

**CONTROL DATA  
9 2 4 / 9 2 4 - A  
PERIPHERAL  
EQUIPMENT CODES**

**Minor Revision (August, 1963)**

This edition, publication 267 a, is a minor revision and does not obsolete publication 267. Pages changed are marked by a dot in the upper outside corner.

PRINTED IN THE UNITED STATES OF AMERICA

## INTRODUCTION

This booklet contains the internal, console, and external select and sense codes for the 924/924-A computers, and a complete list of available instructions. No attempt is made to explain the codes or instructions, since the booklet is designed as a memory aid for the person who is assumed to be familiar with 1604/924/160 techniques.

The 924/924-A computers may operate in the 924, 1604, or 160 mode. The mode is program-selected and may involve using different peripheral equipment with different EF codes. In those instances where the same peripheral device may be used with either the 1604/1604-A or the 160/160-A, the following format is used:

Equipment title \_\_\_\_\_

### 1612 HIGH SPEED PRINTER

Code type—SELECT

	<u>160</u>	<u>1604</u>	<u>Name &amp; function</u>
This operation is not used in the 1604 mode.	0600	0600	Select printer and do not interrupt on ready.
	0605	-----	Print information and advance paper.
Codes for use by 924/924-A in the 160 mode.	<u>0606</u>		Do not advance paper after next print.
		<u>6006</u>	

## INTRODUCTION (Cont'd)

For cases using the 924/924-A or the 160/160-A, the heading "924" is used in place of "1604"

Single column listings apply to either the 924/924-A or the 160/160-A, as explained under the equipment titles.

### SPECIAL NOTE

Whenever the sense or status response codes are listed in two columns (160 and 1604), action following the code recognition depends upon the 924/924-A mode:

1604 mode - Skip (P+2) on listed condition, otherwise read next instruction (P+1).

160 mode - Special programming is necessary to interpret the status response.

## CONTENTS

Table of Instructions . . . . .	1
Table of Instructions Arranged by Functions . . . . .	3
Table of Internal Select Codes . . . . .	6
Table of Internal Sense Codes . . . . .	8
Table of Console Equipment Codes . . . . .	8
Table of External Function Codes . . . . .	9
161 Typewriter . . . . .	9
162 Magnetic Tape Synchronizer . . . . .	10
165 Plotter . . . . .	12
166-2 Line Printer . . . . .	13
167 Card Reader . . . . .	13
170 Card Punch Control Unit . . . . .	14
177 Card Reader . . . . .	15
1614 Card Reader . . . . .	15
925 Magnetic Tape Controller . . . . .	16
1607 Magnetic Tape System . . . . .	19
1610 Control Unit . . . . .	22
1612 High Speed Printer . . . . .	23
1615/926 Magnetic Tape Controllers . . . . .	24
1619 Disk File Controller . . . . .	28

## TABLE OF INSTRUCTIONS

00	----	(See footnote)
01	ARS	A Right Shift
02	QRS	Q Right Shift
03	LRS	AQ Right Shift
04	ENQ	Enter Q
05	ALS	A Left Shift
06	QLS	Q Left Shift
07	LLS	AQ Left Shift
10	ENA	Enter A
11	INA	Increase A
12	LDA	Load A
13	LAC	Load A Complement
14	ADD	Add
15	SUB	Subtract
16	LDQ	Load Q
17	LQC	Load Q Complement
20	STA	Store A
21	STQ	Store Q
22	AJP	A Jump
23	QJP	Q Jump
24	MUI	Multiply Integer
25	DVI	Divide Integer
26	ATI	A to Index
27	QTI	Q to Index
30	SKH	Skip High
31	SKL	Skip Low
32	UJP	Unconditional Jump
33	URJ	Unconditional Return Jump
34	SCA	Scale A
35	SCQ	Scale AQ
36	SSK	Storage Skip
37	SSH	Storage Shift
40	SST	Selective Set
41	SCL	Selective Clear
42	SCM	Selective Complement
43	SSU	Selective Substitute

---

Code 00 is illegal; the computer will stop and must be master cleared before it will continue.

## TABLE OF INSTRUCTIONS (Cont'd)

44	LDL	Load Logical
45	ADL	Add Logical
46	SBL	Subtract Logical
47	STL	Store Logical
50	ENI	Enter Index
51	INI	Increase Index
52.0	XAQ	Interchange A and Q
52.1	CMA	Complement A
52.2	CMQ	Complement Q
53	LIL	Load Index
54	ISK	Index Skip
55	IJP	Index Jump
56	INQ	Increase Q
57	SIL	Store Index
60	XEC	Execute
61	SAL	Substitute Address
62	TAL	Tally
63	PTS	Pattern Search
64	EQS	Equality Search
65	THS	Threshold Search
66	MEQ	Masked Equality
67	MTH	Masked Threshold
70	RAD	Replace Add
71	RSB	Replace Subtract
72	RAO	Replace Add One
73	RSO	Replace Subtract One
74.0	EXF	External Function Select
74.7	EXF	External Function Sense
74.1-6	EXF	External Function Activate Channel
75	SLJ	Selective Jump
76	SLS	Selective Stop
77.0	IOL	I/O Lockout Selection *
77.1-6	WCI	Wait Channel Inactive *

---

\* Valid on 924-A only

## TABLE OF INSTRUCTIONS

Arranged by Functions

### DATA TRANSMISSION

12	LDA	Load A
13	LAC	Load A Complement
16	LDQ	Load Q
17	LQC	Load Q Complement
20	STA	Store A
21	STQ	Store Q
52.0	XAQ	Interchange A and Q

### ADDRESS TRANSMISSION

04	ENQ	Enter Q
10	ENA	Enter A
26	ATI	A to Index
27	QTI	Q to Index
50	ENI	Enter Index
53	LIL	Load Index
57	SIL	Store Index
61	SAL	Substitute Address

### FIXED POINT ARITHMETIC

11	INA	Increase A
14	ADD	Add
15	SUB	Subtract
24	MUI	Multiply Integer
25	DVI	Divide Integer
51	INI	Increase Index
56	INQ	Increase Q
62	TAL	Tally



**TABLE OF INSTRUCTIONS**  
**Arranged by Functions (Cont'd)**

**LOGICAL**

40	SST	Selective Set
41	SCL	Selective Clear
42	SCM	Selective Complement
43	SSU	Selective Substitute
44	LDL	Load Logical
45	ADL	Add Logical
46	SBL	Subtract Logical
47	STL	Store Logical
52.1	CMA	Complement A
52.2	CMQ	Complement Q

**SHIFT**

01	ARS	A Right Shift
02	QRS	Q Right Shift
03	LRS	AQ Right Shift
05	ALS	A Left Shift
06	QLS	Q Left Shift
07	LLS	AQ Left Shift
34	SCA	Scale A
35	SCQ	Scale AQ

**REPLACE**

70	RAD	Replace Add
71	RSB	Replace Subtract
72	RAO	Replace Add One
73	RSO	Replace Subtract One

**STORAGE SEARCH**

63	PTS	Pattern Search
64	EQS	Equality Search
65	THS	Threshold Search
66	MEQ	Masked Equality
67	MTH	Masked Threshold

**TABLE OF INSTRUCTIONS**  
Arranged by Functions (Cont'd)

**STORAGE TEST**

36	SSK	Storage Skip
37	SSH	Storage Shift

**SKIP**

30	SKH	Skip High
31	SKL	Skip Low
54	ISK	Index Skip

**JUMPS AND STOPS**

22	AJP	A Jump
23	QJP	Q Jump
32	UJP	Unconditional Jump
33	URJ	Unconditional Return Jump
55	IJP	Index Jump
60	XEC	Execute
75	SLJ	Selective Jump
76	SLS	Selective Stop

**SENSE AND CONTROL**

74.0	EXF	Select
74.7	EXF	Sense
74.1-6	EXF	Activate Channel
77.0	IOL	I/O Lockout Selection *
77.1-6	WCI	Wait Channel Inactive *

---

\* Valid on 924-A only

## TABLE OF INTERNAL SELECT CODES

74 0 000C0†	Interrupt on channel C inactive
000C1†	Remove above interrupt selection
00070	Clear arithmetic faults
00100	Allow interrupt on internal (arithmetic) faults
00101	Remove above interrupt selection
00200*	Select interrupt scanner (no priority)
00201*	Select channel 1 interrupt priority
00202*	Select channel 2 interrupt priority
00203*	Select channel 3 interrupt priority
00204*	Select channel 4 interrupt priority
00205*	Select channel 5 interrupt priority
00206*	Select channel 6 interrupt priority
003XX*	External interrupt inhibit/enable
01000	Select real-time interrupt
01001	Remove real-time interrupt selection
04010	Select 924 mode for channel 1 and 2
04011	Select 160 mode for channel 1 and 2
04012	Select 1604 mode for channel 1 and 2
04020	Select 924 mode for channel 3 and 4
04021	Select 160 mode for channel 3 and 4
04022	Select 1604 mode for channel 3 and 4

---

† C = 1-6

\* Valid on 924-A only

- 74 0 04030 Select 924 mode for  
channel 1 and 2, 3 and 4
- 04031 Select 160 mode for  
channel 1 and 2, 3 and 4
- 04032 Select 1604 mode for  
channel 1 and 2, 3 and 4
- 04040 Select 924 mode for  
channel 5 and 6
- 04041 Select 160 mode for  
channel 5 and 6
- 04042 Select 1604 mode for  
channel 5 and 6
- 04050 Select 924 mode for  
channel 1 and 2, 5 and 6
- 04051 Select 160 mode for  
channel 1 and 2, 5 and 6
- 04052 Select 1604 mode for  
channel 1 and 2, 5 and 6
- 04060 Select 924 mode for  
channel 3 and 4, 5 and 6
- 04061 Select 160 mode for  
channel 3 and 4, 5 and 6
- 04062 Select 1604 mode for  
channel 3 and 4, 5 and 6
- 04070 Select 924 mode for  
channel 1 and 2, 3 and 4,  
5 and 6
- 04071 Select 160 mode for  
channel 1 and 2, 3 and 4,  
5 and 6
- 04072 Select 1604 mode for  
channel 1 and 2, 3 and 4,  
5 and 6
- 74.0 C0000† Clear all channel C selections
- 77.0 00000\* Lockout all I/O
- 77.0 00010\* Remove above selection
- 77.0 00020\* Enable IOL on top priority  
external interrupt
- 77.0 00030\* Remove above selection

---

† C = 1-6

\* Valid on 924-A only

## TABLE OF INTERNAL SENSE CODES

74 7 000C0†	Skip on channel C active
000C1†	Skip on channel C inactive
00110	Skip on divide fault
00111	Skip on no divide fault
00120	Skip on shift fault
00121	Skip on no shift fault
00130	Skip on overflow fault
00131	Skip on no overflow fault
00200	Skip on real-time interrupt
00201	Skip on no real-time interrupt

## TABLE OF CONSOLE EQUIPMENT CODES

### 350 PAPER TAPE READER

#### SELECT

11200	Reader and no interrupt on end of tape
11210	Reader and set end-of-tape indicator
11220	Reader and interrupt on end of tape

#### SENSE

11200	Skip on reader, end of tape
11201	Skip on reader, no end of tape
11210	Skip on reader, assembly mode
11211	Skip on reader, character mode

### PAPER TAPE PUNCH

#### SELECT

21200	Punch, assembly mode
21210	Punch, character mode
21240	Turn punch motor off

#### SENSE

21200	Skip on punch, out of tape
21201	Skip on punch, not out of tape

---

† C= 1-6

## TABLE OF EXTERNAL FUNCTION CODES

### 161 TYPEWRITER (160 mode only)

#### SELECT

- 4210 Select typewriter output
- 4220 Select typewriter input
- 4240 Request typewriter status

#### STATUS RESPONSE

- 0000 Typewriter ready
- 0004 Typewriter power off
- 0010 Typewriter not in computer status
- 0020 Input character ready
- 0040 Output in use

NOTE: If second typewriter is added, master bits will be 43.

## 162 MAGNETIC TAPE SYNCHRONIZER (160 mode only)

### SELECT

- Y11X Write if OUT is given
- Y11X Write end-of-file mark if no OUT is given
- Y12X Backspace one record if INA is given
- Y12X Search backward to end-of-file mark if no INA is given
- Y13X Read forward if INPUT is given
- Y13X Search forward to end-of-file mark if no INPUT is given
- Y14X Request status
- Y15X Rewind unload
- Y16X Rewind load
- Y171 Set tapes to odd parity
- Y172 Set tapes to even parity
- 210X High density
- 110X Low density

## 162 (Cont'd)

### STATUS RESPONSE

0000	Odd parity selected - no errors
0001	Even parity selected - no errors
0002	Tape X not ready
0004	Parity Error
0015	Illegal BCD detected on Write
0020	End-of-file mark read
0040	End-of-tape or load point sensed
0100	High density
0200	Tape X busy

NOTES: Y = 1: 6-bit mode.

Y = 2: 12-bit mode.

X = (0 to 7): designates one of the four (eight) 60X's. The master bits 12, 13, 22, and 23 are used for second and third tape control. If the tape transport is a 606, a 6-bit, high density selection is illegal (a programmer consideration).



## 165 PLOTTER (160 mode only)

### SELECT

- 4401 Select plotter for Write operation
- 4440 Select plotter for Read operation

Follow 4401 with Output instruction and transmit one of these:

- 0001 Move carriage and pen .01" in +X direction
- 0002 Move carriage and pen .01" in -X direction
- 0004 Rotate drum .01" in -Y direction
- 0005 Carriage and pen move .01" in +X direction, drum rotates in -Y direction .01"
- 0006 Carriage and pen move .01" in -X direction, drum rotates in -Y direction .01"
- 0010 Rotate drum .01" in +Y direction
- 0011 Carriage and pen move .01" in +X direction, drum rotates in +Y direction .01"
- 0012 Carriage and pen move .01" in -X direction, drum rotates in +Y direction .01"
- 0020 Move pen down to paper
- 0040 Move pen away from paper

### STATUS RESPONSE

Status is obtained by selecting the unit for reading. The obtained status is the value of the 12 switches on the unit.

## 166-2 LINE PRINTER (160 mode only)

### SELECT

- 0700 Asynchronous print
- 0710 Synchronous print
- 072X Advance forms
- 0740 Check status

### STATUS RESPONSE

- 0000 166-2 ready
- 0001 Buffer busy
- 0002 Out of paper
- 0004 Paper moving
- 0010 Drum stationary
- 0020 Off-line

## 167 CARD READER (160 mode only)

### SELECT

- 4500 EF clear
- 4501 Free run read
- 4502 Single cycle read
- 4504\* Negate translate, H→BCD
- 4505\* FRR, H→BCD and pack
- 4506\* SCR, H→BCD and pack
- 4540 Check status

### STATUS RESPONSE

- 0000 Card reader ready
- 0001 Hopper empty
- 0002 Stacker full
- 0004 Feed failure
- 0010 Program error
- 0020 Amplifier failure
- 0040 Motor power off

---

\* Hollerith facility available on 167-2 only.

# 170 CARD PUNCH CONTROL UNIT SELECT

<u>160</u>	<u>1604</u>	
3002	4002	Punch
----	4006	Punch with interrupt
3040	----	Check status
----	0000	Output channel clear

## SENSE (status response)

0000	----	MS switch in 160 position; 523 ready
0200	----	MS switch in 1604 position
2000	----	523 not ready
----	4004	1604 selected and 523 ready
----	4005	1604 not selected or 523 not ready
----	4010	1604 selected
----	4011	1604 not selected

## 177 CARD READER

### SELECT

- 4500 EF clear
- 4501 Free run read
- 4502 Single cycle read
- 4505 Negate translate, H→BCD, free run read
- 4506 Negate translate, H→BCD, single cycle read
- 4510 Gate card
- 4540 Status request

### STATUS RESPONSE

- 0001 Input tray empty
- 0002 Primary or secondary stacker full
- 0004 Feed failure
- 0010 Late input request
- 0020 Pre-read error
- 0040 Manual on or motor power off
- 0100 Read comparison error
- 0200 End of file
- 0400 Ready

## 1614 CARD READER

Same as 177 card reader.

# 925 MAGNETIC TAPE CONTROLLER

(924 mode)

## SELECT

### Write Operations

- 20n1 \* Select tape n to write binary
- 20n2 Select tape n to write coded
- 2001 Prepare selected tape to write binary
- 2002 Prepare selected tape to write coded
- 2003 Write end-of-file mark on selected tape
- 2004 Select interrupt when write tape next ready
  
- 2005 Rewind selected write tape
- 2006 Backspace selected write tape
- 2007 Rewind/unload selected write tape
- 2400 Clear interrupt selections on write tape
- 2401 Set low density on selected write tape
- 2402 Set high density on selected write tape
- 2403 Skip bad spot on selected write tape
- 2404 Select interrupt on next error

### Read Operations

- 20n1 Select tape n to read binary one record
- 20n2 Select tape n to read coded one record
- 22n2 Select tape n to read coded one file
- 2001 Prepare selected tape to read binary one record
- 2002 Prepare selected tape to read coded one record
- 2201 Prepare selected tape to read binary one file
- 2202 Prepare selected tape to read coded one file
- 2003 Move selected read tape forward one record
- 2203 Search file mark forward
- 2004 Select interrupt when read tape next ready

---

\* n = 1 - 4

- 2005 Rewind selected read tape
- 2006 Backspace selected read tape
- 2206 Search file mark backward
- 2007 Rewind/unload selected read tape
- 2400 Clear interrupt selections on read tape
- 2401 Set low density on selected read tape
- 2402 Set high density on selected read tape
- 2404 Select interrupt on next error.

## SENSE

### Write Operations

- 2000 Skip on ready to write
- 2001 Skip on not ready to write
- 2002 Skip on write reply parity error
- 2003 Skip on no write reply parity error
- 2004 Skip on write reply length error
- 2005 Skip on no write reply length error
- 2006 Skip on end-of-tape mark
- 2007 Skip on no end-of-tape mark
- 2400 Skip on ready to select
- 2401 Skip on not ready to select
- 2402 Skip on load point
- 2403 Skip on not load point
- 2404 Skip on interrupt on write tape
- 2405 Skip on no interrupt on write tape
- 2406 Skip on write program error
- 2407 Skip on no write program error

## 925 (Cont'd)

### Read Operations

2000	Skip on ready to read
2001	Skip on not ready to read
2002	Skip on read parity error
2003	Skip on no read parity error
2004	Skip on read length error
2005	Skip on no read length error
2006	Skip on file mark
2007	Skip on no file mark
2400	Skip on ready to select
2401	Skip on not ready to select
2402	Skip on load point
2403	Skip on not load point
2404	Skip on interrupt on read tape
2405	Skip on no interrupt on read tape
2406	Skip on read program error
2407	Skip on no read program error

### SELECT

#### Off-Line Operations

- \* C2540 Set Halt Off-line FF
- C2560 Clear Halt Off-line FF

### SENSE

#### Off-Line Operations

- C2540 Skip exit if off-line active
- C2541 Skip exit if off-line not active

---

\* C = Output Channel (2, 4, 6)

## 1607 MAGNETIC TAPE SYSTEM

### SELECT

160    1604

#### Write Operations

60n1*	20n1	Select tape n to write binary
60n2*	20n2	Select tape n to write coded
6001**	2001	Prepare selected tape to write binary
6002**	2002	Prepare selected tape to write coded
6003	2003	Write end-of-file mark
----	2004	Interrupt when selected write tape ready
6005	2005	Rewind selected write tape
6006	2006	Backspace selected write tape
6007	2007	Rewind selected write tape, interlock
6053	----	Status request

#### Read Operations

50n1*	20n1	Select tape n to read binary
50n2*	20n2	Select tape n to read coded
5001**	2001	Prepare selected tape to read binary
5002**	2002	Prepare selected tape to read coded
----	2004	Interrupt when selected read tape ready
5005	2005	Rewind selected read tape
5006	2006	Backspace selected read tape
5007	2007	Rewind selected read tape, interlock

---

\* Available only when 1607 is manually assigned to the 160.

\*\* Useful for making read and write selections in program control mode.



## 1607 (Cont'd)

### SENSE (status response)

#### Write Operations

----	2000	Ready to write
X1XX	2001	Not ready to write
XX2X	2002	Write reply parity error
----	2003	No write reply parity error
----	2004	Write reply length error
----	2005	No write reply length error
XXX4	2006	End-of-tape mark
----	2007	No end-of-tape mark

#### Read Operations

----	2000	Ready to read
X2XX	2001	Not ready to read
XX4X	2002	Read parity error
----	2003	No read parity error
----	2004	Read length error
----	2005	No read length error
XX1X	2006	End-of-file mark
----	2007	No end-of-file mark

Under program control mode the following additional codes are available:

### SELECT

#### Write Operations

----	2501	Select write control for 160
6052	2502	Release write control to 1604
----	2503	Select direct 1604 to 160
----	2500	Release direct selection
----	2504	Select action request
6050	----	Release action request
5051	2540	Set communication flag 1
6055	2560	Clear communication flag 1
6051	----	Set communication flag 2
6056	2520	Clear communication flag 2

### Read Operations

----	2501	Select read control for 160
5052	2502	Release read control to 1604
----	2503	Select direct 160 to 1604
5053	----	Select 1604 interrupt
----	2505	Release 1604 interrupt

SENSE (status response)

### Write Operations

2XXX	2500	Write control available
----	2501	Write control not available
XXX1	2560	Communication flag 1 set
----	2561	No communication flag 1 set
----	2520	Communication flag 2 set
----	2521	No communication flag 2 set

### Read Operations

XXX2	----	160 action request
X4XX	----	Direct 1604 to 160
4XXX	2500	Read control available
----	2501	Read control not available
1XXX	----	Direct 160 to 1604
----	2504	160 interrupt
----	2505	No 160 interrupt

# 1610 CONTROL UNIT

## SELECT

160    1604

### Write Operations

3001	4001	Print
3002	4002	Punch
----	4005	Print with interrupt
----	4006	Punch with interrupt
3040	----	Request status of output

### Read Operations

0301	4001	Read from primary read
0302	4002	Read from secondary read
0303	4003	Read from primary and secondary read (read one row from primary, one from secondary, etc.)
----	4005	Secondary read with interrupt
----	4006	Primary and secondary read with interrupt
0340	----	Request status of input

## SENSE (status response)

### Write Operations

0000	----	All units ready
----	4002	Printer ready
4000	4003	Printer not ready
----	4004	Punch ready
2000	4005	Punch not ready
0200	4010	1604 selected (for output)
----	4011	1604 not selected

### Read Operations

0000	----	All units ready
----	4002	Reader ready
0001	4003	Reader not ready
0020	4004	1604 selected (for input)
----	4005	1604 not selected

## 1612 HIGH SPEED PRINTER

### SELECT

<u>160</u>	<u>1604*</u>	
0600	6000	Select printer and do not interrupt on ready
0601	6001	Space paper one line
0602	6002	Space paper two lines
0603	6003	Skip to format channel 7
0604	6004	Skip to format channel 8
0605	----	Print information and advance paper
0606	6006	Do not advance paper after next print
0607	6007	Select printer and interrupt on ready
0610	6010	Clear monitor channels 1-6
0611	6011	Select monitor channel 1
0612	6012	Select monitor channel 2
0613	6013	Select monitor channel 3
0614	6014	Select monitor channel 4
0615	6015	Select monitor channel 5
0616	6016	Select monitor channel 6

### SENSE (status response)

4000	6000-1	Printer ready
0000	----	Printer not ready

Status (160) is always ready on the 1612 - no request is necessary.

---

\* As only the lower six bits of memory are used when buffering to the 1612, it is better to use 924 mode.

# 1615/926 MAGNETIC TAPE CONTROLLERS

## SELECT

<u>160</u>	<u>1604</u>	
<u>Write Operations</u>		
60n1	20n1	Select tape n to write binary
60n2	20n2	Select tape n to write coded
6001	2001	Prepare selected tape to write binary
6002	2002	Prepare selected tape to write coded
6003	2003	Write end-of-file mark on selected tape
----	2004	Select interrupt on write tape's next ready
6005	2005	Rewind selected write tape
6006	2006	Backspace selected write tape
6007	2007	Rewind/unload selected write tape
----	2400	Clear interrupt selections on write tape
6010	2401	Set low density on selected write tape
6020	2402	Set high density on selected write tape
6030	2403	Skip bad spot on selected write tape
----	2404	Select interrupt on next error
6053	----	Request status

### Read Operations

50n1	20n1	Select tape n to read binary one record
50n2	20n2	Select tape n to read coded one record
52n1	22n1	Select tape n to read binary one file

52n2	22n2	Select tape n to read coded one file
5001	2001	Prepare selected tape to read binary one record
5002	2002	Prepare selected tape to read coded one record
5201	2201	Prepare selected tape to read binary one file
5202	2202	Prepare selected tape to read coded one file
5003	2003	Move selected read tape forward one record
5203	2203	Search file mark forward
----	2004	Select interrupt on read tape's next ready
5005	2005	Rewind selected read tape
5006	2006	Backspace selected read tape
5206	2206	Search file mark backward
5007	2007	Rewind/unload selected read tape
----	2400	Clear interrupt selections on read tape
5010	2401	Set low density on selected read tape
5020	2402	Set high density on selected read tape
----	2404	Select interrupt on next error

#### SENSE (status response)

##### Write Operations

----	2000	Ready to write
X1XX	2001	Not ready to write
XX2X	2002	Write reply parity error
----	2003	No write reply parity error
----	2004	Write reply length error
----	2005	No write reply length error
XXX4	2006	End-of-tape mark
----	2007	No end-of-tape mark
----	2400	Ready to select

## 1615/926 (Cont'd)

----	2401	Not ready to select
----	2402	Load point
----	2403	Not load point
----	2404	Interrupt on write tape
----	2405	No interrupt on write tape
----	2406	Write program error
----	2407	No write program error

### Read Operations

----	2000	Ready to read
X2XX	2001	Not ready to read
XX4X	2002	Read parity error
----	2003	No read parity error
----	2004	Read length error
---	2005	No read length error
XX1X	2006	End-of-file mark
----	2007	Not end-of-file mark
----	2400	Ready to select
----	2401	Not ready to select
----	2402	Load point
----	2403	Not load point
----	2404	Interrupt on read tape
----	2405	No interrupt on read tape
----	2406	Read program error
----	2407	No read program error

The following additional select and sense codes are available under the program control mode of operation:

### SELECT

#### Write Operations

----	2500	Release direct selections
----	2501	Select write control for 160
6052	2502	Release write control to 1604
----	2503	Select direct 1604 to 160
----	2504	Select action request

6050	----	Release action request
5051	2540	Set communication flag 1
6055	2560	Clear communication flag 1
6051	----	Set communication flag 2
6056	2520	Clear communication flag 2

#### Read Operations

----	2501	Select read control for 160
5052	2502	Release read control to 1604
----	2503	Select direct 160 to 1604
5053	----	Select interrupt
----	2505	Release interrupt

SENSE (status response)

#### Write Operations

2XXX	2500	Write control available
----	2501	Write control not available
XXX1	2560	Communication flag 1 set
----	2561	Communication flag 1 not set
----	2520	Communication flag 2 set
----	2521	Communication flag 2 not set

#### Read Operations

4XXX	2500	Read control available
----	2501	Read control not available
----	2504	160 interrupt
----	2505	No 160 interrupt
1XXX	----	Direct 160 to 1604
X4XX	----	Direct 1604 to 160
XXX2	----	160 action request



# 1619 DISK FILE CONTROLLER

## SELECT

<u>160</u>	<u>1604</u>	
7000	5000	Request select
7001	5001	Request select--clear positioner power
7002	5002	Request select check mode type I
7002	5002	Request select check mode type II (Includes activated input buffer)
7003	5003	Request select checkword check
7004*	5006	Select interrupt on next available
7005*	5007	Clear interrupt on next available
7006*	5010	Select interrupt on next ready
7007*	5011	Clear interrupt on next ready
7010*	5012	Select interrupt on next fault
7011*	5013	Clear interrupt on next fault
7020	----	Request status

## STATUS RESPONSE

<u>160</u>	
XXX0	Ready
XXX1	Not Ready
XXX2	160 not selected
XXX4	1604 selected
XX1X	Program error
XX2X	Checkword error
XX4X	Internal fault
1XXX	File off line
2XXX	File warning

\* 160 - A Only

SENSE

1604

5000	Skip on available
5001	Skip on not available
5002	Skip on ready
5003	Skip on not ready
5004	Skip on program error
5005	Skip on no program error
5006	Skip on checkword error
5007	Skip on no checkword error
5010	Skip on internal fault
5011	Skip on no internal fault
5012	Skip on 1604 selected
5013	Skip on 1604 not selected

**CONTROL DATA**

CORPORATION

**8100 34TH AVENUE SOUTH, MINNEAPOLIS 20, MINNESOTA**