CONTROL DATA® 9465
DISK STORAGE DRIVE

P12 AND ABOVE

DIAGRAMS &
CIRCUIT DESCRIPTION
CARD PLACEMENT
WIRE LISTS

CONTROL DATA
CORPORATION

CUSTOMER ENGINEERING MANUAL

RECORD of REVISIONS

REVISION	NOTES
A	Manual released. This manual incorporates all change orders released prior to
(2-14-69)	2-14-69.
B	Engineering Change Order 5347 incorporating the following:
(5-15-69)	Engineering Change Orders 4539B, 4638A, 4646, 4677, 4772, 4843, 4914, 4949, 4950,
	5033, 5038A, 5279 affecting pages 1-1, 1-5, 1-9, 1-11, 1-13, 1-15, 3-6, 3-13,
	3-17, 3-18, 3-22, 3-23, 3-24, 3-25, 3-36, 3-38, 3-40, 3-42, 3-45.
C	Engineering Change Order PE12158 incorporating the following:
(7-31-69)	ECO PM4840B affecting pages 1-15.
	ECO PM5207 affecting pages 3-42, 3-43.
	ECO PM5296A affecting pages 1-13, 3-36 thru 3-42.
	ECO PM5334 affecting pages 3-31, 3-32, 3-35.
D	Engineering Change Order PE12527 incorporating the following:
(1-13-70)	FCO PE12234/ECO PE12234 affecting pages 1-5, 1-13, 1-15, 3-36 thru 3-41.
	FCO PE12285/ECO PE12285A affecting pages 1-1, 3-14, 3-15, 3-16.
	FCO PE12126 affecting pages 1-11
	ECO PE12054A affecting pages 3-42, 3-45.
	ECO PE12211 affecting page 1-5.
	ECO PE12225A affecting pages 3-31, 3-32, 3-35, 3-36 thru 3-41, 1-13.
	ECO PE12231 affecting page 3-31.
	ECO PE12298 affecting pages 3-21, 3-22.
	ECO PE12461 affecting page 1-11.
	Editorial Changes affecting page 1-26, 1-29.

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or use Comment Sheet in the back of this manual.

PART 1

DIAGRAMS & CIRCUIT DESCRIPTION

FOREWARD

Customer Engineering material for the CONTROL DATA® 9465 Disk Storage Drive is contained in four separate manuals, and provides all information required to install, operate, and maintain a 9465.

Publication No. 41247200	General Description, Operation, Installation and Checkout, Maintenance
Publication No. 41248800	Theory of Operation, Diagrams, Wire Lists
Publication No. 40860200	Illustrated Parts List
Publication No. 40826700	Disk Storage Drive (OEM) 1604 Logic Modules Manual

CONTENTS

KEY TO LOGIC SYMBOLS

(STANDARD 1604 OR 3600 CARD TYPES)

Logic diagrams represent a symbolic approach to electronic schematics. By using symbols to represent building block circuits, the diagram becomes easy to read if the reader understands the function of the symbols. In Control Data Corporation logic, two signals, a logical 0 ("0") and logical 1 ("1"), are the possible input or output conditions of a circuit. A circuit with an output of "1" is "up" and a circuit with an output of "0" is "down". Detailed descriptions of logic symbols and their associated building block circuit cards are contained in the appropriate printed circuit manual (1604 and 3600 Card Types). Refer to the Literature Distribution Center Catalog for the publication number and latest revision level.

STANDARD LOGIC SYMBOLS

Standard logic diagram symbols for Control Data equipment using 1604- or 3600-type cards are inverters, flip-flops, control delays, capacitive delays, inductive delays, and line drivers and receivers.

Inverters

An inverter is a logic element which provides an output that is an inversion of its input. When more than one input is provided to an inverter, "1's" take precedence over "0's" and drive the output of the inverter to "0". Because any "1" input of several inputs drives the output to a "0", an inverter may be considered an inverting OR (NOR) gate when more than one input is present.

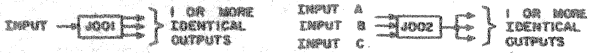


Figure 1. Inverter Symbols

Acceptable conventions for showing multiple OR inputs are given in Figure 2.

Figure 2. OR Circuit Conventions

An AND gate requires that all its inputs be "1's" in order that its output be a "1". If one or more of the inputs to an AND gate are "0", the output is a "0". Figure 3 illustrates conventions for showing AND gates feeding an inverter.

Figure 3. AND Circuit Conventions

Figure 4 illustrates a combination AND/OR input.

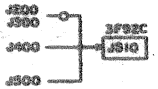


Figure 4. AND/OR Circuit Convention

Flip-Flops (FF)

The flip-flop (FF) is a storage device with two stable states - designated as Set and Clear - and is composed of two or more inverters. The logic symbols (Figure 5) are formed by the combination of inverter symbols. By convention, Set inputs and outputs are shown in the upper part of the symbol and Clear inputs and outputs are shown in the lower part of the symbol.

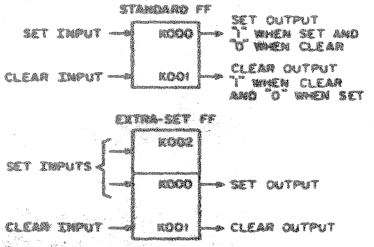


Figure 5. Flip-Flop Symbols

Figure 6 illustrates the interconnection of inverter symbols to form a flip-flop symbol. The term numbers assigned to each flip-flop are the term numbers of the internal inverters as seen by comparing the terms in Figure 5 with those in Figure 6. Notice that the Set output is the output of inverter K001, and the Clear output is the output of inverters K000 and K002.

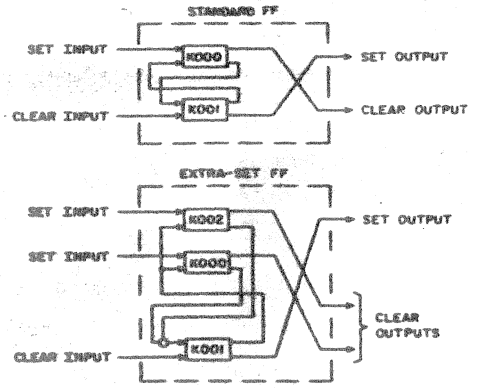


Figure 6. Internal Inverter Connections for a Flip-Flop

Control Delay

A control delay is a timing device consisting of an H term which receives the input and one or more V, Y, or N terms to provide the outputs. The H term is essentially a flip-flop with controlled feedback and occupies an entire printed circuit card. The output term(s) are inverter(s) located elsewhere on the logic chassis. The "1" outputs from a control delay are clocked pulses which are delayed one phase time from the "1" inputs. Clock inputs are not shown on the logic diagrams for any H, V, Y, or N terms; these terms, which control the start and duration of the delayed output pulses, may be found in the Equation Summary. Figure 7 illustrates two representative forms of the control delay symbol, with possible inputs and outputs labelled. Figure 8 shows the electrical connections for the two forms.

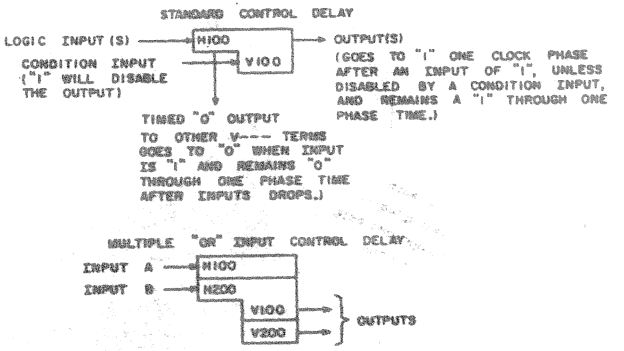


Figure 7. Control Delay Symbols

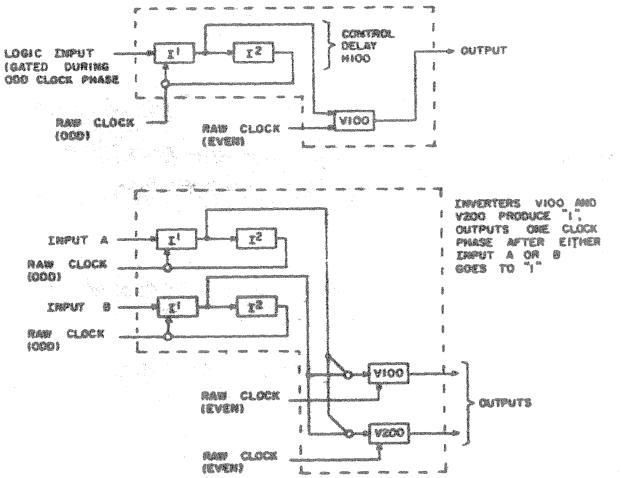


Figure 8. Electrical Connections for Control Delay

Control delays may have multiple inputs and/or multiple outputs. When a control delay has multiple output terms (i.e., more than one Y, Y, or N term), each output term may have a separate conditioning input.

Capacitive Delays

A capacitive delay is used to delay the "1" input to a logic element. ("0" inputs are not affected by the delay.) Capacitive delays may be active or passive, depending upon whether or not transistors are used as part of the delaying circuit. Delay periods are checked by using a dual-trace scope connected to the input and output of the delay producing element. The actual connection points for the scope and probes vary for different cards and should be determined by referring to the Printed Circuit Manual.

Active delays may be recognized by the circuit letter always present as part of the card location. Pin numbers are also shown when external wiring is needed to connect the proper capacitance. In Figure 9, the pluggable delay uses this wiring to connect to capacitors on the same card. In the third example, this wiring connects to capacitors located on two separate capacitor cards.

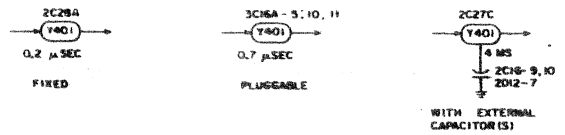


Figure 9. Active Capacitive Delays

All passive capacitive delays (Figure 10) are formed by wiring grounded capacitors, located on one or more capacitor cards, as an AND input to the affected logic element. For this reason, all passive delays show pin numbers to provide this external wiring data.

Figure 10. Passive Capacitive Delays

Capacitive delays may be adjustable or nonadjustable, depending on the card type and/or the external wiring connections on the card. When it is necessary to adjust the delay period in order to obtain specified circuit operation (usually done by varying a potentiometer in the RC network), a diagonal arrow is added to the delay symbol as shown in Figure 11.

Figure 11. Adjustable Capacitive Delays

Inductive Delays

An inductive delay is used to delay either the "1" or "0" input to a logic element or as a tapped delay line for timing of operations. The symbol for this delay is an elongated oval with a double vertical line just within the input end of the oval. When used as a tapped delay line, the inductive delay is terminated in its characteristic impedance. Inductive delays are identified in the same manner as capacitive delays (except for the vertical lines) unless they are used as delay lines. On multi-section cards where no identifying circuit letters are present, pin numbers are shown adjacent to the input and output arrows. Figure 12 shows both kinds of inductive delays.

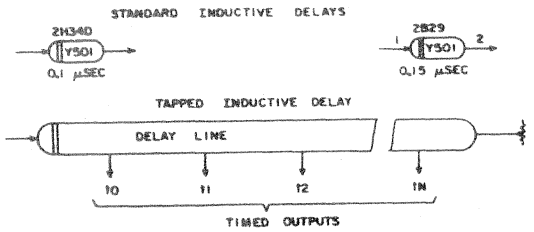


Figure 12. Inductive Delays

Line Drivers/Receivers

Voltage levels used to represent "1's" and "0's" on cables are different from those used for internal logic. The level shift to and from internal logic is made by line drivers and line receivers. These cards may be considered as inverting the signal electrically, but not logically. The letters commonly associated with these cards are L & M (1604) and R & T (3000 Series). A 3000 Series Receiver may also be used to perform a logical inversion by swapping the twisted pair wires. This usage is indicated by a circle on the input side of the symbol. In Figure 13, "1's" and "0's" have been added to clarify the logic states; they are not part of the symbol.

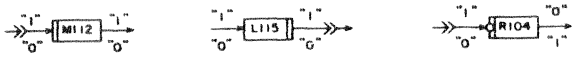


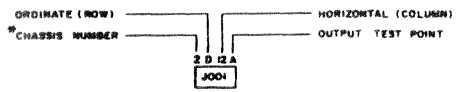
Figure 13. Typical Line Driver/Receiver Symbols

NON-LOGIC CONVENTION

The use of the double vertical bar, as shown in Figure 13, denotes a shift in signal voltage level from that used in internal logic. The double bar appears on the input or output side of the symbol, depending on which side connects to the non-logic-level signal. No particular voltage level is implied by the double bar - only that it is non-logic.

JACK ASSIGNMENTS

Each numbered term in the logic diagrams contains a jack assignment showing the physical location of that hardware element and the test point (circuit section) associated with it. For some card types, the test point letter is replaced by a pin number. For these cases, a card extender must be used in order to test that section of the card. Also, some symbols show no test point. This is because the entire card is used for one purpose (e.g. a single inverter, FF, or control delay). Figure 14 illustrates the inverter J001, with 2D12A representing its jack assignment.



*When most or all jack assignments are located on one chassis, the chassis numbers for that chassis are omitted. All multi-chassis devices include a chassis number as part of each jack assignment.

Figure 14. Jack Assignment Scheme

CABLE IDENTIFICATION

Cable connections are represented by the MIL-STD-15 symbol and identified as to connector location and pins used, as shown in Figure 15.

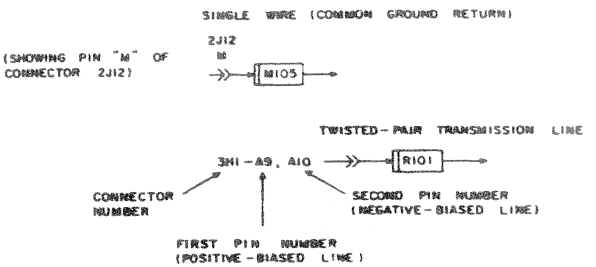


Figure 15. Cable Connections

SPECIAL LOGIC SYMBOLS

Nonstandard elements (special logic and/or non-logic elements) are represented by a special circuit symbol (generally a rectangle as shown in Figure 16). The special circuit symbol always shows the symbol designation, jack location, and the card type. Supplemental information may also be shown such as in the case of special delay cards which indicate the delay period. For detailed information refer to the specific card type in the appropriate Printed Circuit or Logic Module Manual.

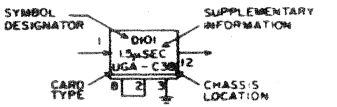


Figure 16. Symbol for Special Circuits

INPUT/OUTPUT DESIGNATIONS

Where several pages of logic are involved, a symbol index and term list (side cars) are incorporated within the manual. Also in certain instances such as special card types or on equipments for which no equation summary exists (as for peripheral devices) input and output pin numbers are indicated on each logic element as are the output destinations of the elements (Figure 17).

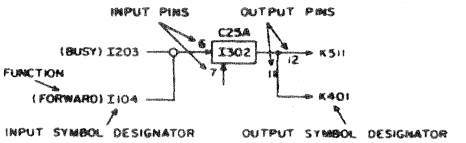
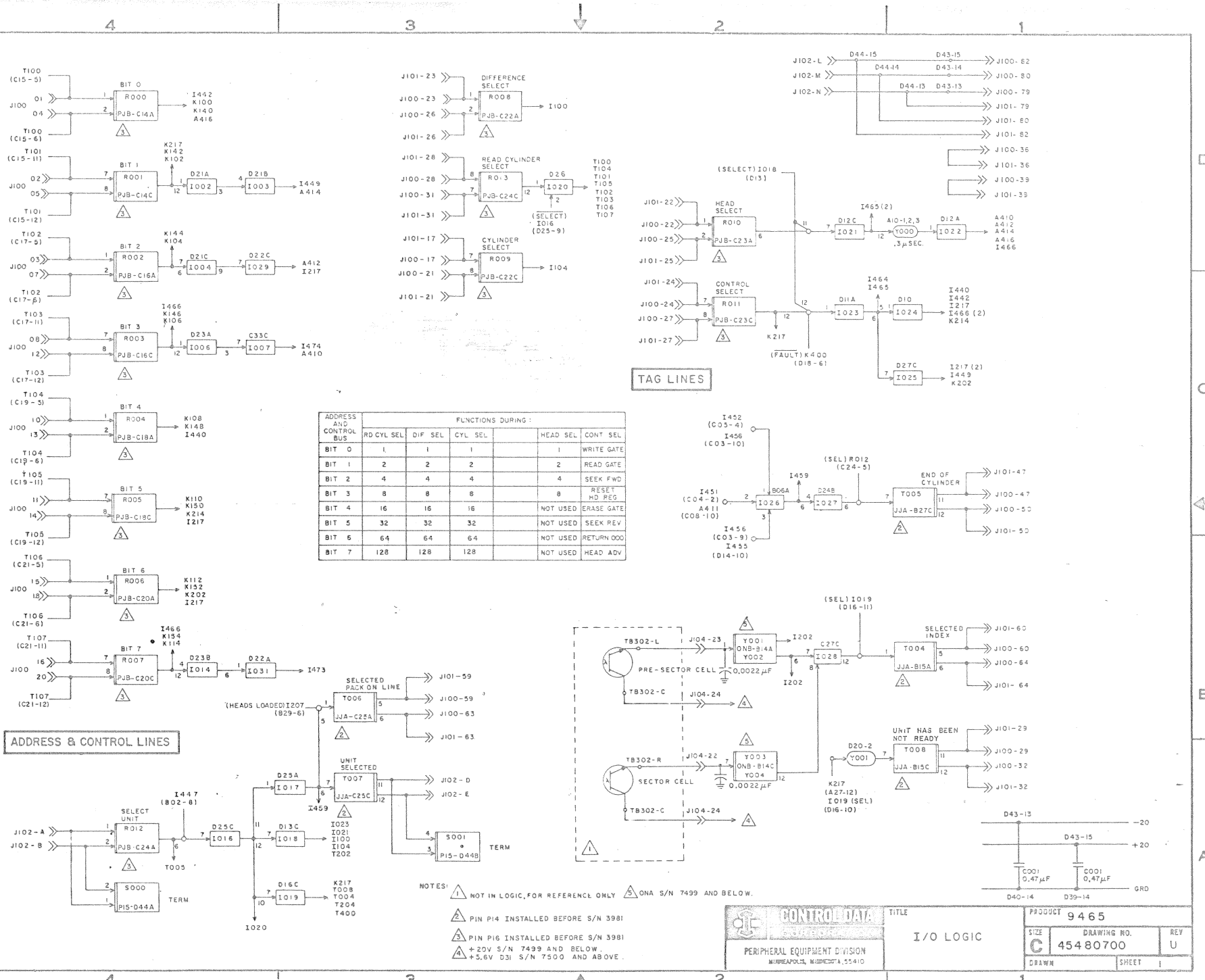


Figure 17. Input/Output Designations



ADDRESS AND CONTROL BUS	FUNCTIONS DURING: RD CYL SEL	DIF SEL	CYL SEL		HEAD SEL	CONT SEL
BIT 0	1	1	1		1	WRITE GATE
BIT 1	2	2	2		2	READ GATE
BIT 2	4	4	4		4	SEEK FWD
BIT 3	8	8	8		8	RESET HD REG
BIT 4	16	16	16		NOT USED	ERASE GATE
BIT 5	32	32	32		NOT USED	SEEK REV
BIT 6	64	64	64		NOT USED	RETURN 000
BIT 7	128	128	128		NOT USED	HEAD ADV

NOTES:
1. NOT IN LOGIC, FOR REFERENCE ONLY
2. PIN P14 INSTALLED BEFORE S/N 3981
3. PIN P16 INSTALLED BEFORE S/N 3981
4. +20V S/N 7499 AND BELOW. +5.6V D31 S/N 7500 AND ABOVE.
5. ONA S/N 7499 AND BELOW.

CONTROL DATA CORPORATION
PERIPHERAL EQUIPMENT DIVISION
MINNEAPOLIS, MINNESOTA 55440

TITLE: I/O LOGIC

PRODUCT 9465
SIZE C | DRAWING NO. 45480700 | REV U
DRAWN | SHEET 1

1-1

Rev D

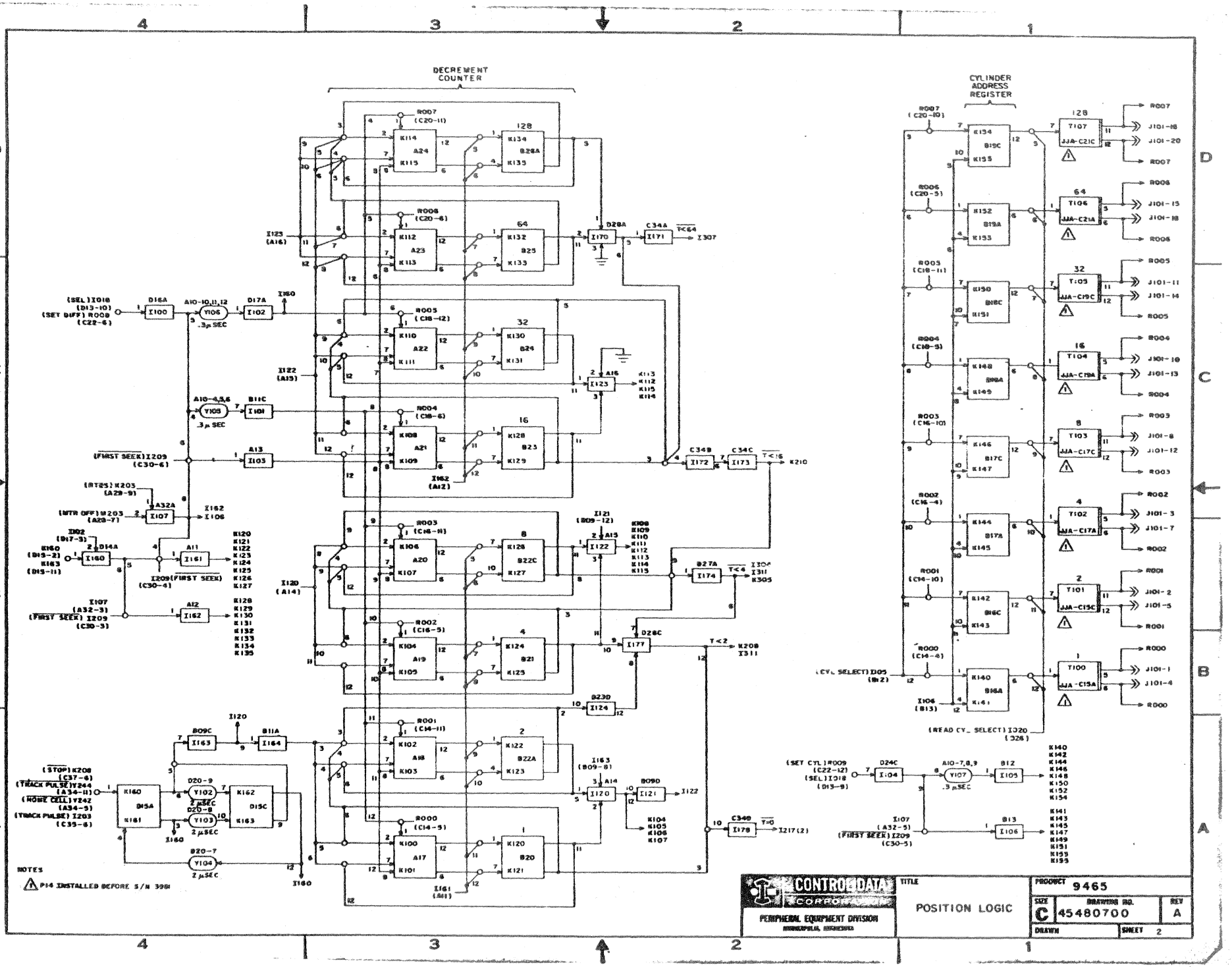
DECREMENT COUNTER

The decrement counter is set by the Difference Select input to the address and control bus. This select sets the counter to the number of cylinders to go during a seek. Direction of seek is controlled by the Control Select line.

As the heads move toward the new cylinder, the trailing edge of each track pulse provides an enabling term to pulse generator K160/161 and K162/163. This pulse generator provides the two phase pulses necessary to decrement the counter. As the counter counts down towards zero, inverters I171, I173, I174, I177, and I178 decode the output of the counter to indicate the number of tracks to go. These lines will be used to control the speed of the carriage motor and, ultimately, to stop the heads on the desired track.

CYLINDER ADDRESS REGISTER

The cylinder address register is set by the Cylinder Select input to the address and control bus. The number stored in the register indicates which cylinder the heads are currently positioned on.


DECREMENT COUNTER
CYLINDER ADDRESS REGISTER
NOTES
P14 INSTALLED BEFORE S/N 3981
CONTROL DATA CORP.
PERIPHERAL EQUIPMENT DIVISION
MINNEAPOLIS, MINNESOTA
TITLE
POSITION LOGIC
PRODUCT 9465
SIZE C
DRAWING NO. 45480700
REV A
DRAWN
SHEET 2

1-3

Rev A

HOME CELL

The home cell is a photocell which receives light if the heads are positioned on an illegal cylinder (less than cylinder 00 or more than 202). This signal is used to detect a seek error or to position the heads on cylinder 00 during a return to zero seek or first seek.

DIRECTION CONTROL

The direction of carriage motion is controlled by the forward FF. The FF forces forward motion when it is set by of the following:

1. Heads unloaded and first seek,
2. Home cell lights while driving in reverse.
3. After a seek has been completed.

The Forward FF is cleared by:

1. Return to zero seek.
2. Reverse seek command.
3. After heads are loaded during first seek.
4. When heads are unloaded with motor off.

The Reverse FF forces reverse motion by clearing the Forward FF. The Reverse FF is set by a control select or if a forward seek error occurs. It is cleared at the end of the reverse seek or upon completion of the seek error recovery.

The RTZS (Return to Zero Seek) FF is set by a control select from the controller. Setting the FF clears the Forward FF to enable reverse drive to the home cell. RTZS FF clears when the home cell lights.

The slow FF is set when tracks-to-go are less than sixteen. The output of the FF acts on the motion circuit to prevent the carriage from moving faster than 6 ips. The FF is cleared by any seek command.

Stop FF commands the carriage to stop. As the decrement counter counts down during a direct seek, the output of I177 goes to "1" on the trailing edge of the next to last track pulse (that is, when T<2). On the leading edge of the next track pulse, Y243 goes to "1" to complete the AND gate to set the FF. The FF is cleared by an any seek command or a motor off and heads unloaded condition.

First Seek FF is used to initially load the heads. When the disks come up to speed, the FF sets. This sets the forward FF. When the heads are loaded, the Forward FF clears. Note that the First Seek FF is also set if a seek error occurs during a forward seek.

Seek Error FF senses an error if the home cell is uncovered during a direct seek. This returns a selected seek error signal to the controller. The FF is cleared upon receipt of a return to zero seek command or power off seek.

DETENT

The Detent FF (K212/213) controls the detent pawl which locks the carriage on its specified track. When the FF is set, cards L200 and L201 are turned off. This deenergizes the detent coil, allowing the detent pawl to engage the gear. Normally, the Detent FF is set by the trailing edge of the last track pulse during a seek. It is also set when the disks are not up to speed and the carriage velocity is less than 2 ips. This prevents head scoring.

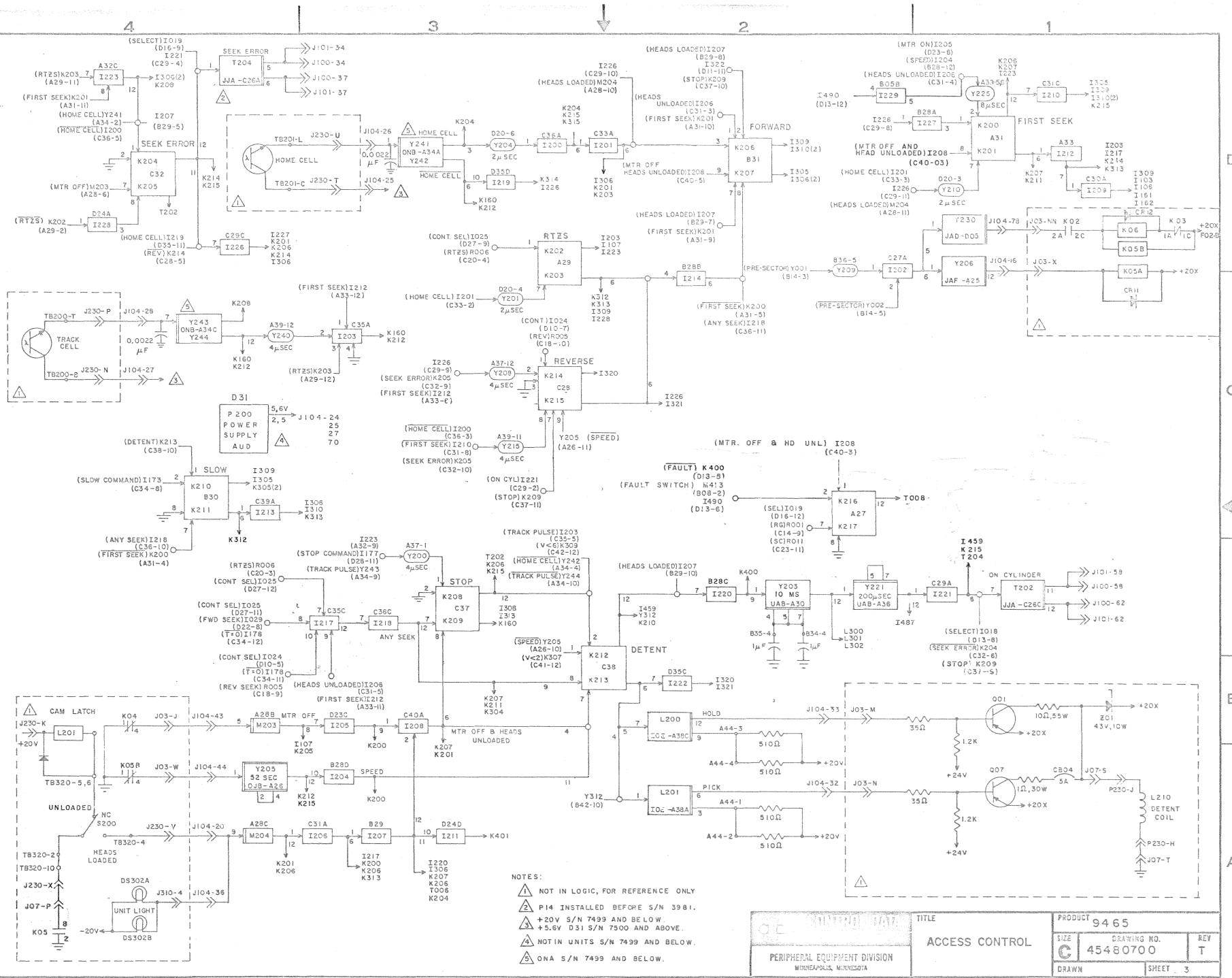
Upon receipt of any seek command, the FF clears. This completes the AND gate into card L201. Turning on the card applies a high current through coil L210 to quickly pull the pawl away from the gear teeth. After 2 ms, the Y312 term into card L201 goes to zero. Card L200 then controls current through coil L210 to hold the detent in its retracted position.

ON CYLINDER

The on cylinder signal informs the controller that the heads have reached the addressed cylinder. This signal is returned to the controller via T202 10.2 ms after the Detent FF sets.

TRACK CELL

The glass timing disk has 203 slots on its middle ring to indicate cylinder position. As the heads move across the disks, the timing disk rotates. Each time a slot passes the track cell, allowing light to hit the cell, the output on ONA Y244 goes to "0" and Y243 goes "1". As the cell goes dark, the input to I203 from Y244 goes to a "1" after 4 usec. ANDing the outputs of Y244 and I203 provides a 4 usec trailing edge "1" pulse to decrease the decrement counter and partially enable Detent FF. The ONA outputs are also used to partially enable the Stop FF.


SEEK ERROR
FORWARD
REVERSE
RTZS
FIRST SEEK
TRACK CELL
HOME CELL
P 200 POWER SUPPLY AUD
SLOW
STOP
DETENT
ON CYLINDER
CAM LATCH
UNLOADED
HEADS LOADED
UNIT LIGHT
NOTES:
1 NOT IN LOGIC, FOR REFERENCE ONLY
2 P14 INSTALLED BEFORE S/N 3981.
3 +20V S/N 7499 AND BELOW. +5.6V D31 S/N 7500 AND ABOVE.
4 NOT IN UNITS S/N 7499 AND BELOW.
5 ONA S/N 7499 AND BELOW.
PERIPHERAL EQUIPMENT DIVISION
MINNEAPOLIS, MINNESOTA
TITLE
ACCESS CONTROL
PRODUCT 9465
SIZE C
DRAWING NO. 45480700
REV T
DRAWN
SHEET 3

1-5

Rev D

SPEED CELL

The glass timing disk has slots in its outer ring used to indicate speed of carriage motion. As each slot permits light to hit the speed photocell, the leading edge of the pulse out of ONA Y321/322 is used to initiate a timing chain generator composed of FF's K300/301 and K302/303. The outputs of these FF's are applied to three UAB delay cards: Y305, Y306 and Y307. If the speed is low enough to allow one or more of these delays to time out, their associated inverters will output a "1" to signify head speeds of less than 15 ips, 6 ips, or 2 ips. These outputs are applied to the set inputs of V<2 FF K306/307, V<6 FF K308/309, and V<15 FF K310/311. The outputs of these FF's in turn, are used to control carriage motion.

MOTION

The printed circuit motor which drives the carriage is controlled by an H-switch consisting of Q03 through Q06. The motor drives forward when the AND gate into L300 is made. Operation of the circuit during a forward seek is explained below.

Upon receipt of a forward command, the Forward FF (K206/207) is set; the Detent FF (K212/213) clears to pull the detent pawl. The direction of seek is sensed by I305 and I309; all inputs to I305 must be "0" to drive forward. Since velocity is 0 ips at this time, I305 outputs a "1" and forward motion starts. (I309 in the reverse circuit operates in a similar manner; if all of its inputs are "0" the motor drives in reverse.)

Rate of motor acceleration is controlled by the Not Max Drive FF (K212/213). When the FF is cleared transistor Q02 is turned on to permit high current flow through the access motor's H-switch, this causes maximum acceleration or, in the case where opposing current is enabled, maximum deceleration. When a seek starts where tracks-to-go exceed 4, the FF clears after delay Y312 times out; the delay permits the detent pawl to clear its gear.

Assume a full 199 track seek. The motor accelerates to a full speed of approximately 35 ips until there are less than 64 tracks to go. The output of I305 goes to "0" when T (tracks-to-go) is less than 64 and V (carriage velocity) is greater than 15 ips. At the same time, the "1" input to I310 in the reverse drive circuit causes opposing current to flow through the H-switch. The motor is then rapidly braked to 15 ips. When V is less than 15, the Not Max Drive FF sets to turn off high current. The 15 ips speed is maintained by serving the motor; I305 and I310 alternately output "1's" and "0's" to maintain a constant speed.

When tracks-to-go are less than 16, the slow FF sets. The Per Dy Brk (Permit Dynamic Braking) FF (which was set at the start of the seek) enables the AND gate input to I310 to again apply reverse current. At the same time, Not Max Drive FF is again cleared. Therefore, the motor is rapidly slowed to 6 ips. When the speed is less than 6 ips, Not Max Drive FF sets, while Per Dy Brake FF clears. Speed is maintained in a "hit and coast" manner. That is, I305 turns on the motor when speed is less than 6 ips, then turns it off when speed exceeds 6 ips.

When tracks-to-go are less than 4, I311 sets K304/305. The motor is again dynamically braked until speed is less than 2 ips. Note that the braking action is now low current since the Not Max Drive FF remains set. Speed of 2 ips is maintained in a hit and coast manner.

The trailing edge of the next to last track pulse causes a stop command which combines with the leading edge of the last pulse to set the Stop FF.

Detent FF sets on the trailing edge of the last track pulse. The circuit consisting of I320 through I324, and delays Y330 through Y332 provide a motor stop pulse. In a forward seek, after the Detent FF sets, a 2 ms "0" pulse delayed by Y331 from I323 is applied through inverters to cards L301 and L302 to stop the motor by the time the detent pawl meshes with its gear.

Operation of this circuit during a return to zero seek is as follows:

1. With RTZS FF set and Forward FF cleared, reverse drive is supplied by the "1" output of I309. Acceleration is retarded since Not Max Drive FF is set.
2. Speed is maintained in a hit and coast manner at 6 ips by the V greater than 6 term that is applied to I309.
3. When the home cell lights, the RTZS FF clears and Forward FF sets. The output of FF K314/315 forces forward drive back to cylinder 00.

FAULT

The Fault FF K400/401 is set and returns a Data Unsafe signal to the controller if one of the following malfunctions occurs:

1. More than one head is selected.
2. Both write (or erase) and read gates on.
3. Erase driver on without write driver on.
4. Erase driver on with either both or no write driver.
5. Read, write, or erase gate on while not on cylinder.

HEAD ADDRESS REGISTER

The head address register consists of FF A400/401 through A416/417. The output of the register is applied to the 10 head select cards (G40-) to control which head will read, write, or erase.

The register may be set in two ways. One method is by means of the Head Select line. When this line is up, the address and control bus directly sets up the register to select the desired head.

If it is desired to select the heads sequentially on a cylinder, the Control Select line and bit 3 of the address bus is used to initially set the register to zero. Thereafter, a head advance signal may be applied to Y405 to increment the register to the next head.

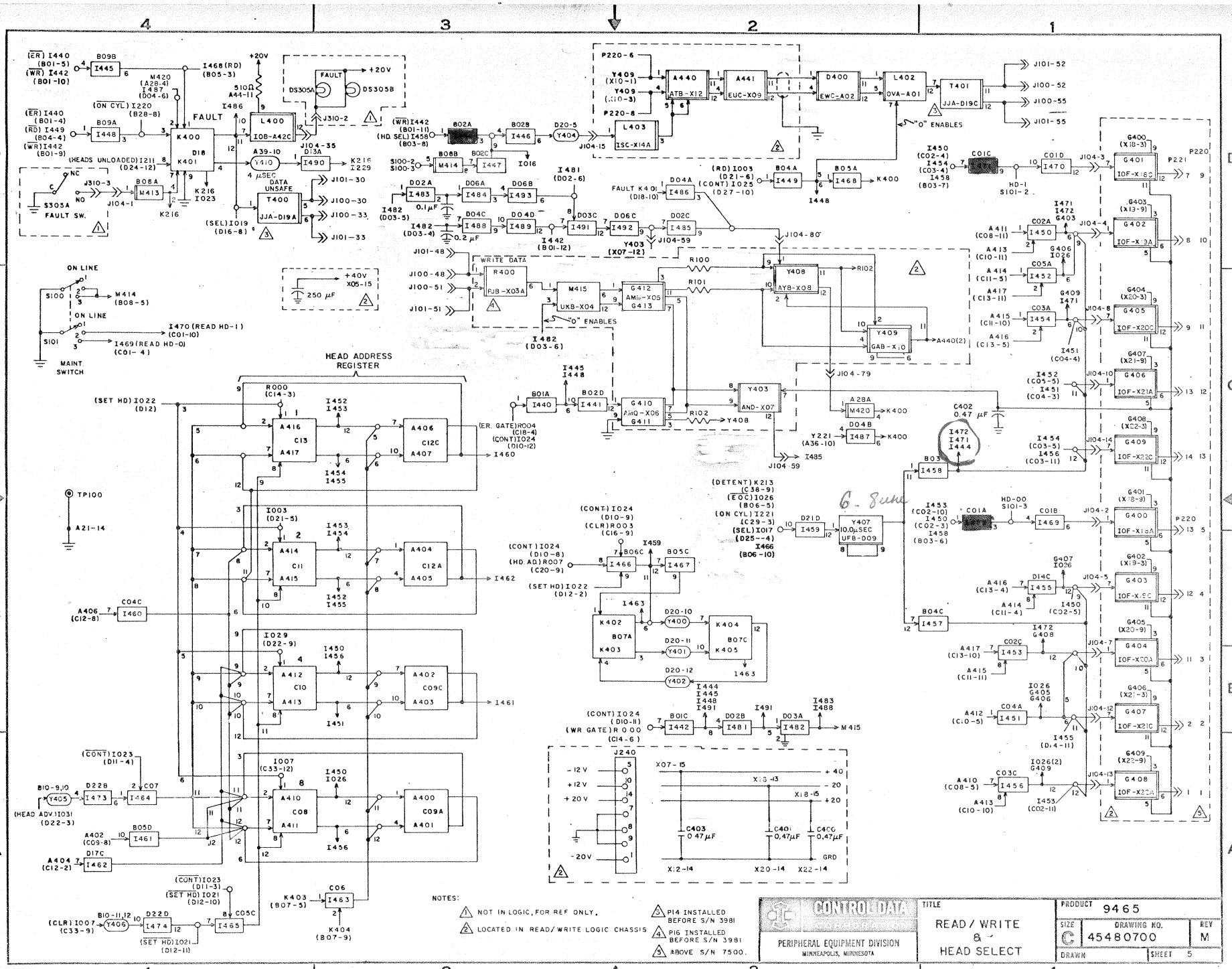
In either method, the timing pulse generator consisting of FF K402/403 and K404/405 provides the enabling pulses to transfer the count in rank I to rank II of the register.

READ CHAIN

The read chain consists of cards A440, A441, D400, L402, and T401. The analog output of the selected head is applied to the ATB gated read amplifier, then amplified by the EUC differential amplifier A441. Shaper D400 converts the analog input fromthe heads to a square wave output. If the read mode has been selected, the OVA pulse shaper gates the square wave output to T401 for transmission to the controller.

WRITE CHAIN

Erase enable is applied to AM- erase driver G410/411 via I440 and I441. In order to write, a write enable must be applied through I442 to UKB toggle M415. Write information, in the form of data pulses, is applied to UKB toggle M415 via R400. The UKB switches state at the leading edge of each write data pulse; its output is applied to AM- G412/413. Write current is then allowed to flow through the head selected by the head address register. Outputs of both AM- drivers are applied to AND card Y403 to check for any unbalance of the output voltages. (If there is an unbalance, Y403 sets the Fault FF K400/401.


HEAD ADDRESS REGISTER
WRITE DATA
ON LINE
MAINT. SWITCH
FAULT
FAULT SW.
DATA UNSAFE
"0" ENABLES
NOTES:
1. NOT IN LOGIC, FOR REF ONLY.
2. LOCATED IN READ/WRITE LOGIC CHASSIS
3. P14 INSTALLED BEFORE S/N 3981
4. P16 INSTALLED BEFORE S/N 3981
5. ABOVE S/N 7500.
CONTROL DATA
PERIPHERAL EQUIPMENT DIVISION
MINNEAPOLIS, MINNESOTA
TITLE
READ / WRITE & HEAD SELECT
PRODUCT 9465
SIZE C
DRAWING NO. 45480700
REV M
DRAWN
SHEET 5

1-9

Rev B

Slot	A	B	C	D
1	L402 (OVA)	I440 / I442 (21)	I472 / I469 / I471 / I470 (20)	
2	D400 (EWC)	I444 / I446 / I447 / I441 (20)	I450 / I453 (22)	I483 / I481 / I485 (20)
3		I458 (11)	I454 / I456 (22)	I432 / I491 (22)
4		I449 / I457 (21)	I451 / I460 (21)	I486 / I487 / I488 / I489 (20)
5		I468 / I229 / I467 / I461 (20)	I452 / I465 (22)	Y230 (JAD)
6		I026 / I466 (23)	I463 (12)	I484 / I493 / I492 (20)
7		K402 / K403 / K404 / K405 (Δ5)	I464 (12)	
8		M413 / M414 (87)	A410 / A411 (32)	
9		I448 / I445 / I163 / I121 (20)	A400 / A401 / A402 / A403 (Δ5)	Y407 (UFB)
10	Y000 / Y000 / Y000 / Y105 / Y105 / Y105 / Y107 / Y107 / Y107 / Y106 / Y106 / Y106 (EEE)	Y405 / Y405 / Y406 / Y406 (EEE)	A412 / A413 (32)	I024 (11)
11	I161 (11)	I164 / I101 (21)	A414 / A415 (32)	I023 / I322 (21)
12	I162 (11)	I105 (11)	A404 / A405 / A406 / A407 (Δ5)	I022 / I021 (21)
13	I103 (11)	I106 (11)	A416 / A417 (32)	I490 / I018 (21)
14	I120 (13)	Y001 / Y002 / Y003 / Y004 Δ4 (ONB)	R000 / R001 Δ2 (PJB)	I160 / I455 (22)
15	I122 (13)	T004 / T008 Δ1 (JJA)	T100 / T101 Δ1 (JJA)	K160 / K161 / K162 / K163 (Δ5)
16	I123 (13)	K140 / K141 / K142 / K143 (Δ5)	R002 / R003 Δ2 (PJB)	I100 / I019 (21)
17	K100 / K101 (32)	K144 / K145 / K146 / K147 (Δ5)	T102 / T103 Δ1 (JJA)	I102 / I462 (21)
18	K102 / K103 (32)	K148 / K149 / K150 / K151 (Δ5)	R004 / R005 Δ2 (PJB)	K400 / K401 (33)
19	K104 / K105 (32)	K152 / K153 / K154 / K155 (Δ5)	T104 / T105 Δ1 (JJA)	T400 / T401 Δ1 (JJA)
20	K106 / K107 (32)	K120 / K121 (31)	R006 / R007 Δ2 (PJB)	Y001 / Y210 / Y201 / Y404 / Y204 / Y104 / Y103 / Y102 / Y400 / Y401 / Y402 (50)
21	K108 / K109 (32)	K124 / K125 (31)	T106 / T107 Δ1 (JJA)	I002 / I003 / I004 / I459 (20)
22	K110 / K111 (32)	K122 / K123 / K126 / K127 (Δ5)	R008 / R009 Δ2 (PJB)	I031 / I473 / I029 / I474 (20)
23	K112 / K113 (32)	K128 / K129 (31)	R010 / R011 Δ2 (PJB)	I006 / I014 / I205 / I124 (20)
24	K114 / K115 (32)	K130 / K131 (31)	R012 / R013 Δ2 (PJB)	I228 / I027 / I104 / I211 (20)
25	Y206 (JAF)	K132 / K133 (31)	T006 / T007 Δ1 (JJA)	I017 / I016 (21)
26	Y205 (OJB)	K134 / K135 / K314 / K315 (Δ5)	T204 / T202 Δ1 (JJA)	I020 (12)
27	K216 / K217 (32)	T005 Δ1 (JJA)	I202 / I028 (22)	I174 / I025 (21)
28	M420 / M203 / M204 (87)	I227 / I214 / I220 / I204 (20)	K214 / K215 (33)	I170 / I177 (23)
29	K202 / K203 (31)	I207 (11)	I221 / I226 (21)	
30	Y203 (UAB)	K210 / K211 (32)	I209 / I307 (21)	
31	K200 / K201 (32)	K206 / K207 (33)	I206 / I210 (21)	P200 (AUD)
32	I107 / I223 (22)	K300 / K301 (31)	K204 / K205 (32)	Y332 (UAB)
33	I212 (11)	K302 / K303 (31)	I201 / I007 (21)	Y331 (UAB)
34	Y241 / Y242 / Y243 / Y244 Δ4 (ONB)	Y305 (UAB)	I171 / I172 / I173 / I178 (20)	Y330 (UAB)
35	Y321 / Y322 Δ4 (ONB)	Y306 (UAB)	I203 / I217 (24)	I320 / I321 / I222 / I219 (20)
36	Y221 (UAB)	Y307 Δ3 (UAB)	I200 / I218 (21)	I313 / I318 (21)
37	Y200 / Y314 / — / Y310 / Y309 / Y308 / Y304 / Y303 / Y302 / Y301 / — / Y208 (CC82-1)	I300 / I301 / I302 / I303 (20)	K208 / K209 (32)	Y315 (UAB)
38	L201 / L200 (IOE)	K304 / K305 (32)	K212 / K213 (32)	
39	— / — / — / Y304 / Y225 / Y225 / — / — / — / Y410 / Y215 / Y240 (CC82-1)	I305 / I309 (24)	I213 / I304 (2)	
40	L300 / L301 (IOE)	I306 / I310 (24)	I208 / I311 (22)	
41	DC FILTER (P54)	I315 / I316 / I312 / I317 (20)	K306 / K307 (31)	
42	L302 / L400 (IOE)	Y312 (UAB)	K308 / K309 (31)	
43	I323 / I324 (21)	Y313 (UAB)	K310 / K311 (31)	
44	RESISTOR (EEG)	K312 / K313 (33)	I314 / I308 (22)	S000 / S001 / — / — / — (P15)

READ / WRITE LOGIC CHASSIS

Slot	X
1	
2	
3	R400 Δ2 (PJB)
4	M415 (UKB)
5	G412 / G413 (AMM)
6	G410 / G411 (AMQ)
7	Y403 (AND)
8	Y408 (AYB)
9	A441 (EUC)
10	Y409 (GAB)
11	
12	A440 (ATB)
13	
14	L403 (ISC)
15–16	J240 SPECIAL CONNECTOR / ±12V POWER MODULE
17	
18	G400 / G401 (IOF)
19	G402 / G403 (IOF)
20	G404 / G405 (IOF)
21	G406 / G407 (IOF)
22	G408 / G409 (IOF)

+40V −20V (slots 5–8); ±12V (slots 11–14)

NOTES:

1. (Δ1) P14 INSTALLED BEFORE S/N 3981
2. (Δ2) P16 INSTALLED BEFORE S/N 3981
3. (Δ3) Y209 TAKEN FROM PIN 5 OF THIS CARD.
4. (Δ4) ONB S/N 7500 AND ABOVE. ONA S/N 7499 AND BELOW.
5. (Δ5) 30A OR 30B.

CONTROL DATA CORPORATION — DEVELOPMENT DIVISION

TITLE: CARD PLACEMENT

PRODUCT: 9465 | SIZE: C | DRAWING NO: 45480700 | REV: S | SHEET: 6 | PAGE:

GENERAL

The power supply is completely solid state to provide low dissipation and high reliablility to the operating system. The power supply provides an adjustable ±20 vdc to the logic chassis, +24 vdc and +20X vdc to the access motor and detent solenoid, +40 vdc to the Write circuit and dynamic braking circuit, +20Y vdc to the power sequencing circuit, and 24 vac to the brush motor circuit.

The main power supply is supplemented by an auxiliary power unit which provides +5.7 vdc for the fiber optic source lamp.

These voltages are sequenced and coupled to the related circuit in such a way as to prevent improper head loading, track accessing, or disk movement.

DC POWER CIRCUIT

The 380-volt input power is applied through the MAIN POWER circuit breaker to the logic chassis fans, power supply fans, and the spindle drive motor, M360. The 220-volt input power is controlled by the DC POWER INPUT and MAIN POWER circuit breakers and is applied to the ferroresonant transformer T01.

Since T01 is a ferroresonant transformer, the voltage developed in the secondary windings tend to remain constant, regardless of the voltage variation of the applied signal or the load applied to the secondary. The voltage developed across the secondary of T01 is coupled from pins 8 and 9 to the primary of transformer T02 and rectifier diodes CR01, CR02, and CR04. Also coupled from pin 8 is 24 vac which is supplied to the brush motor circuit.

Rectifier diodes CR04A and CR04B, and rectifier diodes CR01A and CR02A develop +20 vdc and −20 vdc, respectively, at their junctions. Capacitors C01 through C04 and chokes L01 and L02 filter the voltages before they are supplied to the logic chassis. Rheostats R03 and R04 are used to adjust the voltages to their proper levels. R01 and R02 are bleeder resistors.

The voltage applied to the primary windings of transformer T02 is coupled to the secondary. The secondary voltage is applied to rectifier diodes CR03A and CR03B which develop +40 vdc at their junction. Capacitor C07 filters the voltage before it is applied through relay K05B to the read/write/erase circuit in the logic chassis. Also developed at the junction of CR03A and CR03B is +40X vdc which is applied to resistor R08.

Resistors R07 and R08 form a voltage divider. The +20Y vdc developed at the junction of rectifier diodes CR01B and CR02B is applied to resistor R07. The junction of resistors R07 and R08 is driven to approximately +24 vdc. This voltage is applied to the H switch and detent circuits for transistor bias.

The +20Y volts at R07 is also applied to filter capacitors C09, C10, and C11. Resistor R06 is a bleeder to discharge the capacitors once the unit has been turned off. The filtered +20Y vdc is used for power sequencing of the unit.

FIBER OPTICS POWER SUPPLY

The secondary voltage of transformer T01 is coupled from pins 5 and 7 to rectifier diodes CR01A and CR01B in the fiber optics power supply. Rectifier diodes CR01A and CR01B develop +5.7 vdc at their junction and apply the voltage to filter capacitors C01 and C02 and filter choke L01. The filtered voltage is coupled through rheostat R03 to the photocell lamp. Resistor R01 is a bleeder to discharge the capacitors once the unit has been turned off.

POWER-ON SEQUENCE

Sequencing of power within the power supply is accomplished by seven relays. This sequencing is necessary to prevent damage to the heads and/or disks and to ensure proper control of the actuator mechanism by the logic.

Motor sequence relay K01 is energized when the unit receives a sequence in from either the control unit or the previous storage drive on the line. If the disk drive unit START switch is not lighted (S301 set to OFF), the sequence out level is applied to the next storage drive. This sequencing of the storage drives is necessary to prevent loading of the primary power source.

Assume that a Power-On command is received from the control unit and the START switch (S301) is lighted. The +20Y vdc is applied through connector J03 to complete the path and energize relay K01. When relay K01 is energized, contacts 1 and 7 close to energize relay K02. When K02 is energized, contacts 3A and 3C close to supply +20 vdc to the logic chassis, and contacts 4C and 4A close to supply -20 vdc to the logic chassis.

Relay K01 also completes the path through contacts 3 and 9 to energize relay K04 (assuming the disk pack is on, both top covers are closed, and the START switch is lighted). Contacts 2 and 5 of K04 open and remove +20Y volts to the brake solenoid, L300. This causes the pawl to free the spindle and close the spindle interlock switch, S333. Contacts 2 and 8 of K04 close to provide +20X to the sector solenoid, L301. The solenoid energizes, swinging the sector sensor assembly into the disk pack, thus closing the pack cover on switch, S334.

With switches S333 and S334 closed, a path is completed to energize relay K03. K03 contacts 3A/3C and 4A/4C close to apply power to the spindle motor, M360. K04 contacts 1 and 4 open and apply an output signal indicating that the motor is on. Contacts 1A and 1C of K03 close so that power will be applied to the head latch solenoid, L200, and the cam latch solenoid, L201, when the disk pack is up to speed.

When the disk pack reaches approximately 50 rpm, relay K05B is energized. Relay contacts 2 and 8 close, supplying +40 vdc to the Write circuit.

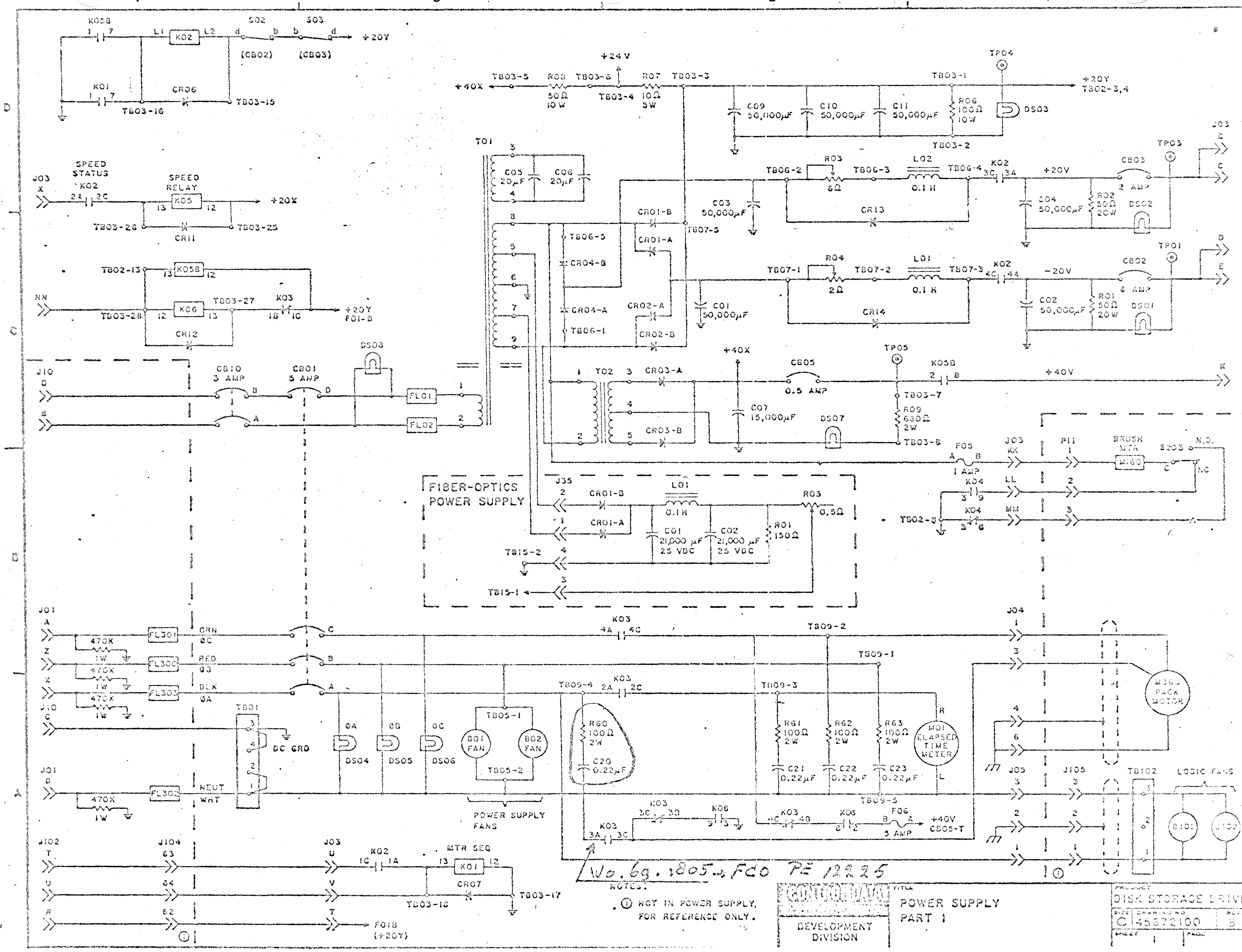
At 80 percent of the rated speed, the logic completes a circuit to energize relay K05A through J03-X. When this relay energizes contacts 1 and 4 open and a signal is applied to the logic, indicating that the pack is up to speed. This signal is applied to a 52-second delay card which allows time for the air to be purged from the disk pack area before loading the heads and for the brush assembly to complete a clean cycle of the disk pack. Relay contacts 2 and 8 of K05A close to apply power to the head latch, L200. Once the heads are loaded, the solenoid armature holds the heads loaded.

POWER-OFF SEQUENCE

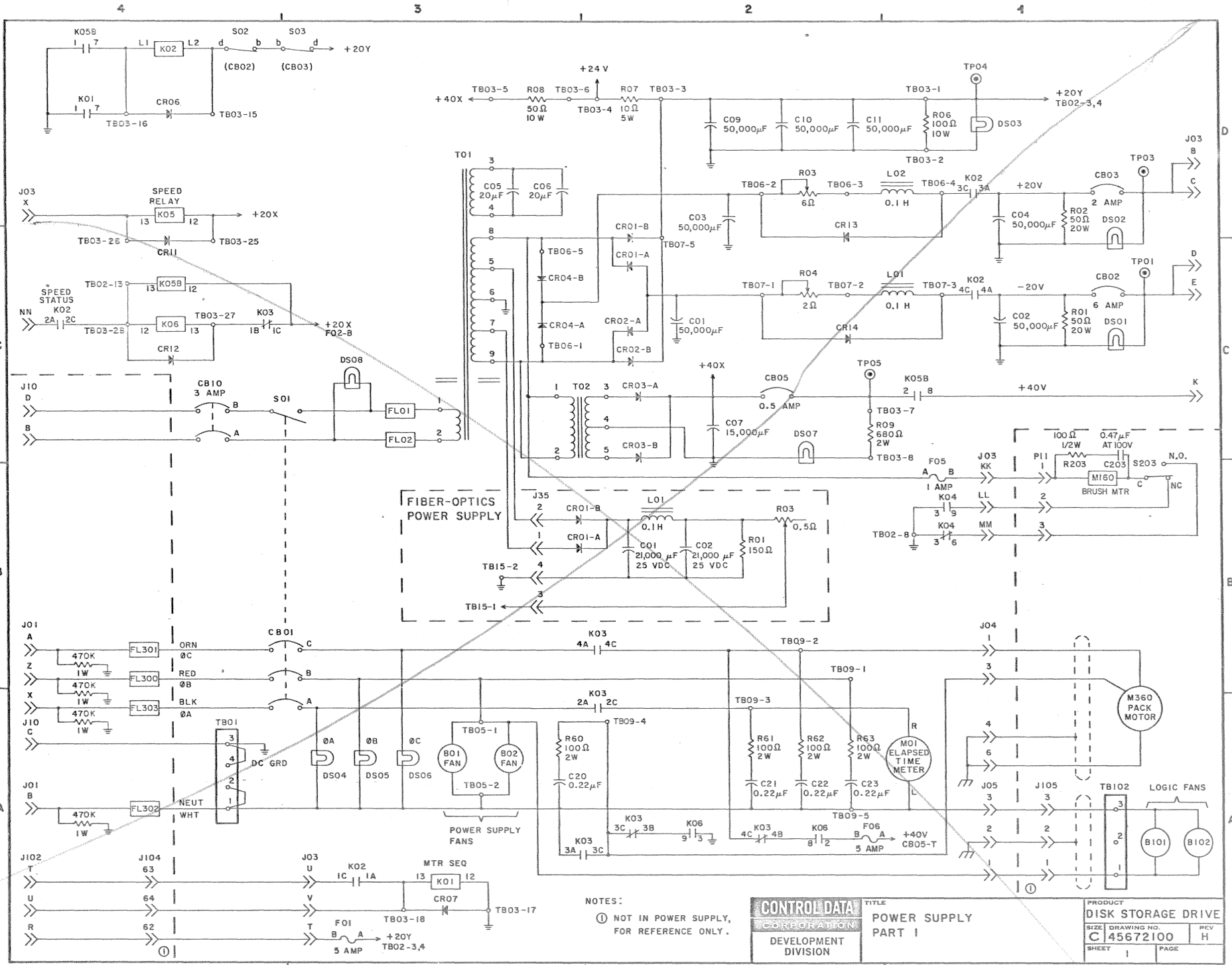
Power in the disk storage drive can be cycled off in any of three ways: from the START switch on the disk storage drive operator control panel, by opening either top cover, or from the control unit. It is assumed that the purpose for this Power-Off sequence is to change packs. The sequence is initiated when START switch S301 is pressed, opening the contacts of S301A and breaking the circuit that holds relays K03 and K04 energized. The following events occur:

1. K03 contacts 3A/3C and 4A/4C open and remove power to the spindle motor, M360, (rotation begins to slow).

(continued)



K05B
K02
S02
S03
+20Y
(CB02)
(CB03)
K01
CR06
TB03-16
TB03-15
+24V
+40X
TB03-5
R08 50Ω 10W
TB03-6
TB03-4
R07 10Ω 5W
TB03-3
TB03-1
TP04
+20Y TB02-3,4
C09 50,000μF
C10 50,000μF
C11 50,000μF
R06 100Ω 10W
DS03
TB03-2
J03
TO1
C05 20μF
C06 20μF
SPEED STATUS
SPEED RELAY
K05
+20X
TB03-26
CR11
TB03-25
TB06-2
R03 6Ω
TB06-3
L02 0.1 H
TB06-4
+20V
CB03 2 AMP
TP03
C03 50,000μF
CR13
C04 50,000μF
R02 50Ω 20W
DS02
CR01-B
CR01-A
TB07-5
TB06-5
CR04-B
CR04-A
TB06-1
CR02-A
CR02-B
TB07-1
R04 2Ω
TB07-2
L01 0.1 H
TB07-3
-20V
CB02 6 AMP
TP01
C01 50,000μF
CR14
C02 50,000μF
R01 50Ω 20W
DS01
TB02-13
K06
TB03-28
TB03-27
K03
+20Y F01-B
CR12
J10
CB10 3 AMP
CB01 5 AMP
DS08
FL01
FL02
+40X
TO2
CR03-A
CR03-B
CB05 0.5 AMP
TP05
+40V
TB03-7
R09 680Ω 2W
C07 15,000μF
DS07
TB03-8
F05 1 AMP
J03
P11
BRUSH MTR
M160
S203
N.O.
N.C.
K04
TB02-8
FIBER-OPTICS POWER SUPPLY
J35
CR01-B
CR01-A
L01 0.1H
C01 21,000 μF 25 VDC
C02 21,000 μF 25 VDC
R01 150Ω
R03 0.5Ω
TB15-2
TB15-1
J01
470K 1W
FL301
FL300
FL303
FL302
ORN ØC
RED ØB
BLK ØA
K03
TB09-2
TB09-1
TB09-4
TB09-3
J04
M360 PACK MOTOR
TB01
DC GRD
ØA ØB ØC
DS04
DS05
DS06
TB05-1
B01 FAN
B02 FAN
TB05-2
POWER SUPPLY FANS
R60 100Ω 2W
C20 0.22μF
R61 100Ω 2W
R62 100Ω 2W
R63 100Ω 2W
C21 0.22μF
C22 0.22μF
C23 0.22μF
M01 ELAPSED TIME METER
NEUT WHT
TB09-5
K08
F06 3 AMP
+40V CB05-T
J05
J105
TB102
LOGIC FANS
B101
B102
J102
J104
MTR SEQ
K01
CR07
TB03-18
TB03-17
F01B (+20Y)
Wo. 69. 1805 + FCO PE 12225
NOTES:
① NOT IN POWER SUPPLY, FOR REFERENCE ONLY.
CONTROL DATA
DEVELOPMENT DIVISION
TITLE POWER SUPPLY PART 1
PRODUCT DISK STORAGE DRIVE
SIZE C
DRAWING NO 45672100
REV B
SHEET 1


K05B
K02
K01
CR06
TB03-16
TB03-15
S02
S03
(CB02)
(CB03)
+20Y
+24 V
+40X
TB03-5
R08
50Ω 10W
TB03-6
TB03-4
R07
10Ω 5W
TB03-3
TB03-1
TP04
TB02-3,4
C09 50,000μF
C10 50,000μF
C11 50,000μF
R06 100Ω 10W
DS03
TB03-2
J03
SPEED RELAY
K05
+20X
TB03-26
TB03-25
CR11
T01
C05 20μF
C06 20μF
TB06-2
R03
6Ω
TB06-3
L02
0.1 H
TB06-4
K02
+20V
CB03
2 AMP
TP03
C04 50,000μF
R02 50Ω 20W
DS02
C03 50,000μF
CR13
CR01-B
CR01-A
TB07-5
TB06-5
CR04-B
CR04-A
TB06-1
CR02-A
CR02-B
C01 50,000μF
TB07-1
R04
2Ω
TB07-2
L01
0.1 H
TB07-3
-20V
CB02
6 AMP
TP01
C02 50,000μF
R01 50Ω 20W
DS01
CR14
SPEED STATUS
K02
TB02-13
K05B
K06
TB03-27
K03
TB03-28
+20X FO2-B
CR12
DS08
J10
CB10
3 AMP
S01
FL01
FL02
T02
CR03-A
CR03-B
+40X
CB05
0.5 AMP
TP05
K05B
+40V
C07 15,000μF
DS07
TB03-7
R09 680Ω 2W
TB03-8
FIBER-OPTICS POWER SUPPLY
J35
L01
0.1H
R03
0.5Ω
C01 21,000 μF 25 VDC
C02 21,000 μF 25 VDC
R01 150Ω
TB15-2
TB15-1
FO5
1 AMP
J03
KK
P11
R203 100Ω 1/2W
C203 0.47μF AT 100V
S203
M160
BRUSH MTR
N.O.
NC
K04
LL
MM
TB02-8
J01
FL301
FL300
FL303
FL302
470K 1W
ORN ØC
RED ØB
BLK ØA
NEUT
WHT
CB01
TB01
DC GRD
ØA
ØB
ØC
DS04
DS05
DS06
B01 FAN
B02 FAN
TB05-1
TB05-2
POWER SUPPLY FANS
K03
TB09-2
TB09-1
TB09-3
TB09-4
TB09-5
R60 100Ω 2W
C20 0.22μF
R61 100Ω 2W
R62 100Ω 2W
R63 100Ω 2W
C21 0.22μF
C22 0.22μF
C23 0.22μF
M01 ELAPSED TIME METER
M360 PACK MOTOR
J04
J05
J105
TB102
LOGIC FANS
B101
B102
K06
F06
5 AMP
+40V CB05-T
J102
J104
J03
MTR SEQ
K01
CR07
TB03-18
TB03-17
F01
5 AMP
+20Y TB02-3,4
NOTES:
① NOT IN POWER SUPPLY, FOR REFERENCE ONLY.
CONTROL DATA CORPORATION
DEVELOPMENT DIVISION
TITLE
POWER SUPPLY PART 1
PRODUCT
DISK STORAGE DRIVE
SIZE C
DRAWING NO. 45672100
REV H
SHEET 1
PAGE

1-13

Rev D

Power-Off Sequence (cont'd)

2. K03 contacts 3B/3C and 4B/4C close (partially completes circuit that will later dynamically brake the spindle motor).
3. K04 contacts 1 and 4 close and signal logic that the spindle motor is off.
4. K04 contacts 2 and 5 close (partially complete circuit that will energize the brake solenoid when spindle motor speed is less than 50 rpm).
5. K03 contacts 1A and 1C open to remove power to the head latch (L200) and cam latch (L201) solenoids (heads unload and carriage starts retracting).
6. K03 contacts 1B and 1C close to energize relay K06.

Energizing K06 closes contacts 2/8 and +40 vdc is applied to the windings of the spindle drive motor. This causes a magnetic field to form. The field opposes further rotation and the motor speed slows rapidly (dynamic braking).

When the logic senses the spindle motor speed is less than 50 rpm it de-energizes relay K05B. This causes the following events:

1. K05B contacts 2 and 8 open, removing +40 vdc to the Write circuit.
2. Contacts 3 and 9 open to remove the +20X voltage to the sector solenoid, L301, and the access motor H switch (prevents further movement of the carriage).
3. Contacts 1 and 4 close to energize the brake solenoid, L300, so that the pawl on the spindle lock assembly engages the spindle lock disk to hold the spindle stationary.
4. Contacts 1 and 7 open, de-energizing relay K02.

When relay K02 de-energizes, contacts 3A/3C and 4A/4C open, removing ±20 vdc to the logic chassis.

DETENT CIRCUIT

Upon receipt of any seek command, transistors Q01 and Q07 are forward biased and the transistors are gated on. When the transistors are gated on a high current pulse is applied through the detent coil L210 which quickly pulls the detent pawl away from the gear teeth. After approximately 2 msec transistor Q07 is gated off. Transistor Q01 remains gated on to provide holding current for the detent coil until a detent command is received.

The holding current flows through resistor R13, reducing the current to approximately 2 amps. When the detent command is received, power is removed from the base of Q01 and current flow is stopped. In approximately 2 msec the spring-loaded pawl is pulled into and engages the detent gear.

PRINTED CIRCUIT MOTOR MOTION CONTROL

The printed circuit motor, which moves the carriage drive and positioning mechanism, is controlled by a 5-transistor switching circuit. By controlling the transistor selection and the amount of current through these transistors, the motor is driven fast or slow in the reverse or forward direction. Transistors Q03 and Q06 are switched on for a forward operation, causing the printed circuit motor to drive the carriage forward. Transistors Q04 and Q05 are switched on for a reverse operation, connecting the switching circuit in such a manner as to allow motor current flow in the reverse direction.

The five transistors (Q02 through Q06) are normally gated off by the +24 volts applied through resistors to each base. Emitter voltage, applied to the PNP transistors, is supplied by the +20X voltage source. The base bias voltage is greater than the applied emitter voltage to assure that the transistors are cut off when not selected. When a move command is applied, the base resistors complete a voltage divider resulting in a forward-biased transistor.

Resistors R29 and R31 prevent overdrive of transistors Q03 and Q05 respectively. This allows the amplifier card inputs to the switching circuit to drive both switching transistors (Q05 and Q04, or Q03 and Q06) in parallel, even though the emitter reference voltages are different. The values of R29 and R31 are selected to provide equal drive to the parallel-switching transistors.

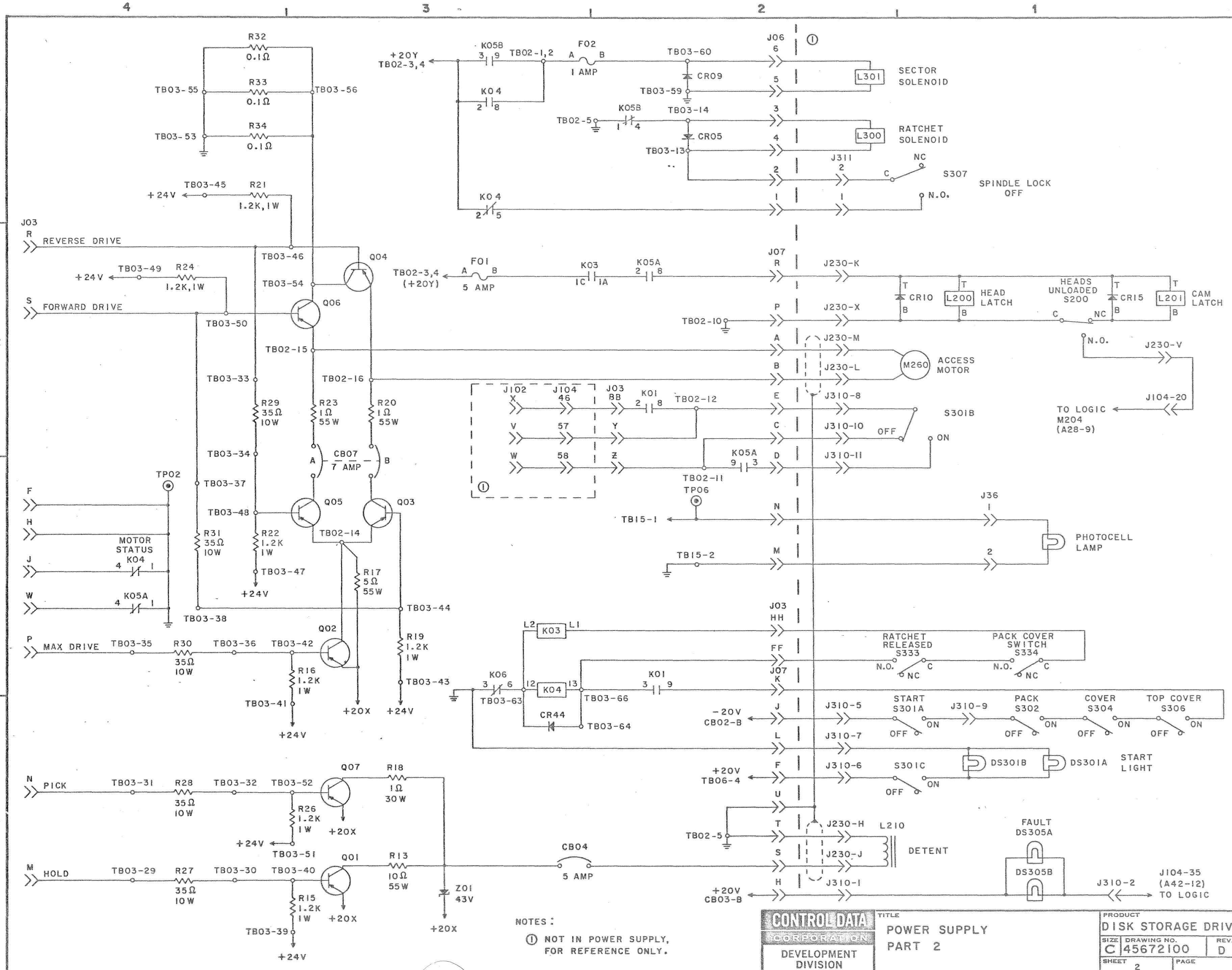
The magnitude of current in the printed circuit drive motor is determined by the power supply voltage and the total effective series resistance in the circuit. The voltage supplied to the switching transistors is fixed, but the total circuit resistance during the high current drive, excluding the saturation resistance of the switching transistors, is approximately 2.5 ohms. After the current is reduced, the total circuit resistance is approximately 12.5 ohms.

The use of series resistor R17 during slow speeds prevents excessive current and motor torque when not needed. Slow speeds are maintained by servoing and not current limiting. Circuit breaker CB07 prevents sustained high-level currents from damaging the printed circuit motor.

Assume that a forward move command of greater than 64 tracks is received; ground is applied through pins P and S of power supply jack J03 to bias on the respective transistors. The Fast command or ground level applied to J03-P turns on Q02. The ground level applied through J03-S forward biases Q06 and Q03. Electron flow is through parallel resistors R32, R33, and R34, through forward biased transistor Q06 to the one side of the printed circuit motor. From the motor, electron flow is through resistor R20, forward biased Q03, and forward biased Q02 to +20X vdc. With electron flow through Q03 and Q06, the motor is driven forward. Transistor Q02 shunts resistor R17, resulting in maximum current flow through the motor and consequently maximum motor acceleration. When the Decrement counter indicates less than 64 tracks remaining, and if the carriage velocity is greater than 15 inches per second, the following occurs:

1. Q03 and Q06 are switched off and Q04 and Q05 are switched on (Q02 remains on). The reverse current through the motor causes the motor to slow the carriage down.
2. When the carriage speed has slowed to 15 inches per second in the forward direction, Q02, Q04, and Q05 are turned off.
3. From this time until the Decrement counter indicates less than 16 tracks remaining, current pulses through the H switch are used to sustain 15 inches per-second carriage speed.
4. With 15 tracks remaining, Q02, Q04, and Q05 turn on (Q03 and Q06 turn off), and again the motor is used as a brake, slowing the carriage to 6 inches per second.
5. At 6 inches per second, Q02, Q04, and Q05 turn off and current pulses (through R17, Q03, the motor, and Q06) sustain a carriage velocity of 6 inches per second.
6. With 3 tracks remaining, Q02, Q04, and Q05 turn on and Q03 and Q06 turn off and slow the carriage to 2 inches per second.
7. At 2 inches per second, Q02, Q04, and Q05 turn off and current pulses (through R17, Q03, the motor, and Q06) sustain a carriage velocity of 2 inches per second.

When the selected track is reached, the spring-loaded pawl is dropped.



NOTES:

① NOT IN POWER SUPPLY, FOR REFERENCE ONLY.

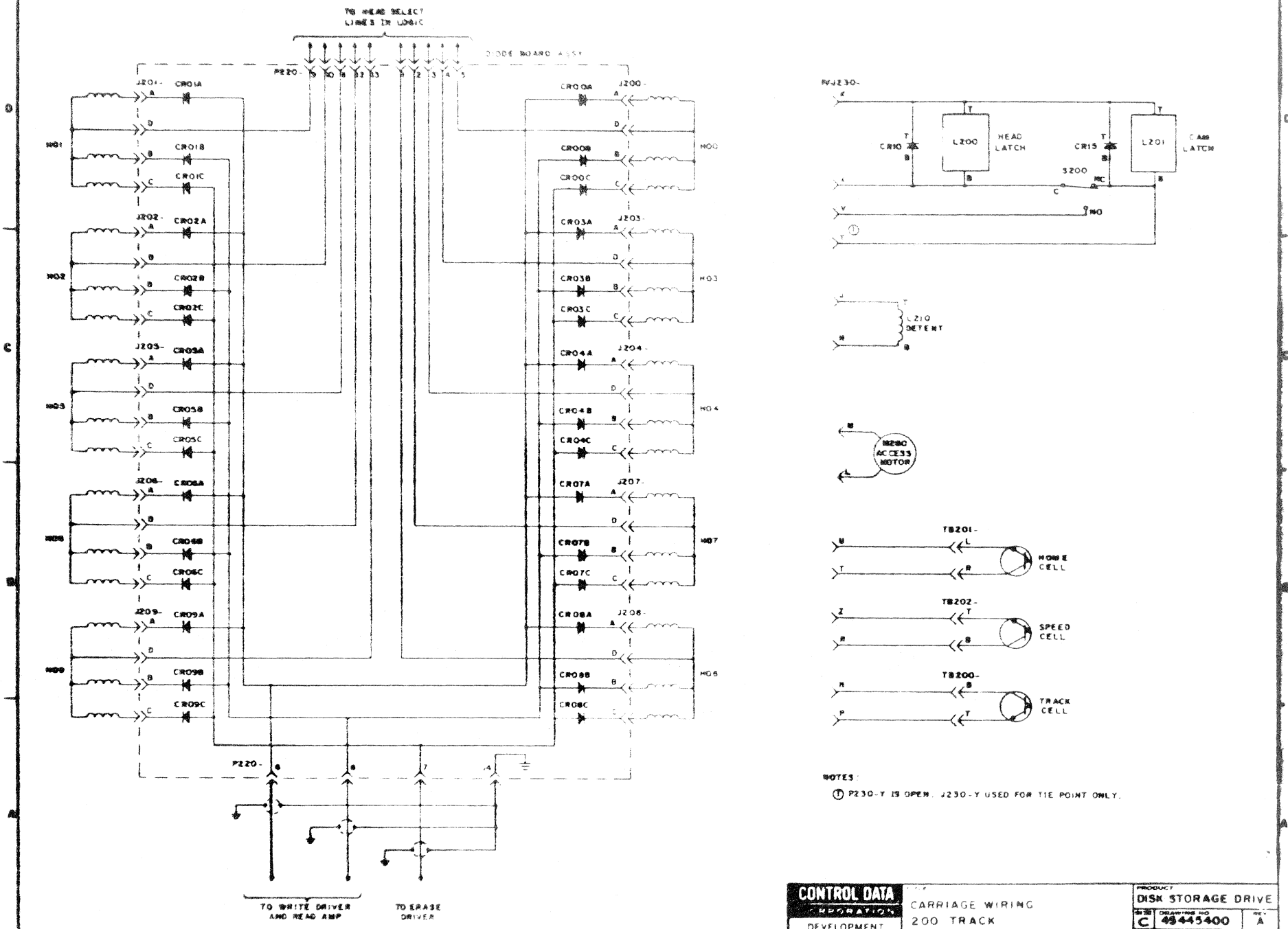
CONTROL DATA CORPORATION
DEVELOPMENT DIVISION

TITLE: POWER SUPPLY PART 2

PRODUCT: DISK STORAGE DRIVE

SIZE	DRAWING NO.	REV.
C	45672100	D

SHEET 2 | PAGE

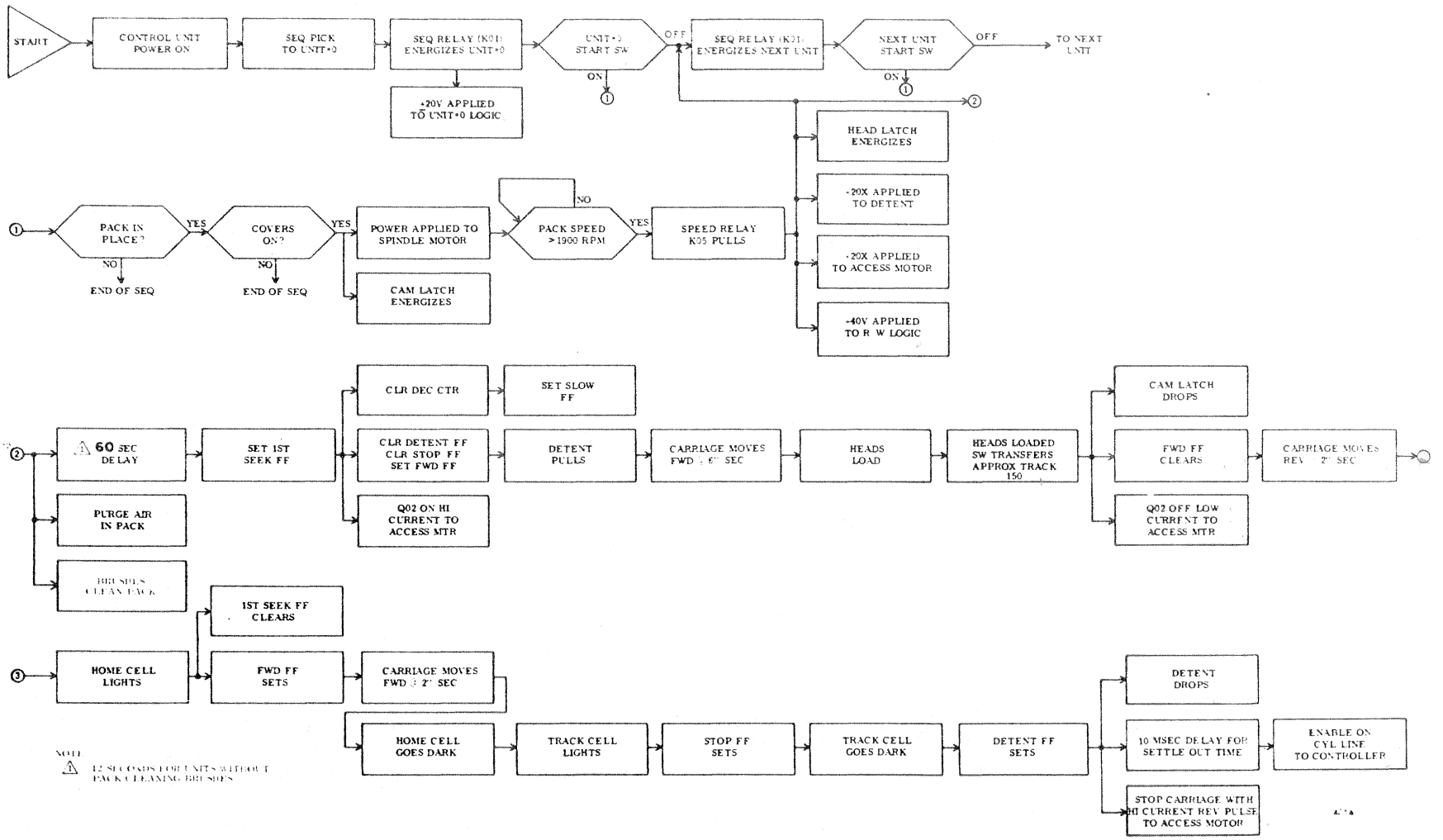


NOTES:

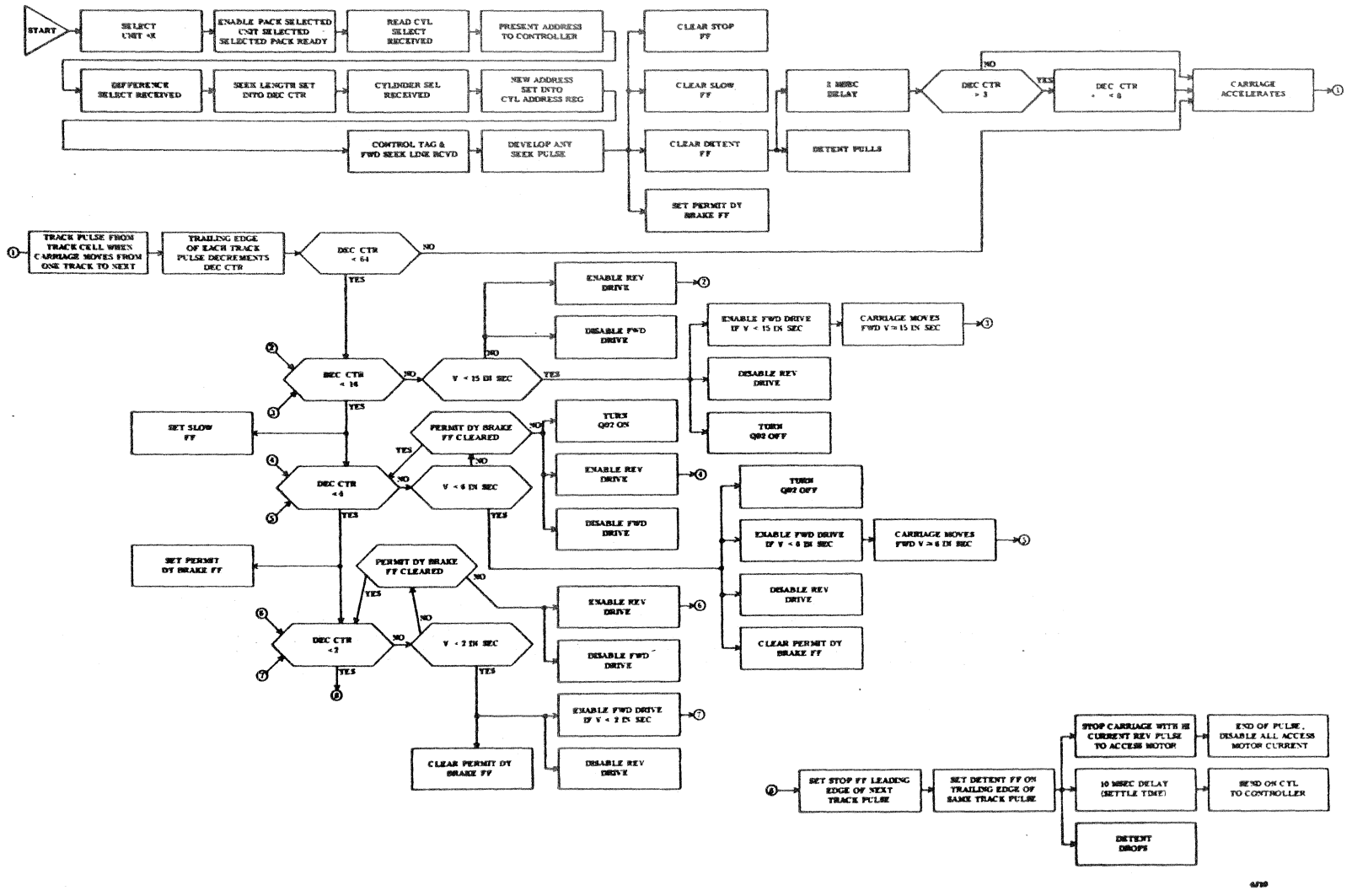
① P230-Y IS OPEN. J230-Y USED FOR TIE POINT ONLY.

CONTROL DATA CORPORATION DEVELOPMENT DIVISION	CARRIAGE WIRING 200 TRACK	PRODUCT DISK STORAGE DRIVE	
		SIZE C	DRAWING NO 49445400
		SHEET 1	REV A

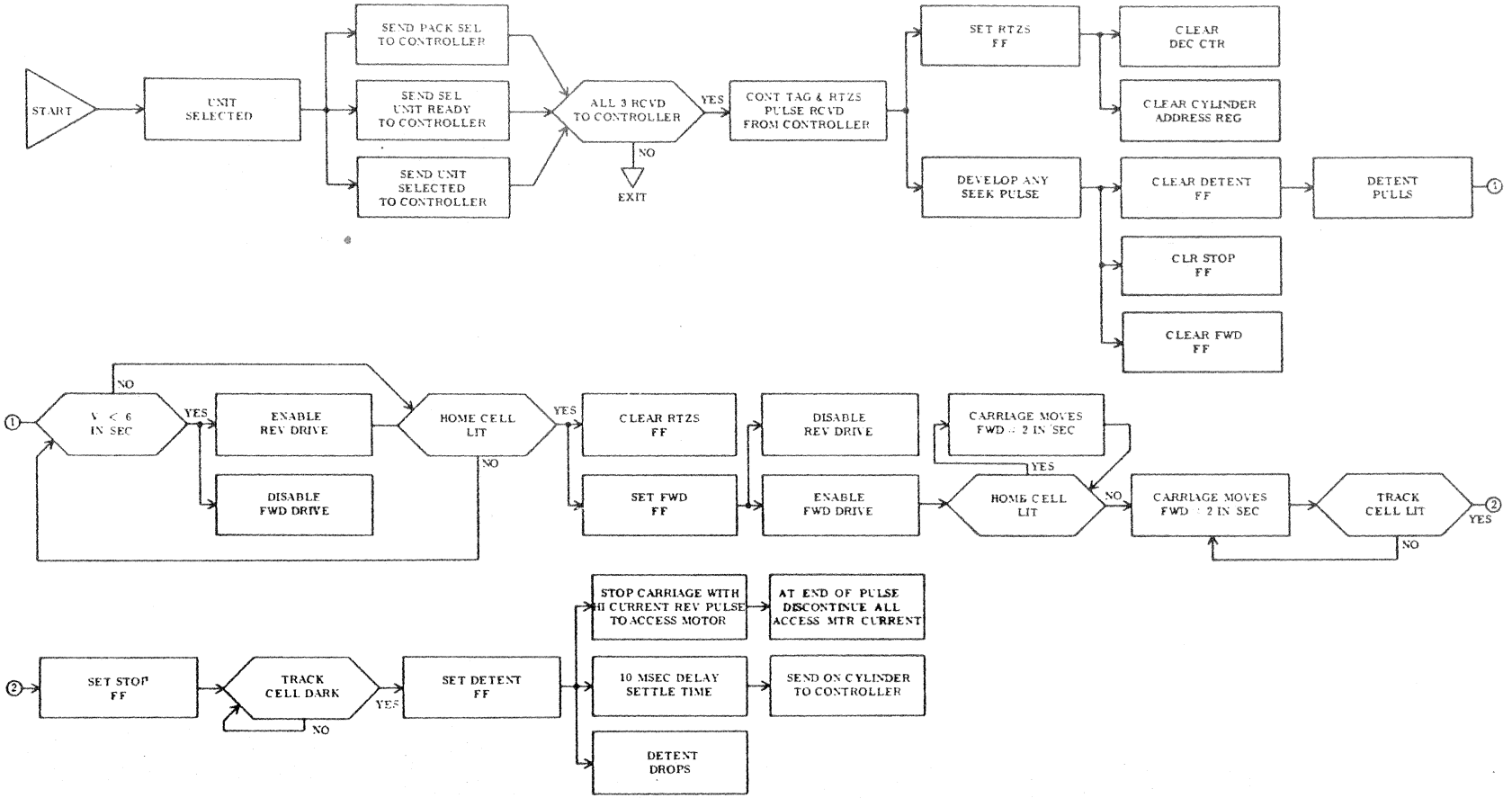
Rev A


START
CONTROL UNIT POWER ON
SEQ PICK TO UNIT•0
SEQ RELAY (K01) ENERGIZES UNIT•0
+20V APPLIED TO UNIT•0 LOGIC
UNIT•0 START SW
OFF
ON
SEQ RELAY (K01) ENERGIZES NEXT UNIT
NEXT UNIT START SW
OFF
TO NEXT UNIT
ON
HEAD LATCH ENERGIZES
+20X APPLIED TO DETENT
+20X APPLIED TO ACCESS MOTOR
+40V APPLIED TO R/W LOGIC
PACK IN PLACE?
YES
NO
END OF SEQ
COVERS ON?
YES
NO
END OF SEQ
POWER APPLIED TO SPINDLE MOTOR
CAM LATCH ENERGIZES
PACK SPEED >1900 RPM
NO
YES
SPEED RELAY K05 PULLS
60 SEC DELAY
SET 1ST SEEK FF
CLR DEC CTR
SET SLOW FF
CLR DETENT FF
CLR STOP FF
SET FWD FF
DETENT PULLS
CARRIAGE MOVES FWD .6" SEC
HEADS LOAD
HEADS LOADED SW TRANSFERS APPROX TRACK 150
CAM LATCH DROPS
FWD FF CLEARS
CARRIAGE MOVES REV .2" SEC
Q02 ON HI CURRENT TO ACCESS MTR
Q02 OFF LOW CURRENT TO ACCESS MTR
PURGE AIR IN PACK
BRUSHES CLEAN PACK
1ST SEEK FF CLEARS
HOME CELL LIGHTS
FWD FF SETS
CARRIAGE MOVES FWD .2" SEC
HOME CELL GOES DARK
TRACK CELL LIGHTS
STOP FF SETS
TRACK CELL GOES DARK
DETENT FF SETS
DETENT DROPS
10 MSEC DELAY FOR SETTLE OUT TIME
ENABLE ON CYL LINE TO CONTROLLER
STOP CARRIAGE WITH HI CURRENT REV PULSE TO ACCESS MOTOR
NOTE
12 SECONDS FOR UNITS WITHOUT PACK CLEANING BRUSHES

First Seek

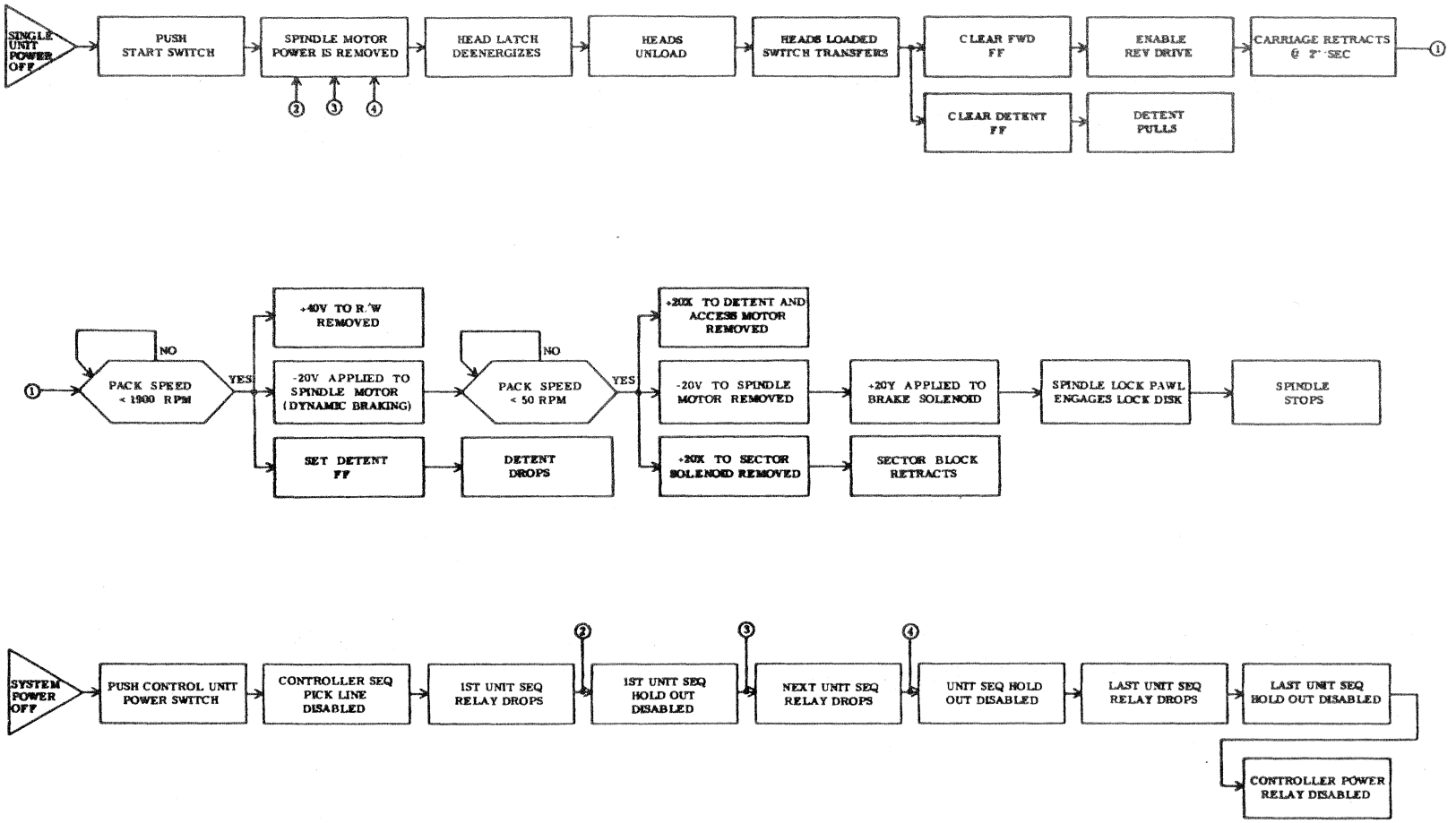

START
SELECT UNIT +X
ENABLE PACK SELECTED UNIT SELECTED SELECTED PACK READY
READ CYL SELECT RECEIVED
PRESENT ADDRESS TO CONTROLLER
DIFFERENCE SELECT RECEIVED
SEEK LENGTH SET INTO DEC CTR
CYLINDER SEL RECEIVED
NEW ADDRESS SET INTO CYL ADDRESS REG
CONTROL TAG & FWD SEEK LINE RCVD
DEVELOP ANY SEEK PULSE
CLEAR STOP FF
CLEAR SLOW FF
CLEAR DETENT FF
SET PERMIT DY BRAKE FF
1 MSEC DELAY
DETENT PULLS
DEC CTR > 3
DEC CTR = 0
CARRIAGE ACCELERATES
TRACK PULSE FROM TRACK CELL WHEN CARRIAGE MOVES FROM ONE TRACK TO NEXT
TRAILING EDGE OF EACH TRACK PULSE DECREMENTS DEC CTR
DEC CTR < 64
YES
NO
ENABLE REV DRIVE
DISABLE FWD DRIVE
ENABLE FWD DRIVE IF V < 15 IN SEC
CARRIAGE MOVES FWD V = 15 IN SEC
DEC CTR < 16
V < 15 IN SEC
DISABLE REV DRIVE
TURN Q07 ON
TURN Q07 OFF
SET SLOW FF
PERMIT DY BRAKE FF CLEARED
DEC CTR < 4
V < 6 IN SEC
ENABLE REV DRIVE
DISABLE FWD DRIVE
TURN Q07 OFF
ENABLE FWD DRIVE IF V < 6 IN SEC
CARRIAGE MOVES FWD V = 6 IN SEC
DISABLE REV DRIVE
CLEAR PERMIT DY BRAKE FF
SET PERMIT DY BRAKE FF
PERMIT DY BRAKE FF CLEARED
DEC CTR = 2
V < 2 IN SEC
ENABLE REV DRIVE
DISABLE FWD DRIVE
ENABLE FWD DRIVE IF V < 2 IN SEC
DISABLE REV DRIVE
CLEAR PERMIT DY BRAKE FF
SET STOP FF LEADING EDGE OF NEXT TRACK PULSE
SET DETENT FF ON TRAILING EDGE OF SAME TRACK PULSE
STOP CARRIAGE WITH HI CURRENT REV PULSE TO ACCESS MOTOR
10 MSEC DELAY (SETTLE TIME)
DETENT DROPS
END OF PULSE, DISABLE ALL ACCESS MOTOR CURRENT
SEND ON CYL TO CONTROLLER

Direct Seek

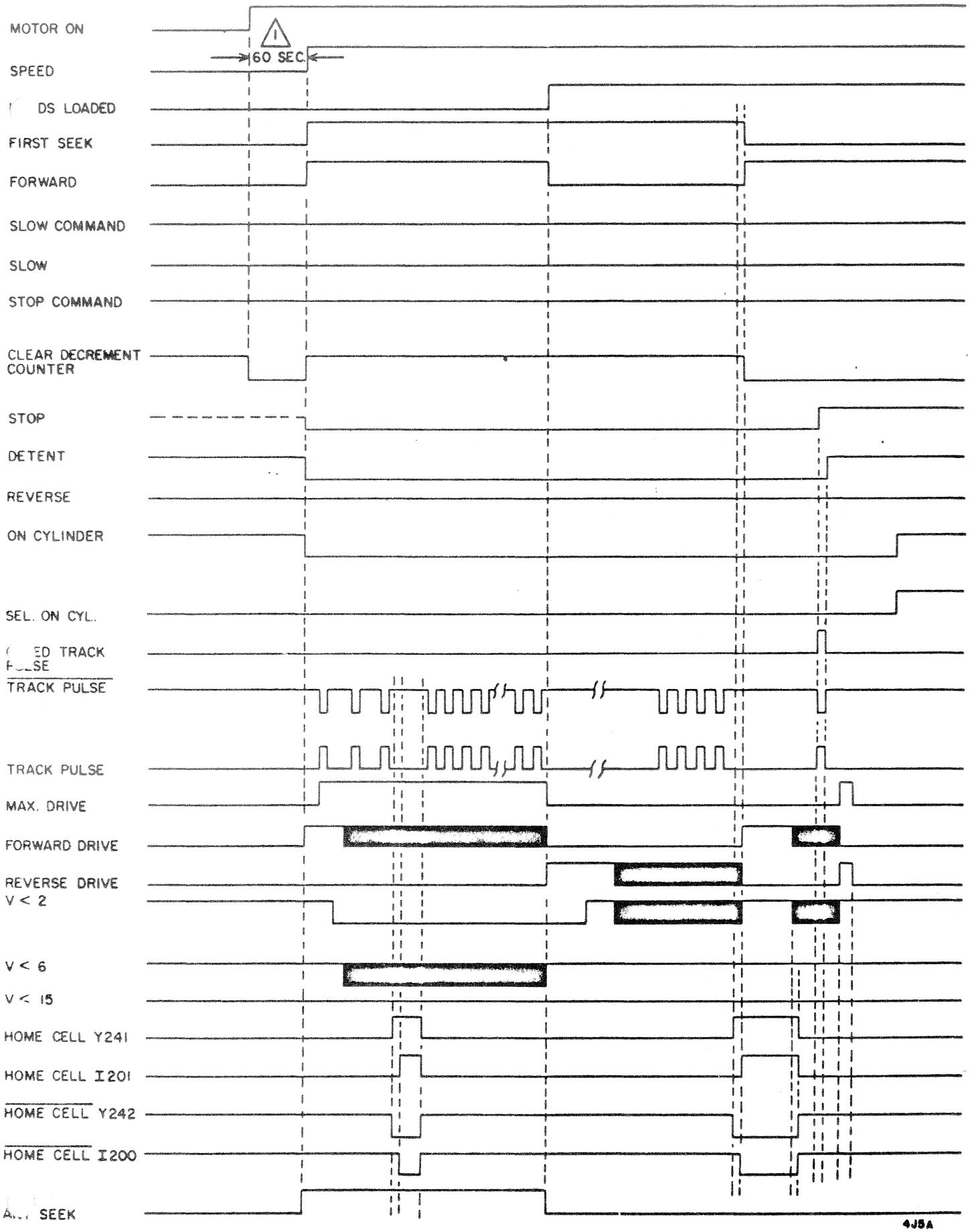


4J3

Return to Zero Seek

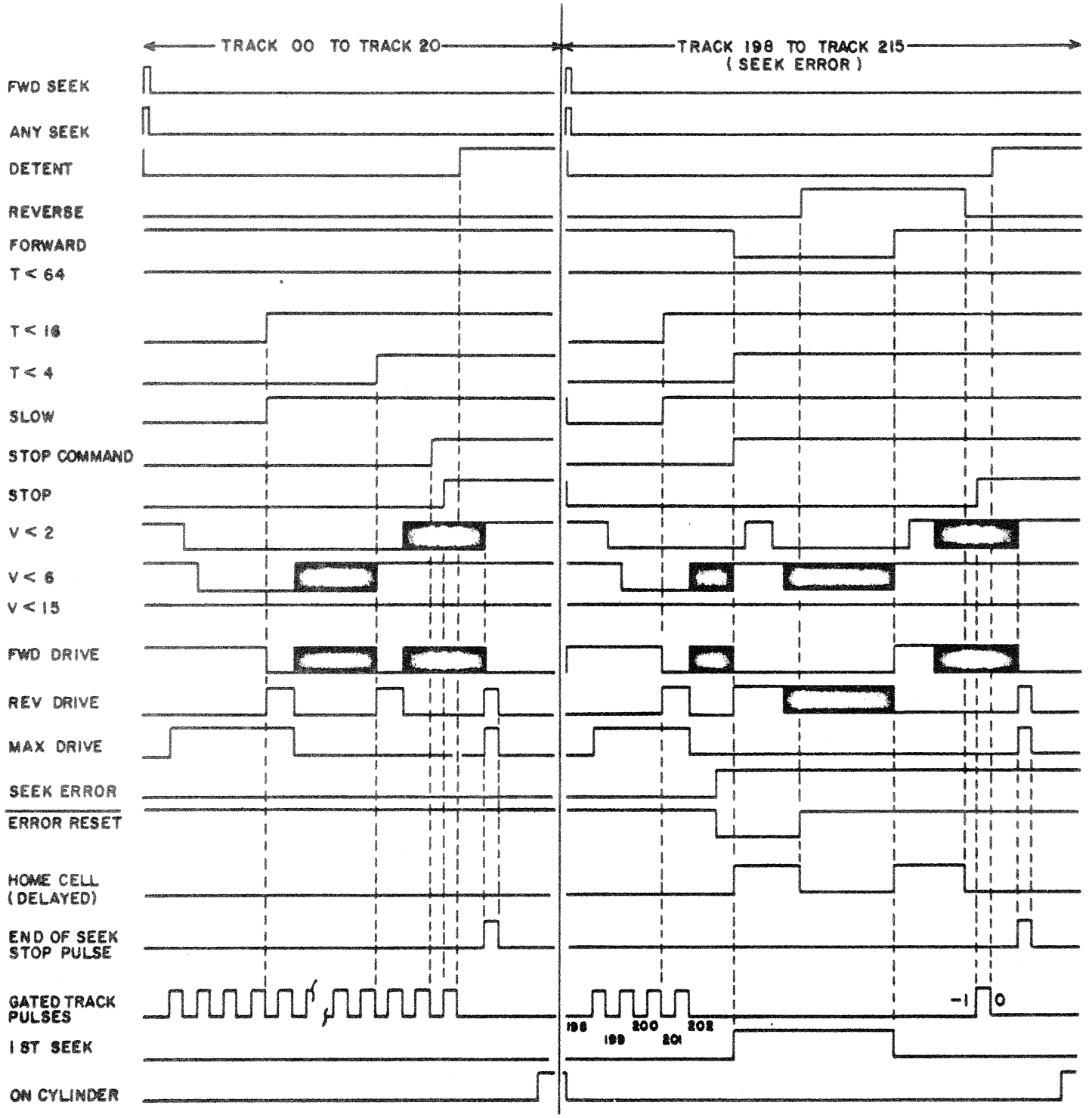


Power OFF Seek



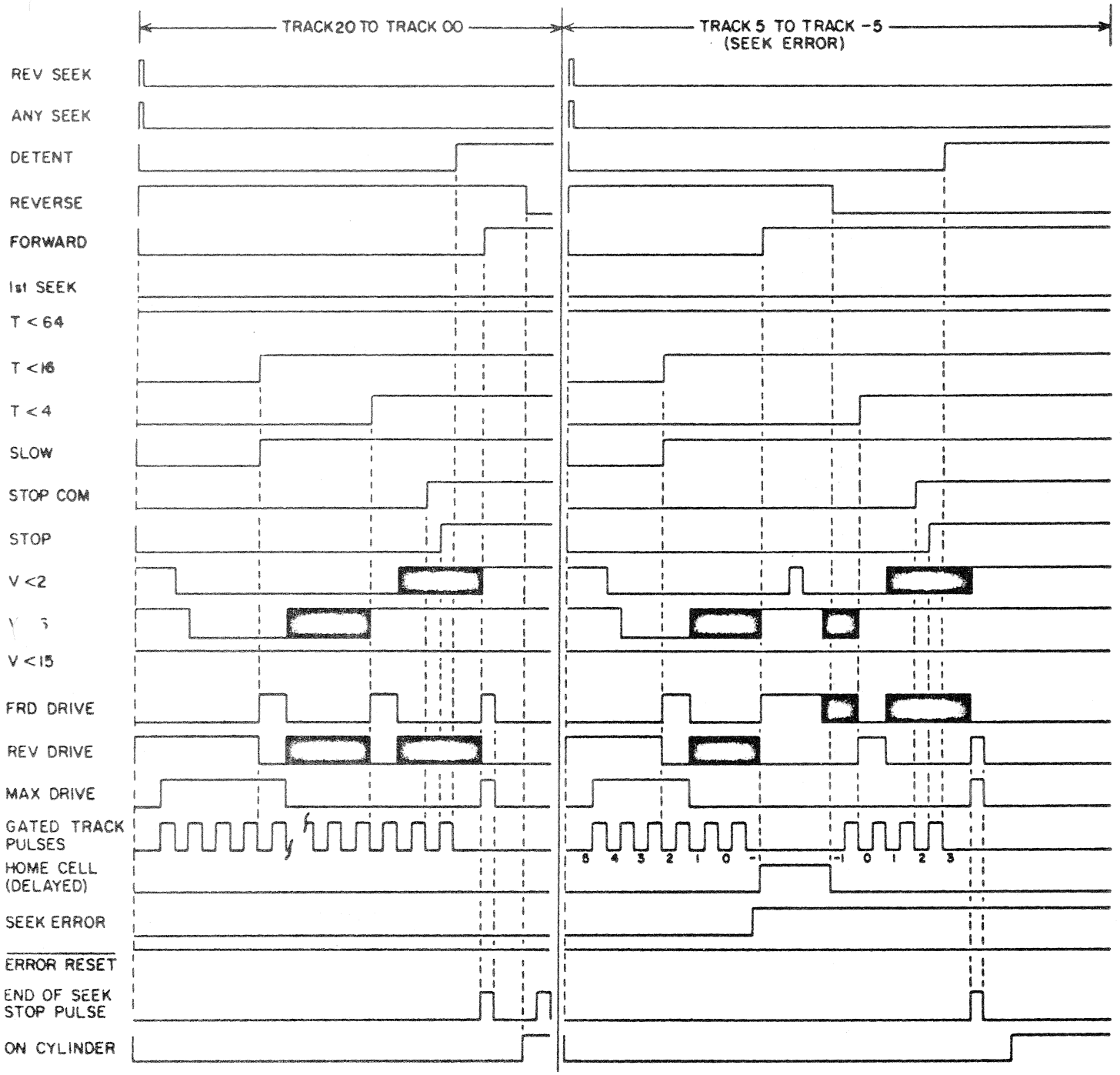
NOTE: ⚠1 12 SEC. FOR UNITS WITHOUT PACK CLEANING BRUSHES.

FIRST SEEK

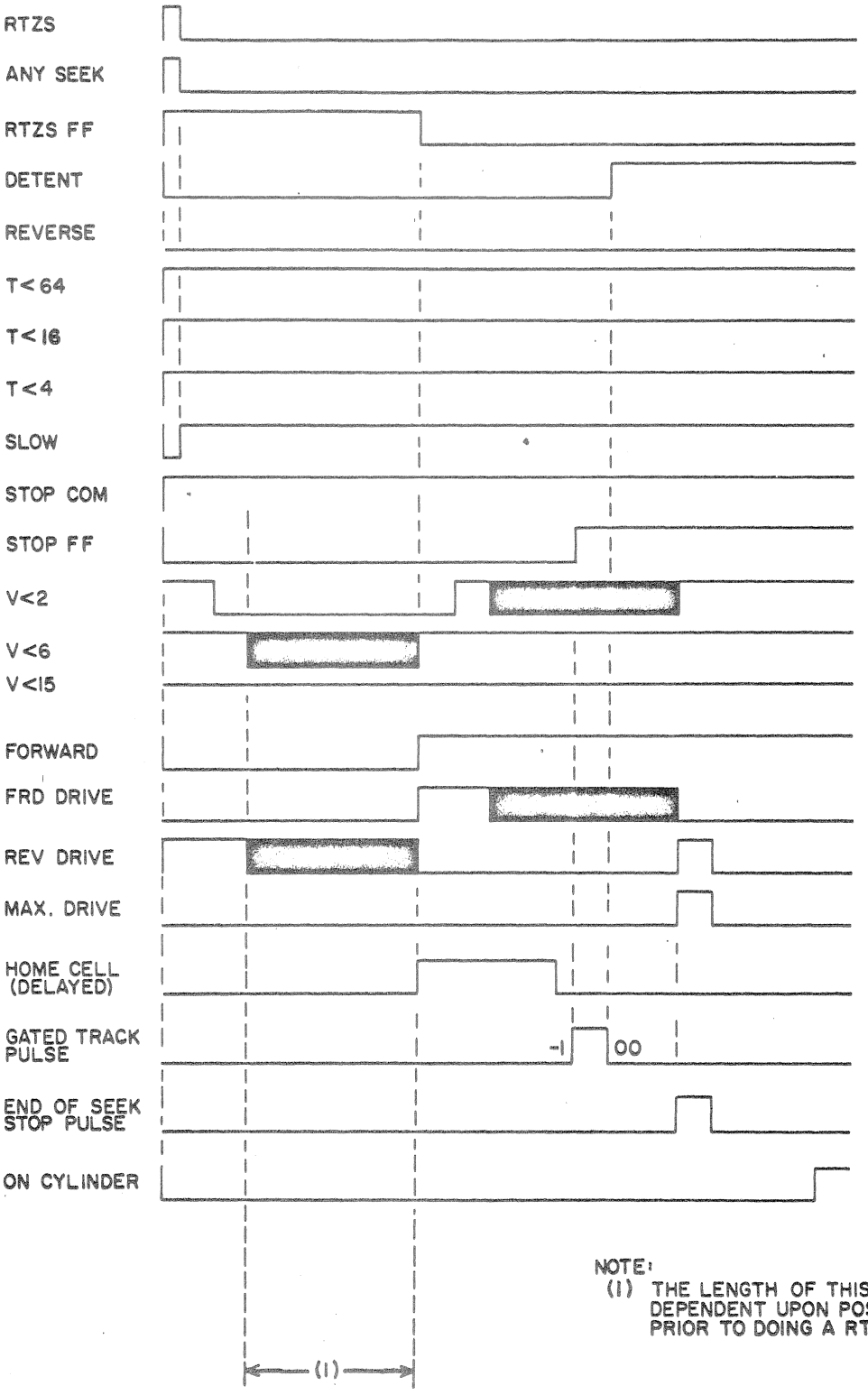


4J11

DIRECT SEEK FORWARD



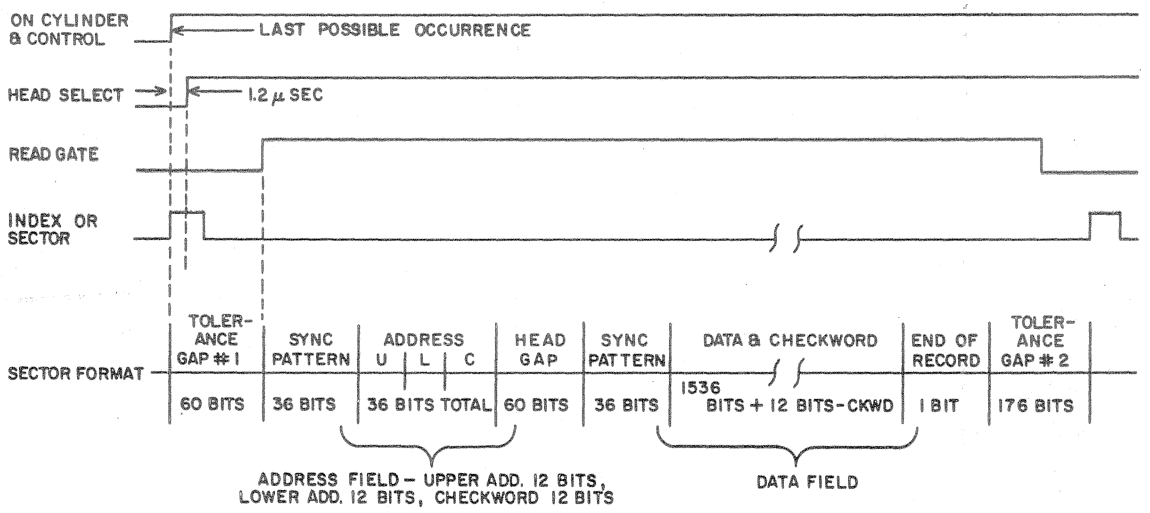
DIRECT SEEK REVERSE



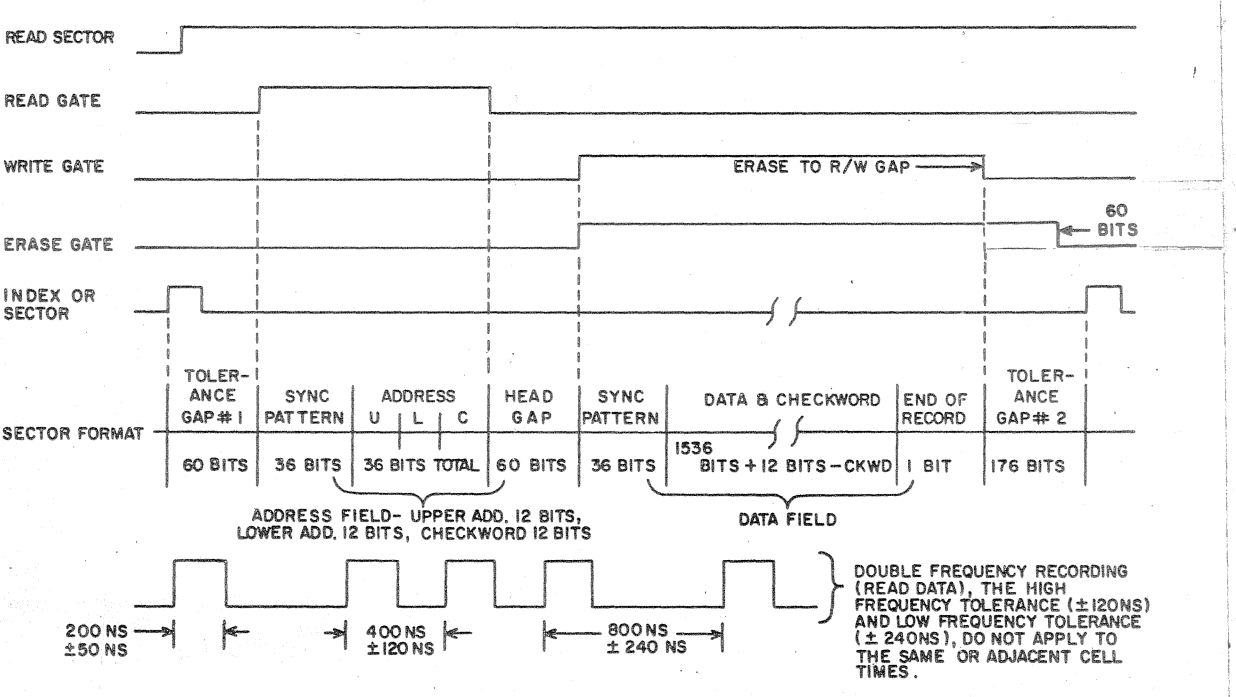
NOTE:
(1) THE LENGTH OF THIS TIME IS DIRECTLY DEPENDENT UPON POSITION OF CARRIAGE PRIOR TO DOING A RTZS.

4J13

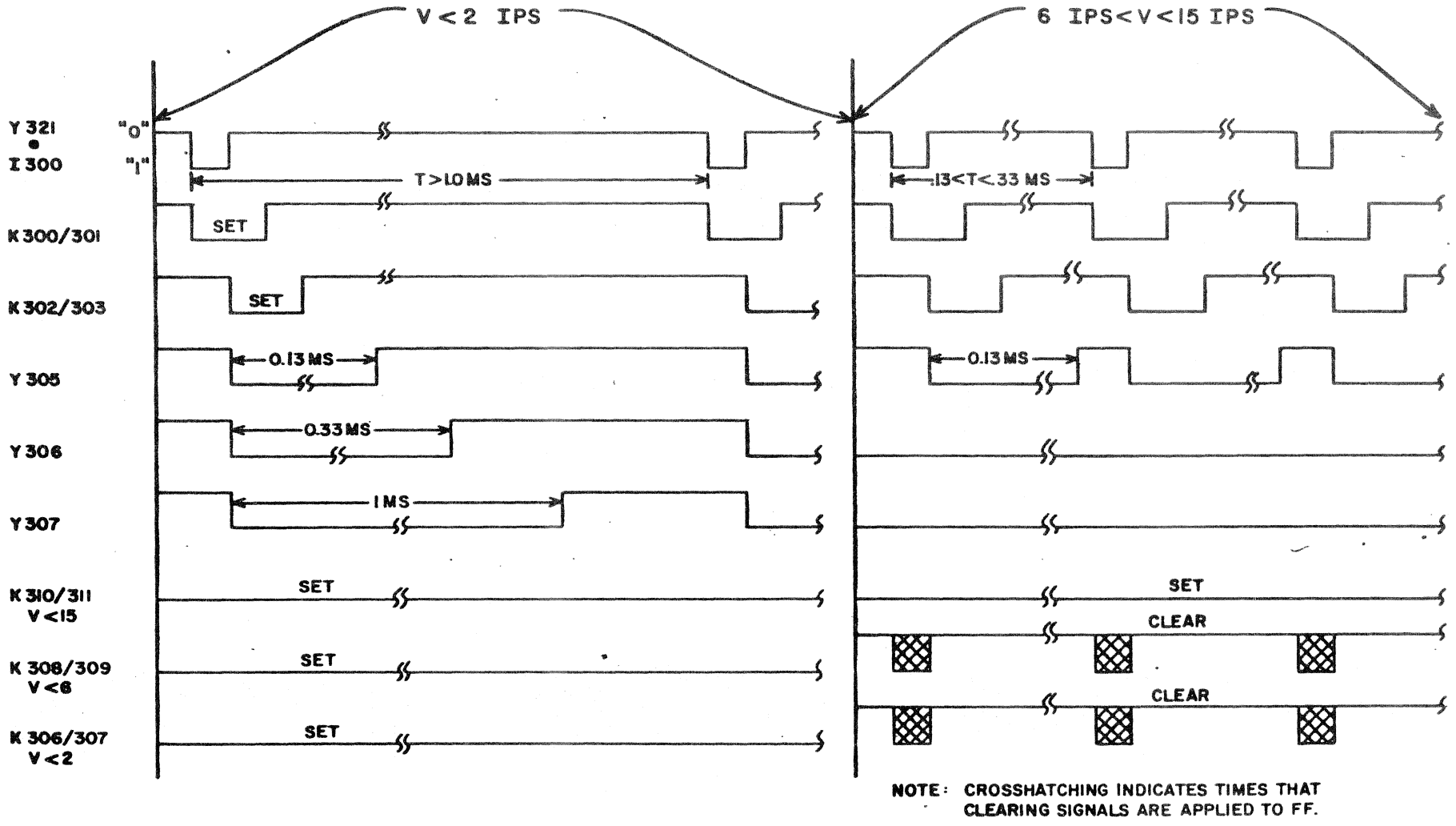
RT ZS



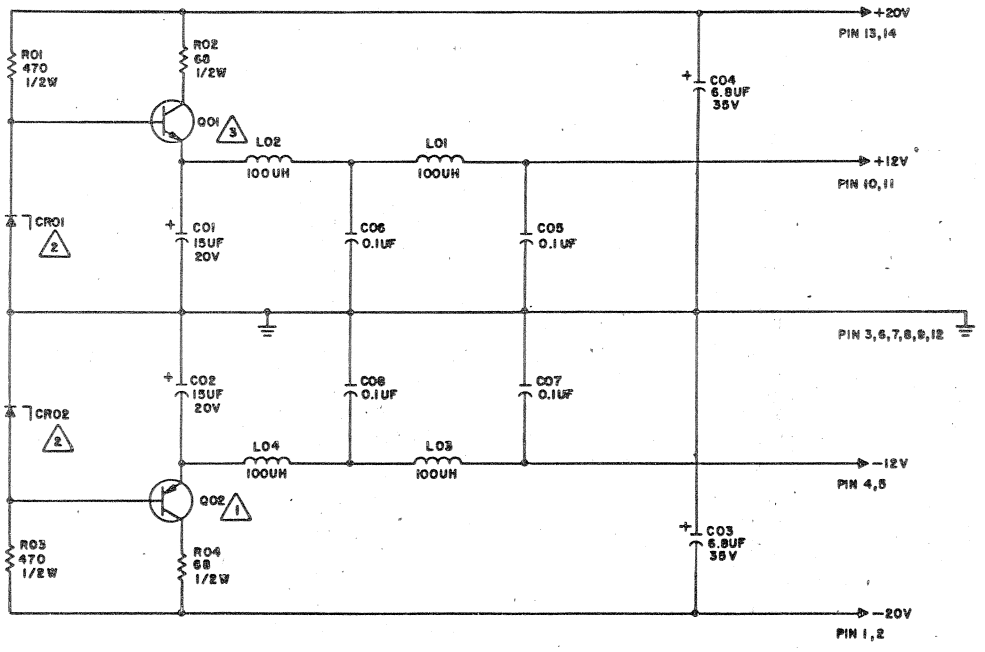
DATA & DATA CONTROL TIMING FOR READING ONE RECORD



DATA & DATA CONTROL TIMING FOR WRITING ONE RECORD 4J9A



SPEED CELL TIMING



NOTE:

1. PNP GERMANIUM 50220101.
2. ZENER 50240116.
3. NPN SILICON 50220600.

±12V. VOLTAGE REGULATOR

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PART 2

CARD PLACEMENT

Card Placement information
for the 9465 will be found
on Page 1-11 in this manual.

PART 3

WIRE LISTS

DESCRIPTION OF WIRE LISTS

The two types of wire lists are:

1. The line printer format which shows logic wiring.
2. The corporate (typed) form which shows non-logic wiring.

LOGIC WIRE LISTS

The following is an example of the logic wire lists with an identification, and an explanation of the columns.

Wire Identification	Wire Length	Wire Origin Location	Wire Origin Pin Number	Component Code	Wire Destination Location	Wire Destination Pin Number	Twisted Pair Wire Size	Twisted Pair Color Code	Change Order
K10310	06	A18	07	O	B11	04			
K10311	05	B11	04	O	B20	05			
K10312	03	B20	05	O	B22	06			
K10320	04	A18	08	O	A13	11			
600300	2T	J104	33	X	A38	12	20	4	0970
600310	25	J104	34	X	A42	06	20	4	0970
600320	25	J104	35	X	A42	12	20	4	0970
600330	58	J104	36	X	A28	09	20	4	0970
600340	15	J104	37	X	SHIELD		E	S	0970
600350	15	J104	38	X	A02	01	24 E	0	0970

Wire Identification

If the first term in this column begins with a letter, the wire originates at a logic card; the letter and the first three digits represents the logic symbol of that card. If the first term begins with a numeral, the wire originates at a point other than logic, for

example at a switch or resistor. A sequential advance in the second to the last digit indicates additional inputs to the same card.

A sequential advance in the last digit indicates the interconnections of an AND input.

K10310 ⎫
K10311 ⎬ Three input AND to K103
K10312 ⎭

K10320 - Single input OR to K103

Wire Length

This column gives the wire length in inches.

Wire Origin Location

This column locates the origin of the wire on the logic chassis. Wires having a common signal at two or more locations are interconnected in series. In the sample, the first three wires shown have a common signal. The Wire Destination Location of the first wire becomes the Wire Origin Location of the second so that the series string is from A18 to B11 to B20 to B22. Note that the first four characters of the Wire Identification terms are the same for the three wires and that the sequencing is from 10 to 11 to 12 in the last two characters.

Wire Origin Pin Number

This column identifies the origin pin or terminal of the wire.

Component Code

This column identifies the components that are located in the Wire Origin Location column. The code letters are identified as follows:

0 - Logic Card

R - Miscellaneous Component (Switch, Resistor, etc.)

X - Jack

Wire Destination Location

This column locates the destination of the wire on the logic chassis.

Wire Destination Pin Number

This column identifies the destination pin or terminal of the wire.

Wire Size

This column identifies the size (AWG) of the wire.

Twisted Pair

When two successive wires have the same letter in this column, this identifies them as a twisted pair.

Color Code

Solid colored wires are identified by a one digit number in this column. Multicolored wires are identified by a number having two or three digits. Each digit of the number identifies one of the colors. The code numbers are identified as follows:

0 - Black	2 - Red	4 - Yellow	6 - Blue	8 - Gray	S - Shield
1 - Brown	3 - Orange	5 - Green	7 - Violet	9 - White	

Change Order

This column identifies the engineering, field, or publications change order that affected and/or altered that wire.

CONTROL DATA
COMPUTER DIVISION

TITLE: WIRE LISTING

WL | DOCUMENT NO. | REV.

SHEET OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS FIND NO.	DESTINATION		ACCESS FIND NO.	REMARKS
20	29	24	993	03	X12	03		X12	09		
21	29	↑	993	03	X13	03		X13	09		
22	29		993	03	X14	03		X14	09		
23	29		993	03	X15	03		X15	09		
24	29		993	03	X16	03		X16	09		

Wire lists other than logic are on a standard corporate form. The remaining columns of the form contain information NOT normally applicable to field usage and therefore are not explained.

The other columns indicate:

Gauge (Ref) - Size of conductor (AWG)

Color (Ref) - Color information

Length (Approx) - Length of conductor in inches

Origin - Origin point of conductor

Destination - Destination point of conductor

Remarks - Useful comments

In multi-digit color codes, the first digit denotes base color and the remaining digits denote tracer colors. The color codes for the non-logic lists are the same as those for logic wiring.

A40010	04	C09	01	0	C08	12	9465 DSD
A40011	03	C08	12	0	C06	11	9465 DSD
A40110	02	C09	04	0	C08	06	9465 DSD
A40111	03	C08	06	0	C06	12	9465 DSD
A40210	03	C09	07	0	C10	12	9465 DSD
A40211	03	C09	07	0	C06	09	9465 DSD
A40310	02	C09	10	0	C10	06	9465 DSD
A40311	03	C09	10	0	C06	10	9465 DSD
A40410	04	C12	01	0	C11	12	9465 DSD
A40411	04	C11	12	0	C06	07	9465 DSD
A40510	02	C12	04	0	C11	06	9465 DSD
A40511	04	C11	06	0	C06	08	9465 DSD
A40610	03	C12	07	0	C13	12	9465 DSD
A40611	04	C12	07	0	C06	05	9465 DSD
A40710	03	C12	10	0	C13	06	9465 DSD
A40711	04	C12	10	0	C06	06	9465 DSD
A41010	13	C08	01	0	C33	12	9465 DSD
A41011	06	C08	01	0	D12	06	9465 DSD
A41020	03	C08	02	0	C07	11	9465 DSD
A41021	03	C07	11	0	C04	11	9465 DSD
A41022	05	C04	11	0	P05	11	9465 DSD
A41023	02	C08	02	0	C09	03	9465 DSD
A41024	08	C09	03	0	D17	11	9465 DSD
A41110	03	C08	07	0	C07	12	9465 DSD
A41111	03	C07	12	0	C04	12	9465 DSD
A41112	05	C04	12	0	P05	12	9465 DSD
A41113	02	C08	07	0	C09	06	9465 DSD
A41114	08	C09	06	0	D17	12	9465 DSD
A41120	03	C08	08	0	C05	12	9465 DSD
A41210	09	C10	01	0	D22	09	9465 DSD
A41211	06	C10	01	0	D12	05	9465 DSD
A41220	03	C10	02	0	C09	09	9465 DSD
A41221	03	C09	09	0	C07	09	9465 DSD
A41222	03	C07	09	0	C04	09	9465 DSD
A41223	07	C10	02	0	D17	09	9465 DSD
A41310	03	C10	07	0	C09	12	9465 DSD
A41311	03	C09	12	0	C07	10	9465 DSD
A41312	03	C07	10	0	C04	10	9465 DSD
A41313	07	C10	07	0	D17	10	9465 DSD
A41320	04	C10	08	0	C05	11	9465 DSD
A41410	06	C11	01	0	D12	04	9465 DSD
A41411	05	D12	04	0	D21	05	9465 DSD
A41420	02	C11	02	0	C12	03	9465 DSD
A41421	04	C11	02	0	C07	07	9465 DSD
A41422	03	C07	07	0	C04	08	9465 DSD
A41510	02	C11	07	0	C12	06	9465 DSD
A41511	03	C12	06	0	C12	11	9465 DSD
A41512	03	C11	07	0	C07	08	9465 DSD
A41520	04	C11	08	0	C05	10	9465 DSD
A41610	02	C13	01	0	C14	03	9465 DSD
A41611	05	C14	03	0	D12	03	9465 DSD
A41620	03	C13	02	0	C12	09	9465 DSD
A41621	04	C12	09	0	C07	05	9465 DSD
A41710	03	C13	07	0	C12	12	9465 DSD
A41711	04	C12	12	0	C07	06	9465 DSD
A41720	05	C13	08	0	C05	09	9465 DSD

I00210	05	D21	01	0	C14	12	9465	DSD
I00310	02	D21	04	0	D21	03	9465	DSD
I00410	06	D21	07	0	C16	06	9465	DSD
I00610	05	D23	01	0	C16	12	9465	DSD
I00710	07	C33	07	0	D23	03	9465	DSD
I01410	04	D23	04	0	C20	12	9465	DSD
I01610	05	D25	07	0	C24	06	9465	DSD
I01611	11	C24	06	0	B02	08	9465	DSD
I01710	03	D25	01	0	D25	11	9465	DSD
I01810	07	D13	07	0	D25	12	9465	DSD
I01910	05	D16	07	0	D25	10	9465	DSD
I02010	04	D26	01	0	C24	12	9465	DSD
I02020	03	D26	02	0	D25	09	9465	DSD
I02110	03	D12	07	0	D13	11	9465	DSD
I02111	08	D13	11	0	C23	06	9465	DSD
I02210	03	D12	01	0	D12	12	9465	DSD
I02211	13	D12	12	0	A10	01	9465	DSD
I02212	02	A10	01	0	A10	02	9465	DSD
I02213	02	A10	02	0	A10	03	9465	DSD
I02310	04	D11	01	0	D13	12	9465	DSD
I02311	04	D13	12	0	D18	06	9465	DSD
I02312	05	D18	06	0	C23	12	9465	DSD
I02410	03	D10	01	0	D11	05	9465	DSD
I02510	08	D27	07	0	D11	06	9465	DSD
I02610	06	B06	01	0	C05	04	9465	DSD
I02611	03	C05	04	0	C03	10	9465	DSD
I02620	07	B06	02	0	C08	10	9465	DSD
I02621	04	C08	10	0	C04	02	9465	DSD
I02630	06	B06	03	0	C03	09	9465	DSD
I02631	11	B06	03	0	D14	10	9465	DSD
I02710	12	D24	04	0	B06	06	9465	DSD
I02810	08	C27	07	0	B14	06	9465	DSD
I02820	08	C27	08	0	B14	12	9465	DSD
I02910	02	D22	07	0	D21	09	9465	DSD
I03110	03	D22	01	0	D23	06	9465	DSD
I10010	04	D16	01	0	D13	10	9465	DSD
I10011	06	D16	01	0	C22	06	9465	DSD
I10110	08	B11	07	0	D16	04	9465	DSD
I10111	06	B11	07	0	A10	04	9465	DSD
I10112	02	A10	04	0	A10	05	9465	DSD
I10113	02	A10	05	0	A10	06	9465	DSD
I10210	03	D17	01	0	D16	05	9465	DSD
I10211	11	D16	05	0	A10	10	9465	DSD
I10212	02	A10	10	0	A10	11	9465	DSD
I10213	02	A10	11	0	A10	12	9465	DSD
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LW45480600 9465 DSD

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LW45480600 9465 DSD

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K11510	05	A24	07	0	A16	10	9465	DSD
K11511	03	A16	10	0	A15	06	9465	DSD
K11512	05	A24	07	0	B25	05	9465	DSD
K11513	02	B25	05	0	B26	06	9465	DSD
K11520	06	A24	08	0	A13	05	9465	DSD
K12010	04	B20	01	0	A17	12	9465	DSD
K12011	04	A17	12	0	A11	11	9465	DSD
K12110	06	B20	07	0	A17	06	9465	DSD
K12111	05	A17	06	0	A11	12	9465	DSD
K12210	04	B22	01	0	A18	12	9465	DSD
K12211	05	A18	12	0	A11	09	9465	DSD
K12310	06	B22	04	0	A18	06	9465	DSD
K12311	05	A18	06	0	A11	10	9465	DSD
K12410	04	B21	01	0	A19	12	9465	DSD

K12411	05	A19	12	0	A11	07	9465 DSD
K12510	06	B21	07	0	A19	06	9465 DSD
K12511	05	A19	06	0	A11	08	9465 DSD
K12610	05	B22	07	0	A20	12	9465 DSD
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K12710	06	B22	10	0	A20	06	9465 DSD
K12711	06	A20	06	0	A11	06	9465 DSD
K12810	04	B23	01	0	A21	12	9465 DSD
K12811	05	A21	12	0	A12	11	9465 DSD
K12910	06	B23	07	0	A21	06	9465 DSD
K12911	06	A21	06	0	A12	12	9465 DSD
K13010	04	B24	01	0	A22	12	9465 DSD
K13011	06	A22	12	0	A12	09	9465 DSD
K13110	05	B24	07	0	A22	06	9465 DSD
K13111	06	A22	06	0	A12	10	9465 DSD
K13210	04	B25	01	0	A23	12	9465 DSD
K13211	06	A23	12	0	A12	07	9465 DSD
K13310	05	B25	07	0	A23	06	9465 DSD
K13311	06	A23	06	0	A12	08	9465 DSD
K13410	04	B26	01	0	A24	12	9465 DSD
K13411	07	A24	12	0	A12	05	9465 DSD
K13510	05	B26	04	0	A24	06	9465 DSD
K13511	07	A24	06	0	A12	06	9465 DSD
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K14011	04	B12	12	0	C14	04	9465 DSD
K14110	04	B16	04	0	B13	12	9465 DSD
K14210	04	B16	07	0	B12	11	9465 DSD
K14211	05	B12	11	0	C14	10	9465 DSD
K14310	03	B16	10	0	B13	11	9465 DSD
K14410	04	B17	01	0	B12	10	9465 DSD
K14411	05	B12	10	0	C16	04	9465 DSD
K14510	04	B17	04	0	B13	10	9465 DSD
K14610	04	B17	07	0	B12	09	9465 DSD
K14611	06	B12	09	0	C16	10	9465 DSD
K14710	04	B17	10	0	B13	09	9465 DSD
K14810	06	B18	01	0	C18	05	9465 DSD
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K15011	04	B18	07	0	B12	07	9465 DSD
K15110	04	B18	10	0	B13	07	9465 DSD
K15210	06	B19	01	0	C20	05	9465 DSD
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K15410	06	B19	07	0	C20	10	9465 DSD
K15411	05	B19	07	0	B12	05	9465 DSD
K15510	05	B19	10	0	B13	05	9465 DSD
K16010	11	D15	01	0	C35	06	9465 DSD
K16011	03	C35	06	0	C37	06	9465 DSD
K16012	08	C37	06	0	A34	11	9465 DSD
K16013	03	A34	11	0	A34	05	9465 DSD
K16110	03	D15	04	0	D15	12	9465 DSD
K16111	04	D15	12	0	D20	07	9465 DSD
K16210	02	D15	07	0	D15	06	9465 DSD
K16211	04	D15	06	0	D20	09	9465 DSD
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K16311	04	D15	03	0	D20	08	9465	DSD
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K20020	07	A31	02	0	B28	12	9465	DSD
K20021	04	B28	12	0	C31	04	9465	DSD
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K20024	06	A31	02	0	A39	05	9465	DSD
K20025	02	A39	05	0	A39	06	9465	DSD
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K20111	09	A28	11	0	C29	11	9465	DSD
K20112	04	C29	11	0	C33	03	9465	DSD
K20113	08	C33	03	0	D20	03	9465	DSD
K20120	10	A31	08	0	C40	03	9465	DSD
K20210	10	A29	01	0	C20	04	9465	DSD
K20211	07	C20	04	0	D27	09	9465	DSD
K20310	08	A29	07	0	C33	02	9465	DSD
K20311	08	C33	02	0	D20	04	9465	DSD
K20410	04	C32	01	0	C36	05	9465	DSD
K20411	07	C32	01	0	A32	12	9465	DSD
K20412	04	A32	12	0	A34	02	9465	DSD
K20413	07	A34	02	0	B29	05	9465	DSD
K20420	04	C32	02	0	C32	14	9465	DSD
K20510	09	C32	07	0	A28	06	9465	DSD
K20520	07	C32	08	0	D24	03	9465	DSD
K20610	06	B31	01	0	C31	03	9465	DSD
K20611	04	B31	01	0	A31	10	9465	DSD
K20620	03	B31	02	0	B29	08	9465	DSD
K20621	12	B29	08	0	D11	11	9465	DSD
K20622	08	B31	02	0	C37	10	9465	DSD
K20630	05	B31	03	0	A28	10	9465	DSD
K20631	07	B31	03	0	C29	10	9465	DSD
K20632	04	C29	10	0	C33	06	9465	DSD
K20710	05	B31	07	0	A31	09	9465	DSD
K20711	03	B31	07	0	B29	07	9465	DSD
K20720	03	B31	08	0	B28	06	9465	DSD
K20721	06	B28	06	0	A31	05	9465	DSD
K20722	07	B31	08	0	C36	11	9465	DSD
K20731	07	B31	09	0	C40	05	9465	DSD
K20810	09	C37	01	0	A37	01	9465	DSD
K20811	04	A37	01	0	A34	09	9465	DSD
K20812	02	A34	09	0	A32	09	9465	DSD
K20813	08	C37	01	0	D28	11	9465	DSD
K20820	04	C37	02	0	C37	14	9465	DSD
K20910	03	C37	07	0	C36	12	9465	DSD
K20920	03	C37	08	0	C40	06	9465	DSD
K21010	08	B30	01	0	C38	10	9465	DSD
K21020	07	B30	02	0	C34	08	9465	DSD
K21110	06	B30	07	0	A31	04	9465	DSD
K21111	07	B30	07	0	C36	10	9465	DSD
K21120	03	B30	08	0	B30	14	9465	DSD
K21210	04	C38	01	0	C41	12	9465	DSD
K21211	09	C38	01	0	A26	10	9465	DSD
K21220	03	C38	02	0	C37	12	9465	DSD
K21221	03	C37	12	0	C35	05	9465	DSD
K21222	09	C35	05	0	A34	04	9465	DSD
K21223	03	A34	04	0	A34	10	9465	DSD
K21224	04	C38	02	0	C42	12	9465	DSD
K21310	03	C38	07	0	C40	04	9465	DSD

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3179
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K21311	07	C38	07	0	B28	11	9465	DSD
K21320	03	C38	08	0	C36	09	9465	DSD
K21410	06	C28	01	0	C18	10	9465	DSD
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K21421	03	C29	09	0	C32	09	9465	DSD
K21422	09	C32	09	0	A37	12	9465	DSD
K21423	05	A37	12	0	A33	06	9465	DSD
K21430	04	C28	03	0	C28	14	9465	DSD
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K21520	03	C28	08	0	C31	08	9465	DSD
K21521	02	C31	08	0	C32	10	9465	DSD
K21522	04	C32	10	0	C36	03	9465	DSD
K21523	08	C36	03	0	A39	11	9465	DSD
K21530	08	C28	09	0	A26	11	9465	DSD
K21610	11	A27	01	0	C40	03	9465	DSD
K21620	11	A27	02	0	B08	02	9465	DSD
K21621	14	A27	02	0	D18	05	9465	DSD
K21622	05	D18	05	0	D13	06	9465	DSD
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K21711	06	C23	11	0	C14	09	9465	DSD
K21712	06	C14	09	0	D16	12	9465	DSD
K21720	03	A27	08	0	A27	14	9465	DSD
K30010	04	B32	01	0	B37	03	9465	DSD
K30011	05	B37	03	0	A35	02	9465	DSD
K30012	10	B32	01	0	D36	06	9465	DSD
K30110	03	B32	07	0	B33	12	9465	DSD
K30111	07	B33	12	0	A37	07	9465	DSD
K30112	04	A37	07	0	A39	04	9465	DSD
K30210	04	B33	01	0	B32	12	9465	DSD
K30211	07	B32	12	0	A37	09	9465	DSD
K30310	02	B33	07	0	B32	06	9465	DSD
K30311	06	B32	06	0	A37	08	9465	DSD
K30410	08	B38	01	0	C40	12	9465	DSD
K30420	07	B38	02	0	C36	08	9465	DSD
K30510	05	B38	07	0	B30	11	9465	DSD
K30511	06	B38	07	0	C41	11	9465	DSD
K30520	05	B38	08	0	B30	10	9465	DSD
K30521	06	B38	08	0	C42	11	9465	DSD
K30522	08	C42	11	0	D27	03	9465	DSD
K30610	04	C41	01	0	B37	12	9465	DSD
K30611	06	B37	12	0	A37	06	9465	DSD
K30710	06	C41	07	0	B36	11	9465	DSD
K30711	04	B36	11	0	B33	06	9465	DSD
K30712	03	B33	06	0	B32	11	9465	DSD
K30810	05	C42	01	0	B37	09	9465	DSD
K30811	06	B37	09	0	A37	05	9465	DSD
K30910	06	C42	07	0	B35	11	9465	DSD
K30911	03	B35	11	0	B33	05	9465	DSD
K30912	02	B33	05	0	B32	10	9465	DSD
K31010	06	C43	01	0	B37	06	9465	DSD
K31011	06	B37	06	0	A37	04	9465	DSD
K31110	07	C43	07	0	B34	11	9465	DSD
K31111	03	B34	11	0	B33	04	9465	DSD
K31112	03	B33	04	0	B32	09	9465	DSD

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K31210	04	B44	01	0	B42	14	9465	DSD
K31220	07	B44	02	0	C39	08	9465	DSD
K31221	05	C39	08	0	B41	09	9465	DSD
K31222	09	B44	02	0	A29	05	9465	DSD
K31230	06	B44	03	0	C44	06	9465	DSD
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K31232	06	C30	08	0	B30	04	9465	DSD
K31310	08	B44	07	0	C31	02	9465	DSD
K31311	08	C31	02	0	A33	08	9465	DSD
K31312	10	B44	07	0	D36	11	9465	DSD
K31320	05	B44	08	0	B38	09	9465	DSD
K31321	05	B38	09	0	C42	04	9465	DSD
K31322	03	C42	04	0	C39	03	9465	DSD
K31323	10	C39	03	0	A29	04	9465	DSD
K31330	10	B44	09	0	D36	12	9465	DSD
K31331	02	D36	12	0	D37	12	9465	DSD
K31410	07	B26	07	0	B39	05	9465	DSD
K31411	10	B39	05	0	D35	12	9465	DSD
K31510	07	B26	10	0	C36	04	9465	DSD
K40010	09	D18	01	0	B09	06	9465	DSD
K40011	04	B09	06	0	B05	03	9465	DSD
K40020	07	D18	02	0	D04	06	9465	DSD
K40021	17	D04	06	0	A28	04	9465	DSD
K40030	10	D18	03	0	B09	03	9465	DSD
K40031	09	D18	03	0	B28	08	9465	DSD
K40110	10	D18	07	0	B08	04	9465	DSD
K40120	04	D18	08	0	D24	12	9465	DSD
K40130	03	D18	09	0	D18	14	9465	DSD
K40210	04	B07	01	0	B05	09	9465	DSD
K40310	03	B07	04	0	B07	12	9465	DSD
K40311	11	B07	12	0	D20	12	9465	DSD
K40410	02	B07	07	0	B07	06	9465	DSD
K40411	03	B07	06	0	B06	11	9465	DSD
K40412	11	B06	11	0	D20	10	9465	DSD
K40510	03	B07	10	0	B07	03	9465	DSD
K40511	11	B07	10	0	D20	11	9465	DSD
L20010	09	A38	07	0	C38	05	9465	DSD
L20110	07	A38	01	0	B42	10	9465	DSD
L20111	05	B42	10	0	C38	04	9465	DSD
L30010	07	A40	01	0	B40	11	9465	DSD
L30011	03	B40	11	0	B41	03	9465	DSD
L30012	11	B41	03	0	D32	11	9465	DSD
L30013	03	A40	01	0	A43	05	9465	DSD
L30014	08	A43	05	0	A30	09	9465	DSD
L30016	06	D32	11	0	C44	11	9465	DSD
L30110	05	A40	07	0	B40	05	9465	DSD
L30111	02	B40	05	0	B41	06	9465	DSD
L30112	11	B41	06	0	D32	10	9465	DSD
L30113	03	A40	07	0	A43	09	9465	DSD
L30114	07	A43	09	0	A30	10	9465	DSD
L30116	08	D32	10	0	C44	12	9465	DSD
L30210	07	A42	01	0	B41	12	9465	DSD
L30211	07	A42	01	0	A30	11	9465	DSD
L40010	16	A42	07	0	D18	11	9465	DSD
L40210	03	A01	01	0	A02	11	9465	DSD
L40220	03	A01	05	0	A02	12	9465	DSD

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L40230	06	A01	07	0	B04	05	9465	DSD
S00010	10	D44	01	0	C24	01	9465	DSD
S00020	10	D44	02	0	C24	02	9465	DSD
S00110	10	D44	03	0	C25	11	9465	DSD
S00120	10	D44	04	0	C25	12	9465	DSD
T00410	09	B15	01	0	C27	12	9465	DSD
T00411	07	C27	12	0	D16	11	9465	DSD
T00510	09	B27	07	0	D24	06	9465	DSD
T00511	05	B27	07	0	C24	05	9465	DSD
T00610	05	C25	01	0	B29	06	9465	DSD
T00611	06	C25	01	0	D25	05	9465	DSD
T00710	05	C25	07	0	D25	06	9465	DSD
T00810	08	B15	07	0	A27	12	9465	DSD
T00811	09	B15	07	0	D16	10	9465	DSD
T00812	09	D16	10	0	C29	05	9465	DSD
T00813	08	C29	05	0	D20	02	9465	DSD
T10010	05	C15	01	0	B16	06	9465	DSD
T10011	09	C15	01	0	D26	12	9465	DSD
T10110	05	C15	07	0	B16	12	9465	DSD
T10111	08	C15	07	0	D26	11	9465	DSD
T10210	05	C17	01	0	B17	06	9465	DSD
T10211	08	C17	01	0	D26	10	9465	DSD
T10310	05	C17	07	0	B17	12	9465	DSD
T10311	07	C17	07	0	D26	09	9465	DSD
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T10710	05	C21	07	0	B19	12	9465	DSD
T10711	06	C21	07	0	D26	05	9465	DSD
T20210	03	C26	07	0	C29	06	9465	DSD
T20211	03	C29	06	0	C32	06	9465	DSD
T20212	09	C26	07	0	D13	08	9465	DSD
T20213	05	C32	06	0	C37	09	9465	DSD
T20410	08	C26	01	0	D16	09	9465	DSD
T20411	03	C26	01	0	C29	04	9465	DSD
T20412	04	C29	04	0	C32	12	9465	DSD
T40010	04	D19	01	0	D18	12	9465	DSD
T40011	03	D18	12	0	D16	08	9465	DSD
T40110	14	D19	07	0	A01	12	9465	DSD
Y20310	07	A30	01	0	B28	09	9465	DSD
Y20610	09	A25	01	0	C27	06	9465	DSD
Y22110	05	A36	01	0	A30	12	9465	DSD
Y23010	13	D05	01	0	C27	05	9465	DSD
Y30510	03	B34	01	0	B33	09	9465	DSD
Y30511	04	B33	09	0	B32	05	9465	DSD
Y30610	04	B35	01	0	B33	10	9465	DSD
Y30611	04	B33	10	0	B32	04	9465	DSD
Y30710	04	B36	01	0	B33	11	9465	DSD
Y31210	07	B42	01	0	C38	11	9465	DSD
Y31310	06	B43	01	0	B33	08	9465	DSD
Y31311	03	B33	08	0	B32	02	9465	DSD
Y31510	08	D37	01	0	B42	11	9465	DSD
Y33010	02	D34	01	0	D35	03	9465	DSD

Y33110	03	D33	01	0	D35	06	9465	DSD
Y33210	03	D32	01	0	D33	11	9465	DSD
Y33211	02	D33	11	0	D34	12	9465	DSD
Y40710	07	D09	01	0	D21	12	9465	DSD
Y41010	14	A39	10	0	D18	04	9465	DSD
100010	02	A26	02	0	A26	04	9465	DSD
*100020	02	A26	05	0	A26	07	9465	DSD
100030	04	A38	03	0	A44	01	9465	DSD
100031	02	A44	01	0	A44	02	9465	DSD
100040	04	A38	09	0	A44	03	9465	DSD
100041	02	A44	03	0	A44	04	9465	DSD
100050	02	A30	04	0	A30	05	9465	DSD
100051	02	A30	05	0	A30	07	9465	DSD
100052	05	A30	07	0	B34	04	9465	DSD
100053	02	B34	04	0	B35	04	9465	DSD
100060	02	B34	05	0	B34	07	9465	DSD
100070	02	B35	05	0	B35	07	9465	DSD
100080	02	B36	04	0	B36	07	9465	DSD
100090	03	A40	03	0	A44	05	9465	DSD
100091	02	A44	05	0	A44	06	9465	DSD
100100	03	A40	09	0	A44	07	9465	DSD
100101	02	A44	07	0	A44	08	9465	DSD
100110	03	A42	03	0	A44	09	9465	DSD
100111	02	A44	09	0	A44	10	9465	DSD
100120	02	B42	04	0	B42	05	9465	DSD
100121	02	B42	05	0	B42	07	9465	DSD
100130	02	B43	04	0	B43	07	9465	DSD
100170	14	B08	05	R	S100	02	9465	DSD
100171	01	S100	02	R	S100	03	9465	DSD
100180	18	C01	10	R	S101	02	9465	DSD
100190	19	C01	04	R	S101	03	9465	DSD
100200	09	A30	14	R	S100	C	9465	DSD
100201	03	S100	C	R	S101	C	9465	DSD
100210	02	C14	01	0	C15	05	9465	DSD
100220	02	C14	02	0	C15	06	9465	DSD
100230	02	C14	07	0	C15	11	9465	DSD
100240	02	C14	08	0	C15	12	9465	DSD
100250	02	C16	01	0	C17	05	9465	DSD
100260	02	C16	02	0	C17	06	9465	DSD
100270	02	C16	07	0	C17	11	9465	DSD
100280	02	C16	08	0	C17	12	9465	DSD
100290	02	C18	01	0	C19	05	9465	DSD
100300	02	C18	02	0	C19	06	9465	DSD
100310	03	C18	07	0	C19	11	9465	DSD
100320	03	C18	08	0	C19	12	9465	DSD
100330	03	C20	01	0	C21	05	9465	DSD
100340	03	C20	02	0	C21	06	9465	DSD
100350	03	C02	06	0	C05	06	9465	DSD
100351	05	C05	06	0	B03	09	9465	DSD
100360	05	C02	05	0	B04	09	9465	DSD
100361	10	B04	09	0	D14	12	9465	DSD
100370	03	C02	12	0	C04	05	9465	DSD
100371	05	C04	05	0	B04	10	9465	DSD
100380	02	C03	06	0	C04	04	9465	DSD
100381	05	C04	04	0	B03	10	9465	DSD
100390	02	C04	03	0	C05	05	9465	DSD

*NOT ON UNITS S/N 7500 AND ABOVE 5279

100391	05	C05	05	0	B03	11	9465 DSD					
100400	05	C04	06	0	B04	11	9465 DSD					
100401	10	B04	11	0	D14	11	9465 DSD					
100410	02	C03	12	0	C02	11	9465 DSD					
100411	05	C02	11	0	B04	12	9465 DSD					
100420	03	C03	11	0	C03	05	9465 DSD					
100421	05	C03	05	0	B03	12	9465 DSD					
100430	12	D20	05	0	B02	06	9465 DSD					
100460	02	D34	04	0	D34	07	9465 DSD					
100470	02	D33	05	0	D33	07	9465 DSD					
100480	02	D32	04	0	D32	07	9465 DSD					
100490	02	A36	05	0	A36	07	9465 DSD					
100500	02	D09	08	0	D09	09	9465 DSD					33311
100510	10	TP100		R	A21	14	9465 DSD					
100600	02	D37	04	0	D37	07	9465 DSD					
100700	02	C20	07	0	C21	11	9465 DSD					
100710	02	C20	08	0	C21	12	9465 DSD					
100720	02	A42	09	0	A44	11	9465 DSD					
100730	03	D02	09	0	D04	03	9465 DSD					
200010	10	J100	01	X	C14	01	9465 DSD			24	A	0
200020	10	J100	04	X	C14	02	9465 DSD			24	A	4
200030	10	J100	02	X	C14	07	9465 DSD			24	B	0
200040	10	J100	05	X	C14	08	9465 DSD			24	B	4
200050	11	J100	03	X	C16	01	9465 DSD			24	C	0
200060	11	J100	07	X	C16	02	9465 DSD			24	C	4
200070	10	J100	08	X	C16	07	9465 DSD			24	D	0
200080	10	J100	12	X	C16	08	9465 DSD			24	D	4
200090	11	J100	10	X	C18	01	9465 DSD			24	E	0
200100	11	J100	13	X	C18	02	9465 DSD			24	E	4
200110	11	J100	11	X	C18	07	9465 DSD			24	F	0
200120	11	J100	14	X	C18	08	9465 DSD			24	F	4
200130	12	J100	15	X	C20	01	9465 DSD			24	G	0
200140	12	J100	18	X	C20	02	9465 DSD			24	G	4
200150	12	J100	16	X	C20	07	9465 DSD			24	H	0
200160	12	J100	20	X	C20	08	9465 DSD			24	H	4
200170	12	J100	17	X	C22	07	9465 DSD			24	J	0
200180	12	J100	21	X	C22	08	9465 DSD			24	J	4
200190	13	J100	22	X	C23	01	9465 DSD			24	K	0
200200	13	J100	25	X	C23	02	9465 DSD			24	K	4
200210	13	J100	23	X	C22	01	9465 DSD			24	L	0
200220	13	J100	26	X	C22	02	9465 DSD			24	L	4
200230	12	J100	24	X	C23	07	9465 DSD			24	M	0
200240	12	J100	27	X	C23	08	9465 DSD			24	M	4
200250	12	J100	28	X	C24	08	9465 DSD			24	N	0
200260	12	J100	31	X	C24	07	9465 DSD			24	N	4
200270	13	J100	29	X	B15	11	9465 DSD			24	P	0
200280	13	J100	32	X	B15	12	9465 DSD			24	P	4
200290	09	J100	30	X	D19	05	9465 DSD			24	R	0
200300	09	J100	33	X	D19	06	9465 DSD			24	R	4
200310	13	J100	34	X	C26	05	9465 DSD			24	S	0
200320	13	J100	37	X	C26	06	9465 DSD			24	S	4
200330		J100	35	X			9465 DSD					
200340		J100	38	X			9465 DSD					
200350	12	J100	36	X	J101	36	9465 DSD			24		4
200360	12	J100	39	X	J101	39	9465 DSD			24		4
200370		J100	40	X			9465 DSD					
200380		J100	43	X			9465 DSD					

200390		J100	41	X			9465 DSD					
200400		J100	44	X			9465 DSD					
200410		J100	42	X			9465 DSD					
200420		J100	45	X			9465 DSD					
200430		J100	46	X			9465 DSD					
200440		J100	49	X			9465 DSD					
200450	17	J100	47	X	B27	11	9465 DSD		24	T	0	
200460	17	J100	50	X	B27	12	9465 DSD		24	T	4	
200490	09	J100	52	X	D19	11	9465 DSD		24	V	0	
200500	09	J100	55	X	D19	12	9465 DSD		24	V	4	
200510		J100	53	X			9465 DSD					
200520		J100	56	X			9465 DSD					
200530		J100	54	X			9465 DSD					
200540		J100	57	X			9465 DSD					
200550	13	J100	58	X	C26	11	9465 DSD		24	W	0	
200560	13	J100	62	X	C26	12	9465 DSD		24	W	4	
200570	13	J100	59	X	C25	05	9465 DSD		24	X	0	
200580	13	J100	63	X	C25	06	9465 DSD		24	X	4	
200590	14	J100	60	X	B15	05	9465 DSD		24	Y	0	
200600	14	J100	64	X	B15	06	9465 DSD		24	Y	4	
200610		J100	65	X			9465 DSD					
200620		J100	70	X			9465 DSD					
200630		J100	66	X			9465 DSD					
200640		J100	71	X			9465 DSD					
200650		J100	67	X			9465 DSD					
200660		J100	72	X			9465 DSD					
200670		J100	73	X			9465 DSD					
200680		J100	76	X			9465 DSD					
200690		J100	74	X			9465 DSD					
200700		J100	77	X			9465 DSD					
200710		J100	75	X			9465 DSD					
200720		J100	78	X			9465 DSD					
200730	18	J100	79	X	D43	13	9465 DSD		24		6	
200740	18	J100	80	X	D43	14	9465 DSD		24		0	
200750	18	J100	82	X	D43	15	9465 DSD		24		2	
300010	11	J101	01	X	C15	05	9465 DSD		24	A	0	
300020	11	J101	04	X	C15	06	9465 DSD		24	A	4	
300030	10	J101	02	X	C15	11	9465 DSD		24	B	0	
300040	10	J101	05	X	C15	12	9465 DSD		24	B	4	
300050	11	J101	03	X	C17	05	9465 DSD		24	C	0	
300060	11	J101	07	X	C17	06	9465 DSD		24	C	4	
300070	10	J101	08	X	C17	11	9465 DSD		24	D	0	
300080	10	J101	12	X	C17	12	9465 DSD		24	D	4	
300090	10	J101	10	X	C19	05	9465 DSD		24	E	0	
300100	10	J101	13	X	C19	06	9465 DSD		24	E	4	
300110	09	J101	11	X	C19	11	9465 DSD		24	F	0	
300120	09	J101	14	X	C19	12	9465 DSD		24	F	4	
300130	11	J101	15	X	C21	05	9465 DSD		24	G	0	
300140	11	J101	18	X	C21	06	9465 DSD		24	G	4	
300150	11	J101	16	X	C21	11	9465 DSD		24	H	0	
300160	11	J101	20	X	C21	12	9465 DSD		24	H	4	
300170	11	J101	17	X	C22	07	9465 DSD		24	J	0	
300180	11	J101	21	X	C22	08	9465 DSD		24	J	4	
300190	11	J101	22	X	C23	01	9465 DSD		24	K	0	
300200	11	J101	25	X	C23	02	9465 DSD		24	K	4	
300210	11	J101	23	X	C22	01	9465 DSD		24	L	0	
300220	11	J101	26	X	C22	02	9465 DSD		24	L	4	
300230	10	J101	24	X	C23	07	9465 DSD		24	M	0	

300240	10	J101	27	X	C23	08	9465 DSD			24	M	4
300250	10	J101	28	X	C24	08	9465 DSD			24	N	0
300260	10	J101	31	X	C24	07	9465 DSD			24	N	4
300270	14	J101	29	X	B15	11	9465 DSD			24	P	0
300280	14	J101	32	X	B15	12	9465 DSD			24	P	4
300290	09	J101	30	X	D19	05	9465 DSD			24	R	0
300300	09	J101	33	X	D19	06	9465 DSD			24	R	4
300310	11	J101	34	X	C26	05	9465 DSD			24	S	0
300320	11	J101	37	X	C26	06	9465 DSD			24	S	4
300330		J101	35	X			9465 DSD					
300340		J101	38	X			9465 DSD					
300370		J101	40	X			9465 DSD					
300380		J101	43	X			9465 DSD					
300390		J101	41	X			9465 DSD					
300400		J101	44	X			9465 DSD					
300410		J101	42	X			9465 DSD					
300420		J101	45	X			9465 DSD					
300430		J101	46	X			9465 DSD					
300440		J101	49	X			9465 DSD					
300450	15	J101	47	X	B27	11	9465 DSD			24	T	0
300460	15	J101	50	X	B27	12	9465 DSD			24	T	4
300490	08	J101	52	X	D19	11	9465 DSD			24	V	0
300500	08	J101	55	X	D19	12	9465 DSD			24	V	4
300510		J101	53	X			9465 DSD					
300520		J101	56	X			9465 DSD					
300530		J101	54	X			9465 DSD					
300540		J101	57	X			9465 DSD					
300550	10	J101	58	X	C26	11	9465 DSD			24	W	0
300560	10	J101	62	X	C26	12	9465 DSD			24	W	4
300570	11	J101	59	X	C25	05	9465 DSD			24	X	0
300580	11	J101	63	X	C25	06	9465 DSD			24	X	4
300590	17	J101	60	X	B15	05	9465 DSD			24	Y	0
300600	17	J101	64	X	B15	06	9465 DSD			24	Y	4
300610		J101	65	X			9465 DSD					
300620		J101	70	X			9465 DSD					
300630		J101	66	X			9465 DSD					
300640		J101	71	X			9465 DSD					
300650		J101	67	X			9465 DSD					
300660		J101	72	X			9465 DSD					
300670		J101	73	X			9465 DSD					
300680		J101	76	X			9465 DSD					
300690		J101	74	X			9465 DSD					
300700		J101	77	X			9465 DSD					
300710		J101	75	X			9465 DSD					
300720		J101	78	X			9465 DSD					
300730	13	J101	79	X	D44	13	9465 DSD			24		6
300740	13	J101	80	X	D44	14	9465 DSD			24		0
300750	13	J101	82	X	D44	15	9465 DSD			24		2
400010	11	J102	A	X	C24	01	9465 DSD			24	A	0
400020	11	J102	B	X	C24	02	9465 DSD			24	A	4
400030	12	J102	D	X	C25	11	9465 DSD			24	B	0
400040	12	J102	E	X	C25	12	9465 DSD			24	B	4
400070		J102	H	X			9465 DSD					
400080		J102	J	X			9465 DSD					
400090		J102	K	X			9465 DSD					
400100	11	J102	L	X	D44	15	9465 DSD			24		2

LW45480600 9465 DSD

400110	11	J102	M	X	D44	14	9465	DSD		24		0
400120	11	J102	N	X	D44	13	9465	DSD		24		6
600010	14	J104	01	X	B08	01	9465	DSD		20		4
600020	10	J104	02	X	C01	06	9465	DSD		24		4
600030	11	J104	03	X	C01	12	9465	DSD		24		4
600040	11	J104	04	X	C02	06	9465	DSD		24		4
600050	11	J104	05	X	C02	05	9465	DSD		24		4
600060	11	J104	07	X	C02	12	9465	DSD		24		4
600070	11	J104	08	X	C03	06	9465	DSD		24		4
600080	11	J104	10	X	C04	03	9465	DSD		24		4
600100	11	J104	12	X	C04	06	9465	DSD		24		4
600110	11	J104	13	X	C03	12	9465	DSD		24		4
600120	10	J104	14	X	C03	11	9465	DSD		24		4
600130	14	J104	15	X	D20	05	9465	DSD		24		4
600140	19	J104	16	X	A25	12	9465	DSD		24		4
600150		J104	17	X			9465	DSD				
600170	17	J104	20	X	A28	09	9465	DSD		24	A	4
600180	17	J104	21	X	A28	14	9465	DSD		24	A	0
600190	12	J104	22	X	B14	07	9465	DSD		24	B	9
600200	12	J104	23	X	B14	01	9465	DSD		24	B	4
600210	12	J104	24	X	B14	15	9465	DSD		24	B	0
600220	19	J104	25	X	A33	15	9465	DSD		24	C	0
600230	19	J104	26	X	A34	01	9465	DSD		24	C	4
600240	20	J104	27	X	A34	15	9465	DSD		24	D	0
600250	20	J104	28	X	A34	07	9465	DSD		24	D	4
600270	24	J104	30	X	A40	06	9465	DSD		20		4
600280	23	J104	31	X	A40	12	9465	DSD		20		4
600290	23	J104	32	X	A38	06	9465	DSD		20		4
600300	23	J104	33	X	A38	12	9465	DSD		20		4
600310	25	J104	34	X	A42	06	9465	DSD		20		4
600320	25	J104	35	X	A42	12	9465	DSD		20		4
600330	21	J104	36	X	A28	09	9465	DSD		20		4
600400	21	J104	43	X	A28	05	9465	DSD		24		4
600410	21	J104	44	X	A26	01	9465	DSD		24		4
600420		J104	45	X			9465	DSD				
600430	16	J104	46	X	J102	X	9465	DSD		20		4
600440		J104	47	X			9465	DSD				
600450	06	J104	48	X	LCG		9465	DSD		16		4
600460	06	J104	49	X	LCG		9465	DSD		16		4
600470	06	J104	50	X	LCG		9465	DSD		16		4
600480	22	J104	51	X	NEG	20	9465	DSD		16		4
600490	22	J104	52	X	NEG	20	9465	DSD		16		4
600500	22	J104	53	X	NEG	20	9465	DSD		16		4
600510	22	J104	54	X	POS	20	9465	DSD		16		4
600520	22	J104	55	X	POS	20	9465	DSD		16		4
600530	22	J104	56	X	POS	20	9465	DSD		16		4
600540	16	J104	57	X	J102	V	9465	DSD		20		4
600550	16	J104	58	X	J102	W	9465	DSD		20		4
600560	08	J104	59	X	D18	02	9465	DSD		24		4
600560	08	J104	59	X	D02	07	9465	DSD				
600580	16	J104	62	X	J102	R	9465	DSD		20		4
600590	16	J104	63	X	J102	T	9465	DSD		20		4
600600	16	J104	64	X	J102	U	9465	DSD		20		4
600610	24	J104	70	X	A35	15	9465	DSD		24	G	0
600620	24	J104	73	X	A35	01	9465	DSD		24	G	4
600630	22	J104	79	X	A28	01	9465	DSD				
600640	08	J104	80	X	D02	09	9465	DSD				

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LW45480600  9465 DSD

600650   05  J104  78  X 005   12   9465 DSD
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LW45480600  9465 DSD

600650   08  J104   59   X 002    07    9465 DSD
600650   05  J104   78   X 005    12    9465 DSD
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CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: R/W LOGIC CHASSIS ASSEMBLY

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 46809600 | REV. A

SHEET 1 OF 5

REVISION STATUS OF SHEETS

1	2	3	4	5
A	A	A	A	A

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		2/28/67		JHD

NOTES:

1. DETACHED LISTS:
   A. PL 46810001
   B. DN & MECH ASSY 46810000
2. ASSOCIATED DOCUMENTS:
   A. CP 46809700
   B. SCHEMATIC 45527800

3. LOGIC CHASSIS GROUND.
4. TOLERANCE ON LENGTHS SHOWN TO BE $^{+1}_{-0}$.
5. BLACK BAND END OF CAPACITOR TO BE CONNECTED TO PIN 14 (GROUND)

COPIES TO

BY	C.M.	DATE 2/22/67	CHKD.	LRO	DATE 2/27/67	ENGR	D.Dodd	DATE 2-28-67

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 46809600 | REV. A

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	45	24	992	02	X12	05		X12	06		
2	↑	↑	↑	↑	X12	05		X14	03		
3					X18	05		X19	05		
4					X19	05		X20	05		
5					X20	05		X21	05		
6					X21	05		X22	05		
7					X22	11		X21	11		
8					X21	11		X20	11		
9					X20	11		X19	11		
10					X19	11		X18	11		
11					X12	01		X10	01		
12					X12	04		X10	03		
13					X10	06		X10	09		
14					X04	12		X05	09		
15					X05	07		X06	07		
16					X06	07		X07	08		
17	↓	↓	↓	↓	X05	05		X06	05		
18	45	24	992	02	X06	05		X07	05		
19	39	COAX	000	03	X07	14		X06	14		

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 46809600 | REV. A

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
20	39	COAX	000	03	X05	14		X04	14		
21	39	COAX	000	03	X03	14		X02	14		
22	37	24	222	02	X07	15		X06	15		
23	↑	↑	↑	↑	X03	15		X02	15		
24					X12	15		X13	15		
25	↓			↓	X18	15		X19	15		
26	37			02	X20	15		X21	15		
27	43		222	05	X09	15		X04	15		
28	38		666	02	X05	13		X04	13		
29	↑		↑	↑	X07	13		X06	13		
30					X03	13		X02	13		
31					X08	13		X09	13		
32					X18	13		X19	13		
33	↓		↓	↓	X20	13		X21	13		
34	38		666	02	X12	13		X13	13		
35	46		993	03	X22	05		X22	11		
36	46		993	03	X08	02		X10	11		
37	46	↓	993	03	X10	02		X08	09		
38	46	24	993	03	X10	04		X08	10		

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 46809600 | REV. A

SHEET 4 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
39	51	COAX	000	04	X01	14		△3			
40	46	24	993	03	X18	03		X18	09		
41	↑	↑	↑	↑	X19	03		X19	09		
42					X20	03		X20	09		
43					X21	03		X21	09		
44					X22	03		X22	09		
45					X04	06		X05	01		
46					X06	09		X06	14		
47	↓	↓	↓		X10	10		X08	11		
48	46	24	993		X04	01		X03	06		
49	39	COAX	000		X08	14		X09	14		
50	↑	↑	↑	↑	X10	14		X11	14		
51					X12	14		X13	14		
52	↓	↓	↓	↓	X18	14		X19	14		
53	39	COAX	000	03	X20	14		X21	14		
54	47	24	994	04	X09	01		X12	11		
55	47	24	994	04	X09	04		X12	12		
56	40	COAX	000	04	X14	14		X17	14		
57	51	COAX	000	04	X22	14		△3			

FORM AA 1669

CONTROL DATA

PERIPHERAL EQUIP. DIV.

TITLE: CONTROL PANEL ASSEMBLY

PRODUCT: DISK PAK

DOCUMENT NO.: WL 41283000

REV.: E

SHEET 1 OF 3

REVISION STATUS OF SHEETS

1	2	3
A	A	A
B	B	B
C	C	B

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		7-14-66		
B	PM0160	SEE CO	B.L.	5-5-67		
C	PM0259	SEE CO	DK	8-30-67		
D	PM3049	SEE CO	DGT	6-28-68	TLT	7-3-68
E	PE12298	CHG GAUGE, COLOR, LENGTH, & NOTE 2	HC	11-7-9	97	11-10-9

NOTES:

1. DETACHED LISTS:
   A. P.L. 41274400
2. FOR MECH. ASSY SEE 41274400 & 45525700

COPIES TO

BY	DATE	CHKD.	DATE	APPD.	DATE
LM	8-20-65	LM	10-14-65	KP	10-15-65

FORM 4568

CONTROL DATA

PERIPHERAL EQUIP. DIV.

TITLE: WIRE LISTING

WL

DOCUMENT NO.: 41283000

REV.: E

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	13	20	4	16	P310	1	14	DS305A	1		
2	13	"	"	16	DS305A	2		P310	2	14	
3	13			16	P310	3	14	S305A	NO		
4	13			14	DS302A	1		P310	4	14	
5	13			14	P310	5	14	DS302B	2		
6	13			12	S301C	C		P310	6	14	
7	13			14	P310	7	14	DS301A	2		
8	13			12	S301B	C		P310	8	14	
9	13			12	P310	9	14	S301A	NO		
10	13			12	S301B	NC		P310	10	14	
11	13	20		12	P310	11	14	S301B	NO		
12	15	24		02	S301C	NO		DS301A	1		
13	15	"		03	DS301A	1		DS301B	1		
14	15			03	DS301A	2		DS301B	2		
15	15			03	DS302A	1		DS302B	1		
16	15	24		03	DS302A	2		DS302B	2		
17	13	20	"	08	DS302A	2		S301A	C		
18	13	20	4	10	DS301B	2		S305A	C		
19											

FORM 385-2 REVISED 4/2/64

CONTROL DATA CORPORATION
PERIPHERAL EQUIP. DIV.

TITLE: WIRE LISTING

WL | DOCUMENT NO. 41283000 | REV. E

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
20	15	24	4	03	DS305A	2		DS305B	2		
21	15	24	4	03	DS305A	1		DS305B	1		

FORM 385-2 REVISED 4/2/64

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: ACTUATOR HARNESS

PRODUCT: DISK STORAGE DRIVE

W/L | DOCUMENT NO. 45498200 | REV. C

SHEET 1 OF 3

REVISION STATUS OF SHEETS

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A	-------	RELEASED		9-13-68		MB
B	PM4950	SEE CO		3-13-69		
C	PM4714	SEE CO		4-4-69		

NOTES:
1. FOR MECH ASSY SEE 45497800.

COPIES TO

BY RSH DATE 4/30/69 | CHKD. [illegible] DATE 4-11-69 | ENGR [illegible] DATE 4/11/69

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 45498200 | REV. C

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	9	20	4	19	P220	1	2	X22	06	6,13	
2	↑	↑	↑	↑	P220	2	2	X21	12	6,13	
3					P220	3	2	X20	06	6,13	
4	↓	↓	↓	↓	P220	4	2	X19	12	6,13	
5	9	20	4	19	P220	5	2	X18	06	6,13	
6	8										3
6A			9	17	COND 7			COND 8			
6B			SHIELD	16	COND 9			COND 10			
7	10	24	4	1 3/4	P220	6	1	COND 6A			
8	10	24	4	1.5	COND 6A			X12	01	5,12	
9	11	24	0	2.5	P220	14	1	SHIELD	COND 6B		
10	11	24	0	3	SHIELD	COND 6B		X12	14	5,12	
11	8										4
11A			9	17	COND 12			COND 13			
11B			SHIELD	16	COND 14			COND 15			
12	10	24	4	1 3/4	P220	7	1	COND 11A			
13	10	24	4	1.5	COND 11A			X10	05	5,12	
14	11	24	0	1 1/2	COND 6B			COND 11B			
15	11	24	0	3	SHIELD	COND 11B		X10	14	5,12	

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 45498200 | REV. C

SHEET 3 OF 3

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
16	8										5
16A			9	17	COND 17			COND 18			
16B			SHIELD	16	COND 19			COND 20			
17	10	24	4	1 3/4	P220	8	1	COND 16A			
18	10	24	4	1.5	COND 16A			X12	04	5,12	
19	11	24	0	1 1/2	COND 11B			COND 16B			
20	11	24	0	3	SHIELD	COND 16B		X11	14	5,12	
21	9	20	4	19	P220	09	2	X18	12	6,13	
22	↑	↑	↑	↑	P220	10	2	X19	06	6,13	
23					P220	11	2	X20	12	6,13	
24	↓	↓	↓	↓	P220	12	2	X21	06	6,13	
25	9	20	4	19	P220	13	2	X22	12	6,13	

FORM AA 1669

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: ACTUATOR HARNESS
PRODUCT: DISK STROAGE DRIVE
W/L
DOCUMENT NO. 45444900
REV. B
SHEET 1 OF 3

REVISION STATUS OF SHEETS

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A	--------	RELEASED		9-13-68		MB
B	PM4677	SEE CO.	TM	5-12-69		

NOTES:
1. A HEXAGON IN THE ACCESS FIND NO. COLUMN INDICATES THAT THE CONDUCTOR IS ONE OF SEVERAL (ALL WITH THE SAME NUMBER IN THE HEXAGON) GOING INTO THE SAME TERMINAL. THE NUMBER IN FRONT OF THE HEXAGON IS THE TERMINAL FIND NO.
2. USE EXISTING LEADS FROM L210.
3. USE EXISTING LEADS FROM M260.
4. —
5. USE EXISTING LEADS FROM CR10 AND CR15.
6. DETACHED LISTS:
   A. DN 45444900

COPIES TO					BY	DATE	CHKD.	DATE	ENGR	DATE
					B. Mc	9/13/68	G.F.	9-13-68	RMO	9-13-68

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING
W/L
DOCUMENT NO. 45444900
REV. B
SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO. (1)	DESTINATION		ACCESS. FIND NO. (1)	REMARKS
1	8	24	4	11	L210	T	2	J230	J	2	6
2	8	24	4	11	L210	B	2	J230	H	2	6
3		18	2	14	M260		3	J230	M	94	9 10
4		18	0	14	M260		3	J230	L	94	9 10
5	2	24									7
5A			0	16	J230	N	1	TB200	B	3,4	
5B			4	16	J230	P	1	TB200	T	3,4	
6	2	24									
6A			0	8	J230	T	1	TB201	R	3,4	
6B			4	8	J230	U	1	TB201	L	3,4	
7	2	24									
7A			0	14	J230	R	1	TB202	B	3,4	
7B			4	14	J230	Z	1	TB202	T	3,4	7
8	2	30									8
8A			2	12	L200	B	7 (1)	J230	X	1	
8B			9	12	L200	T	7	J230	K	1 (2)	
8C			6	13	S200	NO	8	J230	V	1	
8D			5	13	S200	NC	8	J230	Y	1 (3)	
9	3	30	2	2	S200	C	8	L200	B	(1)	8

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 45444900 | REV. B

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
10	9	24	4	8	L201	T	7	J230	K	(2)	△8
11	9	24	4	9	L201	B	7	J230	Y	(3)	△8
12	93										△9
12A					CR15	T	△5	L201	T		
12B					CR15	B	△5	L201	B		
13	93										
13A					CR10	T	△5	L200	T		
13B					CR10	B	△5	L200	B		△9

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: DUO-TYNE CONNECTOR ASSEMBLY

PRODUCT: DISK PAK

WL | DOCUMENT NO. 45513300 | REV. A

SHEET 1 OF 2

REVISION STATUS OF SHEETS

1	2
A	A

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		4/22/66		MB

NOTES:

1. DETACHED LISTS:
   A. PL 45519200
   B. FOR MECH ASSY SEE 45519200

(2) FOR CONDUCTOR DESIGNATION SEE R/W LOGIC WIRE LIST

(3) TOLERANCES ON THESE LENGTHS TO BE +1" -0"

COPIES TO				BY	PJN	DATE 4-21-66	CHKD.	LRO	DATE 4-21-66	ENGR	JCP	DATE 4-21-66

FORM AA 1672

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING (3)

WL | DOCUMENT NO. 45513300 | REV. A

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION (2)		ACCESS. FIND NO.	REMARKS
1	3	24	6	5	J240	1				2	
2	4	24	6	3	↑	5				2	
3	5	24	2	4		14				2	
4	6		0			7					
5	6		0		↓	8					
6	7	24	2	2	J240	10				2	

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE
FILTER BOX ASSEMBLY

PRODUCT
DISK STORAGE DRIVE

WL | DOCUMENT NO. 45479200 | REV. A

SHEET 1 OF 2

REVISION STATUS OF SHEETS

1	2
A	A

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		4/23/68		MB

NOTES:
1. DETACHED LISTS:
   A. PL 46822503.
   B. FOR MECH. ASSY SEE 46822503.

COPIES TO

BY	J.L.S.	DATE 4/8/68	CHKD.	G.F.	DATE 4/15/68	ENGR	T.M.P.	DATE 4/15/68

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 45479200 | REV. A

SHEET 2 OF 2

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	8	16									
1A			0		P01	A		FL303	B		ØA
1B			3		P01	D		FL301	B		ØC
1C			2		P01	E		FL300	B		ØB
1D			9		P01	B		FL302	B		NEUTRAL
1E			5		P01	C		GROUND	-		

FORM

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: FINAL ASSEMBLY I

PRODUCT: DISK PAK

WL | DOCUMENT NO. 45526700 | REV. C

SHEET 1 OF 2

REVISION STATUS OF SHEETS

1	2
A	A
B	B
C	C

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		5-20-66		MB
B	PM 1164	SEE CO	LRH	3-9-67	RTR	
C	PM 2131	SEE CO	S.C.	11-1-67	EW	2-23

NOTES:

1. A HEXAGON IN THE ACCESS FIND NO. COLUMN INDICATES THAT THE CONDUCTOR IS ONE OF SEVERAL (ALL WITH THE SAME NUMBER IN THE HEXAGON) GOING INTO THE SAME TERMINAL. A NUMBER IN FRONT OF A HEXAGON IS THE TERMINAL FIND NO.

2. DETACHED LISTS:
   A. PARTS LIST
   B. FOR MECH ASSY SEE 41251000

3. FOR FIND NO'S & ACCESS FIND NO'S SEE:
   A. W11 WIRE LIST 41288600
   B. W11 PARTS LIST 41262300

4. TOLERANCES ON LENGTHS SHOWN TO BE $^{+1"}_{-0"}$

COPIES TO

BY	K.T.	DATE 4-21-66	CHKD.	LRO	DATE 4-21-66	ENGR	JW	DATE 4/21/66

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 45526700 | REV. C

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.) (4)	ORIGIN		ACCESS. FIND NO. (1)	DESTINATION		ACCESS. FIND NO. (1)	REMARKS
1	51	24	4	9	J230	K	67	L201	T	66 (1)	
2	51	24	4	11	L201	T	(1)	TB320	8	58	
3	62	24	4	12	TB320	6	58	L201	B	66	
4	51	24	4	8	J230	V	67	TB320	4	58	
5	108	20	4	8	J230	X	109	TB320	10	58	
6	(3)										
6A					L200	B		TB320	7		
6B					S200	NC		TB320	5		
6C					S200	NO		TB320	3		
6D					S200	C		TB320	1		
7	(3)				L200	T		TB320	9		
8	108	20	4	8	TB320	10	58	TB320	2	58	

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: VOLTAGE ADJ. ASSEMBLY (+20VDC)

PRODUCT: DISK PAK

WL | DOCUMENT NO. 41297200 | REV. A

SHEET 1 OF 2

REVISION STATUS OF SHEETS

1	2
A	A

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		2/7/66		DE

NOTES:

(1) THESE DESIGNATIONS; L, (LEFT) C, (CENTER) & R, (RIGHT) ARE WHEN VIEWED FROM TERMINAL BLOCK SIDE OF ASSEMBLY.

2 DETACHED LISTS:

A. P/L 41253200
B. FOR MECH ASSY SEE 41253200

COPIES TO					BY	K.T.	DATE 2-4-66	CHKD.	LRO	DATE 2-4-66	ENGR	KY	DATE 2-4-66

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 41297200 | REV. A

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION ⚠1		ACCESS. FIND NO.	REMARKS
1	12	16	9	6	TB06	1		R03	L		FROM 45 TERMINAL ON ORIGIN
2	12	16	9	6	TB06	1		R03	C		FROM BTM. OF 90 TERM. ON ORIGIN
3	12	16	9	6	TB06	2		R03	R		FROM 45 TERMINAL ON ORIGIN

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: VOLTAGE ADJ. ASSEMBLY (-20 VDC)

PRODUCT: DISK PAK

WL | DOCUMENT NO. 41297300 | REV. A

SHEET 1 OF 2

REVISION STATUS OF SHEETS: 1 A | 2 A

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		2/7/66		JE

NOTES:

⚠1 THESE DESIGNATIONS; L, (LEFT) C, (CENTER) & R, (RIGHT) ARE WHEN VIEWED FROM TERMINAL BLOCK SIDE OF ASSEMBLY.

2 DETACHED LISTS:

A. P/L 41243300
B. FOR MECH ASSY SEE 41253300

COPIES TO

BY	K.T.	DATE 2-4-66	CHKD.	LRO	DATE 2-4-66	ENGR	KY	DATE 2-4-66

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 41297300 | REV. 4

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS FIND NO	DESTINATION /1		ACCESS. FIND NO.	REMARKS
1	12	16	9	6	TB07	1		RO4	L		FROM 45 TERMINAL ON ORIGIN
2	12	16	9	6	TB07	1		RO4	C		FROM BTM. OF 90 TERM. ON ORIGIN
3	12	16	9	6	TB07	2		RO4	R		FROM 45 TERMINAL ON ORIGIN

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: IDENTIFICATION PLATE ASSEMBLY

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 41289600 | REV. D

SHEET 1 OF 2

REVISION STATUS OF SHEETS

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		4-13-66		RW
B	PM1374	SEE CO	DRB	5-10-67	RTR	
C	PM2424	SEE CO	SD	1-4-68	LW	
D	PM2424A	SEE CO	JF	3-19-68	TLT	

NOTES: 1. DETACHED LISTS:
A. PL 41254400
B. FOR MECH ASSY SEE 41254400

/2 FOR CONDUCTOR DESTINATION OF CONDUCTOR IDENT. # 1, 3, 4, 5 AND 7 SEE LOGIC WIRE LIST

/3 WIRE LENGTH TOLERANCE +1, -0.

COPIES TO

BY	PJN	DATE	4-5-66	CHKD.	LRO	DATE	4-9-66	ENGR	JCP	DATE	4-11-66

FORM AA 1672

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING (3)

WL | DOCUMENT NO. 41289600 | REV. P

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION (2)		ACCESS. FIND NO.	REMARKS
1	7	24	4	14	S100	02				6,8	
2	11	22		1	S100	03		S100	02		
3	9	24	4	18	S101	02				6,8	
4	10	24	4	20	S101	03				6,8	
5	8	24	4	10	S100	A				6,8	
6	6	24	4	4	S101	B		S100	A		
7	13	24	4	10	TP100					6,8	

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: FRONT PANEL ASSY

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 70538000 | REV. E

SHEET 1 OF 2

REVISION STATUS OF SHEETS: 1 2

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		4-22-68		
B	PM3088	SEE CO	EW	6-14-68	TLT	6-18-68
C	PM5334	DRAWING WAS 45480300	DC	6-17-69	97	6-20-69
D	PE12231	NOTE CHG ONLY S/N 13000	DC	10-17-69	97	10-28-69
E	12225	DWG NO WAS 454-19200 S/N 13,000	DC	10-28-69	TLT	11-3-69

NOTES:

1. DETACHED LISTS:
   A. PL 70537700
   B. FOR MECH ASSY SEE 70537700

(2.) THESE CONDUCTORS ARE PART OF ARC SUPPRESSOR ASSY. F/N 50.

COPIES TO

BY J.L.S. | DATE 4-15-68 | CHKD. 97 | DATE 4-15-68 | ENGR | DATE

FORM AA 1672

CONTROL DATA
CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 70538000 | REV. E

SHEET 2 OF 2

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	△2				K03	4C		TB09	2		
2	38	24	4		CB01C	B	39	DS06	B	40	
3	△2				CB01B	B	43	TB09	1		
4	38	24	4		CB01B	B	39	DS05	B	40	
5	△2				K03	3C		TB09	4		
6					K03	2C	48	M01	R	49	
7	38	24	4		CB01A	B	39	DS04	B	40	
8	△2				M01	L	49	TB09	5		
9	41	16	4		CB10B	B	43	S01	T	43	
10	41	16	4		CB10B	B	43	DS08	B	42	
11	41	16	4		DS08	T	42	CB10A	B	43	
12	△2				TB09	3		K03	2C		
13	38	24	4		CB02	B	39	TP01			
14	38	24	4		CB03	B	39	TP03			
15	38	24	4		CB05	B	39	TP05			

FORM AA1669

CONTROL DATA
CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: HARNESS, D.C. POWER PANEL

PRODUCT: DISK PAK

WL | DOCUMENT NO. 46819600 | REV. D

SHEET 1 OF 3

REVISION STATUS OF SHEETS

1	2	3
A	A	A
B	B	B
C	C	C
D	D	C

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		10/27/65		JCP
B	PM 0315	SEE C.O.	DK	2/28/66	KW	
C	PM 1987	DWG NO. WAS 41280100	ZAK	10-11-67	KW	
D	PM 1987D	SEE C.O				

NOTES:

△1 A HEXAGON IN THE ACCESS FIND NO. COLUMN INDICATES THAT THE CONDUCTOR IS ONE OF SEVERAL (ALL WITH THE SAME NUMBER IN THE HEXAGON) GOING INTO THE SAME TERMINAL. A NUMBER IN FRONT OF A HEXAGON IS THE TERMINAL FIND NO.

2. DETACHED LISTS:
   A. PL 46819700

3. FOR MECH ASSY SEE #46819700.

△4 IN THESE COLUMNS (2), UNLESS OTHERWISE SPECIFIED:
   A. T INDICATES TOP
   B. B INDICATES BOTTOM
   C. L INDICATES LEFT
   D. R INDICATES RIGHT

COPIES TO

BY	LM	DATE 9-22-65	CHKD.	LM	DATE 10-26-6	ENGR	JCP	DATE 10-27-65

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE

WIRE LISTING

WL | DOCUMENT NO. 46819600 | REV. D

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN (4)		ACCESS. FIND NO. (1)	DESTINATION (4)		ACCESS. FIND NO. (1)	REMARKS
1	1	16	4		TB07	1	7	C01	-	6 (1)	
2	↑	↑	↑		C01	+	6 (3)	C02	+	6 (2)	
3					C02	+	(2)	C01	+	(3)	
4					C01	+	(3)	T01	6	4 (5)	
5					T01	6	(5)	C01	+	6 (4)	
6					C01	+	(4)	C03	-	6 (7)	
7					C03	-	(7)	T01	6	4 (6)	
8					T01	6	(6)	C03	-	(7)	
9					C03	-	6 (8)	C04	-	6 (9)	
10					C04	-	(9)	C03	-	(8)	
11					TB07	5	7	CR01	TR	5	
12					CR01	TL	5	C01	-	(1)	
13					C01	-	(1)	CR02	TL	5	
14					CR02	TR	5	TB07	5	(10)	
15					C03	+		TB06	2	7	
16					CR01	B	5	T01	8	3	
17					T01	9	3	CR02	B	5	
18	↓	↓	↓		R01	B		C02	+	(2)	
19	1	16	4		C02	-	3	R01	T		

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE

WIRE LISTING

WL | DOCUMENT NO. 46819600 | REV. C

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN (4)		ACCESS. FIND NO. (1)	DESTINATION (4)		ACCESS. FIND NO. (1)	REMARKS
20	1	16	4		C05	R	7	C06	L	7	
21	↑	↑	↑		C06	R	7	C05	L	7	
22					R02	T		C04	+	3	
23	↓	↓	↓		C04	-	(9)	R02	B		
24	1	16	4		C03	-	(8)	C01	+	(4)	

FORM AA 1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: D.C. POWER PANEL (MISC. WIRING)

PRODUCT: DISK PAK

WL | DOCUMENT NO. 46819400 | REV. B

SHEET 1 OF 2

REVISION STATUS OF SHEETS

1	2
A	A
B	B

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		2/8/66		JB
B	PM 1987	DWG NO. WAS 41289700	ZAK	10-12-67	KW	

NOTES:

1. DETACHED LISTS:
   A. PL 46819500
   B. FOR MECH ASSY SEE 46819500

2. USING EXISTING LEADS FROM LO1 & LO2

3. TOLERANCES ON WIRE LENGTHS TO BE $\pm\frac{1}{2}$"

COPIES TO

BY	K.T.	DATE 1-7-66	CHKD.	LRO	DATE 2-8-66	ENGR	JCP	DATE 2-5-66

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 46819400 | REV. B

SHEET 2 OF 2

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	34	16	4	3	TO1	3		CO6	L		
2	34	16	4	3	TO1	4		CO6	R		
3				7	LO1	T	2	TBO7	2	35	
4				7	LO1	B	2	TBO7	3	35	
5				7	LO2	T	2	TBO6	3	35	
6				7	LO2	B	2	TBO6	4	35	

FORM AA 1669

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: HARNESS ASSY, A.C. (POWER SUPPLY)

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 45419600 | REV. D

SHEET 1 OF 3

REVISION STATUS OF SHEETS

1	2	3
A	A	A

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		4-23-68		[illegible]
B	PM2952	SEE CO	EW	6-19-68	TLT	6-20-68
C	PM4823	SEE CO	GV	4-15-69	DCH	5-6
D	PM5334	DWG WAS 45480400	DS	6-17-69	DS	6-20-69

NOTES:

1. DETACHED LISTS:
   A. PL 45480900

COPIES TO

BY RWP 4/17/68 | CHKD. AJ 4/18/68 | ENGR DWP 4/19/68

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL 45419600 | REV. D

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	1	16	4		TB09	2	4	J04	1	8	
2	↑	↑	↑		FL01	L	3	TB05	1	6	
3					FL01	L	3	J05	1	8	
4					TB01	1	7	K03	3A	7	
5					K03	3C	4	J04	3	8	
6					TB01	1	[illegible]	M01	L	5	
7	↓	↓			TB01	1	[illegible]	TB05	2	6	
8	1	16			TB01	2	7	J05	3	8	
9	11	24			TB01	2	12	DS04	T	12	
10	11	24			TB01	2	12	DS05	T	12	
11	14	24			TB01	2	12	DS06	T	12	
12	1	16			CB10B	B	3	FL01	L	3	
13	↑	↑			FL01	R	3	T01	1	4	
14					CB10A	B	3	FL02	L	4	
15					FL02	R	3	T01	2	3	
16					T01	6	3	TB01	3	7	
17					TB01	3	7	T01	6	3	
18	↓	↓	↓		J04	4	8	SAFETY GROUND		3	
19	1	16	4		J04	6	8	SAFETY GROUND		3	

FORM AA1669

Rev C

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

DOCUMENT NO.: WL 45419600 REV. D

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
20	1	16	4		J05	2	.8	SAFETY GROUND		3	
21	1	16	4		CB01C	B	3	K03	4A	7	
22	1	16	4		CB01A	B	3	K03	2A	7	

FORM AA1688

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: HARNESS ASSEMBLY, DC POWER SUPPLY

PRODUCT: DISK STORAGE DRIVE

WL DOCUMENT NO. 45863000 REV. H

SHEET 1 OF 12

REVISION STATUS OF SHEETS

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		10-31-68		
B	PM4200	SEE CO	TM	12-9-68	DCH	12-18-68
C	PM4539	SEE CO	CC	2-4-69	DCH	3-4-9
D	PM4646	SEE CO	CC	2-21-69	DCH	3-4-9
E	PM4823	SEE CO	GV	4-17-69	DCH	5-8
F	PM45398	SEE CO	GV	4-17-69	DCH	5-8
G	PM5038	SEE CO	HK	5-23-69	97	5-26-9
H	PM5296	DRAWING NO WAS 45448100 SN 10,000	DC	7-29-69	97	8-5-69

NOTES:

1. A HEXAGON IN THE ACCESS FIND NO. COLUMN INDICATES THAT THE CONDUCTOR IS ONE OF SEVERAL (ALL WITH THE SAME NUMBER IN THE HEXAGON) GOING INTO THE SAME TERMINAL. A NUMBER IN FRONT OF A HEXAGON IS THE TERMINAL FIND NO.

2. DETACHED LISTS:
   A. PL 46018900

COPIES TO

BY	GP	DATE 9/13/68	CHKD.	RJP	DATE 11-1-68	ENGR	rel	DATE 11/20/68

FORM AA 1672

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: HARNESS ASSY, A.C. (POWER SUPPLY)

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 70537900 | REV. E

SHEET 1 OF 3

REVISION STATUS OF SHEETS

1	2	3

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		4-28-68		[illegible]
B	PM2952	SEE CO	EW	6-19-68	TLT	6-20-68
C	PM4823	SEE CO	GV	4-15-69	DC	5-6
D	PM5334	DWG WAS 45480400	DS	6-17-69	97	6-20-69
E	12225	DWG NO WAS 45419600	DC	10-28-69	TLT	11-3-69

NOTES:

1. ASSOCIATED DOCUMENTS
   A. PL 70537800.

COPIES TO

BY Rup 4/17/68 CHKD. RJ 4/18/68 ENGR DWP 4/18/68

FORM AA 1672

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 70537900 | REV. E

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	1	16	4		TB09	2	4	J04	1	8	
2	↑	↑	↑		CB01	B	3	TB05	1	6	
3					TB05	1	6	J05	1	8	
4					TB01	1	7	K03	3A	7	
5					K03	3C	A	J04	3	8	
6					TB01	1		M01	L	5	
7	↓	↓			TB01	1	↓	TB05	2	6	
8	1	16			TB01	2	7	J05	3	8	
9	11	24			TB01	2	12	DS04	T	12	
10	11	24			TB01	2	12	DS05	T	12	
11	11	24			TB01	2	12	DS06	T	12	
12	1	16			S01	B	3	FL01	L	3	
13	↑	↑			FL01	R	3	T01	1	A	
14					CB10A	B	3	FL02	L	↓	
15					FL02	R	3	T01	2	3	
16					T01	6	3	TB01	3	7	
17					TB01	3	7	T01	6	3	
18	↓	↓	↓		J04	4	8	SAFETY GROUND		3	
19	1	16	4		J04	6	8	SAFETY GROUND		3	

FORM AA1669

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 70537900 | REV. E

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
20	1	16	4		J05	2	8	SAFETY GROUND		3	
21	1	16	4		CB01C	B	3	K03	4A	7	
22	1	16	4		CB01A	B	3	K03	2A	7	

FORM AA1669

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: HARNESS ASSEMBLY, DC POWER SUPPLY

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 1 OF 12

REVISION STATUS OF SHEETS

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD.
A		RELEASED		10-31-68		
B	PM4200	SEE CO	TM	12-9-68	DCH	12-18-68
C	PM4539	SEE CO	CC	2-4-69	DCH	3-4-9
D	PM4646	SEE CO	CC	2-21-69	DCH	3-4-9
E	PM4823	SEE CO	GV	4-17-69	DCH	5-8
F	PM4539B	SEE CO	GV	4-17-69	DCH	5-8
G	PM5038	SEE CO	HK	5-23-69	97	5-26-9
H	PM5296	DRAWING NO WAS 45448100 S/N 10,000	DC	7-29-69	97	8-5-69
J	PE12234	DWG WAS 45863000 S/N 13,000	FSC	10-13-69	97	10-15-9

NOTES:

1. A HEXAGON IN THE ACCESS FIND NO. COLUMN INDICATES THAT THE CONDUCTOR IS ONE OF SEVERAL (ALL WITH THE SAME NUMBER IN THE HEXAGON) GOING INTO THE SAME TERMINAL. A NUMBER IN FRONT OF A HEXAGON IS THE TERMINAL FIND NO.

2. DETACHED LISTS:
   A. PL 70539500.

COPIES TO

BY BP 9/13/68 | CHKD. RSP 11-1-68 | ENGR [illegible] 11/20/68

FORM AA 1672

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
1	15	16	4		C11	+	4	C10	+	10 (1)	
2	"	"	"		C10	+	(1)	C09	+	10 (2)	
3					C09	+	(2)	TB07	5	18	
4					R17	R	2	TB02	2	18	
5					TB02	2	18	Q02	B	5	
6					Q02	C	5	TB02	14	18	
7					TB02	14	18	Q05	B	5	
8					Q05	C	5	CB07A	B	4	
9					CB07B	T	4	R20	R	2	
10					R23	R	2	CB07A	T	4	
11					CB07B	B	4	Q03	C	5	
12	"	"	"		Q03	B	5	TB02	14	18	
13	15	16	14		TB02	14	18	R17	L	2	
14											
15	15	16	14		C04	+	4	CB03	T	10 (3)	
16	"	"	"		CB03	T	(3)	K02	3A	18	
17					K02	3C	18	TB06	4	18	
18	"	"	"		TB07	3	18	K02	4C	18	
19	15	16	4		K02	4A	18	CB02	T	10 (4)	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
20	15	16	4		CB02	T	(4)	C02	-	4	
21	"	"	"		T01	6	10 (6)	C09	-	10 (5)	
22					C09	-	(5)	C10	-	10 (7)	
23					C10	-	(7)	C09	-	(5)	
24					C09	-	(5)	T01	6	(6)	
25					C04	-	4	TB02	10	18	
26					TB02	10	18	T02	4	11 (8)	
27					T02	4	(8)	C07	-	4	
28					C07	+	11 (9)	CB05	T	4	
29					CB05	B	10 (10)	K05B	2	12-19	
30					K05B	8	12-19	J03	K	6	
31					J07	U	6	TB02	5	18	
32					TB02	5	18	J03	H	6	
33					J03	F	6	TB02	5	18	
34					TB02	3	18	C09	+	(2)	
35					C07	+	(9)	CR03	R	5	
36					CR03	B	5	T02	5	4	
37	"	"	"		T02	2	4	T01	9	4	
38	15	16	4		T01	8	4	T02	1	4	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 4 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
39	15	16	4		T02	3	4	CR03	T	5	
40	↓	↓	↓		TB02	1	(18)	Z01	TERM	17	
41					Z01	STUD	4	CB04	T	11 (11)	
42					TP04		17	K05B	3	12	
43					TB02	15	18	R23	L	2	
44					R20	L	2	TB02	16	18	
45					TB02	16	18	Q04	B	5	
46					Q06	B	5	TB02	15	18	
47					K05B	9	12,19	TB02	1	(19)	
48					TB02	1	(18)	Q01	B	5	
49					Q01	C	5	R13	T	2	
50					R13	B	2	CB04	T	(11)	
51					CB02	B	11 (12)	J03	D	6	
52					J03	E	6	CB02	B	(12)	
53					CB03	B	11 (13)	J03	B	6	
54					J03	J	6	K04	4	12	
55					TB02	2	18	Q07	B	5	
56	↓	↓	↓		R18	R	2	CB04	T	(11)	
57	15	16	4		CB03	B	(13)	J03	C	6	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 5 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
58	16	20	4		C11	-	4	TB03	2	9-26	
59	↓	↓	↓		TB03	5	9-26	C07	+	(9)	
60					J03	NN	7	K02	2A	3	
61					K02	2C	3	TB03	28	926	
62					TB02	13	3	K05B	13	12-19	
63					K05B	12	12-19	K03	1C	18 (20)	
64					TB02	2	3	K05A	12	12-19	
65					K05A	13	12-19	TB03	26	9	
66	↓	↓	↓		TB02	12	3	K01	8	12-19	
67	16	20	4		K01	9	12-19	J07	K	7	
68											
69	16	20	4		J07	J	7	CB02	B	(12)	
70	↓	↓	↓		DS01	B	2	TB02	7	3	
71					TB02	7	3	DS07	B	2	
72					DS07	T	2	TB03	8	9-26	
73					TB03	7	9-26	CB05	B	(10)	
74					DS03	B	2	TB02	6	3	
75	↓	↓	↓		TB02	6	3	DS02	B	2	
76	16	20	4		CB04	B	4	J07	S	7	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 6 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
77	16	20	4		J07	T	7	TB02	5	3	
78	16	20	4		TB02	3	3	TB03	1	9-26	
79											
80											
81	16	20	4		TB06	4	9-26	J07	F	7	
82	↑	↑	↑		J07	E	7	TB02	12	3	
83					K05A	1	12-19	TB02	8	3	
84					TB02	1	3	K04	8	12-19	
85					K04	13	12-19	TB03	64	9-26	
86					TB03	64	9-26	K01	3	12-19	
87					K01	7	12-19	TB03	16	9-26	
88					TB03	16	9-26	K02	L1	18	
89					TB02	13	3	K06	12	12-19	
90					TB03	63	9-26	K04	12	12-19	
91					J03	FF	7	TB03	66	9-26	
92					TB02	3	3	TP04	—	17	
93	↓	↓	↓		TB02	3	3	K04	2	12-19	
94	16	20	4		K04	1	12-19	TB02	7	3	
95											

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE
WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 7 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
96	16	20	4		K05A	3	12-19	J07	D	7	
97	↑	↑	↑		J07	C	7	TB02	11	3	
98					TB02	11	3	J03	Z	7	
99	↓	↓	↓		J03	T	7	F01	B	17	
100	16	20	4		TB02	6	3	J07	L	7	
101											
102											
103	16	20	4		TB03	13	9-26	J06	4	25	
104	↑	↑	↑		J06	3	25	TB03	14	9	
105	↓	↓	↓		TB03	14	9-26	K05B	4	12-19	
106	16	20	4		TB02	8	13	K06	3	12-19	
107											
108	16	20	4		TB02	16	3	J07	B	7	
109	↓	↓	↓		J07	A	7	TB02	15	3	
110					TB02	12	3	J03	Y	7	
111					TB02	6	3	TB03	17	9-26	
112					TB03	17	9-26	K01	12	12-19	
113					K01	13	12-19	K02	1A	18 (16)	
114	16	20	4		K02	1A	(16)	TB03	18	9-26	

FORM AA1669

[redacted]
MINNEAPOLIS, MINNESOTA

TITLE

WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 8 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
115	16	20	4		TB03	18	9-26	J03	V	7	
116	16	20	4		J03	U	7	K02	1C	3	
117											
118	16	20	4		J03	BB	7	K01	2	12-19	
119	▲	▲	▲		K01	1	12-19	TB02	9	3	
120	▼	▼	▼		K06	6	12-19	K03	L2	18 (23)	
121	16	20	4		K03	11	3	J03	HH	7	
122											
123	16	20	4		TB03	53	9-26	TB03	55	9-26	
124	▲	▲	▲		TB03	54	9-26	Q06	C	5	
125					Q07	T	5	TB03	52	9-26	
126					TB03	54	9-26	Q04	C	5	
127					Q04	T	5	TB03	46	9-26	
128					TB03	46	9-26	TB03	33	9-26	
129					TB03	33	9-26	J03	R	7	
130					J03	P	7	TB03	35	9-26	
131					TB03	34	9-26	TB03	48	9-26	
132	▼	▼	▼		TB03	48	9-26	Q05	T	5	
133	16	20	4		Q06	T	5	TB03	50	9-26	

FORM AA1669

[redacted]
MINNEAPOLIS, MINNESOTA

TITLE

WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 9 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
134	16	20	4		TB03	51	9-26	TB03	49	9-26	
135	▲	▲	▲		TB03	49	9-26	TB03	47	9-26	
136					TB03	47	9-26	TB03	45	9-26	
137					TB03	45	9-26	TB03	43	9-26	
138					TB03	43	9-26	TB03	41	9-26	
139	▼	▼	▼		TB03	41	9-26	TB03	39	9-26	
140	16	20	4		TB03	39	9-26	TB03	6	9-26	
141	16	20	4		TB03	3	9-26	TB07	5	3	
142	16	20	4		TB02	10	3	TP02	—	17	
143											
144											
145	16	20	4		J07	P	7	TB02	10	3	
146											
147					J06	1	25	K04	5	12-19	
148	16	20	4		TB03	53	9-26	TB03	2	9-26	
149	16	20	4							12-19	
150											
151	16	20	4		TB03	63	9-26	K03	L2	(23)	
152	16	20	4		K05A	9	12-19	TB02	11	3	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 10 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
154	16	20	4		K05A	8	12-19	J07	R	7	
155	↑	↑	↑		J03	S	7	TB03	37	9-26	
156					TB03	37	9-26	TB03	50	9-26	
157					TB03	52	9-26	TB03	32	9-26	
158					TB03	31	9-26	J03	N	7	
159					J03	M	7	TB03	29	9-26	
160					TB03	30	9-26	TB03	40	9-26	
161					TB03	40	9-26	Q01	T	5	
162					Q02	T	5	TB03	42	9-26	
163					TB03	42	9-26	TB03	36	9-26	
164					TB03	38	9-26	TB03	44	9-26	
165					TB03	44	9-26	Q03	T	5	
166					J03	W	7	K05A	4	12-19	
167					J07	H	7	CB03	B	(13)	
168					J06	5	25	TB03	59	9-26	
169					TB03	59	9-26	TB02	9	3	
170	↓	↓	↓		J06	6	8	TB03	60	9-26	
171	16	20	4		TB03	60	9-26	F02	B	7	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 11 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		1 ACCESS. FIND NO.	DESTINATION		1 ACCESS. FIND NO.	REMARKS
172	16	20	4		TB02	8	3	K04	3	12,19	
173	16	20	4		K04	9	12-19	J03	LL	7	
174	15	16	4		Q07	C	5	R18	L	2	
175	16	20	↑		K02	L2	3	S02	D	17	
176	16	20			S02	B	17	S03	B	17	
177	16	20			S03	D	17	TB02	4	3	
178	16	20			TB03	15	9-26	S02	D	17	
179	16	20			TB03	25	9-26	TB02	1	(19)	
180	15	16			T01	08	4	TB06	5	3	
181	15	16			T01	09	4	TB06	1	3	
182	16	20	↓		F01	A	17	TB02	4	3	
183	14	20	4		F02	A	17	TB02	1	3	
184	16	20	4		K05B	7	12,19	K02	41	20	
185	↓	↓	↓		K06	13	12-19	TB03	27	9-26	
186					K03	1B	3	TB03	27	9-26	
187					K06	8	12-19	K03	4B	3	
188					J03	X	7	TB03	26	9-26	
189	↓	↓	↓		TB02	13	3	TB03	28	9-26	
190	16	20	4		K03	1C	1B (20)	F02	B		

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL | DOCUMENT NO. 70539600 | REV. J

SHEET 120F 12

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
191	16	20	4		J03	MM	7	K04	6	12-19	
192											
193	16	20	4		CB05	T	4	F06	A	-	
194					K05A	2	12-19	K03	1A	3	
195	16	20	4		K03	3B	3	K06	9	12-19	
196	15	16	4		F05	A	-	T01	8	4	
197	16	20	4		F05	B	-	J03	KK	7	
198	16	20	4		K06	2	12,19	F06	B	-	
199	16	20	4		K05B	1	12,19	TB02	5	3	
200	16	20	4		J06	2	25	TB03	13	9-26	
201	15	16	4		T01	5	4	J35	2	8	
202					T01	7	4	J35	1	8	
203					T01	6	4	TB15	2	18	
204					J35	3	8	TB15	1	18	
205					J35	4	8	TB15	2	18	
206					TB15	2	18	J07	M	6	
207					TB15	1	18	TP06	-		
208	15	16	4		TB15	1	18	J07	N	6	

orig.

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: CABLE ASSEMBLY (W3)

PRODUCT: DISK STORAGE DRIVE

WL | DOCUMENT NO. 45449700 | REV. K

SHEET 1 OF 7

REVISION STATUS OF SHEETS

1	2	3	4	5	6	7
A	A	A	A	A	A	-
B	A	A	A	A	B	-
C	C	C	C	C	C	-
D	D	D	D	D	D	D
E	E	E	E	E	E	E

REVISIONS

REV.	ECO	DESCRIPTION	DRFT.	DATE	CHKD.	APPD
A		RELEASED				
B	PM2[illegible]	SEE CO DWG WAS 46[illegible]	S.C.	10-21-67	[illegible]	[illegible]
C	PM[illegible]	SEE CO DWG WAS 40776300	JF	10-31-67	[illegible]	[illegible]
D	PM2242	DWG NO WAS 40775700	JPM	2-2-68	[illegible]	[illegible]
E	PM3645	DWG. NO. WAS 45464200	CC	10-2-68	[illegible]	10-12-68
F	PM4309	SEE CO	EW	12-17-68	DCH	12-18-68
G	PM4772	SEE CO	GV	2-27-69	DCH	3-3-69
H	PM4823	SEE CO	GV	4-15-69	DCH	5-6
J	PM5207	SEE CO	DS	6-30-69	97	7-19-69
K	PE12054	SEE CO	GV	7-24-69	97	7-29-9

NOTES:

1. A HEXAGON IN THE ACCESS FIND NO. COLUMN, INDICATES THAT THE CONDUCTOR IS ONE OF SEVERAL (ALL WITH THE SAME NUMBER IN THE HEXAGON) GOING INTO THE SAME TERMINAL. A NUMBER IN FRONT OF A HEXAGON IS THE TERMINAL FIND NO.
2. DETACHED LISTS: A. PL 40849500.
3. FOR MECH ASSEMBLY SEE 40849500.
4. INDICATES END OF SHIELD IS FLOATING.

COPIES TO

BY C.M. 2/24/67 | CHKD. [illegible] 3/4/67 | ENGR JWL 3-7-67

FORM AA 1672

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

DOCUMENT NO. WL 45449700 REV. K

SHEET 2 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
1	33	24	4		P104	15	14	X14	1	16,45	
2					P104	2	14	X18	1	16,45	
3					X18	7	16,45	P104	3	14	
4					P104	4	14	X19	1	16,45	
5					X19	7	16,45	P104	5	14	
6					P104	7	14	X20	1	16,45	
7					X20	7	16,45	P104	8	14	
8					P104	10	14	X21	1	16,45	
9					X21	7	16,45	P104	12	14	
10					P104	13	14	X22	1	16,45	
11					X22	7	16,45	P104	14	14	
12	33	24			P104	59	14	X07	12	16,45	
13	34	20			P104	57	15	P03	Y	12	
14	34	20			P03	Z	12	P104	58	15	
15	33	24			P104	45	14	P03	AA	11	
16	34	20			P03	BB	12	P104	46	15	
17	33	24			P104	47	14	P03	CC	11	
18	33	24			P03	W	11	P104	44	14	
19	33	24	4		P104	43	14	P03	J	11	

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

DOCUMENT NO. WL 45449700 REV. K

SHEET 3 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
20	34	20	4		P07	K	12	S306	NO.	23	
21					S304	C	23	S302	NC.	23	
22					S302	C	23	J310	9	21	
23					J310	10	21	P07	C	12	
24					P07	D	12	J310	11	21	
25					J310	4	21	P104	36	15	
26					P104	35	15	J310	2	21	
27					J310	B	21	P07	E	12	
28					P07	P	12	P230	X	15	
29		20			P230	K	15	P07	R	12	
30		16			P07	N	13	J36	J	64	
31		20									
32											
33											
34		20								15	
35		16			J36	Z	64	P07	M	13	
36		20			P07	H	12	J310	1	21	
37		20			J310	S	21	P07	J	12	
38	34	20	4		P07	F	12	J310	6	21	

FORM AA 5069

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL DOCUMENT NO. 45449700 REV. K

SHEET 4 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
39	34	20	4		J310	7	21	P07	L	12	
40					P03	X	12	P104	16	15	
41					P104	30	15	P03	S	12	
42					P03	R	12	P104	31	15	
43					P104	34	15	P03	P	12	
44					P03	N	12	P104	32	15	
45					P104	33	15	P03	M	12	
46	34	20	4		J310	3	21	P104	1	15	
47	36	16	0		X17	14	18,47	P104	48	29	
48	36		0		P104	49	29	P03	F	13	
49	36		0		P03	H	13	P104	50	29	
50	37		2		X17	15	18,47	P104	54	29	
51	37		2		P104	55	29	P03	B	13	
52	37		2		P03	C	13	P104	56	29	
53	38		6		X17	13	18,47	P104	51	29	
54	38		6		P104	52	29	P03	D	13	
55	38		6		P03	E	13	P104	53	29	
56	35	16	4		P03	K	13	X08	15	18,47	

CONTROL DATA CORPORATION
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

WL DOCUMENT NO. 45449700 REV. K

SHEET 5 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO. (1)	REMARKS
57	27	24									
57A			0		P230	N	14	P104	27	14	
57B			4		P230	P	14	P104	28	14	
58	26	24									
58A			0		P104	24	14	TB302	C	24	
58B			4		P104	23	14	TB302	L	24	
58C			9		P104	22	14	TB302	R	24	
59	27	24									
59A			0		P230	T	14	P104	25	14	
59B			4		P230	U	14	P104	26	14	
60	27	24									
60A			4		P104	20	14	P230	V	14	
60B			0		P104	21	14	P230	W	14	
61	32	20									
61A			SHIELD		(4)		—	P07	U	13 (1)	
61B			0		P230	L	15	P07	B	12	
61C			2		P230	M	15	P07	A	12	

FORM AA 1609

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

DOCUMENT NO.: WL 45449700 REV. K

SHEET 6 OF

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS FIND NO. (1)	DESTINATION		ACCESS. FIND NO.	REMARKS
62	32	20									
62A			SHIELD		P07	U	(1)	(4)		-	
62B			0		P07	T	12	P230	H	15	
62C			2		P07	S	12	P230	J	15	
63	34	20	4		S306	C	23	S304	NO	23	
64					P104	62	15	P03	T	12	
65					P03	U	12	P104	63	15	
66					P104	64	15	P03	V	12	
67					P03	DD	12	P104	65	15	
68					P104	66	15	P03	EE	12	
69	34	20	4		P07	V	12	J310	12	21	
70	27	24									
70A			4		P230	R	14	P104	70	14	
70B			0		P230	Z	14	P104	73	14	
71	34	20	4		P07	Y	12	P230	Y	15	
72	33	24	4		P104	79	14	X08	12	16,45	
73	33	24	4		P104	80	14	X08	01	16,45	
74	34	20	4		P03	NN	12	P104	78	15	
75	34	20	4		P03	HH	12	S334	C	23,63	

FORM AA1669

CONTROL DATA
MINNEAPOLIS, MINNESOTA

TITLE: WIRE LISTING

DOCUMENT NO.: WL 45449700 REV. K

SHEET 7 OF 7

CONDUCTOR IDENT.	FIND NO.	GAUGE (REF.)	COLOR (REF.)	LENGTH (APPROX.)	ORIGIN		ACCESS. FIND NO.	DESTINATION		ACCESS. FIND NO.	REMARKS
76	34	20	4		P03	FF	12	S333	NO	23	
77	34	20	4		S333	C	23	S334	NO	23,63	
84	34	20	4		P03	KK	12	P11	1	21	
85	34	20	4		P03	LL	12	P11	2	21	
86	34	20	4		P03	MM	12	P11	3	21	
87A	50	20	5		P06	4	57	L300	1	23	SPINDLE BRAKE
87B		20	0		P06	3	57	L300	2	23	SPINDLE BRAKE
88A	51	20	4		P06	5	57	L301	1	23	SECTOR SENSOR SOLENOID
88B		20	0		P06	6	57	L301	2	23	SECTOR SENSOR SOLENOID
89A	50	20	5		P06	1	57	P311	1	21	DISABLE SWITCH
89B		20	0		P06	2	57	P311	2	21	DISABLE SWITCH

FORM AA1669

COMMENT SHEET

MANUAL TITLE CONTROL DATA 9465 DISK STORAGE DRIVE

Diagrams and Wire List Manual

PUBLICATION NO. 41248800 REVISION _____

FROM: NAME: _____

BUSINESS ADDRESS: _____

COMMENTS:

This form is not intended to be used as an order blank. Your evaluation of this manual will be welcomed by Control Data Corporation. Any errors, suggested additions or deletions, or general comments may be made below. Please include page number references and fill in publication revision level as shown by the last entry on the Record of Revision page at the front of the manual. Customer engineers are urged to use the TAR.

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AA 3419

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CONTROL DATA CORPORATION

FIELD CHANGE ORDER LOG

EQUIPMENT IDENTIFICATION NO. 9465 P14 SERIAL NO. 14045 PAGE NO. 1

FCO NO.	DATE INSTALLED	INSTALLED BY	FCO NO.	DATE INSTALLED	INSTALLED BY
PE 12310A	6/10/70	NRMOPS			

AA1815

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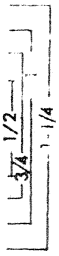

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CONTROL DATA
CORPORATION

8100 34th AVE. SO., MINNEAPOLIS, MINN. 55440

LITHO IN U.S.A.

14095

REVISION D PUBLICATION NO. 41248800

TITLE: 9465 Diagrams and Wire List Manual

REASON FOR CHANGE:

Engineering Change Order PE12527 incorporating the following:

1. Field Change Order PE12234.
   Engineering Change Order PE12234.
2. Field Change Order PE12285.
   Engineering Change Order PE12285A.
3. Field Change Order PE12126.
4. Engineering Change Order PE12054A.
5. Engineering Change Order PE12211.
6. Engineering Change Order PE12225A.
7. Engineering Change Order PE12231.
8. Engineering Change Order PE12298.
9. Engineering Change Order PE12461.
10. Editorial Changes.

INSTRUCTIONS: Replace the following pages with the attached revised pages:

PAGE NO.	REASON FOR CHANGE	WHERE CHANGED
Record of Revisions		
Forward		
1-1	2	Zone C3
1-5	1,5	Zone C1
1-11	3,9	All 30 Type Cards
1-13	1,6	Zone C3,A3
1-15	1	Zone C3
1-26	10	
1-29	10	New Page
3-14	2	Conductors 200350,200360
3-15	2	Conductors 200730,200750
3-16	2	Conductors 300730,300750
3-21	8	Conductors 3,7,9,10,11,13, 14,15,16,17,18
3-22	8	Conductors 20,21
3-31	6,7	New Wire List
3-32	6	New Wire List
3-35	6	New Wire List
3-36 thru 3-41	1,6	New Wire List
3-42	4	Revision Level
3-45	4	Conductors 75,77

ORIGINATED BY L.J.RUSSELL APPROVED C. H. BERTSCH DATE 1-13-70

AA3148

REVISION C PUBLICATION NO. 41248800

TITLE: 9465 Disk Storage Drive - Diagrams & Wire List Manual

REASON FOR CHANGE:

Engineering Change Order PE12158 incorporating the following:

1. Engineering Change Order PM4840B.
2. Engineering Change Order PM5207.
3. Engineering Change Order PM5296A.
4. Engineering Change Order PM5334.

INSTRUCTIONS: Replace the following pages with the attached revised pages:

PAGE NO.	REASON FOR CHANGE	WHERE CHANGED
1-13	3	Zone D3
1-15	1	Zone C3
3-31,32	4	New Wire List
3-35	4	New Wire List
3-36 thru 3-42	3	New Wire List
3-42	2	Revision Level
3-43	2	Conductors 30,35

ORIGINATED BY L. J. Russell APPROVED J. R. Cotton DATE 7-30-69

1404

REVISION B PUBLICATION NO. 41248800

TITLE: 9465 Diagrams, Card Placement, Wire List Manual

REASON FOR CHANGE:

Engineering Change Order PM5347 incorporating the following:

1. Engineering Change Order PM4638A.
2. Engineering Change Order PM4646.
3. Engineering Change Order PM4677.
4. Engineering Change Order PM4772.
5. Engineering Change Order PM4843.
6. Engineering Change Order PM4914.
7. Engineering Change Order PM4949.
8. Engineering Change Order PM4950.
9. Engineering Change Order PM5038A.
10. Engineering Change Order PM5279.

INSTRUCTIONS: Replace the following pages with the attached revised pages:

PAGE	REASON	WHERE CHANGED
Record of Revisions		
1-1	5	Zone B2
1-5	10	Y205
1-9	1,7	Zone C-3, D-2,3,4
1-11	1	A39, D2, D3, D
3-6	1	I484110 - I49310
3-13	10	100020
3-17	1	600560
3-18	1	600650
3-22	6,8	Revision status
3-23	6,8	Conductors 7, 9, 12, 14, 17, 19
3-24	3	Conductors 3, 4, 5A, 5B, 6A, 6B, 7A, 7B, 7A, 7B, 8A, 9
3-25	3	Conductors 10, 11
3-36	2,9	Revision status
3-38	9	Conductor 63
3-40	2	Conductor 141
3-42	4	Revision status
3-45	4	Added Conductors 84-89B

ORIGINATED BY Thomas Moore APPROVED T. R. Cooley DATE 5-15-69

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