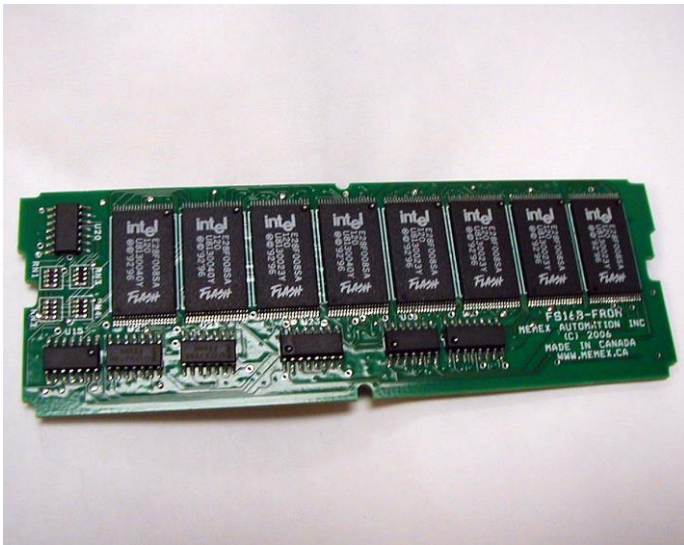


Memory Upgrade for the Fanuc 16B (0010) Series CNC FROM Module Installation

Installation Instructions



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Fanuc 16B Control CPU Card (0010 CPU Card is 2nd from right in this picture beside the power supply)

Introduction

Thank you for purchasing the Memex Memory Upgrade Kit for the Fanuc 16B series control. At Memex we invest a great deal of effort in the design, manufacture and testing of each unit we build, and back it with a three-year limited warranty. We are confident you will find this upgrade significantly improves your CNC machining operations.

General Information

The installation procedure is straightforward and relatively easy to complete – backup the parameters and programs, swap the memory module, and restore the parameters and programs. All that’s needed are some basic skills and hand tools. Estimated time required: 1 hour.

The 16B with the Main CPU card of A16B-3200-0010 can be upgraded to 2.25MB (5120 meters) + up to 8 Megs of FLASH System Read Only Memory (FROM). The memory is resident on a Single In-Line Memory Module or “SIMM” that is located on the Main CPU board in slot 1 (top left if board is removed and connector to motherboard is on the left). This “CPU” board is one of the grey slots in the yellow plastic box, next to the power supply at the right side. The CPU board, once removed, can keep the SIMM powered for over 30 minutes via a “MAXCAP” backup capacitor.

IMPORTANT:

Please see “Applicable CPU Boards” on page 16. This SIMM must not be installed in any other CPU board not listed in the table. If the intended CPU board is not A16B-3200-0010, please contact Memex Technical Support.

Installation Considerations

The memory upgrade should be conducted with care. Never install or remove a board with the control power on (the main power can be on, but not the control). Take care when handling circuit boards, as they are static sensitive. Keep the boards in the anti-static bag provided. Do not place the SIMM in any other slot on the Fanuc CPU board. Do not force, drop or otherwise mishandle the boards during the installation procedure.

About this Manual

This manual explains how to install the Memex Memory Upgrade Kit for the Fanuc 16B (0010 CPU card) control only, and consists of the following sections:

Installing the Memex Memory Upgrade explains how to install the Memex Memory Upgrade Kit into the Fanuc 16B CNC. It consists of sections regarding backing up the control's memory contents to both a memory PC card (formerly known as a "PCMCIA" card) and a computer, removing the existing CNC memory module and installing the new one, changing some settings to use the new memory size, and restoring and verifying the control.

Fanuc 16 & 18 Technical Summary provides brief summaries of the procedures to punch and read data, critical parameters and their settings, serial port and cable configuration information, applicable CPU boards and memory modules, and PC card backup file naming conventions.

Technical Support provides contact information for technical support and customer service.

Appendix A: Parameter Records provides tables for manually recording critical parameters before performing the memory upgrade. These parameters must be re-entered manually before restoring the parameter backups after the memory upgrade. *It is critical that they be copied down accurately.*

Installing the Memex Memory Upgrade

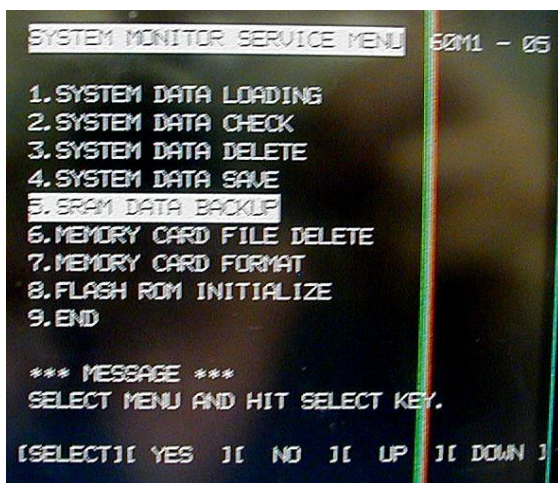
Backup All Parameters

For the 16B control, 4 Meg PCMCIA SRAM card is required (sold separately) that will allow you to easily backup your existing CNC settings. This optional 4 Meg SRAM card can be purchased from Memex, if required. The process backs up all parameters into non-volatile memory on the card. The card may then be kept as a safety backup of the pre-upgrade configuration in case a quick reversal of the upgrade is ever required, or updated after the upgrade to facilitate a quick restore of the new configuration in the event of any parameter change or loss.

Backup to SRAM PCMCIA Card

Before starting the installation, power on the control and verify that the machine tool is in good working order. If the control has an SRAM system error and is inoperable, then you will have to replace your SIMM with the new one, and restore the information from existing parameter backups. Please read the attached Addendum at this time.

1. Home the machine before performing the memory upgrade.
2. Insert the 4 Meg SRAM PC card into the main CPU (A16B-3200-0010) slot 1, facing left. It goes in only a short way and can be done with the power ON or OFF.
3. Power ON the control holding down the right-most soft key and the 7th soft key to its left counting the right-most key as 1. It is usually the other Chapter key (except with colour monitors) under the monitor. The SYSTEM MONITOR SERVICE MENU screen should appear.



Main IPL Screen When Powered Up Holding Right Soft Key (Under Monitor) and 7th from Right

4. If the card has not been used in a Fanuc before, use the soft key {DOWN} and optionally select #5 to format it. **(Do NOT select 8. FLASH ROM INITIALIZE as all system files will be lost.)**
5. Select the SRAM DATA BACKUP line and press SELECT to change to the Backup screen.

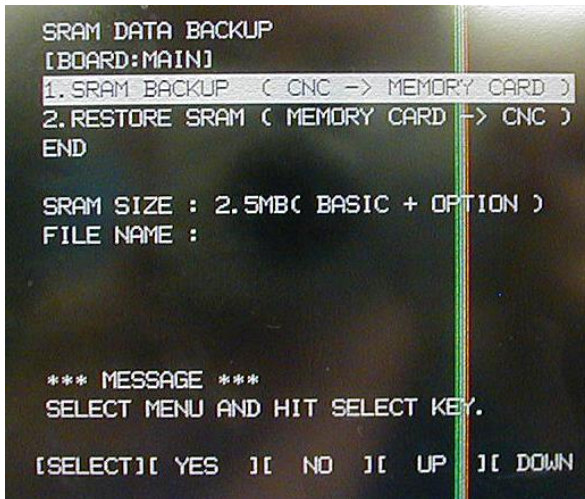
Note: If the CNC has an Option board that also has SRAM, it needs to be backed up as well. An intermediate menu will appear in this case. Select each line and backup up the files indicated (if present).

BOOT SLOT CONFIGURATION 60M1-09			
NO.	BOARD	F-ROM	SRAM
0.	MAIN	6MB	0.5 MB
3.	OPT3		128 KB
4.	LCB		512 KB

*** MESSAGE ***
SELECT SLOT AND HIT SELECT KEY

Sample Optional Intermediate SRAM Backup Menu

To start use DOWN and select MAIN to see the screen below:



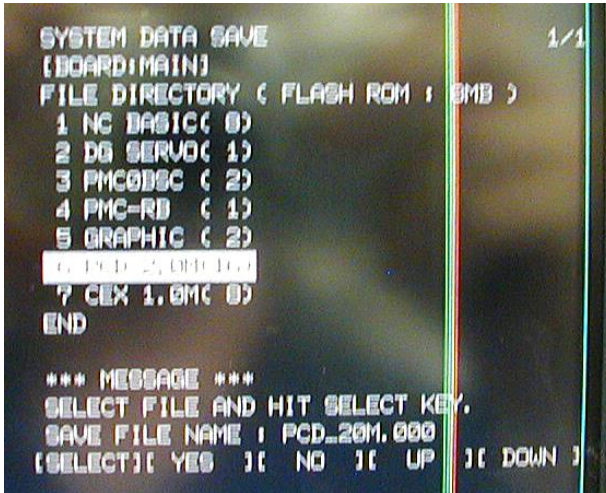
- Using the soft keys, select SRAM BACKUP. It will ask you if you want to save the SRAM settings. Press YES to save the necessary files.
- Back out of that menu by using the soft keys to select END. (Once at the main menu you can check the contents of your SRAM card by selecting MEMORY CARD FILE DELETE and checking out what files are available for deletion - obviously back out of this menu without deleting anything after looking.)
- On the main screen, go to the bottom and select END, then press **YES** to leave this area and reboot the control. The files backed up to the SRAM card may be checked via a notebook PC's PC card slot. Filenames should match the ones listed on page 18.

CAUTION:

*Take care with the "initialize **Flash** memory option" from the SRAM boot screen ...* It will clear your operating system files, including your ladder. If you have a backup and have installed the new Memex FROM board, this process is OK to do at that time.

9. Once you have safely backed up the SRAM onto a laptop, proceed to backup the firmware double-checking that all files are accounted for. Use Item **4. SYSTEM DATA SAVE**.

This may take several reloads on the PCMCIA SRAM card as it can only handle 4, 6 or 8 Megs of the possible 8 Megs + 2.25 Meg SRAM backup you need to do. Make sure your computer can read the PCMCIA Type II SRAM card first!



From SYSTEM DATA SAVE Screen proceed to backup each file separately. You may have to move files from the PCMCIA SRAM card to your laptop to complete this step.

NOTE:

When you remove the old FROM board you will not lose the FLASH System files, only the Additional SRAM (if present on the board).

The Fanuc 16MB with the 0010 CPU card has 256k of battery backed SRAM on the main CPU card, then the FROM module has additional memory.

The PCMCIA SRAM backup procedure is very secure, just make sure that you have a copy of the 9000 macro programs (you may have to unprotect them with parameter P3202.4 and P3202.0 to 0 to *unprotect* part programs in the 8000 and 9000 series)

Optional Record Settings & Options

Settings

1. Using the forms on page 28, record the SETTING (“Handy”) screen data. (To display the parameters, Press the **SYSTEM** **PARAM** soft keys. To skip to specific parameters, enter the number of the parameter to be displayed and press **NO.SRH.** The screen can also be changed using the cursor or page key.)
2. Write down the serial port settings in parameters 20, 100-103, 111-113 and 121-123. (131-133 if using Channel 3, i.e. RS-422 link.)
3. Using the forms on pages 22-26, record the NC Service Parameters, PC Parameters, and Data Tables.



Fanuc RoboDrills often need Memex FROM boards.

Optional Manual Backup to Computer

1. If not already connected, connect the CNC to a PC with a serial data cable (see “Standard FANUC Serial Cable”, page 24). You will need a communications program (such as a DNC system or at least a terminal program) to download and upload the parameters. Make sure the software’s communications settings match the CNC’s.

NC Parameters

2. Get the computer ready to receive the NC data.
 - Select EDIT mode.
 - Press softkeys `SYSTEM` `PARAM` `OPTR` `>` `PUNCH` `EXEC`

Pitch Error Compensation

3. Get the computer ready to receive the Pitch Error Comp. data.
 - Confirm that EDIT mode is selected.
 - Press `SYSTEM` `>` `PITCH` `OPTR` `>` `PUNCH` `EXEC`

Macro Variables

4. Get the computer ready to receive the macro variables.
 - Confirm that EDIT mode is selected.
 - Press `OFFSET` `>` `MACRO` `OPTR` `>` `PUNCH` `EXEC`

Part Programs

5. Set parameter 3202.4 and 3202.0 to 0 to *unprotect* part programs in the 8000 series and 9000 series. Get the computer ready to receive part programs.
 - Confirm that EDIT mode is selected.
 - Press `PRGRM` `>`
 - Type O-9999 and press `PUNCH` `EXEC`.

Tool & Work Offsets

6. Get the computer ready to receive the Tool Offset data.
 - Confirm that EDIT mode is selected.
 - Press `OFFSET` `OPTR` `>` `PUNCH` `EXEC`

Get the computer ready to receive the Work Offset data.

- Confirm that EDIT mode is selected.
- Press `WORK` `OPTR` `>` `PUNCH` `EXEC`

PMC Data

7. The PMC communications settings are separate from the normal serial port settings. Set them to match the settings for other serial communications so the PMC data can be easily backed up.
To set the communications settings and output the data:
 - Select MDI mode.
 - Press **OFFSET/SETTING**, then the **SETTING** softkey.
 - Cursor to PARAMETER WRITE and input a 1. Ignore alarm.
 - Press **SYSTEM** key, then softkeys **PMC** **PMCPRM** **KEEPRL**.
 - Cursor to K17 and set bit 1 to **1** (change no other bits).
 - Select EDIT mode.
 - Press **<> I/O**.
 - Set the parameters to match those of the normal I/O channel.
 - For CHANNEL NO, input **1** for channel 1.
 - For DEVICE, press softkey **FDCAS**.
 - For KIND DATA, press softkey **PARAM**.
 - For FUNCTION, press softkey **WRITE**.
 - For FILE No, enter the file name @PMC and press **INPUT**.
 - Press softkey EXEC. The PMC parameters will be output.
 - After output finishes, set PARAMETER WRITE back to **0**.
 - Press **RESET** to release alarm 100.

Once downloaded this PMC file must be edited before it can be reloaded. Load the file just downloaded into an editor and delete the 12 or so characters before the first percent sign (these are feed characters and will cause a 930 System Alarm when file is reloaded).

NOTE: On some Makino machines the PMC parameters may be locked with LOCK RELEASE. Type MSYS or PRO then INPUT. Also on some Makino machines the M231 code can be used to copy the PMC data into program 06666.

- In MDI mode, press PROGRAM M 2 3 1 INSERT
- Press CUSTOM then PARAM or MS
- Press MENU PAGE then LOCK RELEASE
- Type P R O or M S Y S then INPUT
- Press CYCLE START

The PMC data will now be written to part program O6666. Backup this program to the computer the same way as other part programs.

Also backup CAP data and Graphics & Animation parameters if present: Edit mode, press **OFFSET** key, then **CAP.TL >** **PUNCH**.

Upgrade Memory Size Option Parameters

Certain NC parameters contain bits that must match the size of memory installed, and must therefore be upgraded before being restored.

Note:

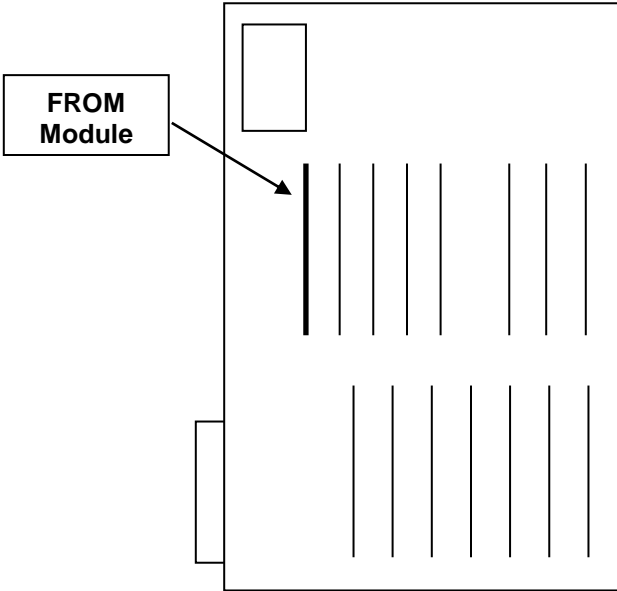
- For FS16MB (FROM) maximum memory is enabled by setting parameter P9921.0 to bit 4=0 + P9943.6=0 + P9953.0=0 + P9953.1=1.
- For FS16 MAPPS on a Mori Seiki, get “D” Params in Custom Key, Input, type “76543210” Input and Yes (to write Parameters), “95” Change D453 & D458 bits, Input decimal as binary.
- For FS16 Sub-Memory set parameters P9950.1=320, P9950.0=640, P9950.5=1280 + P9949.7=Add. Sub-Memory for PP/S Edit2 Option

Note: If you have trouble clearing the Additional SRAM and still get Parity Alarms, you can download a blank 512k SRAM backup file from our web site at: http://www.memex.ca/products/SRAM2_5D.FDB

This file can be renamed to whatever the control can read in the restore screen. This file copied and renamed the number of times necessary will effectively erase (write to all zeros) the Additional SRAM Card.

If you have a simple controller (no Option or Loader boards) holding down **RESET + DELETE** will clear every board).

A16B-3200-0010



A16B-3200-0010 Fanuc 16B CPU Card Layout Example



Install the New Memory Module

Make sure that there is a current backup of NC Parameters, Pitch Error Compensation, Offsets, PMC Parameters and Part Programs as explained in “Backup All Parameters” starting on page 2. *The following steps will delete all data from your control.*

Remove CPU

1. With the Fanuc control powered off and the Emergency Stop button depressed, access the main masterboard. Find Slot 1, second from the right, labelled as the Main CPU board. Locate the tabs on the top and bottom. Squeeze the tabs and carefully pull the board out. The unit can often be removed with all the cables attached if the shield clamps are loosened, otherwise carefully label the cables and the points they connect to so they can be correctly reconnected later, and remove cables as necessary.

Install Memory Module

2. Locate the existing memory module – see diagram on page 9 or refer to your Maintenance Manual. It is labelled “SRAM”. Remove it carefully by opening the small tabs and tilting it towards the back. Insert the new module the same way (*note the keyway*). It should click into place. Now put the CPU board back into its slot and make sure all cables are correctly connected, well seated and secured.

Initialize Memory Module

3. With the **□** & **DELETE** keys depressed, power on the control, and keep the **□** & **DELETE** keys depressed until you see the memory starting to clear. This will clear the entire memory module. If the control will not power on at this point, check that main power is restored and the cabinet door interlock is bypassed. The control may take a few seconds to clear the entire memory. Alternatively, try powering on with **RESET + DELETE** to delete all memory on all boards (not just our Additional SRAM).

NOTE: If you have a Loader OP3 board, it too will be cleared in this procedure. It seems that TT controls are not affected however, as the L/R switch selects the side to clear.

The Memex Additional SRAM memory module has now been initialized and all parameters must be restored.

Restore The Control

Restore Settings & Options

Before restoring parameters from backup copy, some of the parameters recorded on pages 28-32 must be restored manually. Enter SETTING (“Handy”) screen data and serial communications parameters.

Restore From SRAM PC Card or from Computer

The remaining parameters may be restored from either the SRAM PC card or the computer. Choose one of the following two options:

Option 1: Restore From SRAM PC Card

1. Before the files on the SRAM card can be restored, they must be renamed to correspond to the new memory size. See page 25 for naming conventions and instructions on renaming the backup files.
2. Insert the SRAM card into the main CPU slot 1, with the face pointing left. It goes in only a short way and can be done with the power ON or OFF.
3. Power ON the control holding down the two right-most soft keys under the monitor. The SYSTEM MONITOR SERVICE MENU screen should appear.
4. Select the SRAM DATA RESTORE line to change to the Restore screen.
10. Cursor to and select RESTORE SRAM. Press to restore the files.
11. Back out of that menu by using the soft keys to select END.
On the main screen, go to the bottom and select END, then press to leave this area and reboot the control.

CAUTION: *Never initialize the **Flash** memory from the SRAM boot screen.* - It will clear your operating system files, including your ladder. It is OK to initialize the **SRAM** card however. To see the files already on the SRAM card, select the “Delete Files” menu item, view them, but then exit.

Enable the Memory Size Option:

1. Check the system – it should boot normally at this point. Note that the system should be exactly as it was before in terms of functionality and memory size. (See note below regarding SRAM RESTORE if not.)
2. Make sure that any protected 9000 or 8000 macro files are serially backed up as you will lose them during the option upgrade.
3. Now manually change the bit to enable the additional memory. To do that in MDI, go into SETTING, page up until you find PWE (Parameter Write Enable) and set it to a 1. You will get an alarm. Then go to SYSTEM, hit PARAM, type 9953 NO.SRCH and proceed to set bit 1 to a 1 (xxxx xx1x where x is don't care). P9953.1=1 is another way to express this. It will ask you about deleting all part programs, hit DELETE to continue. Reset PWE and cycle the power off and on.
4. It is a good idea to delete other bits not needed at this time – so make sure P9943.6=0, P9953.1=0, P9921 bits 4 to 0=0 (e.g. P9921=xxx0 0000).
5. Check your new memory in EDIT at PROGRAM, DIR ... I would also suggest powering on with the "0" + "DELETE" keys held to clear all program memory to be safe. You should be up and running now with 2 Megs or 5120 Meters of part program storage. I would suggest another MEM card SRAM backup in the new state when all is proven to be operational.
6. Congratulations - You are done...

SRAM RESTORE APPENDIX

If the system does not come up properly after reloading all FROM and SRAM files, or if the SRAM gives a 915 SRAM parity alarm that is not fixed with deleting the part program area (0+DELETE), then you will have to restore the SRAM files from the old card to the new one – with a name change.

Interestingly, Fanuc looks at the FROM card and automatically looks for SRAM files fitting for that card – not for the old one.

As such, you will have to rename the SRAM backup files from whatever they were to the following:

Old Name:

SRAM0_5A.FDB to SRAM2_5A.FDB (both are 512K)

Note that if you cannot clear the CNC memory normally (“O”+DELETE), then simply download a blank 512k FS-16 file from our web site and rename it to the missing 4 files (SRAM2_5B.FDB, to SRAM2_5E.FDB). The reloading of blank files will effectively clear the memory of the CNC.

http://www.memex.ca/products/SRAM2_5D.FDB

Interesting enough, the Fanuc will error out saying that not all the files loaded (as it expects 5 half Meg files) but that is OK. Reboot and you will be ready to go.

Option 2: Restore From Computer

1. Set the PWE (set parameter 8000.0 to 1).

Restore NC Parameters

2. Get the computer ready to send the NC data. Make sure its serial communications settings match the CNC’s corresponding settings.
 - Select EDIT mode, and turn the Program Protect key OFF.
 - Press SYSTEM PARAM OPTR > READ EXEC .
 - Send the data from the computer.
 - Power the CNC off & back on after upload finishes. Alarm 300 is normal at this stage if Absolute Pulse Coders exist.

Restore PMC Data

3. Get the computer ready to send the PMC data. Make sure the CNC is ready to receive the PMC data - see “PMC Data” on page 7. Note that some machine tools require that the Ladder be stopped before all the Data Tables can be loaded. If so, press SYSTEM, PMC, RUN/STOP, >, STOP. If the control has special options, such as a 5th axis table, you might need to power on holding “-“ & “.” and then select a boot without the ladder running.

Load the PMC data as follows:

- Press OFFSET SETTING.
- Select MDI mode and set PWE on (set #8000.0 to 1).

- Press **SYSTEM** **PMC** **PCMPRM** **KEEPRL**.
- Set K17 bit 1 to **1** (change no other bits in K17).
- Select Edit mode. If required, set #K900 to 10.
- Press **<** or **>** to find **I/O**. For CHANNEL NO, input **1**.
- For DEVICE, select **FDCAS**.
- For DATA KIND, press **PARAM**.
- For FUNCTION, press **READ**. For FILE NO, press **2**.
- Press **<** **SPEED** and check serial settings for FDCAS.
- Press **EXEC** and send PMC data from the computer.

On some Makinos the PMC data is restored via program O6666. If it was backed up via O6666, restore O6666 from the computer and call it up in Memory mode, then

- Press **CUSTOM** then **PARAM** or **MS**.
- Press **MENU PAGE** then **LOCK RELEASE**.
- Type **P** **R** **O** or **M** **S** **Y** **S** then **INPUT**.
- Press **CYCLE START**.

PMC parameters will be written into the registers. Lock the parameter register by pressing LOCK RELEASE. Turn power OFF and ON, and then delete O6666.

Restore Pitch Error Compensation

4. Get the computer ready to send the Pitch Error Comp. data. Confirm EDIT mode is selected.
 - Press **SYSTEM** **>** **PITCH** **OPTR** **>** **READ** **EXEC**.
 - Send the data from the computer.

Macro Variables

5. Upload the Macro Variables as a part program. Execute the program in Memory mode and then delete it.

Restore Part Programs

6. Set parameter 3202.4 and 3202.0 to 0 to *unprotect* part programs in the 8000 and 9000 series.
 - Confirm EDIT mode is selected.
 - Press **PRGRM** **OPTR** **>** **READ** **EXEC**.
 - Send the part programs from the computer.

Restore Offsets

7. Get the computer ready to send the Tool Offset data.
 - Confirm EDIT mode is selected.
 - Press **OFFSET** **OPTR** **>** **READ** **EXEC**.
 - Send the Tool Offset data.

Get the computer ready to send the Work Offset data.

- Press **WORK** **OPTR** **>** **READ** **EXEC**.
 - Send the Work Offset data.
8. Reload CAP data and Graphics & Animation data if present.
- In Edit mode, press **OFFSET** **CAP TL** **>** **READ**.
9. Reset Absolute Pulse Encoders, if necessary.
- Power on holding **P** & **CAN**.
 - Manually home the machine.
 - If Alarm 300 persists, then:
 - Select MDI mode and set PWE on (set #8000.0 to 1).
 - Press **SYSTEM** **PARAM**. Set #P1815.4 to 1 on all axes.
 - Reset PWE (#8000.0 to 0) and power the control off & on.
 - Manually home the machine again. Set PWE.
 - Press **SYSTEM** **PARAM**. Set #P1815.4 to 1 on all axes.
 - For Relative Position, set #P3104.3 to 1.
 - Reset PWE. Press **RESET**.

Verify The Control

Once the upgrade is completed, including the reloading of all parameters, test the machine via the following procedure.

IMPORTANT: *Do not move the machine until you are sure all parameters have been restored.*

- Change to either MDI mode or Program mode.
- Home all axes, tool changers and pallets.
- Check spindle functionality through all speeds and gear ranges.
- Check Clockwise and Counter-clockwise spindle rotation with M3 and M4 commands.
- Check the tool changer. Be sure that the tool received was the tool requested and that the carousel rotates in the proper direction.
- Check the pallet changer (if applicable). If the machine requires special custom macros for a pallet changer or tool changer, be sure that they are present.

Note:

At the end of this process, we recommend that one final SRAM backup be made using the PCMCIA SRAM card in IPL mode. By this point the machine is working with the new memory (2 Megs).

Installation Checklist

- Check machine - Power ON and check for problems before you start.
- Read Addendum.
- Backup settings, options, parameters and programs.
- Power OFF.
- Depress EMERGENCY STOP.
- Change SIMMs.
- Power On the Control holding & **DELETE** to clear all.
- Set PWE to enable.
- Restore settings.
- Restore parameters & part programs.
- Change memory size option.
- Reload Macro Programs O8000 and O9000 series.
- Check the parameters and machine operation thoroughly.

Complete.

Fanuc 16 Technical Summary

Punching

NC Parameters

EDIT mode; SYSTEM PARAM
OPTR > PUNCH EXEC

Pitch Error Compensation

EDIT mode; SYSTEM > PITCH
OPTR > PUNCH EXEC

Macro Variables

EDIT mode; OFFSET > MACRO
OPTR > PUNCH EXEC

All Programs

EDIT mode; PRGRM >
O-9999 PUNCH EXEC

Offsets

EDIT mode; OFFSET (or WORK)
OPTR > PUNCH EXEC

Reading

NC Parameters

EDIT mode, Protect key off; SYSTEM
PARAM OPTR > READ EXEC

Pitch Error Compensation

EDIT mode; SYSTEM > PITCH
OPTR > READ EXEC

All Programs

EDIT mode; #3202.4 & .0 = 0; PRGRM
OPTR > READ EXEC

Offsets

EDIT mode; OFFSET (or WORK),
OPTR > READ EXEC

Initializing

Erase Entire Memory

Power On holding O & RESET
with Write Protect Key off

Typical Serial Communications Parameter Settings

NOTE: For Channel 3, see Parameter Manual, Fanuc #62450E, section 4.2 (5).

Parameter	Description	Setting
0020	I/O Channel	0 or 1 = Chan. 1, 2=2
0100.1	Tape Vertical Check – all channels	0 = No TV Check
0100.3	EOB format in ISO code – all chan.	1 = CR, LF, LF (0 = LF)
0100.5	DNC Handshake method – all chan.	1 = DC3 when buffer full
0100.7	Treatment of Null code – all chan.	1 = Ignore Nulls (0 = alarm)
0101.0	Stop Bits – Channel 0	0 = 1, 1 = 2 stop bits
0101.3	ISO or ASCII Input code – Chan. 0	0 = Auto-select (1 = ASCII)
0101.7	Feed output – Channel 0	1 = no feed (0 = feed output)
0102	Device Type – Channel 0	0 = RS232C with DC codes
0103	Baud Rate – Channel 0	10=4800,11=9600,12=19200
0111-0113	Same as 0101-0103 but for I/O Channel 1	
0121-0123	Same as 0101-0103 but for I/O Channel 2	

Applicable CPU Boards

	16-B	
	A16B-3200-0010	

Available Memory SIMM

16-B (0010 CPU)	FROM	SRAM
A20B-2902-0080	4 Meg	512 kB
A20B-2902-0081	4 Meg	0
A20B-2902-0082	2 Meg	0
A20B-2902-0090	8 Meg	2 Meg
A20B-2902-0091	8 Meg	0
A20B-2902-0092	6 Meg	0
A20B-2902-0093	8 Meg	512 kB
A20B-2902-0094	6 Meg	512 kB

Standard Fanuc Serial Port: (DB-25 Female)

1 = Frame Ground	6 = Data Set Ready
2 = Transmit Data	7 = Signal Ground
3 = Receive Data	8 = Carrier Detect
4 = Ready To Send	20 = Data Terminal Ready
5 = Clear To Send	25 = +24 Volts DC

Standard Fanuc Serial Cable:

Computer			Fanuc	
25-pin Female	to		25-pin Male	
Tx - 2	-		3 - Rx	
Rx - 3	-		2 - Tx	
RTS - 4	-		5 - CTS	
CTS - 5	-		4 - RTS	
SG - 7	-		7 - SG (Ground)	
			6+8+20 Jumpered	
9-pin Female	to		25-pin Male	
Tx - 3	-		3 - Rx	
Rx - 2	-		2 - Tx	
RTS - 7	-		5 - CTS	
CTS - 8	-		4 - RTS	
SG - 5	-		7 - SG (Ground)	
			6+8+20 Jumpered	

Fanuc Protocol: E,7,x

The standard serial communications protocol for Fanuc controls is always Even Parity and 7 Data Bits. Stop Bits are either 1 or 2, as set via parameter 101, 111 or 121, depending on the channel used. (see “Typical Serial Communications Parameter Settings” on page 16).

NOTE: SRAM PC Card File Naming Conventions

The files saved on the SRAM PC card during backup are named according to a set of naming schemes, depending upon memory module size. When performing a restore operation after a memory upgrade, files backed up from a different memory size will be ignored, since the directory looks for filenames according to the scheme for the current memory size. Therefore the backup files must be renamed to match the naming scheme of the new memory size. A computer with PC card reading capability is required to access and rename the files on the card. The naming schemes for each memory size are as follows:

Memory PC Card Backup File Naming Scheme

512K	SRAM0_5A.FDB
1.0MEG	SRAM1_0A.FDB, SRAM1_0B.FDB
1.5MEG	SRAM1_5A.FDB, SRAM1_5B.FDB, SRAM1_5C.FDB
2.0MEG	SRAM2_5A.FDB, SRAM2_5B.FDB, SRAM2_5C.FDB, SRAM2_5D.FDB, SRAM2_5E.FDB

Example:

When upgrading from 1280 Meters (512k) to 5120 Meters (2 Megs), the files on the card would be renamed from “SRAM0_5A.FDB” to “SRAM2_5A.FDB”. The 4 remaining files in the 2 Meg naming scheme will be created by the control, after you abort the load after the first file.

Memex Technical Support & Service

In case of technical difficulty with the memory upgrade procedure, please contact your Memex dealer, or call Memex Automation Technical Support at **1-905-635-3042**.

Appendix A of this manual may be used to record technical information, service advice, etc. as needed.

If you have any other questions or concerns, need answers to technical questions, or need information about Memex products and/or services, please contact your local Memex dealer, or contact Memex Automation at:

Memex Automation

105 – 3425 Harvester Rd.,
Burlington, Ontario Canada L7N 3N1
Phone: 1-905-635-1540 Fax: 1-905-631-9640
www.memex.ca

sales@memex.ca
support@memex.ca



Fanuc 16MB with PCMCIA SRAM in the MEM card slot on the A16B-3200-0010 CPU card.

Appendix A: Parameter Records

Fanuc System 16/18 Machine Parameter Worksheet

Company: _____ Machine No.: _____ Date: _____

Fanuc Software Version: _____ Main CPU Board No.: _____

Setting Data Screen

Parameter Write	Type Format
TV Check	Sequence Stop (Program No.)
Punch Code	Sequence Stop (Sequence No.)
Input Unit	X Axis Mirror
I/O Channel	Y Axis Mirror
Sequence No.	

Serial Communications Parameters **Note:** Grey area (#131-132) are for Channel 3, normally used for RS-422 link.

All Channels		Channel 1		Channel 2		Channel 3	
Par.#	Value	Par.#	Value	Par.#	Value	Par.#	Value
20	101	111		121		131	
100	102	112		122		132	
	103	113		123		133	

NC Service Parameters

Par.#	Value	Par.#	Value	Par.#	Value	Par.#	Value
9900		9925					
9920		9926					
9921		9927					
9922		9928					
9923		9929					
9924		9930					

PC Parameters

		Timers			Spare		Counters			Keep Relays	
No.	Data	No.	Data	No.	Data	No.	Preset	Current	No.	Data	
1		21				1			1		
2		22				2			2		
3		23				3			3		
4		24				4			4		
5		25				5			5		
6		26				6			6		
7		27				7			7		
8		28				8			8		
9		29				9			9		
10		30				10			10		
11		31				11			11		
12		32				12			12		
13		33				13			13		
14		34				14			14		
15		35				15			15		
16		36				16			16		
17		37				17			17		
18		38				18			18		
19		39				19					
20		40				20					

"No. of Data" row 0 indicates how many data tables there are. The remaining rows in that column indicate how many entries are in each table. Page down through each table and record all the data in each, using the form on the next two pages - photocopy the form before starting, if more are needed.

Data Tables

No.	Parameter	No. of Data	Offset	Special	Table No. 0
0	-----		-----	-----	-----
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

No.	Data	No.	Data	No.	Data	No.	Data
0		0		0		0	
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
0		0		0		0	
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
0		0		0		0	
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	

5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
0		0		0		0	
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
0		0		0		0	
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
0		0		0		0	

Notes

Notes



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Thank you for choosing
Memex Memory