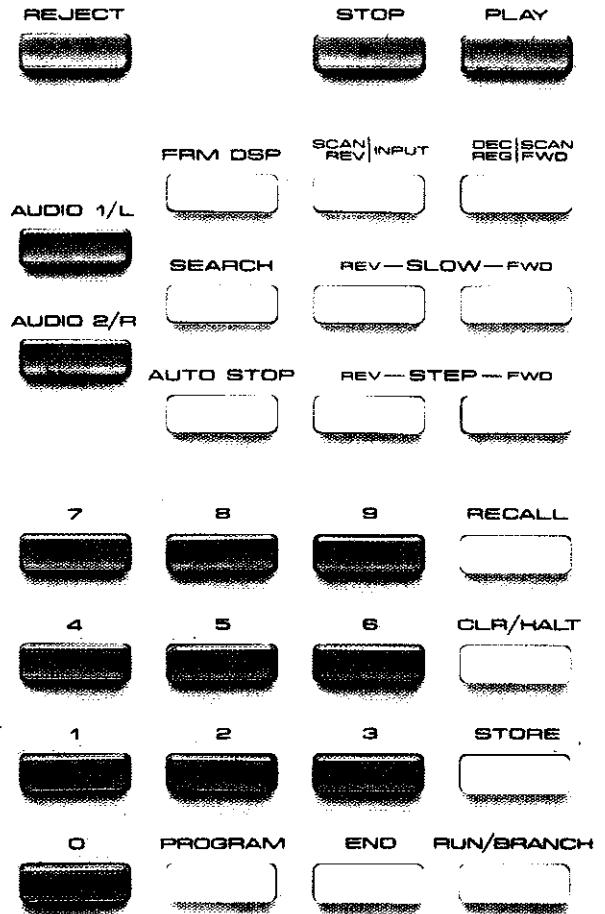


# USERS GUIDE TO PROGRAMMING

 **PIONEER**

**LaserDisc**<sup>TM</sup>

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PLEASE NOTE: This booklet is an introduction to programming the Pioneer optical videodisc player, Model PR-7820. For more detailed information, please refer to the Pioneer "Programming Reference Guide" (U3).



REJECT



STOP



PLAY



FRM DSP



SCAN|REV|INPUT



DEC|SCAN  
REG|FWD



AUDIO 1/L



SEARCH



REV—SLOW—FWD



AUDIO 2/R



AUTO STOP



REV—STEP—FWD



7



8



9



RECALL



4



5



6



CLR/HALT



1



2



3



STORE



0



PROGRAM



END



RUN/BRANCH



## REMOTE CONTROL UNIT OPERATION

### KEYPAD COMMAND BUTTONS

**STOP** stops the player for a specific period of time (expressed in tenths of seconds) and then continues. STOP appears as "WAIT" on the display screen.  
EXAMPLE: 30 WAIT stops the program for three seconds.

**INPUT** prepares the player to respond to keypad input (as in answering a multiple-choice question).  
EXAMPLE: 3 INPUT prepares the program for four possible inputs ("0," "1," "2" and "other").

**SEARCH** commands a search for a specific frame.  
EXAMPLE: 14500 SEARCH sends the player to frame 14500.

**AUTOSTOP** commands a search for a specific frame.  
EXAMPLE: 12500 AUTOSTOP plays until frame 12500.

**PROGRAM** sets the memory location at 0000. If a memory address precedes the command entry, the player will index to the address.  
EXAMPLE: 106 PROGRAM puts the player in program mode, starting at memory location 0106.

**END** takes the player out of program mode.

**DEC REG** decrements (decreases) the value of a specific register by one with each play-through.  
EXAMPLE: 6 DEC REG decreases the value of Register 6 one digit with each play-through.

**SLOW FORWARD** or **SLOW REVERSE** puts the player in slow motion.  
EXAMPLE: 6000 SLOW FWD puts the player in slow motion until it reaches frame 6000.

**STEP FORWARD** or **STEP REVERSE** steps the player forward or backward one frame.  
EXAMPLE: STEP FWD advances the player one frame.

**RECALL** selects a register number.  
EXAMPLE: 1 RECALL selects Register 1.

**HALT** takes the player out of automatic mode and returns it to manual mode.  
EXAMPLE: HALT is last command of program-writing sequence.



REJECT



STOP



PLAY



FRM DSP



SCAN  
REV INPUT



DEC SCAN  
REG FWD



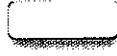
AUDIO 1/L



SEARCH



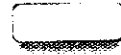
REV—SLOW—FWD



AUDIO 2/R



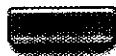
AUTO STOP



REV—STEP—FWD



7



8



9



RECALL



4



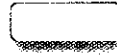
5



6



CLR/HALT



1



2



3



STORE



0



PROGRAM



END



RUN/BRANCH



## REMOTE CONTROL—CONT.

**STORE** establishes setting or value for a selected register.

EXAMPLE: 4 STORE sets the selected register at a value of four.

**BRANCH** redirects the program to another memory location.

EXAMPLE: 76 BRANCH sends the program to memory location 0076.

**AUDIO 1 and AUDIO 2** control respective sound tracks on the videodisc. Even number precedents turn sound off; odd number precedents turn sound on.  
EXAMPLE: 1 AUDIO 2 turns on track 2.

**RUN** puts player in AUTOMATIC mode for operation according to stored instructions.

**FRAME DISPLAY** controls on/off display of videodisc frame numbers.

**REJECT** halts program execution, returns videodisc to load position and stops disc rotation. Normally used in MANUAL mode to remove the videodisc from player.

**PLAY** instructs play of a video sequence until the program stops the player.

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## MANUAL PROGRAMMING

The capability of manual programming is a versatile feature of the Pioneer optical videodisc player, Model PR-7820. Using the player's hand-held Remote Control Unit (RCU), a variety of functions can be programmed by simply keying in frame and register numbers. When in the PROGRAM mode, these entries are stored in a section of the player's microcomputer memory, one "byte" per memory location, and are performed in sequence whenever the RUN button is pressed. In this manner, it is possible to edit, freeze, or even completely restructure videodisc programming with the touch of a button.

In the microcomputer memory, locations 0 through 1023 are available for 1024 separate "bytes" of information. Registers are composed of two memory locations and, thus, registers 0-511 are also available. Please note, however, that memory locations and registers fill the *same* 1024 bytes of microcomputer memory from opposite ends. Therefore, if most of the memory is used up with frame numbers and commands, there will not be much room left for registers, and vice versa. For details on the use of registers in the MANUAL mode, see your player's "Operator's Manual."

## PROGRAM COMMANDS

Each program command is usually tied to a specific frame or memory location number which is entered before the command itself. A typical command sequence would be: 1000 SEARCH. This sequence would require four memory locations for the frame number (ONE, ZERO, ZERO, ZERO) and one for the command (SEARCH). This command sequence would tell the player to search for frame 1000.

Exceptions to the typical command sequence are: STOP (which appears on the screen as WAIT with a duration expressed in tenths of seconds); STEP FORWARD or STEP REVERSE (which advance or reverse the player one frame only); and HALT (which is used to put the player in MANUAL mode).

---

## FUNCTIONS

Using standard sequences of numbers and program commands, it is possible to achieve a variety of functions that may be stored while in the PROGRAM mode. The combinations are many, and once a user has a basic understanding of manual programming, the writing and entering of a complex program is easy and not limited to the examples in this guide.

Here are some of the most common program functions and the combinations necessary to enter them:

### PLAY A MOTION SCENE

To play a motion scene (as opposed to displaying a "still"), it is necessary to know the frame number with which the scene begins and also the frame number with which the scene ends. The command sequence would then be:

(beginning frame number) SEARCH  
followed by

(ending frame number) AUTOSTOP.

If SEARCH is not followed by AUTOSTOP, the player will freeze on the beginning frame number.

### PLAY SEVERAL MOTION SCENES

To play several unrelated motion scenes on the same videodisc, simply repeat the above sequence, in each case specifying the beginning and ending frame numbers.

### BRANCH (IN RESPONSE TO INPUT CHOICE)

To pose a question or offer a selection it is necessary to know the memory locations of the various "choices," whether they are motion scenes or still frames. First, the player must be brought to a stop at a particular frame number (i.e. the "menu" still frame offering the multiple choice/true-false/yes-no question, or an index of choices), and then prepared to accept a specific number of inputs, beginning with a "defaulted" input of "0," and continuing with "1," "2," "3," etc. For example, on frame 15,430 might be the following question:

SAFETY GOGGLES MUST BE WORN

(1) in the lunch room.

(2) in the work shop.

(3) when driving company vehicles.

The sequence would be:

15430 AUTOSTOP

followed by

4 INPUT.

---

## FUNCTIONS—CONT.

The first possible answer, "0," is usually unused and therefore defaulted back to the question. Defaulting prevents a keypad input error from disorienting the user. Selecting "0" will keep the player at frame 15,430—thus re-asking the question.

To default "0," enter a leading zero and then the memory location of the INPUT command as the first BRANCH. Also allow for this when calculating your INPUT command: three possible answers and one default for an entry of 4 INPUT.

The rest of the sequence would then be:

```
(menu memory location) BRANCH
(memory location) BRANCH
(memory location) BRANCH
(memory location) BRANCH
```

The first answer might be branched to memory location 0063, where the command sequence

```
5000 SEARCH
5600 AUTOSTOP
23 BRANCH
```

would be stored. This sequence would play a 600 frame motion scene that would say, in effect, "No, only in the workshop are safety goggles worn." The 23 BRANCH would then branch back to memory location 0023 and resume the program with whatever command sequence begins there. And so on.

When all choice branches have been entered, the final entry should be another default branch. This time the entry would be:

```
(menu memory location) BRANCH.
```

A leading zero is only necessary for the first BRANCH command. The final BRANCH serves to default any inputs greater than those offered. In other words, inputs greater than 3 will seemingly have no effect on the player.

### PLAY A MOTION SCENE IN SLOW MOTION

To play a motion scene in slow motion, again know the beginning and ending frame numbers. In this case, however, the beginning frame number would be coupled with a SEARCH or AUTOSTOP command and the ending frame number would be entered with the command SLOW FWD (or REV, if reverse is desired).

To begin a scene in slow motion, enter:

```
(beginning slow motion frame number) SEARCH
(ending slow motion frame number) SLOW FWD.
```

To begin a scene at regular speed and then shift to slow motion, enter:

```
(beginning frame number) SEARCH
(beginning slow motion frame number)
AUTOSTOP
```

```
(ending slow motion frame number) SLOW FWD.
```

Be sure to adjust the player's SPEED CONTROL to achieve the desired rate of slow motion.

### DISPLAY A TIMED FREEZE FRAME

To view a particular still frame for a given amount of time, simply enter the frame number as in the example above, followed by the command AUTOSTOP. Then express the duration of the freeze frame in tenths of seconds with the command STOP (which appears as WAIT on the screen). For example, if a particular motion scene were to pause at frame 17,291 for ten seconds before continuing, the command sequence would be:

```
17291 AUTOSTOP
100 STOP
(ending frame number) AUTOSTOP.
```

### PLAY A SERIES OF TIMED FREEZE FRAMES

It is also possible to play a timed sequence of freeze frames by branching and utilizing the DECREMENT REGISTER feature. At the beginning of the program, select a register and enter into it the number of freeze frames desired. The sequence would be:

```
(register number) RECALL
(number of freeze frames) STORE.
```

Then, when the frames to be timed are reached, enter either

```
(beginning frame number) SEARCH
or (beginning frame number) AUTOSTOP
(duration of freeze) STOP
STEP FWD
(register number) DEC REG
(memory location of STOP command) BRANCH.
```

This loop will continue, reducing the register value by one with each cycle, until the register value is "0." By entering a frame number and an AUTOSTOP command after this sequence, the player will resume playing at normal speed.

### END A PROGRAM

When a program has been completely entered, the last command should be HALT. This will take the player out of PROGRAM mode and return it to MANUAL mode.

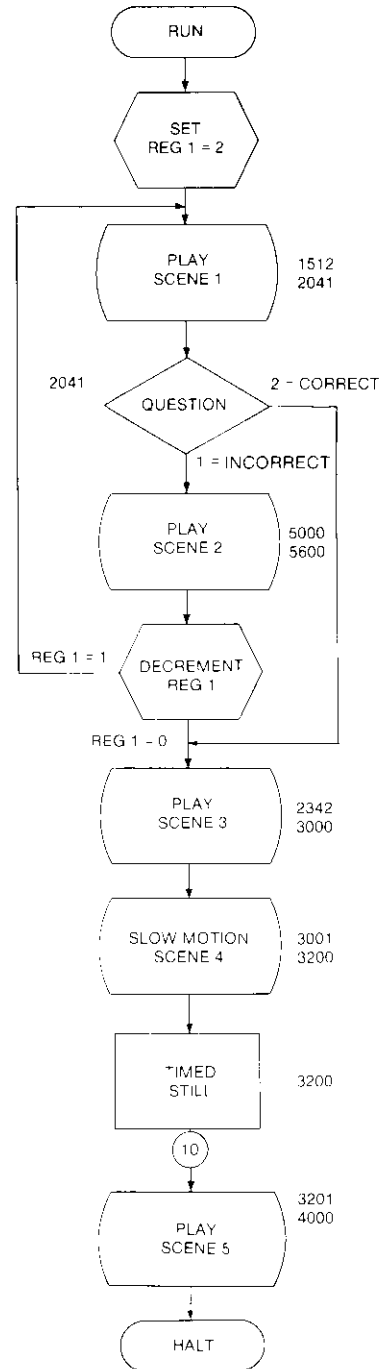
## A SAMPLE PROGRAM

Let's examine a typical programming situation. Our program starts by initializing a register to contain the value 2, and then playing scene 1 from frame 1512 to frame 2041. Scene 1 is followed by a multiple choice question at frame 2041. Two answers are possible: "1" is the incorrect answer, and "2" is the correct answer. If the correct answer is selected, scene 3 is played from frame 2342 to frame 3000.

If the incorrect answer is chosen, the player searches to and plays scene 2 from frame 5000 to frame 5600, which contains some remedial information to help the viewer answer the question correctly. After scene 2 is played, the previously initialized register is decremented to count how many times the multiple choice question has been answered incorrectly. The first time, the register is decremented from an initial value of 2 to a new value of 1, so the program replays scene 1 and then repeats the multiple choice question.

However, if the incorrect answer is chosen again, the register is decremented from a value of 1 to a new value of 0 and, since the question was incorrectly answered a second time, the program does not repeat the multiple choice question again, but continues on to play scene 3 from frame 2342 to frame 3000. Notice that, although the question is not repeated, the remedial material is shown again.

When scene 3 completes, the player shows scene 4 in slow motion from frame 3001 to frame 3200. The final frame of scene 4 will freeze for 10 seconds before playing the last scene, scene 5, from frame 3201 to 4000 at normal speed. The final frame of scene 5 will freeze and the player will revert to manual mode.



## ENTERING A PROGRAM

Entering a program is simple: merely press the PROGRAM button. Instantly the "0" memory location appears with its content. For example, the memory location will appear as \*0000. Below it will be the content of the location: either a one-digit number (THREE, SIX, ZERO, etc.) or a command (SEARCH, AUTOSTOP, WAIT, etc.).

When a new entry is keyed in, the number or command will appear on the screen and then the location will automatically advance one digit. The new location will appear as \*0001 and the current content will appear underneath. Each location will accommodate a one-digit number or a single command. Frame numbers and other multiple-digit numbers require multiple locations.

### TRY ENTERING THE SAMPLE PROGRAM

#### MEMORY

LOCATION	OPERAND	COMMAND	PURPOSE
		PROGRAM	Puts player in PROGRAM mode
0000	1	RECALL	Selects register 1
0002	2	STORE	Sets the value of Register 1 at 2
0004	1512	SEARCH	Tells the player to search for frame 1512
0009	2041	AUTOSTOP	Tells the player to search for frame 2041
0014	3	INPUT	Prepares the player to accept three answers—"0," "1," and "2"
0016	014	BRANCH	Redirects the program to memory location 0014 (answer "0")
0020	29	BRANCH	Redirects the program to memory location 0029 (answer "1")
0023	43	BRANCH	Redirects the program to memory location 0034 (answer "2")

0026	14	BRANCH	Redirects the program to memory location 0014 (any other answer)
0029	5000	SEARCH	Tells the player to search for frame 5000
0034	5600	AUTOSTOP	Tells the player to play until frame 5600
0039	1	DEC REG	Decreases the value of Register 1 by one
0041	4	BRANCH	Redirects the program to memory location 0004
0043	2342	SEARCH	Tells the player to search for frame 2342
0048	3000	AUTOSTOP	Tells the player to play until frame 3000
0053	3200	SLOW FWD	Tells the player to play in slow motion until frame 3200
0058	100	STOP (WAIT)	Tells the player to freeze on frame 3200 for ten seconds
0062	4000	AUTOSTOP	Tells the player to play until frame 4000 and then freeze
0067		HALT	Returns the player to MANUAL Mode
		END	Takes the player out of PROGRAM mode

Now, press RUN to play this sample program.



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