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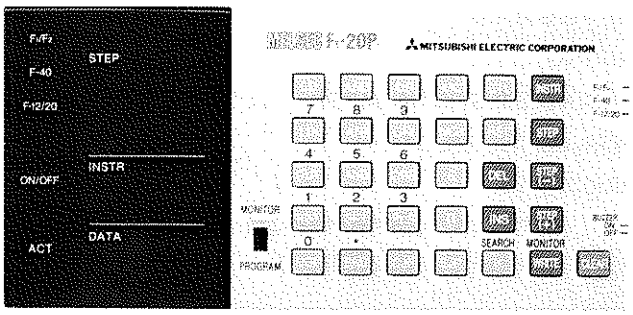
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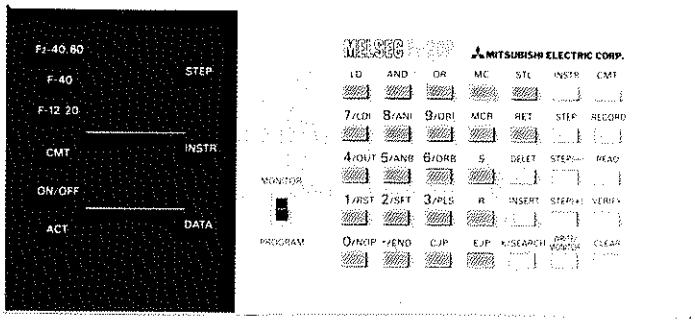
Find the *Mitsubishi Melsec F2-20P-E* at our website: *Click HERE*

MITSUBISHI Programmable Controller MELSEC F.F1.F2 SERIES

INSTRUCTION MANUAL



F1-20P-E Programming Panel



F2-20P-E Programming Panel

- This manual provides information concerning the operation procedures of the F1-20P-E and F2-20P-E Programming Panels for the use of the MELSEC F1, F2, enhanced F2 and F series Programmable Controllers.
- Users should ensure that the detail of this manual is studied and understood before attempting to use the units.
- Information concerning the programming instructions and the use of the Mitsubishi Programmable Controller is covered in a separate manual.

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1 INTRODUCTION

The programming panel is a small low cost, clip-on panel to enable all the F1, F2 and F series programmable controllers (PCs) either to write a program or to monitor the PC whilst it is operating. The programming panel is also used to write programs into the program loader.

The F1-20P-E programming panel is now available with additional features and succeeds the F-20P-E, and other model F2-20P-E is available for the audio cassette interface requirement. These are all compatible with the F1, F2 and F series programmable controllers.

The functions of F2 series are, (version 2.1 & after), highly enhanced, and accordingly the F2-20P-E is also enhanced as follows.

1. Display of step number is upgraded from 3 digit to 4 digit display.
2. Key-in buzzer is added.
3. Automatic stepping function is added.

Points of differences between each programming panel.

	New F2-20P-E	New F1-20P-E	Old F2-20P-E	Old F1-20P-E	F-20P-E
Display of step/element	separately	←	←	←	in one
Digits of display of step number	4 digits	4 digits	3 digits	←	←
CMT Interface	provided	Not provided	provided (only 1K memory)	Not provided	←
Instruction Keys	All provided	←	←	←	(Note 1)
Key-in buzzer	provided	provided	Not provided	←	←
Automatic stepping function (Note 2)	provided	provided	Not provided	←	←
Applicable PC	* All F-series	* All F-series	F, F1, F2 Some limitations in the case of enhanced F2 (Note 3)		

* All F-series means F, F1, F2 and enhanced F2.

(Note 1) Additional functions when using the F-20P-E with the F1 or F2 series PC are obtained by using the keys given in the following table on the next page.

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Key on F1-20P-E or F2-20P-E	Function	Key on F-20P-E
MC	Master Control	NOP
MCR	Master Control Reset	END
CJP	Conditional Jump	NOP
EJP	End of Conditional Jump	END
S	Set (or Forced OFF)	NOP (8)
R	Reset (or ForcedsOFF)	END (9)
STL	Step Ladder	ANB
RET	End of Step Ladder	END 575

(Note 2) Automatic stepping function

When STEP (+) or STEP (−) key is kept depressed, the same function as to depress the key repeatedly is acquired.

(Note 3) Limitations in the case of enhanced F2 (after version 2.1)

1 When the program exceeds 1,000steps, the first figure of step number is not displayed.

2 When additional state No. S800 ~ S977 is programmed, substitute key operation is necessary as follows.

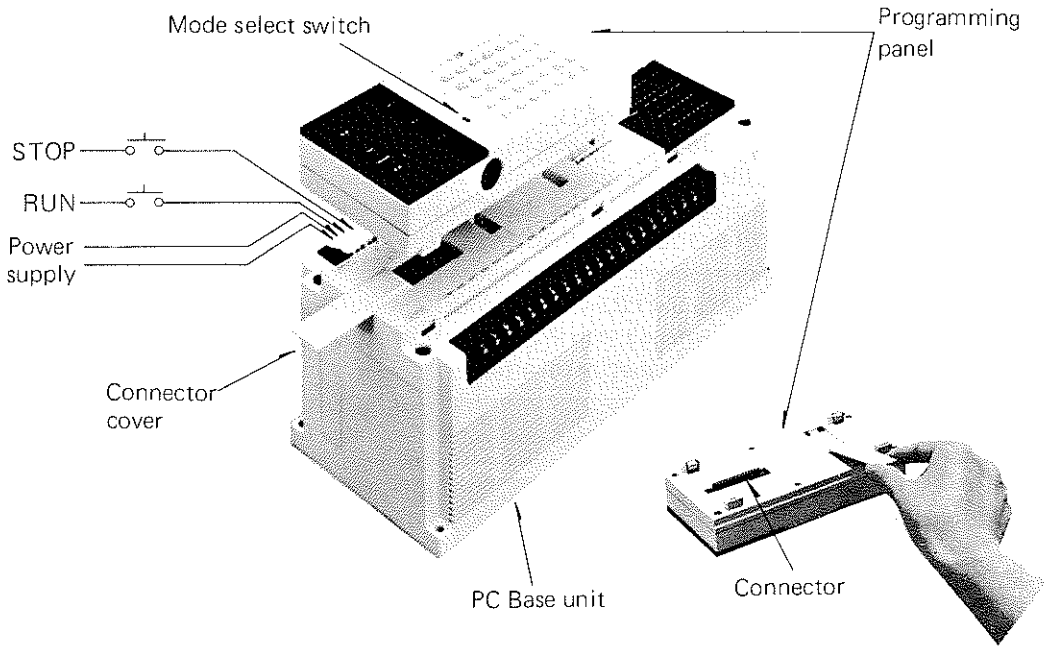
STL → ANB, S → NOP, R → END

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2 PREPARATION FOR PROGRAMMING

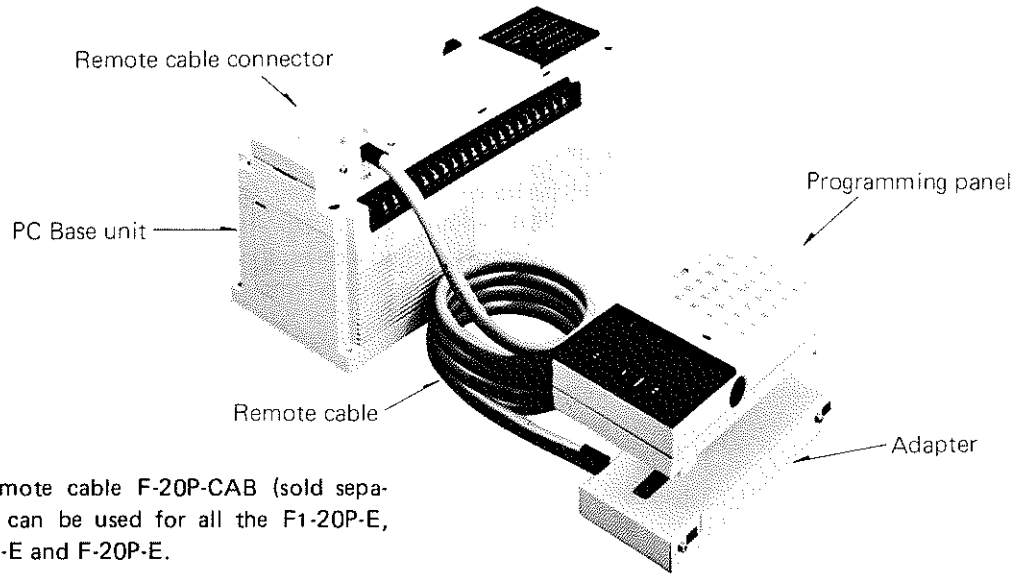
2-1 ASSEMBLY

(1) PROGRAMMING PANEL AND BASE UNIT



i) Remove connector cover from the top of the PC.
ii) Clip connector cover into recess on the bottom of the Programming Panel (for storage)
iii) Clip Programming Panel to top of PC.

(2) REMOTE PROGRAMMING



The remote cable F-20P-CAB (sold separately) can be used for all the F1-20P-E, F2-20P-E and F-20P-E.

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i) Clip Programming Panel onto remote cable adapter.
ii) Clip remote cable connector onto the top surface of the PC.

2-2 SETTING THE MODES AND SWITCHES

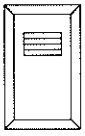
(1) RUN/STOP MODES OF PC BASE UNIT
The PC has two possible modes, RUN and STOP. IN RUN mode the PC is scanning the program and hence switching the outputs according to the program and condition of inputs. In STOP mode, scanning of the program stops and the PC may be programmed.

(2) PROGRAM/MONITOR MODES OF PROGRAMMING PANEL
Similarly the programming panels have two modes of operation, PROGRAM and MONITOR. In PROGRAM mode (with the PC in STOP mode), programs may be written, edited and read (and the PC cannot be switched into RUN mode). When in MONITORmode, with the PC in RUN mode, program operation may be monitored.

Base Unit / Programmer	Run mode	Stop mode
Monitor mode 	Program can be monitored at running condition.	States of counters or auxiliary relays with battery back-up can be monitored.
Program mode 	Instructions from the programmer are not accepted by the base unit.	Program can be written and read.

*The base unit will not run if the 'Stop' mode is changed to the 'Run' mode when the programmer is in 'Program' mode.
*When using the program loader, the program/monitor switch is invalid. Instructions by the loader unit take priority to the programmer's functions.

(3) PC SELECT SWITCH (F1-20P-E and F2-20P-E types)
The PC Select Switch (right hand end of Programming Panel) should be set as follows depending on the PC being used;



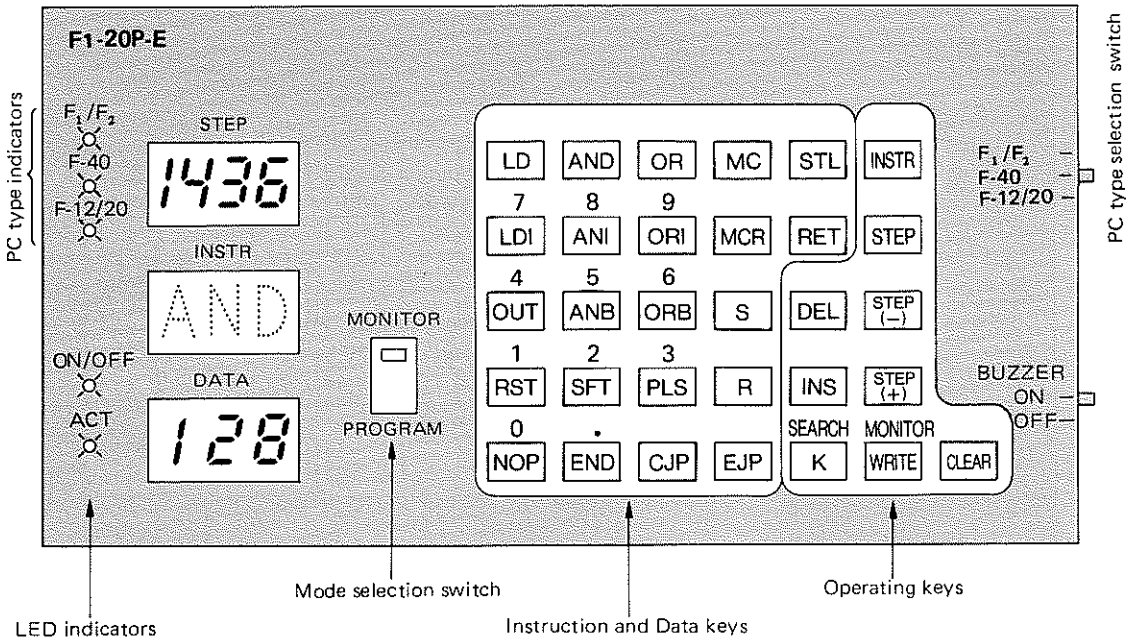
● ⟶ F_1 and F_2 series
● ⟶ F-40M
● ⟶ F-12R, F-20M

Cautions:
(1) The ambient temperature should be less than 40 deg. C when using the F1-20P-E/F2-20P-E with the F1-12MR/F-12R.
(2) The PC power should be turned off or the programming panel should be switched to MONITOR mode before the programming panel is removed from the base unit.

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3 PROGRAMMING PANEL LAYOUT

F1-20P-E PROGRAMMING PANEL



☼ PC TYPE ..... Selection is via the switch on the right hand end of the Programming Panel

☼ ON/OFF ..... Indicates the on/off status of an element whilst it is being monitored by element monitoring function.
(In the case of timer and counter, the LED will not be turned ON until the time or count value is equal to the setting value.)

☼ ACT ..... Indicates the continuity of a contact or activation of a coil, while it is being monitored by instruction minitoring function (monitor tracing by step number for F-40 and F1/F2 series).
In the case of timer and counter, the LED will be turned ON when the timer or counter coil is activated.

1436 STEP DISPLAY.... Indicates the step number. Fourth digit not shown for 1K memory units.

INSTRUCTION DISPLAY ..... Indicates the instructions e.g. LD, LDI, AND or K for constants.

128 DATA DISPLAY..... Indicates the element number or constant value.

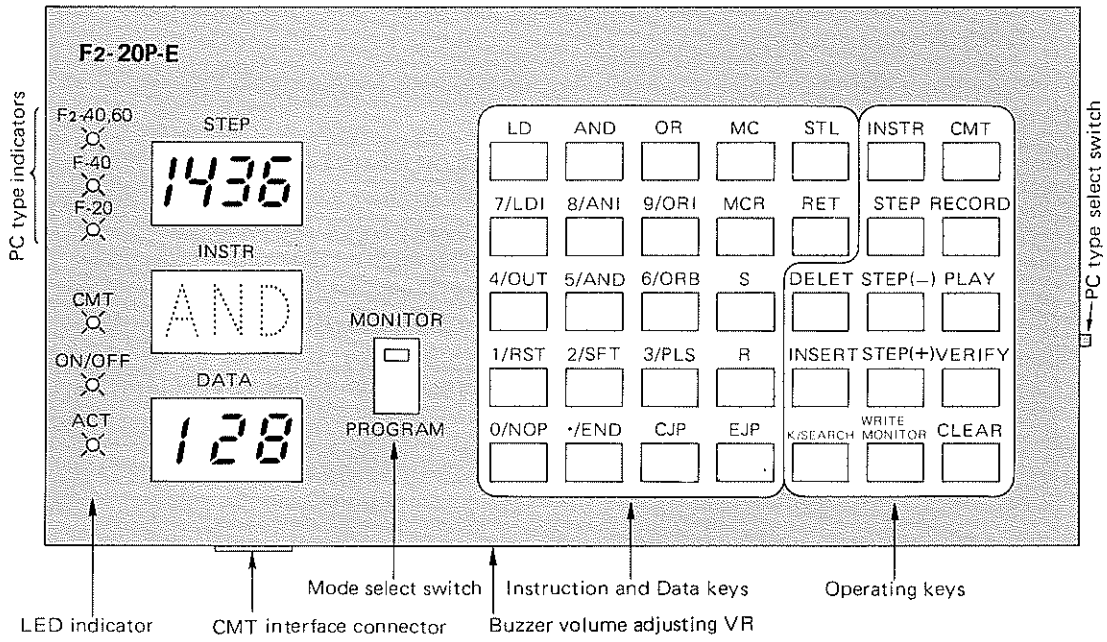
Note: i) Where keys have two functions the appropriate function is discriminated automatically according to previous key-strokes.

ii) No keys are necessary for the element symbols X, Y, M, T, C, S, and F.

iii) When changing the memory capacity of the enhanced F2 (F2-series Ver. 2.1), never fail to turn off the power supply first.
The F1-20P-E judges the memory size automatically.

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F2-20P-E PROGRAMMING PANEL



- PC TYPE ..... Selection is via the switch on the right hand end of the Programming Panel
- CMT ..... CMT mode is selected by pressing "CMT" key
- ON/OFF ..... Indicates the on/off status of an element whilst it is being monitored by element monitoring function.
  (In case of timer and counter, the LED will not be turned ON until the time or count value is equal to the setting value.)
- ACT ..... Indicates whether a contact is close or open, while it is being monitored by instruction monitoring function (monitor tracing by step number for F-40 and F1/F2 series).
  In the case of timer and counter, the LED will be turned ON when the timer or counter coil is activated.

1436 STEP DISPLAY.... Indicates the step number. Fourth digit not shown for 1K memory units.

INSTRUCTION DISPLAY ..... Indicates the instructions e.g. LD, LDI, AND or K for constants.

128 DATA DISPLAY..... Indicates the element number or constant value.

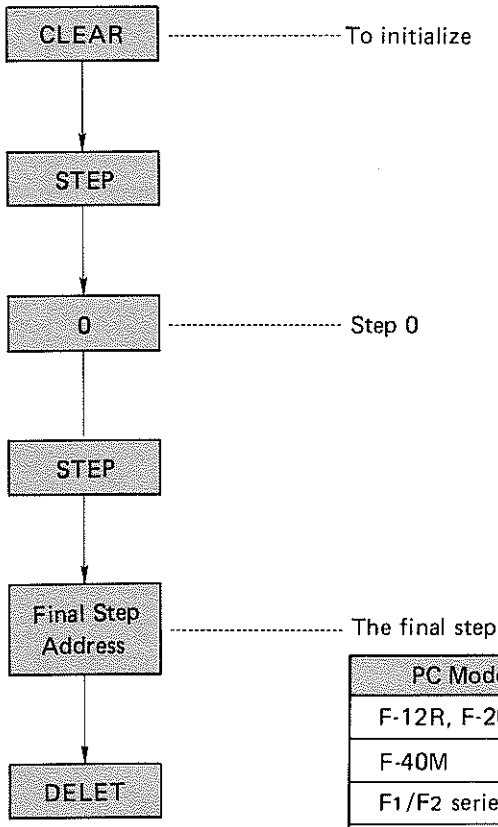
Note:
i) Where keys have two functions the appropriate function is discriminated automatically according to previous key-strokes.
ii) No keys are necessary for the element symbols X, Y, M, T, C, S, and F.
iii) When changing memory capacity selection switch of 1K or 2K in the F2 series PC (after version 2.1), never fail to turn off the power to the PC.
The F2-20P-E judges memory size automatically.

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4 CLEARING THE PROGRAM

PROGRAM

This procedure is carried out prior to writing a new program. It clears all memory locations including the memory backed by battery such as M300-M377, counters, states and data reqisters.
The following table indicates the key sequences;



PC Model	Final Step Address
F-12R, F-20M	477 (Octal)
F-40M	889 (Decimal)
F1/F2 series (1K)	999 (Decimal)
F2 series (2K)	1999 (Decimal)

After deleting is completed, step number 000 is displayed.

Cautions:

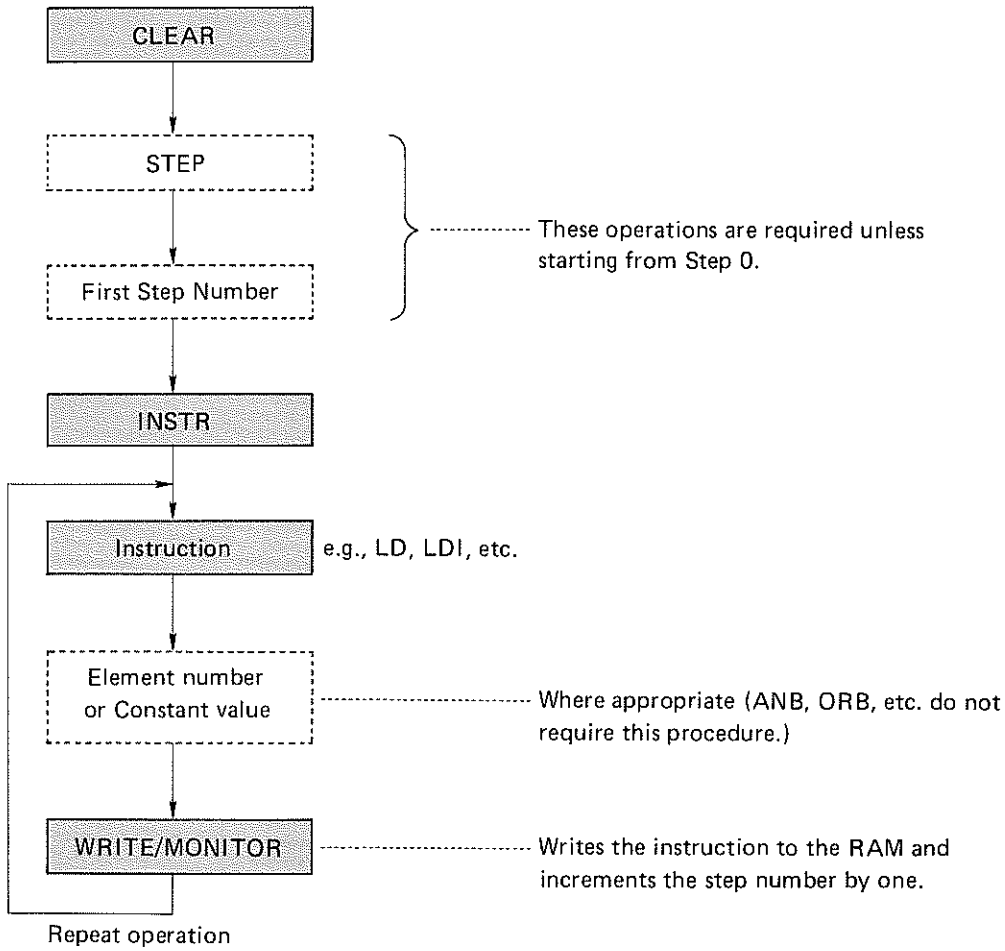
When an EEPROM cassette (F-EEPROM -1 or F-EEPROM-2(only Enhanced F2 series)) is plugged onto the F1/Enhanced F2 series base unit, all clearing, writing, reading and monitoring are performed for only the program in the EEPROM, and the program in the RAM will be invalid.

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5 PROGRAM WRITING

MONITOR / PROGRAM — RUN / STOP

This section describes the procedure to write instructions into the PC's RAM or program loader's RAM. When using the F1/F2 series base unit with a EEPROM cassette, the instructions are written into the EEPROM.

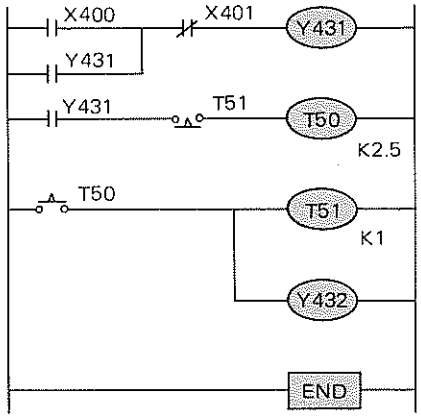


Ref. 1) When a correction is required before depressing the [WRITE/MONITOR] key, depress the [INSTR] key and write a correct instruction.

2) If a correction is required after depressing the [WRITE/MONITOR] key, depress the [STEP(−)] key to reverse and write a correct instruction.

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Program example; (F1 base unit)



Key Operations:

CLEAR	STEP	0	
	STEP	9 9 9	DELET
INSTR	LD	4 0 0	WRITE
	OR	4 3 1	WRITE
	ANI	4 0 1	WRITE
	OUT	4 3 1	WRITE
	LD	4 3 1	WRITE
	ANI	5 1	WRITE
	OUT	5 0	WRITE
	K	2 · 5	WRITE
	LD	5 0	WRITE
	OUT	5 1	WRITE
	K	1	WRITE
	OUT	4 3 2	WRITE
	END		WRITE

TIMER CONSTANT

Numeric Assignments and Constant Settings

Element No. / PC Type	T50~T57	T450~T457	T550~T557	T650~T657
F-12, 20M	0.1~99	——	——	——
F-40M	——	0.1~999	0.1~999	——
F1/F2 series	0.1~999	0.1~999	0.1~999	0.01~99.9

Note: It is important to place the decimal point in the correct position when programming the 10m.sec timers (F1/F2 series), see following example:

Key-in 99.0 ---------- value set at 99.0 seconds

Key-in 99 ---------- value set at 0.99 seconds

(If keyed in without decimal point, the value is set at 1/100 seconds.)

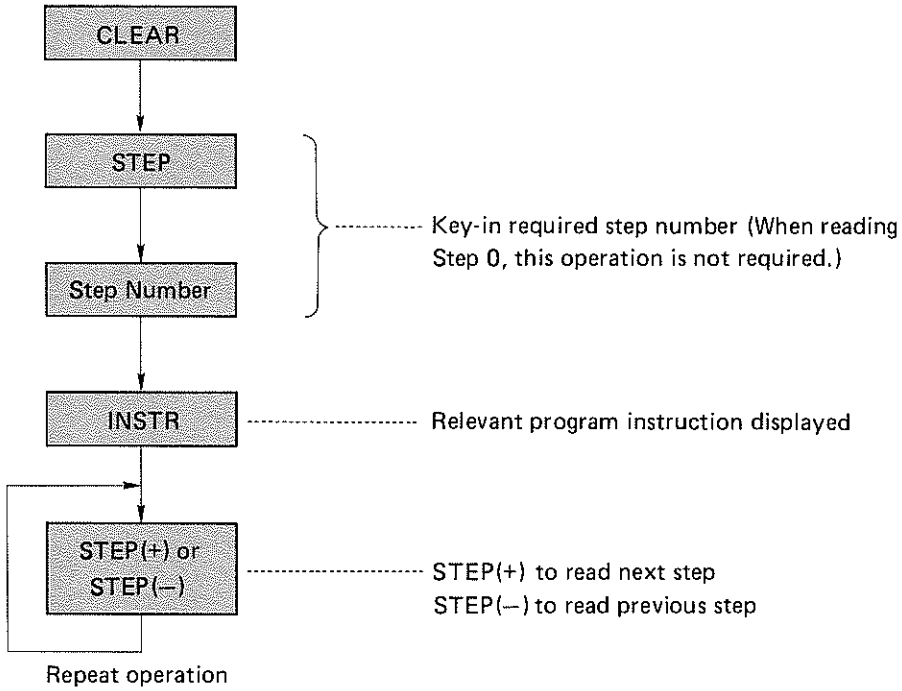
When programming the 100m.sec timers, the key-in data will be equal to the setting value.

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6 PROGRAM READING BY STEP NUMBER

MONITOR PROGRAM RUN STOP

This section describes the operation procedure to read and display the instructions in the order of step number.



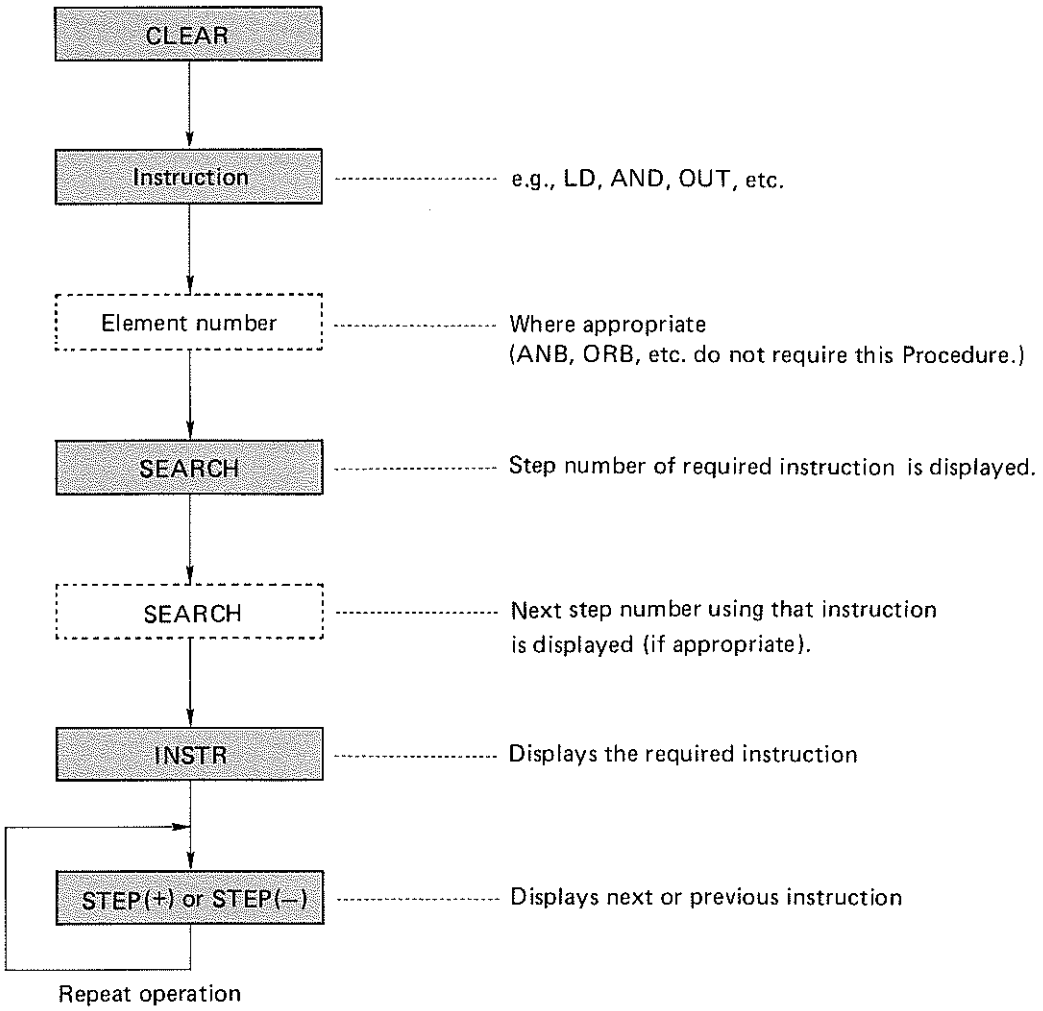
When using the F-20P the step number and instruction can be alternately displayed by pressing the STEP and INSTR keys, as appropriate. With the F1-20P-E or F2-20P-E the step number and instruction are displayed simultaneously.

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7 SEARCHING FOR AN INSTRUCTION

MONITOR / PROGRAM — RUN / STOP

It may be convenient when editing to be able to find a given instruction without designation of step number. This is done as follows:



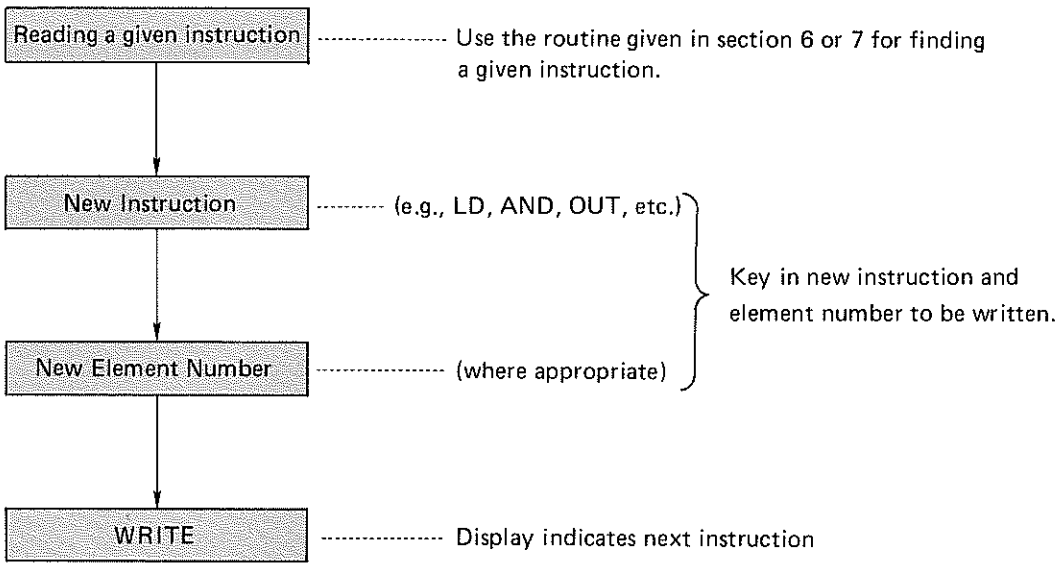
Note: This procedure cannot be used to find constants. It is necessary, to find the preceding OUT instruction and step one forward.

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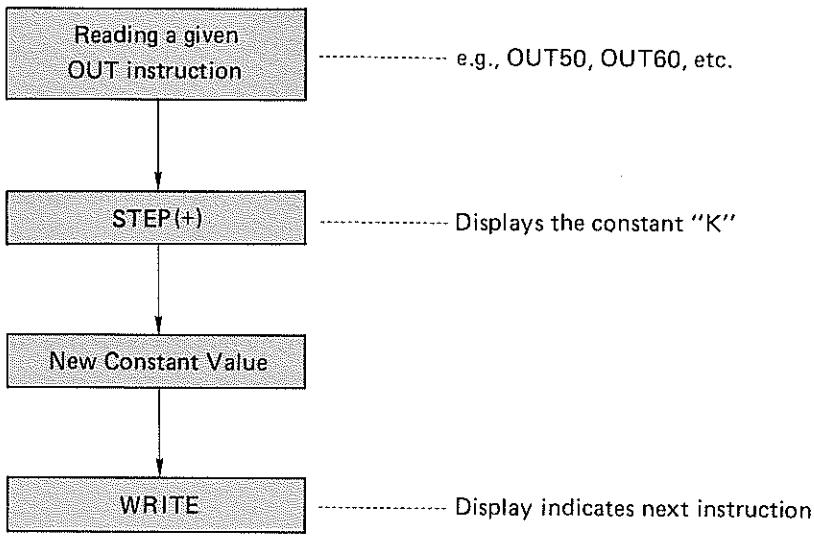
8 MODIFYING PROGRAMS

MONITOR PROGRAM RUN STOP

This section describes the operation procedure to re-write a program when necessary to modify the program.

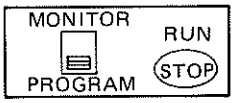


Note: When re-writing a constant, use the search routine to find the previous OUT instruction, and step forward one place.



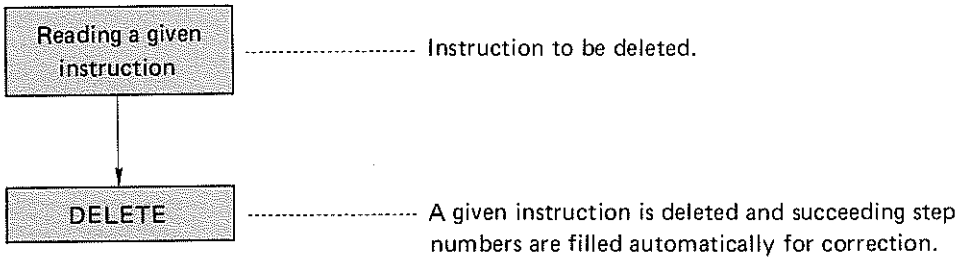
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9 DELETING AND INSERTING INSTRUCTION

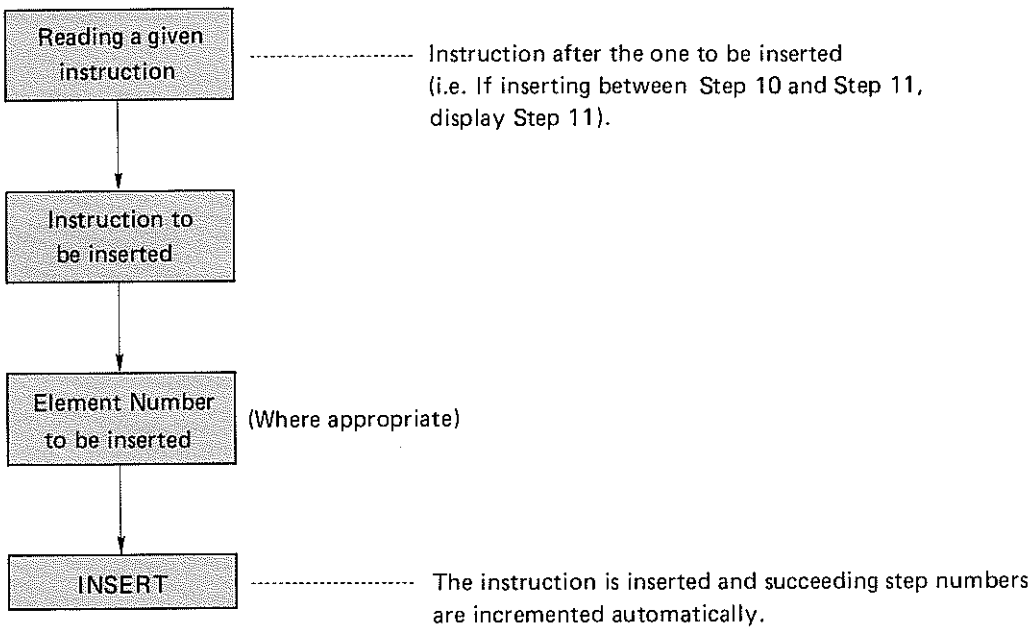


Having used the routine given in Section 6 or 7 for finding a given instruction, the following procedures may be used to delete and insert instructions:

DELETE:



INSERT:



Note: 1) The INSERT instruction adds the new instruction or constant in front of the one originally displayed.

2) Bear in mind that deleting the instructions such as LD, ANB, ORB, etc. change the circuit configuration greatly.

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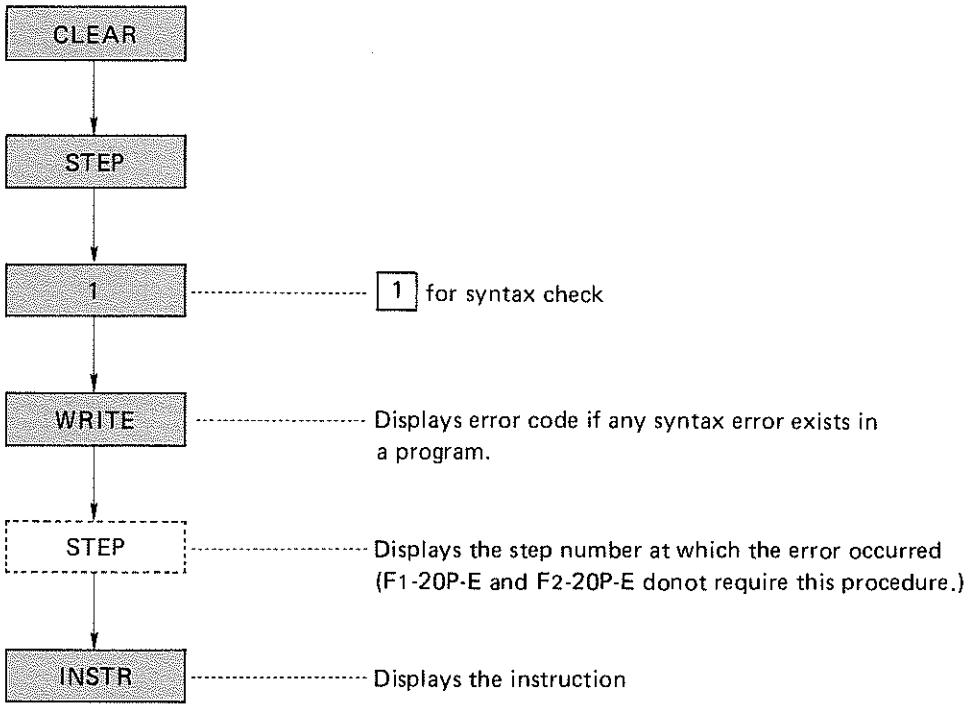
10 PROGRAM CHECK(F1 and F2 Series)

MONITOR PROGRAM RUN STOP

Checking (or debugging) of program is possible with the F1/F2 series PCs. This section describes the operation procedures of the program check.

10-1 SYNTAX CHECK

The following procedure checks the program syntax.



SYNTAX ERROR CODES

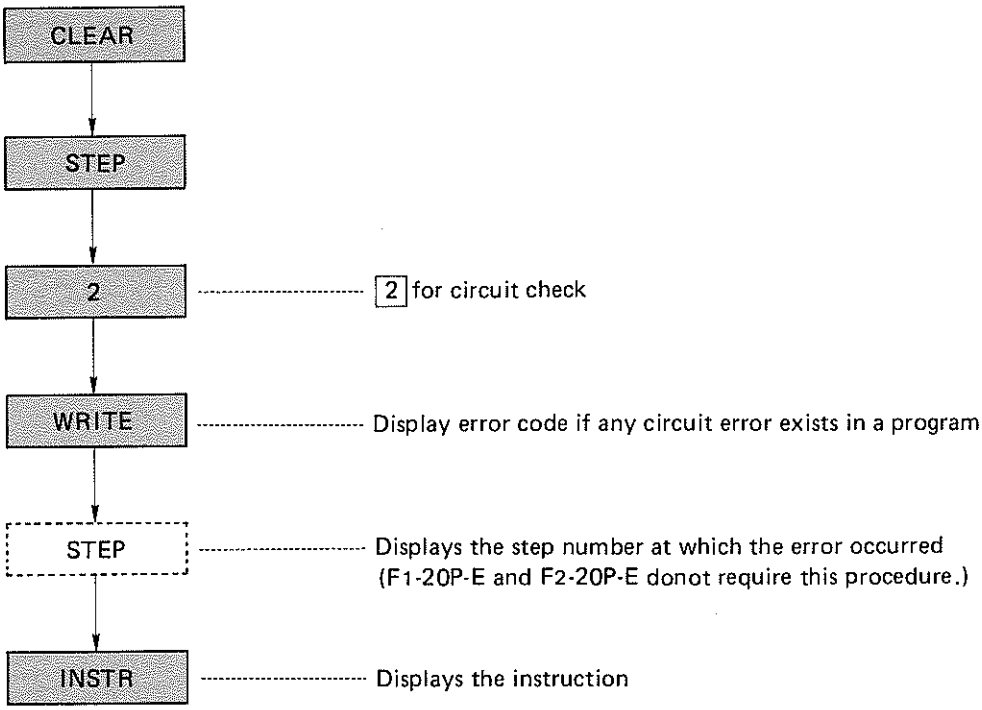
Code 1-1 ---------- Incorrect element number (e.g., X800)
or unmatched element number (e.g., OUT X400)
Code 1-2 ---------- No constant after OUT T or C
Code 1-3 ---------- Incorrect constant range

Note: After correcting an error, check the syntax error again to examine other steps.

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10-2 CIRCUIT CHECK

The following procedure checks the circuit continuity.



CIRCUIT ERROR CODES

Code 2-1 --------- LD and/or LDI used more than eight times in one coil (ladder rung).
Code 2-2 --------- Incorrect use of LD/LDI and ANB/ORB.
MC, MCR, EJP or END are not located at the bus bar.
Code 2-3 --------- Unmatched step ladder instruction
- STL does not start from bus bar
- MC and MCR are inside STL
- RET is outside STL
- STL is inside subroutine (F2 series)
- RET absent
- STL used more than eight times consecutively

Code 2-4 --------- Subroutine start used more than twice (F2 series)
Code 2-5 --------- Unmatched subroutine (F2 series)
- Call instuction in subroutine
- No subroutine return instruction
- Subroutine return instruction outside subroutine
- Subroutine call inside STL

Note: After correcting an error, check the circuit error again to examine other steps.

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10-3 SUM CHECK

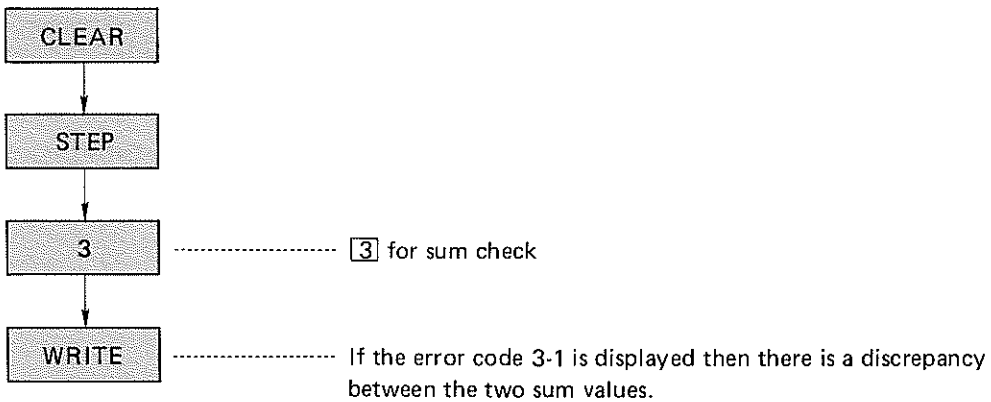
A "sum check" facility can be used to check that data has not been corrupted. This involves summing the data in the program memory and checking that this sum remains constant.

The summing procedure is carried out in the following circumstances:

1) When the programming Panel is switched from "program" to "monitor".
2) After any program editing.
3) After any "on-line" constant re-writing.
4) When the programming panel (program mode) is removed from the PC.

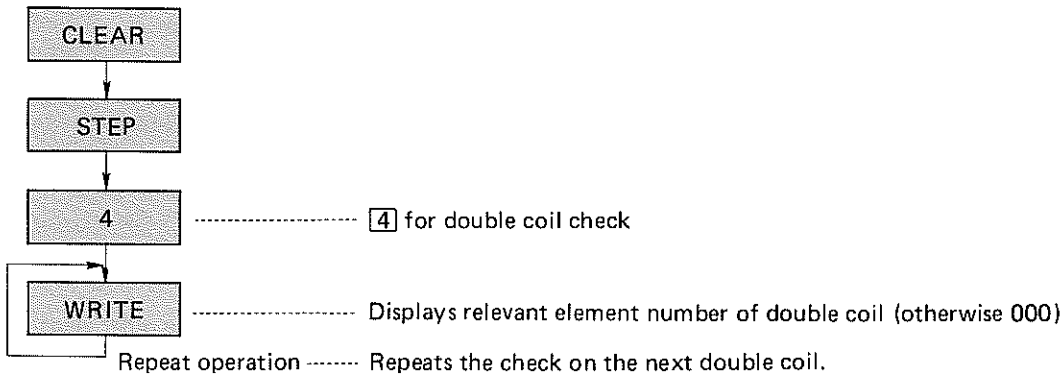
The sum check is carried out in the following circumstances:

1) When the power supply is turned ON.
2) When the Programming Panel is switched from "program" to "monitor".
3) When the Programming Panel (program mode) is removed from the PC.
4) When the "sum check" procedure is called up, as follows:



10-4 DOUBLE COIL CHECK

In some cases, same OUT instruction is programmed twice or more (called double coil) without inconsistency of the logic in Jump Programs or Step-ladder program area, and some functional instruction coils can be used twice or more. But in other case, the condition may arise where same coil is turned ON and OFF simultaneously. In order to avoid this, the following procedure may be used:

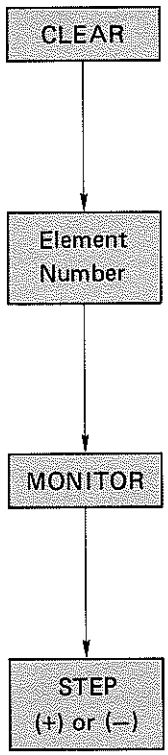


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11 ELEMENT MONITORING

MONITOR RUN PROGRAM STOP

This section describes the monitoring procedure of a given element with the PC in RUN or STOP mode, and the programming panel in MONITOR mode.



Element number to be monitored

ON/OFF Status indicated by:

i) F-20P-E ---- "OUT" indicator LED
ii) F1-20P-E and F2-20P-E .... "ON/OFF" indicator LED

The next or previous element number can be monitored as required. (F-40, F1/F2 series)

The element number must be specified each time on the F-12R and F-20M.

Note: 1) When timers or counters are monitored the remaining time or count is displayed. (The timer setting value or counter current value is displayed with the F-40, F1/F2 series PC in STOP mode, but 000 is displayed with F-12/20 in STOP mode.)

2) When the time or count is completed, this is indicated by:
   i) F-20P-E ..... "OUT" indicator LED
   ii) F1-20P-E/F2-20P-E ..... "ON/OFF" indicator LED

3) The element inside Jump circuit can also be monitored.

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12 FORCED ON/OFF

MONITOR RUN PROGRAM STOP

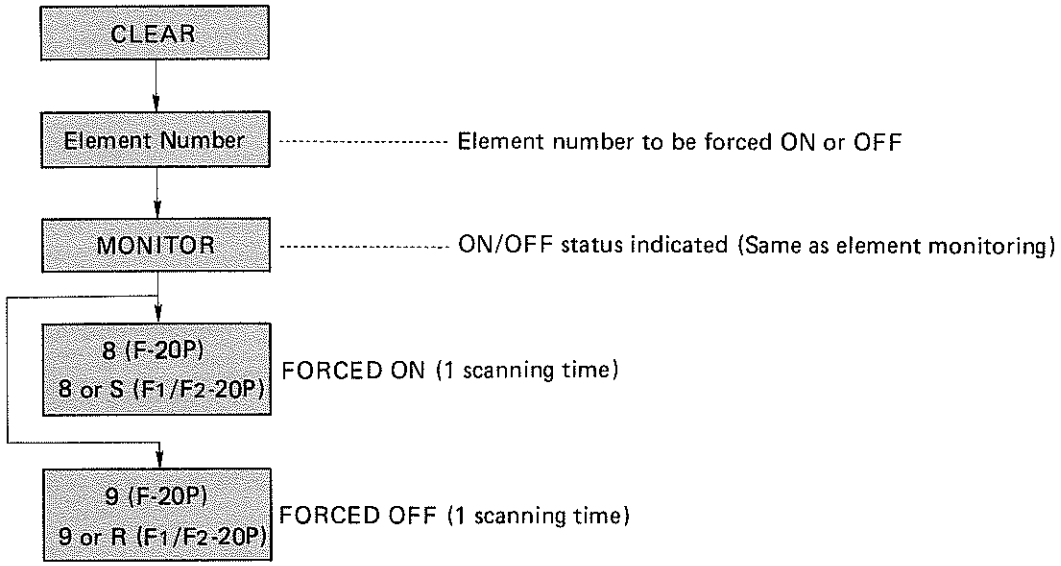
In the same manner as the element monitoring, forced ON/OFF is available on the following relays:

F-40M: Aux. Relay ------- M300~M377
Timer ---------- T450~T457
T550~T557
Counter ---------- C460~C467
C560~C567

F2 series: All elements except non-battery back-up Aux. relays and functional instruction coils.

F1 & enhanced F2 series: All elements except functional instruction coil.

This function is not available on F-12R and F-20M.



Note: 1) Since forced ON/OFF lasts for one scanning cycle of program execution, major effects of this function can be as follows:

Timers ---------- Forced time up
Forced Reset
(Forced ON is not available whilst in STOP mode)

Counters ---------- Forced Count up
Forced Reset

Set/Reset circuit
Latching of circuits

2) Outputs can be forced ON when in STOP mode. (ON status remains).
In order to reset the condition, forced OFF is required.

3) Timers can not be forced ON when in STOP mode.

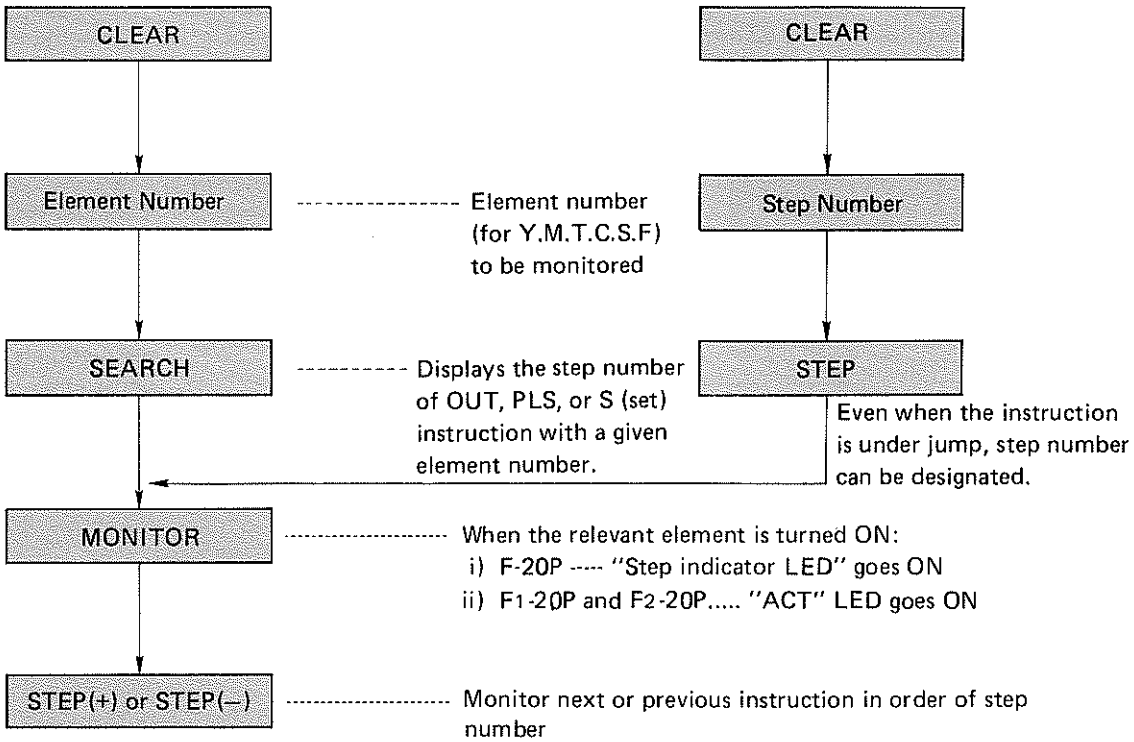
4) The forced ON/OFF cannot be used if the coil concerned is being jumped or omitted (in RUN mode).

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13 INSTRUCTION MONITORING

MONITOR PROGRAM RUN STOP

This section describes the instruction monitoring procedure to display ON/OFF status of instructions with the step number in the program. This is available on the F-40M, F1/F2 series PCs.



Note: 1) The instruction inside jump circuit can not be traced by searching function, but monitoring is available.

2) ON status is indicated in following situations:
   - Normally open contact is activated
   - Normally close contact is not activated
   - OUT coil is activated
   - Timer/counter coil is activated whether the time or count is completed or not. (But the timer/counter contact does not indicate ON status when the time or count of the timer/counter is not completed.)

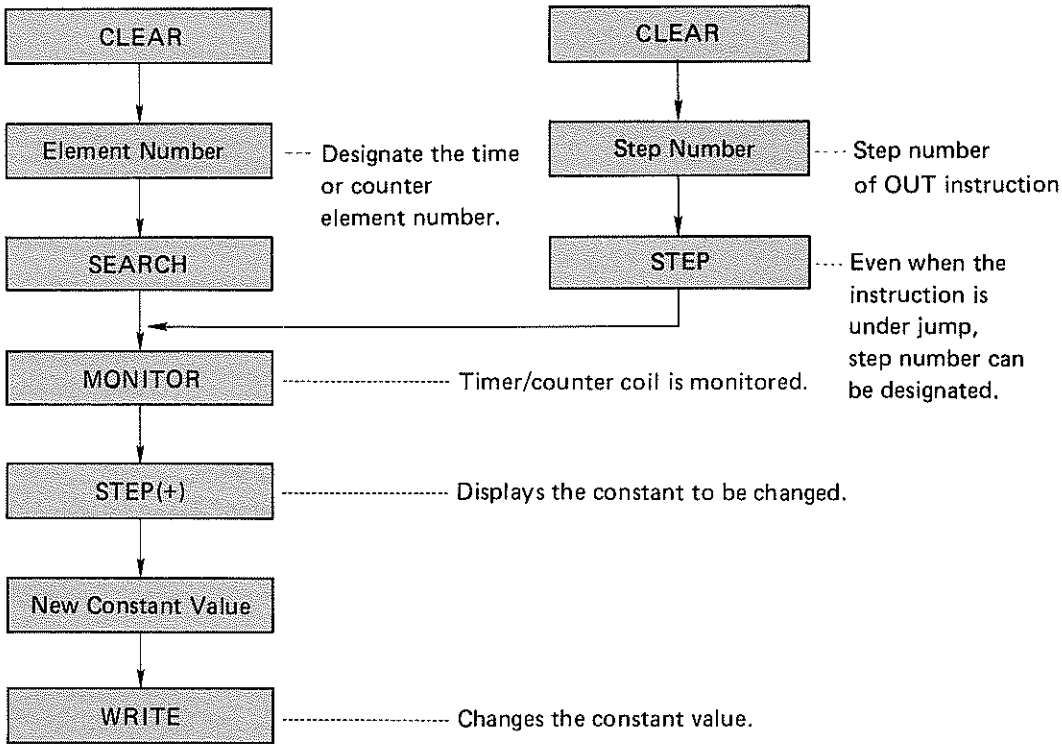
3) When timers or counters are monitored, the remaining time or count can not be monitored.

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14 CHANGING CONSTANTS WHILE IN MONITOR MODE

MONITOR RUN PROGRAM STOP

It is possible to change the timer/counter constants whilst in instruction monitoring mode. This is available on the F-40M, and F1/F2 series operating the RAM memory program, and the constants programmed in the RAM memory are changed.



Note: 1) If a constant is actually in use when it is being changed, the constant will be changed after the time or count is completed.

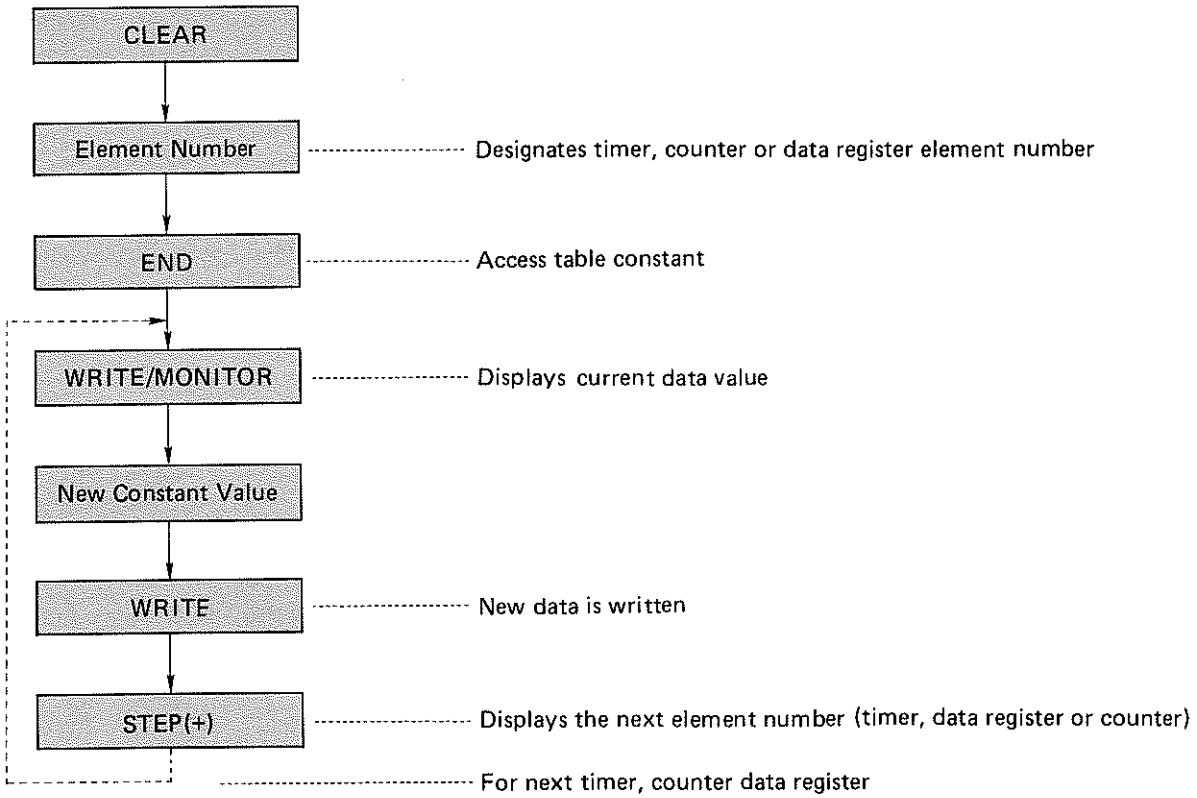
2) Elements cannot be traced by searching function if they are within a jumped portion of program.

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15 REGISTER DATA CHANGE

MONITOR PROGRAM RUN STOP

The F2 series PCs have two memory locations for T,C constants. The first is the program memory area and the second is a constant table which is a setting value register backed by battery.
The constant value in the program memory is used if the setting register value is zero. Otherwise the setting register value takes precedence.
Hence program running from a ROM cassette can have constants altered by writing new values into the setting register.
Also, user data registers can be accessed in the same manner.



Note: All data in the table are deleted when the program memory is cleared (see Section 4) or when the program is transferred via the program loader or the GP-80F2B.

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16 STL STATE MONITORING/TRACKING

MONITOR PROGRAM RUN STOP

The step-ladder (STL) states are scanned from the lowest no. S600 upwards. The nth active state is displayed continously.

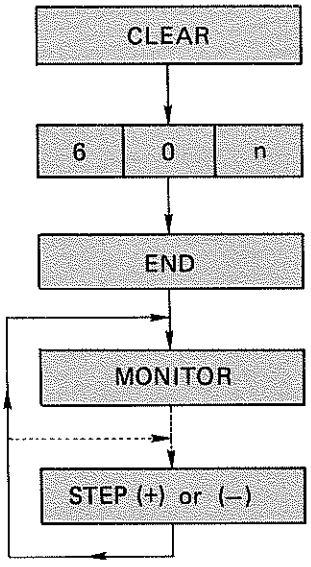
n=0 [600] [END] [MON.] lowest 'ON' state no. will be displayed.

n=1 [601] [END] [MON.] 2nd lowest 'ON' state no. will be displayed.

etc ....

Effectively, in a single flow system, the movement of the 'ON' state can be continously tracked.

If the 'ON' state is not found [0][0][0] is displayed.



n = 0 ~ 7 Instruction code
nth lowest 'ON' state.

State Monitor

Monitor:

Step(+)	n + 1	next lowest 'ON' state
Step(–)	n – 1	last lowest 'ON' state.

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17 USE OF CASSETTE RECORDER

MONITOR RUN PROGRAM STOP

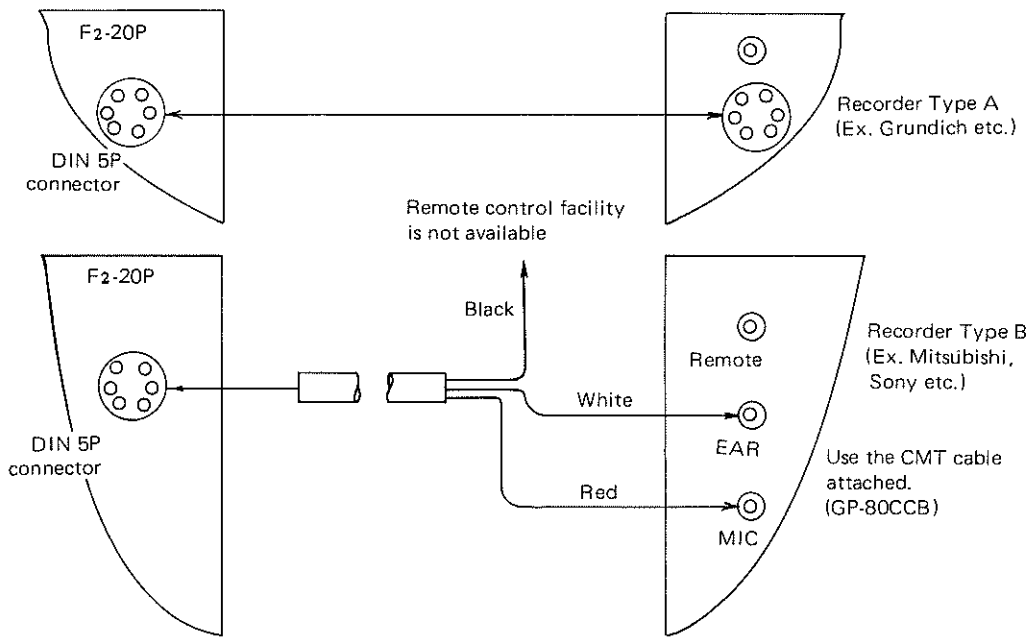
17-1 CASSETTE RECORDER

The F2-20P-E has a built in CMT (Cassette Magnetic Tape) interface. This enables it to transfer programs between the PC's RAM and a cassette recorder and to compare programs on cassette with those in the RAM.

Standard cassette recorders and tape can be used and a 30 ~ 60 minute tape should be able to hold up to five programs per side.

The Programming Panel is connected to the cassette recorder via a standard cable (as used with the GP-80), however the remote control facility is not available with the F2-20P-E.

Standard cassette speed is used and the volume level should be set at maximum (unless this causes frequent errors).

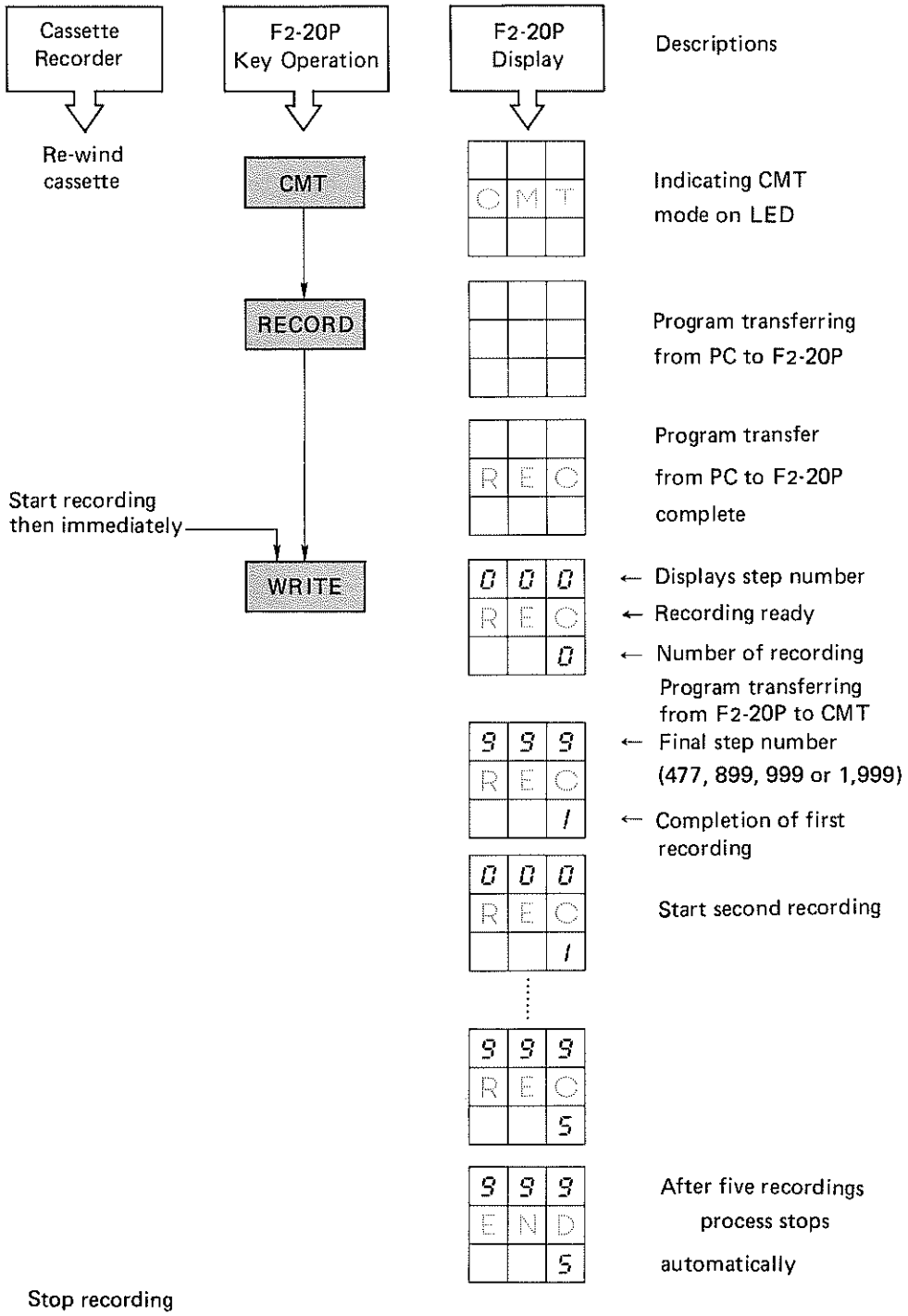


Note: i) The recording cable (red) and playback cable (white) must not be connected to the recorder at same time, because some models of recorders in the market may cause noise interference during the data transmission.

ii) The CMT recording function of the old F2-20P-E is within 1K steps, so it cannot be used with 2K mode in F2 series.

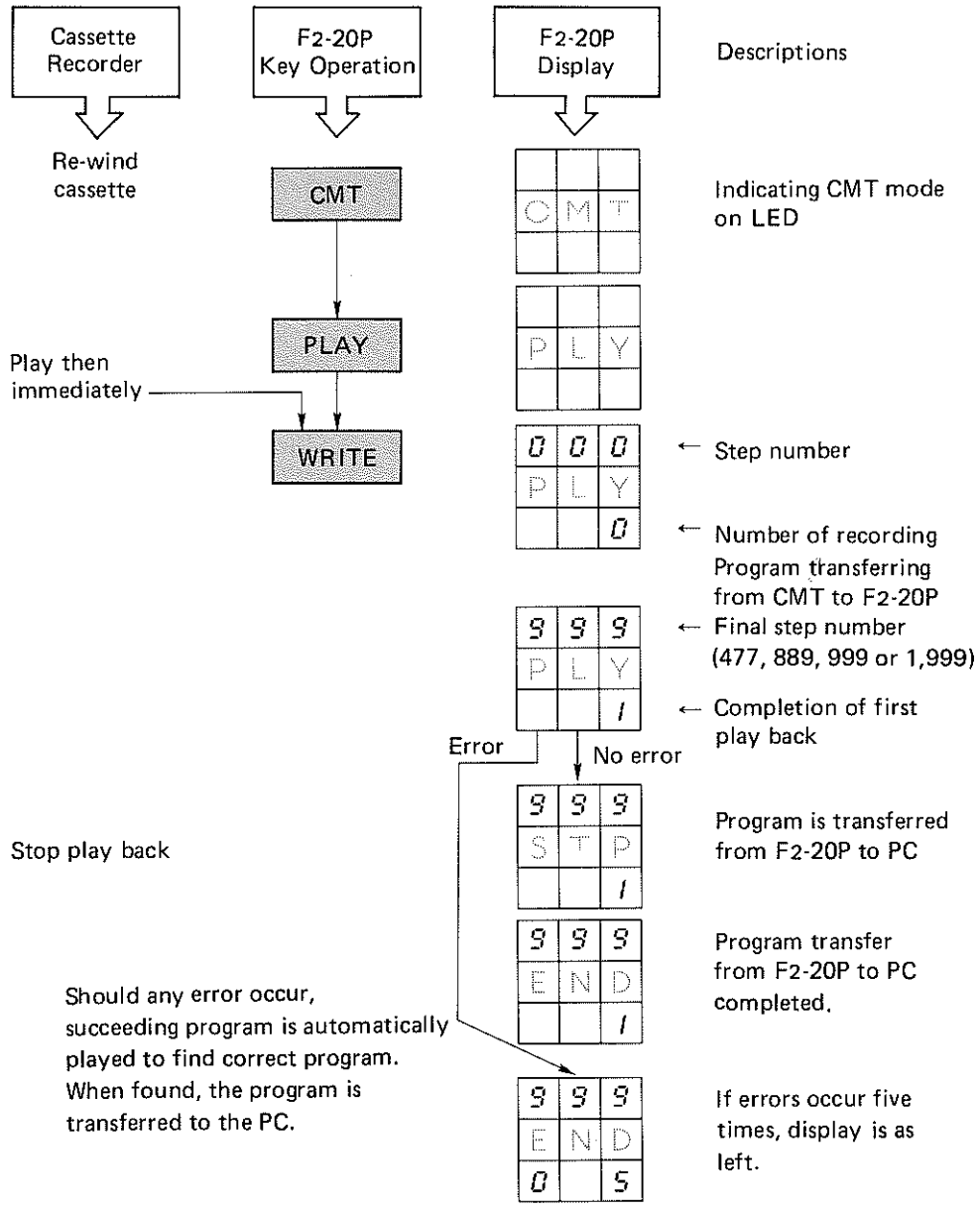
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17-2 RECORDING



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17-3 PLAY BACK



X	X	X
L	E	V
E	R	R

Note: "Level Error" is displayed in following cases:

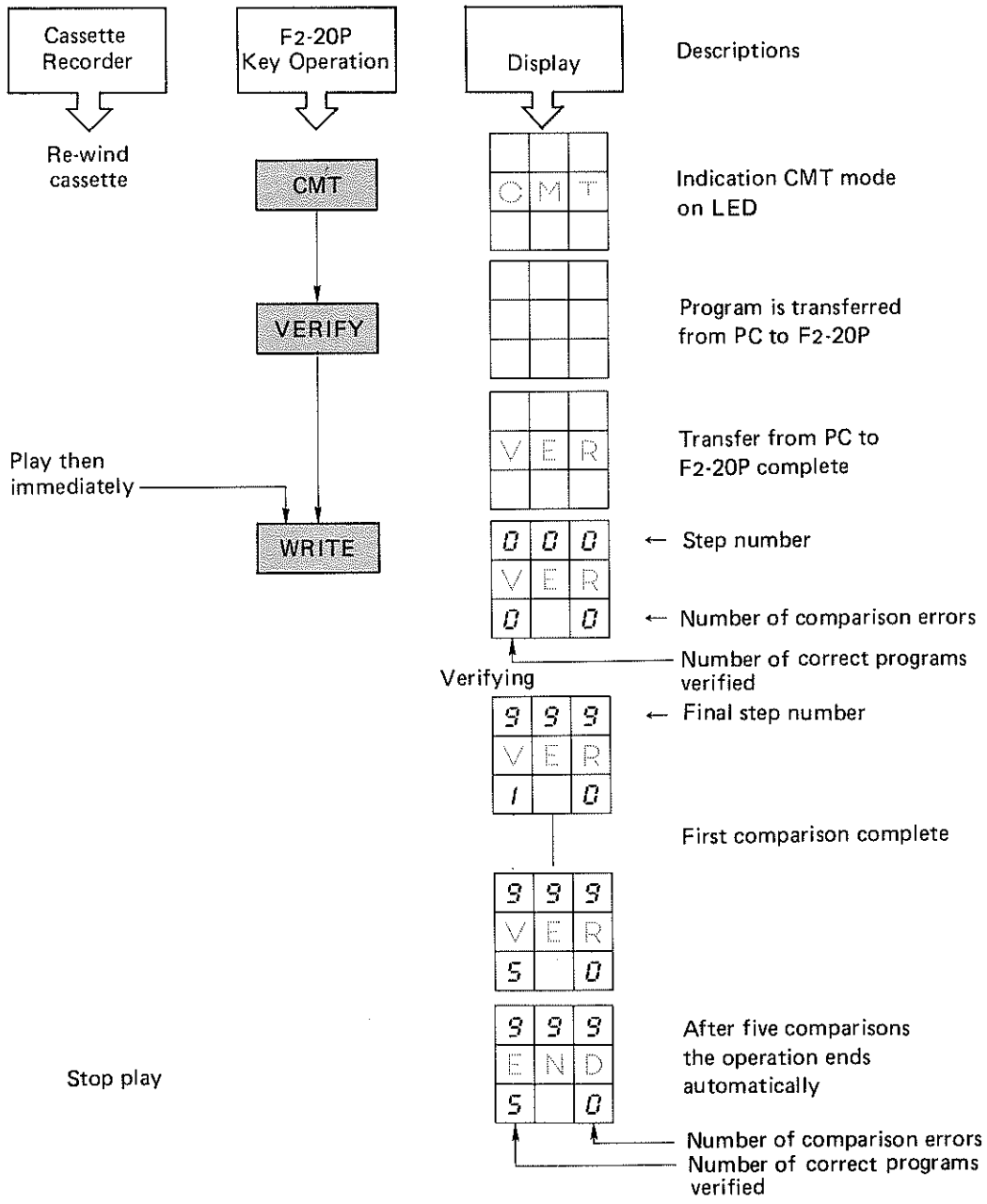
i) Recorder is stopped during operation.

ii) Volume is reduced during operation.

iii) Memory in the CMT is not complete.

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17-4 PROGRAM COMPARISON



Note:

"Level Error" is displayed in following cases:

i) Recorder is stopped during operation.
ii) Volume is reduced during operation.
iii) Memory in the CMT is not complete.

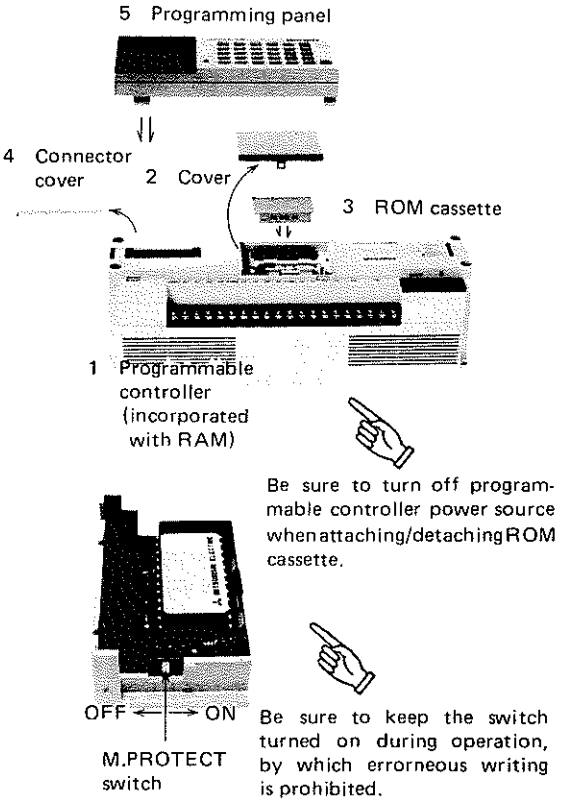
X	X	X
L	E	V
E	R	R

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18 TRANSFER/COMPARE WITH EEPROM (Enhanced F2 & F1 Series)

MONITOR / PROGRAM — RUN / STOP

The PCs of each series are operated in accordance with the program of built-in RAM.
When the ROM cassette (option) is mounted on the PC, the PC executes the program in the ROM cassette instead of the program in the RAM.
With the ROM cassette used, the program stored in the cassette will not be lost even if the battery voltage is dropped.
Consequently, the use of such option will allow the maintenance-free feature to be realized.
Especially in the case of F1/F2 series PC, the EEPROM cassette may be also used for ROM cassette.
The EEPROM will not require any battery back-up, and thus allows the realization of maintenance-free feature.
It is also characterized by that the program can be stored easily without using ROM writer or CMT.
It is possible to write the program directly with the programming panel to the EEPROM attached to the programmable controller, however, it will take a maximum of 20 seconds for insertion or deletion of the instruction in this case.
In this regard, it is generally recommended to transfer the program in accordance with the following procedure to the EEPROM attached, after program development by the use of built-in RAM.



Type F-EEPROM-1, 2 ROM cassette

Writing from RAM to EEPROM
(M. PROTECT switch: OFF)

CLEAR → STEP → 8 0 9 → WRITE → WRITE

Reading from EEPROM to RAM
(M. PROTECT switch: ON or OFF)

CLEAR → STEP → 9 0 8 → WRITE → WRITE

RAM: EEPROM compare
(M. PROTECT switch: ON or OFF)

CLEAR → STEP → 8 1 9 → WRITE → WRITE

CAUTIONS

It takes approx. 20 seconds(1K step), approx. 40 seconds(2K step)in writing to EEPROM.

The programming panel display is blanked during the execution of transfer/compare, and indicates "000" upon completion of execution.

Be careful not to make any mistake in transfer direction

RAM side data flickers on display when the result of compare is found to be inconsistent. When "INSTRUCTION" key is depressed, EEPROM side data is displayed.

Note: The above reading/compare can be also executed for type F-ROM-1, 2 ROM cassette.

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The following table shows the differences between the programming /monitoring function corresponding to the type of memory used for the programmable controller and the program transfer/ compare function using the programming panel.

ROM \ PC	F-12,20	F-20M F-40M	F_1	Enhanced F_2	Old F_2
F-EEPROM-1(1K)	×	×	○	○ 1K mode	×
F-EEPROM-2(2K)	×	×	○ Less than 1K	○	×
F-ROM-1(1K)	×	○	○	○ 1K mode	○
F-ROM-2(2K)	×	×	○ Less than 1K	○	○ Less than 1K

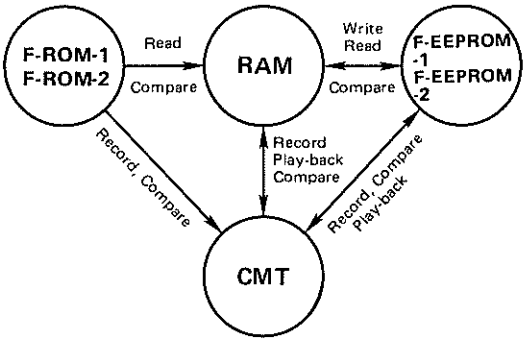
Memory type and programming / monitoring function

Functions \ Memory types		RAM	F-EEPROM-1 mounted	F-ROM-1 mounted
Programmable controller……STOP Programming panel……PROGRAM	Program all erase	○	○ (40 sec.)	×
	Writing of instruction	○	○	×
	Reading of instruction	○	○	○
	Searching of instruction	○	○	○
	Re-writing of instruction/constant	○	○	×
	Deletion/insertion of instruction	○	○ (40 sec. Max.)	×
	Program check	○	○	○
Programming controller…RUN or STOP Programming panel…… MONITOR	Monitoring of factor/No.	○	○	○
	Forced ON/OFF	○	○	○
	Monitoring of instruction	○	○	○
	Modification of constant	○	×	×
	Modification of constant setting value table	○ (F_2 series)	○ (F_2 series)	○ (F_2 series)

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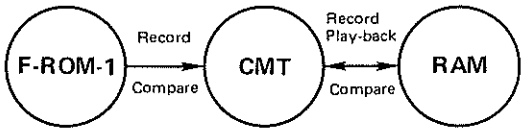
Transfer/compare of program by programming panel

F1/F2 Enhanced series



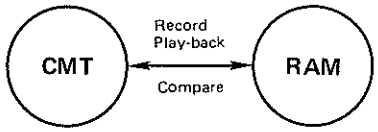
CMT is applicable only when F2-20P is used.

F2 series, F-20M, 40M



Use of F2-20P

F-12, 20
(programmable controller for RAM only)



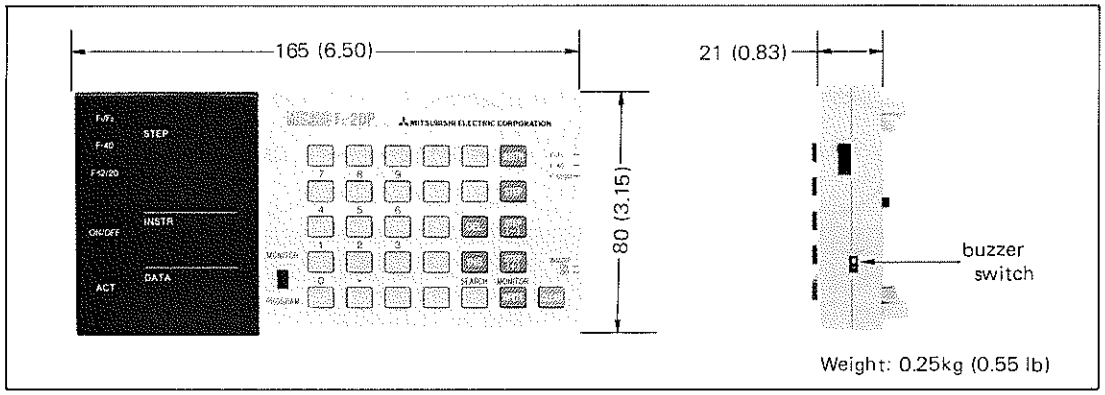
Use of F2-20p

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19 OUTLINES AND DIMENSIONS

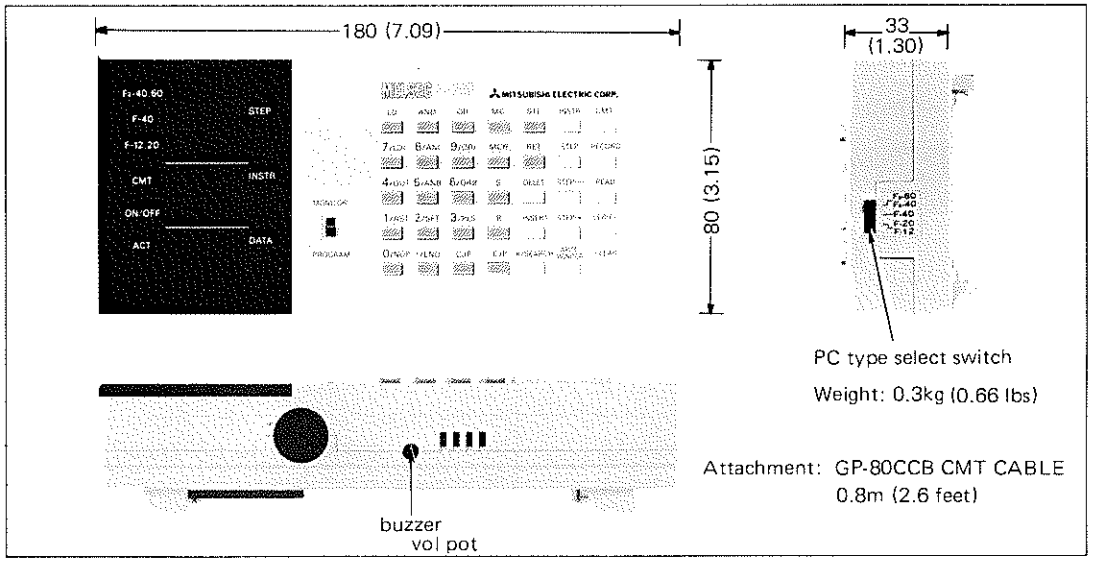
Type F1-20P-E Programming Panel

mm (inch)

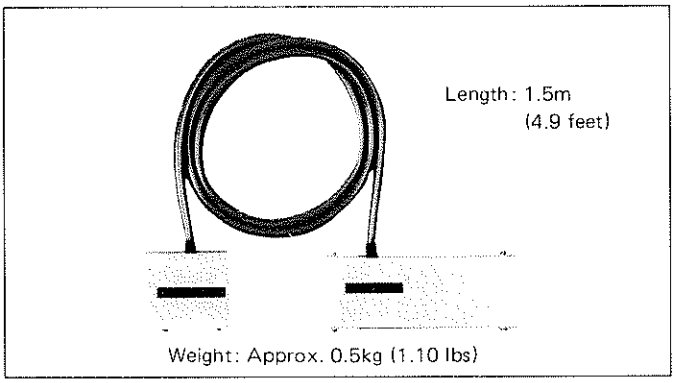


Type F2-20P-E Programming Panel

mm (inch)



Type F-20P-CAB Remote Cable



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– MEMO –

— MEMO —

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REVISIONS

Revision date	Manual	Comments
—	JY992D06701A	First Edition
Oct 1986	JY992D06701B	ADDITION : EEPROM details P25, P26
Oct 1988	JY992D06701C	F_2-20P-E upgrade for enhanced F_2-PC REVISED : P1, P2, P5, P19, P20 ADDITION : P22. COCOM label on contents Page
MAY 1989	JY992D06701D	F_1-20P-E upgrade for enhanced F_2-PC REVISED : Front cover, P1, P5, P30

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JY992D06701D
Printed in Japan (ROD) (D1)

Effective MAY 1989
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