DIGITAL EQUIPMENT CORPORATION

MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 8/29/73

TITLE RK05 EXERCISER OPERATORS GUIDE

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

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ENG	APPD	SIZE	CODE	NUMBER	REV
		A	SP	RKØ5-TA-3	

I. SCOPE

The RK05 exerciser provides the logic necessary to issue basic commands to the DEC pack. No CPU or drive controller is necessary. Through use of the exerciser one can verify proper operation or isolate most types of hard drive failure. On line operation and use of Maindecs is required when dealing with reliabilty problems.

As the name suggests this device only exercises the RK05. Disk bus address invalid and seek incomplete conditions are indicated by lamps on the exerciser front panel. No other error conditions are either sensed or tested for. It is the responsibility of the operator through observation of drive signals and drive activity to ascertain the status of the unit under test.

II. CONTROLS AND INDICATORS (Ref. Fig.1)

A. Position Exerciser

Cylinder Address switch register:

Switches 128-1 enable manual inputs to the disk bus cylinder address lines 07-01 respectively.

Run Switch: after the drive becomes ready, i.e., R/W/S ready L becomes true, the run switch will enable the generation of STROBE pulses and the start of exerciser timing.

RTZ switch: when activated will cause the RESTORE signal to be asserted on the disk bus, clear the address invalid latch in the exerciser and will clear the address counter within the exerciser.

FWD/Rev switch: enables counting up or counting down of of the address counter.

ADDR Inv. indicator lamp: denotes the receipt of the address invalid signal from the RK05.

Seek Inc indicator lamp: denotes the presence of the seek incomplete signal on the disk bus.

Power on indicator lamp: denotes the presence of +15 VDC within the exerciser.

Function switch: selects one of the 4 modes of operation.

Drive selection switch: allows selection of drive with ID set from 3-0.

B. Writer Exerciser

Write sector switch: will enable write on any one sector (9-Ø) or on all sectors.

Data bits switch register: enables data bits as follows:

DATA BIT SW	DATA BITS ENABLED
1.	0, 4, 8, 12, 16 *
2.	1, 5, 9, 13, *
3.	2, 6, 10, 14,*
4.	3, 7, 11, 15,*

Constant write: when set will enable constant writing of the data patterns set in data bit switches over the disk surface as defined by the write sector switch.

DC ERASE switch: holds bus write clock and data line at +3 VDC, i.e., DC erases the surface of the disk as defined by the write sector switch.

Write button: initiates write which begins at the first index pulse received and lasts through the following revolution of the disk.

Head select switch: allows selection of upper or lower head.

*For 8/E Only

4 Pin Mate-N-Lock: power input pin 1=GND

2= +5 VDC

3+ +15 VDC

4= -15 VDC

III. PRELIMINARY SET UP

A. Power down the RK05.

B. Connect the unibus cable(BC11-A) from slot AB1 in the exerciser to slot AB8 in the RK05.**

C. Disconnect J1 on the RK05 power supply. Connect the 9 pin male connector of the exerciser power calbe in the J1.

D. Connect P1 in the RK05 into the female 9 pin connector or of the exerciser power cable.

E. Connect the 4 pin male connector of the exerciser power cable into the 4 pin female connector on the exerciser front panel.

F. Power up the drive and observe that the blower immediately come on, after a short delay the door lock solenoid becomes energized and the power on lamp on the front panel of the exerciser is lit.

G. Set drive selector to ID of drive being tested.

** Both drive and exerciser end of the unibus should be terminated.

IV. POSITIONER EXERCISER OPERATION

A. Step Mode of operation is one of single track seeks. The operation will begin with track 0 when the FWD/REV SW is in the FWD position and proceed until reaching track 202. The exerciser counter will then be cleared and the cycle is repeated. If the FWD/REV Sw is in the REV position, the operation will begin at track 202, do one cylinder seeks until reaching track 0 then load the address counter in the exerciser with 202 and repeat the cycle.

Switch setting:

Cylinder address sw. register - 0

RTZ sw. = Not RTZ

FWD/REV sw. = optional

Function sw = step

Drive select sw = ID of drive to be exercised

Run sw = run

B. Alternate mode is one which executes ever increasing seeks. When the FWD/Rev sw. is set to FWD, the operation begins at track 0 with seeks expanding toward track 202. With the direction switch set to REV, seeks expand from 202 towards cylinder 0.

Switch setting:

Cylinder address sw. register = 0

RTZ sw = oprional

Function sw=ALT

Drive select sw = ID of drive to be exercised

Run sw = Run

C. Oscillate mode executes repeated seeks from cylinder 0 to the cylinder set into the cylinder address sw. register.

Switch setting:

Cylinder address sw. register = 0-202***

RTZ sw = not RTZ

FWD/REV = Not applicable

Function sw = OSC

Drive select sw = ID of drive to be exercised

Run sw = RUN

D. Random mode will generate pseudo random track addresses, strobe them into the RK05 which will seek to those cylinder addresses.

Switch setting:

Cylinder address sw. register = 0

RTZ sw. = not RTZ

FWD/REV = optional

Function sw. = Ran

Drive select sw = ID of drive to be exercised

Run sw. = run

V. WRITER EXERCISER OPERATION

A. Head select sw = head desired.

B. Data bits sw register = data pattern desired.

C. Write sector = sector desired (9-0) or entire track.

D. Constant write - set if continuous writing desired.

E. DC erase = set if a DC erase of sector 9-0 or of the entire track is desired, Press write button to execute.

F. Write button = press to execute write of data patterns or DC erase.

*** Cylinder address higher than 202 will force the invalid address error, and light the indicator on the exerciser front panel.

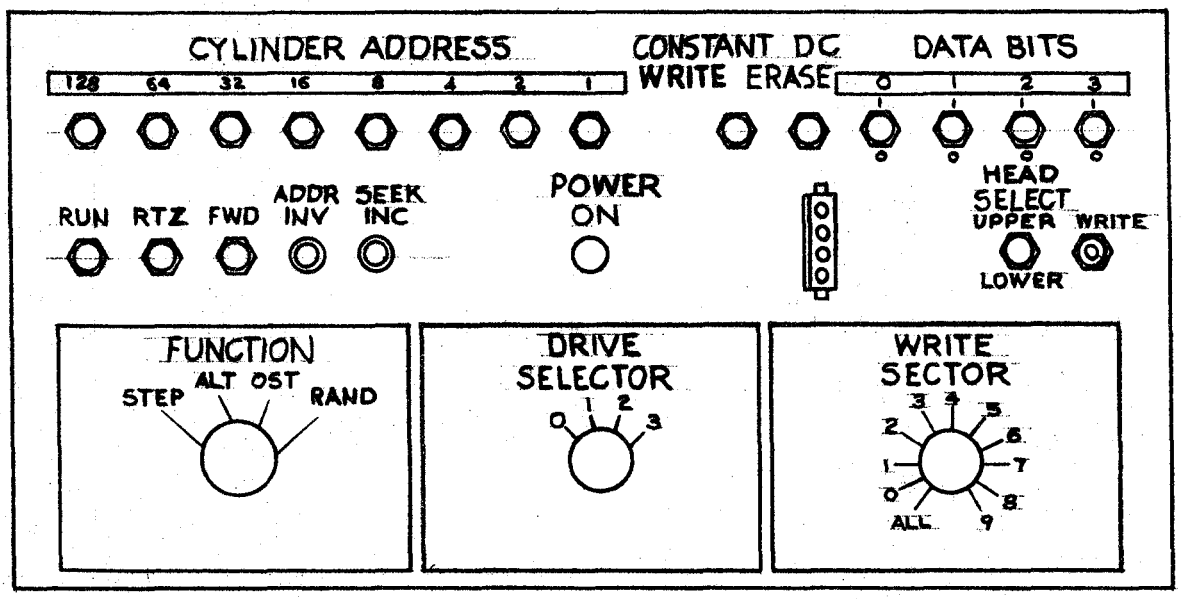

FIGURE 1

RK05 EXERCISER

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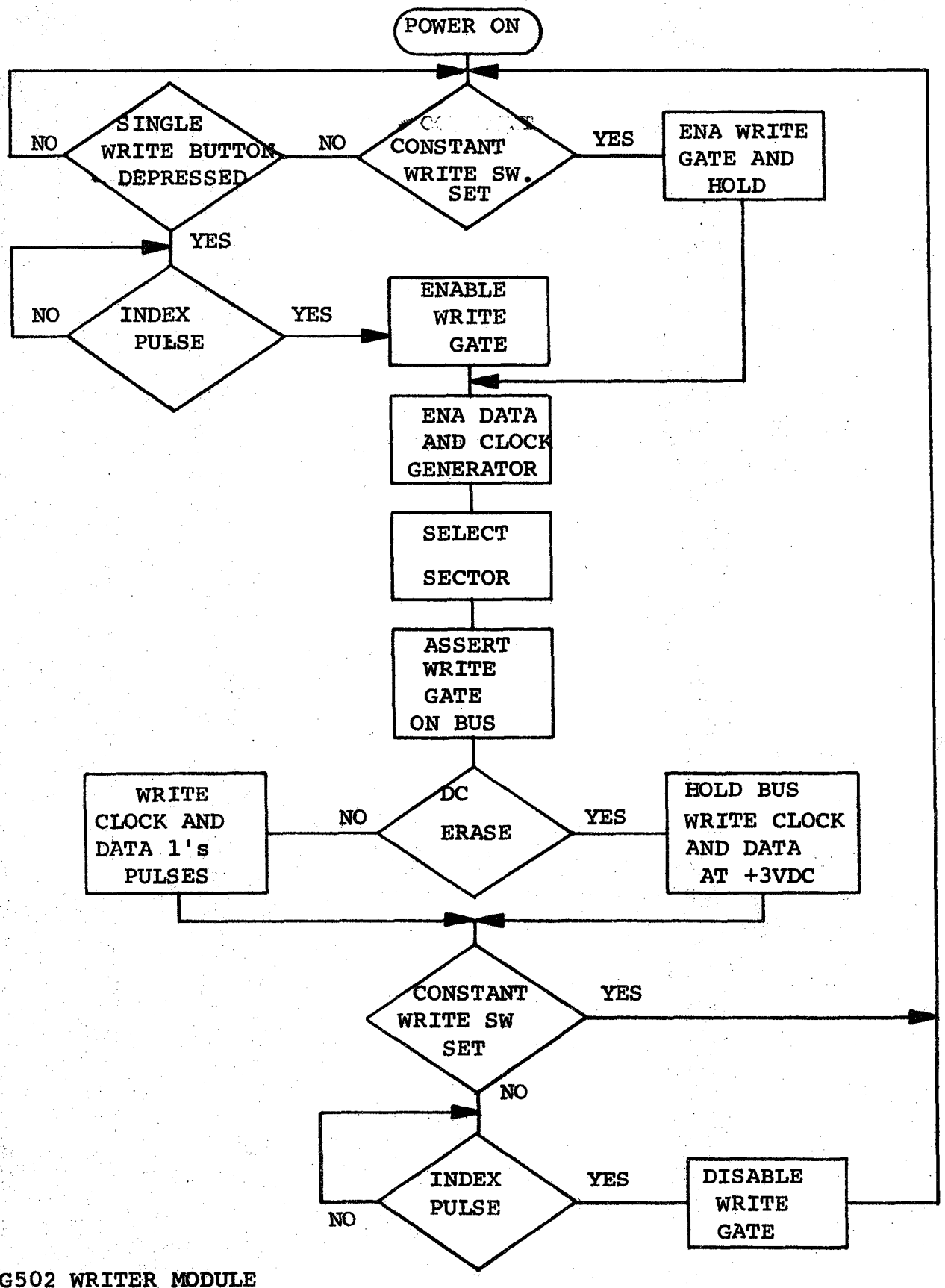

G502 WRITER MODULE

	SIZE	CODE	NUMBER	REV
	A	SP	RKØ5-TA-3	

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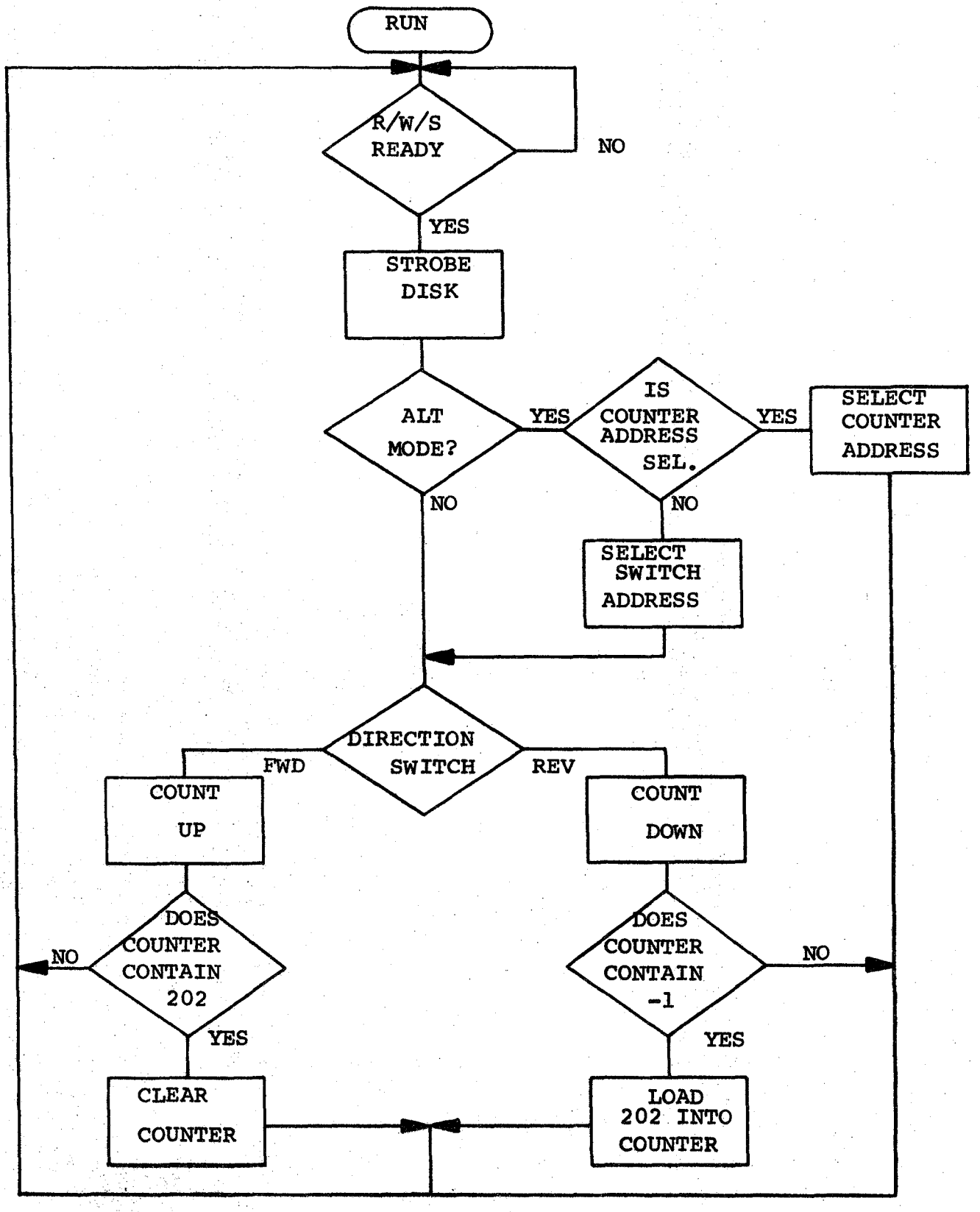
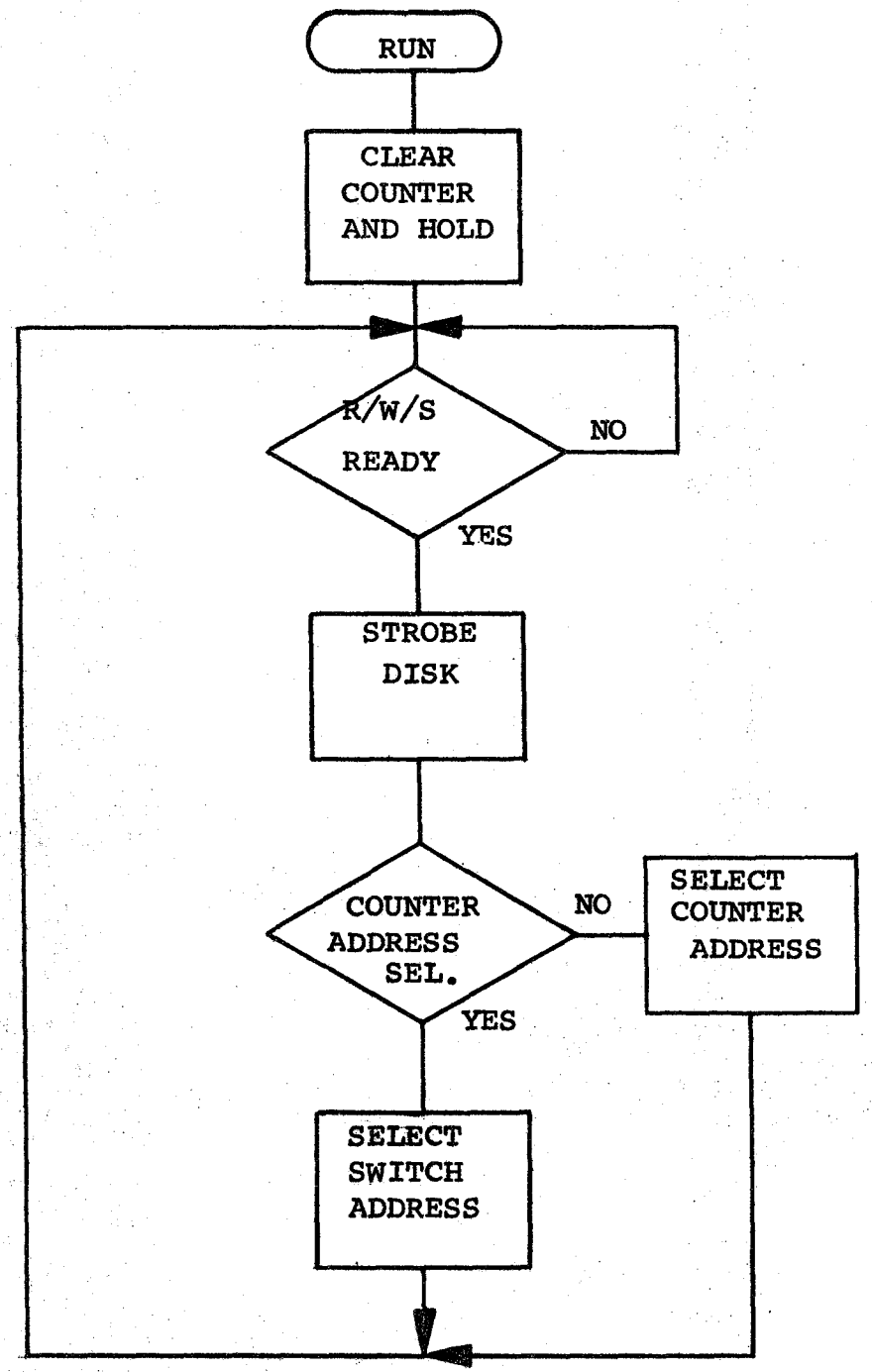


G503 POSITIONER MODULE
STEP/ALT MODE

	SIZE	CODE	NUMBER	REV
	A	SP	RKØ5-TA-3	



G503 POSITIONER MODULE
OSCILLATE MODE

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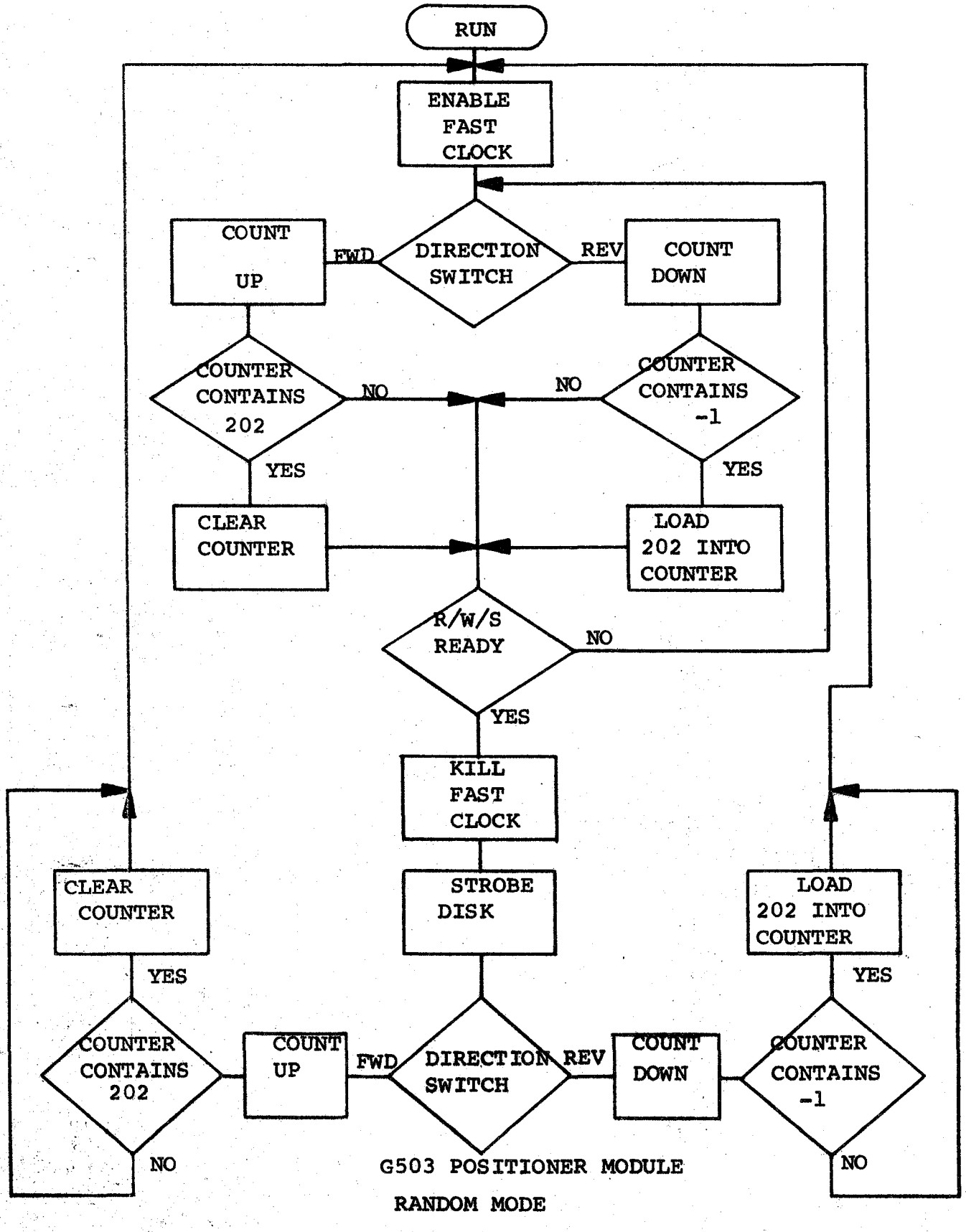

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