

THE FOLLOWING PROCEDURE IS FOR THE ALIGNMENT / PM OF AN RK05 DISK DRIVE CONNECTED TO A PDP-8 FAMILY SYSTEM (RK05 OR RKS05 CONTROLLER) ALTHOUGH IT MAY BE USED FOR A PDP-11 SYSTEM BY SUBSTITUTING AN APPROPRIATE UTILITY OR TOGGLE-IN ROUTINE. ALL ALIGNMENT DATA IS IDENTICAL.

- A) PULL THE DRIVE OUT AND REMOVE THE TOP COVER, REAR BOTTOM COVER, AND THE CARD CAGE FILTER COVER IN THE REAR OF THE DRIVE. CLEAN THE HEADS (EVEN IF THEY DON'T LOOK DIRTY) AND ALSO THE SPINDLE WITH A "TEXWIPE" OR 91% ISOPROPYL ALCOHOL AND Q-TIPS.
- B) CHECK THE POWER SUPPLY VOLTAGES (REMEMBER THEY ARE SWITCHING REGULATORS AND SOME RIPPLE WILL BE OBSERVED, BUT NO MORE THAN 200 MV.) IF IT IS NECESSARY TO ADJUST THEM, REMEMBER THAT THE SERVO AMPLITUDES WILL CHANGE ALSO !
- C) INSERT THE ALIGNMENT CARTRIDGE IN DRIVE (WRITE LOCKED PLEASE !) AND GIVE IT 20-30 MINUTES WARM-UP TIME TO STABILIZE. (ESPECIALLY IF IT JUST CAME OUT OF A COLD CAR TRUNK)
- D) PERFORM SERVO ADJUSTMENTS

-NOTE: IF AVAILABLE, USE ALIGNX FOR THE FOLLOWING PROCEDURE OR AN APPROPRIATE 8 OR 11 TOGGLE IN PROGRAM. IF ALL ELSE FAILS, THE MANUAL HAS A JUMPER PROCEDURE OR THE RK05 OFF-LINE TESTER MAY BE USED.

PDP-8 TOGGLE-IN PROGRAMS

ALIGNMENT		OSC. SEEK	
-----		-----	
20/	7201	20/	7201
	6742		7104
	1033		6742
	6744		1042
	1034		6746
	6746		7604
	7604		6743
	6743		6741
	6741		5227
	5230		2050
	5220		5231
	1000		1042
34/	0000		6746
			7300
			6743
			6741
			5237
			5223
		42/	3200

- CHANGE LOC 34 (OR 42 & 43) TO 0002, 0004 (3202,3204) FOR DRIVES 1,2
- SW. REG. 0-6 = CYLINDER BIT 7=1 FOR UPPER HEAD, 0 FOR LOWER
- CYLINDER 105 = BITS 0,1,3,6 = 1

SERVO ADJUSTMENT CHART

- SYNC SCOPE ON PIN B05J2 (FWD H) ... EXT. +

POT ---	SIGNAL -----	SCOPE -----	ADJUST FOR -----	DRIVE -----	ALIGNX -----
(6)	LIMIT OFFSET	A05J1	BAL. ON 0	LOADED	0000
(5)	LIMIT AMP.	"	3 V. DC	LIMITS	0000
TOP	COS AMP.	A05S1	10 V. PTP	4 CYL SEEK	0402
(2)	COS OFFSET	"	BAL. ON 0	"	
(3)	SINE AMP	A05M1	10 V. PTP	4 CYL SEEK	
(4)	SIN OFFSET	"	BAL. ON 0	"	
BOT	VEL. OFFSET	"	BAL. ON 0	"	
(7)	VEL. AMP	"	3.2 MS PERIOD	2 CYL SEEK	0401
H604	ACC. DRIVE	A05H1	14 MS TO KNEE	64 CYL SEEK	0404

- NOTE: SEE PAGE 3 FOR EXPLANATION OF ALIGNX SW. REG. SETTINGS

E) PERFORM HEAD ALIGNMENT

- IT IS IMPERITIVE THAT YOU HAVE THE PROPER TOOLS TO PERFORM THIS !!!
OLD POSITIONERS REQUIRE A 45 IN.-OZ. TORQUE WRENCH AND THE NEWER
(RK05J) ONES A 125 IN.-OZ. WRENCH. IF YOU FAIL TO USE THE PROPER
TOOLS, THE HEAD ADJUSTMENT TAB WILL BE RUINED !!

- ALIGN HEADS TO TRACK 105
(ALIGNX = 0005 LOWER / 0205 UPPER)

SCOPE: TP3 CHAN 1
TP4 CHAN 2
A02R2 EXT. SYNC (INDEX)

- IF YOU ONLY HAVE TWO PROBES, YOU CAN USED EITHER TP3 OR 4
BUT IT IS BEST TO ADD TP3 + TP4 (CHAN 2 INVERTED), WHEN DONE,
UN-INVERT CHAN 2 AND THE TWO SIGNALS SHOULD CANCEL. IF NOT, YOU
HAVE G-180 PROBLEMS .

F) SET INDEX DELAY PULSE TO 70 US (CAN BE UP TO 20US APART BUT MUST BALANCE AROUND 70 US) POT IS ON M7700 MODULE (A02)

- G) ADJUSTMENT OF G180 DATA SEPERATOR
- THIS MUST BE DONE WITH A DATA PACK LOADED, NOT THE ALIGNMENT CART. !!!
- SCOPE TP1 (ACCESS THRU REAR OF CARD CAGE) 100 NS/DIV; TRIGGER CHAN 1 INTERNAL DC +
- SHOULD SEE A STABLE TRACE OF 440 NS AND A JITTERY ONE AT 500 NS
- R55 (BOTTOM POT) ADJUSTS 440 NS
- R54 (TOP POT) ADJUSTS 500 NS
- IF YOU CAN'T GET THE DUAL PULSES:
 - 1) R55 (BOT) FULLY COUNTER CLOCKWISE
 - 2) R54 (TOP) FULLY CLOCKWISE
 - 3) R54 (TOP) COUNTER CLOCK FOR 490-500 NS
 - 5) R55 (BOT) CLOCKWISE FOR 440 NS

*** ALIGNX SWITCH REGISTER SETUP ***

VERSION 3.1

SWITCH REGISTER SETUP

: 0 :	1 :	2 :	3 :	4 :	5 :	6 :	7 :	8 :	9 :	10 :	11 :

:	:	:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:	:	:
:	DRIVE	0-7	:	SEEK	UPPER	:	:	:	:	CYL TO SEEK	:
:	:	:	:	ALIGN	LOWER	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:	:	:

BITS 9,10,11 - SET TO DESIRED CYLINDER TO SEEK / ALIGN TO

- | | |
|------------|------------------------------------|
| 0 = 0 CYL | 4 = 64 CYL |
| 1 = 2 CYL | 5 = 105 CYL (ALIGN HEADS TO THIS) |
| 2 = 4 CYL | 6 = 202 CYL |
| 3 = 16 CYL | 7 = ANY CYL YOU DEPOSIT IN LOC. 37 |

ALIGNX HAS FINALLY BEEN UPDATE TO INCLUDE A SOFTWARE SWITCH REGISTER CONSOLE PACKAGE. IT IS SIMILIAR TO ALL OTHER 8A CONSOLE PACKAGES AND IS USED AS FOLLOWS:

- IMPORTANT LOCATIONS

20	-	THIS IS THE SOFTWARE SWITCH REGISTER LOCATION
21	-	HARDWARE CONFIGURATION
		0000 = RK8E (DEFAULT)
		0001 = RKS8E (CSS CONTROLLER FOR 8 DRIVES)
22	-	400 = CONSOLE PACKAGE IS ACTIVE
		0 = USE HARDWARE SWITCH REGISTER

THE DEFAULT CONDITIONS IS FOR ACTIVE CONSOLE, RK8E CONTROLLER

USE ODT TO MAKE EITHER PERMINANT OR TEMPORARY PATCHES TO THESE LOCATIONS.

- IF THE CONSOLE PACKAGE IS NOT ACTIVE, THE ONLY KEYBOARD INPUT THE PROGRAM WILL ACCEPT IS ^C (<CTRL> C), TO RETURN TO OS-8 MONITOR.

IF THE CONSOLE PACKAGE IS ACTIVE, TYPE:

^C	-	RETURN TO OS-8 MONITOR
^D	-	TO MODIFY THE PSUEDO-SWITCH REGISTER
^R	-	RESTARTS THE PROGRAM
^U	-	ERASES THAT LINE JUST INPUT
RETURN	-	TERMINATES A LINE OF INPUT

ALL OTHER INPUT EXCEPT THE ABOVE AND THE NUMERIALS 0-9 ARE IGNORED.

R E M E M B E R . . .

THE SW CONTENTS YOU TYPE IN ARE EXACTLY AS YOU WOULD SET INTO THE HARDWARE SWITCHES, WERE THEY AVAILABLE.

====> NOTE: THERE IS A FEATURE TO CHANGE THE DISK CONTROLLER IOT'S. START THE PROGRAM AT LOC 210 WITH THE NEW DEVICE CODE IN THE SWITCH REGISTER (OR ANSWER THE SR = QUESTION IF THE CONSOLE PACKAGE IS ACTIVE.)