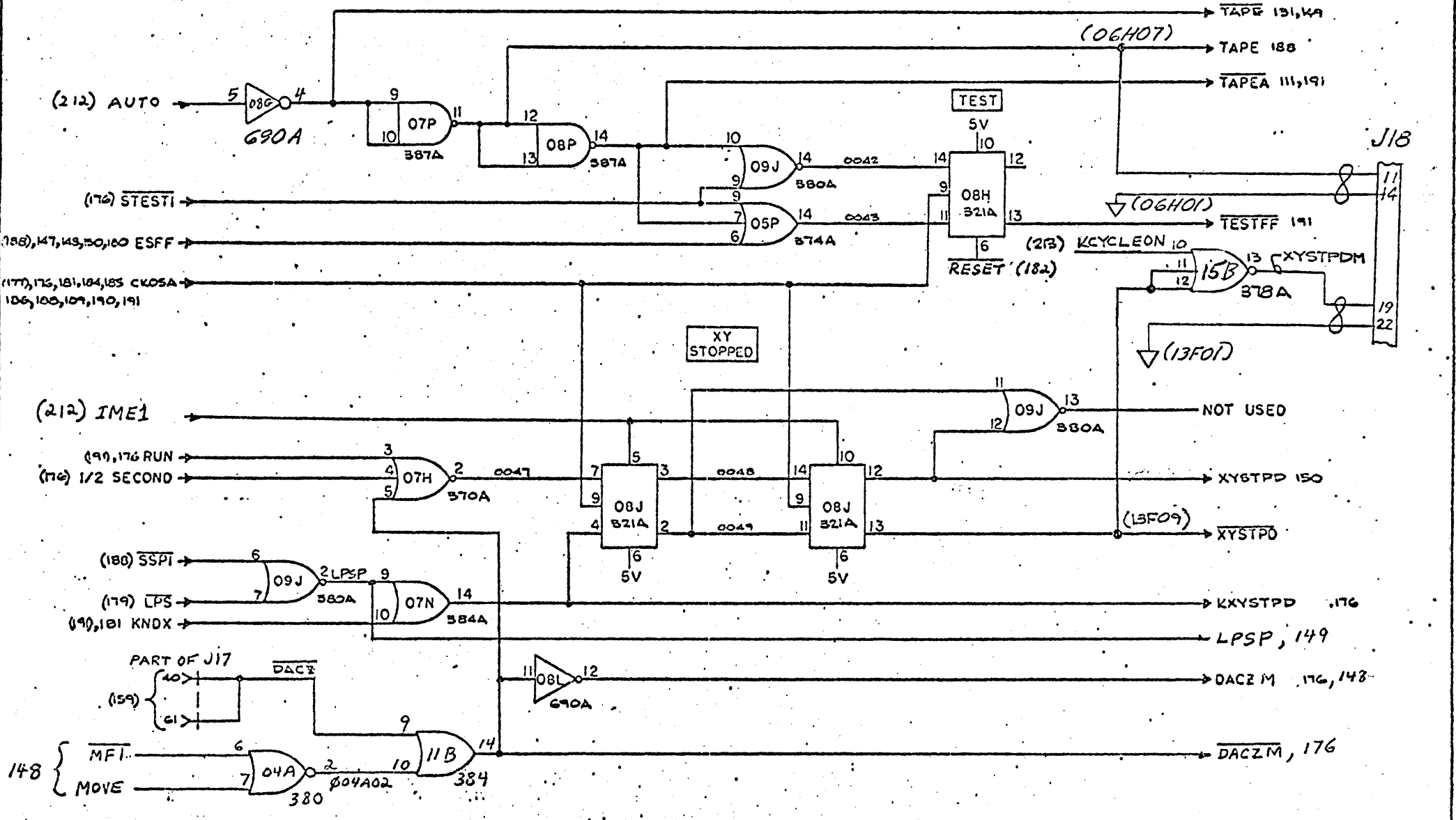
REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED X.X .X.XX ANGLE 2.00 3.000 10.00 CONCENTRICITY AND OUT OF ROUND T.I.R. .001	BY <i>John</i>	DATE 12.2.72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cevitron Corporation 1907 24 Ave, Santa Ana, California	
REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	TITLE LOGIC DIAGRAM - TEST AND XY STOPPED F/F	
FINISH	APPROVED	DATE	SCALE DWG # 1800-0189	
NEXT ASSY	USED ON			



NOTES: UNLESS OTHERWISE SPECIFIED,  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

DRILLING MACHINE

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE .01 .001 .030 CONCENTRICITY AND OUT OF ROUND .01 .001		BY <u>DPE</u> CHECKED _____ DATE _____	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 1307 McGraw, Santa Ana, California	
APPROVED _____ DATE _____		TITLE LOGIC DIAGRAM - TEST AND XY STOPPED XFF		
MATERIAL _____		SCALE _____		
FINISH _____		DATE _____		
NEXT ASSY	USED ON	1800-189-2		



NOTES: UNLESS OTHERWISE SPECIFIED,  
 I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

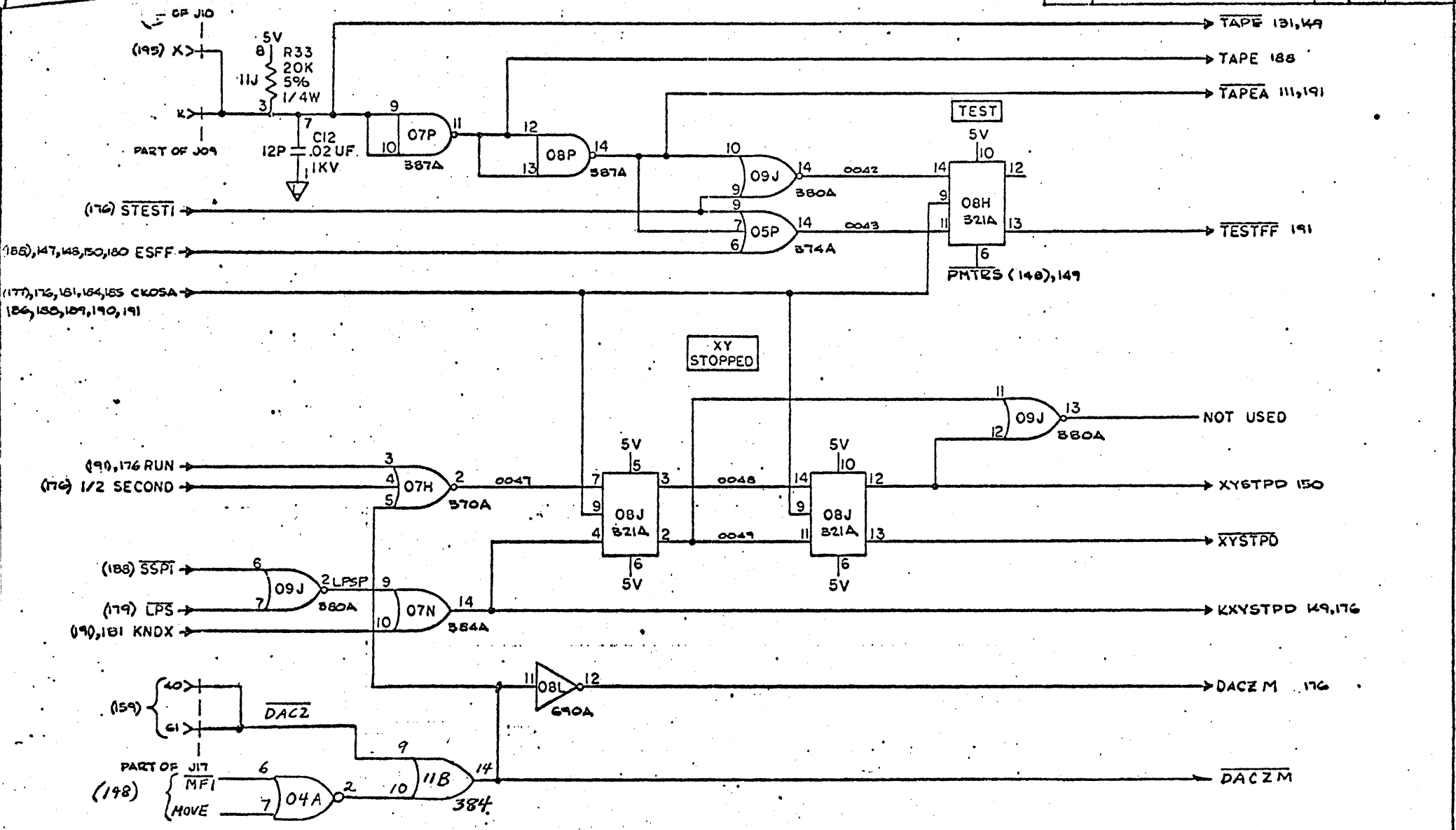
MARK IV

REF.	DESCRIPTION	QTY. PER ASSY	QTY. PER MACH	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX .000 1/32" ANGLES COMPLETELY AND OUT OF PLUMB 1/4 .001			
	REMOVE BURRS AND BREAK ALL SHARP EDGES			
	FINISH			
	NEXT ASSY			
	USED ON			

DATE	SYNERGISTIC PRODUCTS, INC.
DATE	A Subsidiary of Centron Corporation
DATE	1272 M. Cow, Santa Ana, California
TITLE	LOGIC DIAGRAM - TEST AND XY STOPPED F/F
SCALE	100%



SYMBOL	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	DATE & APPROVAL
Δ	RFL PER ECO 867			BF 5-10-73

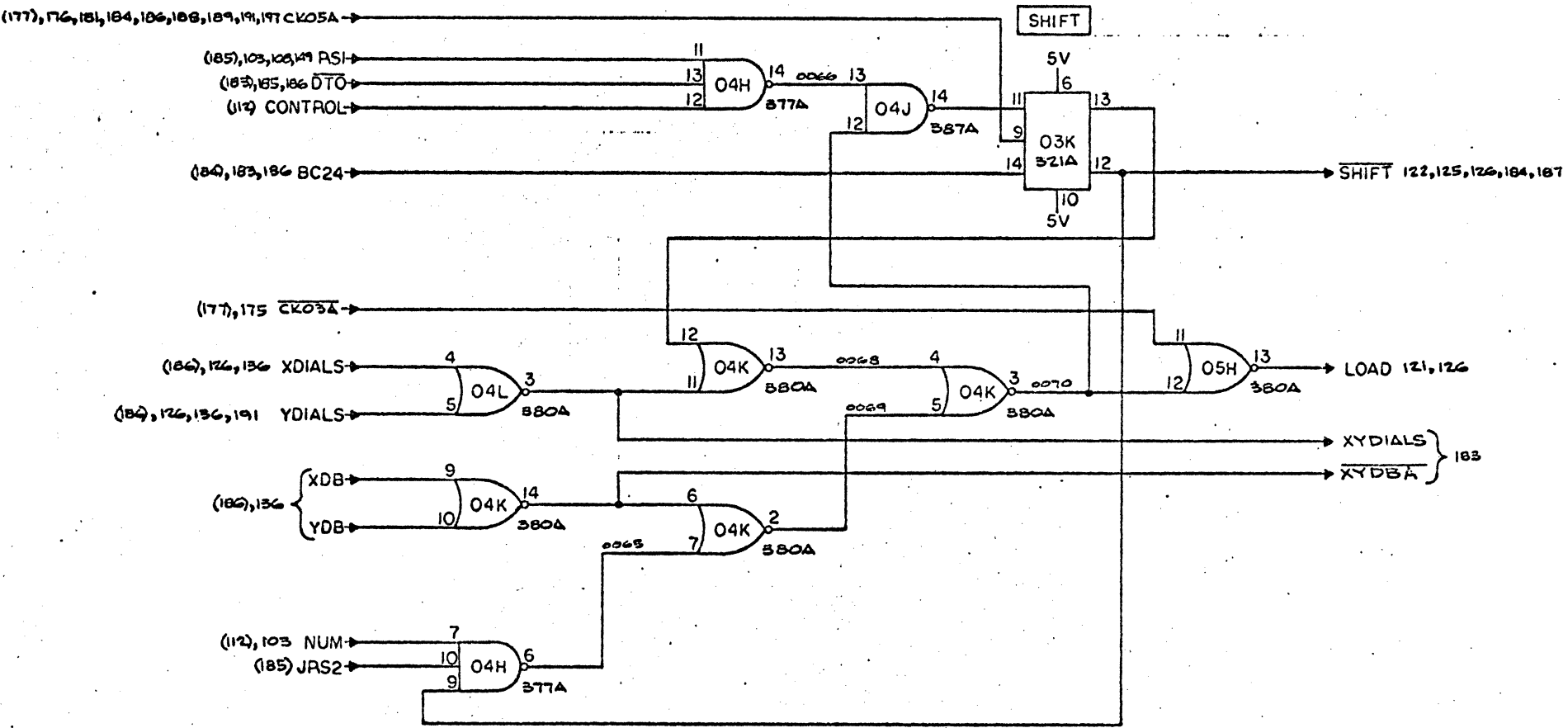


NOTES: UNLESS OTHERWISE SPECIFIED,  
 I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.

7/2/P DYNAMIC BRAKING MOD

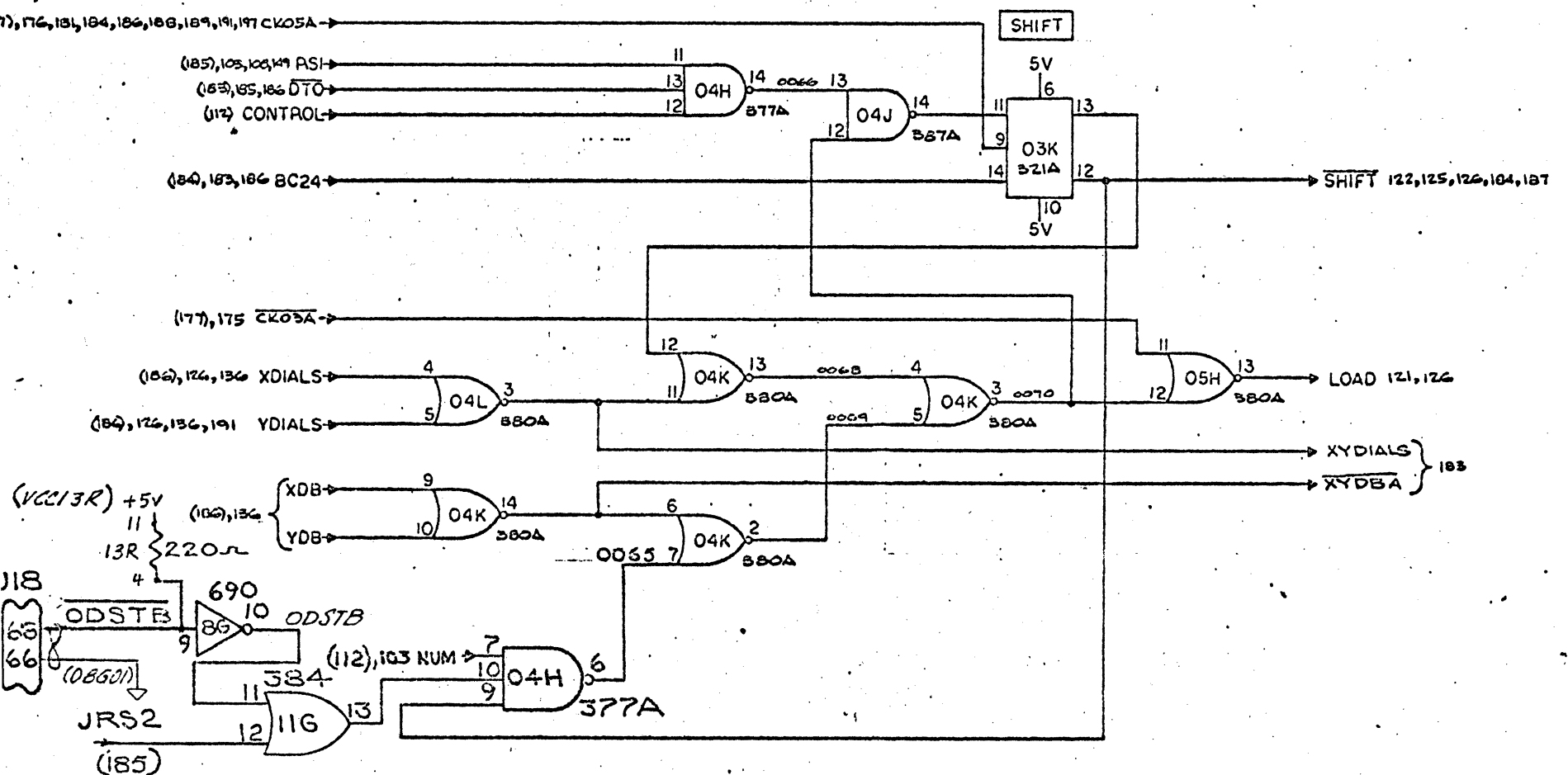
REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	BY <i>Nehru</i>	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corbin Corporation 1502 McGraw, Santa Ana, California	
DR MAX ANGLE	CHECKED	DATE	TITLE LOGIC DIAGRAM - TEST AND XY STOPPED F/F	
DR 2.000 1/8"	APPROVED	DATE	SCALE	
CONCENTRICITY AND OUT OF ROUND T.H. .001	MATERIAL		1800-0187-45 A	
REMOVE BURRS AND BREAK ALL SHARP EDGES	FINISH			
NEXT ASSY	USED ON			

REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REV PER ECO 412	001 KPF	2-29-72 KPF
B	REV PER ECO 867	005 KPF	4-27-73



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC 11,  
 8P SERIES OR EQUIV.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED IN .XXX ANGLES E.S. 2.003 20° 30'		BY <i>K. L. ...</i>	DATE 12/29/72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cleviton Corporation 1902 Mc-Gee, Santa Ana, California
CONCENTRICITY AND OUT OF ROUND T.I.R. .005		CHECKED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	TITLE LOGIC DIAGRAM - SHIFT F/F AND LOAD
FINISH		MATERIAL	SCALE	
NEXT ASSY	USED ON	SCALE		000-0190

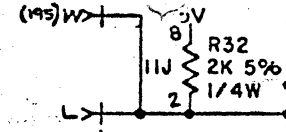


NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILOGIC II,  
 SP SERIES OR EQUIV.  
 2. J18 IS STEP AND REPEAT CONNECTOR

DRILLING MACHINE

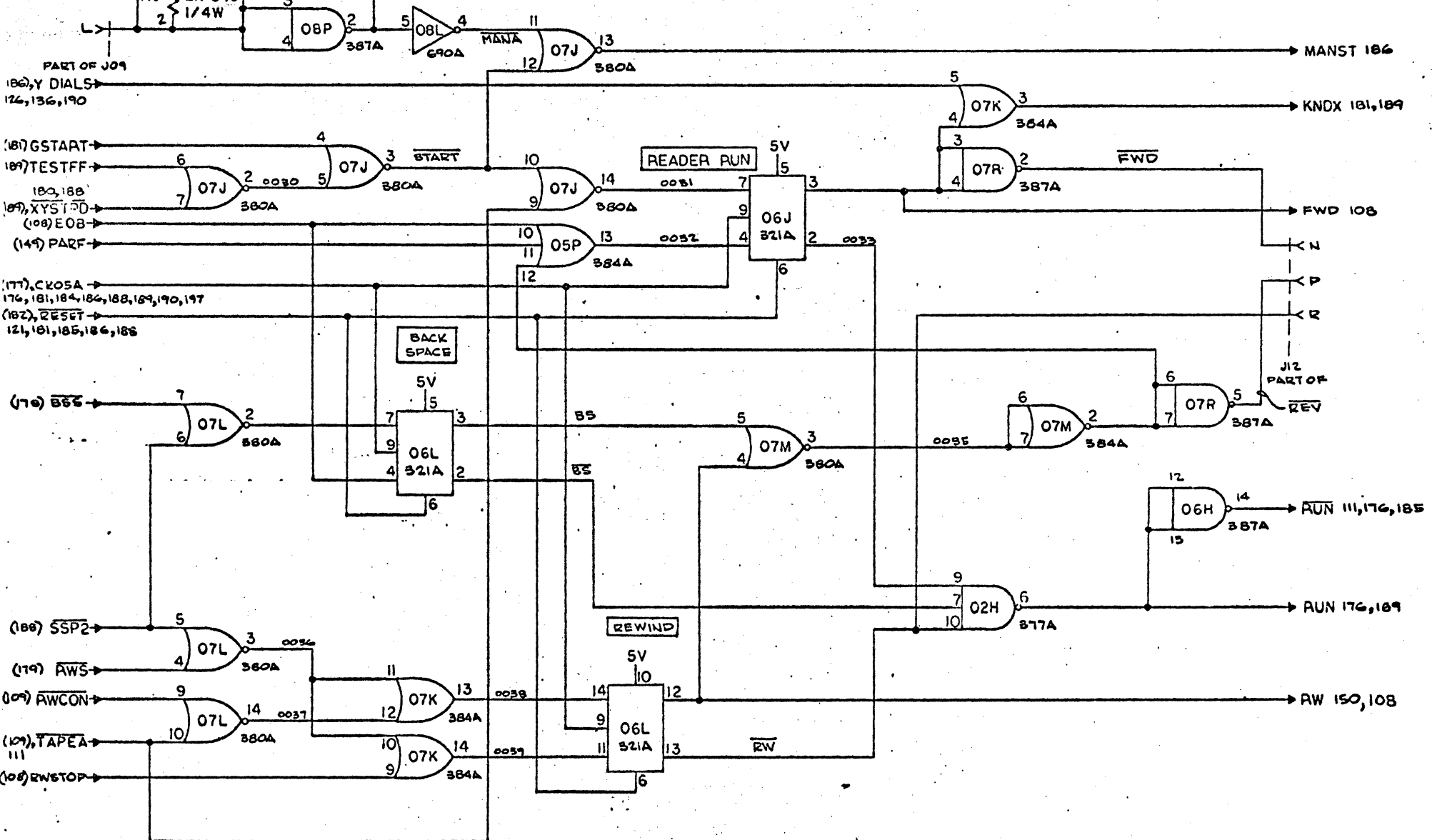
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .01 .03 .05 .10 .15 .20 .30 .40 .50 .60 .70 .80 .90 1.00 1.50 2.00 3.00 4.00 5.00 6.00 8.00 10.00 UNLESS OTHERWISE SPECIFIED		BY JY	DATE 8/72	SYNERGISTIC PRODUCTS, INC. A Division of GenCorp Corporation 1307 Michigan, S.W. Ann Arbor, Michigan
CONDUCTIVITY AND QTY. OF ROUND TO R. 200		APPROVED	DATE	
REMOVE BURRS AND SPARK ALL SHARP EDGES		MATERIAL		TITLE LOGIC DIAGRAM - SHIFT F/E AND LOAD
FINISH		PART NUMBER		
NEXT ASSY	USED ON			A
				1800-0190-2

PART OF J10



PART OF J09

- (180) Y DIALS  
176, 186, 190
- (181) GSTART
- (187) TESTFF
- (182, 188) XYSTPD
- (108) EOB
- (149) PARF
- (177) CKO5A
- 176, 181, 184, 188, 189, 190, 197
- (182) RESET
- 121, 181, 185, 186, 188
- (170) BSS
- (188) SSP2
- (179) AWS
- (109) AWCON
- (109) TAPEA
- (108) RWSTOP



NOTE: UNLESS OTHERWISE SPECIFIED  
I.C.'S ARE SIGNETICS UTILOGIC II,  
SP SERIES OR EQUIV.

SYMBOL	DESCRIPTION	DATE
B	REV PER ECC 867	07F 4-27-73

MAN 186, 187

MANST 186

KNDX 181, 189

FWD 108

J12  
PART OF  
REV

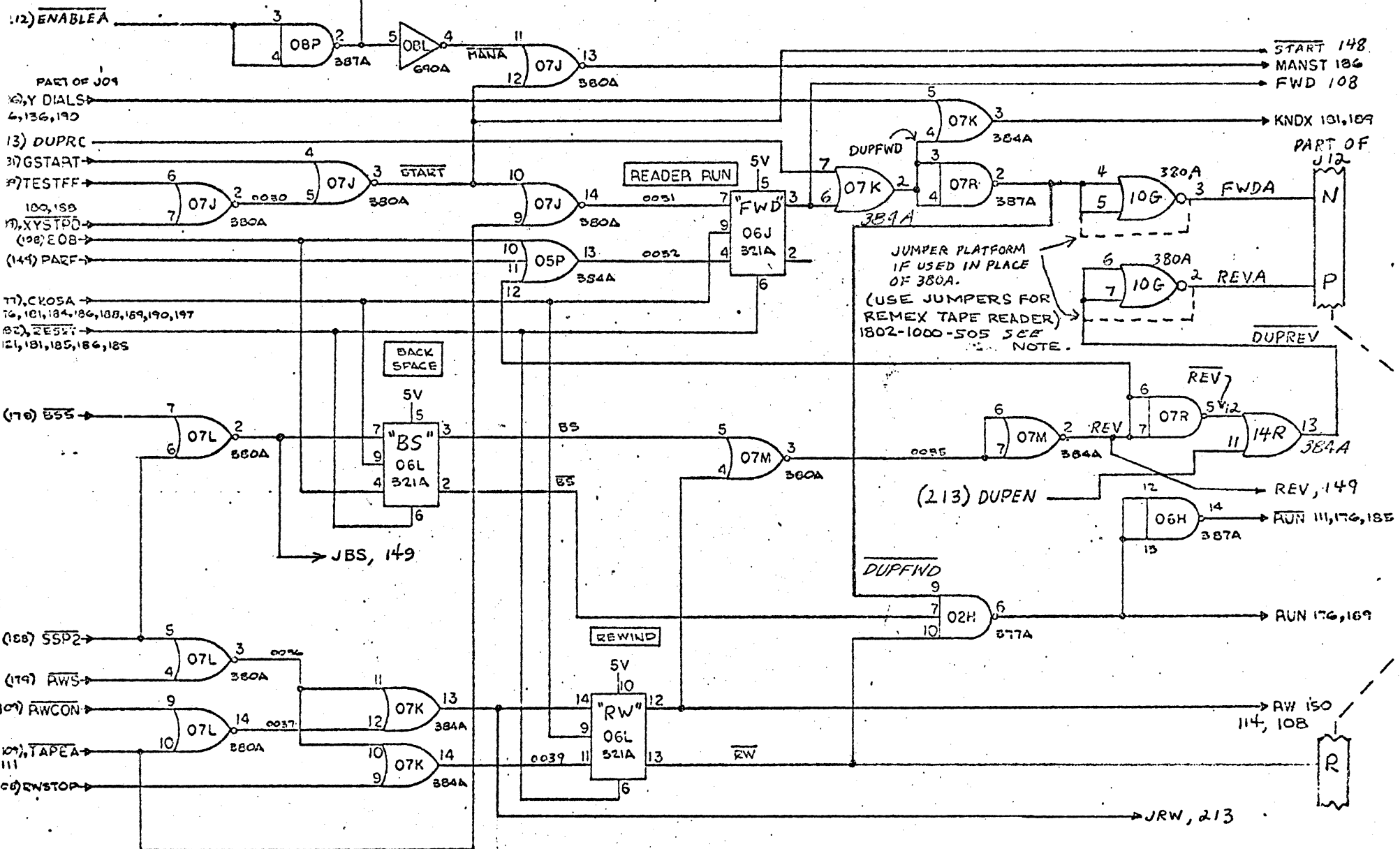
RUN 111, 176, 185

RUN 176, 189

RW 150, 108

REF.	DESCRIPTION	QTY PER ASSY.	QTY PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED IN INCH ANGLE 2.00 2.00 2.00 CONCENTRICITY AND OUT OF ROUND T.I.R. .005		BY <i>R. J. ...</i>	DATE 11 MAR 73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Canon Corporation 1902 Mc Graw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		CHECKED	DATE	
MATERIAL		APPROVED	DATE	
NEXT ASSY		USED ON		TITLE LOGIC DIAGRAM - READER CONTROL F/F
SCALE				DWG # 1800-0191

ENABLE (J08-Y) AD WIRE FROM 14H08 TO 14G08 FOR VCC (COMPUTER W/4) MAN, 186, 187



- (12) ENABLE
- PART OF J04
- (13) Y DIALS 4, 136, 190
- (13) DUPRC
- (14) START
- (14) TESTFF 100, 158
- (17) XYSTOP (198) EOB
- (144) PARF
- (17) CKO5A 16, 181, 184, 186, 188, 189, 190, 197
- (18) S5P2 12, 181, 185, 186, 185
- (18) S5P2
- (19) AWS
- (20) RWCON
- (21) TAPEA
- (22) RWSTOP

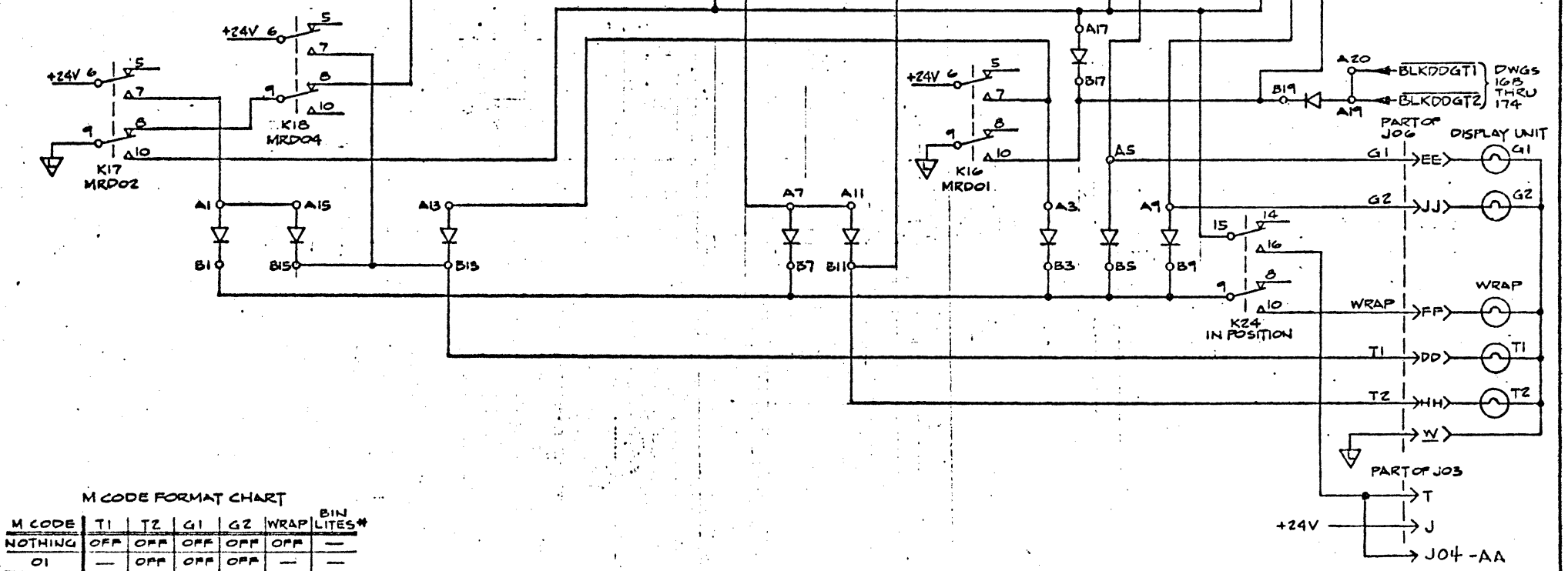
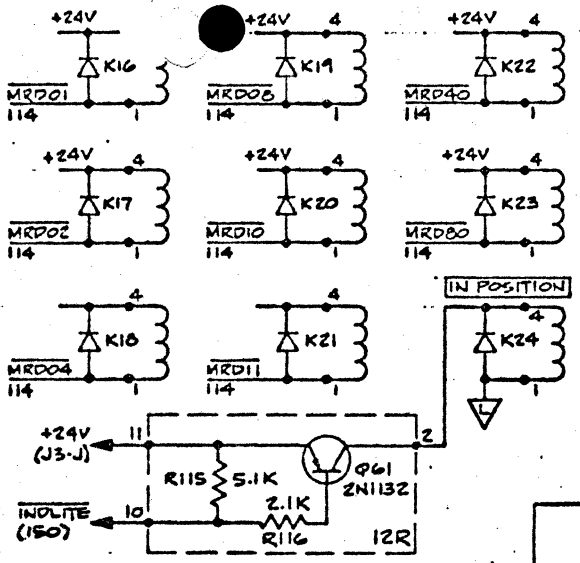
- START 148
- MANST 186
- FWD 108
- KNDX 181, 189
- PART OF J12
- FWDA
- REVA
- DUPREV
- REV
- REV, 149
- RUN 111, 176, 185
- RUN 176, 169
- RW 150, 114, 108

NOTE: UNLESS OTHERWISE SPECIFIED  
 1. I.C.'S ARE SIGNETICS UTILIGIC 11, SP SERIES OR EQUIV.  
 2. J12 IS READER CONNECTOR.  
 3. J08 IS DIGITIZER CONNECTOR.

DRILLING MACHINE

REF.	DESCRIPTION	REV.	DATE	PART NUMBER
<p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR BE USED TO OTHERS FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN PERMISSION OF SIGNETIC PRODUCTS.</p>				
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY: [Signature]	DATE: [Date]	<p>SYNTECH INDUSTRIES, INC.                  A Subsidiary of General Dynamics                  1502 Myrtle, Santa Ana, California</p>
	DRILL ANGLE	APPROVED	DATE	
	DRILL CONCENTRICITY AND OUT OF ROUND TOLERANCES			
	REMOVE BURRS AND BREAK ALL SHARP EDGES			TITLE: LOGIC DIAGRAM - READER CONTROL P.C.
	FINISH			SCALE: 1800-0191-2 A
	NEXT ASSY			SCALE: 1800-0191-2 A
	USED ON			SCALE: 1800-0191-2 A

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
B	REDRAWN PER ECO 448	
C	ECO 867	10.5 LDF 4/27/73

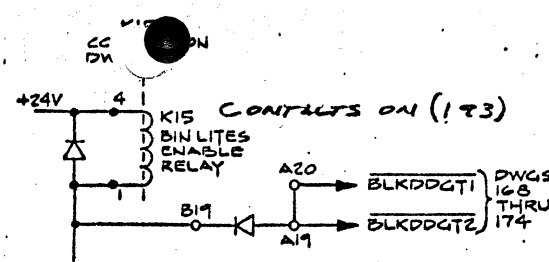
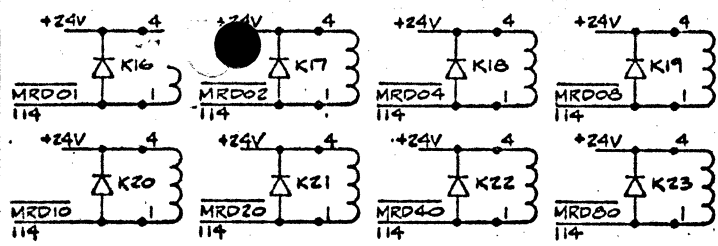


M CODE FORMAT CHART

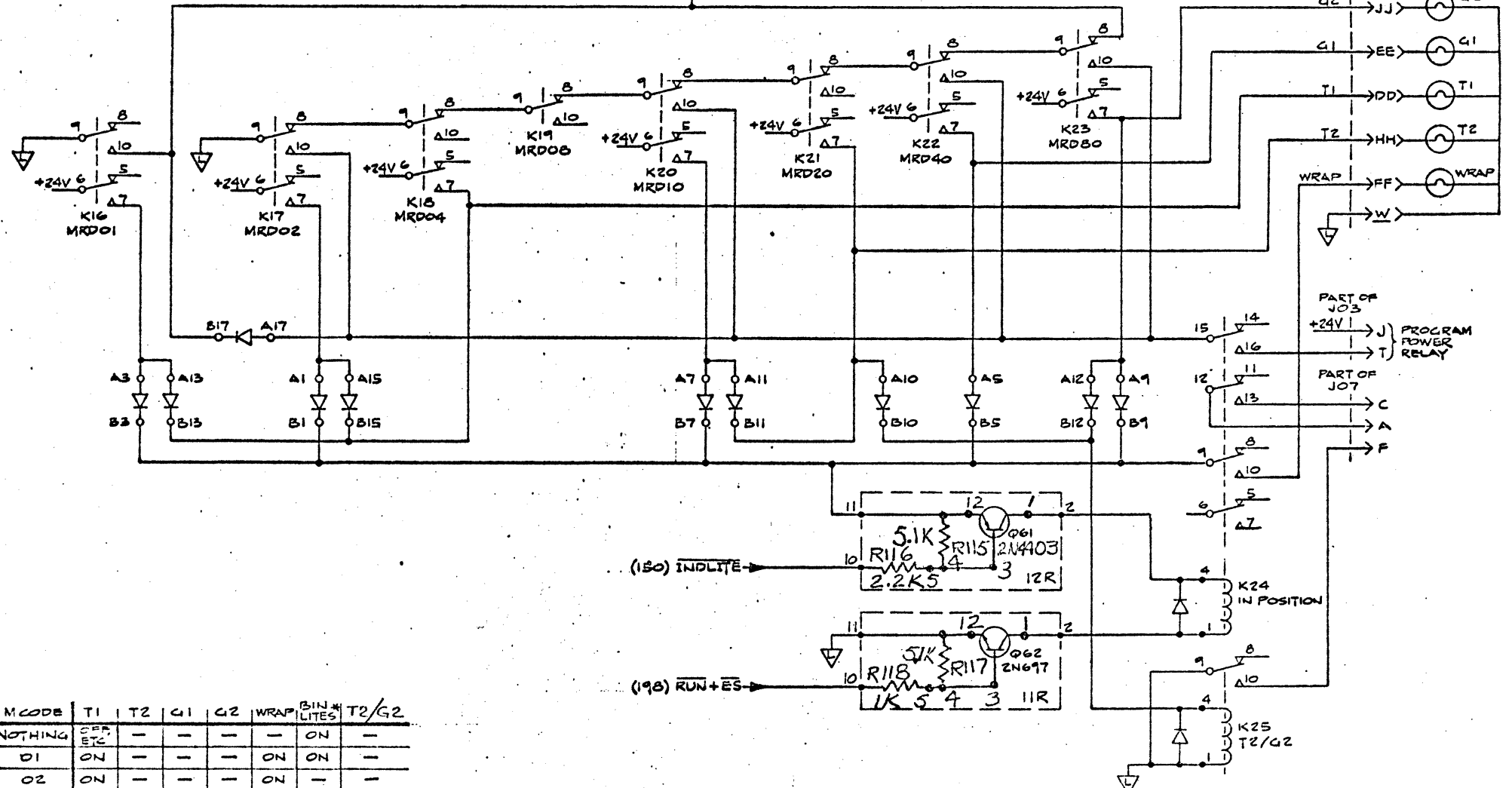
M CODE	T1	T2	G1	G2	WRAP	BIN LITES*
NOTHING	OFF	OFF	OFF	OFF	OFF	—
01	—	OFF	OFF	OFF	—	—
02	—	OFF	OFF	OFF	—	OFF
04	—	OFF	OFF	OFF	OFF	OFF
08	OFF	OFF	OFF	OFF	OFF	OFF
10	OFF	—	OFF	OFF	—	OFF
20	OFF	—	OFF	OFF	OFF	OFF
40	OFF	OFF	—	OFF	—	OFF
80	OFF	OFF	OFF	—	—	OFF

\* UNITS AND TENS DIGITS OF NUMERIC DISPLAY ARE BLANKED.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 1907 McCow, Santa Ana, California
.XX .XXX ANGLE		3-2-73		
CONCENTRICITY AND OUT OF ROUND T.R., .005		DATE		TITLE SCHEMATIC PROCESSOR MRE-LAYS (MANUAL SYSTEM)
REMOVE BURS AND BREAK ALL SHARP EDGES		DATE		
FINISH		MATERIAL		SCALE OWN 1800-0192 C
NEXT ASSY		USED ON		



REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	REV ECO 498	4-7-72	DPF
B	REV ECO 867	4/27/73	AS
C	REV ECO 1899	4/9/74	DPF

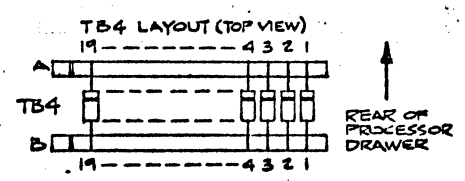
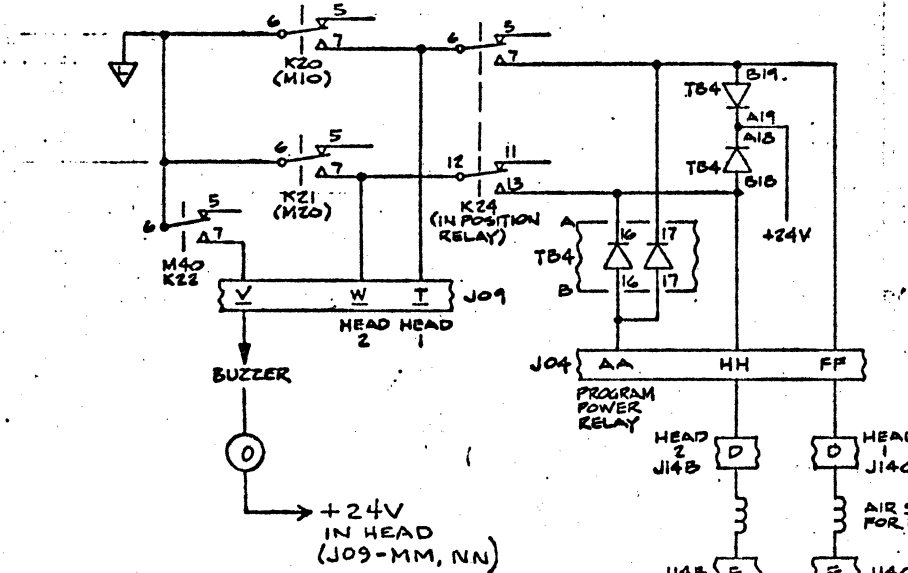
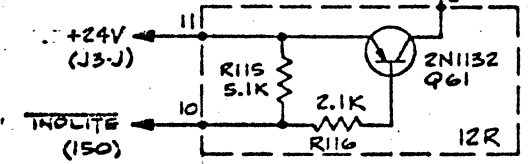
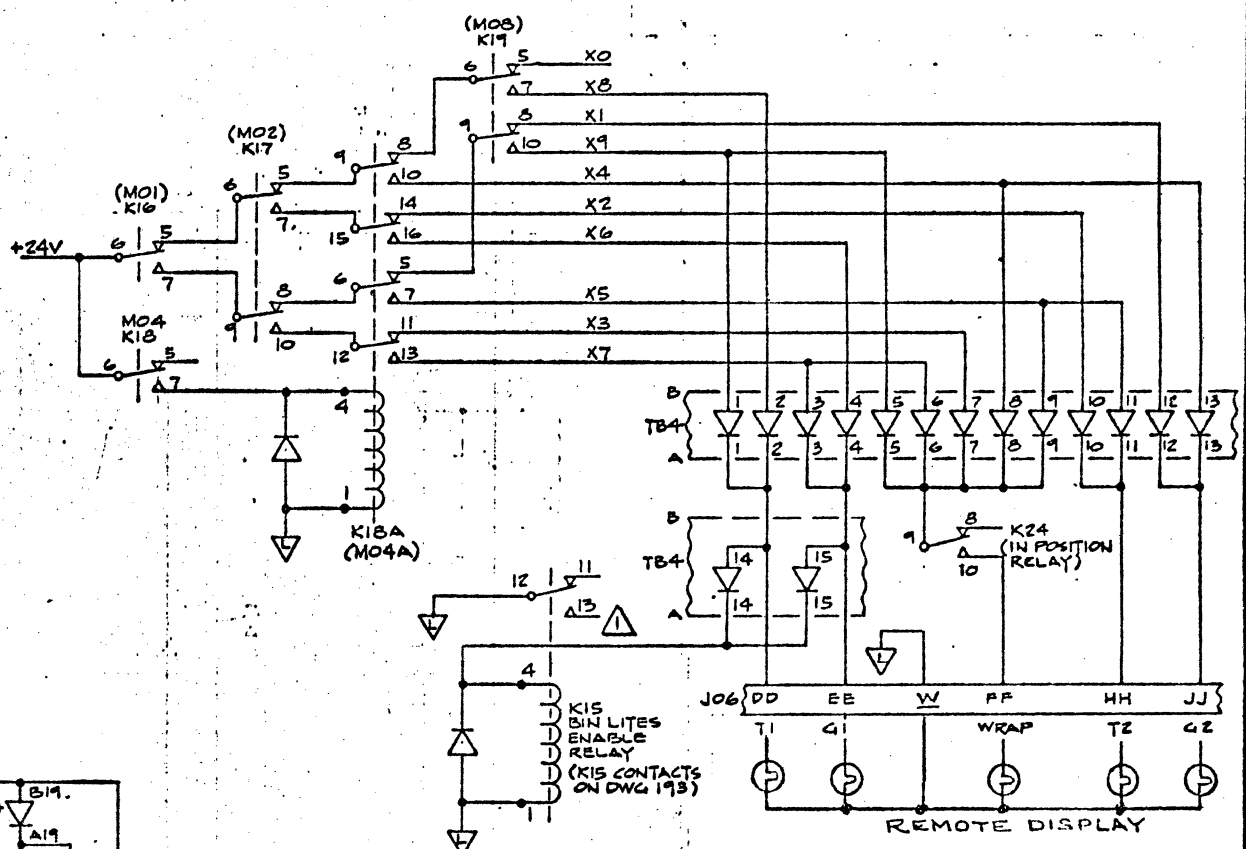
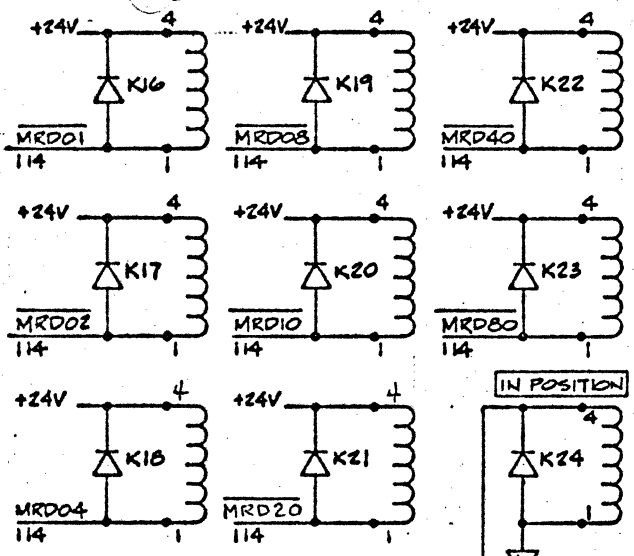


M CODE	T1	T2	G1	G2	WRAP	BIN LITES*	T2/G2
NOTHING	OFF ETC	-	-	-	-	ON	-
01	ON	-	-	-	ON	ON	-
02	ON	-	-	-	ON	-	-
04	ON	-	-	-	-	-	-
08	-	-	-	-	-	-	-
10	-	ON	-	-	ON	-	ON
20	-	ON	-	-	-	-	ON
40	-	-	ON	-	ON	-	-
80	-	-	-	ON	ON	-	ON

\* WHEN BIN LITES ARE ON, THE UNITS AND TENS DIGITS OF THE NUMERIC DISPLAY ARE BLANKED.

REF.	DESCRIPTION	QTY. PER ATTY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED Ø .001 MAX ANGLE 1:31 2.000 3:0-30" CONCENTRICITY AND OUT OF ROUND T.I.R. .005		BY: <i>McGuire</i> CHECKED: <i>McGuire</i> APPROVED: <i>McGuire</i>	DATE: 3-2-73 1-2-73 3-2-73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cauton Corporation 1802 McIlwain, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL	HTL	NOT TO SCALE PROCESSOR M RELAYS
NEXT ASSY	USED ON	FINISH	SCALE	DWG NO. 1800-0192-2

REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REV PER ECO 498	ECO	3-30-72
B	ECO 867	J.S.	4/27/73 JPF



**AUTOMATIC ELECTRIC M-CODE FORMAT CHART**

INDICATOR	H01+H02	H01	H02	H01+H02
GZ	01	11	21	31
TZ	02	12	22	32
WRAP	03	13	23	33
GZ WRAP	04	14	24	34
TZ WRAP	05	15	25	35
G1	06	16	26	36
Z1 WRAP	07	17	27	37
T1	08	18	28	38
T1 WRAP	09	19	29	39
	10	20		30

ANY M-CODE VALUE PLUS 40 WILL GIVE A BUZZER IN ADDITION TO THAT M-CODE'S FUNCTION (EXAMPLE: M52 GIVES T2 ON HEAD 1 AND A BUZZER)

TO RESTORE DIGIT BLANKING, CONNECT K15-13 TO 02D06 (BLKDDGT1) AND K5-13 TO 02D12 (BLKDDGT2) (SEE DWG 169)

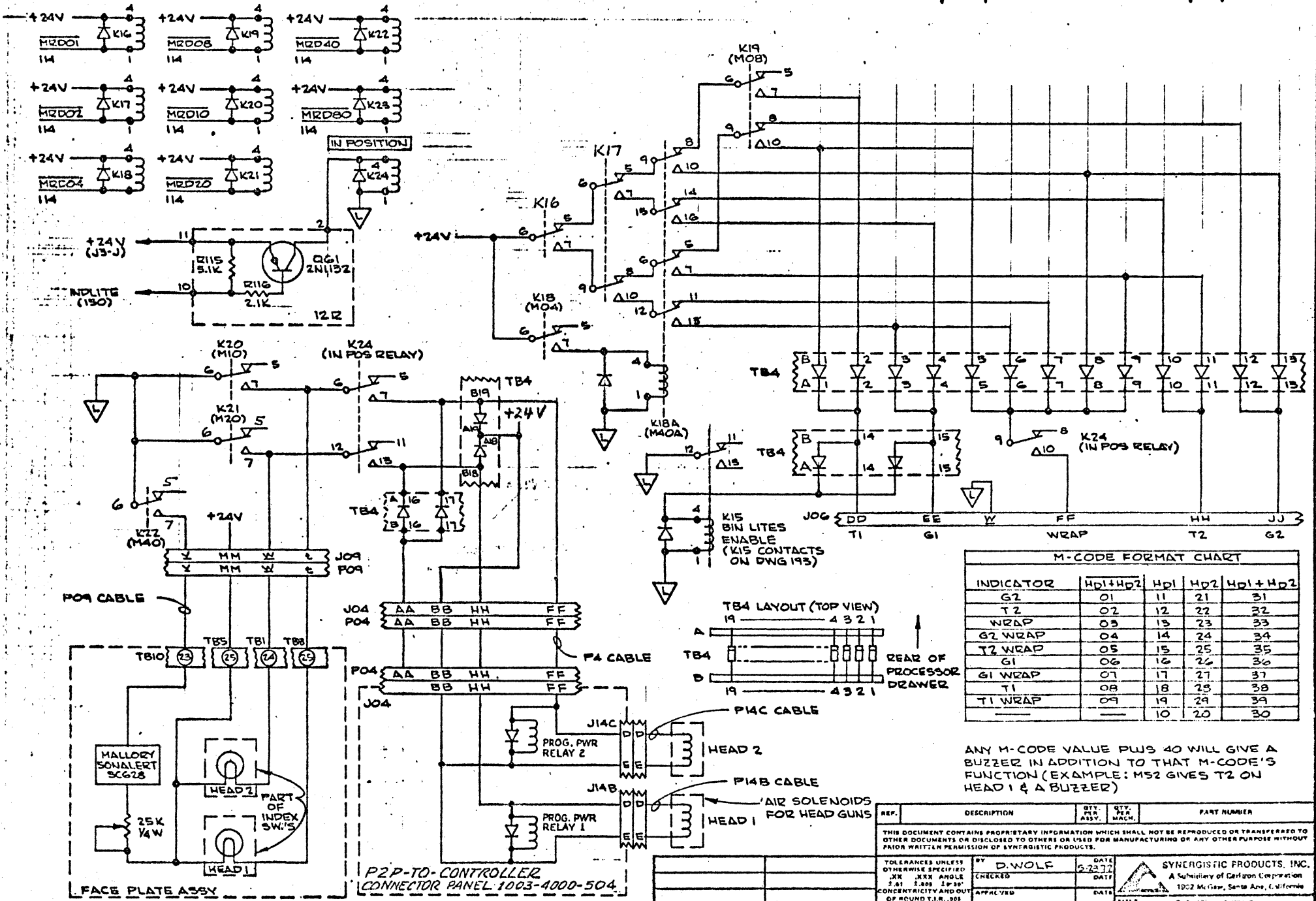
NOTES: UNLESS OTHERWISE SPECIFIED.

+24 TB4-A18

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .25 REEF ANGLE 2.00 2.00 2.00 CONCENTRICITY AND OUT OF ROUND F.T.R..002		DATE 3-25-72		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevton Corporation 1032 McGraw, Santa Ana, California
CHECKED <i>[Signature]</i>		DATE 4-20-72		
APPROVED <i>[Signature]</i>		DATE 4-20-72		
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE SCHEMATIC M FUNCTIONS WITH BUZZER AUTOMATIC ELECTRIC
FINISH		SCALE		1000-0192-3
NEXT ASSY		USED ON		



REVISION			
SYMBOL	DESCRIPTION	CHK BY	DATE & APPROVAL
A	REL PER ECO 861		9/27/73 APF



**M-CODE FORMAT CHART**

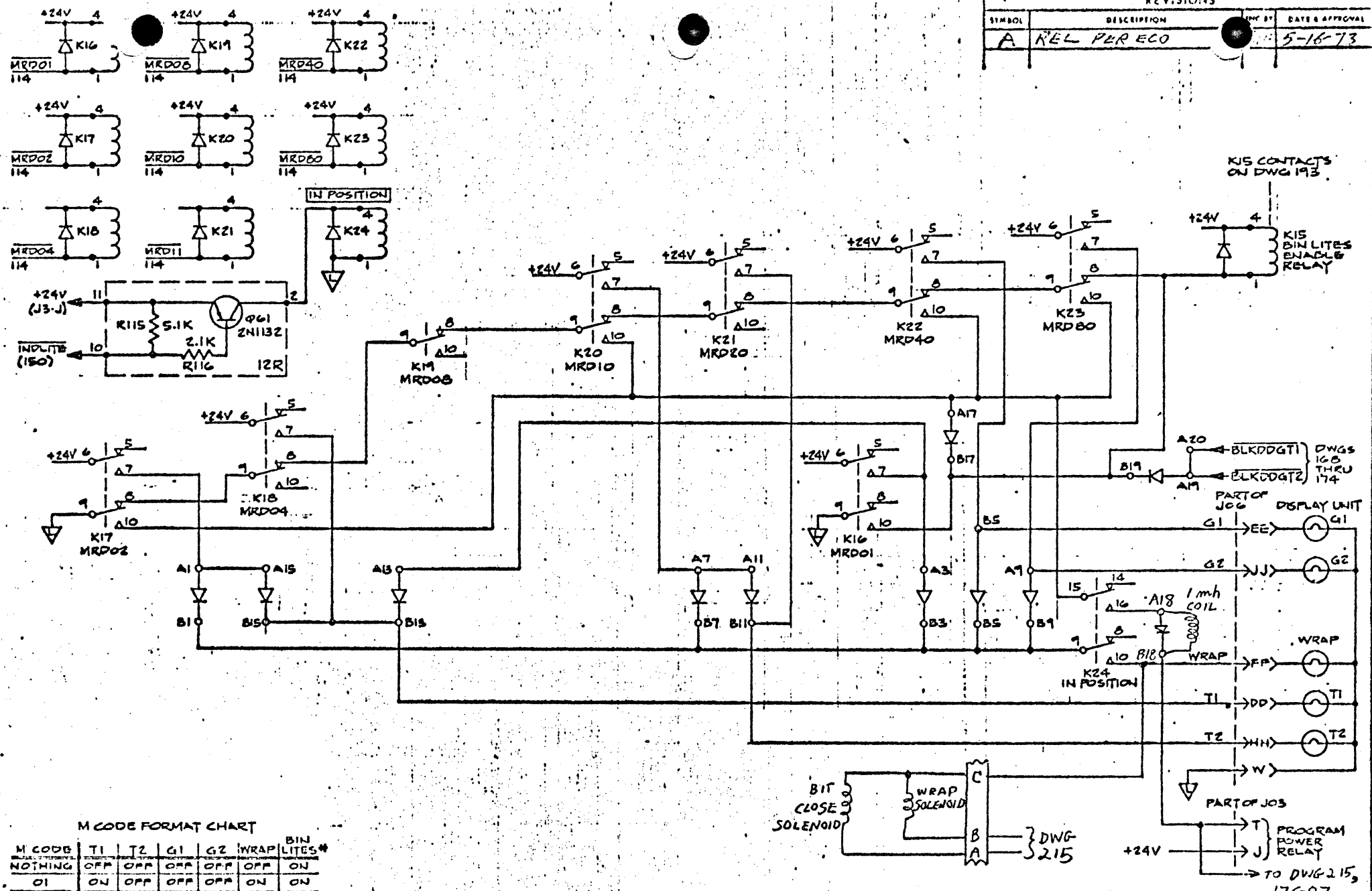
INDICATOR	Hp1+Hp2	Hp1	Hp2	Hp1+Hp2
G2	01	11	21	31
T2	02	12	22	32
WRAP	03	13	23	33
G2 WRAP	04	14	24	34
T2 WRAP	05	15	25	35
G1	06	16	26	36
G1 WRAP	07	17	27	37
T1	08	18	28	38
T1 WRAP	09	19	29	39
		10	20	30

ANY M-CODE VALUE PLUS 40 WILL GIVE A BUZZER IN ADDITION TO THAT M-CODE'S FUNCTION (EXAMPLE: M52 GIVES T2 ON HEAD 1 & A BUZZER)

P2P-TO-CONTROLLER  
CONNECTOR PANEL 1003-4000-504

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED XX XXX ANGLE 2.51 2.88 1P 3P CONCENTRICITY AND OUT OF ROUND T.R. .001		BY D.WOLF	DATE 6-7-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlson Corporation 1002 McGeer, San Jose, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE -SCHEMATIC- M FUNCTIONS WITH BUZZER
NEXT ASSY	USED ON	DRAWN DATE JOB # 1500-0172-B		

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	REL PER ECO	5-16-73	



M CODE FORMAT CHART

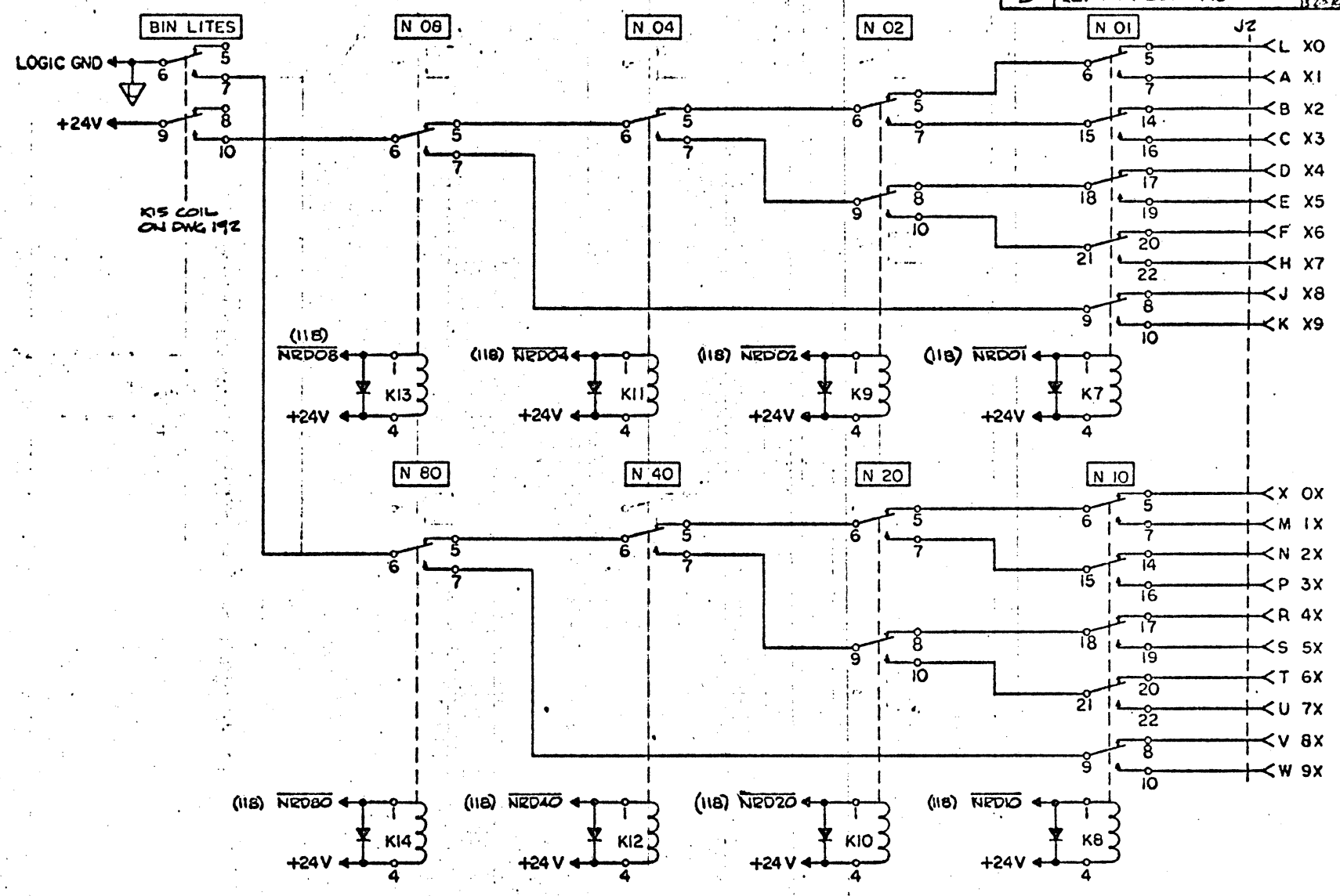
M CODE	B	T1	T2	G1	G2	WRAP	LITES*
NOHING		OFF	OFF	OFF	OFF	OFF	ON
01		ON	OFF	OFF	OFF	ON	ON
02		ON	OFF	OFF	OFF	ON	OFF
04		ON	OFF	OFF	OFF	OFF	OFF
08		OFF	OFF	OFF	OFF	OFF	OFF
10		OFF	ON	OFF	OFF	ON	OFF
20		OFF	ON	OFF	OFF	OFF	OFF
40		OFF	OFF	ON	OFF	ON	OFF
60		OFF	OFF	OFF	ON	ON	OFF

\* UNITS AND TENS DIGITS OF NUMERIC DISPLAY ARE BLANKED.

VERTICAL TABLE  
SERIAL NO. 290

REF.	DESCRIPTION	REV. NO.	DATE	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.			
	TOLERANCES UNLESS OTHERWISE SPECIFIED: XX .XX ANGLE 2.51 ±.005 3° 30' CONCENTRICITY AND OUT OF ROUND T.L./XX	BY: M. GUIRE CHECKER:	DATE: 3-13-72	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlson Corporation 1902 McLean, Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL:	DATE:	TITLE: SCHEMATIC OF RELAYS PROCESSOR (MANUAL SYSTEM)
	FINISH:			SCALE: DWG 1900-0192-6
	NEXT ASSY:	USED ON:		

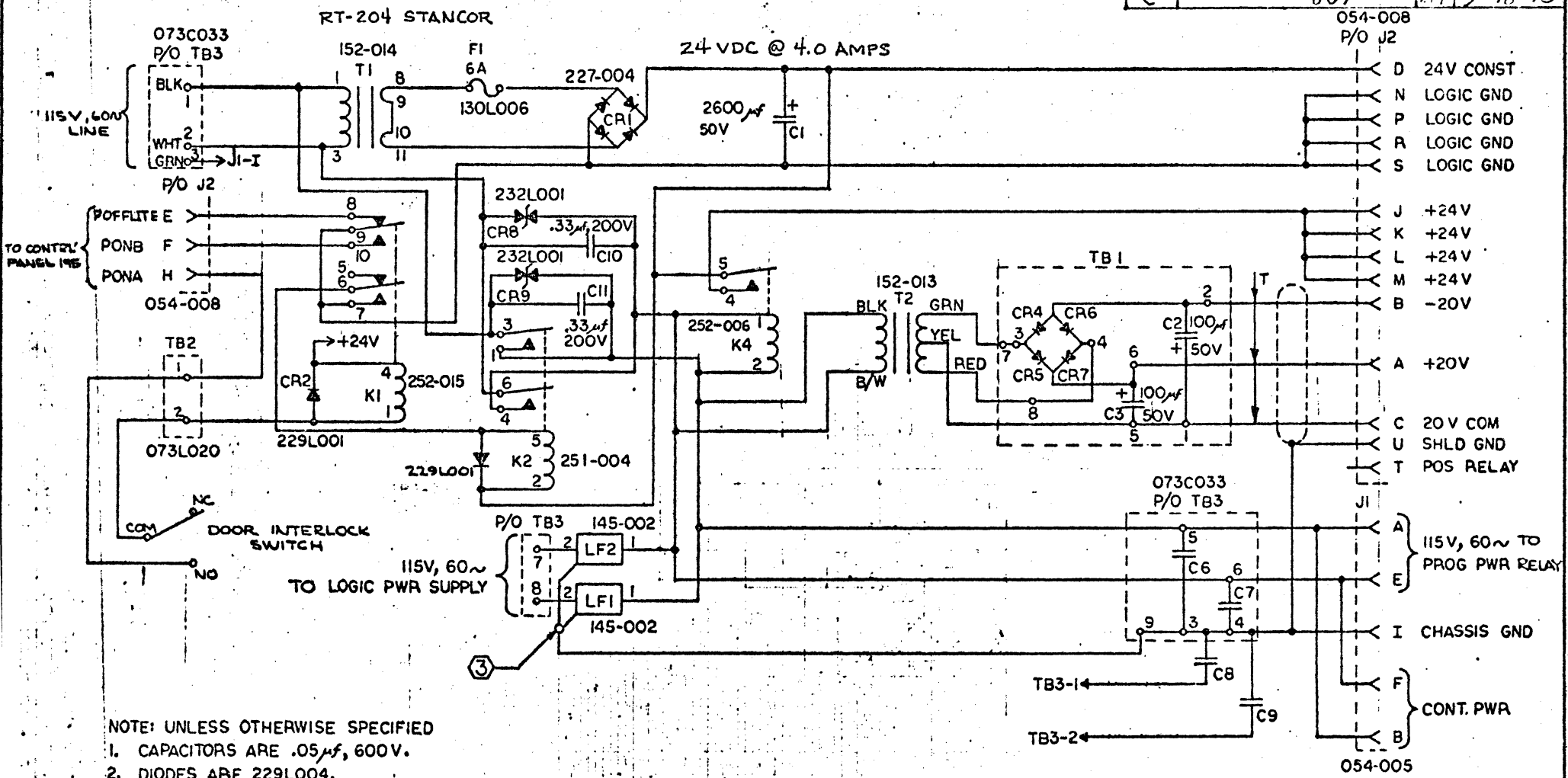
REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REV PER ECO 412	APF	1-23-72 APF
B	REV PER ECO 418	APF	1-20-72 APF



NOTE: UNLESS OTHERWISE SPECIFIED  
 1. DIODES ARE IN456.

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XX ANGLE .01 .005 10-90° CONCENTRICITY AND OUT-OF-ROUND V.I.R. .005		BY <i>L. Cohen</i>	DATE <i>1-23-72</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevite Corporation 1002 McCaw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE SCHEMATIC-PROCESSOR N RELAYS
NEXT ASSY	USED ON	MATERIAL		SCALE 1800-0193

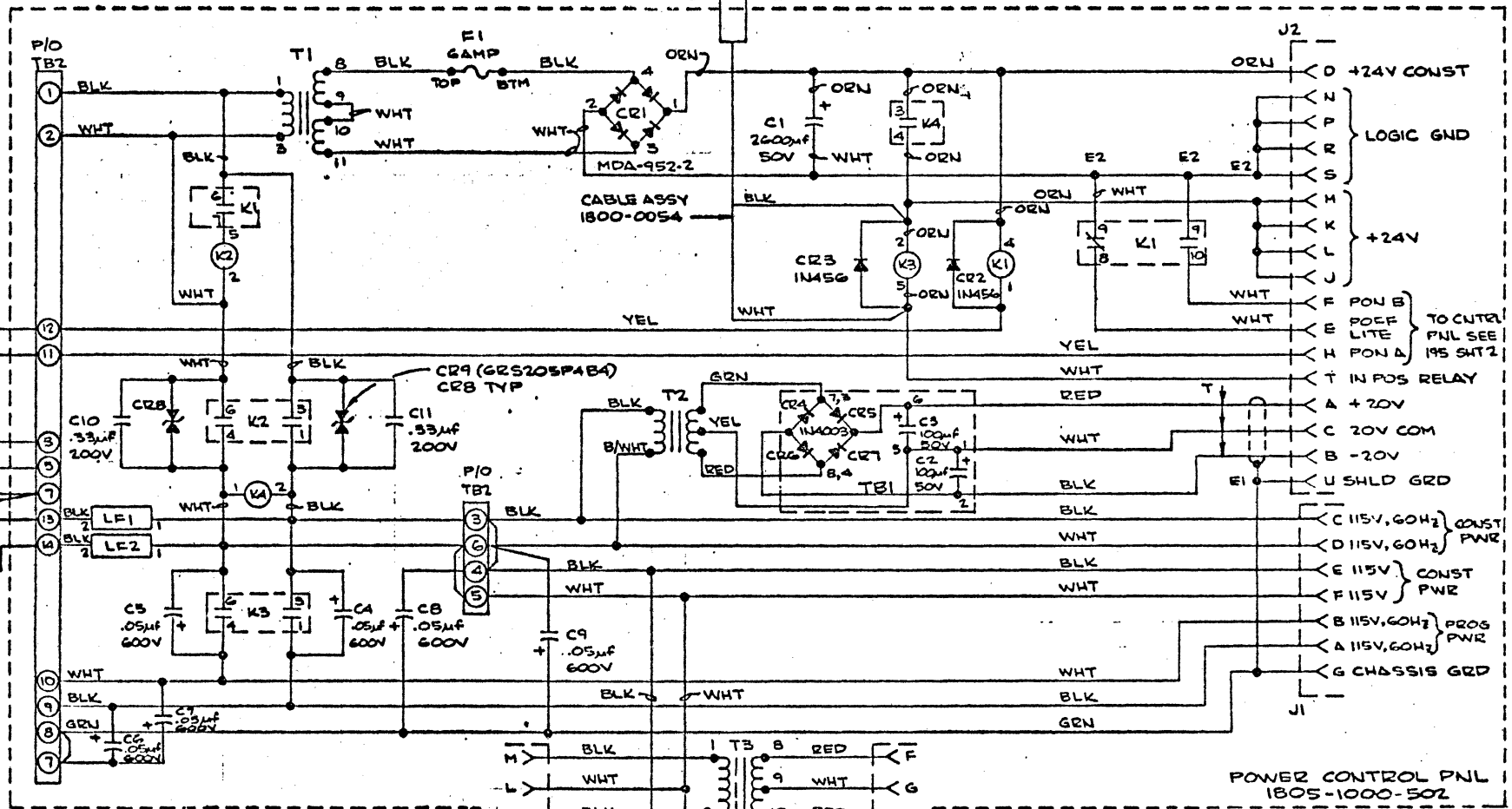
REVISIONS			
SYMBOL	DESCRIPTION	REV. #	DATE & APPROVAL
A	REV PER ECO 412	210	3-26-72 DPF
B	REV PER ECO 568	238E	6-14-72 DPF
C	" " " 867	619F	5-16-73



- NOTE: UNLESS OTHERWISE SPECIFIED
1. CAPACITORS ARE .05 $\mu$ f, 600V.
  2. DIODES ARE 229L004.
  3. TERMINATE LFI, LF2 & LEAD FROM TB3-9 AT MOUNTING SCREW.
  4. REFERENCE ASSY DRAWING 1805-1000-501.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 1.01 2.00 1.00 CONCENTRICITY AND OUT OF ROUND T.I.R. .005		BY <i>Kalu</i> CHECKED APPROVED	DATE 31 MAR 71 DATE DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 N. Grw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL		TITLE SCHEMATIC - POWER CONTROL
1805-1000-501	NEXT ASSY	USED ON	SCALE	DWG # 1800-0194 C

REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	DATE
X1	ENG REL	4/23/72

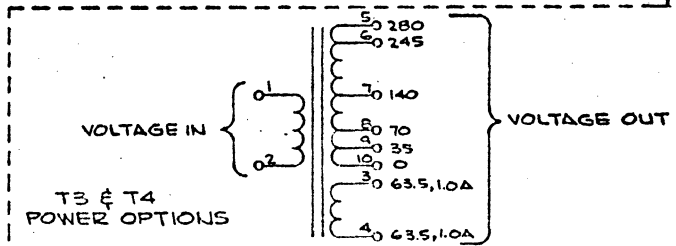
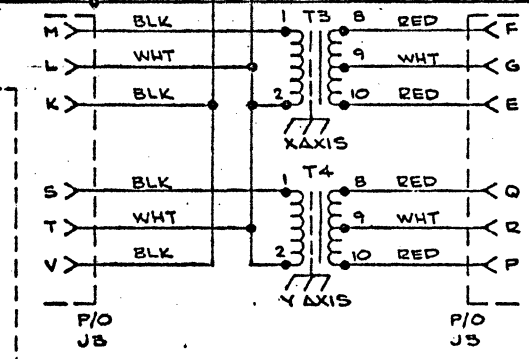
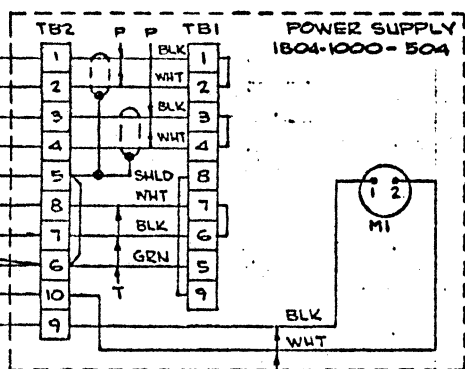


REAR DOOR INTERLOCKS

BLU  
ORN  
WHT  
WHT/BLK  
RED  
GRN

CABLE ASSY 1800-0058

GRN  
RED  
WHT/BLK  
WHT  
ORN  
BLU



REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		BY D. WOLF		DATE 4/23/72
.XX ANGLE		CHECKED		DATE
±.01 F.003 ±.010		APPROVED		DATE
CONCENTRICITY AND OUT OF ROUND .001		REWORK		
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
1804-1000-504	VERTICAL TABLE			
1805-1000-502	VERTICAL TABLE			
NEXT ASSY	USED ON			

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		BY D. WOLF		DATE 4/23/72
.XX ANGLE		CHECKED		DATE
±.01 F.003 ±.010		APPROVED		DATE
CONCENTRICITY AND OUT OF ROUND .001		REWORK		
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
1804-1000-504	VERTICAL TABLE			
1805-1000-502	VERTICAL TABLE			
NEXT ASSY	USED ON			

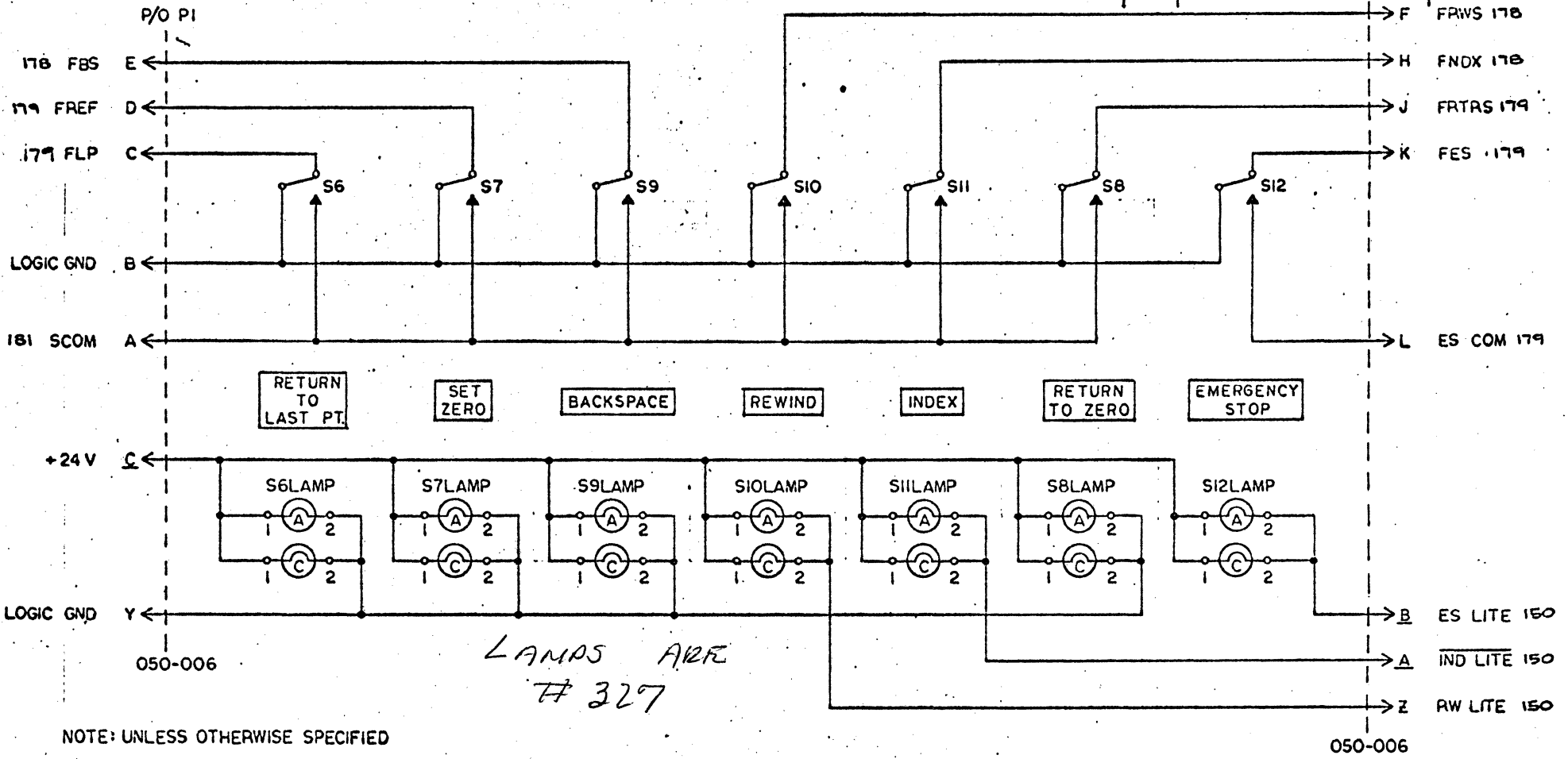
SYNERGISTIC PRODUCTS, INC.  
A Subsidiary of Cavtron Corporation  
1002 McGraw, Santa Ana, California

TITLE SCHEMATIC - POWER CONTROL (VERT. TABLE)

SCALE DWG # 1800-194-2

NOTES: UNLESS OTHERWISE SPECIFIED.

REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
B	REV PER ECO 867	4/27/73 RPF

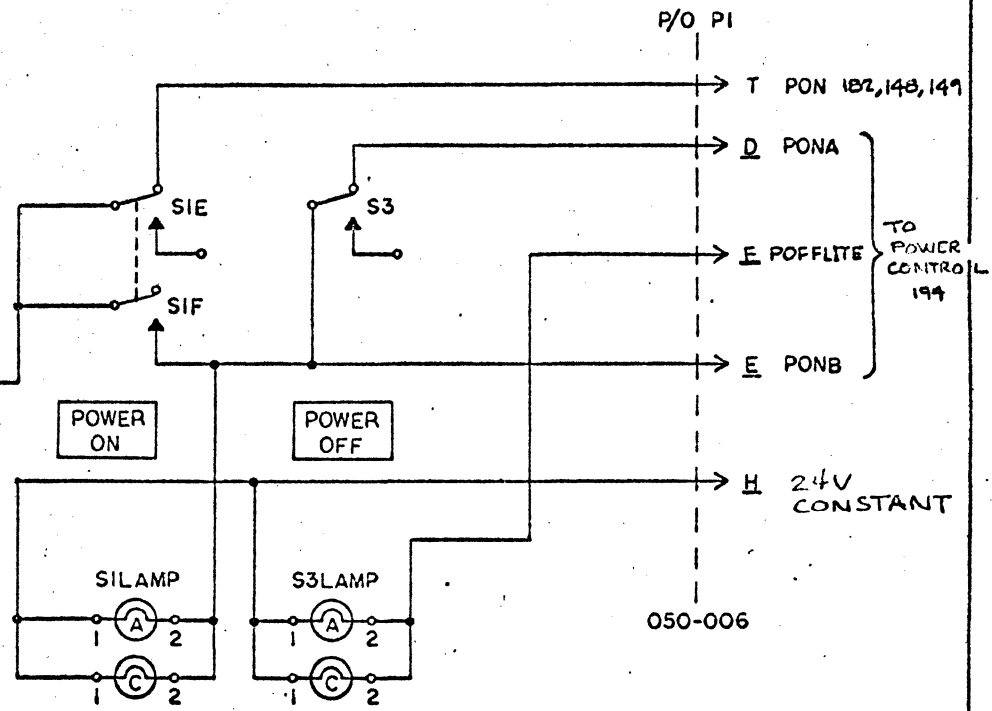
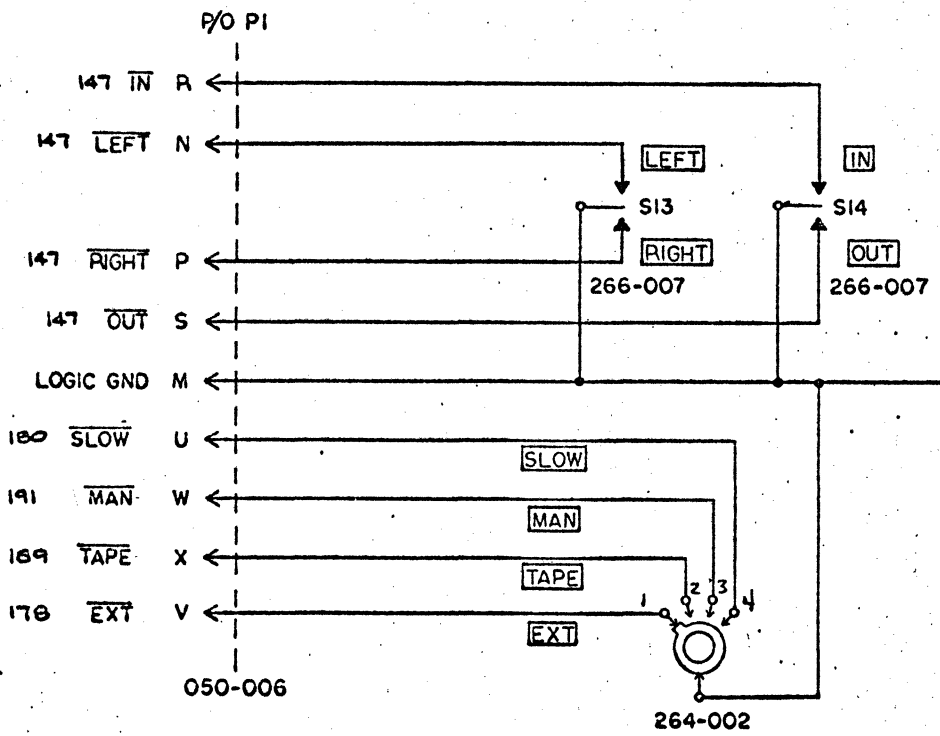


NOTE: UNLESS OTHERWISE SPECIFIED

1. ALL SWITCHES ARE 263-002.
2. ALL LAMPS ARE 143COII.
3. PI ON CONTROL PANEL MATES WITH J10 IN PROCESSOR DRAWER.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY <i>L. J. De...</i> DATE 1/2/73		
.XX .XXX ANGLE		CHECKED DATE		
.01 ±.005 1° 30'		APPROVED DATE		
CONCENTRICITY AND OUT OF ROUND T.Y.N..005		MATERIAL		
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		
NEXT ASSY		USED ON		
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Contron Corporation 1902 McGraw, Santa Ana, California				TITLE SCHEMATIC - SHT CONTROL PANEL 1 OF 3
SCALE				DWG # 1800-0195 B

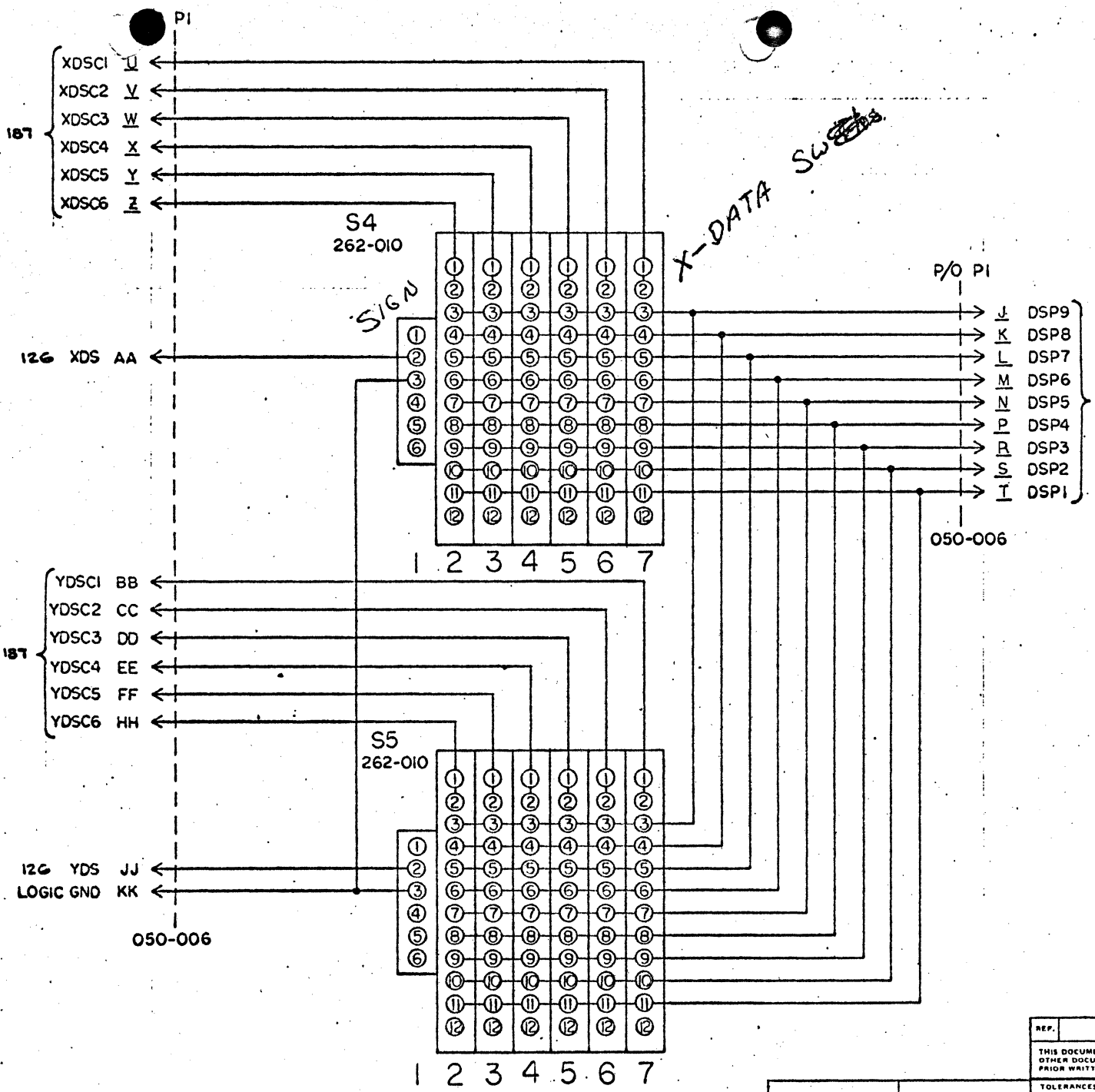
REVISIONS			
SYMBOL	DESCRIPTION	DATE	DATE & APPROVAL
A	REV PER ECO 412	1-23-72	
B	ECO 867	2/27/73	ROP



LAMPS ARE  
# 327

REP.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER MACHINE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE ±.01 7.000 10°/30° CONCENTRICITY AND OUT OF ROUND T.I.R. .005		BY <i>R. Ch...</i>	DATE <i>12/19/72</i>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1902 McGeer, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	TITLE SCHEMATIC - SHT CONTROL PANEL 2 OF 3
NEXT ASSY		USED ON		SCALE 050-0195

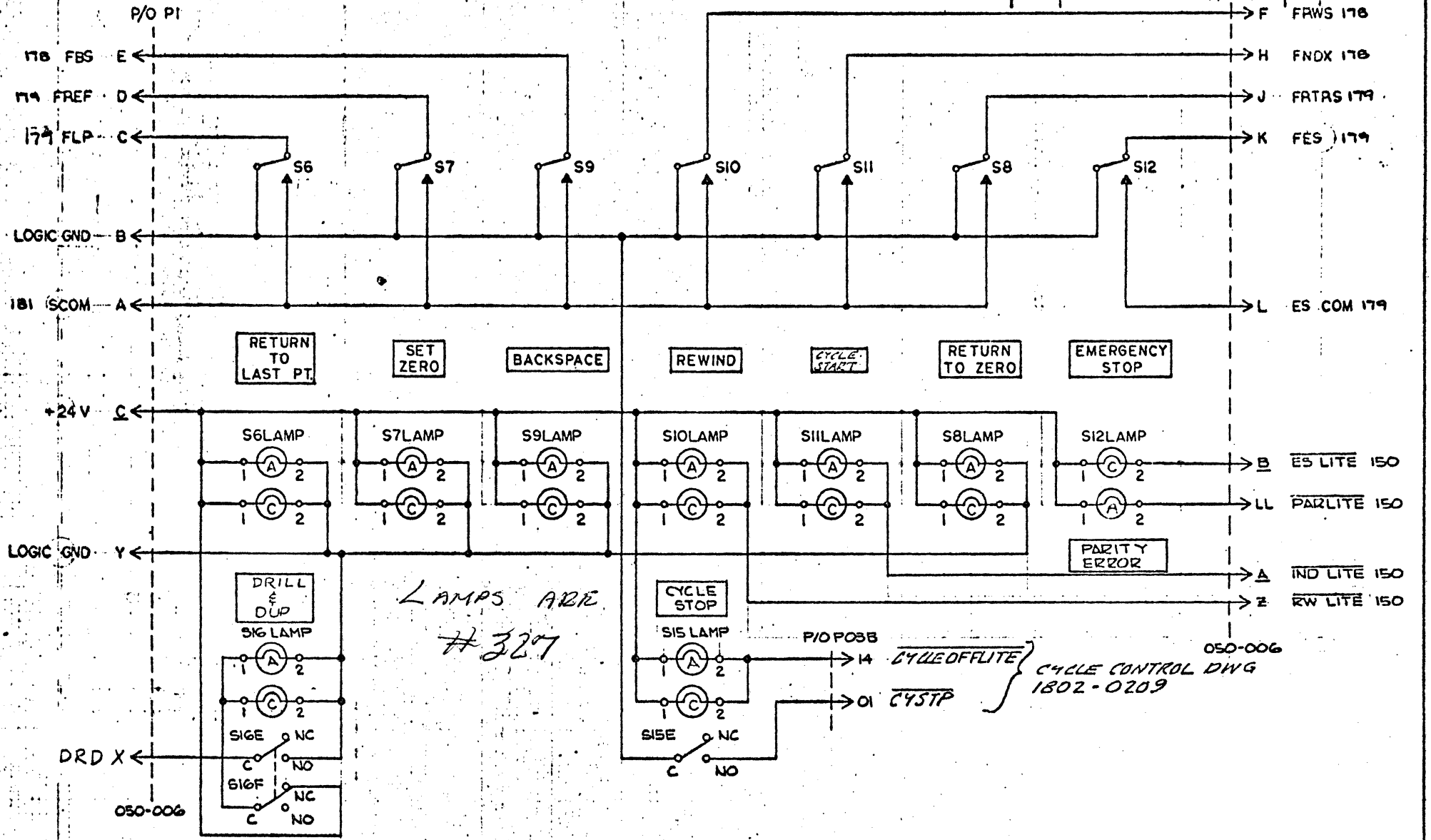
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	2-28-72 A.P.F.
B	ECO 867	4/27/73 O.P.F.



REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Caribon Corporation 1902 M. Cow, Santa Ana, California
.XX .XX ANGLE		Checked	DATE	
2.01 2.00 10-30'		APPROVED	DATE	TITLE
CONCENTRICITY AND OUT OF ROUND T.R. .005		MATERIAL		SCHEMATIC - SHT
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		CONTROL PANEL 3 OF 3
NEXT ASSY		USED ON		SCALE
				QTY. 1800-0195

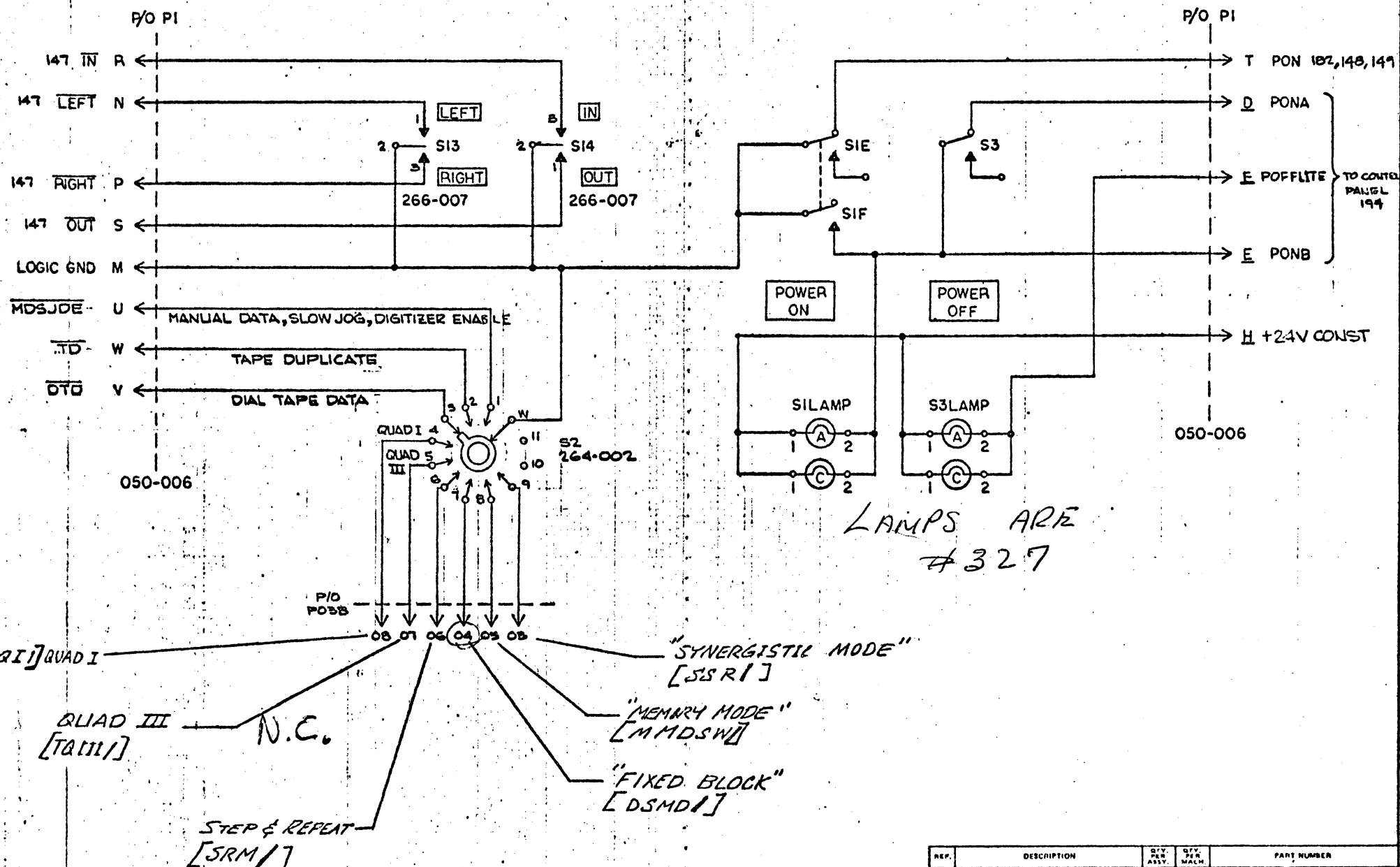


REVISIONS		DATE & APPROVAL
SYMBOL	DESCRIPTION	
A	REL PER ECO 867	APR 4-21-73
	P/O P1	



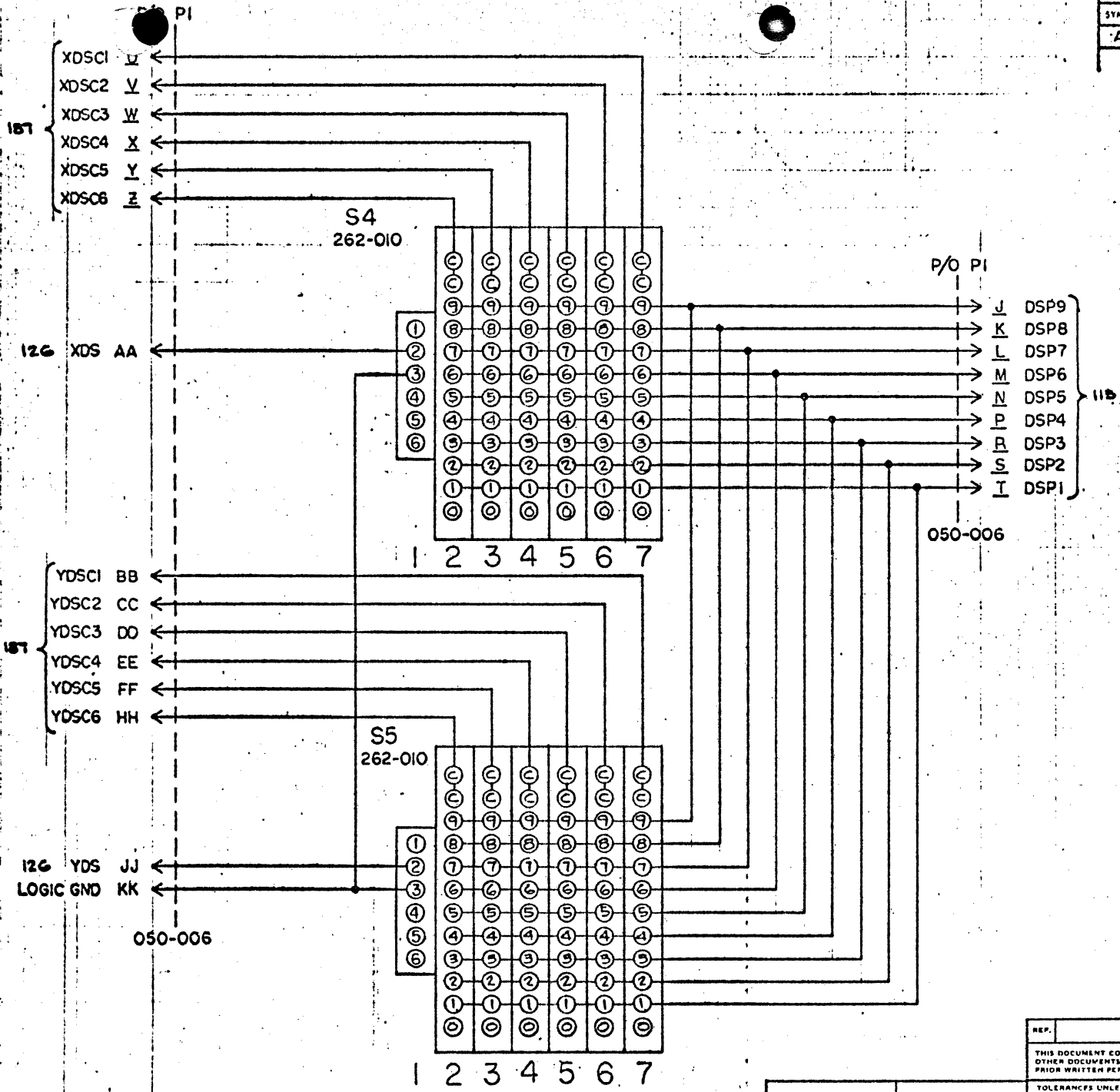
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER	
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.					
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carboron Corporation 1902 MacGregor, Santa Ana, California	
	.XX .XXX ANGLE	CHECKED	DATE		
	±.01 ±.008 ±.020 CONCENTRICITY AND OUT OF ROUND T.I.A..008	APPROVED	DATE		
	REMOVE BURRS AND BREAM ALL SHARP EDGES	MATERIAL			
1801-1000-504	DIGITIZER			TITLE	SHT 1 OF 3
NEXT ASSY	USED ON			SCALE	050-006 1800-0195-1A

REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REL PER ECO 867	SW	DEF 4/27/73



REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1932 McGray, Santa Ana, California
.001 .002 .005 .010 .020 .030 .040 .050 .060 .070 .080 .090 .100 .150 .200 .250 .300 .400 .500 .600 .700 .800 .900 1.000 1.500 2.000 3.000 4.000 5.000 6.000 8.000 10.000		CHECKED	DATE	
CONCENTRICITY AND DOWT OF ROUND T.I.R. .001		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		TITLE
FINISH				SCHMATIC -- SHT
1801-1000-504		DIGITIZER		CONTROL PANEL. 2 OF 3
NEXT ASSY		USED ON		SCALE
				DWG # 1800-0195-1 A

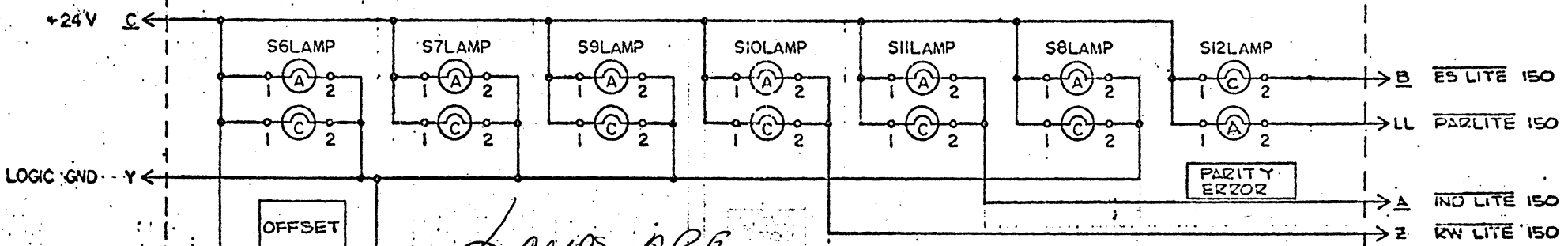
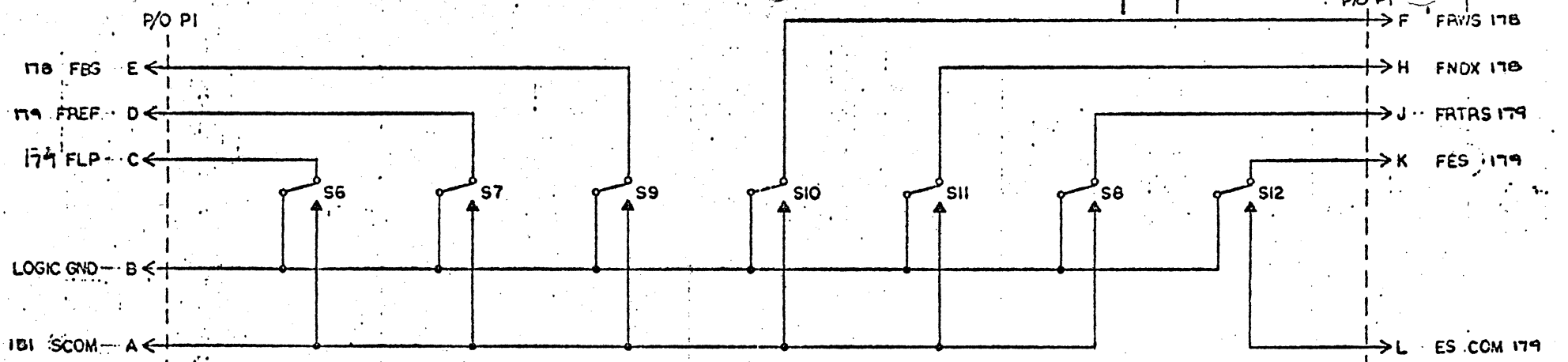
REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REL FER ECO 867	APF 4/27/73



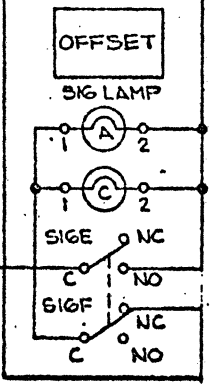
REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McGraw, Santa Ana, California
.XX .XX ANGLE		CHECKED	DATE	
CONCENTRICITY AND OUT OF ROUND T.R..001		APPROVED	DATE	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL	TITLE SCHEMATIC - SHT CONTROL PANEL 3 OF 3	
FINISH		SCALE		UWG # 1800-0195-1 A

1801-1000-804	DIGITIZER
NEXT ASSY	USED ON

SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REL PER ECO 267	APR 4-27-73



*LAMPS ARE # 327*



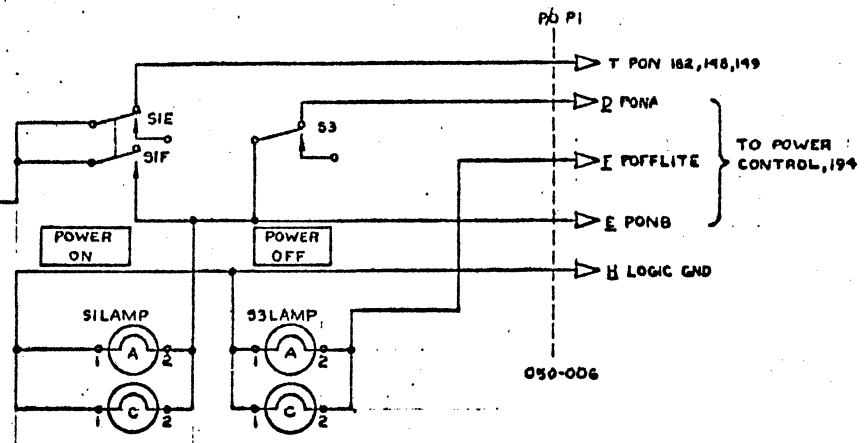
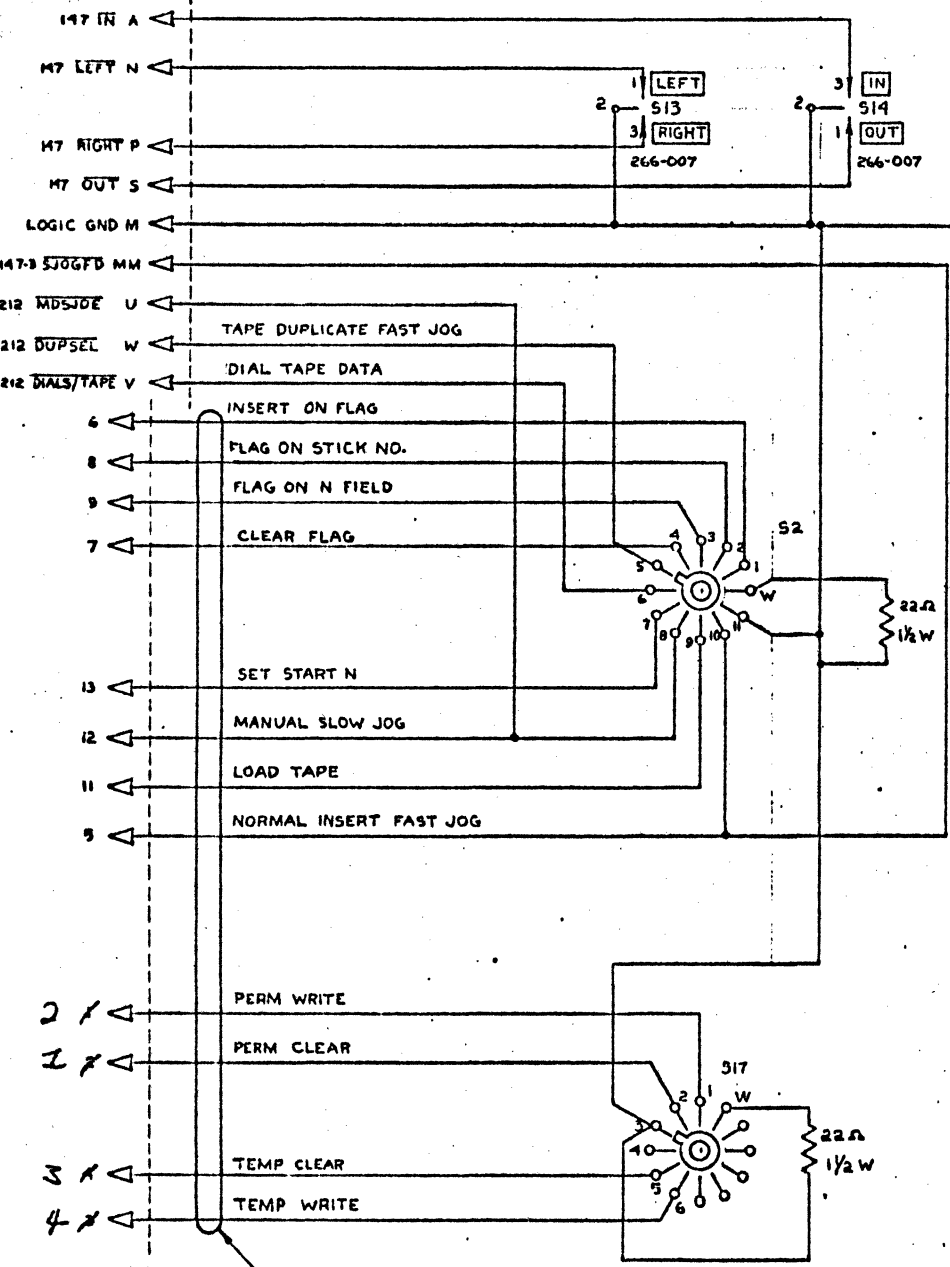
**MARK III**

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED H8 H9X ANGLE 2.00 2.00S 12.00 CONCENTRICITY AND OUT OF ROUND P.R. .005	BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cartron Corporation 1002 McSwain, Santa Ana, California	
REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	TITLE	SHT
FINISH	APPROVED	DATE	SCHEMATIC -	1 OF 3
1801-1000-504	MATERIAL	DATE	CONTROL PANEL	
NEXT ASSY	USED ON	DATE	SCALE	1800-01952 A

050-006

050-006

REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REL PER ECO 865	DS	8-11-73 DPF
B	P14K 1 → 4		1/18 PMS



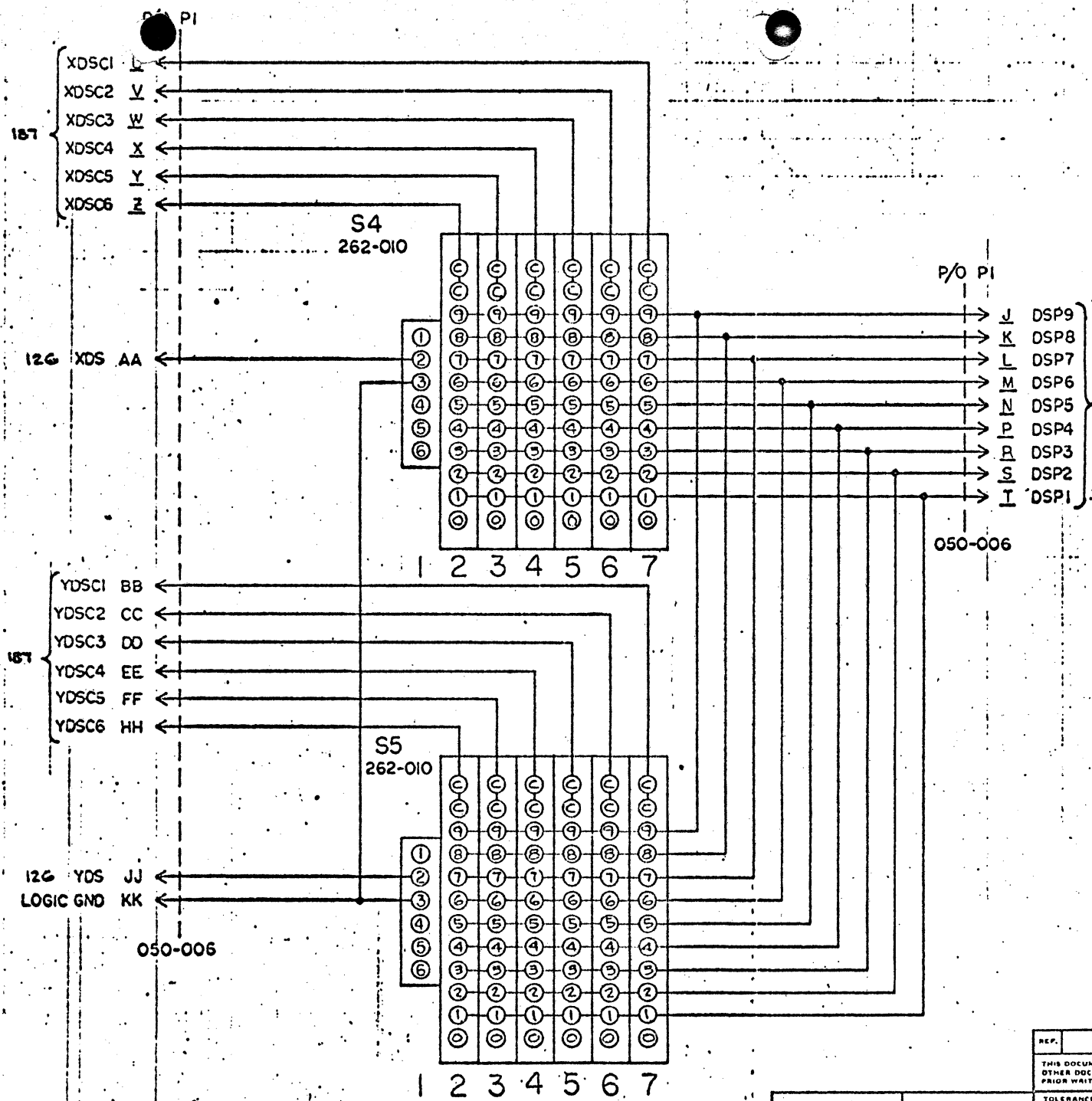
NOTE: S2 & S17 ALSO SHOWN ON 1801-0410

MARK VI SN 006 SUBS

NOTES: UNLESS OTHERWISE SPECIFIED.

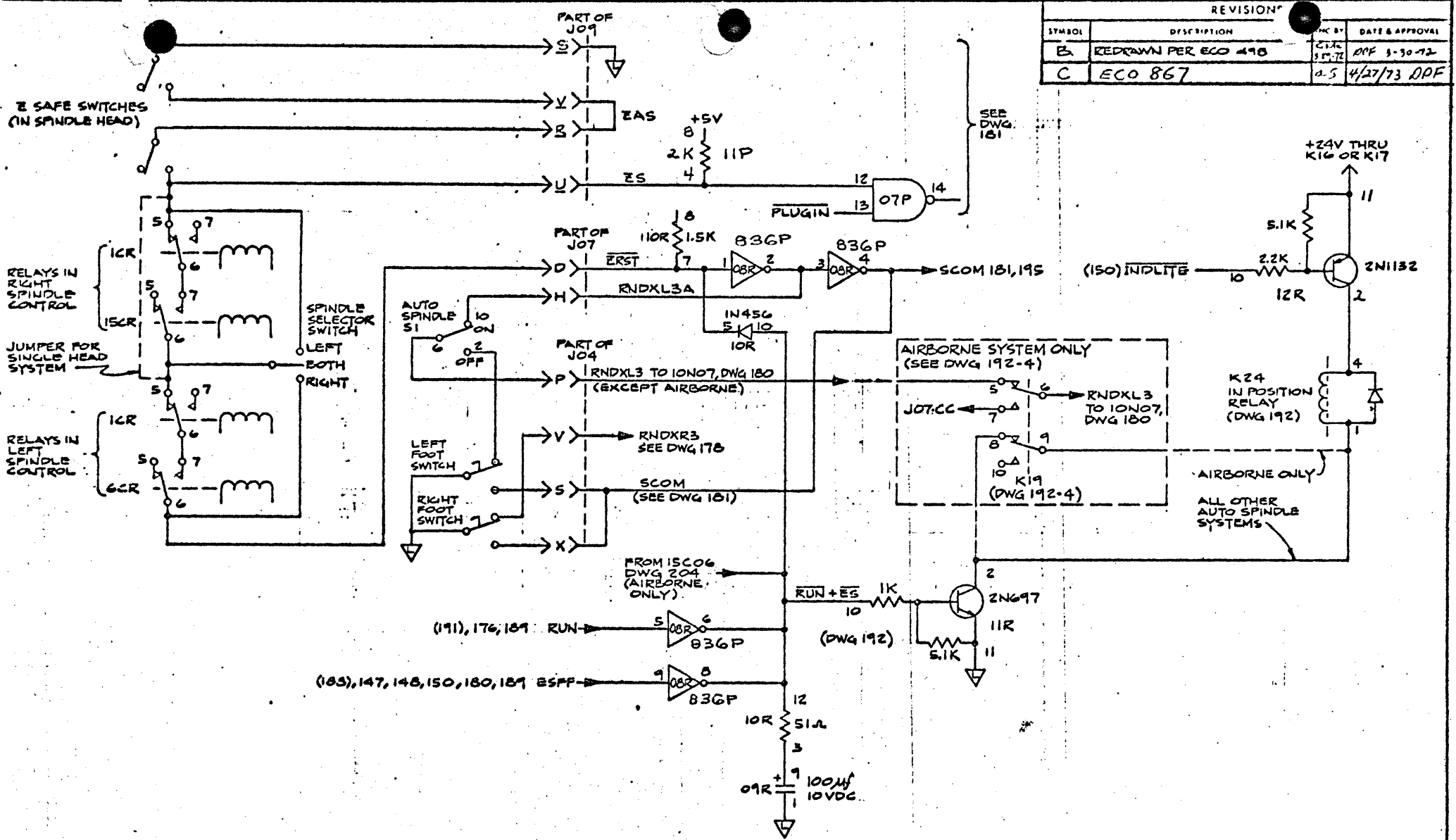
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED XX - .XXX ANGLE	BY GENE SCHULTZ	DATE 8/14/73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cartron Corporation 1802 McOmex, Santa Ana, California
	CONCENTRICITY AND OUT OF ROUND .11 R. .025	CHECKED	DATE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED	DATE	
1801-1000-506	MARK IX	FINISH	MATERIAL	TITLE SCHEMATIC CONTROL PANEL
NEXT ASSY	USED ON			SCALE OWN # 1800-0195-3


REVISIONS			
SYMBOL	DESCRIPTION	BY	DATE & APPROVAL
A	REL PER ECO 867	RTE	DPF



118

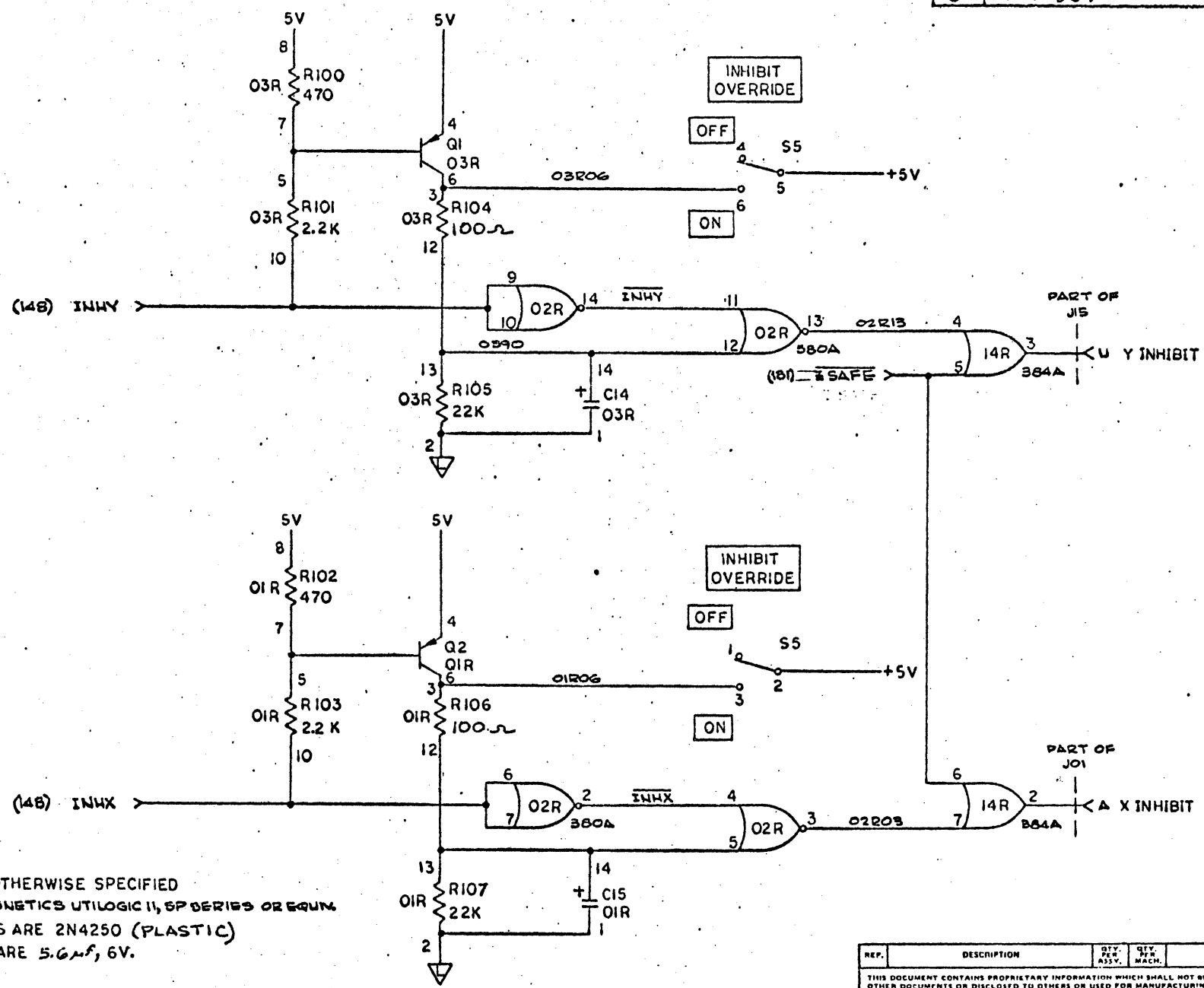
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNEGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY		DATE
.001 MAX ANGLE		CHECKED		DATE
CONCENTRICITY AND OUT OF ROUND .001		APPROVED		DATE
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL		
FINISH				
1801-1000-504		DIGITIZER		
NEXT ASSY		USED ON		
SYNEGISTIC PRODUCTS, INC. A Subsidiary of Carlton Corporation 1807 McGee, Santa Ana, California			TITLE	
SCHEMATIC - SHT			CONTROL PANEL 3 OF 3	
SCALE			DWG # 1800-0195-2	



REVISION			
SYMBOL	DESCRIPTION	CHK BY	DATE & APPROVAL
B	REDRAWN PER ECO 498	3/5/72	DPF 3-30-72
C	ECO 867	a.s	4/27/73 DPF

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXK .XXK ANGLE .25 .25K .25K CONCENTRICITY AND OUT OF ROUND TIR .01		BY <b>McGUIRE</b> CHECKED APPROVED	DATE 3-21-72 DATE 1-2-73 DATE	<b>SYNERGISTIC PRODUCTS, INC.</b> A Subsidiary of Cartron Corporation 1902 McGraw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		MATERIAL		TITLE <b>AUTO RESTART (AUTO SPINDLE ONLY)</b>
NEXT ASSY	USED ON	SCALE 0-78 3		1800-0198 C

SYMBOL	DESCRIPTION	DATE & APPROVAL
A	REV PER ECO 412	12/23-72 P.P.F.
B	ECO 867	12/27/73 P.P.F.

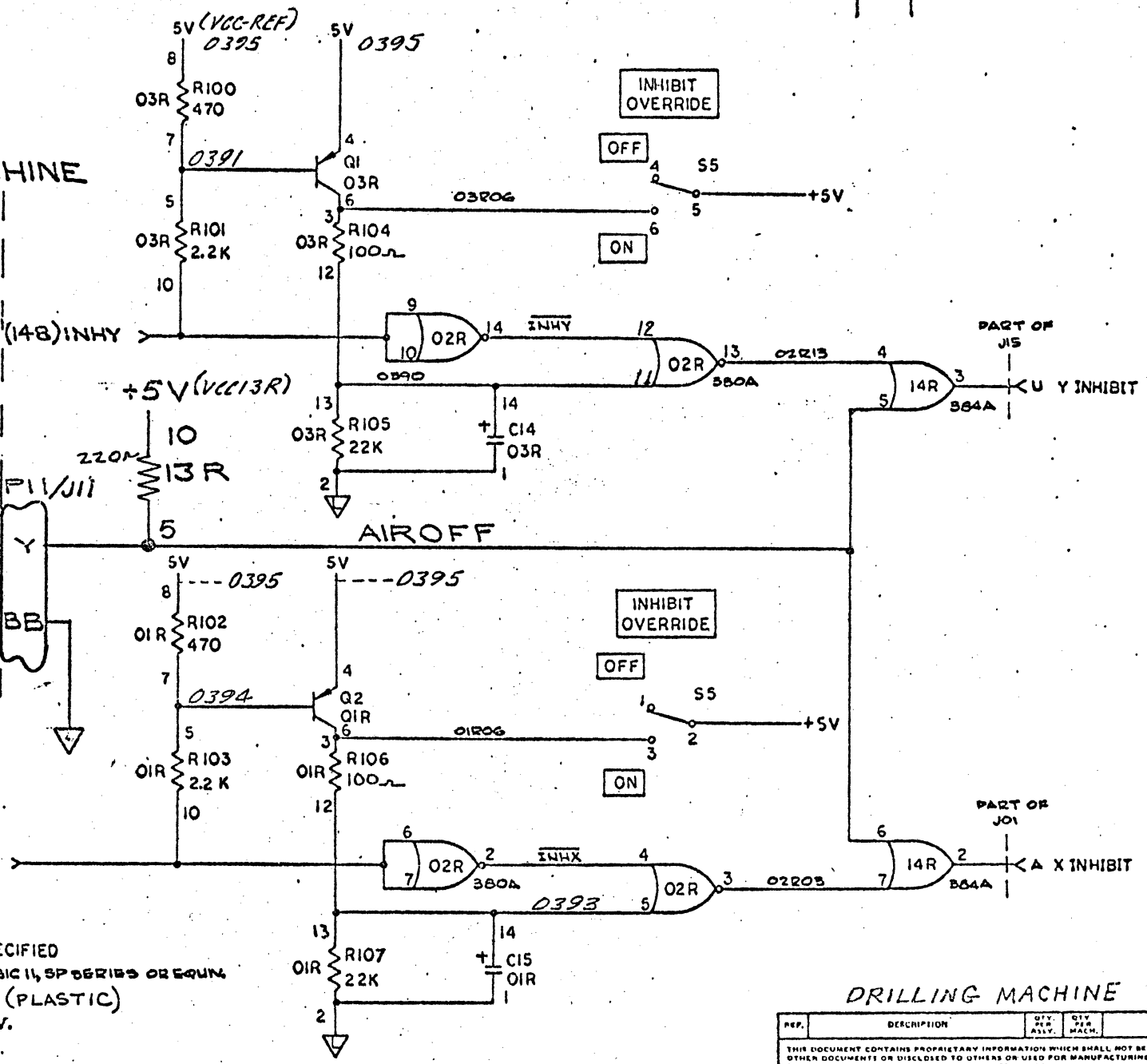
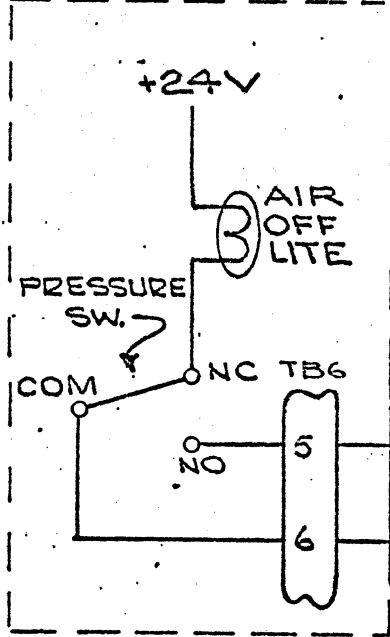


- NOTE: UNLESS OTHERWISE SPECIFIED
1. I.C.'S ARE SIGNETICS UTILOGIC II, SP SERIES OR EQUIV.
  2. TRANSISTORS ARE 2N4250 (PLASTIC)
  3. CAPACITORS ARE 5.6Mf, 6V.

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XXK ANGLE 2.51 2.505 4 #36 CONCENTRICITY AND OUT OF ROUND T.I.R..085	BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavicon Corporation 1902 McLean, Santa Ana, California
	REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	
	FINISH	APPROVED	DATE	
		MATERIAL		TITLE SCHEMATIC- MOTOR INHIBIT DELAY
	NEXT ASSY	USED ON		SCALE Dwg # 1800-0199



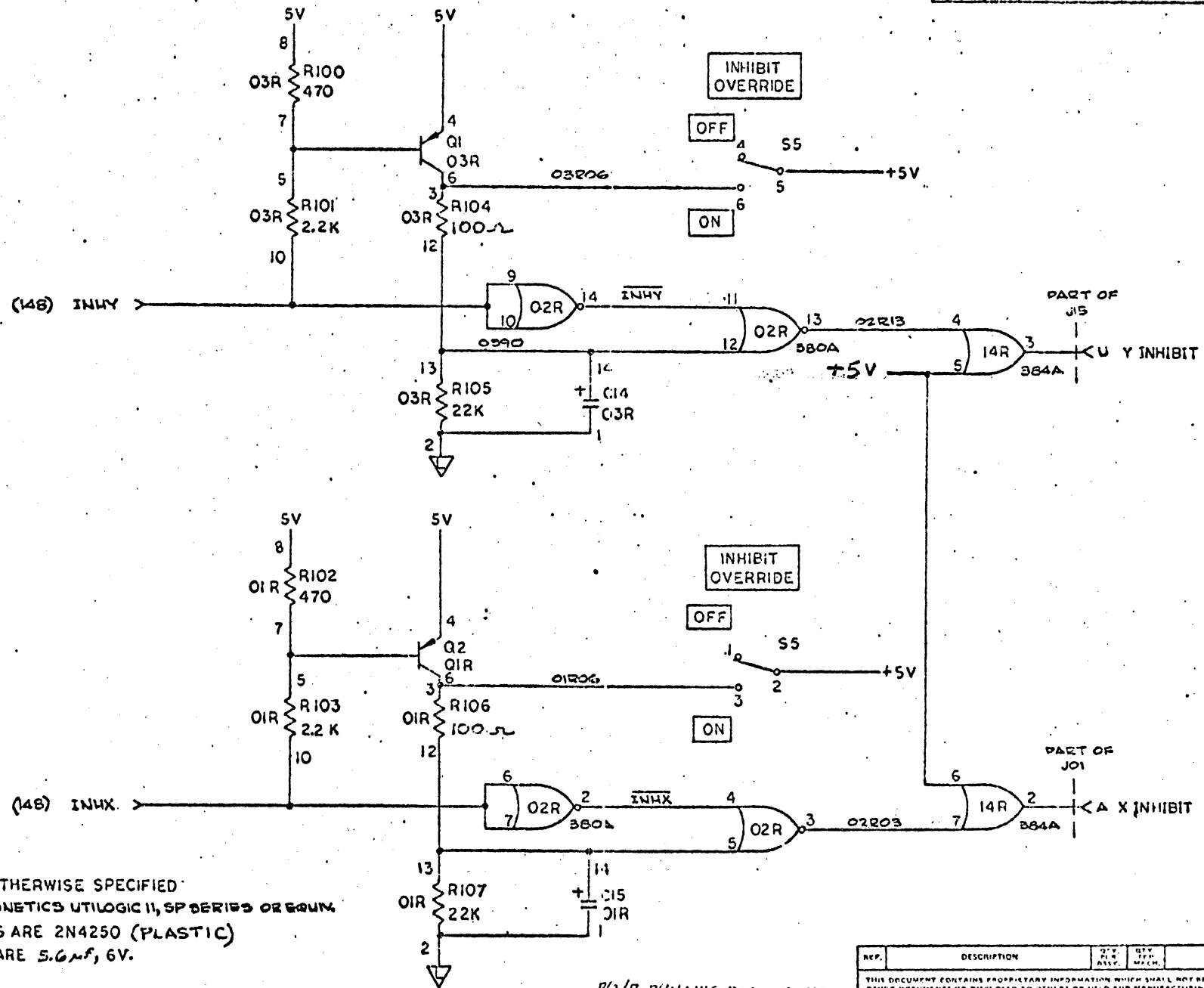
V DRILLING MACHINE



- NOTE: UNLESS OTHERWISE SPECIFIED
1. I.C.'S ARE SIGNETICS UTILOGIC 11, SP SERIES OR EQUIV.
  2. TRANSISTORS ARE 2N4250 (PLASTIC)
  3. CAPACITORS ARE 5.6μf, 6V.

DRILLING MACHINE

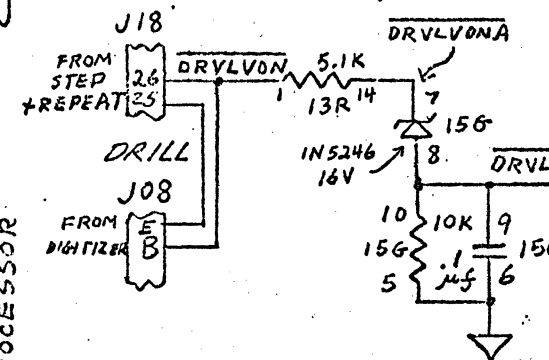
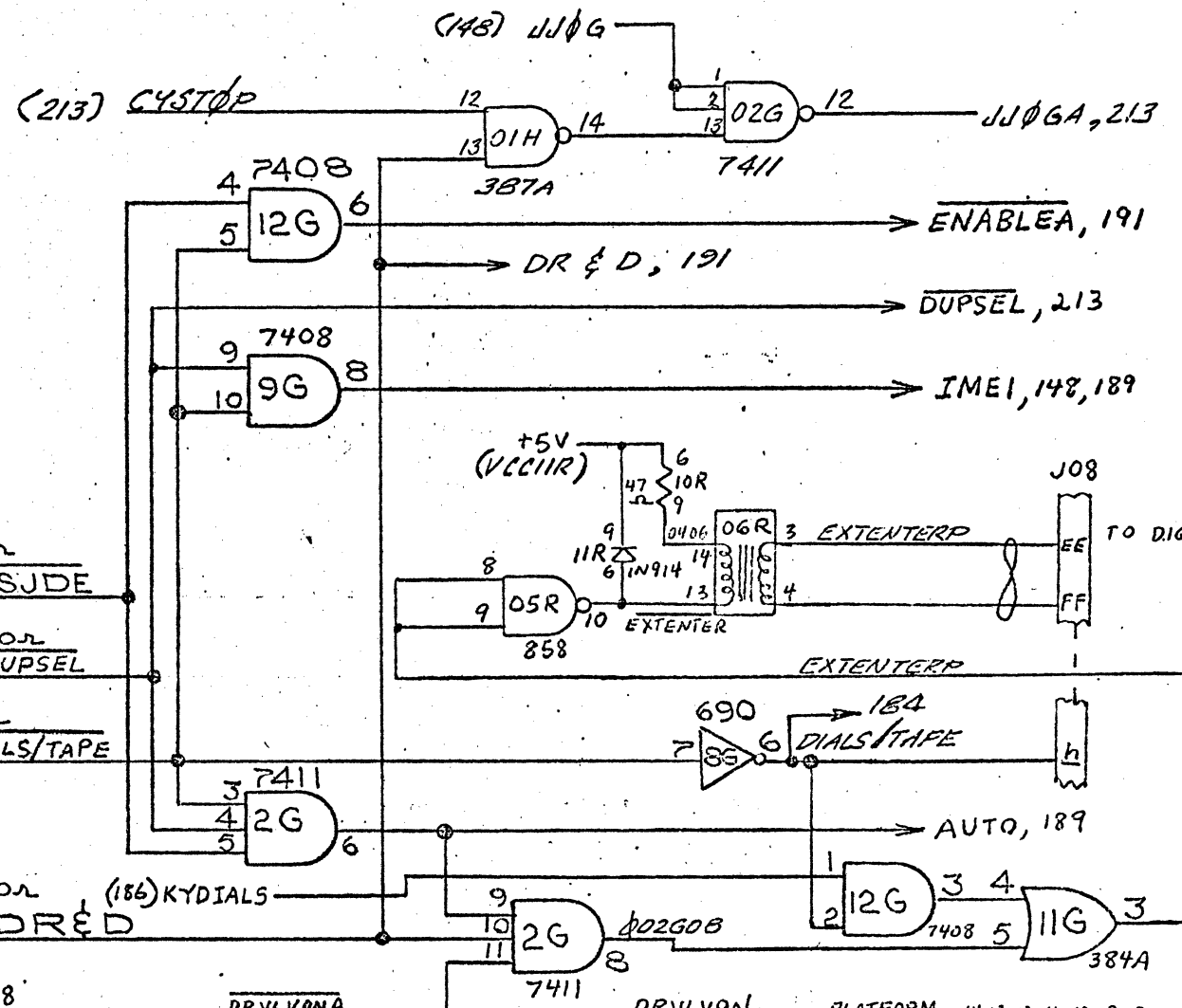
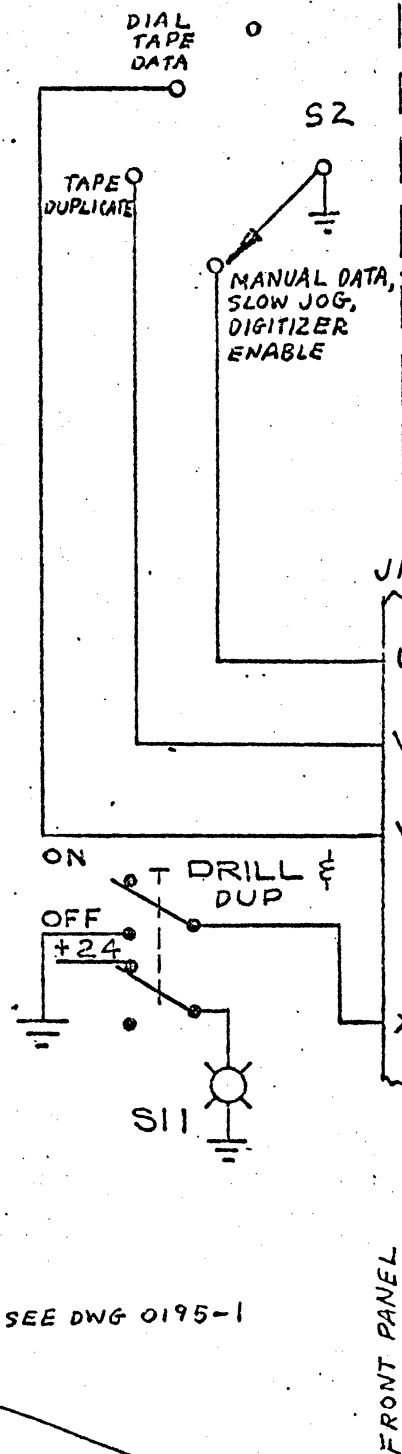
REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE .001 .005 .10-30" CONCENTRICITY AND OUT OF ROUND .001-.004		BY CHECKED APPROVED	DATE DATE DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corvcon Corporation 1902 McGraw, Santa Ana, California
REMOVE BURRS AND PREPAR ALL SHARP EDGES FINISH		MATERIAL		TITLE SCHEMATIC - MOTOR INHIBIT DELAY SCALE UNITS
NEXT ASSY	USED ON	1200-0192-2 A		



- NOTE: UNLESS OTHERWISE SPECIFIED:
1. I.C.'S ARE SIGNETICS UTILOGIC 11, 5P SERIES OR EQUIV.
  2. TRANSISTORS ARE 2N4250 (PLASTIC)
  3. CAPACITORS ARE 5.6 $\mu$ F, 6V.

P12/P DYNAMIC BRAKING MOD

REP.	DESCRIPTION	QTY	BY	DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.					
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY	DATE	SYNERGISTIC PRODUCTS, INC.	
FR. 3PK. 470		CHECKED	DATE	A Subsidiary of Control Corporation	
CONCENTRICITY AND OUT OF ROUND 0.0015		APPROVED	DATE	1902 McGraw, Santa Ana, CA, U.S.A.	
REMOVE BURRS AND BREAK ALL SHARP EDGES		MATERIAL	TITLE		
FINISH		SCALE			1300-0197-3 A
NEXT ASSY	USED ON				

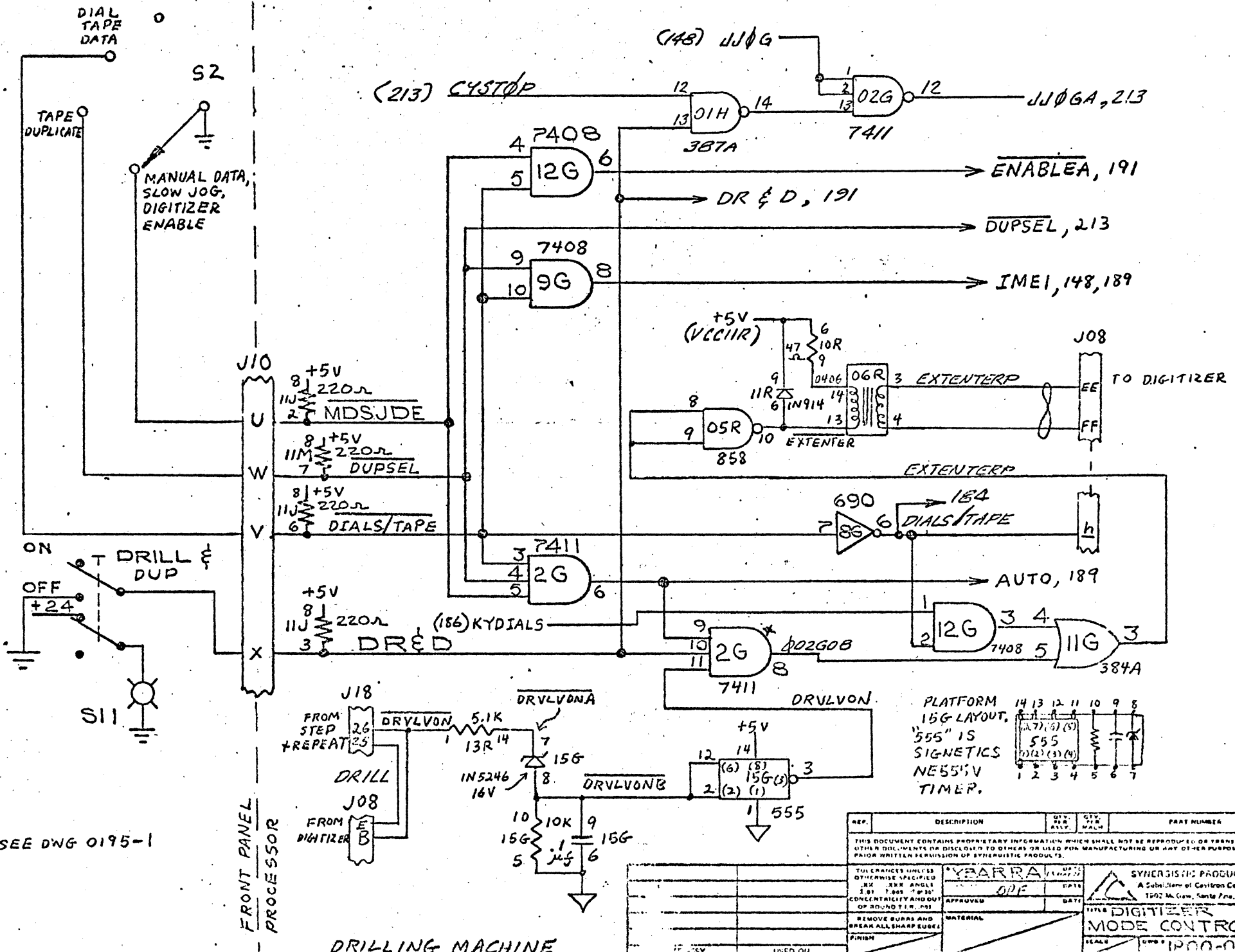


REF.	DESCRIPTION	QTY	PART #	SYN	DATE	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE		SYNERGISTIC PRODUCTS, INC.		
.1% .1% ANGLE		DATE		A Subsidiary of Control Corporation		
.1% .1% .1% .1%		DATE		1802 Mission, Santa Ana, California		
CONCENTRICITY AND OUT OF ROUND T.R. .05		DATE		DIGITIZER MODE CONTROL		
REMOVE BURRS AND SPEAK ALL SHARP EDGES		DATE		1800-0212		
FINISH		DATE				

SEE DWG 0195-1

FRONT PANEL PROCESSOR

DRILLING MACHINE

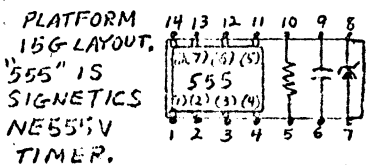


SEE DWG 0195-1

FRONT PANEL  
PROCESSOR

DRILLING MACHINE

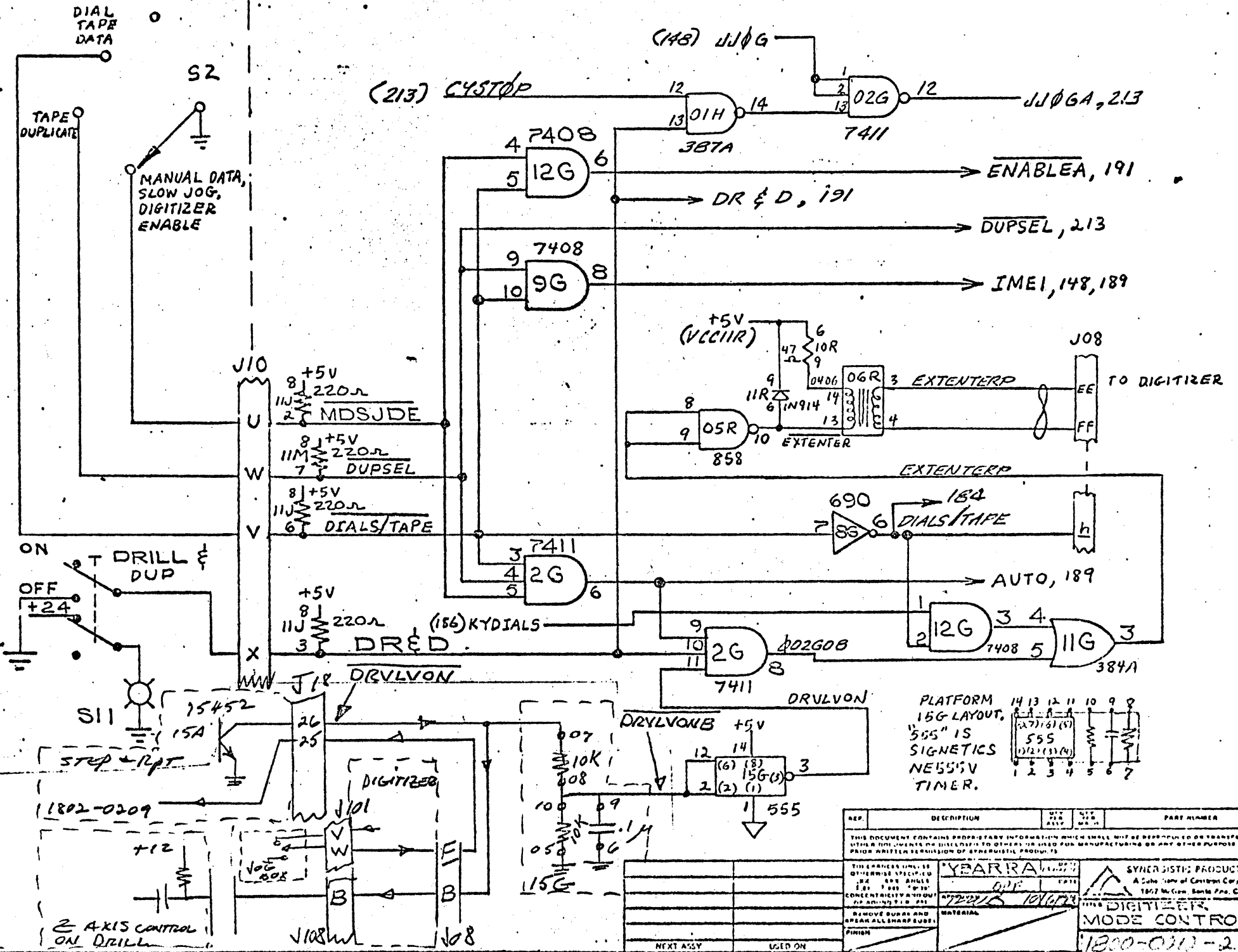
REF.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER MACHINE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS: .001" - .005" .001" ANGLES: 180° ± .005" CONCENTRICITY AND OUT OF ROUND: .001" FINISH: REMOVE BURRS AND BREAK ALL SHARP EDGES				
APPROVED: <b>YARRA</b>		DATE: <b>07E</b>		
MATERIAL:		DATE:		
FINISH:		DATE:		
USED ON:		DATE:		
SY:		DATE:		



SYNERGISTIC PRODUCTS, INC.  
A Subsidiary of Carlson Corporation  
1502 Mc Gray, Santa Ana, California

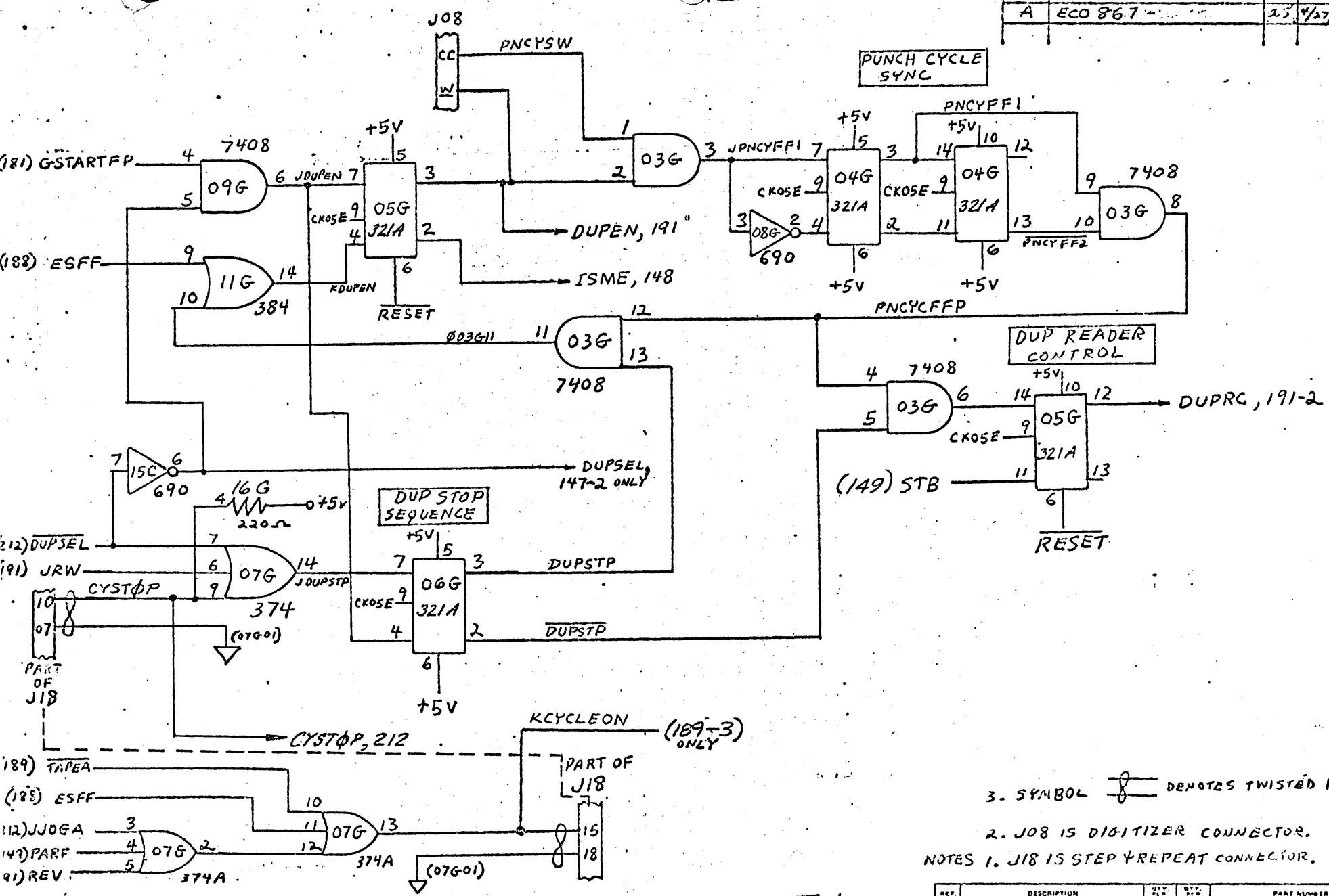
TITAN DIGITIZER  
MODE CONTROL


100-0212



REF.	DESCRIPTION	QTY. REQ.	QTY. ON HAND	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL BE REPRODUCED OR TRANSMITTED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
<small>THE PARTS LIST IS OTHERWISE SPECIFIED BY SEE ANGLE 555 7408 7411 CONDUCTIVE TYPING OF ANGLE 712 251 REMOVE BURRS AND BREAK ALL SHARP EDGES! FINISH</small>				
YEAR	RA	DATE	BY	SYNERGISTIC PRODUCTS, INC.
				A Subs. of Control Corporation 1802 Mc Gray, Santa Ana, California
MATERIAL			DIGITIZER MODE CONTROL	
1800-011-2				

REVISION		DATE & APPROVAL
SYMBOL	DESCRIPTION	
A	ECO 86.7	2.5 4/27/73 MPF



3. SYMBOL  DENOTES TWISTED PAIR.

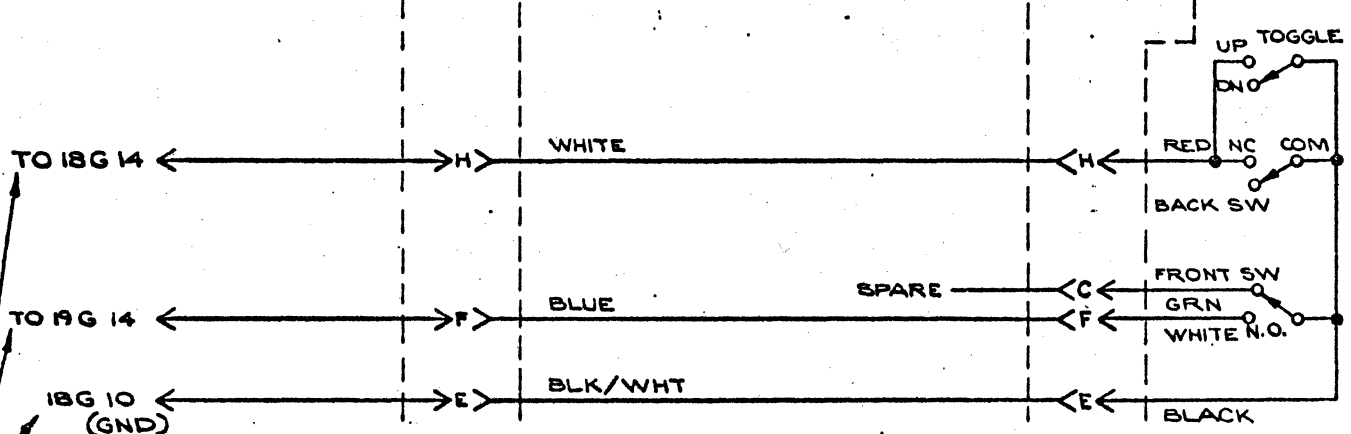
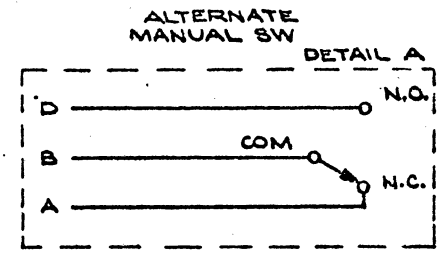
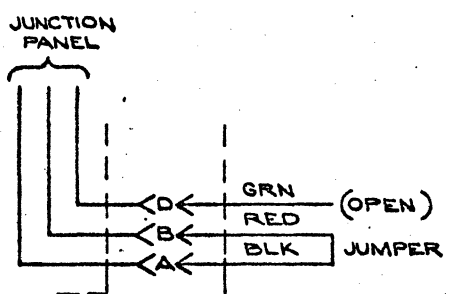
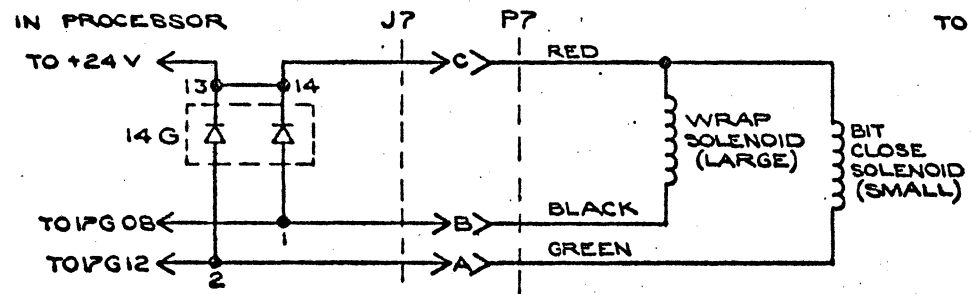
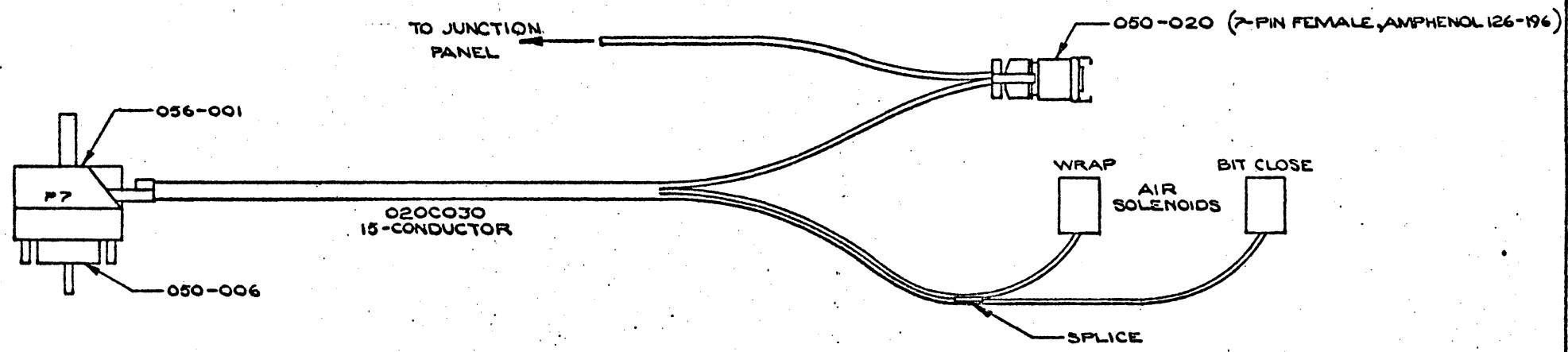
2. J08 IS DIGITIZER CONNECTOR.

NOTES 1. J18 IS STEP & REPEAT CONNECTOR.

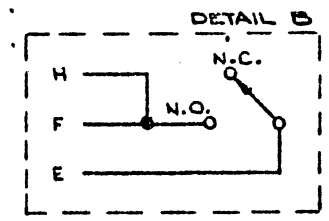
MARK IV &  
DRILLING MACHINE.

REF.	DESCRIPTION	QTY. PER ASSY.	BY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carlson Corporation 1907 M. Ave., Santa Ana, California
FINISH		DATE		
REMOVE BURRS AND BREAK ALL SHARP EDGES		DATE		TITLE LOGIC DIAGRAM - TAPE DUPLICATOR CONTROL
NEXT ASSY		USED ON		SCALE 1/8" = 1"

REVISIONS			
NO.	DESCRIPTION	BY	DATE & APPROVAL

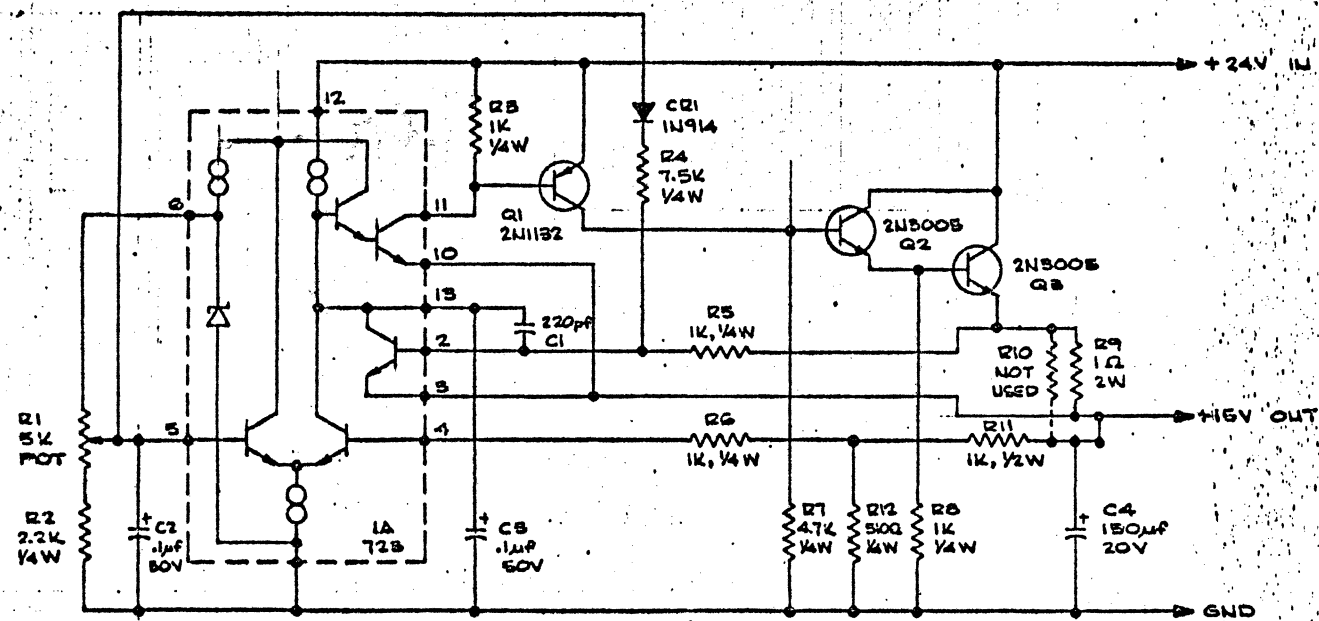


SWITCHES SHOWN WITH GUN RESTING AGAINST BACK SW.



REF.	DESCRIPTION	QTY. REQ.	QTY. INST.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX .XX ANGLE 2.51 2.00 2.00 CONCENTRICITY AND OUT OF ROUND I.R. .008		BY J.YBARRA CHECKED	DATE 9/17/78	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1907 Mc Graw, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		APPROVED M. Ferguson	DATE 7-18-78	
NEXT ASSY		USED ON		TITLE VERTICAL TABLE FIXTURED GUN WIRING
				SCALE DWS # 1800-0214

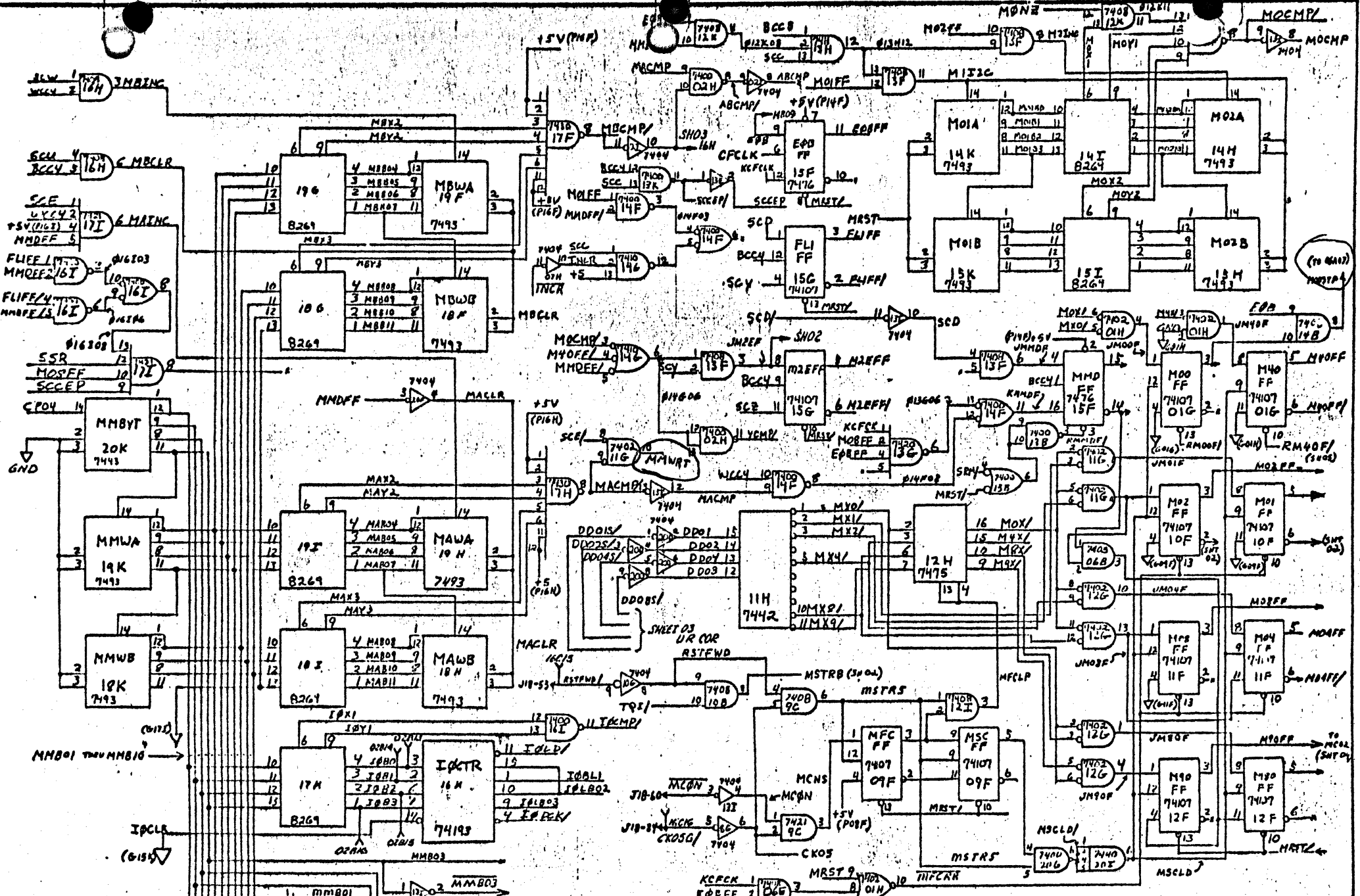
REVISION		INC BY	DATE & APPROVAL
SYMBOL	DESCRIPTION		
A	REV PER ECO 679	12/10/72	D. Ferguson 4/18/72



NOTES: UNLESS OTHERWISE SPECIFIED.

APP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED .XX .XXX ANGLE	BY <i>D. Ferguson</i>	10/2/72		SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cevron Corporation 1972 McGee, San Jose, California
CONCENTRICITY AND OUT OF ROUND T.I.R. .001	CHECKED	GATE		
REMOVE BURRS AND BREAK ALL SHARP EDGES	APPROVED <i>D. Ferguson</i>	10/2/72		TITLE SCHEMATIC, +15V D.C. REGULATOR
1506-2007-2	1802-1000-505			SCALE DWS # 1500-0216
NEXT ASSY	USED ON			





REF.	DESCRIPTION	QTY.	PART NUMBER
6-20-72	REV. A		
7-12-72	REV. B		
7-14-72	REV. D		
7-21-72	REV. E		

SY.	QTY.	DATE
CHECKED		
APPROVED		

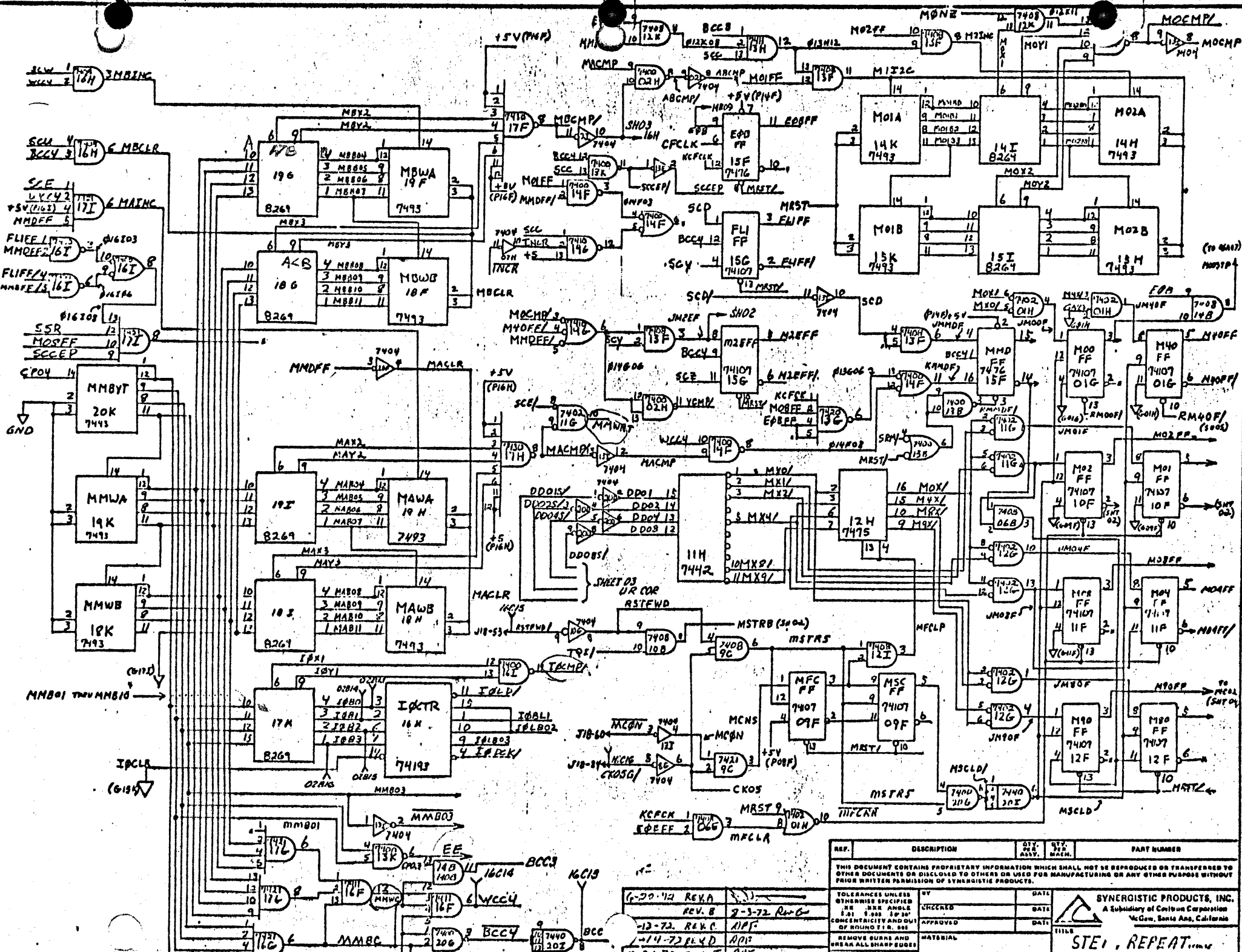
  

DATE	DESCRIPTION

MATERIAL	SYNERGISTIC PRODUCTS, INC.
REMOVE BURRS AND BRUSH ALL SHARP EDGES FINISH	A Subsidiary of Corbin Corporation McGraw-Hill, Santa Ana, California

STE. REPEAT



REF.	DESCRIPTION	REV.	DATE	PART NUMBER
6-20-72	REV. A	1		
	REV. B	2-3-72	Rev. C	
	REV. C	APR		
	REV. D	APR		
	REV. E	APR		

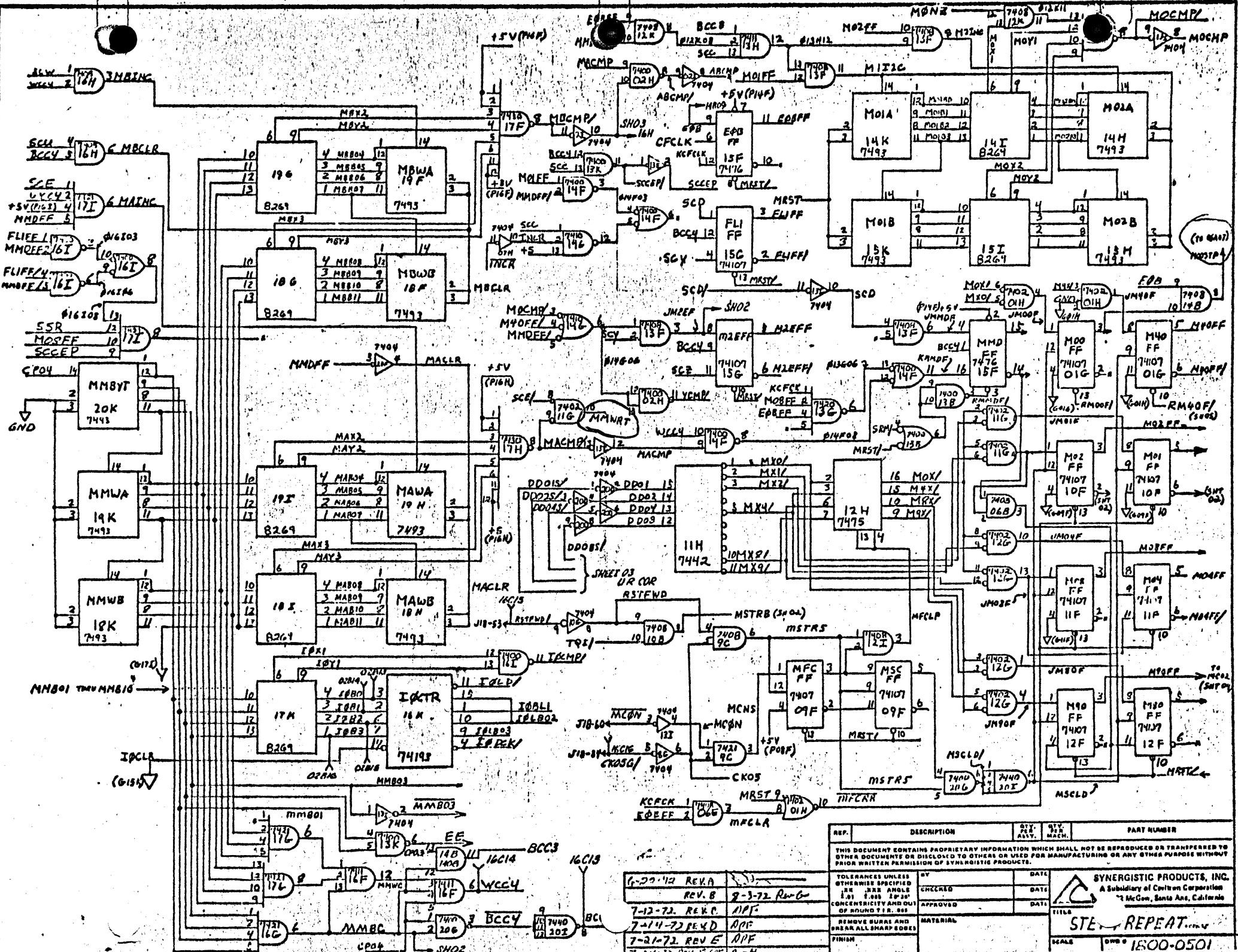
BY	DATE	DESCRIPTION
CHECKED	DATE	
APPROVED	DATE	

TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE
±.01 ANGLES		
±.005 ±.010		
CONCENTRICITY AND OUT OF ROUND ±.010		
REMOVE BURRS AND BREAK ALL SHARP EDGES		
FINISH		

SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calspan Corporation McLean, Santa Ana, California	
<b>STEEL REPEAT</b>	



REV.	DESCRIPTION	REV. ASSY.	REV. MACH.	PART NUMBER
6-22-72	REV. A			
	REV. B			
7-12-72	REV. C			
7-14-72	REV. D			
7-21-72	REV. E			
7-24-72	REV. F			

DATE	BY	DATE	BY

TOLERANCES UNLESS OTHERWISE SPECIFIED ARE: RESISTORS 1% 0.5% 20%, CAPACITORS AND OUT OF ROUND ± 0.1%

REMOVE BURRS AND BREAK ALL SHARP EDGES

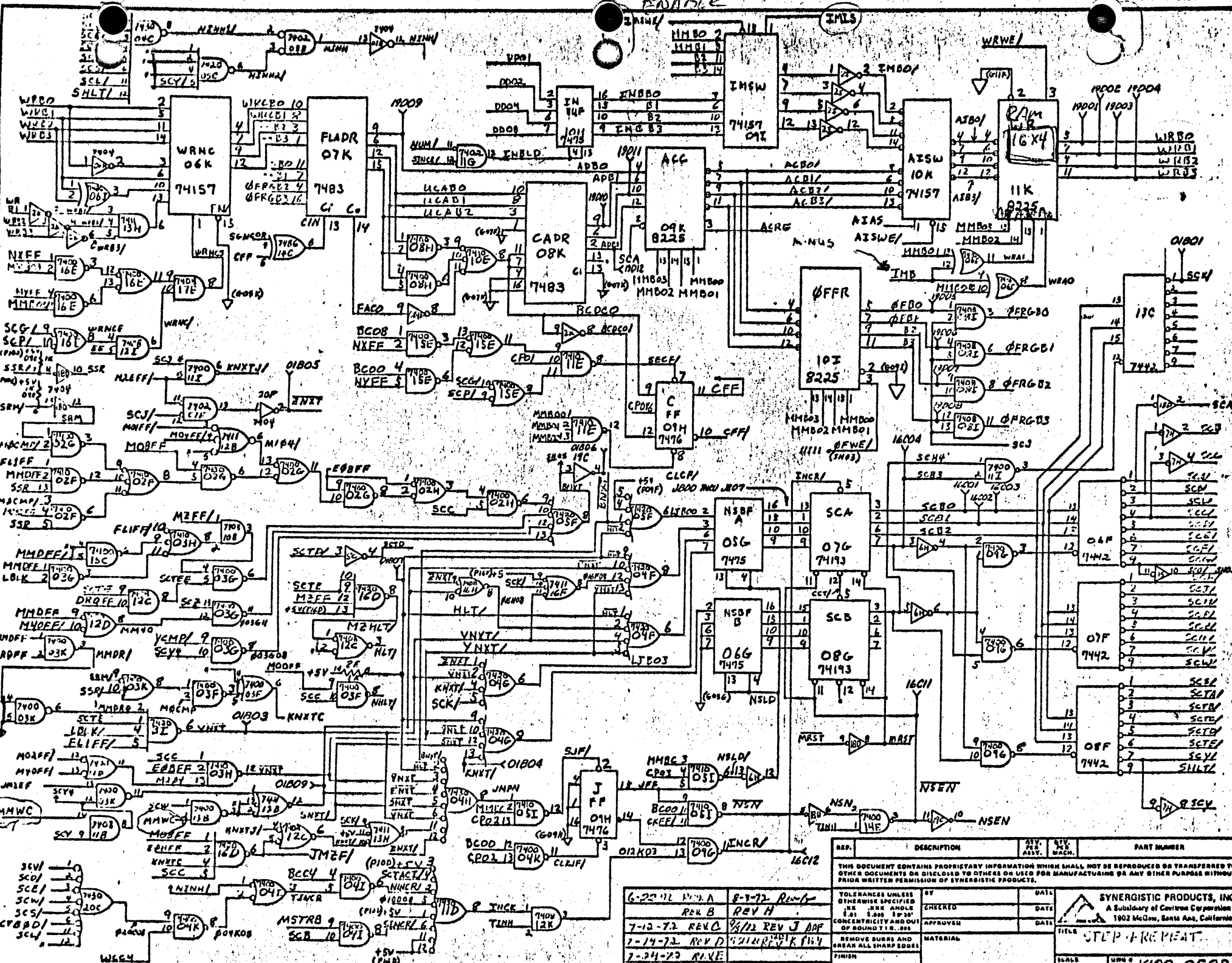
FINISH

MATERIAL

SYNERGISTIC PRODUCTS, INC.  
A Subsidiary of Clevite Corporation  
7500 Santa Ana, California

STE REPEAT

SCALE DIM # 1500-0501



REP.	DESCRIPTION	REV.	DATE	PART NUMBER
6-25-72	REV A	8-3-72	REV B	
7-12-72	REV C	8/22	REV J	DEF
7-14-72	REV D			
7-24-72	REV E			

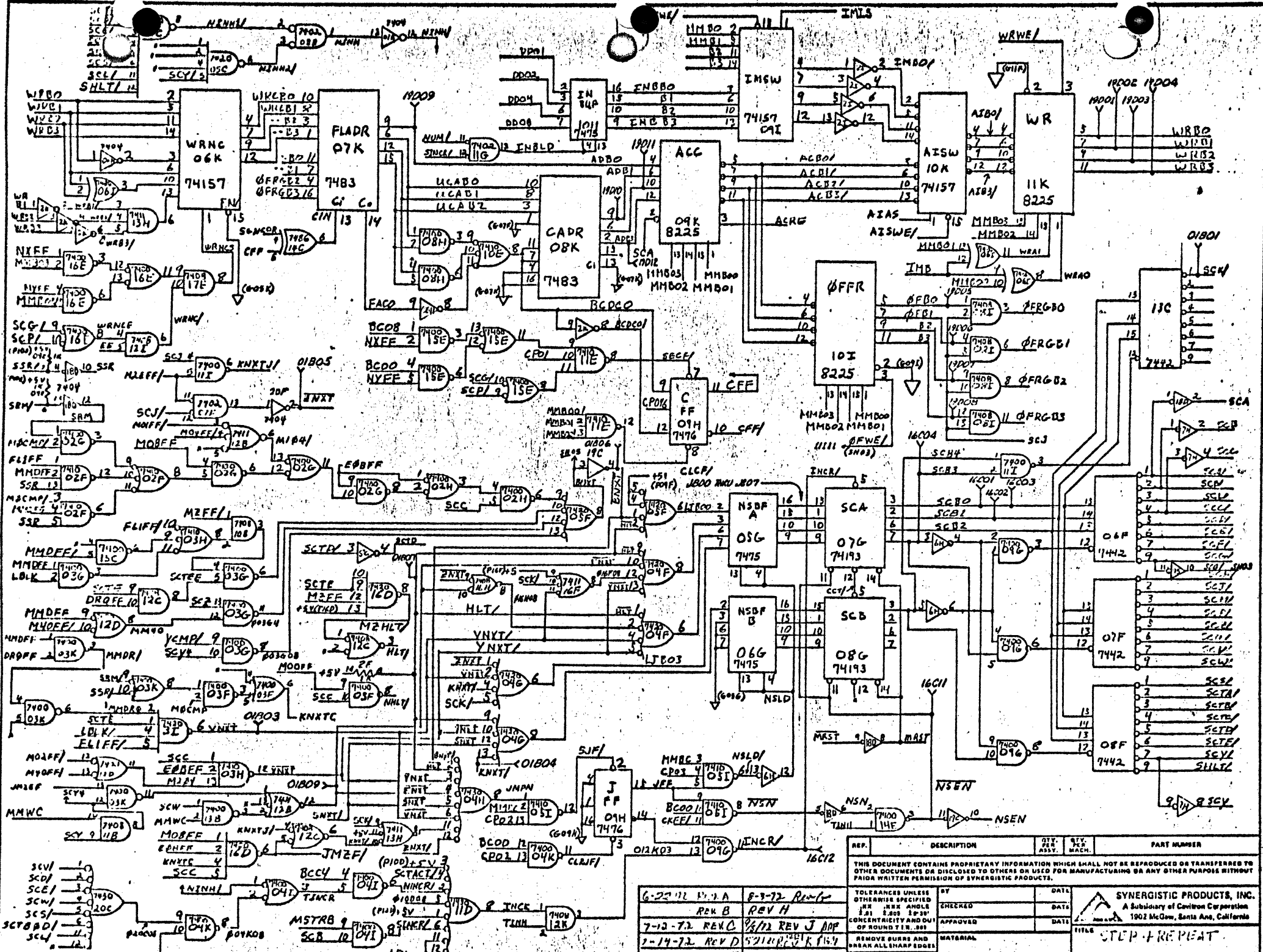
TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS IN ANGLES 0.01 0.005 10/30 CONCENTRICITY AND RUNOUT 0.010 0.005  
 REMOVE BURRS AND BREAK ALL SHARP EDGES  
 FINISH

BY CHECKED APPROVED MATERIAL  
 DATE DATE DATE  
 DATE DATE

SYNERGISTIC PRODUCTS, INC.  
 A Subsidiary of Convair Corporation  
 1802 McGow, Santa Ana, California

TITLE STEP - P R E P A R E M E N T

SCALE 1:1  
 1800-0508



REF.	DESCRIPTION	QTY. ASSY.	QTY. MACH.	PART NUMBER
6-22-72	REV A			
7-13-72	REV B			
7-14-72	REV D			
7-24-72	REV E			
1-31-73	REV F			
8-3-72	REV G			
9/1/72	REV J			
5/21/73	REV K			

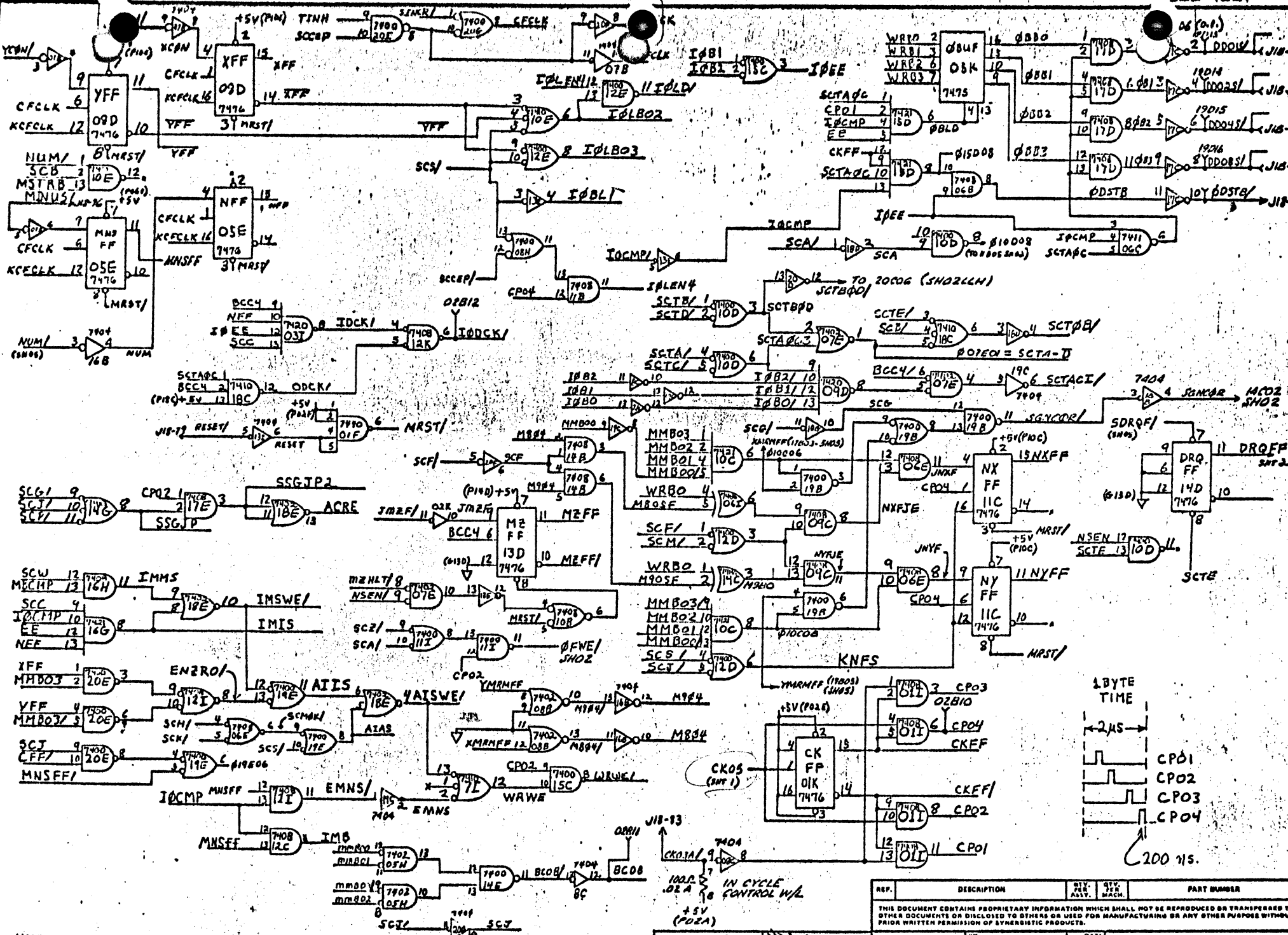
BY	DATE	SYNERGISTIC PRODUCTS, INC.
CHECKED	DATE	A Subsidiary of Covelon Corporation
APPROVED	DATE	1902 McGraw, Santa Ana, California
MATERIAL		

TOLERANCES UNLESS OTHERWISE SPECIFIED		DATE
IN INCH ANGLES		
CONCENTRICITY AND OUT OF ROUND		
REMOVE BURRS AND BREAK ALL SHARP EDGES		
FINISH		

STEP	REPEAT
SCALE	1:100-050E



REF.	DESCRIPTION	REV.	DATE	PART NUMBER
6-23-72	REVA			
	REVB			
7-12-72	REVC	DAF		
7-21-73	REVD	DAF		
2-25-73	REVE	DAF		

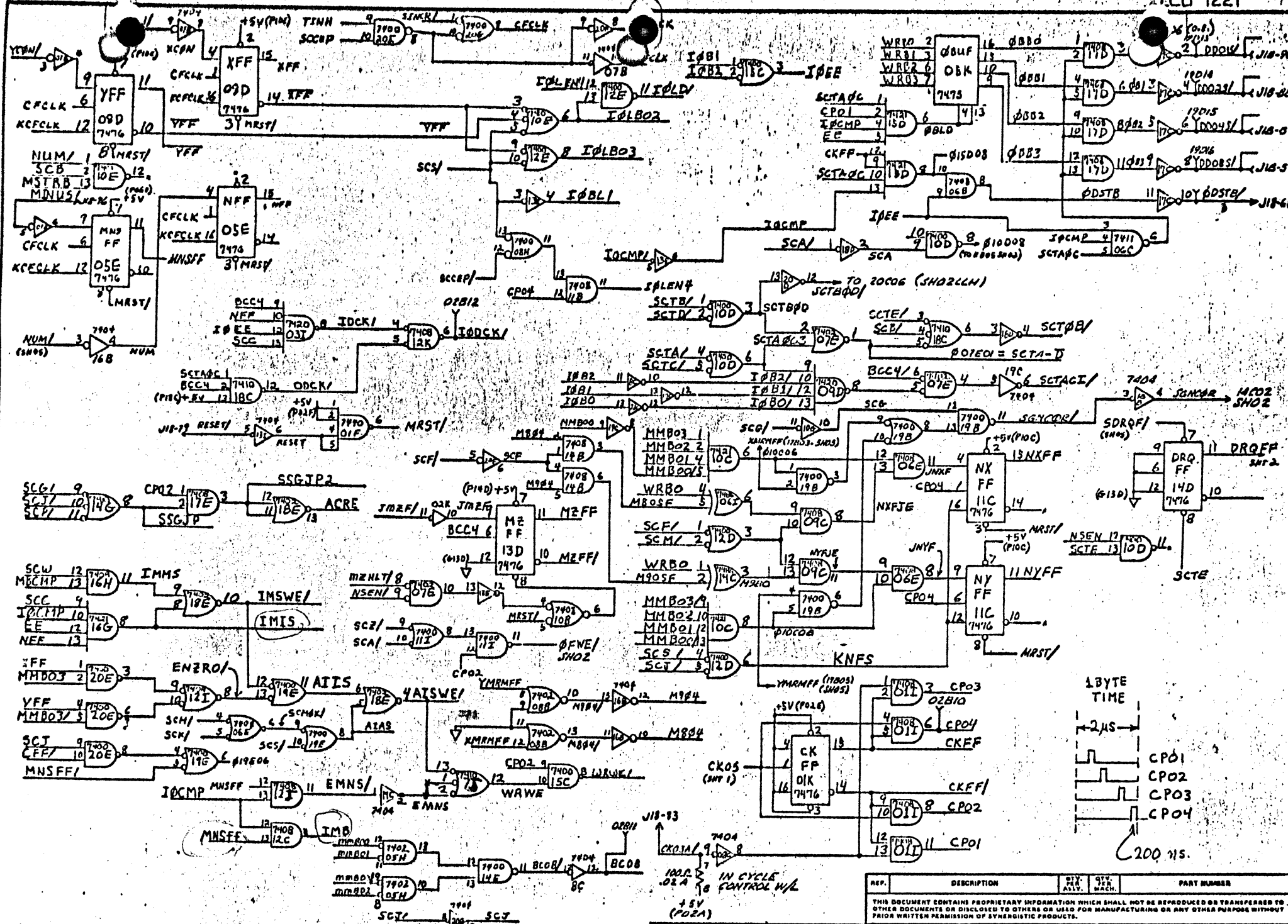
REV.	DESCRIPTION	REV.	DATE	PART NUMBER

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TOLERANCES UNLESS OTHERWISE SPECIFIED:				
RE	MAX ANGLE	BY	DATE	
7-12-72	REVC	DAF		
7-21-73	REVD	DAF		
2-25-73	REVE	DAF		
REMOVE BURRS AND BREAK ALL SHARP EDGES				
FINISH				

SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtree Corporation 1902 McGow, Santa Ana, California				
TITLE: <b>STEP &amp; REPEAT</b>				
SCALE	UNIT	1800-0503		



REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER INCH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED		BY DATA		
OR XXX ANGLE		CHECKED DATE		
L.91 L.88 L.20		APPROVED DATE		
CONCENTRICITY AND OUT OF ROUND T.R. .005		MATERIAL		
REMOVE BURRS AND BREAK ALL SHARP EDGES		FINISH		

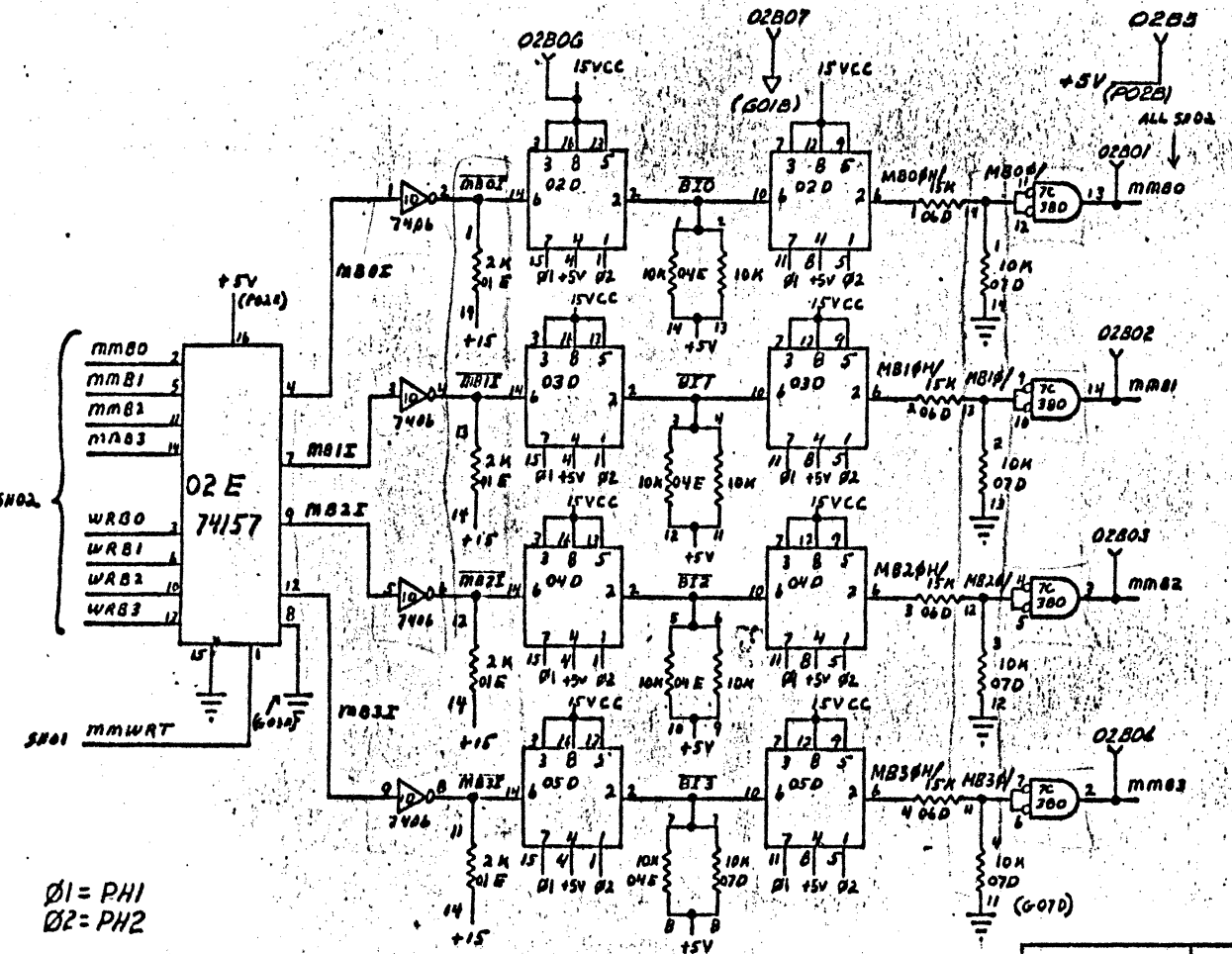
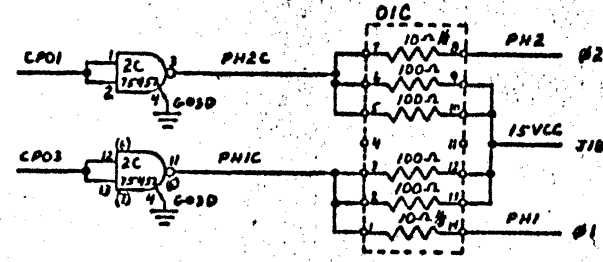
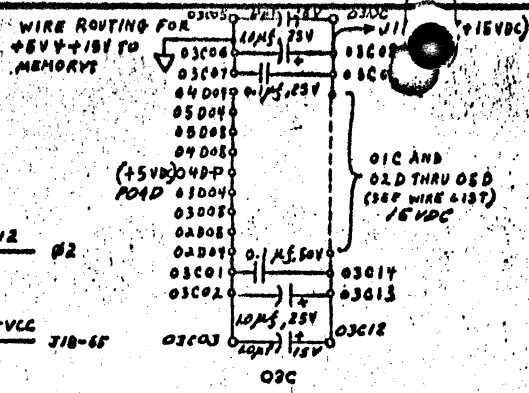
  

6-22-72	REV A		
	REV B		
7-12-72	REV C	DPF	
7-21-73	REV D	DPF	
7-25-73	REV E	DPF	

SYNERGISTIC PRODUCTS, INC.	TITLE	SCALE
A Subsidiary of Caribon Corporation 1802 McGee, Santa Ana, California	STEP 4 REPEAT	DWG # 1500-0503

REV. NO.	DESCRIPTION	DATE	APPROVAL
1	PROD RELEASE ECO 12	12/15/73	RHW



Ø1 = PH1  
Ø2 = PH2

REV.	DESCRIPTION	REV. DATE	REV. MACH.	PART NUMBER
7-25-72	REV. C DPF			
8-3-72	REV. D DPF			
8-4-72	REV. E			

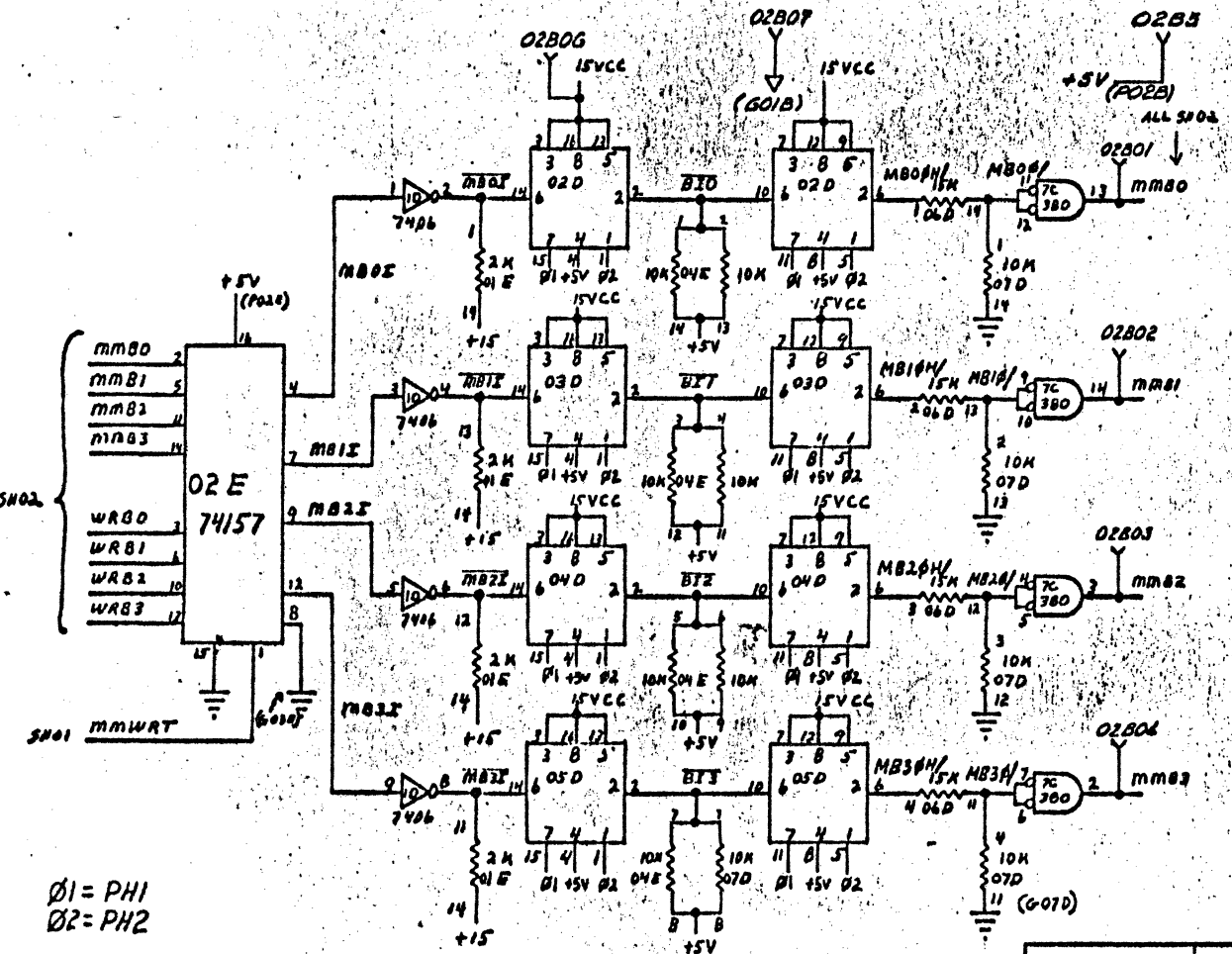
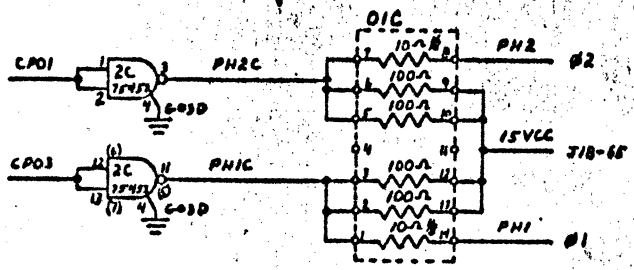
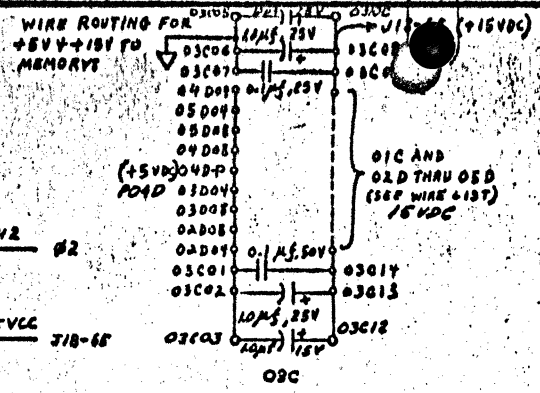
TOLERANCES UNLESS OTHERWISE SPECIFIED RXX ANGLE RXX RXX RXX CONCENTRICITY AND OUT OF ROUND T.I.R. .001	BY	DATE	<p>SYNERGISTIC PRODUCTS, INC. A Subsidiary of Control Corporation 1902 McGraw, Santa Ana, California</p>
REMOVE BURRS AND BREAK ALL SHARP EDGES	CHECKED	DATE	
FINISH	APPROVED	DATE	

TITLE	STEP + REPEAT
SCALE	ONE 1500-0504



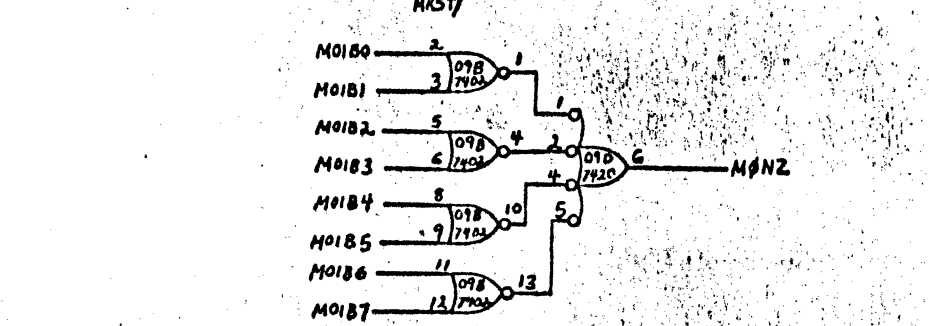
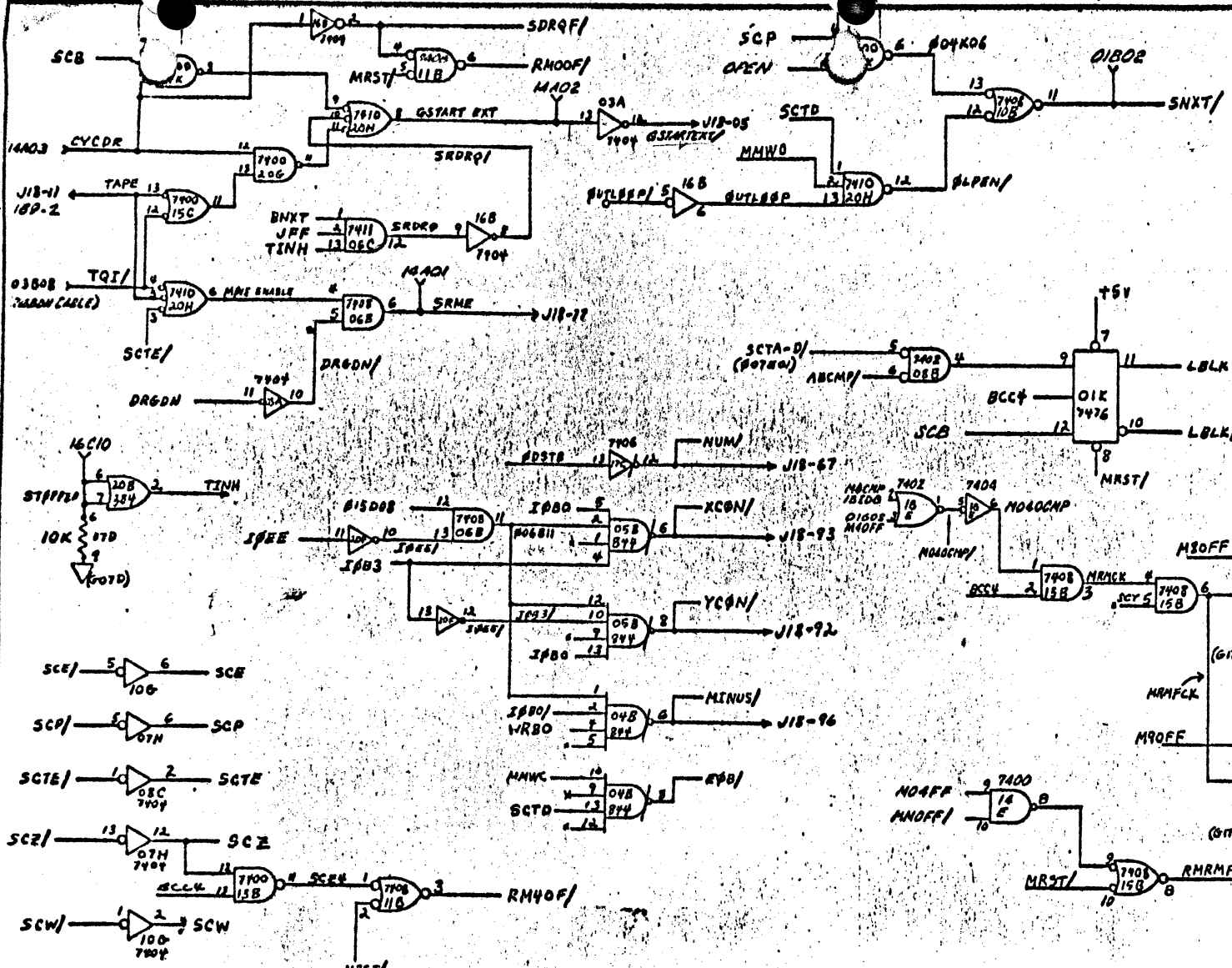
REVISIONS			
SYM BOL	DESCRIPTION	DATE	APPROVAL
P	PROD RELEASE ECO 12		RMR 5 SEP 73



REP.	DESCRIPTION	REV. NO.	REV. DATE	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE		
XX .XX ANGLE	CHECKED	DATE		
2.51 2.50 1.5 3"	APPROVED	DATE		
CONCENTRICITY AND OUT OF ROUND I.R. .005				
REMOVE BURRS & BREAK ALL SHARP EDGES	MATERIAL			
FINISH				
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Calsion Corporation 1902 McGee, Santa Ana, California		TITLE		
SCALE		STL REPEAT		
		1800-0504		

7-25-72 REV. C DPF	
8-3-72 Rev D DPF	
4-7-73 Rev E	

SYMBOL	DESCRIPTION	DATE	APPROVAL
E	PROD RELEASE ECO	5 SEP 73	



J18-75 — DLSDBN/ } NOT USED  
 J18-76 — NC0N/ }  
 03807 — TAI11/ }

REF.	DESCRIPTION	REV.	DATE	PART NUMBER
7-12-72 DPF				
7-24-72 REV A DPF				
8-3-72 Rev B				
8-4-72 Rev C				

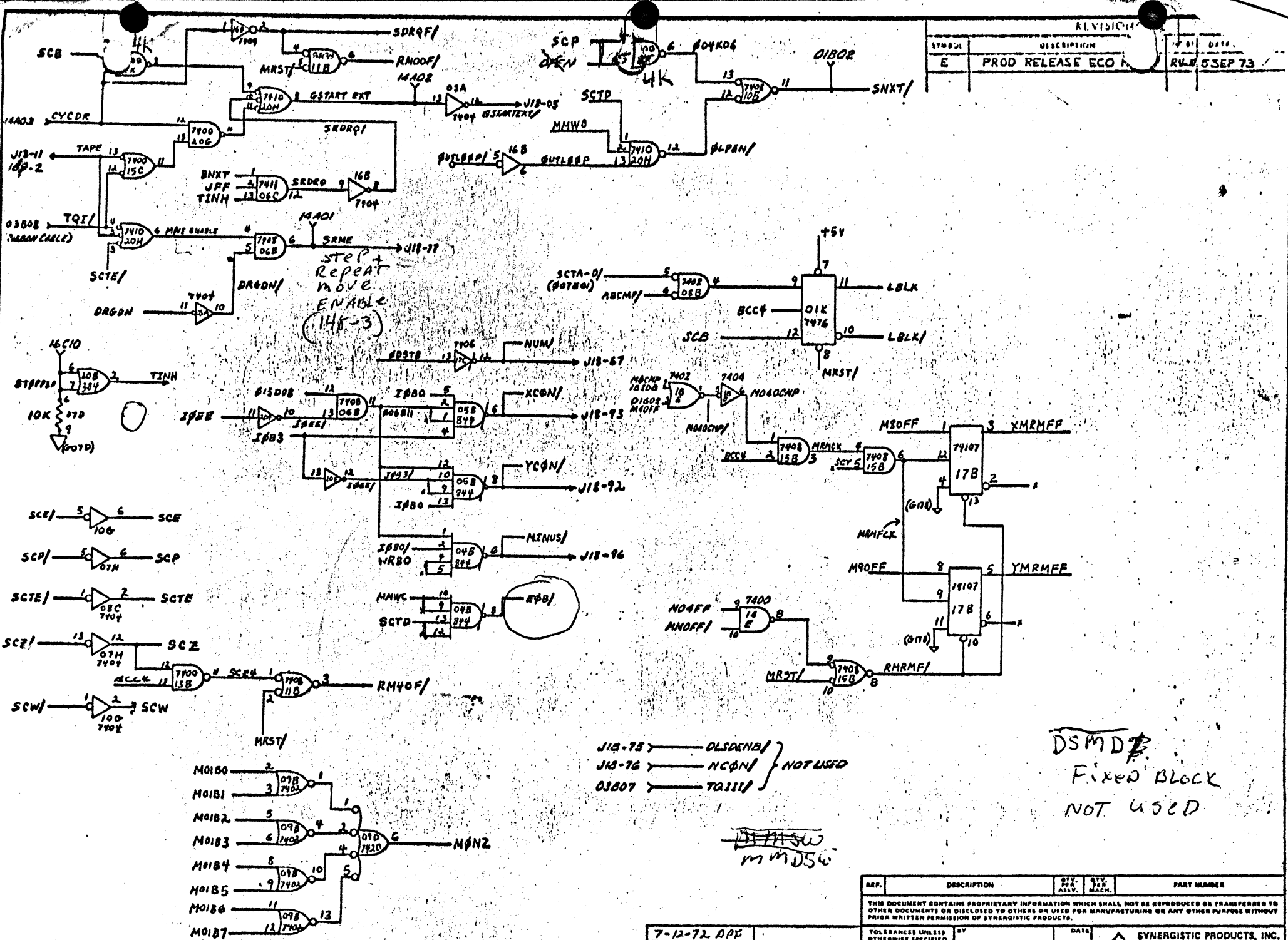
TOLERANCES UNLESS OTHERWISE SPECIFIED IN THE ANGLE  
 1.25 ±.005 90° 50'  
 CONCENTRICITY AND OUT OF ROUND T.I.R. .005  
 REMOVE BURRS AND BREAK ALL SHARP EDGES

BY	DATE	SYNERGISTIC PRODUCTS, INC.
CHECKED	DATE	A Subsidiary of Calspan Corporation
APPROVED	DATE	1802 Mc Dow, Santa Ana, California

TITLE: STEP & REPEAT

REVISION

SYMBOL	DESCRIPTION	BY	DATE
E	PROD RELEASE ECO	RW	5 SEP 73



J18-75 -> OLSDEN/ } NOT USED  
 J18-76 -> NCON/ }  
 O3B07 -> TALLI/ }

MMSW  
 MMSW

DSMD  
 Fixed Block  
 NOT USED

REF.	DESCRIPTION	QTY. PER Assy.	QTY. PER MACH.	PART NUMBER
7-12-72 DPE	TOLERANCES UNLESS OTHERWISE SPECIFIED			
24-72 REV A DPE	SEE ANGLE			
23-72 Rev B	1:25 1:200 1:50 1:100 CONCENTRICITY AND OUT OF ROUND T.I.R. .005			
8-4-72 Rev C	REMOVE BURRS AND BREAK ALL SHARP EDGES			
	BY			
	CHECKED			
	APPROVED			
	MATERIAL			
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TITLE: STEP + REPEAT				

800-0101	(NO. 1)	1800-0135	ACTUAL REGISTER AND ADDER BITS 13-16	0177-2	SYSTEM CLOCK GENERATION
0102	(NO. 2)	0140	ACTUAL REGISTER AND ADDER BITS 9-12	0178	MANUAL SWITCH INPUT NO. 1
0103	S FUNCTION REGISTER WIRE ROUTE DISPLAY	0141	ACTUAL REGISTER AND ADDER BITS 5-8	0179	MANUAL SWITCH INPUT NO. 2
0104	READER TRACK GATING AND ASCII-ETA CONV.	0142	ACTUAL REGISTER AND ADDER BITS 1-4	0180	MANUAL SWITCH INPUT NO. 3
0105	READER TRACK PARITY DECODER	0143	TACH PULSE SYNCHRONIZATION	0181	INDEX, AXIS SAFE, SSI AND SS2 F/F
0106	TRANSLATOR NO. 1-3 TO 1 OUT OF 8	0144	CONTROL TIME COUNTER	0182	RESET PULSE GENERATION
0107	TRANSLATOR NO. 2-3 TO 1 OUT OF 8	0145	ACTUAL REGISTER CLOCKING	0183	DIGIT TIME COUNTER
0108	CONTROL CHARACTER DECODER NO. 1	0146	ACTUAL REGISTER CLEAR	0184	BIT TIME COUNTER
0109	CONTROL CHARACTER DECODER NO. 2	0147	JOG SWITCH GATING	0185	H AND N FUNCTION AND READER STROBE F/F
0110	CONTROL CHARACTER DECODER NO. 3	0148-2	JOG OR MOVE SYNC. AND MOTOR INHIBIT	0186	DIALS AND TAPE DATA TIME F/F
0111	TAPE READER DATA TRACK VERIFICATION	0149-2	START MOVE OR PARITY FAILURE	0187	DIALS INTERROGATION GATING
0112	ALPHA AND NUMERIC CHARACTER DECODER	0150	INDEX, REWIND AND STOP INDICATOR DRIVERS	0188	RETURN TO REF. AND STOP F/F SWITCH SINGLE PULSE
0113	TRANSLATOR NO. 0-9 TO 1 OUT OF 4	0151	COARSE RANGE DECODER	0189	TEST AND XY STOPPED F/F
0114	M FUNCTION REGISTER	0152	FINE RANGE DECODER	0190	SHIFT F/F AND LOAD
0115-3	MOTOR CONTROL (2 SHEETS)	0153	DAC INPUT DIRECT SET-RESET ENABLE	0191	READER CONTROL F/F
0115-2	X-AXIS MTR. DR.	0154	DAC INPUT CLOCKING	0192	PROCESSOR M RELAYS
0117-2	Y-AXIS MTR. DR.	0155	DAC INPUT REGISTER X SIGN AND MSB	0193	PROCESSOR N RELAYS
0118	N FUNCTION REGISTER	0156	DAC INPUT REGISTER X LSB	0194	POWER CONTROL
0119	TACH PULSE DECODING X-AXIS	0157	DAC INPUT REGISTER Y SIGN AND MSB	0195	CONTROL PANEL (3 SHEETS)
0120	TACH PULSE DECODING Y-AXIS	0158	DAC INPUT REGISTER Y LSB	0196	(NOT USED)
0121	4-BIT DESIRED INPUT REGISTER	0159	DAC INPUT ZERO DECODER	0197	(NOT USED)
0122	CONVERSION REGISTER BITS 1-4	0160	DAC REFERENCE VOLTAGES	0198	(NOT USED)
0123	CONVERSION REGISTER BITS 5-14	0161	DAC NEGATIVE REFERENCE SUPPLY	0199	MOTOR INHIBIT DELAY
0124	CONVERSION REGISTER BITS 15-24	0162	DAC X AXIS AMPLIFIER		
0125	BCD TO BINARY AND DESIRED ARITHMETIC	0163	DAC Y AXIS AMPLIFIER		
0126	DESIRED REGISTER SIGN	0164	DAC X AXIS JOG CIRCUIT		
0127	X-DESIRED REGISTER BITS 15-24	0165	DAC Y AXIS JOG CIRCUIT		
0128	X-DESIRED REGISTER BITS 5-14	0166	(NOT USED)		
0129	Y-DESIRED REGISTER BITS 15-24	0167	BCD TO 7 SEGMENT DECODER		
0130	Y-DESIRED REGISTER BITS 5-14	0168	DISPLAY REGISTER SEGMENT 3		
0131	X AND Y DESIRED REGISTER BITS 1-4	0169	DISPLAY REGISTER SEGMENT 4		
0132	DESIRED REGISTER OUTPUT GATING BITS 1-6	0170	DISPLAY REGISTER SEGMENT 5		
0133	DESIRED REGISTER OUTPUT GATING BITS 7-12	0171	DISPLAY REGISTER SEGMENT 6		
0134	DESIRED REGISTER OUTPUT GATING BITS 13-18	0172	DISPLAY REGISTER SEGMENT 7		
0135	DESIRED REGISTER OUTPUT GATING BITS 19-24	0173	DISPLAY REGISTER SEGMENT 8		
0136	X AND Y DESIRED REGISTER CLOCKING	0174	DISPLAY REGISTER SEGMENT 9		
0137	ACTUAL REGISTER AND ADDER BITS 21-24	0175	DAC INPUT DIRECT SET-RESET GATING		
0138	ACTUAL REGISTER AND ADDER BITS 17-20	0176	TIME DELAY COUNTER		

P/2/P

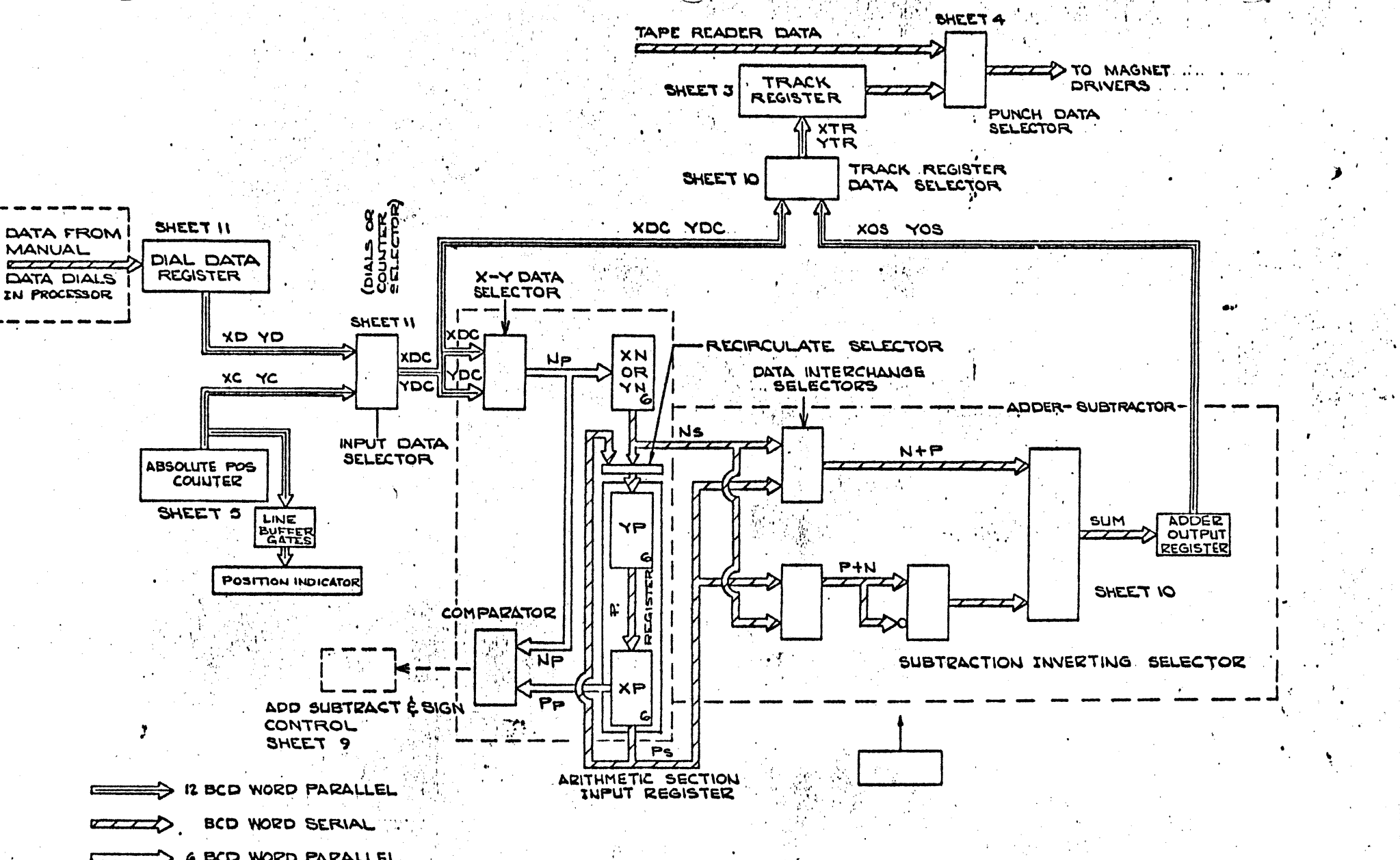
REF.	DESCRIPTION	REV. BY ASSY.	QTY. BY MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED XX MM ANGLE 0.01 0.002 10 30 CONCENTRICITY AND OUT OF ROUND 0.10 0.05		DATE CHECKED 12/17/77	DATE APPROVED	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavlon Corporation 1802 N. Cole, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		DATE	TITLE REF DOCUMENTS 1800 CONTROLLER	SCALE 1:1 1800-0100-506
NEXT ASSY	USED ON			

000-0101	(NOT)	1600-0139	ACTUAL REGISTER AND ADDER BITS 13-16	0177-3	SYSTEM CLOCK GENERATION	
0102	(NOT)	0140	ACTUAL REGISTER AND ADDER BITS 9-12	0178-2	MANUAL SWITCH INPUT NO. 1	W/L 1802-1100-501 PAPER
0103	S FUNCTION REGISTER WIRE ROUTE DISPLAY	0141	ACTUAL REGISTER AND ADDER BITS 5-8	0179	MANUAL SWITCH INPUT NO. 2	WIRE LIST, LOGIC MATRIX
0104-2	HEADER TRACK GATING AND ASCII-EIA CONV.	0142	ACTUAL REGISTER AND ADDER BITS 1-4	0180-2	MANUAL SWITCH INPUT NO. 3	W/L 1802-1000-505 HARD WIRE
0105	HEADER TRACK PARITY DECODER	0143-2	TACH PULSE SYNCHRONIZATION	0181-2	INDEX, AXIS SAFE, S51 AND S52 F/F	LIST: "PROCESSOR DRAWING - N/C
0106	TRANSLATOR NO. 1-3 TO 1 OUT OF 8	0144-2	CONTROL TIME COUNTER	0182-2	RESET PULSE GENERATION	DRILL MACH."
0107	TRANSLATOR NO. 2-3 TO 1 OUT OF 8	0145	ACTUAL REGISTER CLOCKING	0183	DIGIT TIME COUNTER	
0108-2	CONTROL CHARACTER DECODER NO. 1	0146	ACTUAL REGISTER CLEAR	0184-2	BIT TIME COUNTER	
0109-2	CONTROL CHARACTER DECODER NO. 2	0147-2	JOG SWITCH GATING	0185	M AND N FUNCTION AND READER STROBE F/F	
0110	CONTROL CHARACTER DECODER NO. 3	0148-3	JOG OR MOVE SYNC. AND MOTOR INHIBIT	0186	DIALS AND TAPE DATA TIME F/F	
0111	TAPE READER DATA TRACK VERIFICATION	0149-3	START MOVE OR PARITY FAILURE	0187-2	DIALS INTERROGATION GATING	
0112-2	ALPHA AND NUMERIC CHARACTER DECODER	0150-2	INDEX, REWIND AND STOP INDICATOR DRIVERS	0188-2	RETURN TO REF. AND STOP F/F SWITCH SINGLE PULSE	
0113-2	TRANSLATOR NO. 3-9 TO 1 OUT OF 4	0151	COARSE RANGE DECODER	0189-2	TEST AND XY STOPPED F/F	
0114-3	M FUNCTION REGISTER	0152	FINE RANGE DECODER	0190-2	SHIFT F/F AND LOAD	
0115-3	MOTOR CONTROL (2 SHEETS)	0153	DAC INPUT DIRECT SET-RESET ENABLE	0191-2	READER CONTROL F/F	
0116-2	X-AXIS MTR. DR.	0154	DAC INPUT CLOCKING	0192	PROCESSOR-M RELAYS NOT USED	
0117-2	Y-AXIS MTR. DR.	0155	DAC INPUT REGISTER X SIGN AND MSB	0193	PROCESSOR-N RELAYS NOT USED	
0118	N FUNCTION REGISTER	0156	DAC INPUT REGISTER X LSB	0194-2	POWER CONTROL *	
0119-2	TACH PULSE DECODING X-AXIS	0157	DAC INPUT REGISTER Y SIGN AND MSB	0195-1	CONTROL PANEL (3 SHEETS) *	
0120-2	TACH PULSE DECODING Y-AXIS	0158	DAC INPUT REGISTER Y LSB	0196	(NOT USED)	
0121	4-BIT DESIRED INPUT REGISTER	0159	DAC INPUT ZERO DECODER	0197	(NOT USED)	
0122	CONVERSION REGISTER BITS 1-4	0160	DAC REFERENCE VOLTAGES	0198	(NOT USED)	
0123	CONVERSION REGISTER BITS 5-14	0161	DAC NEGATIVE REFERENCE SUPPLY	0199-2	MOTOR INHIBIT DELAY	
0124	CONVERSION REGISTER BITS 15-24	0162	DAC X AXIS AMPLIFIER	0212	DIGITIZER MODE CONTROL	
0125	BCD TO BINARY AND DESIRED ARITHMETIC	0163	DAC Y AXIS AMPLIFIER	0213	TAPE DUPLICATOR CONTROL	
0126-2	DESIRED REGISTER SIGN	0164-2	DAC X AXIS JOG CIRCUIT	0216	+15VDC REGULATOR	
0127	X-DESIRED REGISTER BITS 15-24	0165-2	DAC Y AXIS JOG CIRCUIT			
0128	X-DESIRED REGISTER BITS 5-14	0166	(NOT USED)			
0129	Y-DESIRED REGISTER BITS 15-24	0167	BCD TO 7 SEGMENT DECODER			
0130	Y-DESIRED REGISTER BITS 5-14	0168	DISPLAY REGISTER SEGMENT 3			
0131	X AND Y DESIRED REGISTER BITS 1-4	0169	DISPLAY REGISTER SEGMENT 4			
0132	DESIRED REGISTER OUTPUT GATING BITS 1-6	0170	DISPLAY REGISTER SEGMENT 5			
0133	DESIRED REGISTER OUTPUT GATING BITS 7-12	0171	DISPLAY REGISTER SEGMENT 6			
0134	DESIRED REGISTER OUTPUT GATING BITS 13-18	0172	DISPLAY REGISTER SEGMENT 7			
0135	DESIRED REGISTER OUTPUT GATING BITS 19-24	0173	DISPLAY REGISTER SEGMENT 8			
0136	X AND Y DESIRED REGISTER CLOCKING	0174	DISPLAY REGISTER SEGMENT 9			
0137	ACTUAL REGISTER AND ADDER BITS 21-24	0175	DAC INPUT DIRECT SET-RESET GATING			
0138	ACTUAL REGISTER AND ADDER BITS 17-20	0176-2	TIME DELAY COUNTER			

REF.	DESCRIPTION	QTY PER ASSY.	SYN. MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS 2.01 2.008 2.010 CONCENTRICITY AND OUT OF ROUND Y.I.R. .008		BY LYBARRA	DATE 1/1/73	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Gencon Corporation 1602 McCaw, 2113 Ave, Calif. 94514
REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED	DATE	
MATERIAL		TITLE 1802-1100-501		SCALE 1:1
NEXT ASSY	USED ON	DRAW # 1802-1100-511		

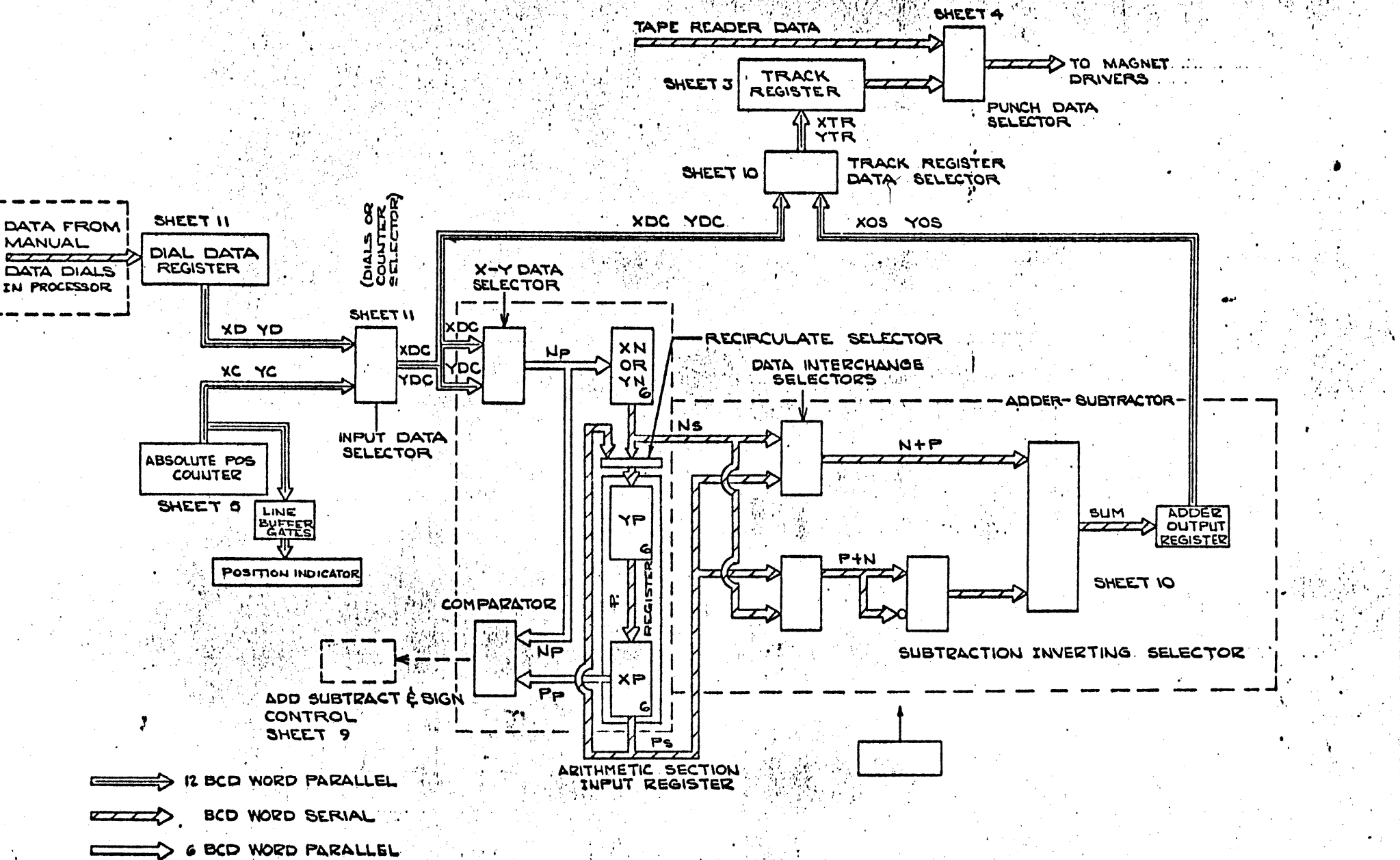
000-0101	MACHINE FUNCTION DIAGRAM	1800-0139	ACTUAL REGISTER AND ADDER BITS 13-16	177-2	SYSTEM CLOCK GENERATION
0102	(NOT USED)	0140	ACTUAL REGISTER AND ADDER BITS 9-12	0178	MANUAL SWITCH INPUT NO. 1
0103	S FUNCTION REGISTER WIRE ROUTE DISPLAY	0141	ACTUAL REGISTER AND ADDER BITS 5-8	0179	MANUAL SWITCH INPUT NO. 2
0104	READER TRACK GATING AND ASCII-EIA CONV.	0142	ACTUAL REGISTER AND ADDER BITS 1-4	0180	MANUAL SWITCH INPUT NO. 3
0105	READER TRACK PARITY DECODER	0143	TACH PULSE SYNCHRONIZATION	0181	INDEX, AXIS SAFE, SSI AND SSI F/F
0106	TRANSLATOR NO. 1-3 TO 1 OUT OF 8	0144	CONTROL TIME COUNTER	0182	RESET PULSE GENERATION
0107	TRANSLATOR NO. 2-3 TO 1 OUT OF 8	0145	ACTUAL REGISTER CLOCKING	0183	DIGIT TIME COUNTER
0108	CONTROL CHARACTER DECODER NO. 1	0146	ACTUAL REGISTER CLEAR	0184	BIT TIME COUNTER
0109	CONTROL CHARACTER DECODER NO. 2	0147	JOG SWITCH GATING	0185	M AND N FUNCTION AND READER STROBE F/F
0110	CONTROL CHARACTER DECODER NO. 3	0146-2	JOG OR MOVE SYNC. AND MOTOR INHIBIT	0186	DIALS AND TAPE DATA TIME F/F
0111	TAPE READER DATA TRACK VERIFICATION	0149-2	START MOVE OR PARITY FAILURE	0187	DIALS INTERROGATION GATING
0112	ALPHA AND NUMERIC CHARACTER DECODER	0150	INDEX, REWIND AND STOP INDICATOR DRIVERS	0188	RETURN TO REF. AND STOP F/F SWITCH SINGLE PULSE
0113	TRANSLATOR NO. 3-9 TO 1 OUT OF 4	0151	COARSE RANGE DECODER	0189	TEST AND XY STOPPED F/F
0114	M FUNCTION REGISTER	0152	FINE RANGE DECODER	0190	SHIFT F/F AND LOAD
0115	MOTOR CONTROL (2 SHEETS)	0153	DAC INPUT DIRECT SET-RESET ENABLE	0191	READER CONTROL F/F
0116-2	X-AXIS MTR. DR.	0154	DAC INPUT CLOCKING	0192	PROCESSOR M RELAYS
0117-2	Y-AXIS MTR. DR.	0155	DAC INPUT REGISTER X SIGN AND MSB	0193	PROCESSOR N RELAYS
0118	N FUNCTION REGISTER	0156	DAC INPUT REGISTER X LSB	0194	POWER CONTROL
0119	TACH PULSE DECODING X-AXIS	0157	DAC INPUT REGISTER Y SIGN AND MSB	0195	CONTROL PANEL (3 SHEETS)
0120	TACH PULSE DECODING Y-AXIS	0158	DAC INPUT REGISTER Y LSB	0196	(NOT USED)
0121	4-BIT DESIRED INPUT REGISTER	0159	DAC INPUT ZERO DECODER	0197	(NOT USED)
0122	CONVERSION REGISTER BITS 1-4	0160	DAC REFERENCE VOLTAGES	0198	(NOT USED)
0123	CONVERSION REGISTER BITS 5-14	0161	DAC NEGATIVE REFERENCE SUPPLY	0199	MOTOR INHIBIT DELAY
0124	CONVERSION REGISTER BITS 15-24	0162	DAC X AXIS AMPLIFIER	1750-0001	SCHEMATIC - BIN LITES
0125	BOD TO BINARY AND DESIRED ARITHMETIC	0163	DAC Y AXIS AMPLIFIER	1750-0002	SCHEMATIC - CONTROL PANEL
0126	DESIRED REGISTER SIGN	0164	DAC X AXIS JOG CIRCUIT	1750-0003	SCHEMATIC - CABLE ASSY
0127	X-DESIRED REGISTER BITS 15-24	0165	DAC Y AXIS JOG CIRCUIT		
0128	X-DESIRED REGISTER BITS 5-14	0166	(NOT USED)		
0129	Y-DESIRED REGISTER BITS 15-24	0167	BOD TO 7 SEGMENT DECODER		
0130	Y-DESIRED REGISTER BITS 5-14	0168	DISPLAY REGISTER SEGMENT 3		
0131	X AND Y DESIRED REGISTER BITS 1-4	0169	DISPLAY REGISTER SEGMENT 4		
0132	DESIRED REGISTER OUTPUT GATING BITS 1-6	0170	DISPLAY REGISTER SEGMENT 5		
0133	DESIRED REGISTER OUTPUT GATING BITS 7-12	0171	DISPLAY REGISTER SEGMENT 6		
0134	DESIRED REGISTER OUTPUT GATING BITS 13-18	0172	DISPLAY REGISTER SEGMENT 7		
0135	DESIRED REGISTER OUTPUT GATING BITS 19-24	0173	DISPLAY REGISTER SEGMENT 8		
0136	X AND Y DESIRED REGISTER CLOCKING	0174	DISPLAY REGISTER SEGMENT 9		
0137	ACTUAL REGISTER AND ADDER BITS 21-24	0175	DAC INPUT DIRECT SET-RESET GATING		
0138	ACTUAL REGISTER AND ADDER BITS 17-20	0176	TIME DELAY COUNTER		

REF.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX .XXX ANGLE 2:31 2.005 3.003 CONCENTRICITY AND OUT OF ROUND 1/4 .003		BY: <u>NEEDRA</u> CHECKED: <u>DATE</u> APPROVED: <u>DATE</u>	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1802 McCreary, Santa Ana, California	
REMOVE BURRS AND BREAK ALL SHARP EDGES		REWORK: <u>DATE</u>	TITLE: <u>REF. DOCUMENTS</u> <u>MG. 01 VERTICAL TABLE</u> REV: <u>DATE</u>	
NEXT ASSY	USED ON	1800-0100-516		



- 12 BCD WORD PARALLEL
- BCD WORD SERIAL
- 6 BCD WORD PARALLEL

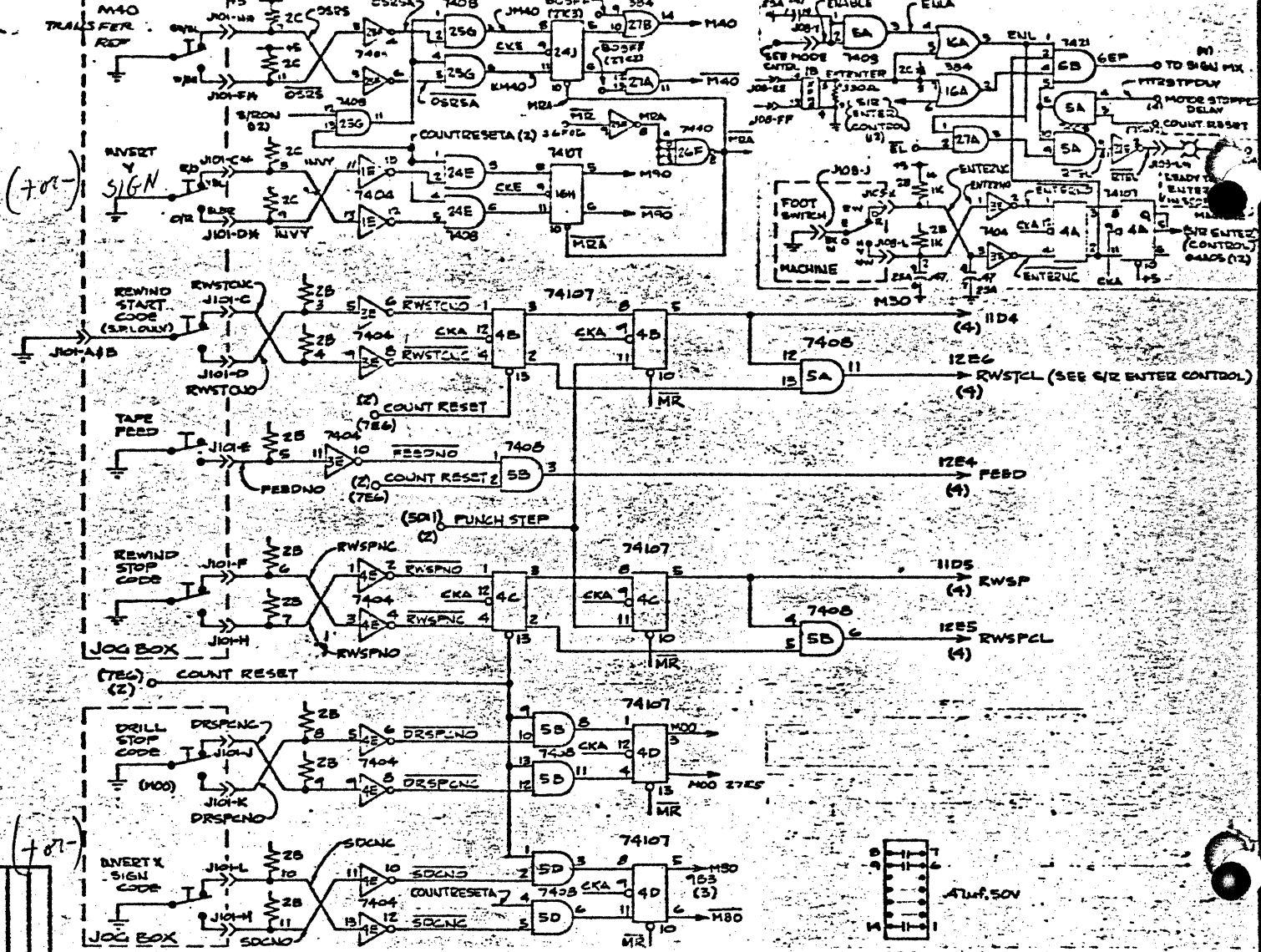
REF.	DESCRIPTION	BY ASSY.	DATE	BY MACH.	DATE	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE			<b>SYNERGISTIC PRODUCTS, INC.</b> A Subsidiary of Contron Corporation 1902 McGee, Santa Ana, California
	XX XXX ANGLE	CHECKED	DATE			
	± .001 ± .005 ± .010	APPROVED	DATE			
	CONCENTRICITY AND OUT OF ROUND T.I.R. .005					
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL				TITLE SYSTEM IP 50 MK II DRILL MACHINE ENGINEERING MECHANICAL DATA FLOW
	FINISH					SCALE _____ DWG # 1801-0002
	NEXT ASSY					
	USED ON					



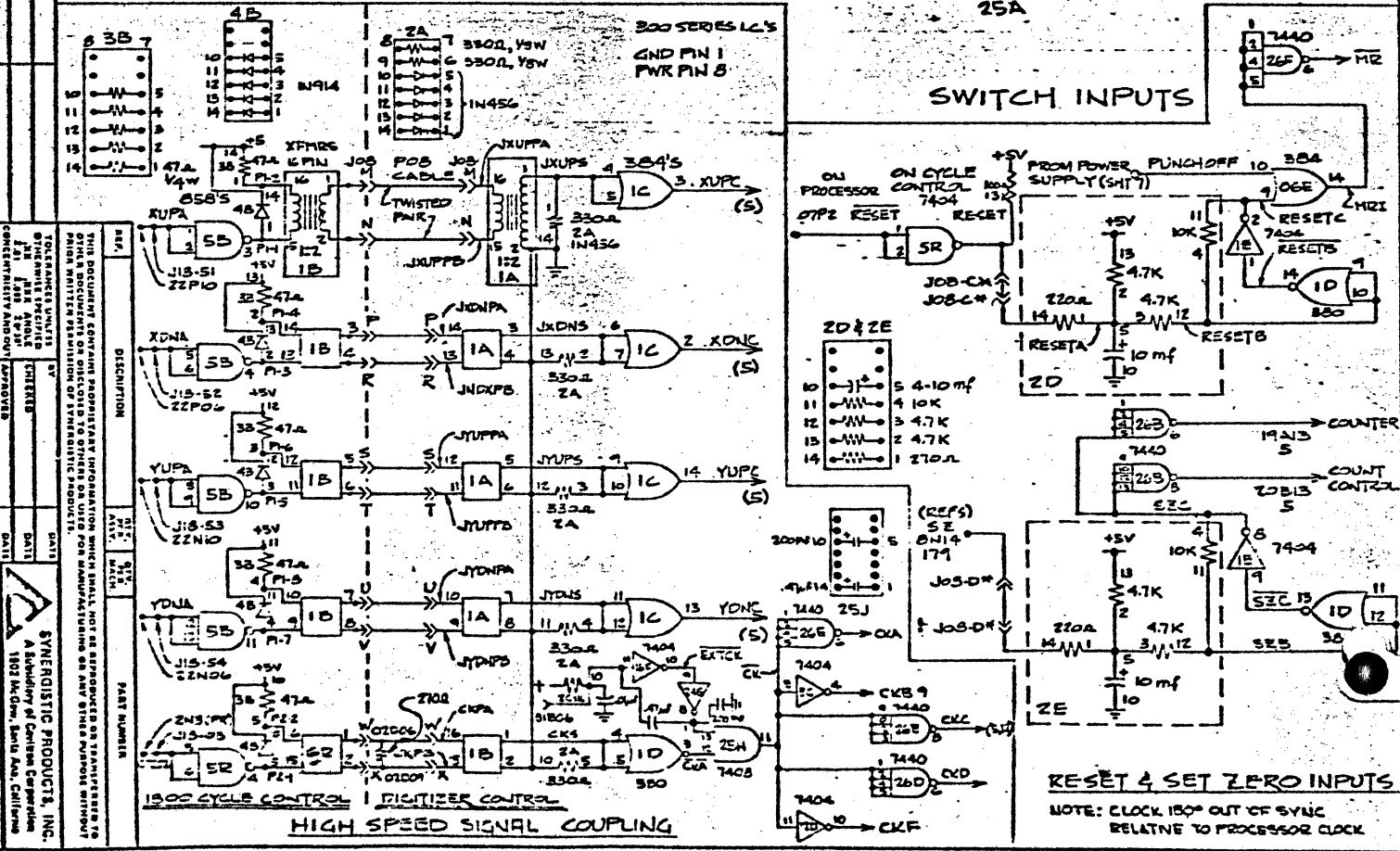
REF.	DESCRIPTION	REV. DES. ASSY.	REV. DES. MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavtron Corporation 1902 McGow, Santa Ana, California
	.XX .XXX ANGLE	CHECKED	DATE	
	±.01 ±.001 10° 30'	APPROVED	DATE	
	CONCENTRICITY AND OUT OF ROUND T.I.R. .003			TITLE SYSTEM 10 00 NIK II
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MANUAL		DRILL PLANCH ENGINEER
	FINISH			MANUAL DATA FLOW
NEXT ASSY	USED ON			SCALE
				DRG # 1801-0002



(70)



(71)

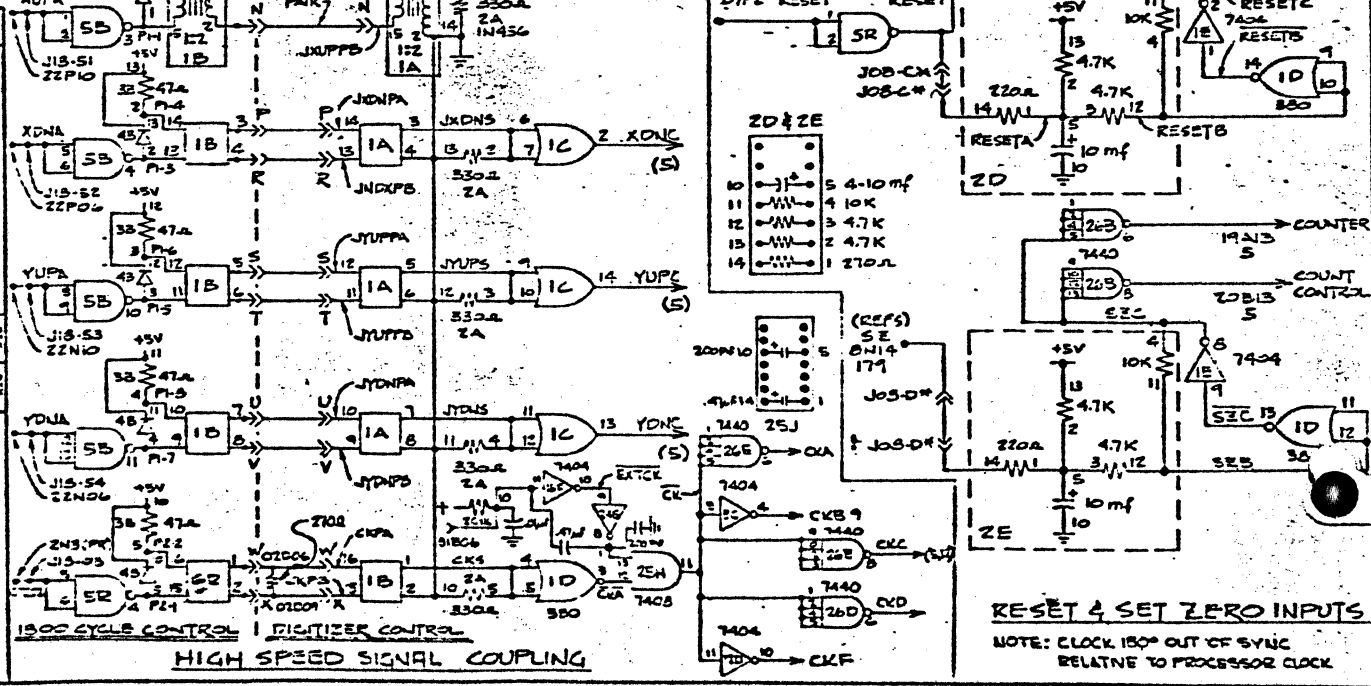


NXT ASSY

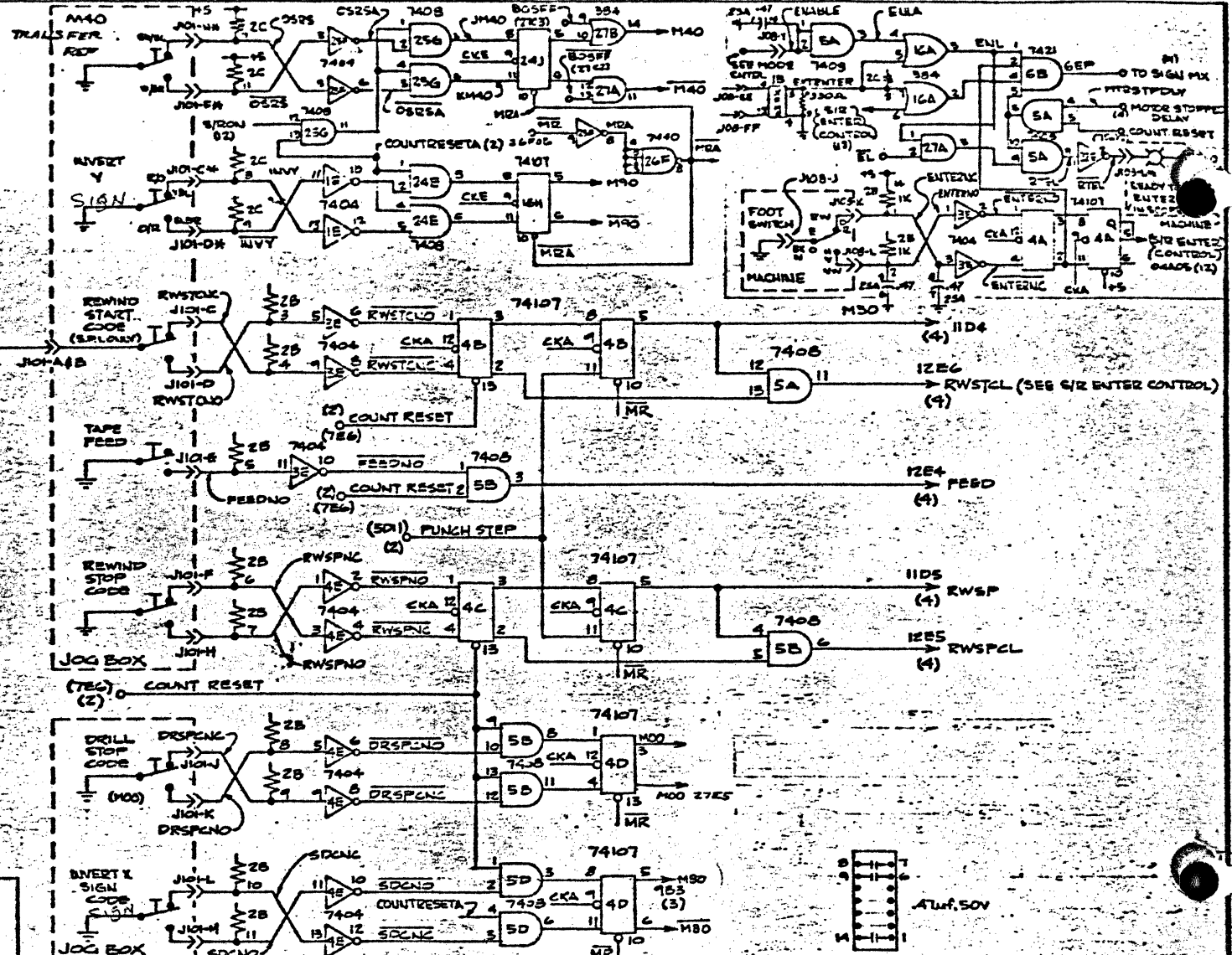
USED ON

1801-0003

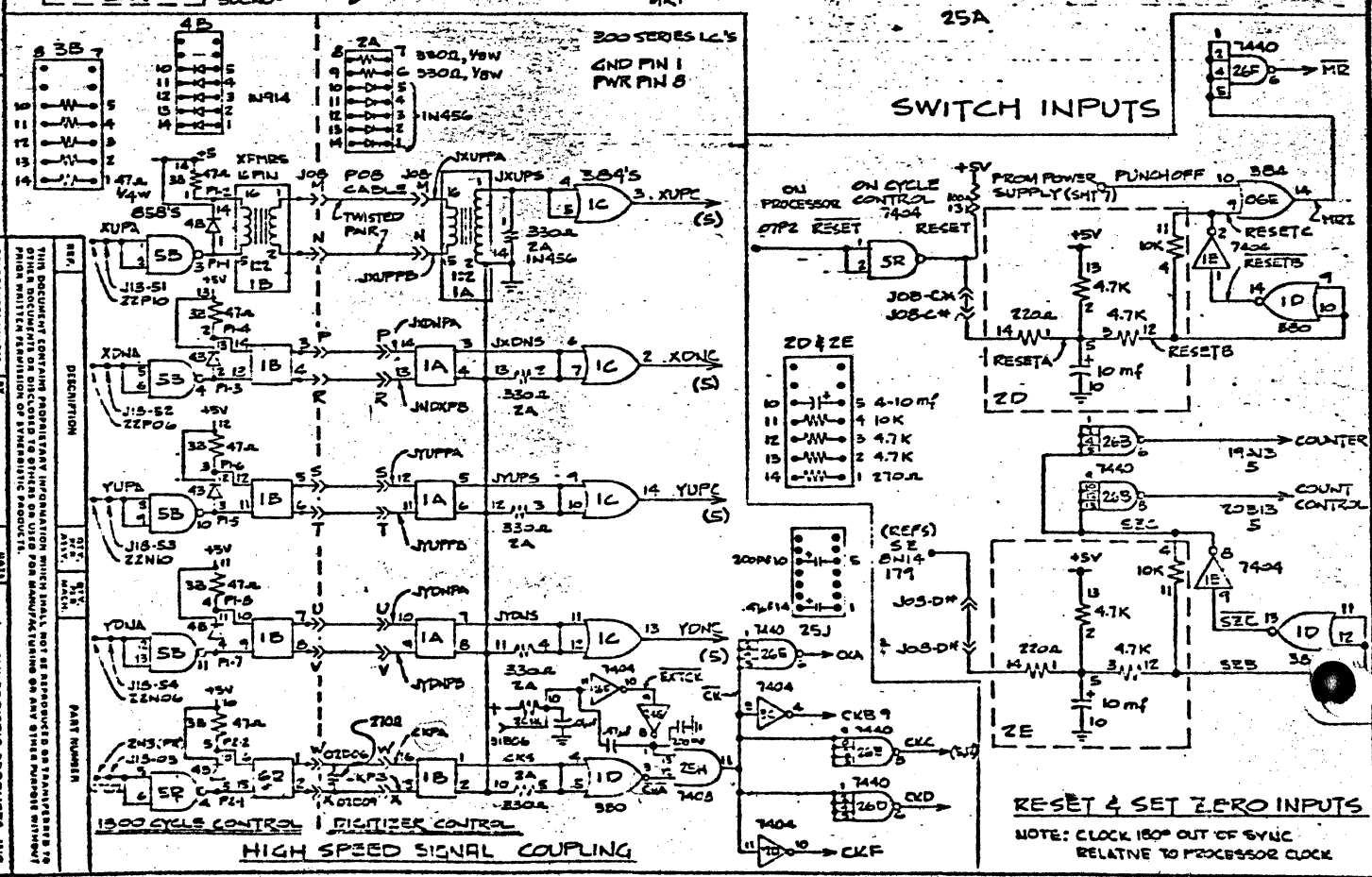
REF.	DESCRIPTION	PART NUMBER
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97B	...	...
98B	...	...
99B	...	...
100B	...	...



RESET & SET ZERO INPUTS  
 NOTE: CLOCK 180° OUT OF SYNC  
 RELATIVE TO PROCESSOR CLOCK



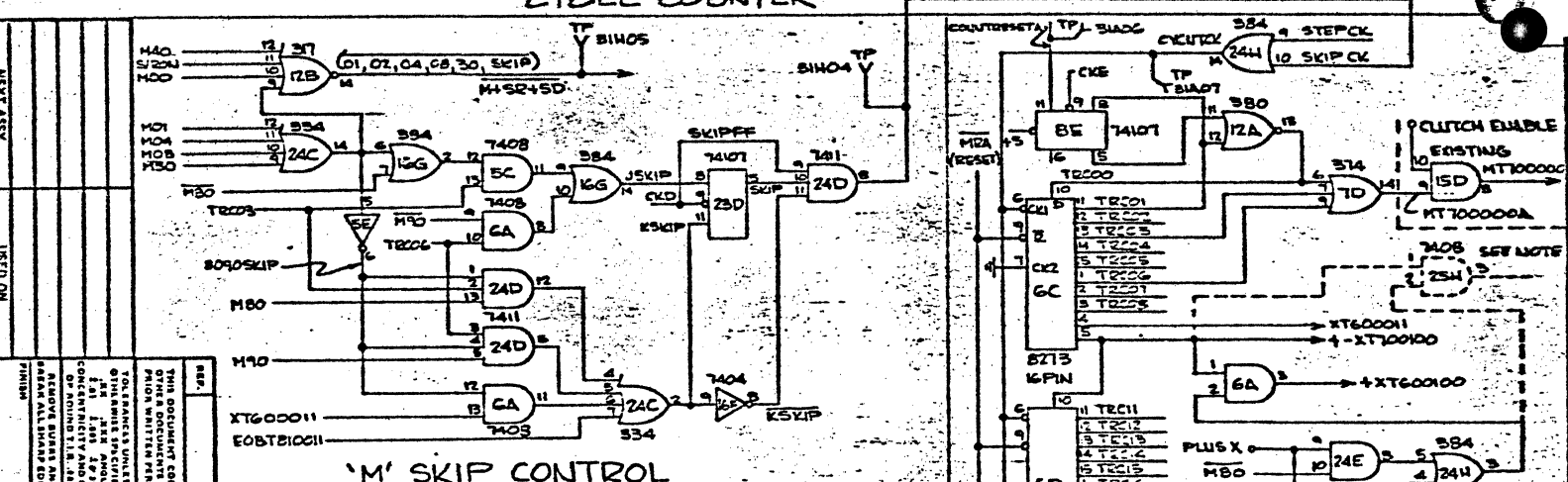
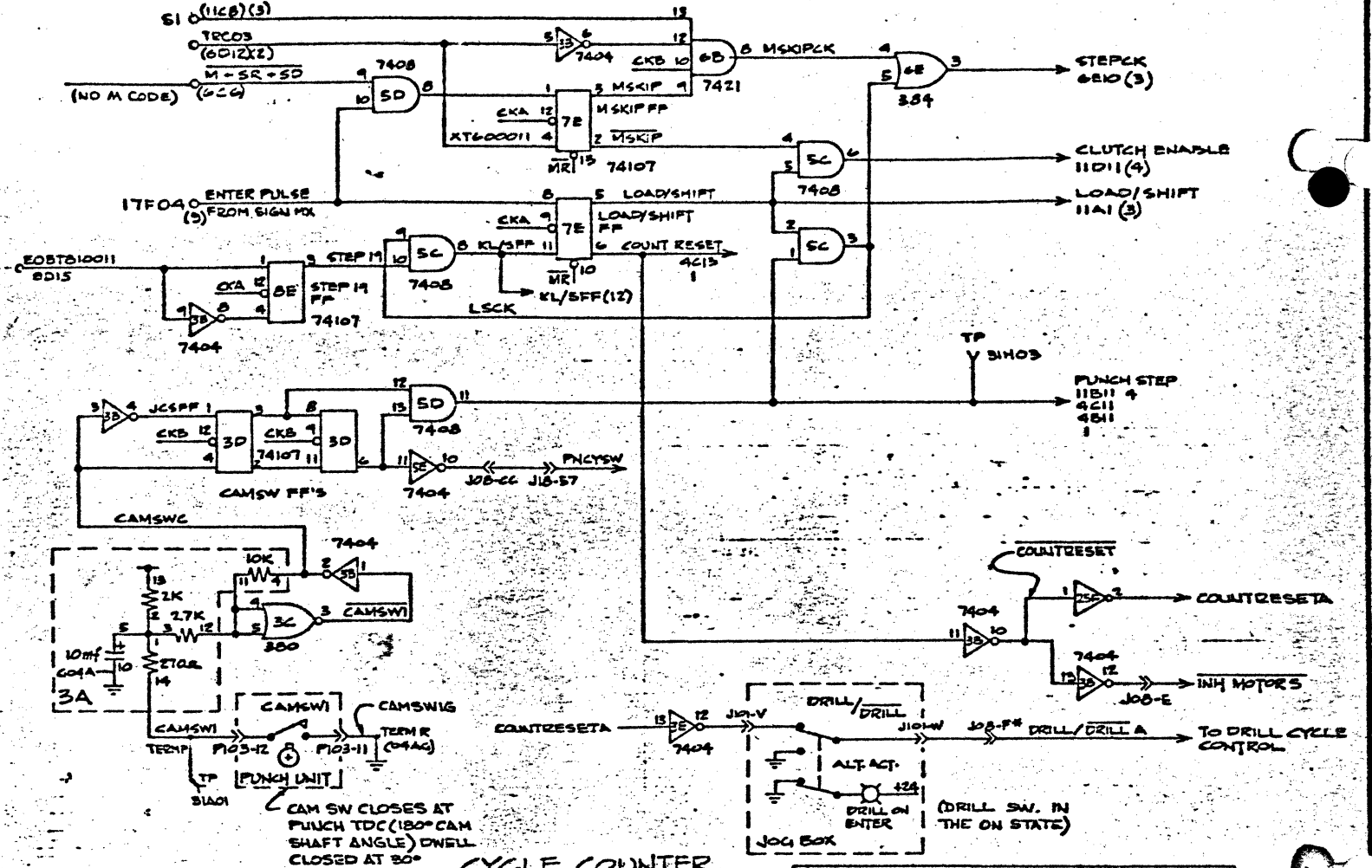
REV. 1	DATE	BY	CHKD
REV. 2	DATE	BY	CHKD
REV. 3	DATE	BY	CHKD
REV. 4	DATE	BY	CHKD
REV. 5	DATE	BY	CHKD
REV. 6	DATE	BY	CHKD
REV. 7	DATE	BY	CHKD
REV. 8	DATE	BY	CHKD
REV. 9	DATE	BY	CHKD
REV. 10	DATE	BY	CHKD



1801-0003

SYNERGETIC PRODUCTS, INC.

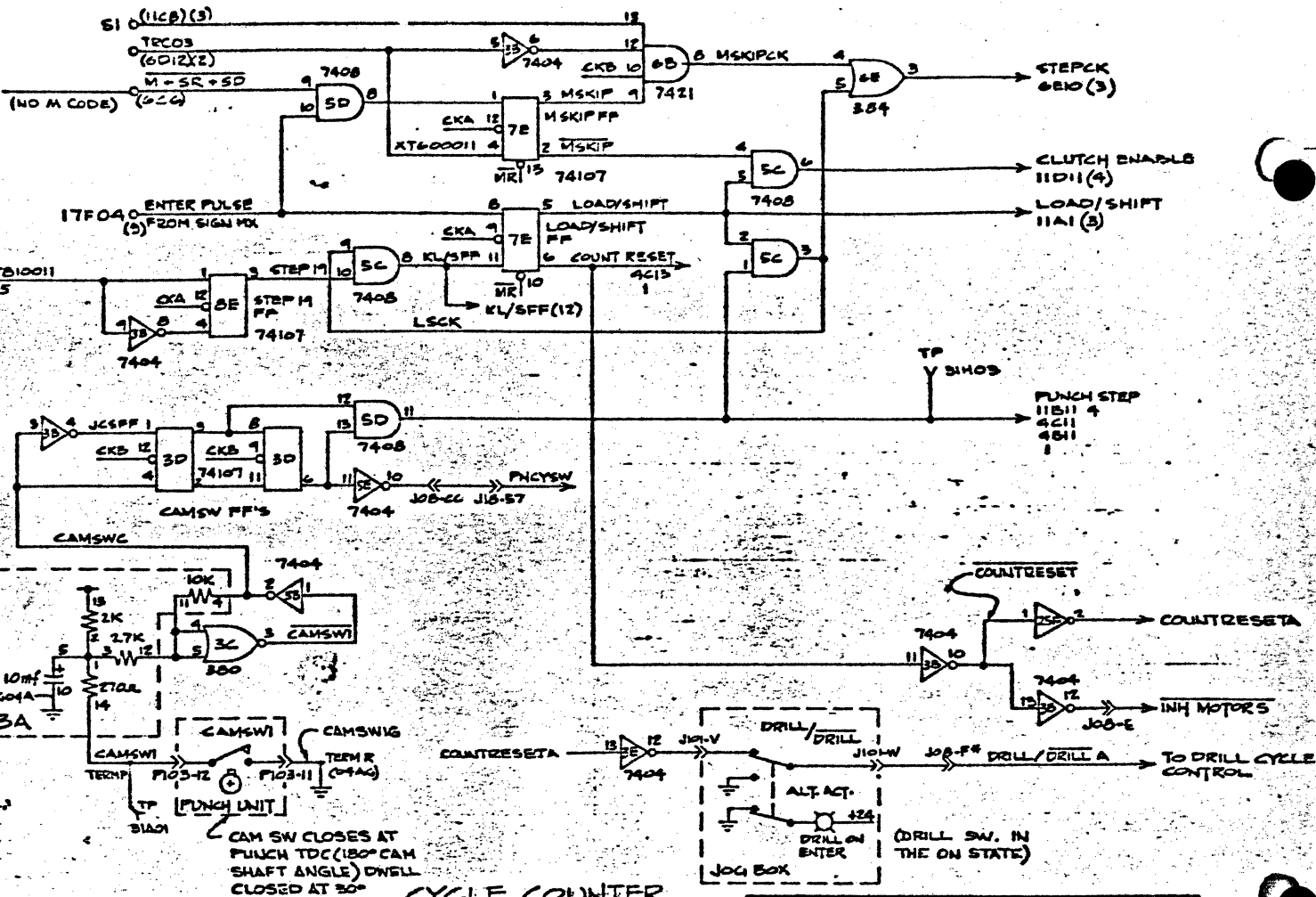
1801 McDev, San Jose, Calif.



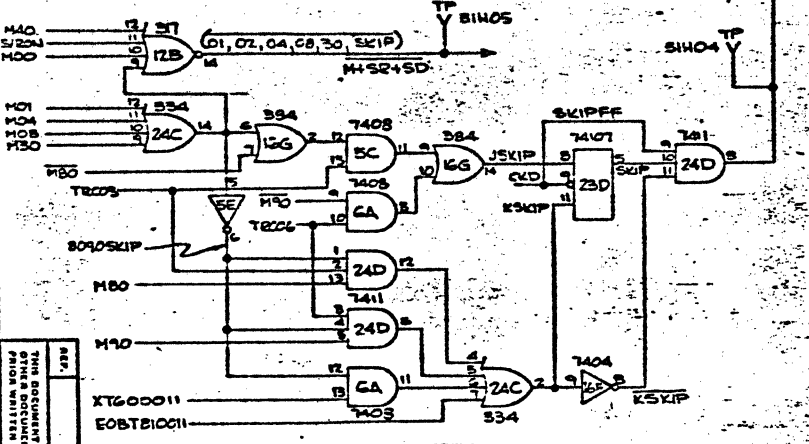
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02	0,1,2,4,8	28	
03	M	29	
04	M	30	
05	M		
06	M		
07	M		
08	M		
09	M		
10	M		
11	M		
12	M		
13	M		
14	M		
15	M		
16	M		
17	M		
18	M		
19	M		
20	M		
21	M		
22	M		
23	M		
24	M		
25	M		

(1) XT600011 4  
 (2) XT600100 5  
 (3) Y7601011 6  
 (4) Y7601100 7  
 (5) XT600100 8  
 (6) XT700000 9  
 (7) XT700100 10  
 (8) Y7601011 11  
 (9) Y7601100 12  
 (10) Y7601011 13  
 (11) Y7601100 14  
 (12) Y7601011 15  
 (13) Y7601100 16  
 (14) Y7601011 17  
 (15) Y7601100 18  
 (16) Y7601011 19  
 (17) Y7601100 20  
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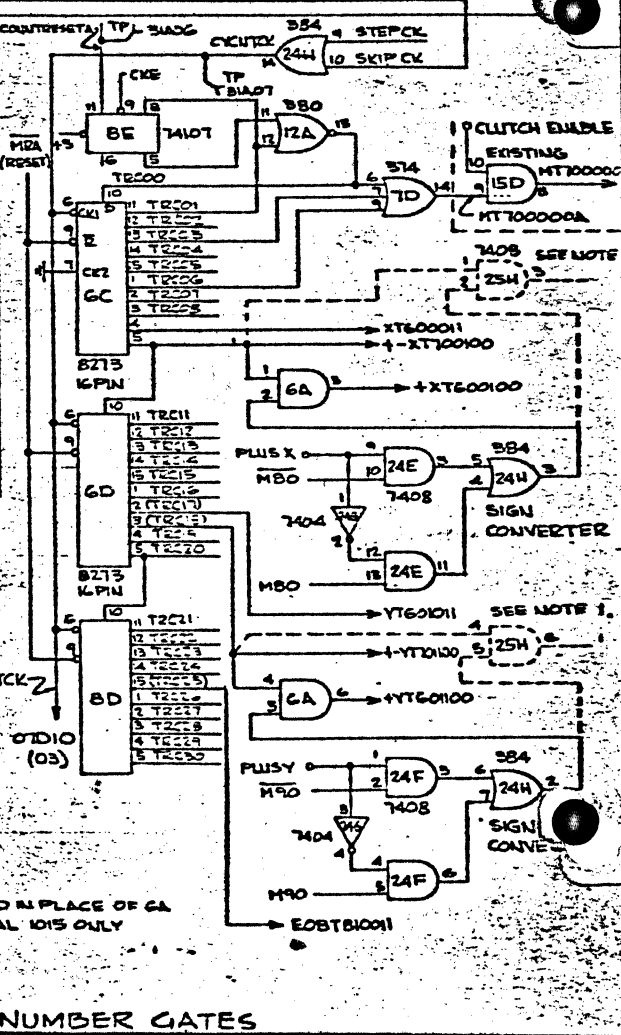
NOTE: 1. 25H USED IN PLACE OF GA ON SERIAL I/O'S ONLY



REV.	DATE	BY	CHKD	DESCRIPTION
1				
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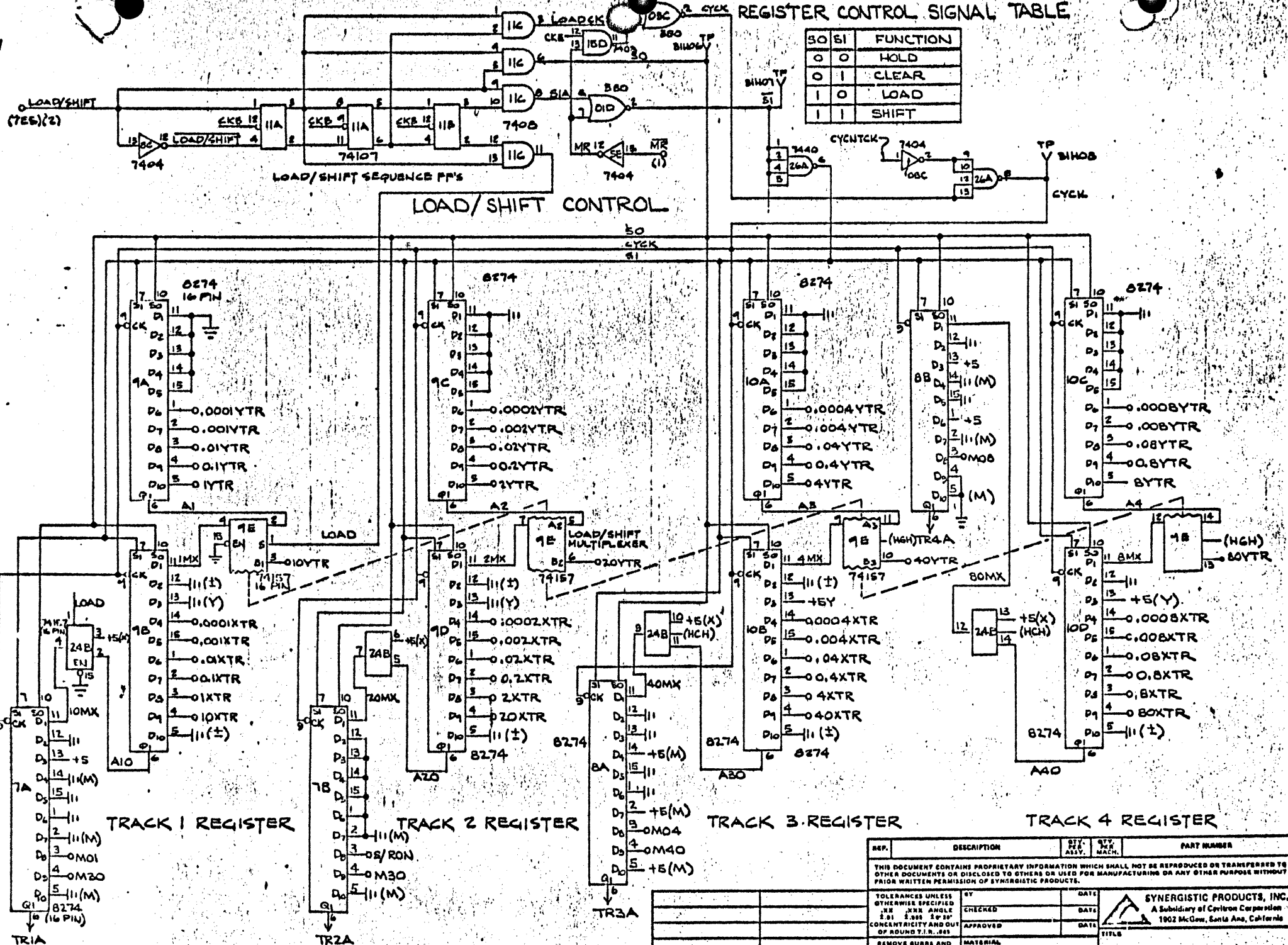
COUNTER	CODE	COUNTER	CODE
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NOTE: 1-25H USED IN PLACE OF 6A ON SERIAL 1015 ONLY

# REGISTER CONTROL SIGNAL TABLE

S0	S1	FUNCTION
0	0	HOLD
0	1	CLEAR
1	0	LOAD
1	1	SHIFT



TRACK 1 REGISTER

TRACK 2 REGISTER

TRACK 3 REGISTER

TRACK 4 REGISTER

REP.	DESCRIPTION	BY ASSY.	DATE	PART NUMBER

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.

TOLERANCES UNLESS OTHERWISE SPECIFIED	BY	DATE
±.01 3.00 2° ±	CHECKED	DATE
CONCENTRICITY AND OUT OF ROUND T.I.R. .001	APPROVED	DATE

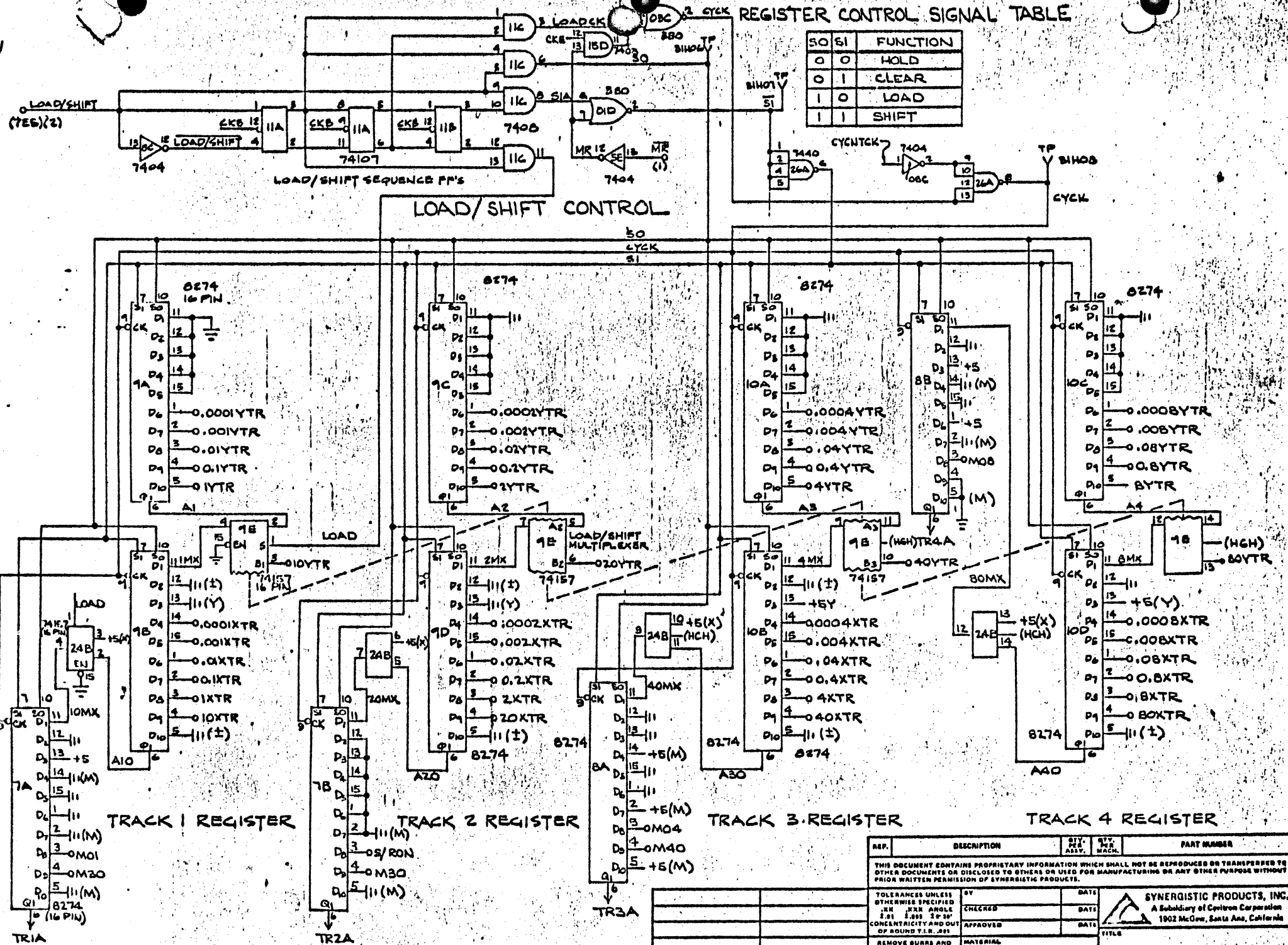
**SYNERGISTIC PRODUCTS, INC.**  
A Subsidiary of Corlison Corporation  
1902 McGow, Santa Ana, California

FINISH	MATERIAL

NEXT ASSY	USED ON	SCALE	DWG #
			1801-0005

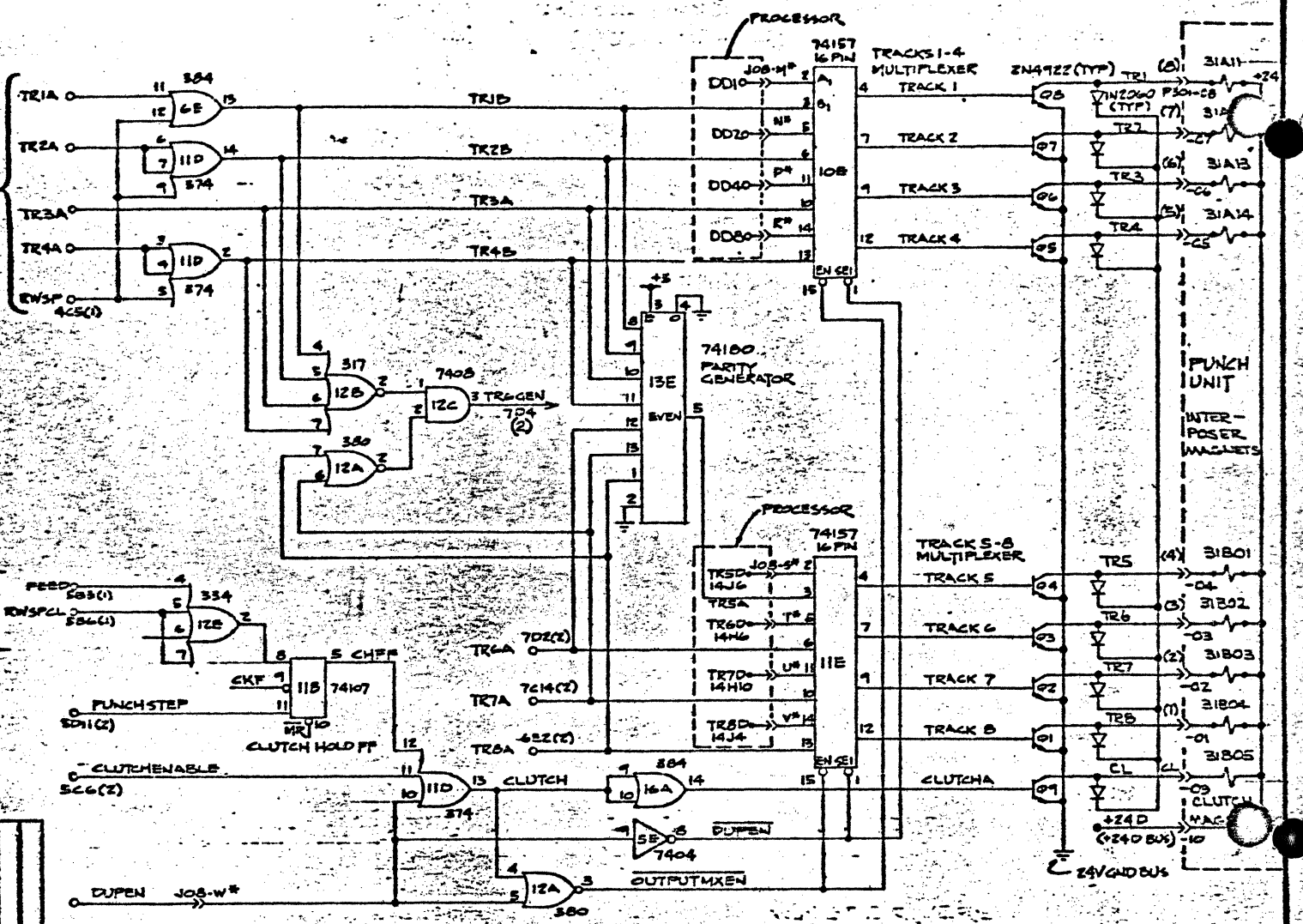
REGISTER CONTROL SIGNAL TABLE

S0	S1	FUNCTION
0	0	HOLD
0	1	CLEAR
1	0	LOAD
1	1	SHIFT

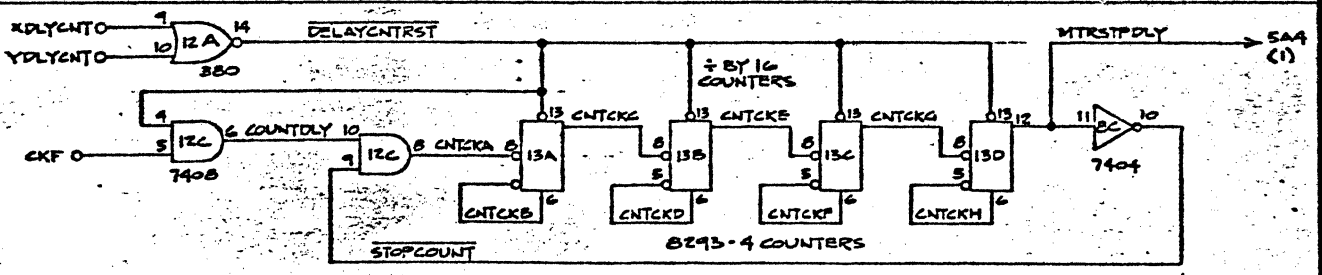


REF.	DESCRIPTION	BY DES. ASSY.	BY MFG. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED: .25 .375 .50 .625 .75 .875 1.00 1.125 1.25 1.375 1.50 1.625 1.75 1.875 2.00 2.125 2.25 2.375 2.50 2.625 2.75 2.875 3.00 3.125 3.25 3.375 3.50 3.625 3.75 3.875 4.00 4.125 4.25 4.375 4.50 4.625 4.75 4.875 5.00 5.125 5.25 5.375 5.50 5.625 5.75 5.875 6.00 6.125 6.25 6.375 6.50 6.625 6.75 6.875 7.00 7.125 7.25 7.375 7.50 7.625 7.75 7.875 8.00 8.125 8.25 8.375 8.50 8.625 8.75 8.875 9.00 9.125 9.25 9.375 9.50 9.625 9.75 9.875 10.00 10.125 10.25 10.375 10.50 10.625 10.75 10.875 11.00 11.125 11.25 11.375 11.50 11.625 11.75 11.875 12.00 12.125 12.25 12.375 12.50 12.625 12.75 12.875 13.00 13.125 13.25 13.375 13.50 13.625 13.75 13.875 14.00 14.125 14.25 14.375 14.50 14.625 14.75 14.875 15.00 15.125 15.25 15.375 15.50 15.625 15.75 15.875 16.00 16.125 16.25 16.375 16.50 16.625 16.75 16.875 17.00 17.125 17.25 17.375 17.50 17.625 17.75 17.875 18.00 18.125 18.25 18.375 18.50 18.625 18.75 18.875 19.00 19.125 19.25 19.375 19.50 19.625 19.75 19.875 20.00 20.125 20.25 20.375 20.50 20.625 20.75 20.875 21.00 21.125 21.25 21.375 21.50 21.625 21.75 21.875 22.00 22.125 22.25 22.375 22.50 22.625 22.75 22.875 23.00 23.125 23.25 23.375 23.50 23.625 23.75 23.875 24.00 24.125 24.25 24.375 24.50 24.625 24.75 24.875 25.00 25.125 25.25 25.375 25.50 25.625 25.75 25.875 26.00 26.125 26.25 26.375 26.50 26.625 26.75 26.875 27.00 27.125 27.25 27.375 27.50 27.625 27.75 27.875 28.00 28.125 28.25 28.375 28.50 28.625 28.75 28.875 29.00 29.125 29.25 29.375 29.50 29.625 29.75 29.875 30.00 30.125 30.25 30.375 30.50 30.625 30.75 30.875 31.00 31.125 31.25 31.375 31.50 31.625 31.75 31.875 32.00 32.125 32.25 32.375 32.50 32.625 32.75 32.875 33.00 33.125 33.25 33.375 33.50 33.625 33.75 33.875 34.00 34.125 34.25 34.375 34.50 34.625 34.75 34.875 35.00 35.125 35.25 35.375 35.50 35.625 35.75 35.875 36.00 36.125 36.25 36.375 36.50 36.625 36.75 36.875 37.00 37.125 37.25 37.375 37.50 37.625 37.75 37.875 38.00 38.125 38.25 38.375 38.50 38.625 38.75 38.875 39.00 39.125 39.25 39.375 39.50 39.625 39.75 39.875 40.00 40.125 40.25 40.375 40.50 40.625 40.75 40.875 41.00 41.125 41.25 41.375 41.50 41.625 41.75 41.875 42.00 42.125 42.25 42.375 42.50 42.625 42.75 42.875 43.00 43.125 43.25 43.375 43.50 43.625 43.75 43.875 44.00 44.125 44.25 44.375 44.50 44.625 44.75 44.875 45.00 45.125 45.25 45.375 45.50 45.625 45.75 45.875 46.00 46.125 46.25 46.375 46.50 46.625 46.75 46.875 47.00 47.125 47.25 47.375 47.50 47.625 47.75 47.875 48.00 48.125 48.25 48.375 48.50 48.625 48.75 48.875 49.00 49.125 49.25 49.375 49.50 49.625 49.75 49.875 50.00		DATE	DATE	
REMOVE BURRS AND DEBurr ALL SHARP EDGES!		MATERIAL		TITLE
FINISH		SCALE		1801-0005

REF.	DESCRIPTION	BY DES. ASSY.	BY MFG. MACH.	PART NUMBER		
TOLERANCES UNLESS OTHERWISE SPECIFIED: .25 .375 .50 .625 .75 .875 1.00 1.125 1.25 1.375 1.50 1.625 1.75 1.875 2.00 2.125 2.25 2.375 2.50 2.625 2.75 2.875 3.00 3.125 3.25 3.375 3.50 3.625 3.75 3.875 4.00 4.125 4.25 4.375 4.50 4.625 4.75 4.875 5.00 5.125 5.25 5.375 5.50 5.625 5.75 5.875 6.00 6.125 6.25 6.375 6.50 6.625 6.75 6.875 7.00 7.125 7.25 7.375 7.50 7.625 7.75 7.875 8.00 8.125 8.25 8.375 8.50 8.625 8.75 8.875 9.00 9.125 9.25 9.375 9.50 9.625 9.75 9.875 10.00 10.125 10.25 10.375 10.50 10.625 10.75 10.875 11.00 11.125 11.25 11.375 11.50 11.625 11.75 11.875 12.00 12.125 12.25 12.375 12.50 12.625 12.75 12.875 13.00 13.125 13.25 13.375 13.50 13.625 13.75 13.875 14.00 14.125 14.25 14.375 14.50 14.625 14.75 14.875 15.00 15.125 15.25 15.375 15.50 15.625 15.75 15.875 16.00 16.125 16.25 16.375 16.50 16.625 16.75 16.875 17.00 17.125 17.25 17.375 17.50 17.625 17.75 17.875 18.00 18.125 18.25 18.375 18.50 18.625 18.75 18.875 19.00 19.125 19.25 19.375 19.50 19.625 19.75 19.875 20.00 20.125 20.25 20.375 20.50 20.625 20.75 20.875 21.00 21.125 21.25 21.375 21.50 21.625 21.75 21.875 22.00 22.125 22.25 22.375 22.50 22.625 22.75 22.875 23.00 23.125 23.25 23.375 23.50 23.625 23.75 23.875 24.00 24.125 24.25 24.375 24.50 24.625 24.75 24.875 25.00 25.125 25.25 25.375 25.50 25.625 25.75 25.875 26.00 26.125 26.25 26.375 26.50 26.625 26.75 26.875 27.00 27.125 27.25 27.375 27.50 27.625 27.75 27.875 28.00 28.125 28.25 28.375 28.50 28.625 28.75 28.875 29.00 29.125 29.25 29.375 29.50 29.625 29.75 29.875 30.00 30.125 30.25 30.375 30.50 30.625 30.75 30.875 31.00 31.125 31.25 31.375 31.50 31.625 31.75 31.875 32.00 32.125 32.25 32.375 32.50 32.625 32.75 32.875 33.00 33.125 33.25 33.375 33.50 33.625 33.75 33.875 34.00 34.125 34.25 34.375 34.50 34.625 34.75 34.875 35.00 35.125 35.25 35.375 35.50 35.625 35.75 35.875 36.00 36.125 36.25 36.375 36.50 36.625 36.75 36.875 37.00 37.125 37.25 37.375 37.50 37.625 37.75 37.875 38.00 38.125 38.25 38.375 38.50 38.625 38.75 38.875 39.00 39.125 39.25 39.375 39.50 39.625 39.75 39.875 40.00 40.125 40.25 40.375 40.50 40.625 40.75 40.875 41.00 41.125 41.25 41.375 41.50 41.625 41.75 41.875 42.00 42.125 42.25 42.375 42.50 42.625 42.75 42.875 43.00 43.125 43.25 43.375 43.50 43.625 43.75 43.875 44.00 44.125 44.25 44.375 44.50 44.625 44.75 44.875 45.00 45.125 45.25 45.375 45.50 45.625 45.75 45.875 46.00 46.125 46.25 46.375 46.50 46.625 46.75 46.875 47.00 47.125 47.25 47.375 47.50 47.625 47.75 47.875 48.00 48.125 48.25 48.375 48.50 48.625 48.75 48.875 49.00 49.125 49.25 49.375 49.50 49.625 49.75 49.875 50.00					DATE	DATE
REMOVE BURRS AND DEBurr ALL SHARP EDGES!		MATERIAL		TITLE		
FINISH		SCALE		1801-0005		



TRACK OUTPUT MULTIPLEXER & MAGNET DRIVERS



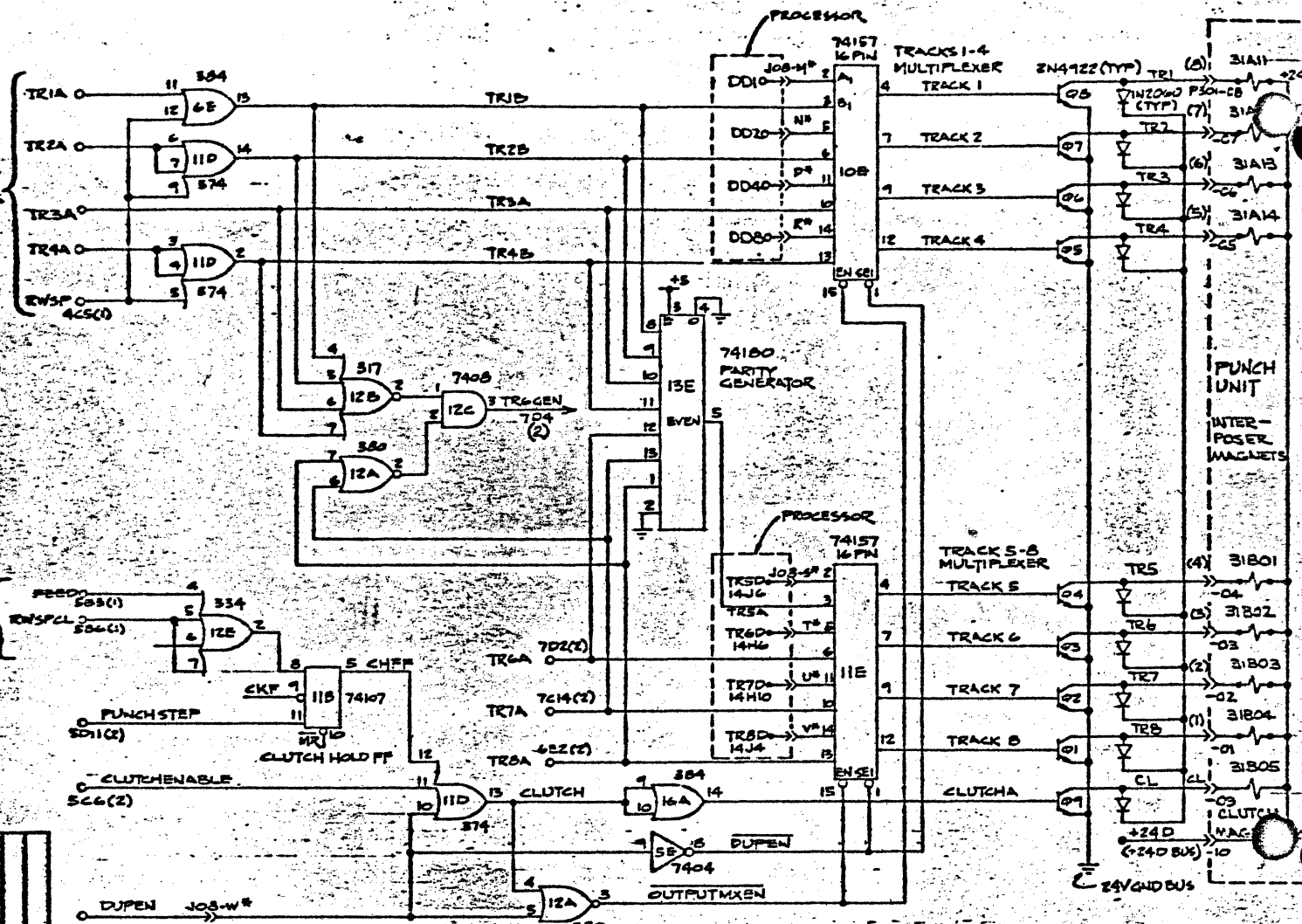
NOTE: GND ALL DIRECT LOAD INPUTS 3, 4, 10, 11  
CONNECT DIRECT LOAD STROBS TO +5 (1)

(NOT USED ON SERIAL)  
1007 & 1015

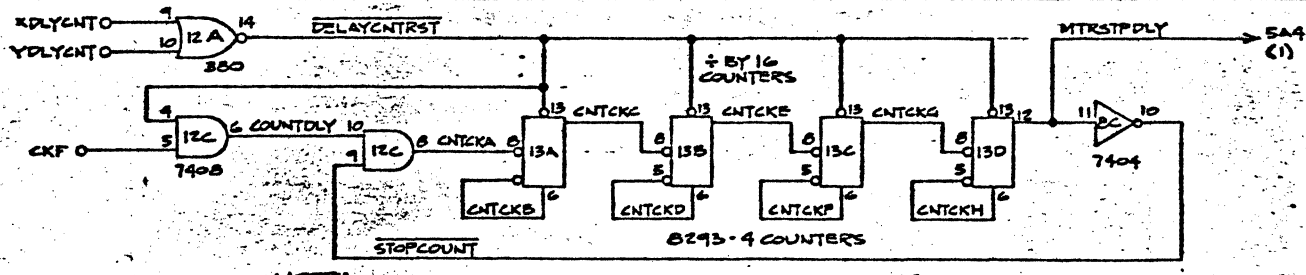
ENTER DELAY COUNTER  
OPTIONAL

REV.	DESCRIPTION	DATE	BY
1	...	...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...
6	...	...	...
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8	...	...	...
9	...	...	...
10	...	...	...

SYNCHRONISTIC PRODUCTS, INC.  
A Subsidiary of Southern Corporation  
1903 N. 4th St., Santa Ana, California



### TRACK OUTPUT MULTIPLEXER & MAGNET DRIVERS



NOTE:  
GND ALL DIRECT LOAD INPUTS 3, 4, 10, 11  
CONNECT DIRECT LOAD STROBS TO +5 (1)  
(NOT USED ON SERIAL)  
1007 & 1015

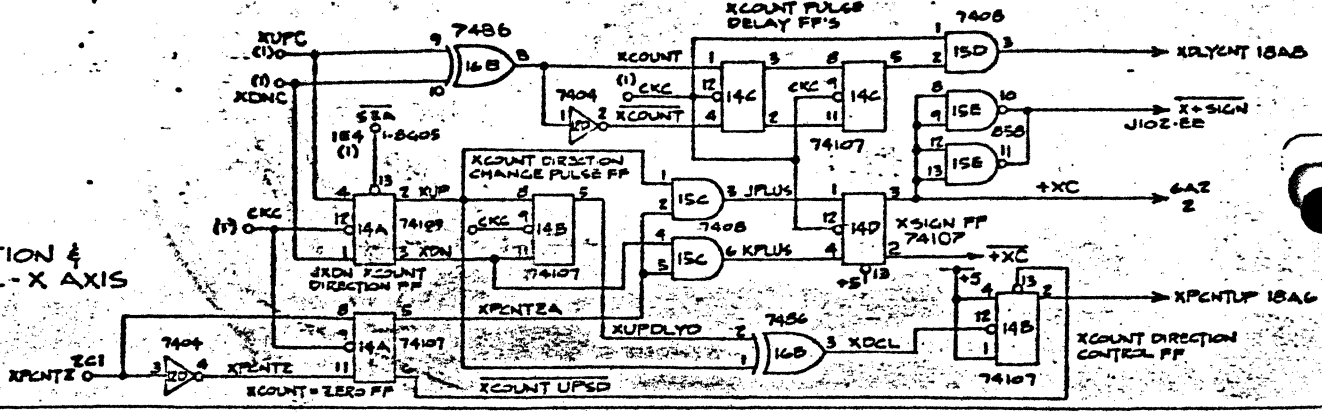
ENTER DELAY COUNTER  
OPTIONAL

REV.	DATE	DESCRIPTION	PART NUMBER
1	4-10-77	INITIAL DESIGN	
2	5-10-77	REVISED TO REFLECT MANUFACTURING CHANGES	
3	11-10-77	REVISED TO REFLECT MANUFACTURING CHANGES	

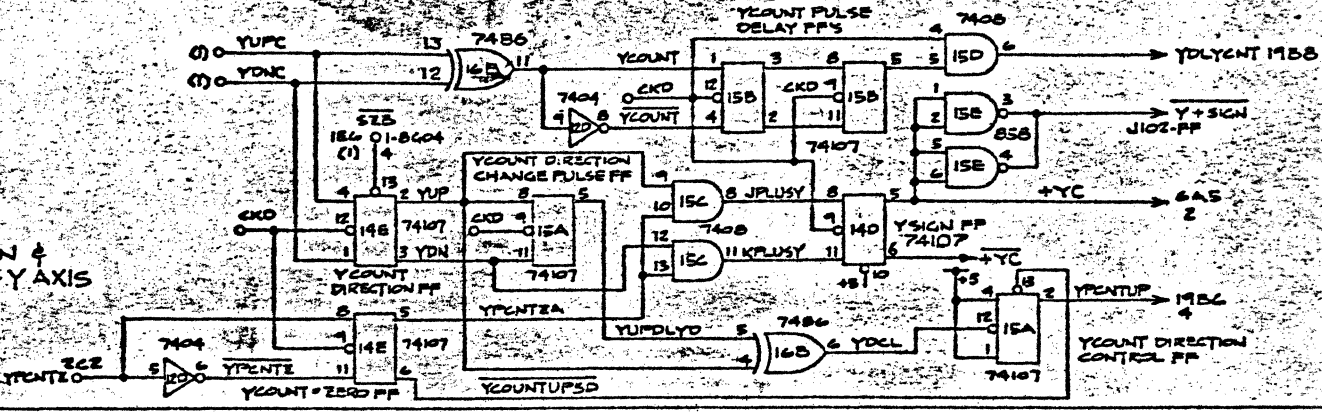
SYNERGETIC PRODUCTS, INC.  
A Subsidiary of Century Corporation  
19079 Highway 2, Santa Ana, California



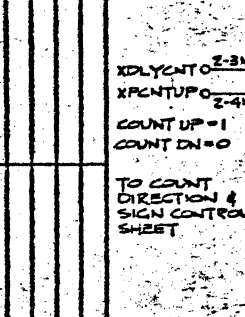
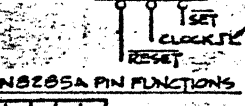
**COUNT DIRECTION & SIGN CONTROL - X AXIS**



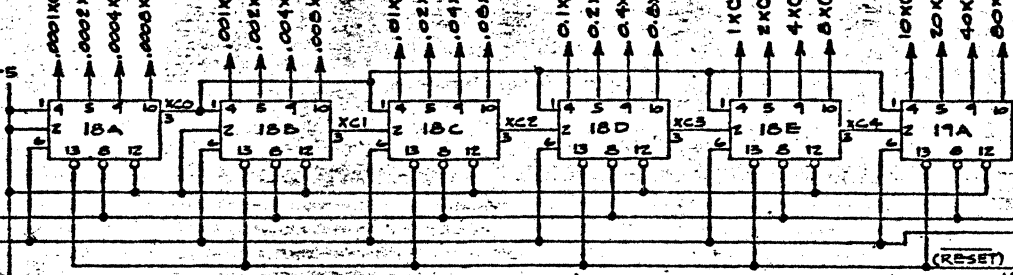
**COUNT DIRECTION & SIGN CONTROL - Y AXIS**



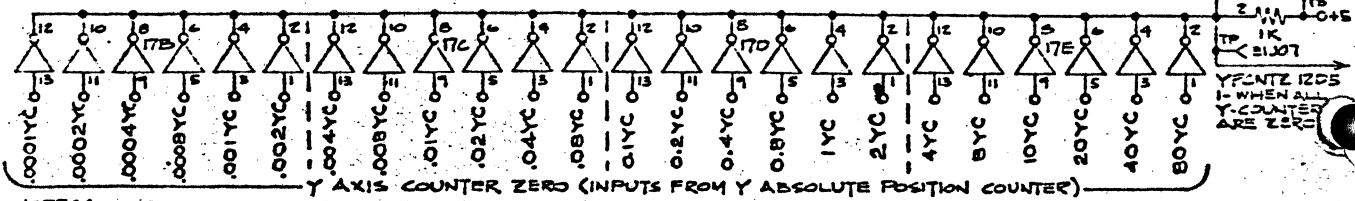
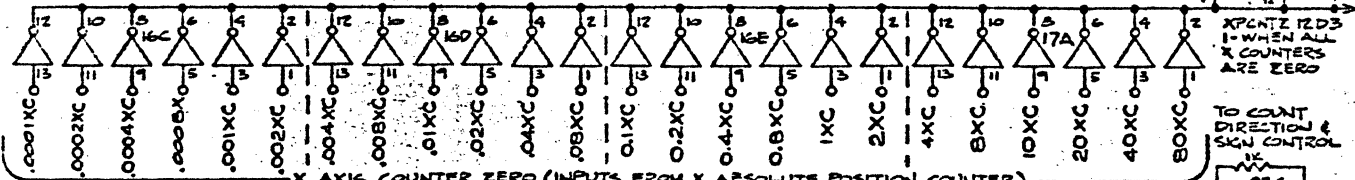
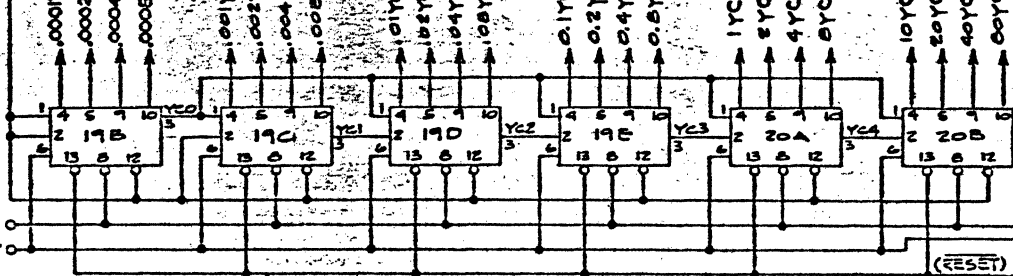
**NS205A PIN FUNCTIONS**



**X ABSOLUTE POSITION TO TRACK REGISTERS & X ZERO GATES**



**Y ABSOLUTE POSITION TO TRACK REGISTERS & Y ZERO GATES**

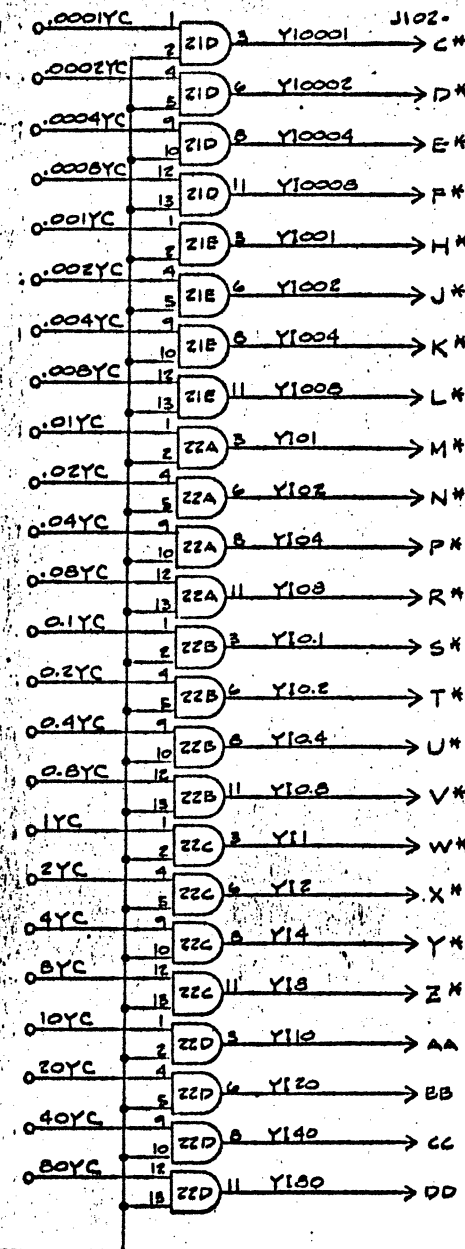
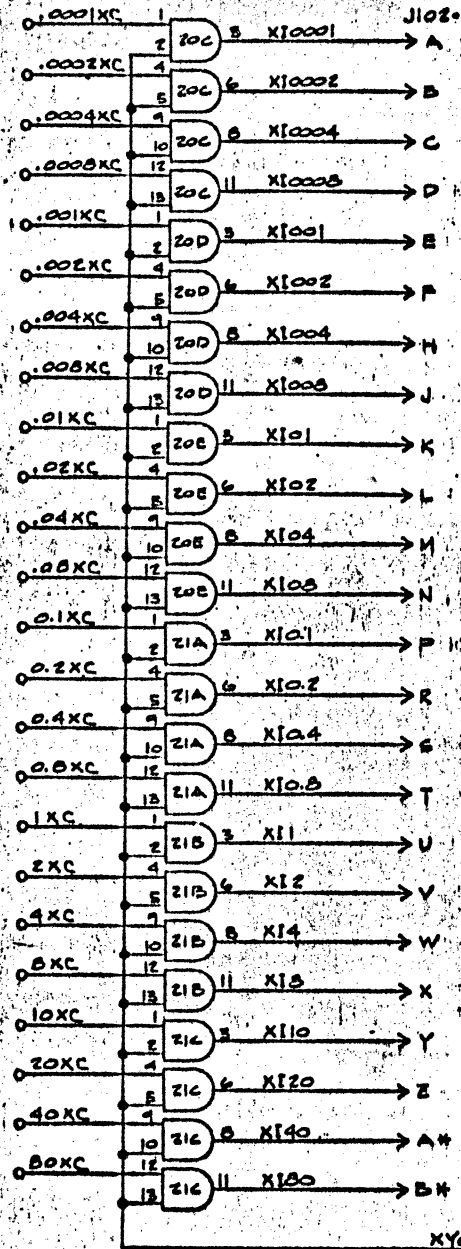


- NOTES:**
1. ALL COUNTERS ARE SIGNETICS NS205A, UP/DOWN, BCD.
  2. ALL INVERTERS ARE 7405.

**POSITION COUNTERS & COUNTER ZERO GATES**

REV.	DESCRIPTION	DATE	BY	CHK'D
1	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF SIGNETICS CORPORATION.			
2	ADDED DESCRIPTIONS OF THE NS205A AND 7405.	11/77	WJ	WJ
3	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
4	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
5	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
6	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
7	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
8	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
9	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
10	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
11	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
12	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
13	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
14	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
15	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
16	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
17	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
18	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
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20	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
21	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
22	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
23	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
24	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
25	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
26	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
27	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
28	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ
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30	REVISIONS TO THE NS205A AND 7405.	11/77	WJ	WJ

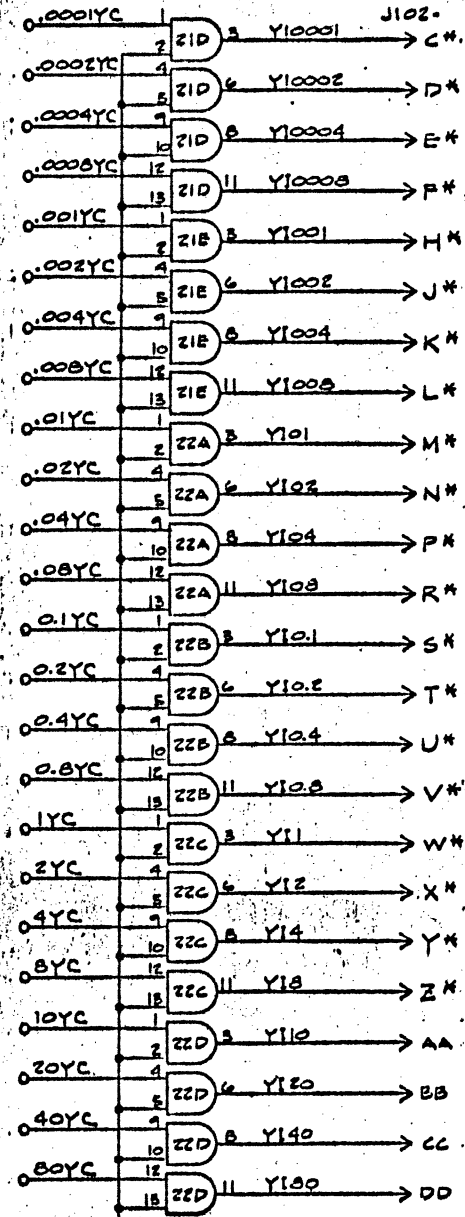
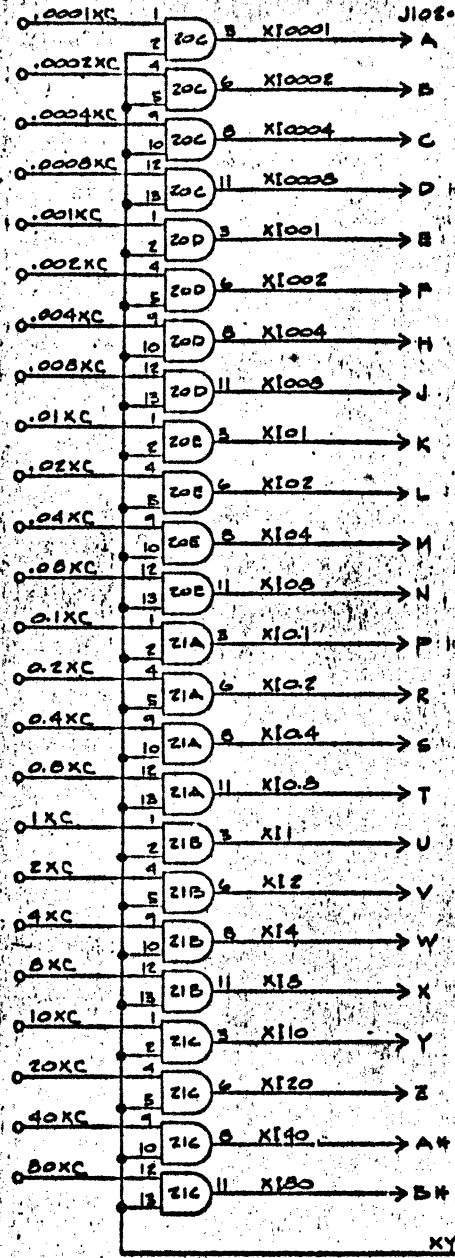
ALL GATES



SECTION I

REP.	DESCRIPTION	QTY. PER ASSY.	QTY. PER MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
TOLERANCES UNLESS OTHERWISE SPECIFIED: DIMENSIONS .001" - .010" ± .0005 DIMENSIONS .010" - .050" ± .001 DIMENSIONS .050" - .100" ± .0015 DIMENSIONS .100" - .500" ± .002 DIMENSIONS .500" - 1.000" ± .003 DIMENSIONS 1.000" - 2.000" ± .004 DIMENSIONS 2.000" - 5.000" ± .005 DIMENSIONS 5.000" - 10.000" ± .006 DIMENSIONS 10.000" - 25.000" ± .008 DIMENSIONS 25.000" - 50.000" ± .010 DIMENSIONS 50.000" - 100.000" ± .012 DIMENSIONS 100.000" - 250.000" ± .015 DIMENSIONS 250.000" - 500.000" ± .018 DIMENSIONS 500.000" - 1000.000" ± .020		BY: M. G. QUINN	DATE: 12-15-71	<p>SYNERGISTIC PRODUCTS, INC. A Subsidiary of Clevison Corporation 1902 McCow, Santa Ana, California</p>
CHECKED:		DATE:	TITLE: POSITION COUNTER GATES	
APPROVED:		DATE:	SCALE: 1/8" = 1"	
MATERIAL:		DATE:	QTY. 1801-0008	
NEXT ASSY:	USED ON:			

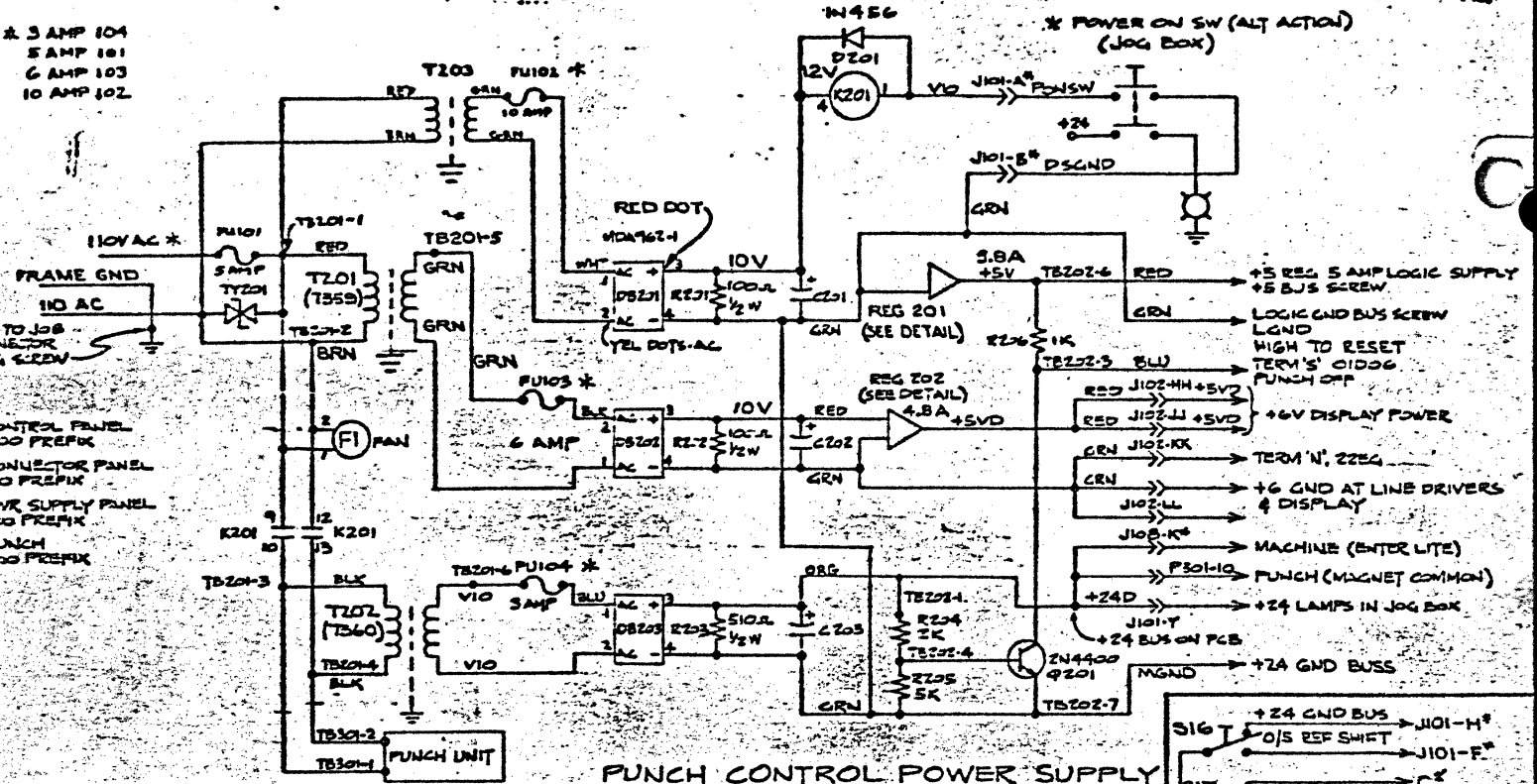
ALL GATES



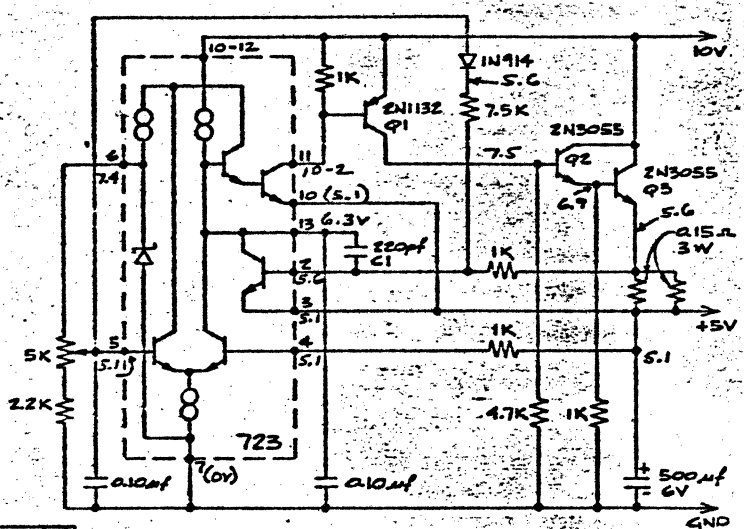
SECTION I

REF.	DESCRIPTION	QTY. PER ASSEMBLY	QTY. PER WALK	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .001 IN ANGLE .001 IN .01 IN CONCENTRICITY AND OUT OF ROUND IN .001		BY: M. QUINN CHECKED:	DATE: 12-13-71 DATE:	<b>SYNERGISTIC PRODUCTS, INC.</b> A Subsidiary of Coultron Corporation 1902 McGow, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES FINISH		APPROVED:	DATE:	TITLE: POSITION COUNTER GATES SCALE: 1:1 DWG NO: 1901-0008
NEXT ASSY	USED ON			

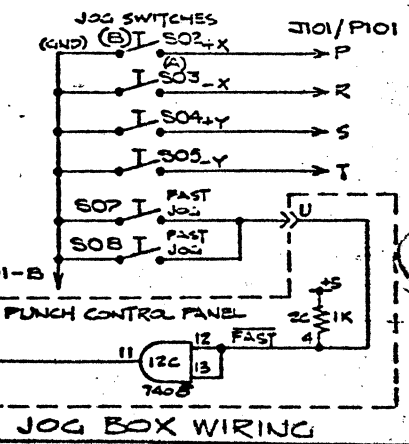
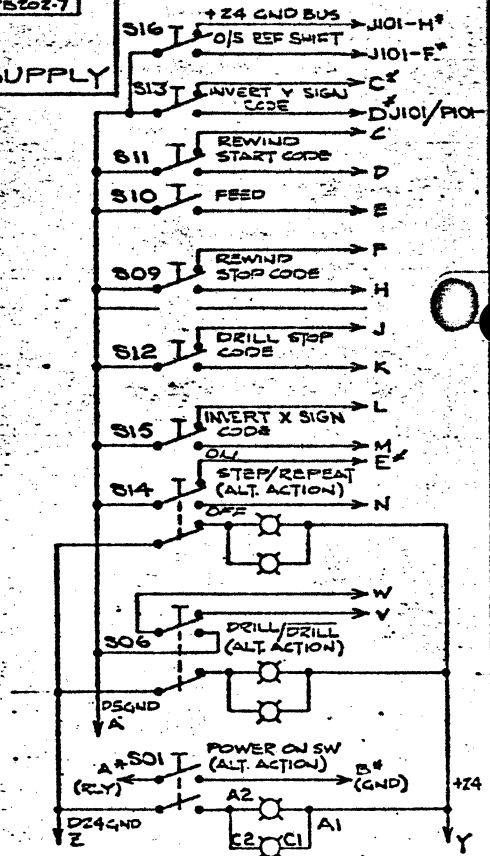
- 3 AMP 104
- 5 AMP 101
- 6 AMP 103
- 10 AMP 102



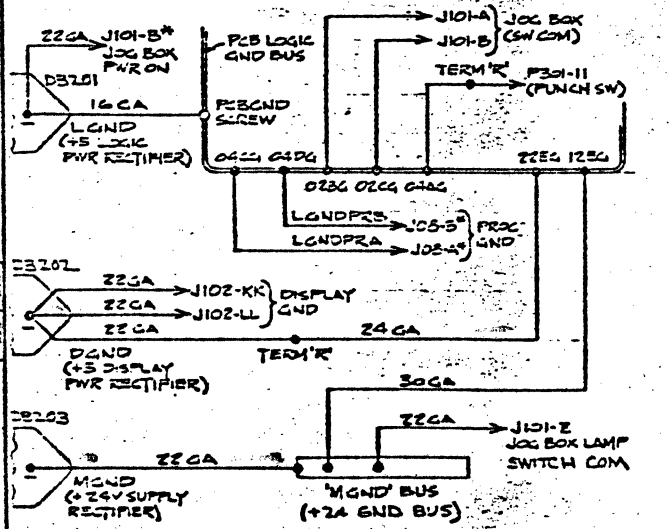
PUNCH CONTROL POWER SUPPLY



5V 7AMP REGULATOR DETAIL



JOG BOX WIRING

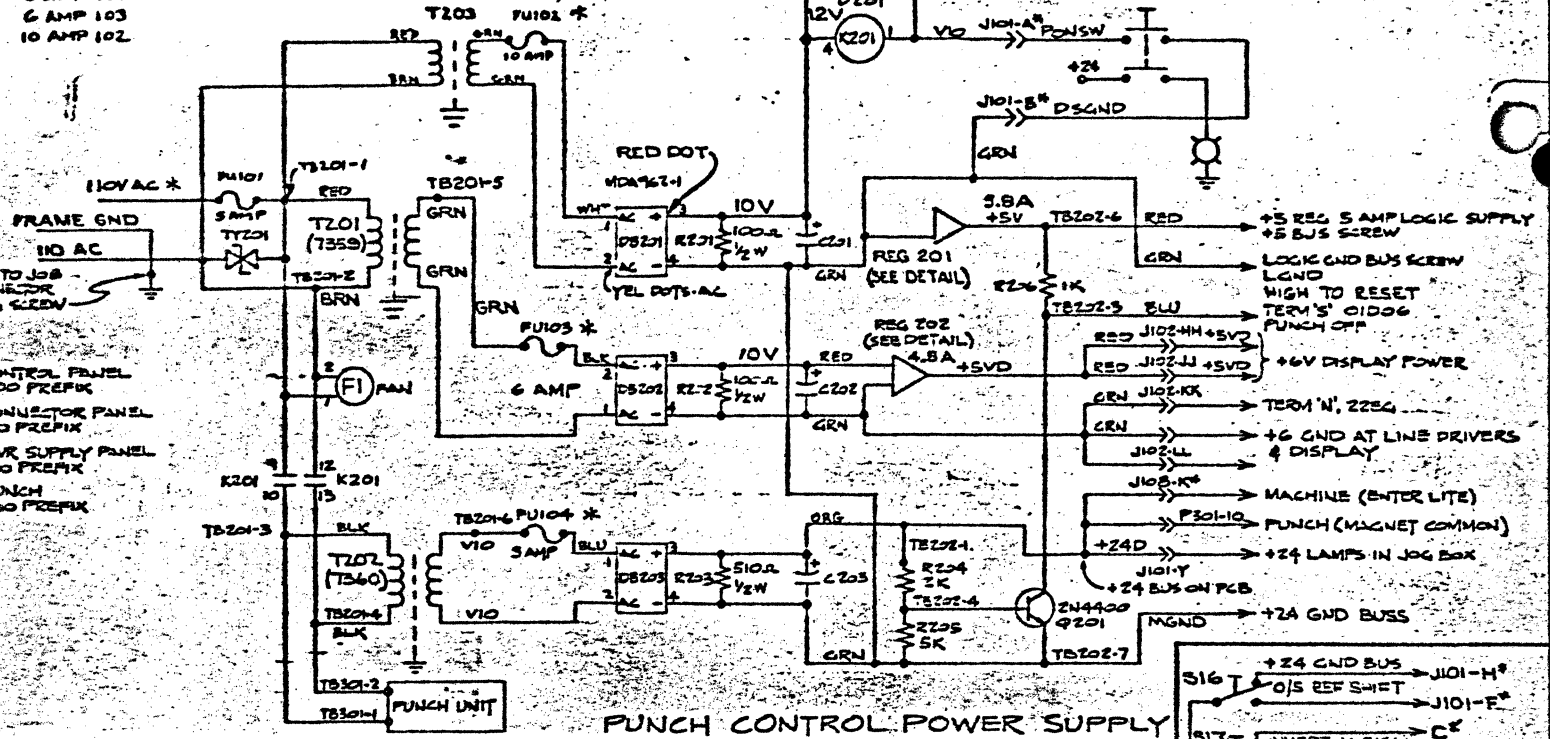


DIGITIZER GROUNDING

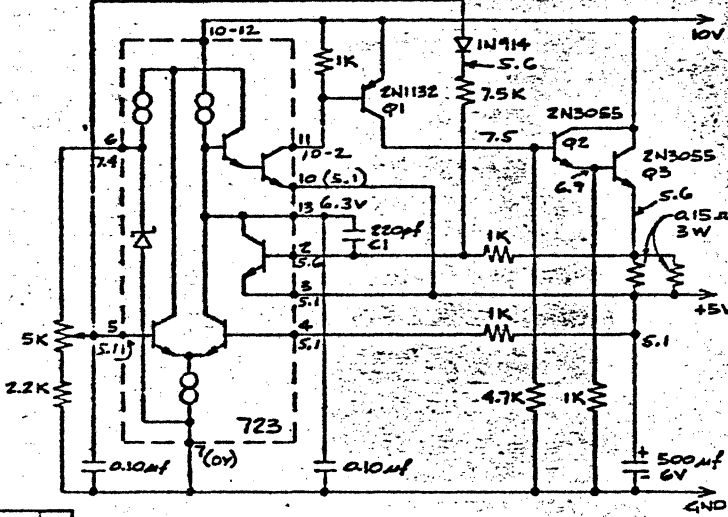
REV.	DATE	DESCRIPTION
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2		REVISED FOR MANUFACTURING
3		REVISED FOR MANUFACTURING
4		REVISED FOR MANUFACTURING
5		REVISED FOR MANUFACTURING
6		REVISED FOR MANUFACTURING
7		REVISED FOR MANUFACTURING
8		REVISED FOR MANUFACTURING
9		REVISED FOR MANUFACTURING
10		REVISED FOR MANUFACTURING
11		REVISED FOR MANUFACTURING
12		REVISED FOR MANUFACTURING
13		REVISED FOR MANUFACTURING
14		REVISED FOR MANUFACTURING
15		REVISED FOR MANUFACTURING
16		REVISED FOR MANUFACTURING
17		REVISED FOR MANUFACTURING
18		REVISED FOR MANUFACTURING
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20		REVISED FOR MANUFACTURING

3 AMP 104  
5 AMP 101  
6 AMP 103  
10 AMP 102

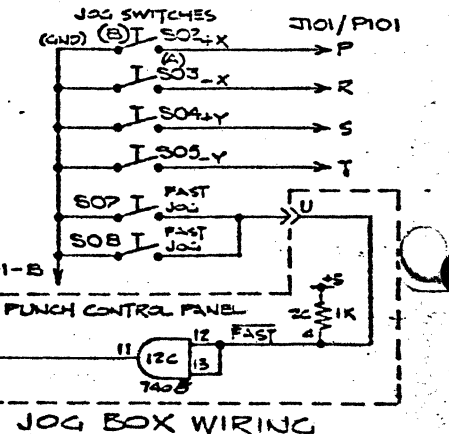
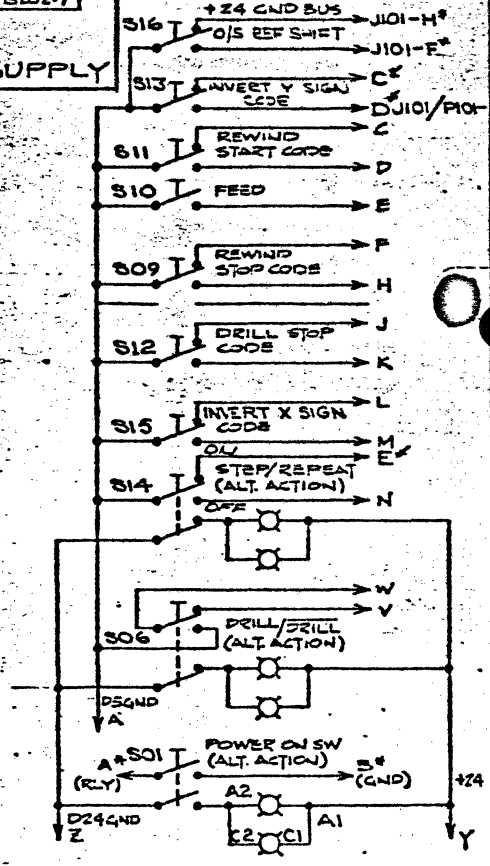
\* POWER ON SW (ALT ACTION)  
(JOG BOX)



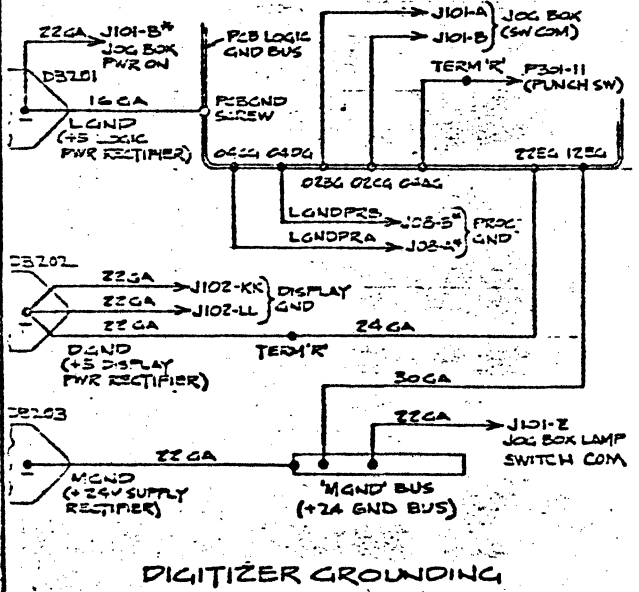
PUNCH CONTROL POWER SUPPLY



EV 7AMP REGULATOR DETAIL

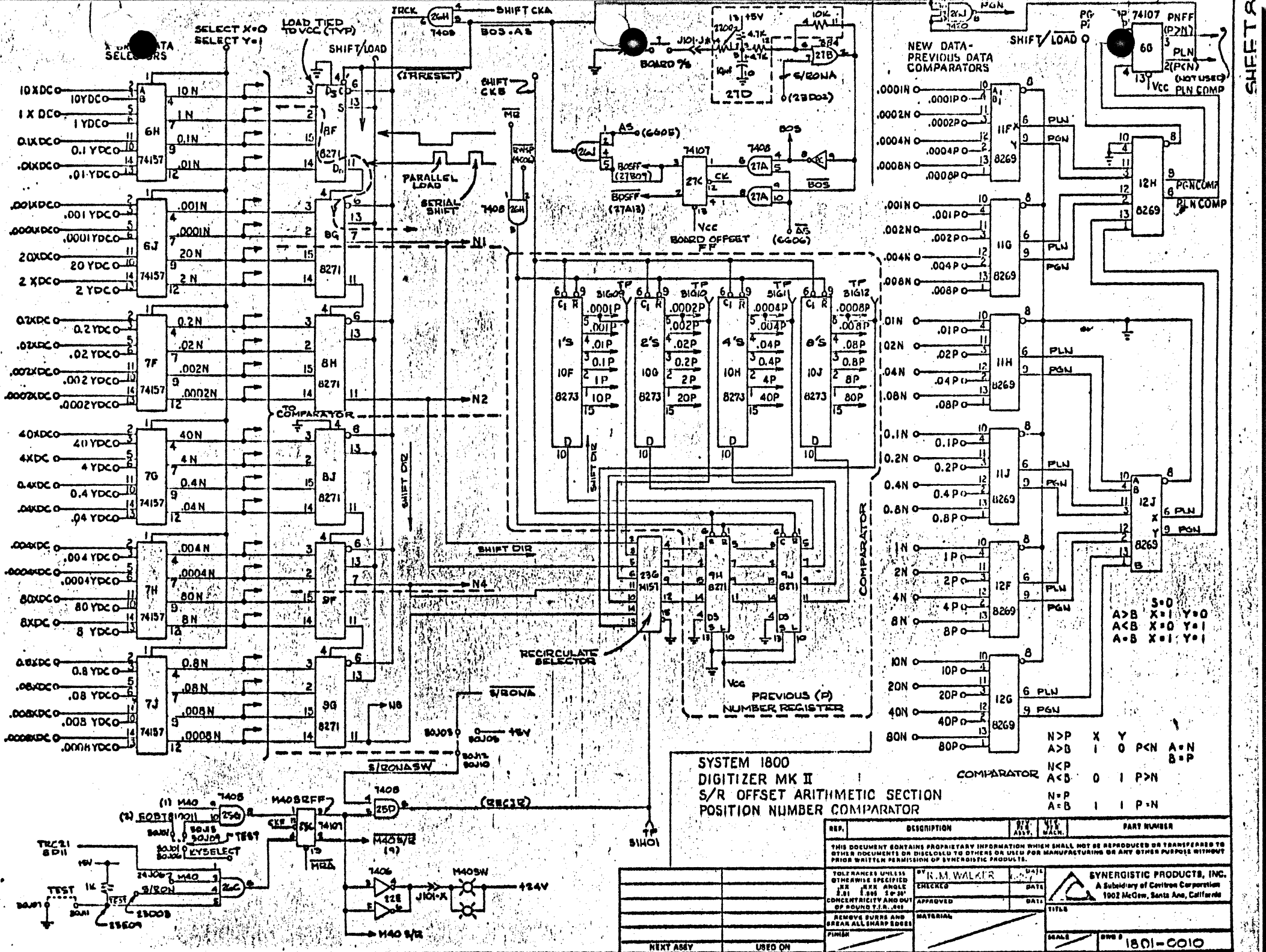


JOG BOX WIRING

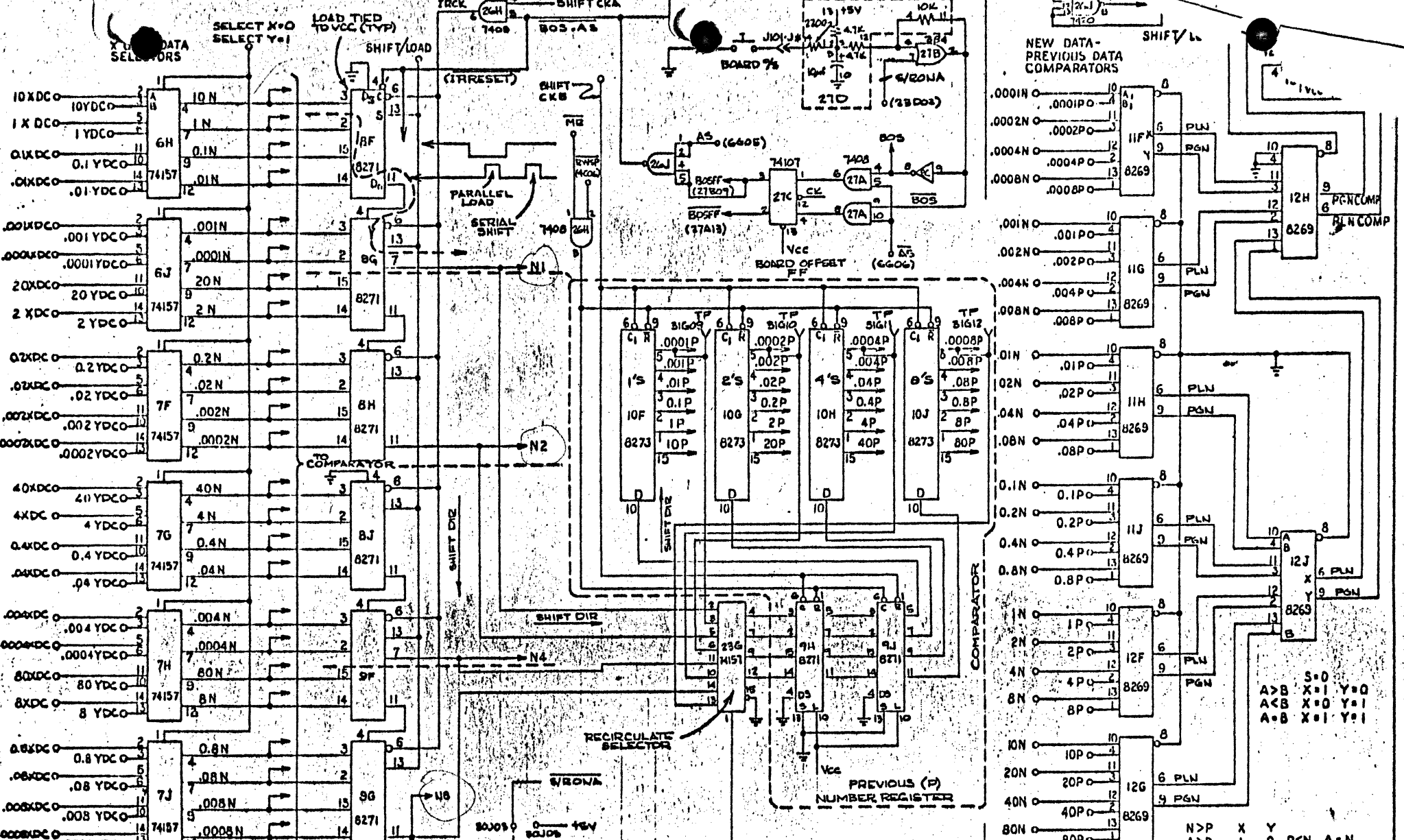


DIGITIZER GROUNDING

REV.	DATE	DESCRIPTION	BY	CHKD.
1	11-22-72	REVISED TO ADD J101-B*	W. J. LIND	
2	11-22-72	REVISED TO ADD J101-A	W. J. LIND	
3	11-22-72	REVISED TO ADD J101-B	W. J. LIND	
4	11-22-72	REVISED TO ADD J101-C	W. J. LIND	
5	11-22-72	REVISED TO ADD J101-D	W. J. LIND	
6	11-22-72	REVISED TO ADD J101-E	W. J. LIND	
7	11-22-72	REVISED TO ADD J101-F	W. J. LIND	
8	11-22-72	REVISED TO ADD J101-G	W. J. LIND	
9	11-22-72	REVISED TO ADD J101-H	W. J. LIND	
10	11-22-72	REVISED TO ADD J101-I	W. J. LIND	
11	11-22-72	REVISED TO ADD J101-J	W. J. LIND	
12	11-22-72	REVISED TO ADD J101-K	W. J. LIND	
13	11-22-72	REVISED TO ADD J101-L	W. J. LIND	
14	11-22-72	REVISED TO ADD J101-M	W. J. LIND	
15	11-22-72	REVISED TO ADD J101-N	W. J. LIND	
16	11-22-72	REVISED TO ADD J101-O	W. J. LIND	
17	11-22-72	REVISED TO ADD J101-P	W. J. LIND	
18	11-22-72	REVISED TO ADD J101-Q	W. J. LIND	
19	11-22-72	REVISED TO ADD J101-R	W. J. LIND	
20	11-22-72	REVISED TO ADD J101-S	W. J. LIND	
21	11-22-72	REVISED TO ADD J101-T	W. J. LIND	
22	11-22-72	REVISED TO ADD J101-U	W. J. LIND	
23	11-22-72	REVISED TO ADD J101-V	W. J. LIND	
24	11-22-72	REVISED TO ADD J101-W	W. J. LIND	
25	11-22-72	REVISED TO ADD J101-X	W. J. LIND	
26	11-22-72	REVISED TO ADD J101-Y	W. J. LIND	
27	11-22-72	REVISED TO ADD J101-Z	W. J. LIND	



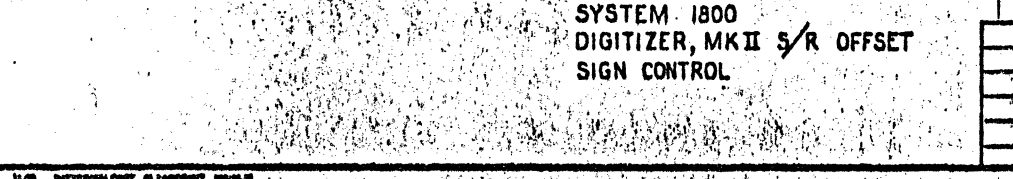
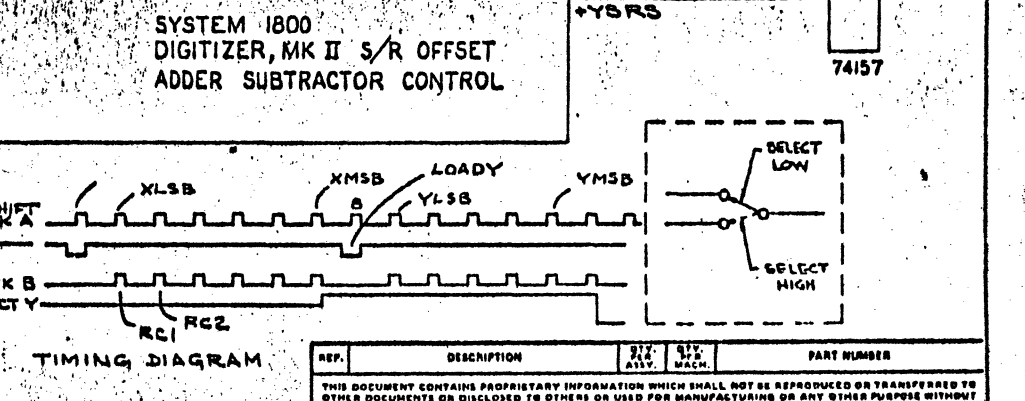
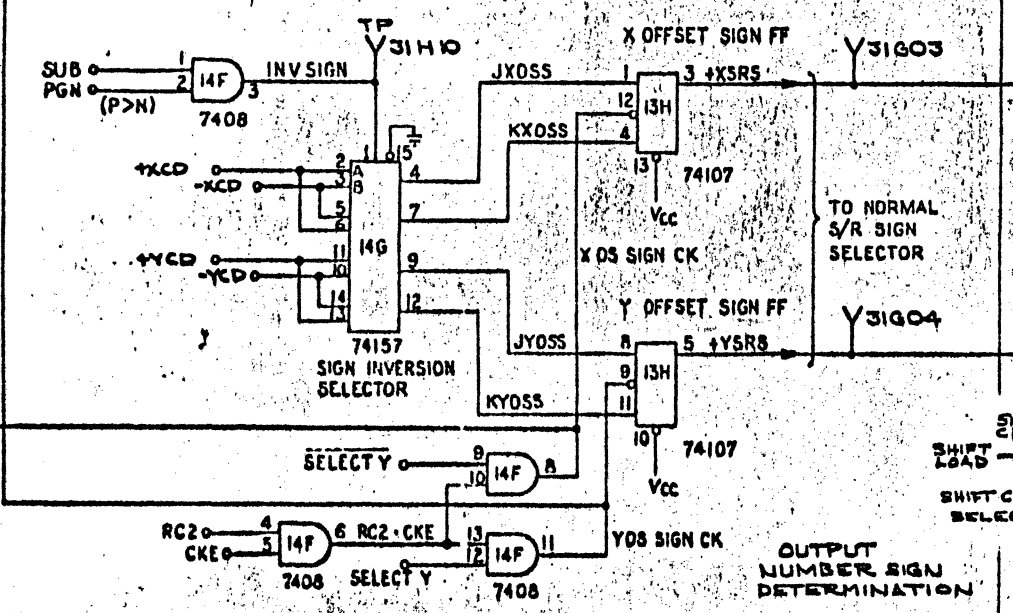
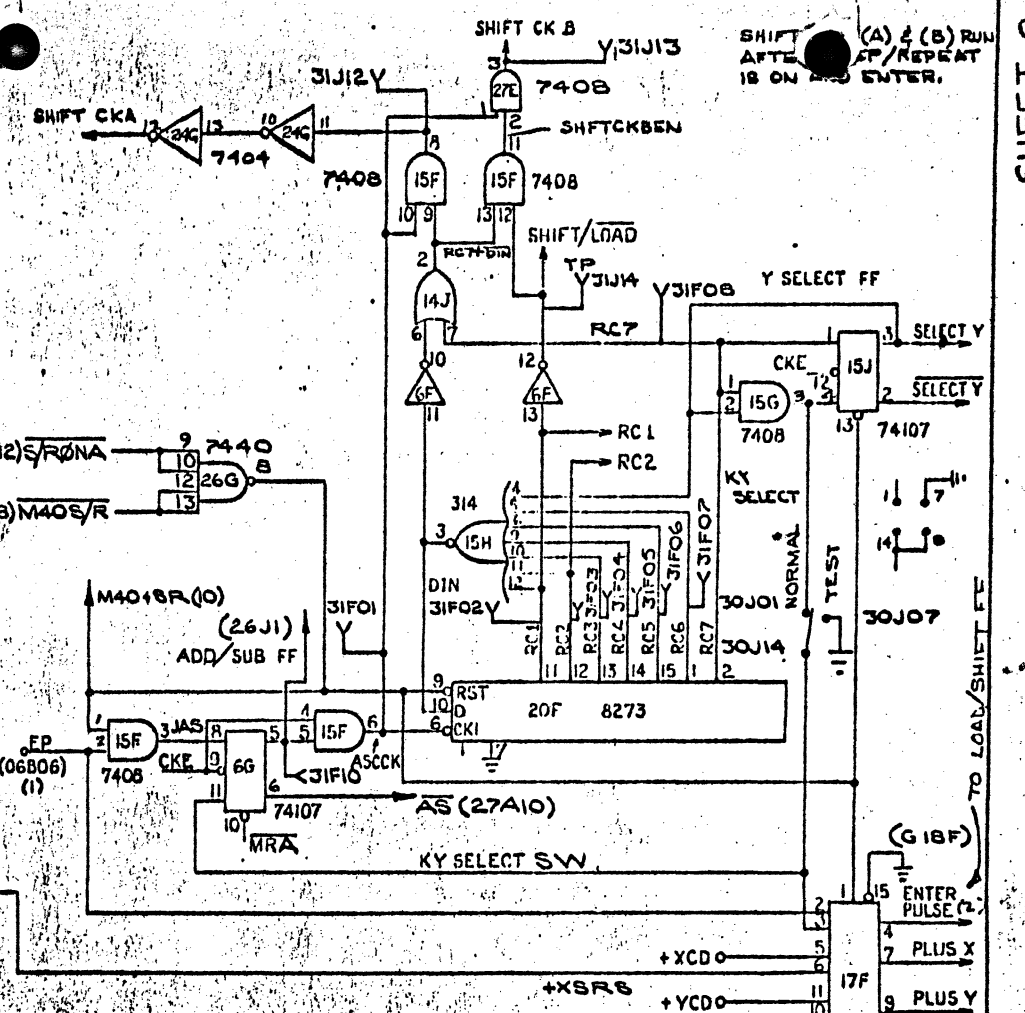
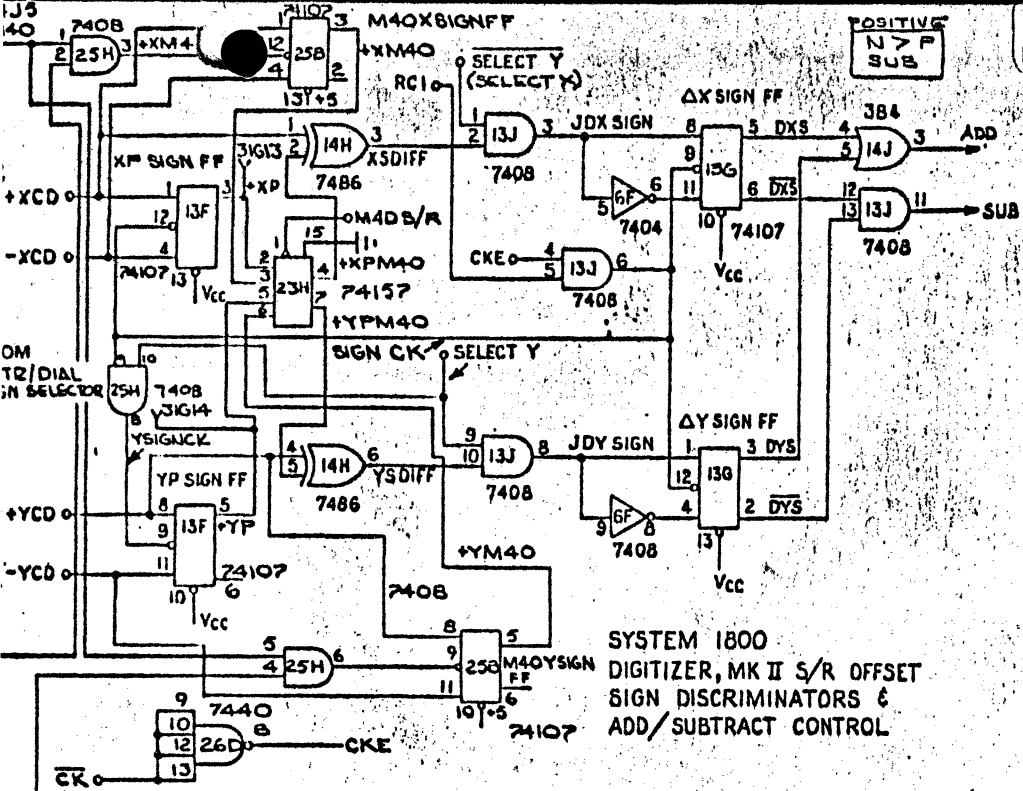
SHEET 8



SYSTEM 1800  
DIGITIZER MK II  
S/R OFFSET ARITHMETIC SECTION  
POSITION NUMBER COMPARATOR

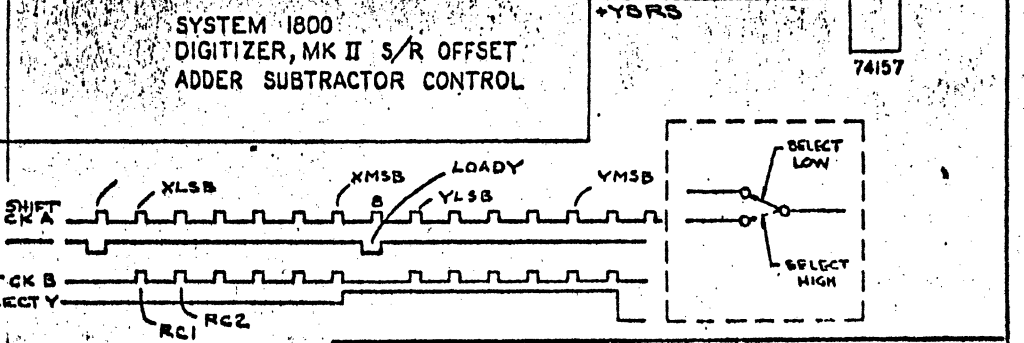
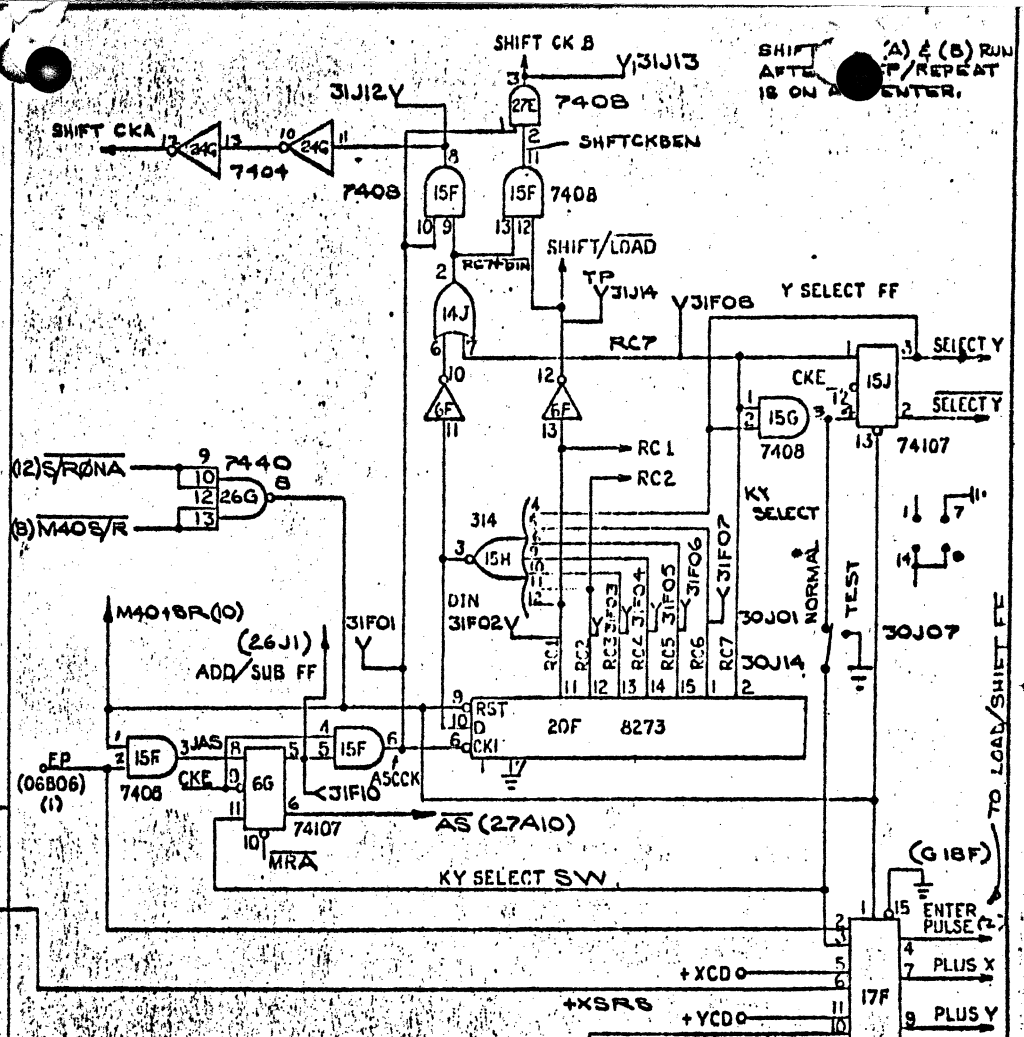
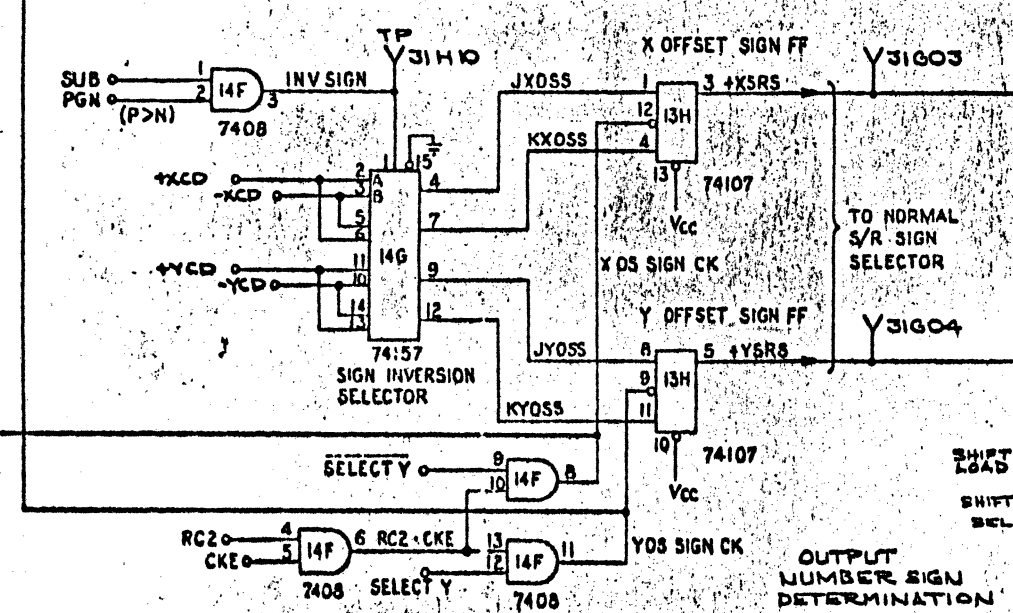
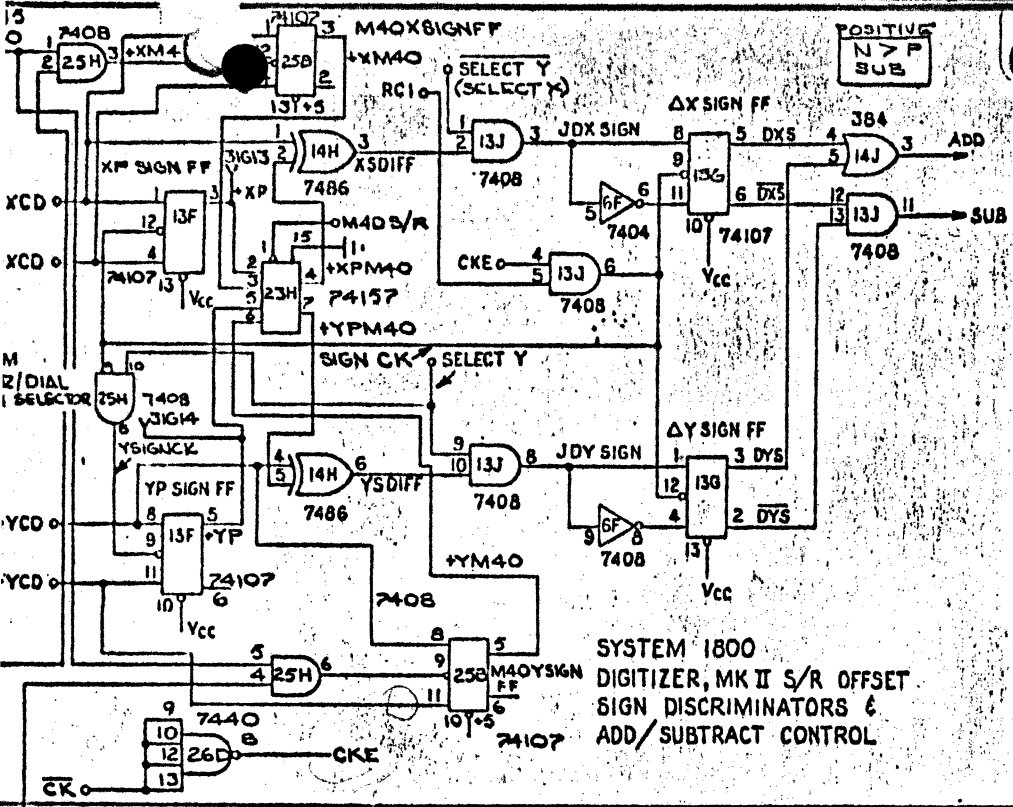
COMPARATOR  
 $N > P \quad X \quad Y$   
 $A > B \quad X = 1 \quad Y = 0 \quad P < N \quad A = N$   
 $N < P$   
 $A < B \quad 0 \quad 1 \quad P > N$   
 $N = P$   
 $A = B \quad 1 \quad 1 \quad P = N$   
 $S = 0$   
 $A > B \quad X = 1 \quad Y = 0$   
 $A < B \quad X = 0 \quad Y = 1$   
 $A = B \quad X = 1 \quad Y = 1$

REF.	DESCRIPTION	BY	CHKD.	PART NUMBER
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TOLERANCES UNLESS OTHERWISE SPECIFIED RES ANGLE 2.51 ± .005 30° ± 30° CONCENTRICITY AND OUT OF ROUND T.J.R..35		BY R.M. WALKER	DATE	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Corbin Corporation 1002 McGow, Santa Ana, California
REMOVE BURRS AND BREAK ALL SHARP EDGES		CHECKED	DATE	
FINISH		APPROVED	DATE	
NEXT ASSEMBLY USED ON		TITLE		
		SCALE 1801-C010		



REF.	DESCRIPTION	REV. ASBY	DATE	G.P. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.					
TOLERANCES UNLESS OTHERWISE SPECIFIED:	R.M. WALKER	DATE	DATE	SYNERGISTIC PRODUCTS, INC.	
1/16" ANGLES	CHECKED			A Subsidiary of Control Corporation	
±0.001 ±0.005	APPROVED			1902 McGee, Santa Ana, California	
CONCENTRIC AND OUT OF ROUND T.I.S. 50%	MATERIAL			TITLE	
REMOVE BURRS AND BREAK ALL SHARP EDGES				SCALE	
FINISH				DWG #	1301-C011

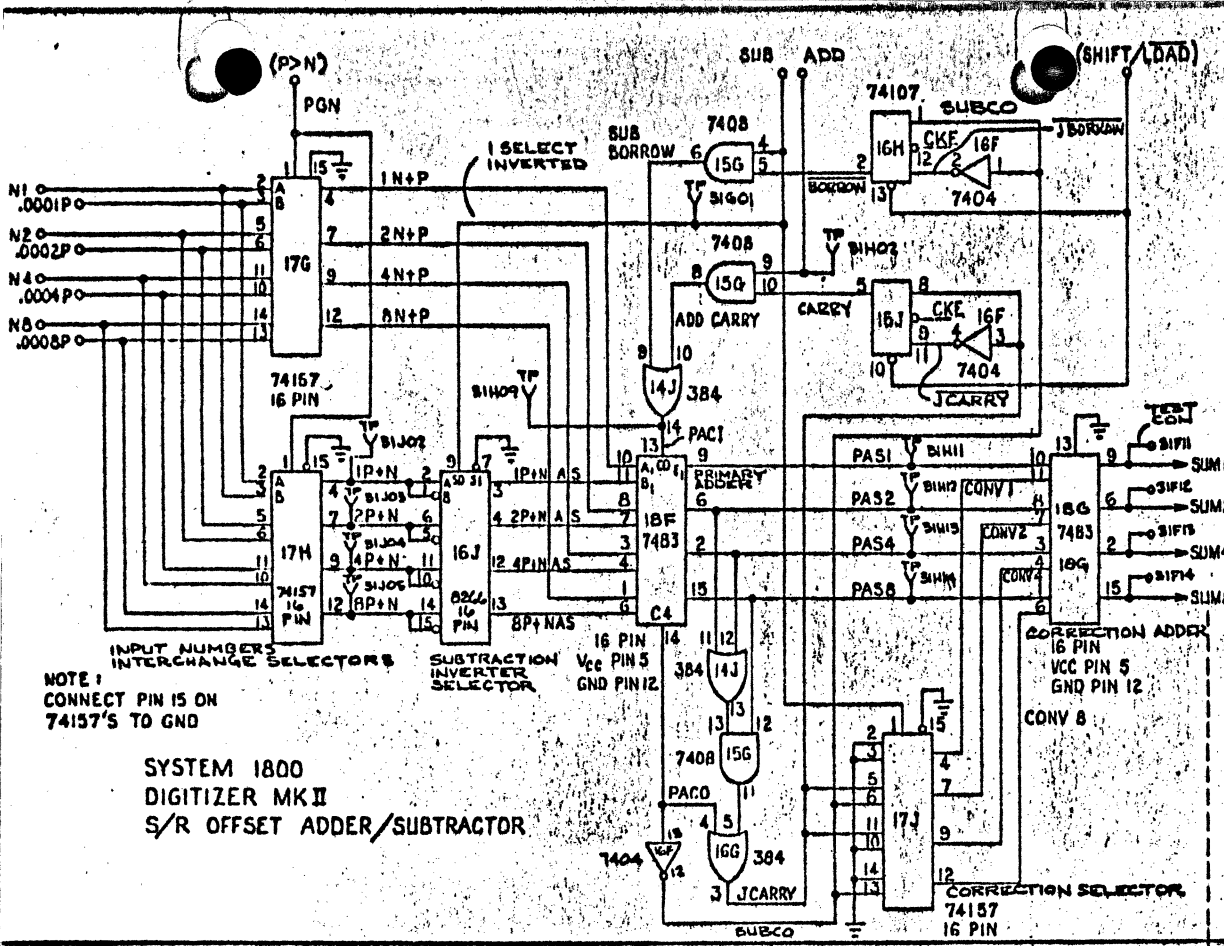




REP.	DESCRIPTION	REV. PART ATTY.	REV. MACH.	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.			
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY R. M. WALKER	DATE	
	OR MAX ANGLE	ETCHED	DATE	
	2.00 ±.005 ±.01	APPROVED	DATE	
	CONCENTRICITY AND OUT OF ROUND V. R. .005			
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		
	PINISH			
NEXT ASSY	USED ON			

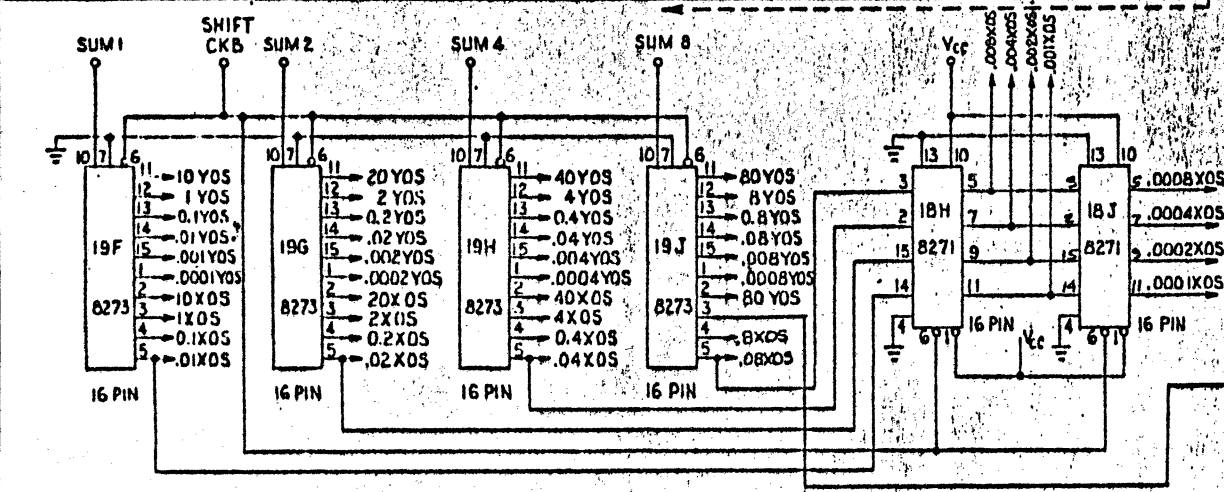
(A) & (B) RUN AFTER REPEAT IS ON ENTER.

(G18F) ENTER PULSE (2) PLUS X PLUS Y

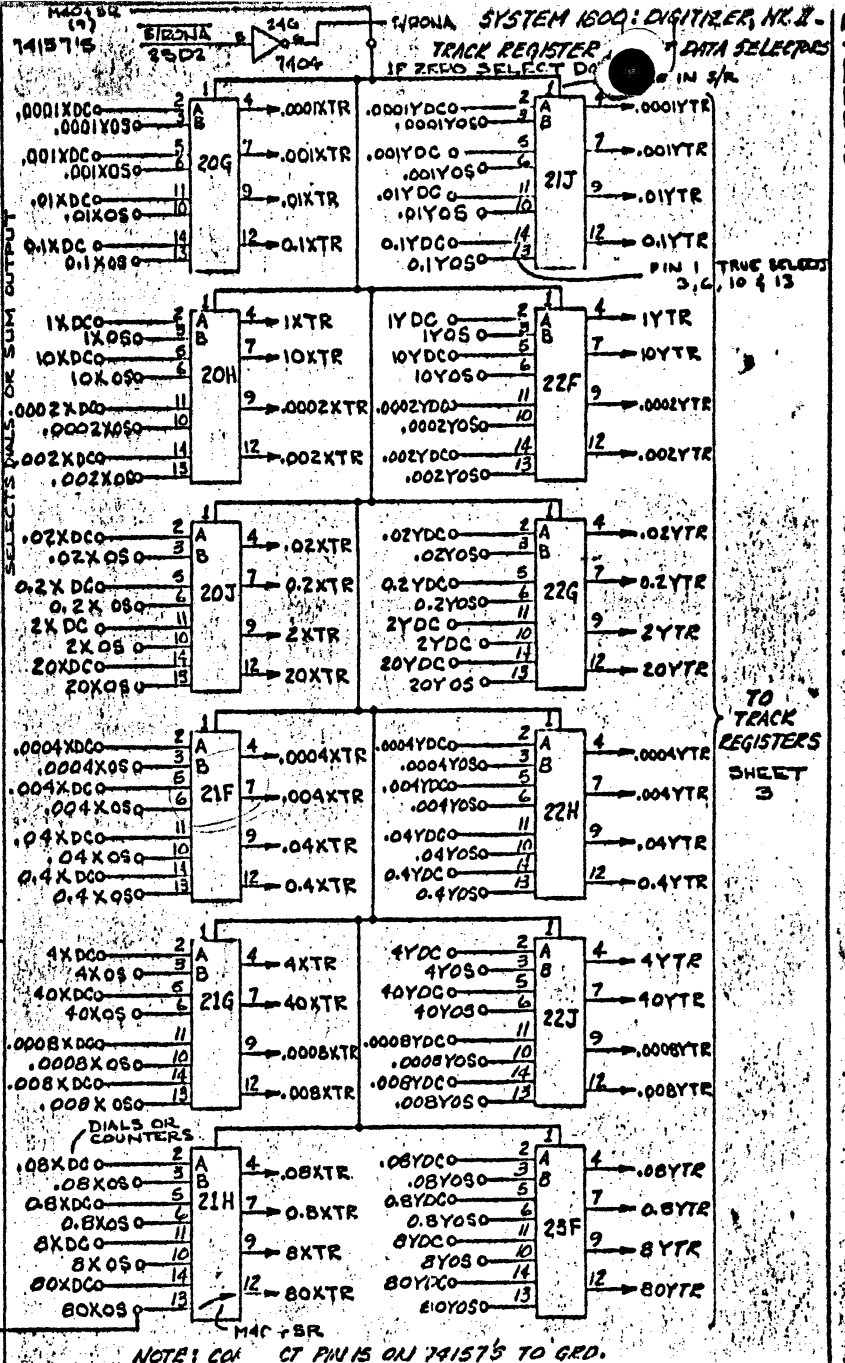


NOTE: CONNECT PIN 15 ON 74157'S TO GND

SYSTEM 1800 DIGITIZER MK II S/R OFFSET ADDER/SUBTRACTOR



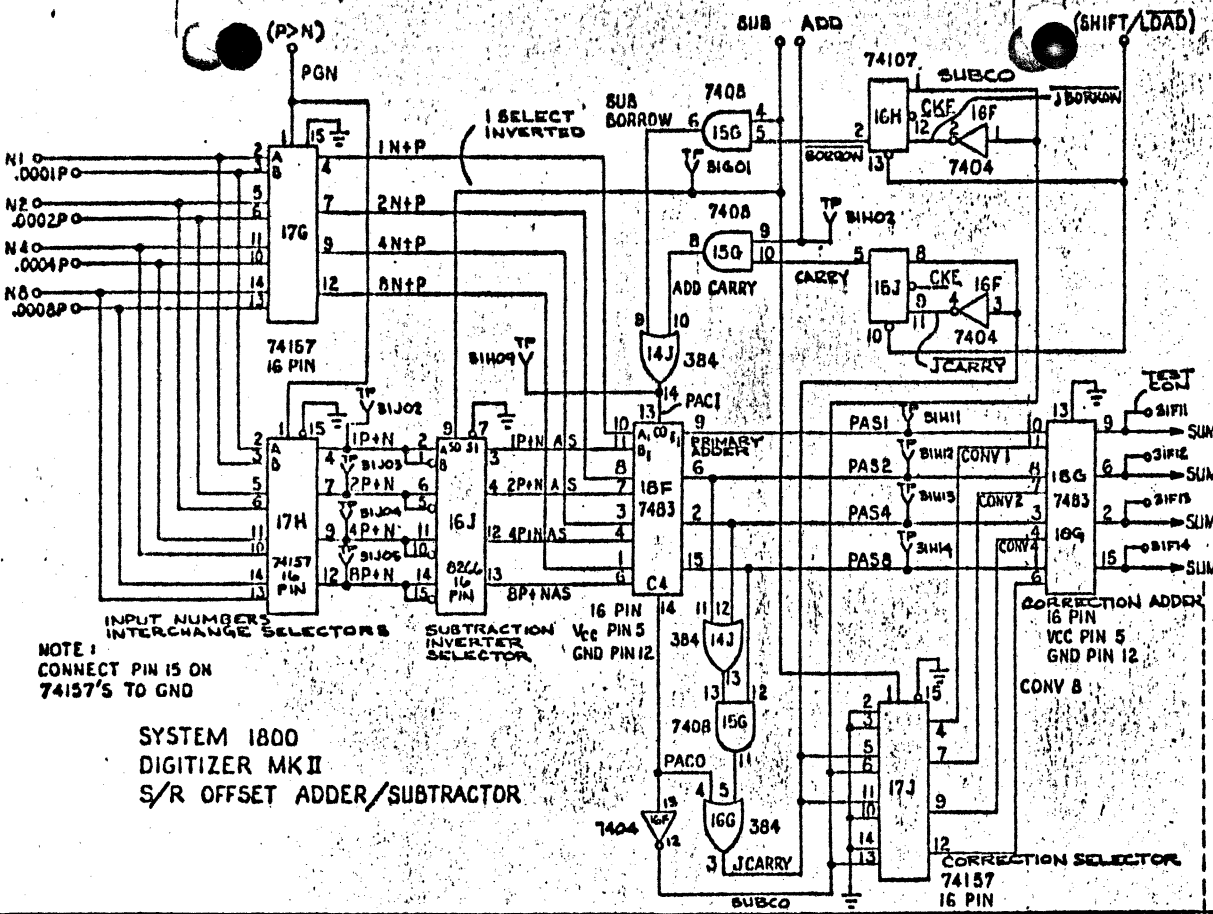
SYSTEM 1800 DIGITIZER, MK II S/R OFFSET ADDER/SUBTRACTOR OUTPUT REGISTER



NOTE: CONNECT PIN 15 ON 74157'S TO GND.

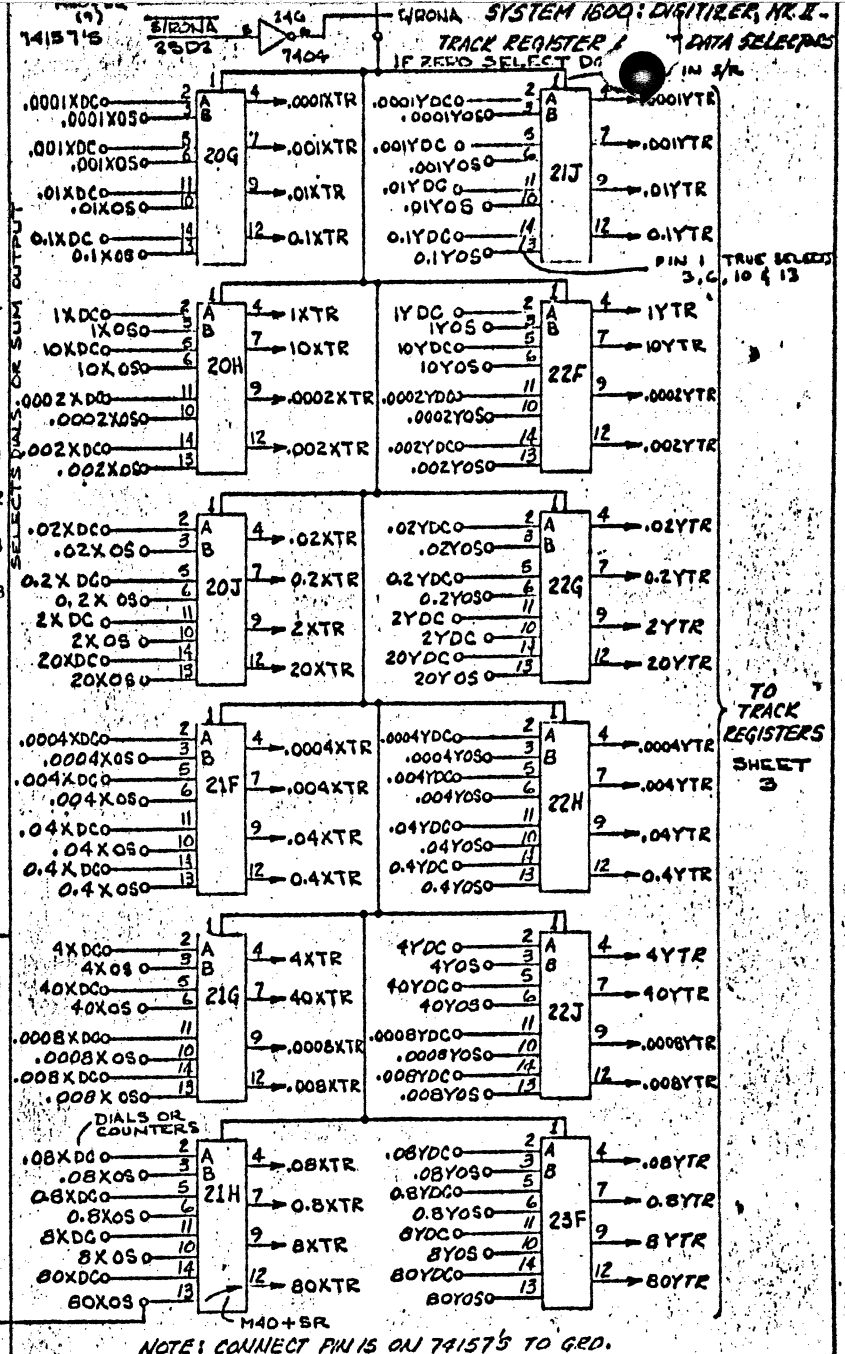
TO TRACK REGISTERS SHEET 3

REF.	DESCRIPTION	DATE	BY	DATE	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
	TOLERANCES UNLESS OTHERWISE SPECIFIED ARE: ANGLES: 0.01 0.001 0.002 0.005 0.010 0.020 0.050 0.100 0.200 0.500 1.000 2.000 5.000 10.000 20.000 50.000 100.000 200.000 500.000 1000.000		R.M. WALKER		
	CONCENTRICITY AND OUT OF ROUND T.I.R. ARE:		CHECKED		
	REMOVE BURRS AND BREAK ALL SHARP EDGES		APPROVED		
	FINISH		MATERIAL		TITLE
	NEXT ASSY		USED ON		SCALE
					DWG # 1801-001Z

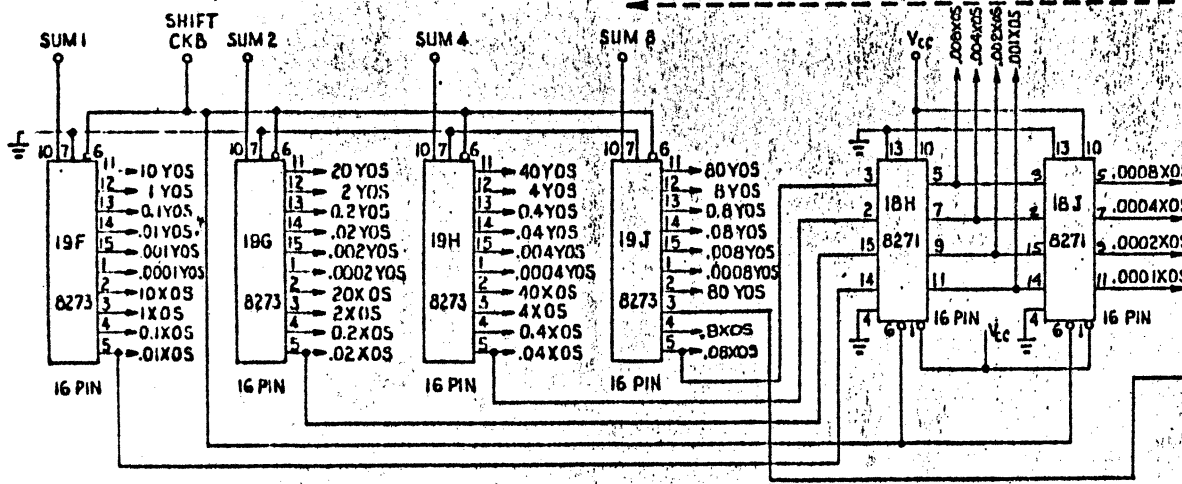


NOTE 1: CONNECT PIN 15 ON 74157'S TO GND

SYSTEM 1800 DIGITIZER MK II S/R OFFSET ADDER/SUBTRACTOR



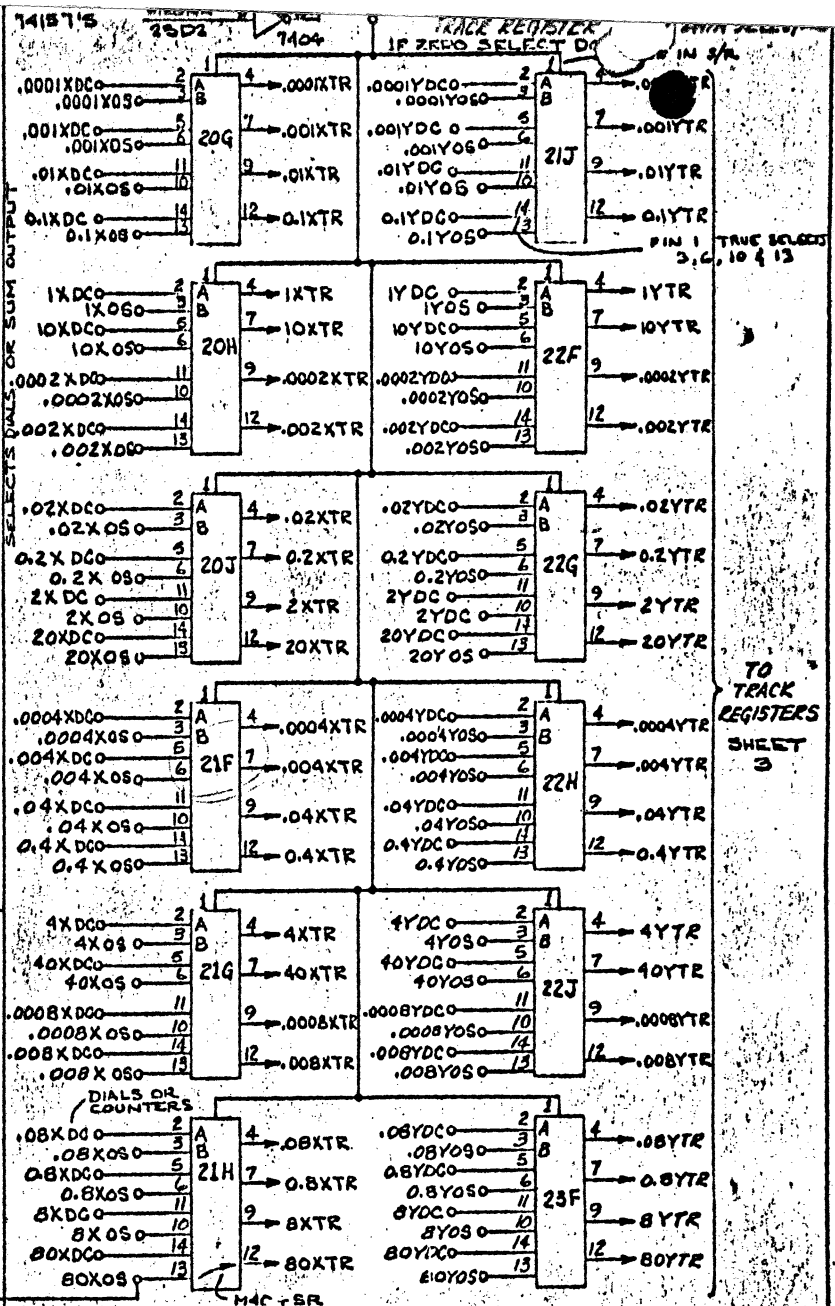
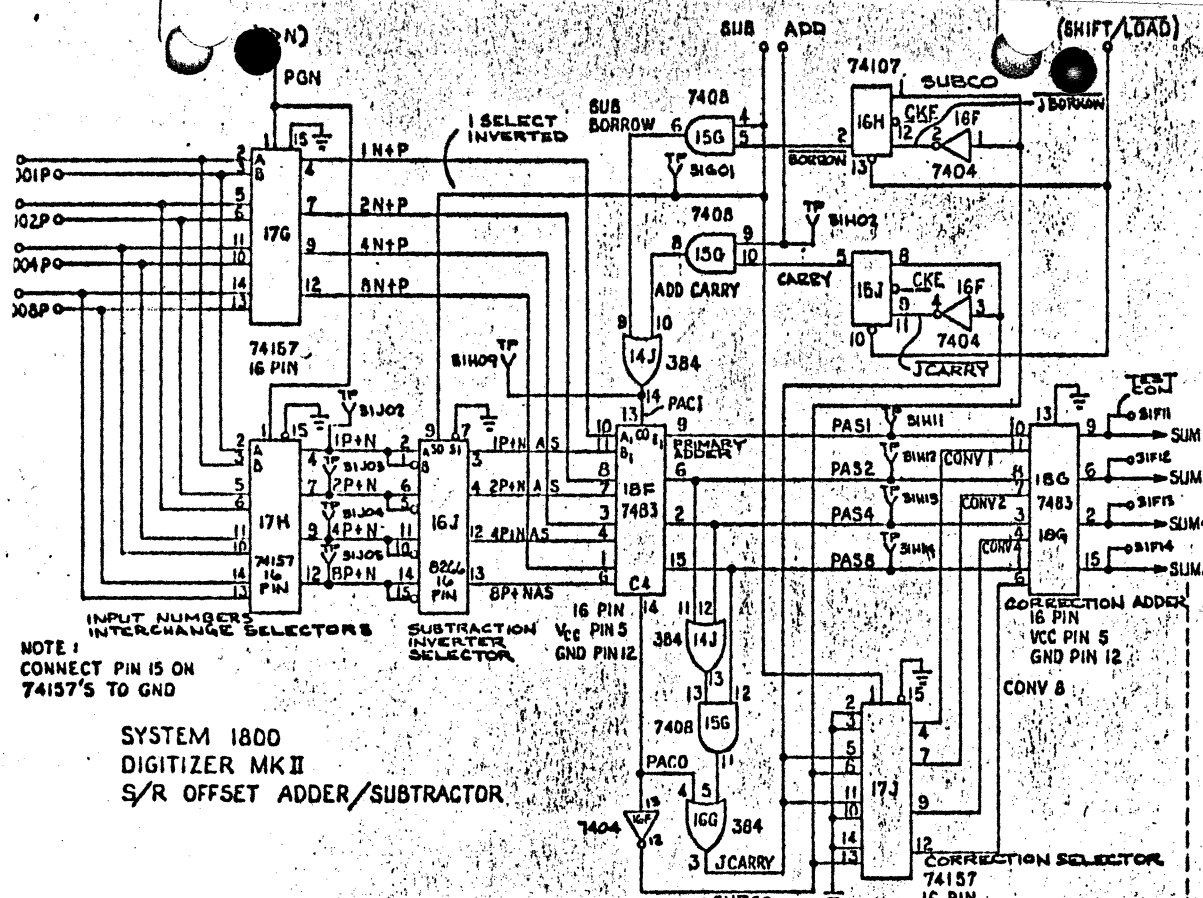
TO TRACK REGISTERS SHEET 3



SYSTEM 1800 DIGITIZER, MK II S/R OFFSET ADDER/SUBTRACTOR OUTPUT REGISTER

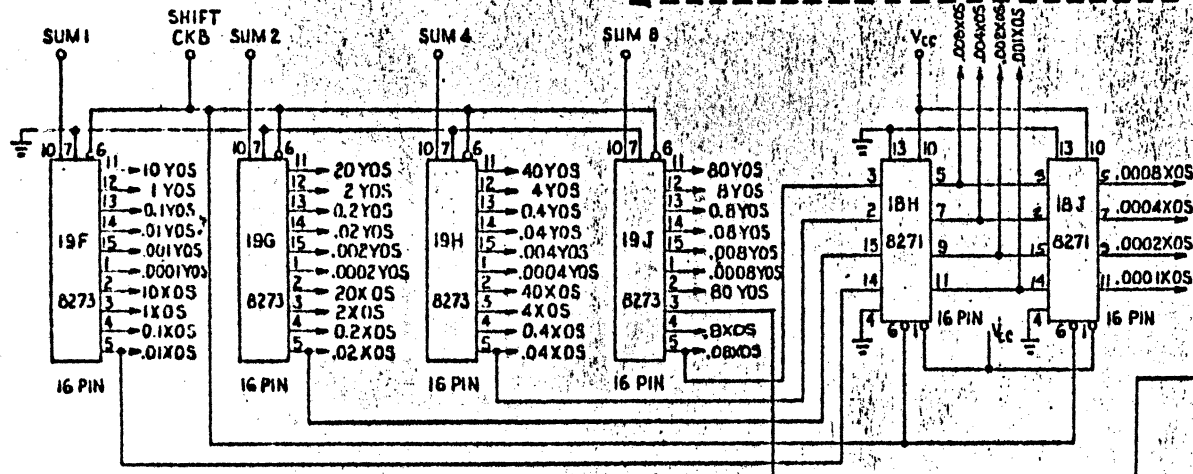
NOTE: CONNECT PIN 15 ON 74157'S TO GND.

REP.	DESCRIPTION	QTY. ASSEMBLY	QTY. MACH.	PART NUMBER
	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.			
	TOLERANCES UNLESS OTHERWISE SPECIFIED	BY R. M. WALKER		DATE
	±.01 MAX ANGLE	CHECKED		DATE
	CONCENTRICITY AND OUT OF ROUND T. I. .005	APPROVED		DATE
	REMOVE BURRS AND BREAK ALL SHARP EDGES	MATERIAL		
	FINISH			
	NEXT ASSY	USED ON		
				SYNERGISTIC PRODUCTS, INC. A Subsidiary of Cavitron Corporation 1902 McGraw, Santa Ana, California
				TITLE
				SCALE: DWG # 1801-001Z



NOTE 1:  
CONNECT PIN 15 ON  
74157'S TO GND

SYSTEM 1800  
DIGITIZER MK II  
S/R OFFSET ADDER/SUBTRACTOR



SYSTEM 1800  
DIGITIZER, MK II S/R OFFSET  
ADDER/SUBTRACTOR  
OUTPUT REGISTER

NOTE 1: CONNECT PIN 15 ON 74157'S TO GND.

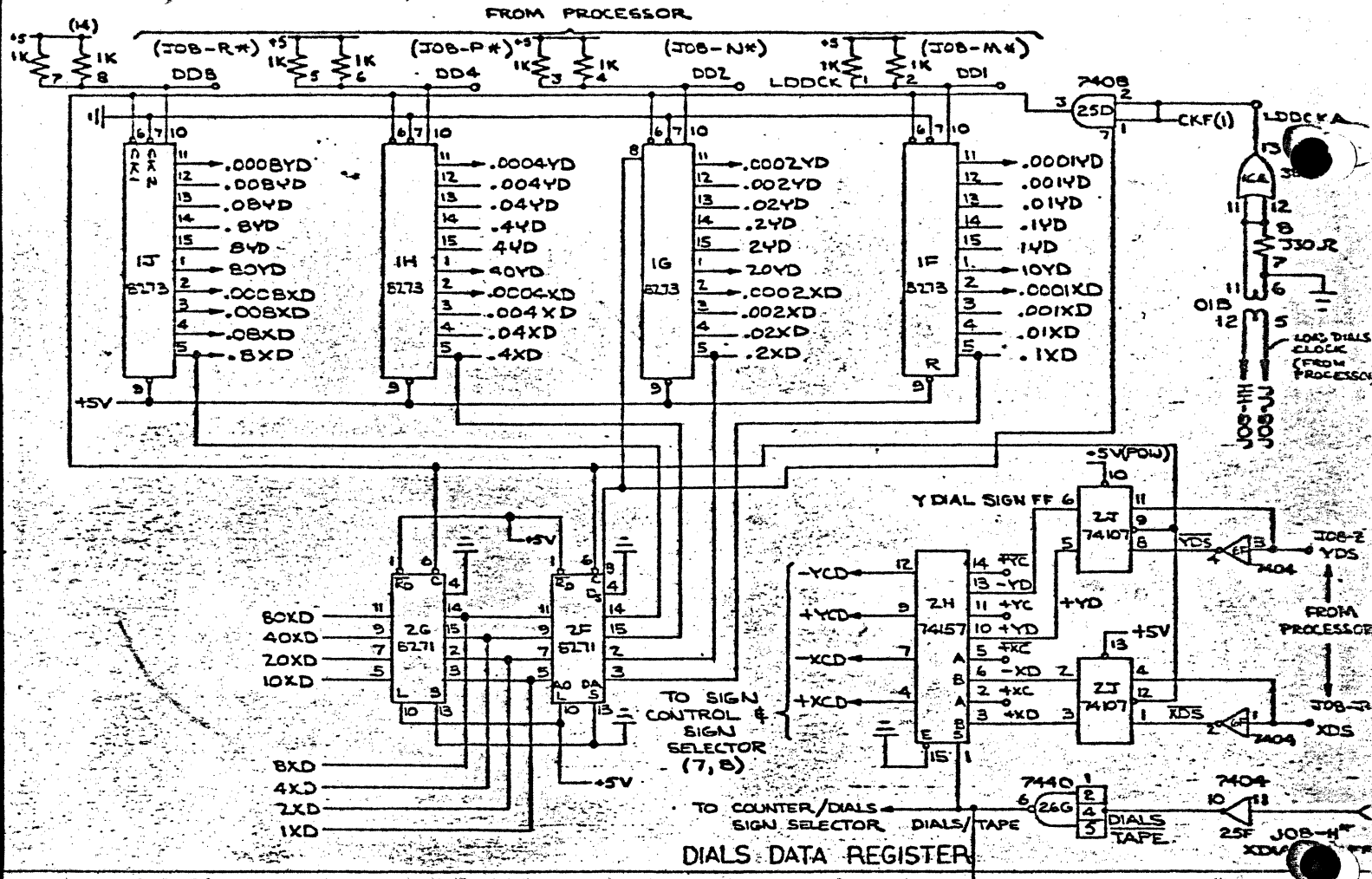
REP.	OPTION	REV. ASSY.	REV. MACH.	PART NUMBER
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS.				
TOLERANCES UNLESS OTHERWISE SPECIFIED .015 .030 .045 .060 .075 .090 .110 .130 .150 .175 .200 .225 .250 .275 .300 .325 .350 .375 .400 .425 .450 .475 .500 .525 .550 .575 .600 .625 .650 .675 .700 .725 .750 .775 .800 .825 .850 .875 .900 .925 .950 .975 .1000	BY R. M. WALKER CHECKED	DATE	DATE	TITLE
CONCENTRICITY AND OUT OF ROUND T.R. .005	APPROVED			
REMOVE BURRS AND DEBUR ALL SHARP EDGES	MATERIAL			
FINISH				
NEXT ASSY	USED ON			
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Carillon Corporation 1802 McGraw, Santa Ana, California				SCALE
1801-001Z				SHEET

SHEET

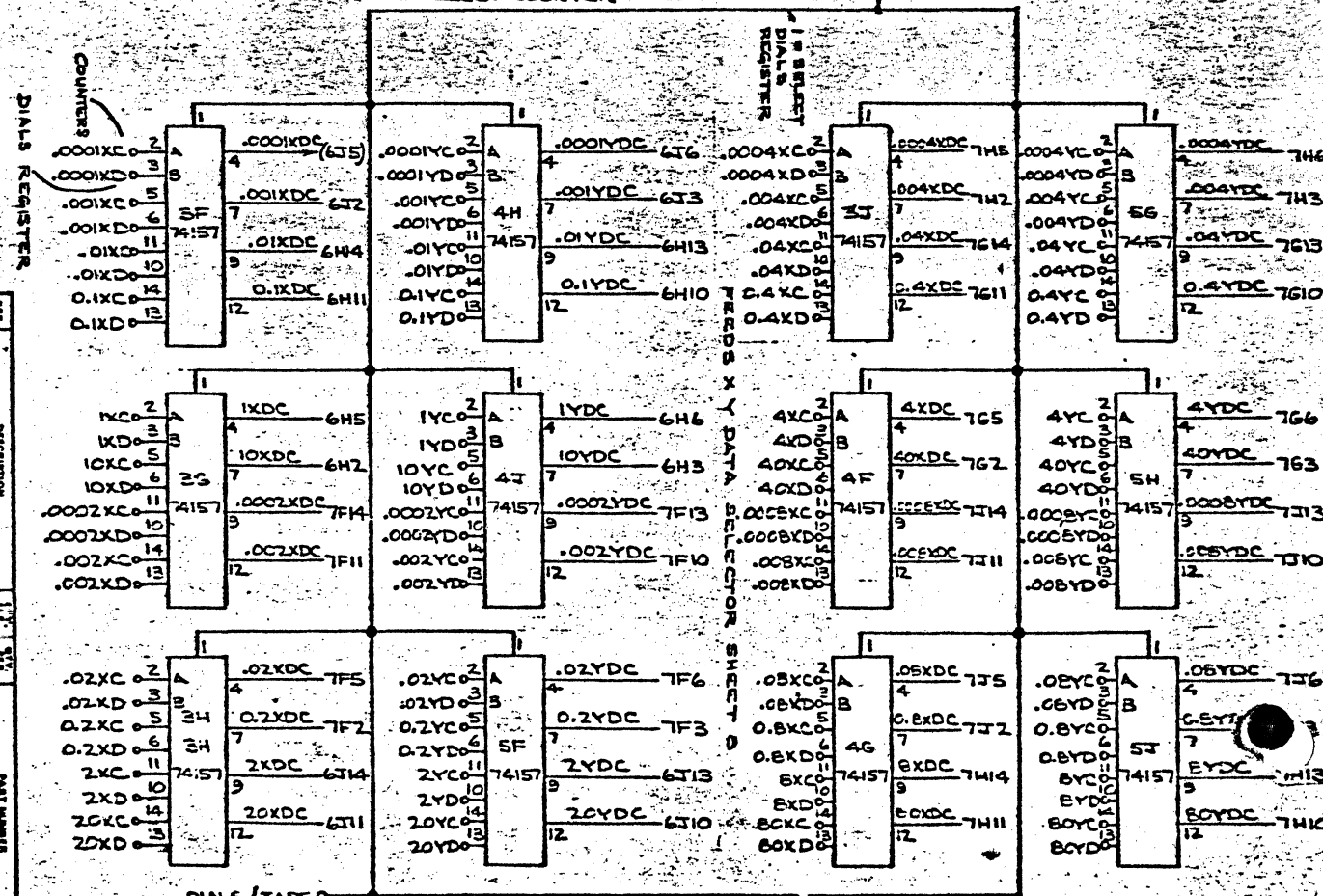
TO TRACK  
REGISTERS  
SHEET  
3

SHEET

107  
 STRUCTURAL DRAWING



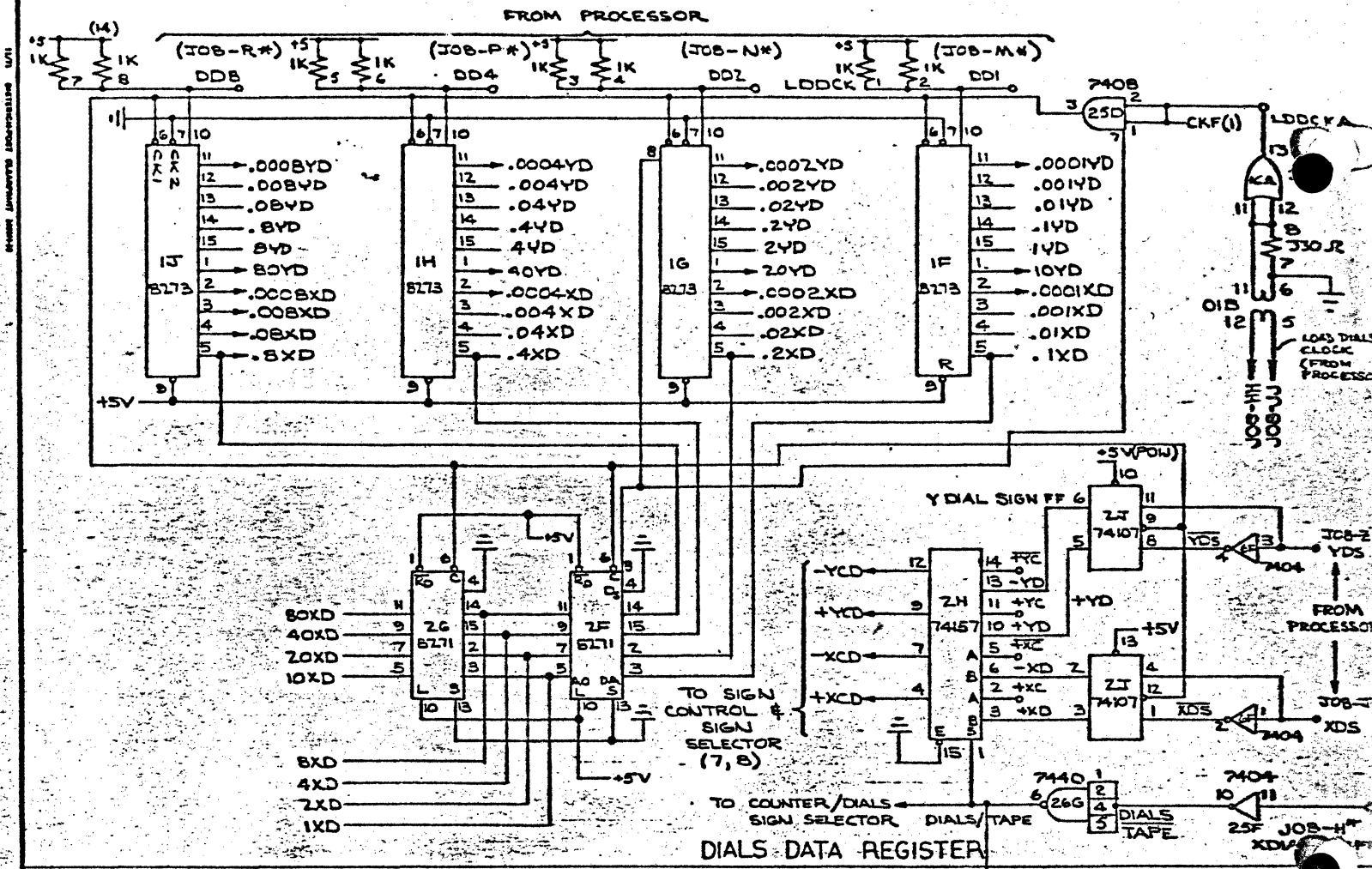
NOTES:  
 1. GND PIN IS ALL 74157'S



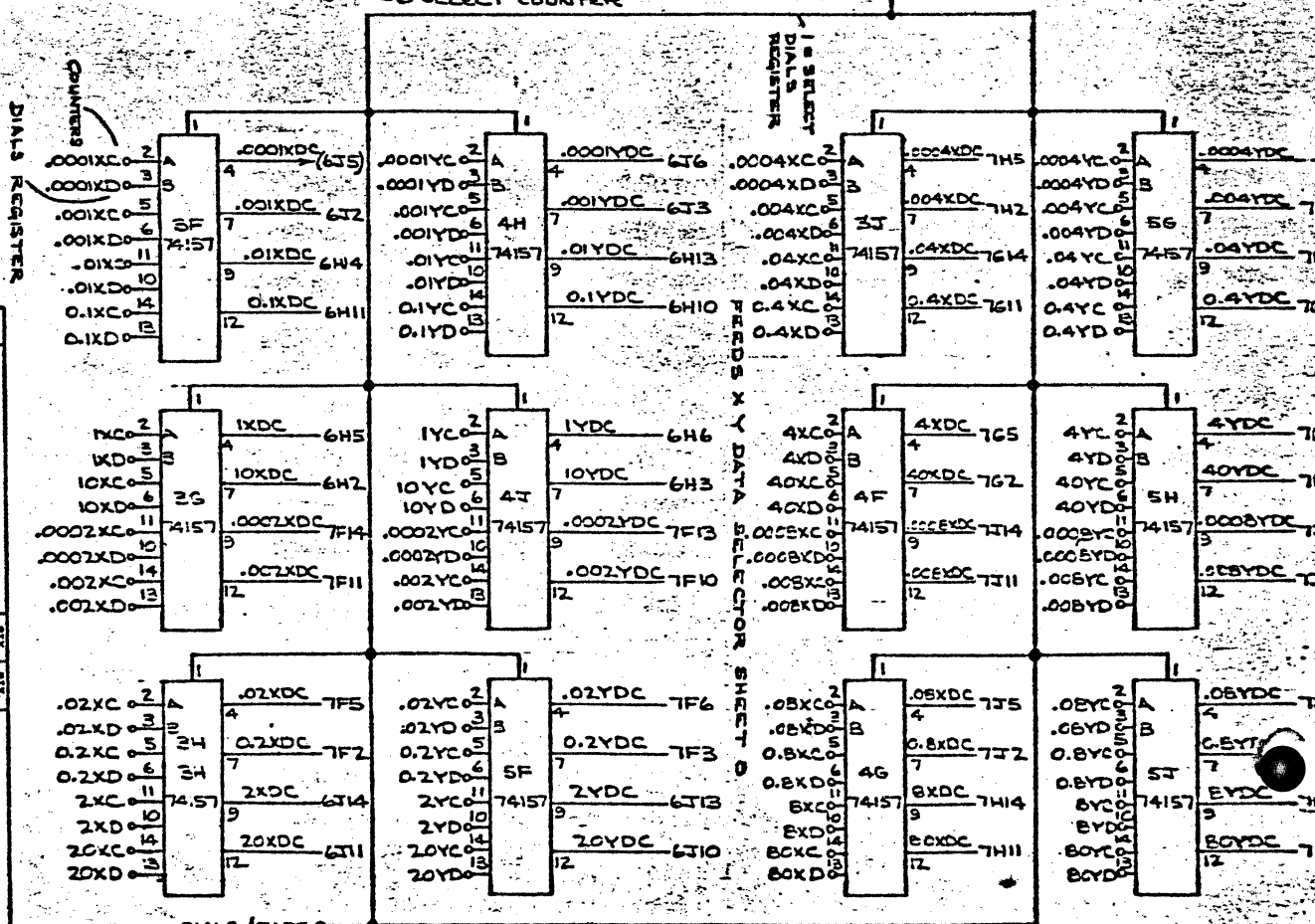
DIALS/TAPE POSITIONS COUNTER DATA SELECTOR

NEXT ASSY	USED ON	REV.	DESCRIPTION	DATE	BY	CHKD	APP'D
			THIS DRAWING CONTAINS INFORMATION OF CONFIDENTIAL CHARACTER AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF SYNERGISTIC PRODUCTS, INC.				
			DESIGNED BY: W. F. F. A. A. G.				
			CHECKED BY: W. F. F. A. A. G.				
			APPROVED BY: W. F. F. A. A. G.				
			DATE: 1/21/57				
			SYNERGISTIC PRODUCTS, INC.				
			A Subsidiary of Carter Corporation				
			1803 Midway Street, Santa Ana, California				
			MODEL: MK II DIGITAL RECORDER				
			SYSTEM: 1800				
			DRAWING NO: 1801-0013				

SHEET 11



NOTES:  
1. GND PIN IS ALL 74157'S

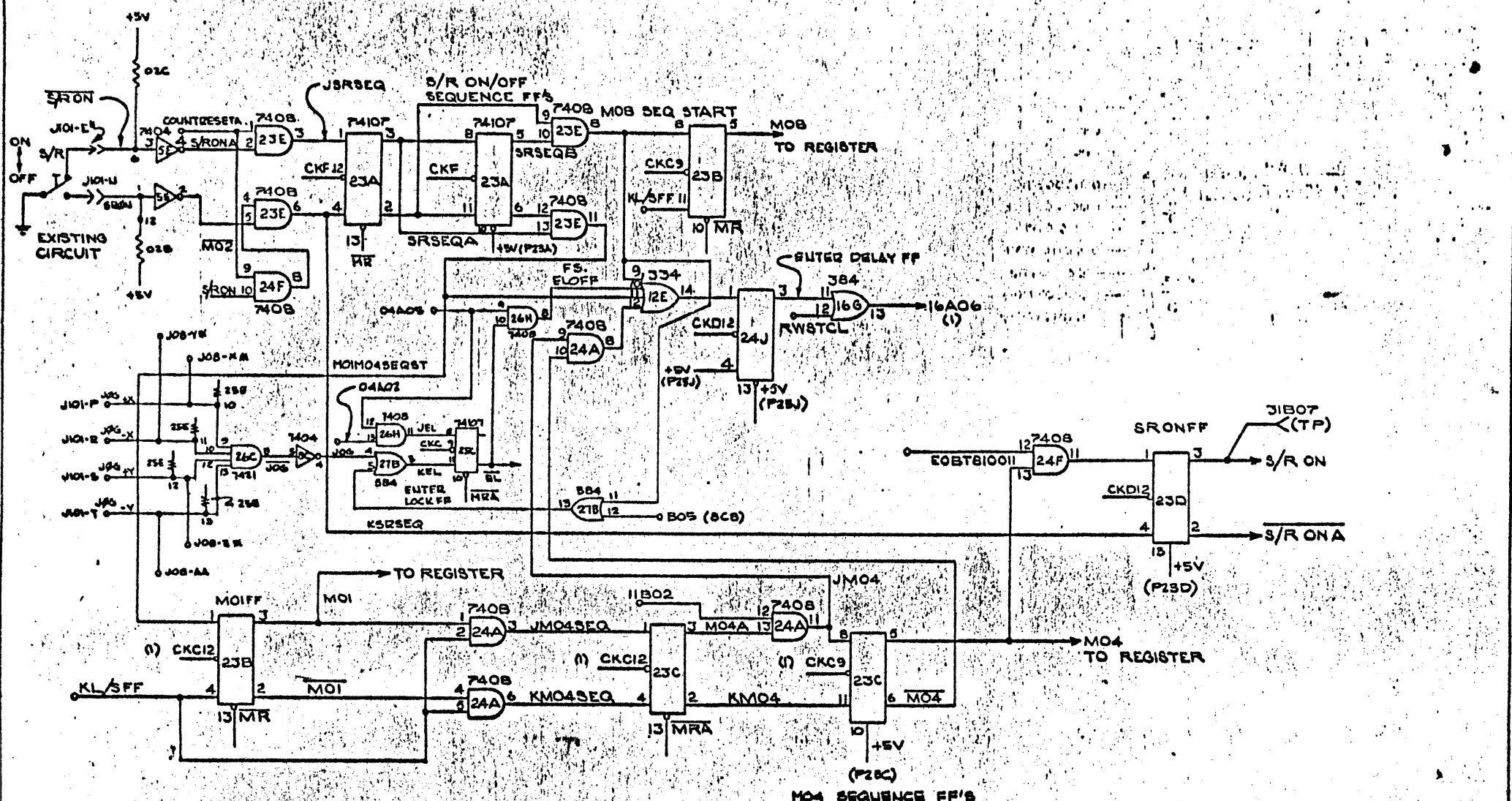


DIALS/TAPE: POSITIONS COUNTER DATA SELECTOR

REV.	DESCRIPTION	DATE	BY	CHECKED	DATE	BY
1	INITIAL DESIGN	10/15/58	W. S. ...	...	...	...
2	...	...	...	...	...	...
3	...	...	...	...	...	...
4	...	...	...	...	...	...
5	...	...	...	...	...	...
6	...	...	...	...	...	...
7	...	...	...	...	...	...
8	...	...	...	...	...	...
9	...	...	...	...	...	...
10	...	...	...	...	...	...
11	...	...	...	...	...	...
12	...	...	...	...	...	...

SYNERGISTIC PRODUCTS, INC.  
A Subsidiary of Cullen Corporation  
1802 McGee, Santa Ana, California  
92705

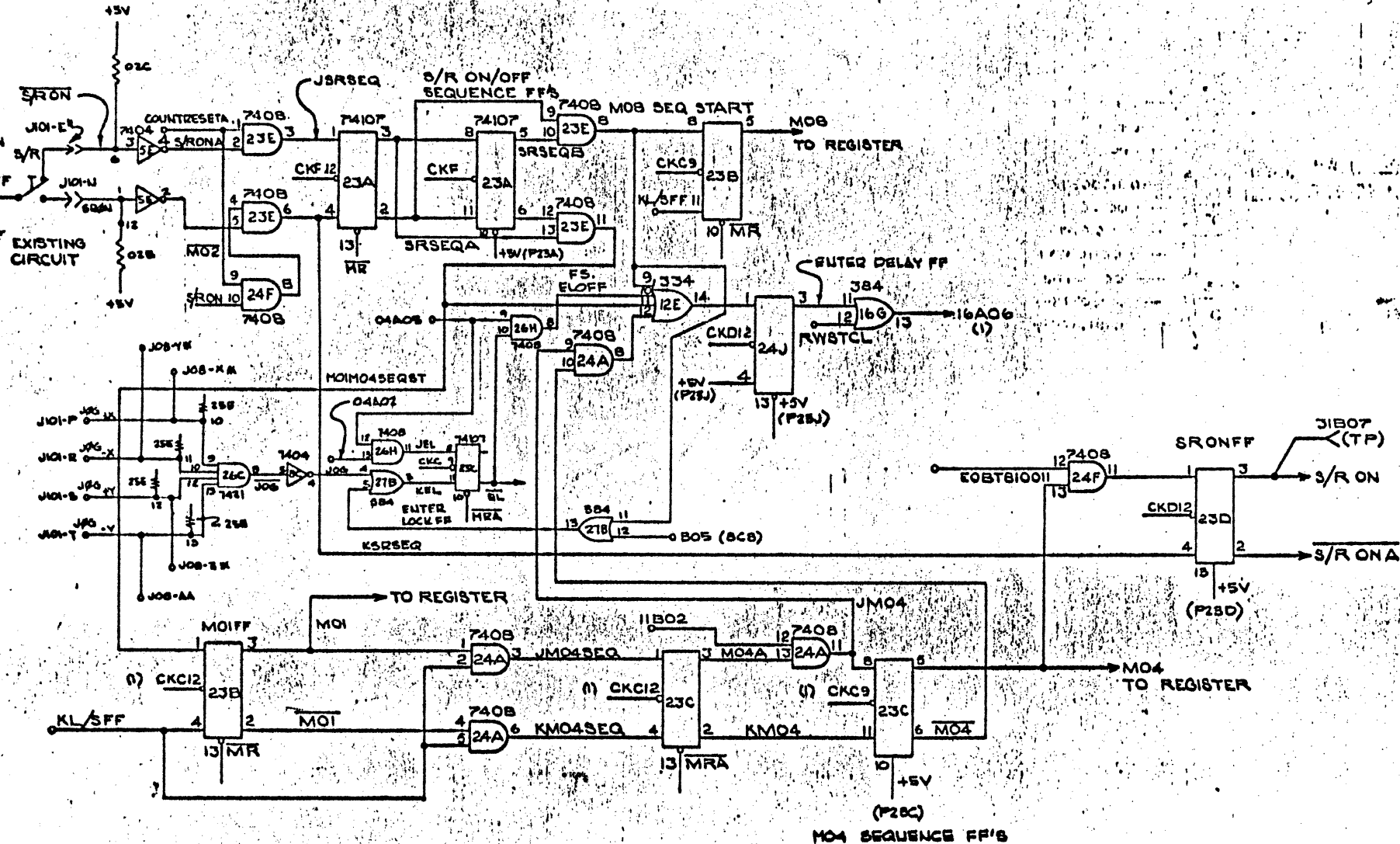
DATE: 10/15/58  
DRAWN BY: W. S. ...  
CHECKED BY: ...  
PART NUMBER: 1801-0013



S/R MO1, MO4, MO6  
ENTER CONTROL

MO4 SEQUENCE FF'S

REF.	DESCRIPTION	912 ASSY.	911 MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED			
	FR USE ANGLES			
	2.01 2.000 1.0 50			
	CONCENTRICITY AND OUT OF ROUND TYP. .05			
	REMOVE BURRS AND BREAK ALL SHARP EDGES			
	FINISH			
NEXT ASSY.	USED ON			
BY YBARRA CHECKED APPROVED DATE		DATE DATE		PART NUMBER 75A01-001A
SYNERGISTIC PRODUCTS, INC. A Subsidiary of Coviron Corporation 1902 McGee, Santa Ana, California		TITLE DRAWING NO.		

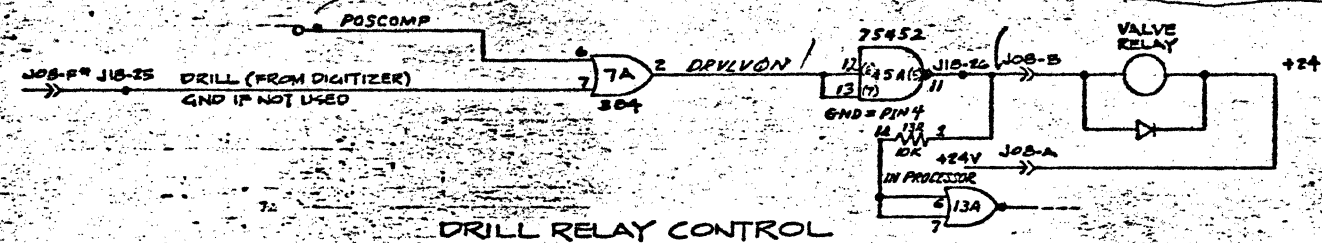
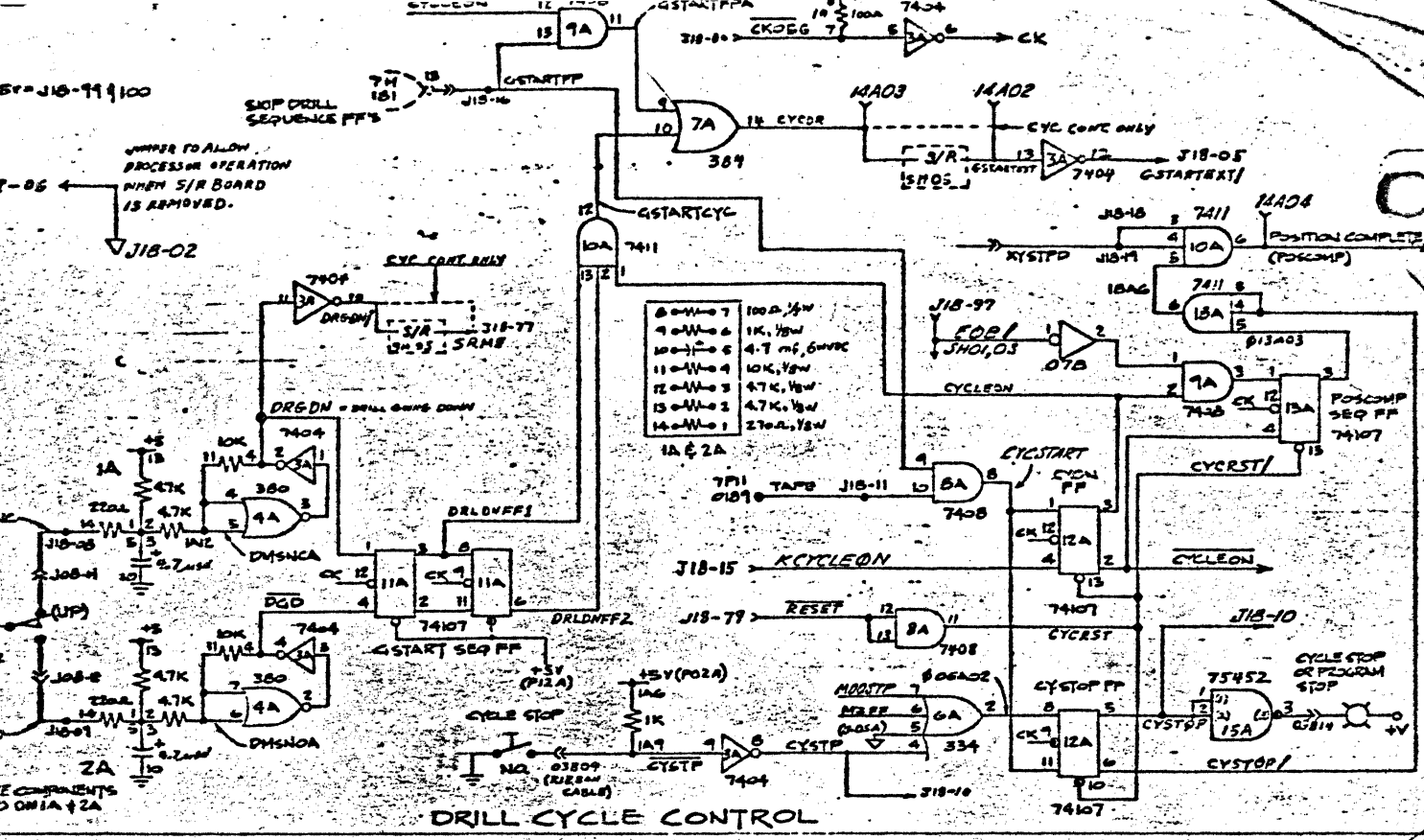


S/R MO1, MO4, MO8  
ENTER CONTROL

MO4 SEQUENCE FF'S

REF.	DESCRIPTION	QTY. ASSY.	QTY. MACH.	PART NUMBER
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	TOLERANCES UNLESS OTHERWISE SPECIFIED ARE: .005 ANGLES 2.51 1.000 2.000 CONCENTRICITY AND RUN OF ROUND T.Y.B. .001	BY YBARRA	7/2/77	SYNERGISTIC PRODUCTS, INC. A Subsidiary of Covicon Corporation 1802 McGraw, Santa Ana, California
	CHECKED	DATE	TITLE	
	APPROVED	DATE	TITLE	
	REMOVE BURRS AND BREAK ALL SHARP EDGES			
	MATERIAL			
	FINISH			
	NEXT ASSY		USED ON	
				SCALE 1:1 1E301-0014





1802-0209

SYNCRONISTIC PRODUCTS, INC.  
 A subsidiary of Carlson Corporation  
 1507 McGraw, Santa Ana, California

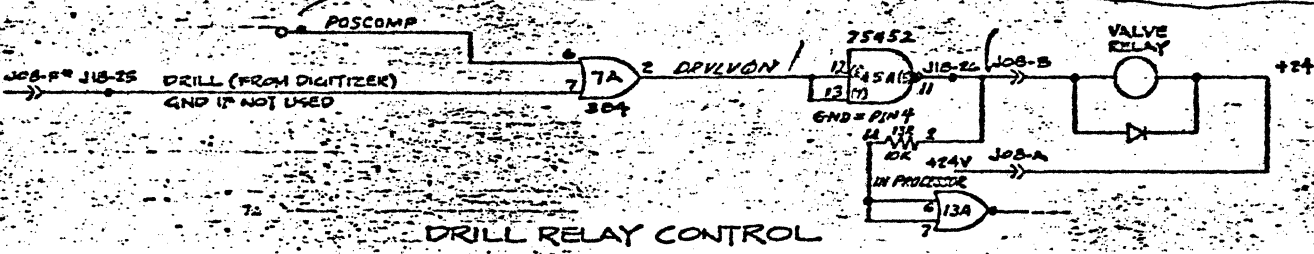
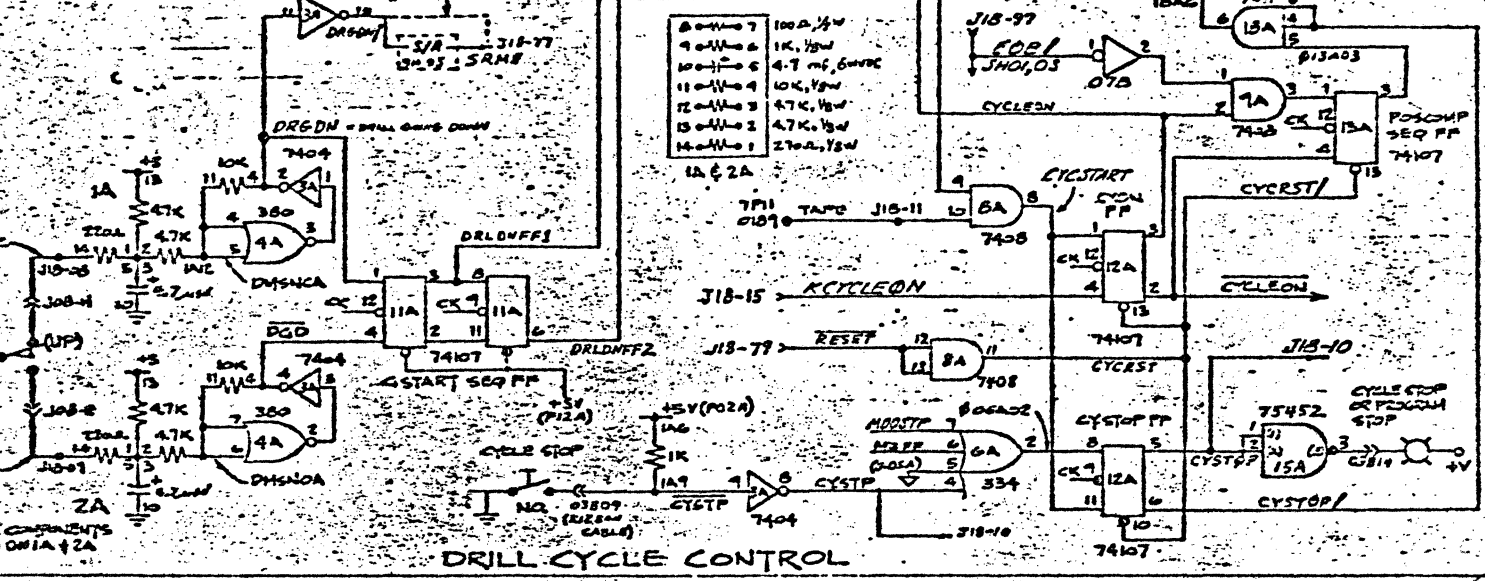
16A  
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 15  
 16A8  
 82 82  
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REV.	DESCRIPTION	DATE	BY
1	PROD RELEASE ECO 121	1961	SEP 73

J18-91100

JUMPER TO ALLOW  
PROCESSOR OPERATION  
WHEN S/R BOARD  
IS REMOVED.

J18-02



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 TELETYPE UNIT: [ ]

BY: [ ]  
 DATE: [ ]

SYNCRONIC PRODUCTS, INC.  
 A Subsidiary of Carlson Corporation

1802-0209

16A  
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 16A8-  
 15A4 16A8  
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REV	DESCRIPTION	DATE	BY
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ODD PARITY

EIA RS-244

EVEN PARITY

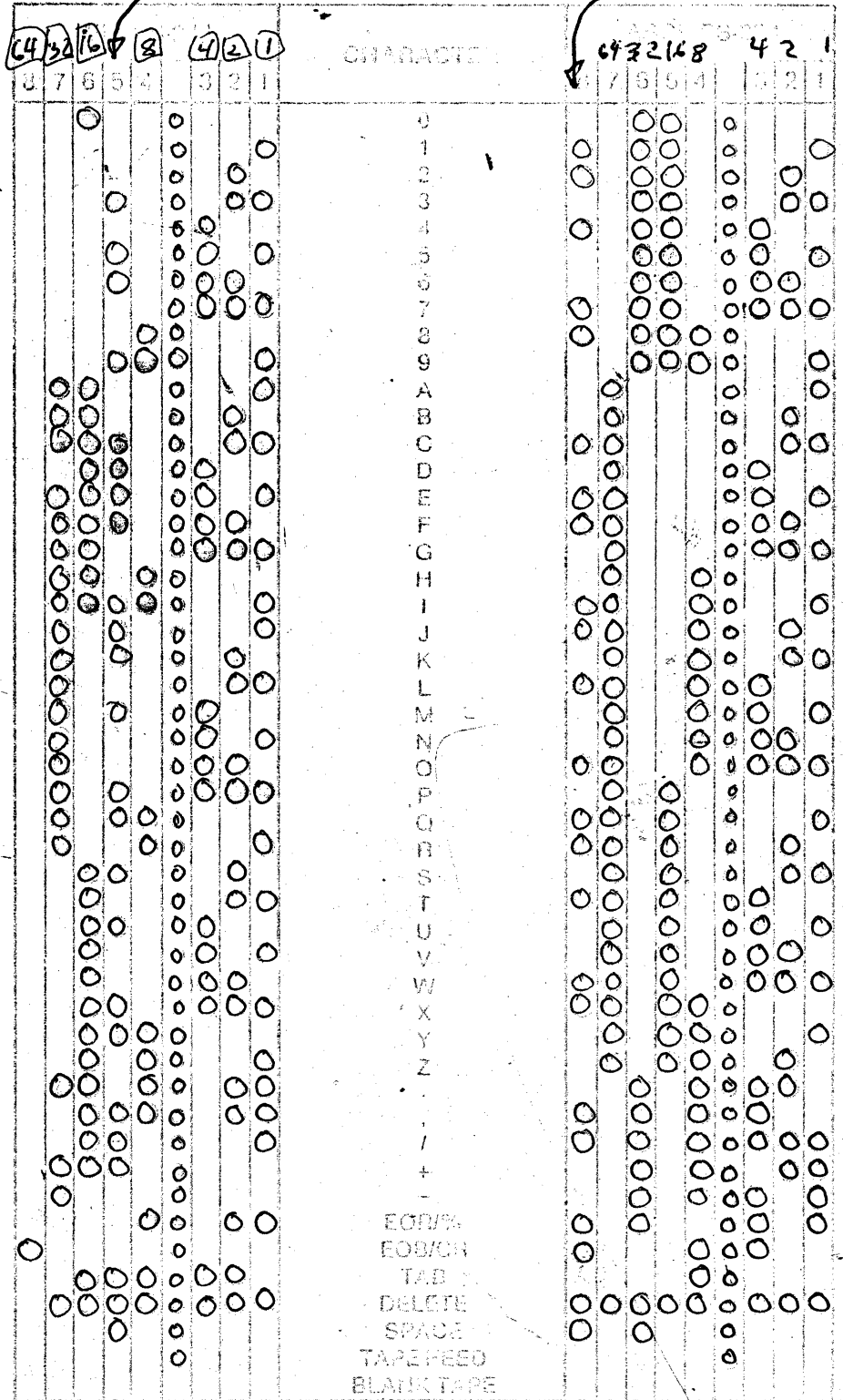


Figure 2. EIA & ASCII Tape Coding