

JUKI®

**Programming Software for
Computer-controlled Sewing Machines**

PGM-20

INSTRUCTION MANUAL

Foreword

Congratulations on your purchase of a JUKI programming software for computer-controlled sewing machines PGM-20.

To get the most out of the functions of the PGM-20, it is necessary to use the programming software correctly. So please read this Instruction Manual carefully before using it. We hope you will enjoy using it for a long time. Please read also the brief operation manual installed in the programming software and description of help functions for how to use the programming software.

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1 GENERAL

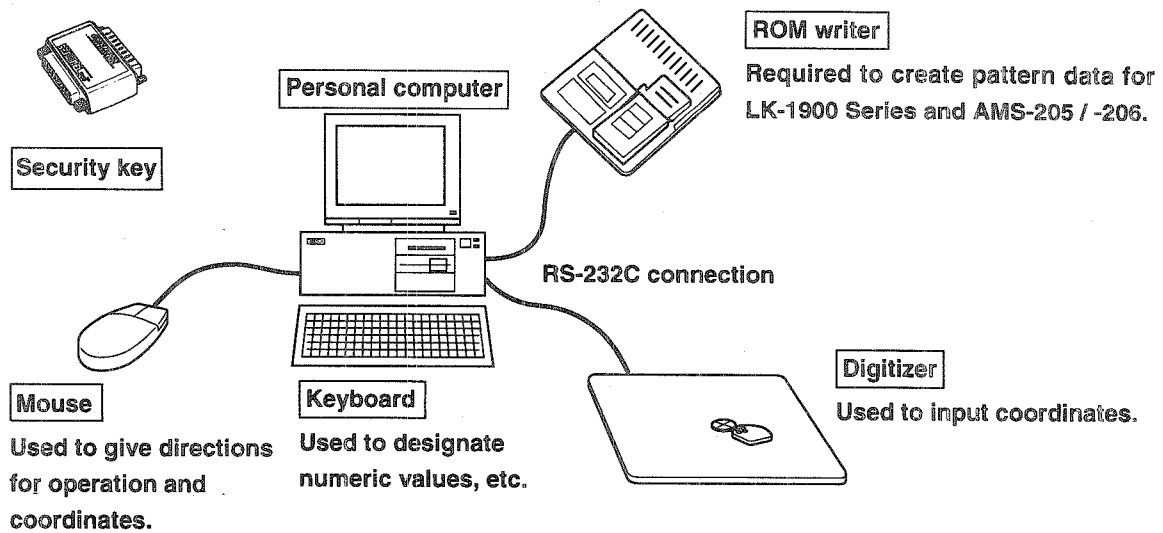
The PGM-20 model of programming software is intended to create pattern data for AMS Series and AVP Series of JUKI computer- controlled cycle machines, LK-1900 Series of electronic bartacking machines. It is provided with many different programming functions to allow the operator to easily create pattern data using the mouse and digitizer in an interactive manner while observing the display given on the screen. In addition, PGM-20 is able to edit pattern data created with the conventional programming device (PGM-10B, PGM-5 / -6).

1.1 Features

- ① The PGM-20 is able to read/write sewing data for AMS, AVP and LK-1900 Series industrial sewing machines. It is also able to modify data originally created for the AMS to be adaptable to the AVP and output the modified data as sewing data for the AVP. In this case, however, configuration points and needle entry points can deviate if the resolution of the modified sewing patterns is different from that of the original one. It is also necessary to modify data on sewing range and mechanical control commands so as to match the AVP model that uses the sewing data originally created for the AMS model.
- ② The PGM-20 provides improved operability for easier and quicker programming works. The PGM-20 achieves upgraded operability with its many different kinds of input and edit functions to allow the operator to conduct most operations with the mouse. Any desired function can be invoked by selecting the corresponding button. Designations of functions corresponding to the buttons are displayed on the screen to enable the operator to select the function in need.
- ③ Input of configuration data and sewing data and edit of configuration points and needle entry points can be easily changed over to deliver speedy programming works.
- ④ Configuration points and needle entry points can be edited by specifying the location of the point to be edited with the mouse. Position of a configuration point or needle entry point can be specified with the mouse while checking stitch-by-stitch display on the screen. The position of a configuration point or needle entry point can be finely specified by inputting coordinates on the keyboard.
- ⑤ The PGM-20 increases working efficiency of the sewing machine. The monitor-type external programming device, being different from the main unit programming device of the sewing machine, permits programming works to be conducted for a desired period of time without interrupting sewing works, thereby increasing working efficiency of the sewing machine.
- ⑥ The PGM-20 enables sewing data management by a personal computer. Sewing data created can be stored on the hard disk of a personal computer. In addition, sewing data can be visually checked on the screen of a personal computer for easier management of sewing data.

2 CONFIGURATION AND CONNECTION OF EQUIPMENTS

Equipments configuration, when all functions of the PGM-20 are used, is illustrated below.



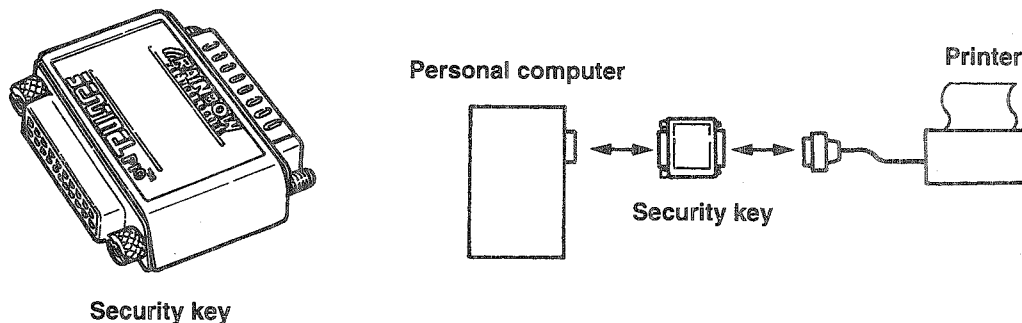
No.	Equipment	Remarks
1	Main unit of personal computer	The PGM-20 operates on an IBM PC / AT compatible.
2	Floppy disk drive	Used to output pattern data to AMS, AVP, etc.
3	CRT	Gives operating / editing screen and configuration patterns, etc.
4	Keyboard	Used to specify numerics, etc.
5	Mouse	Used to give directions for operation, input coordinate points and correct data.
6	Digitizer	Used to input coordinates from original drawings.
7	ROM writer	Used to output pattern data for LK-1900 Series and AMS-205 / -206.

When connecting the aforementioned equipments, carefully read the instruction manuals for the respective equipments.

CONNECTION OF THE SECURITY KEY

Connect the security key supplied as an accessory to the connector for the printer of the personal computer, and use the PGM-20. When the personal computer has already been connected to the printer, connect the security key directly to the personal computer and connect the printer to the rear of the security key.

PGM-20 does not work unless the security key is installed. So, be careful.



Note : Do not connect any device other than the printer to the rear of the security key.

2.1 Connecting the digitizer

Establish output format for the digitizer to be connected to the personal computer so that it matches the format of the PGM-20. Refer to the specifications for the PGM-20 for its format.

Then, designate the communication-related items of the digitizer as described below.

No.	Item	Description of setting	Remarks
1	Output format	Establish the output format referring to the specifications. *1	
2	Data transmission mode	Stream mode	
3	Data transmitting speed	20 data / sec.	
4	Resolution	0.1 mm	
5	Transmission terminator	Established in CR / LF	
6	Communicating speed	9,600 bps	
7	Data length	8-bit	Can be changed *2
8	Parity bit	ODD (odd parity)	Can be changed *2
9	Stop bit	2-bit	Can be changed *2

*1 Output format can be changed over between 5 bytes and 8 bytes by the setting on the PGM-20.

*2 It can be changed by a certain degree on the PGM-20.

Then, actuate the PGM-20 and invoke the "Condition setting / Device type" contained in the menu bar to set the following.

No.	Item	Description of setting
1	COM connection	Specify the communications port number to which the digitizer is connected.
2	Output format	Set the output format to that of the digitizer to be connected to the personal computer.
3	Data length	8-bit
4	Parity	ODD (odd parity)
5	Stop bit	2-bit
6	Size	Set the size to that of the digitizer to be connected to the personal computer.

2.2 Connecting the ROM writer

ROM writer, PKW-1100 (Pecker-11) (manufacturer : AVAL DATA CORPORATION) differs in connecting method and operating procedure from any other ROM writer.

In the case where Pecker-11 is connected to the PGM-20, the PGM-20 directly controls input/output under the remote control mode. In the case where any other ROM writer is connected to the PGM-20, you have to create a file to be used for transmission to the ROM writer on the PGM-20 and manually perform transmission.

To connect Pecker-11, set Pecker 11 as shown in the table below.

No.	Item	Description of setting	Remarks
1	Communicating speed	9,600 bps	Recommended value but can be changed *
2	Data length	8-bit	
3	Parity bit	ODD (odd parity)	
4	Stop bit	2-bit	
5	Data flow control	RTS / CTS control	
6	Type of record	INTELLEC HEX	
7	Kind of ROM	Differs with the model of sewing machine to be used ; AMS-205 / -206, LK-1900 Series. Adjust the setting to the ROM to be used.	
8	Receiving abort time	Set to 5 to 10 seconds.	
9	Protocol selection	Specify as "control code is not sent to external devices."	

* It can be changed by a certain degree on the PGM-20.

Every time you turn ON the power to the Pecker-11, specify the following.

No.	Item	Description of setting
1	Offset address	Specify the "0."
2	Operation mode	Specify the terminal mode or the on-line mode.

Then, actuate the PGM-20 and invoke the "Condition setting / Device type" contained in the menu bar to set the following.

No.	Item	Description of setting
1	COM connection	Specify the communications port number to which the ROM writer is connected.
2	Format	Specify INTELLEC extended HEX.
3	Communicating speed	Set it to 9,600 bps. This value should be same with the setting established on the ROM writer.

In the case where any ROM writer other than Pecker-11, establish settings for the ROM writer and Windows95 according to the explanation of the ROM writer. In this case, no setting is required to be established for the PGM-20.

2.3 Setting Windows95

For the PGM-20, Windows 95 COM port is used for the connection of the digitizer, ROM writer, etc. to perform communications with them.

In the case where an added RS-232C adapter card is used for the connection of the digitizer, ROM writer, etc., check the system property on the control panel to be sure that the COM port has been correctly set. Contact the manufacturer of the personal computer or the added adapter card for details.

It should be remembered, for the PGM-20, communicating speed of the digitizer and the number of data bits of the ROM writer are fixed from the system's sake. They are re-established in the system after the PGM-20 has started. This means that the port communicating speed and the number of data bits will never change even if you establish any of them differently with the system property on the control panel.

In addition, set the size of font of the property to the small one.

When the PGM-20 starts while the size of font is kept large, the letters may not be fully indicated.

Set the printer to be normally used using the "Printer / Addition of printer" contained in the start menu.

Set the printer without fail even when the printer is not connected.

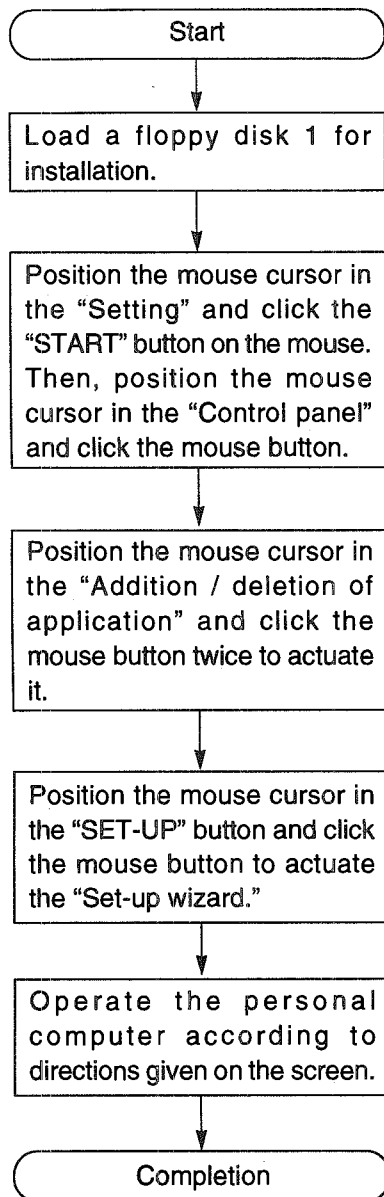
3 SETTING THE PGM-20 WHEN PUTTING IT INTO SERVICE

For the PGM-20, initial values have been established for most of the items. You can use the PGM-20 with no additional operation, as long as no change of the settings is required to be made. If the setting of any of the items has to be changed to match the personal computer used, invoke the "Condition setting / Device type" contained in the menu bar to re-establish a setting for the item. In addition, appropriately establish settings for items contained in "Condition setting / Sewing conditions."

No.	Item	Description of setting
1	Digitizer	Refer to the description given in "Connecting the digitizer."
2	ROM	Refer to the description given in "Connecting the ROM writer."
3	H / D storage directory path	Specify the name of the drive and directory to be used to store data on the hard disk using the PGM-20. PGM-20 will refer to this directory when storing data on the hard disk. Example) C : ¥PGM
4	F / D drive	Specify the name of drive to be used to output data to a floppy disk.
5	ROM type	Specify the kind of ROM installed when using the ROM transmission function. In case of the EP-ROM, overwriting of the same pattern number is not possible.
6	Setting time-out	This setting specifies the length of time of the time-out when communicating with the ROM writer. Change the value to a larger one if the time-out error occurs in the ROM input, ROM transmission or ROM data list. If the value is excessively large, the transmission time will be lengthened. So, be careful.

4 INSTALLING / UNINSTALLING THE PROGRAM

Install the PGM-20 in the system following the steps of procedure described below.



When the PGM-20 is installed in your personal computer, "JUKI PGM-20" group will be created in the start menu program within which icons corresponding to execution programs and attached files are created. (Group name and execution module name are created with version number attached. Those names appear in this Instruction Manual with the version number omitted.)

Read first the "Brief operation manual" for operating procedures. This file has been created with Microsoft WORD. Even if Microsoft WORD is not available on your personal computer, the file can be read using Word Pad supplied for Windows95.

To actuate the PGM-20, click on the "START" button and specify "JUKI PGM-20" in the "JUKI PGM-20" group contained in the Start menu program.

To delete the PGM-20, also actuate the "Addition / deletion of application," specify the PGM-20 from the menu list and click on the "ADD / DELETE" button. Then, operate the personal computer according to the directions given on the screen.

When installing under the re-installing or version-up, delete the PGM-20 once. Then, perform the installing.

5 SPECIFICATIONS

Item	Description of specification		
Requirements of personal computer on which PGM-20 operates	IBM PC / AT compatibles		
	CPU	Pentium 120 MHz or more is recommended. (i486DX 33 MHz or more) A numeric data processor has to be incorporated.	
	Memory	16 MB or more (to allow smooth operation of Windows95)	
	Hard disk	50 MB or more capacity is required. Device designation "C:" has to be assigned.	
	Floppy disk	A floppy disk drive is required to have one or more drive(s) for 3.5 " 2DD / 720 KB, 2HD / 1.44 MB. A device designation from "A ." to "Z ." shall be assigned.	
	CRT resolution	CRT of "1024 x 768 dots, 256 colors or more" is recommended. (640 x 480 dots, 16 colors or more)	
	Mouse	A mouse has to be provided and operative.	
	Miscellaneous	To use a digitizer and ROM writer, each equipment has to be provided with dedicated RS-232C channel.	
OS	Windows95 of English version has to be operating.		
Maximum pattern input range	Approximately -1600 mm to +1600 mm for both X- and Y-axes (differs with the specified edit size)		
Digitizer	To be connected to the personal computer when establishing data from the digitizer. To be operated with connected to RS-232C (One of COM1 to COM4).		
	Input data format	Conforms to the below-stated type input format of the digitizer (manufacturer : GRAPHTEC CORPORATION). • Binary-1 • Binary-2	
	Mode	Stream mode of 20 points / sec. is required.	
	Resolution	0.1 mm is required.	
Data setting range	Differs with the sewing machine to be used.		
Applicable models of sewing machines	AMS B / C / D Series of large-sized pattern seamers, AVP-870 / -875 / -880 (information on material-folding control cannot be created), LK-1900 Series		
Data input/output	3.5 " floppy disk (2DD 720 KB / 2HD 1.44 MB. Use either one that matches the sewing machine to be used), hard disk, ROM writer		
ROM writer	Required when inputting / outputting data for AMS-205 / -206 and LK-1900 Series. For the remote mode, PKW-1100 (Pecker-11) (manufacturer : AVAL DATA CORPORATION) has to be used and connected to RS-232C (one of COM1 to COM4). For any ROM writer other than PKW-1100, only input / output HEX files (INTELLEC HEX format).		
Resolution	Adaptable to 0.1 / 0.16 / 0.2 mm in accordance with the model of sewing machine to be used. It should noted however configuration points and needle entry points can deviate when converting data with different resolutions.		

5.1 Output data format of the digitizer

This is to describe the data format that is input by the PGM-20 from the digitizer. The input data format conforms to the format of the digitizer (manufacturer : GRAPHTEC CORPORATION).

Similar format is also supported by the digitizer of other manufacturer's make.

Contact the manufacturer of the digitizer for the format.

5.1.1 Binary-1 format

Bit \ Byte	7	6	5	4	3	2	1	0
Byte1	0	1	F3	F2	F1	F0	XA	YA
Byte2	0	0	X5	X4	X3	X2	X1	X0
Byte3	0	0	X11	X10	X9	X8	X7	X6
Byte4	0	0	Y5	Y4	Y3	Y2	Y1	Y0
Byte5	0	0	Y11	Y10	Y9	Y8	Y7	Y6

- X0 to X11 / Y0 to Y11

They represent coordinate data.

- XA / YA

They indicate that X and Y coordinates are negative values. The PGM-20 does not use XA / YA.

- F0 to F3

They indicate that the cursor button is in the pressed state.

- Other sections

The respective sections other than those described above have to be fixed to the values given in the table above.

5. 1. 2 Binary-2 format

Byte \ Bit	7	6	5	4	3	2	1	0
Byte1	0	1	0	0	0	0	1	PR
Byte2	0	0	0	F4	F3	F2	F1	F0
Byte3	0	0	X5	X4	X3	X2	X1	X0
Byte4	0	0	X11	X10	X9	X8	X7	X6
Byte5	0	0	0	X16	X15	X14	X13	X12
Byte6	0	0	Y5	Y4	Y3	Y2	Y1	Y0
Byte7	0	0	Y11	Y10	Y9	Y8	Y7	Y6
Byte8	0	0	0	Y16	Y15	Y14	Y13	Y12

- X0 to X16 / Y0 to Y16
They indicate coordinate data.
- PR
It indicates "effective (=0) / ineffective (=1)" of coordinates. The PGM-20 does not use the PR.
- F0 to F4
They indicate that the cursor button is in the pressed state.
- Bit 0 to Bit 5 of Byte 1
The PGM-20 does not use them.
- Other sections
The respective sections other than those described above have to be fixed to the values given in the table above.

6 CAUTIONS IN USE

Take the following cautions in using the PGM-20.

- 1) In the case where data originally created for a certain model of sewing machine are output as data for any other model of sewing machine, e.g., the sewing data for AMS-D type machine are read and written as sewing data for AMS-B type machine, some commands that are not supported can be deleted or deformed, for some models of sewing machine, at the time of output.
- 2) If data for a certain model of sewing machine being edited is converted into data for any other model of sewing machine of which resolution is different from the former model, the needle position may change more or less since the locations of configuration points and needle entry points are re-computed. In the case where the data is re-converted for the original model, the original needle position may not always be restored since the locations of configuration points and needle entry points are re-computed. To prevent this phenomenon, it is recommended to save the data once in prior to execution. (If the data once saved is read, the original needle position will be restored.)
- 3) Operations responding to mechanical control commands may differ with model of sewing machine. For example, external input command or external output command can stop the sewing machine to wait for a signal from an external device or actuates an external device. Input mechanical commands while carefully checking the specifications of the sewing machine used. If the sewing machine is operated using faulty sewing data, mechanical damage can result. Carefully avoid the use of faulty sewing data.
- 4) Floppy disks to be used for reading / writing of sewing data are restricted to the type that the personal computer and OS (Windows95) can read / write in the standard procedure. Check the floppy disk to be sure that it is applicable to the sewing machine (2DD or 2HD) since the PGM-20 is not able to discriminate the type of floppy disk.
- 5) PGM-20 does not work unless the security key is installed.
- 6) If the ROM type of the "Condition setting / Device type" is wrongly set, the ROM data may be damaged. Use the PGM-20 after checking the ROM type.

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