

# Gould 484 Programmable Controller

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## PROGRAMMING GUIDE/P190

**SUBJECT:** Instructions for using the P190 Programmer with a 484 Programmable Controller and the following three 484/P190 tapes:

AS-T484-001	484 Programmer
AS-T484-002	Utility Package (Ladder Lister)
AS-T190-001	P190 Tape Loader (484 Operations)

**SPECIAL INSTRUCTIONS:**

This guide supersedes the following publications:

ML-P190-001	484 Programmable Controller Program Tapes/P190
ML-484L-USE	484 Programmable Controller Ladder Lister/P190

June, 1984

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## PREFACE

This guide contains instructions for using the 484 PC Programmer, Tape Loader, and Ladder Lister Tapes with a P190 Programmer. Section 1 is an introduction to the P190 Programmer and a description of how it is connected to other devices. Section 2 explains how the program tape is used to create and edit programs. Section 3 describes how the tape loader tape is used to transfer programs between a 484 PC and a tape. The tape loader tape is also used to compare a tape and a 484 PC's memory. Section 4 describes how the ladder lister tape is used to create hard copies of a 484 PC's memory on a printer. Appendix A contains error and information messages which are displayed on a P190 Programmer.

Use the following publications in conjunction with this guide:

ML-C484-000	484 Programmable Controller User's Manual
ML-C484-APL	484 Programmable Controller Applications Manual
ML-P190-USE	P190 Programmer User's Guide
PI-P190-001	P190/484 Reference Guide
PI-J474-001	J474/J475 Interface User's Manual

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# SECTION 1

## INTRODUCTION TO THE P190 PROGRAMMER

This section covers the basic information needed to use a P190 Programmer with any of the 484 PC tapes.

### 1.1 THE P190 PROGRAMMING KEYBOARD

The P190 Programmer keyboard has four sections: software label keys, alphabetic keys, function keys, and numeric keys (see Figure 1-1). When using the 484 PC tapes you are most concerned with the software label keys.

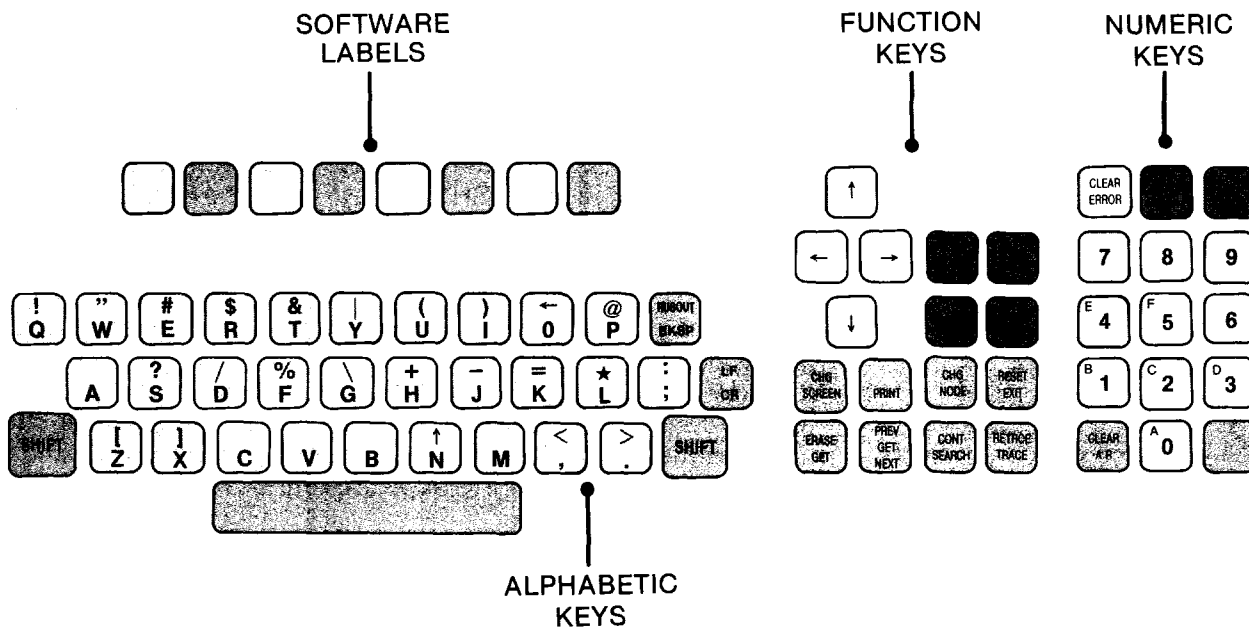


Figure 1-1. P190 Keyboard

#### 1.1.1 Software Label Keys

The software label keys are located at the top of the keyboard in a horizontal row consisting of eight keys which are alternately colored white and grey. The eight software label keys correspond to the eight software labels which appear on the bottom of the CRT screen when a tape is in use. To select a function simply press the corresponding software label key.

#### 1.1.2 Hardware Keys

The following P190 Programmer keys are used with the programmer, tape loader, and ladder lister tapes. Their functions are defined below:



The Change Node (CHG NODE) key is used to access the software labels which allow you to enter new logic or change existing logic.



The Change Screen (CHG SCREEN) key is used to move back and forth between the logic screen and the alternate screen. The P190 retains the information so the CHG SCREEN key can be toggled without losing any data.

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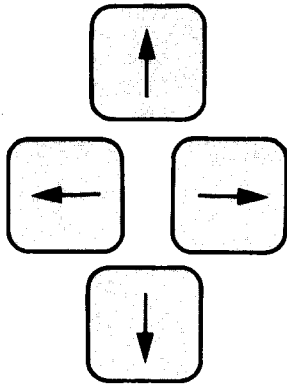
The CLEAR AR key is pressed to clear the value in the assembly register (AR) and replace it with zeros. This key also clears any error messages pertaining to the AR.



The CLEAR ERROR key is used to remove any error message or information message that appears on the error line of the screen.



The Continue Search/Search (CONT/SEARCH) key is used along with the SHIFT key for a comprehensive search procedure. When this key is pressed, search parameters must be entered into the search field in the lower right corner of the P190 screen. To continue the search, press the SHIFT key and the CONT/SEARCH key simultaneously.



A set of four keys control cursor movement. Each key, when pressed, moves the cursor one space in the direction indicated by the arrow on the key (up, down, right, or left). As long as the key is pressed, the cursor continues to move in the direction indicated. When the cursor reaches the last position in any direction, it wraps around and appears in the first position on the opposite end of the screen.



The Delete Network/Delete Node (NTWK DELETE NODE) key and the SHIFT key are used to delete a single node or a whole network. To delete a single node, position the cursor over the node to be deleted and press the NTKW DELETE NODE key. To delete a whole network, position the cursor anywhere in the network to be deleted and press the SHIFT key and the NTKW DELETE NODE key simultaneously.



The ENTER key is used to insert the value or reference number in the Assembly Register (AR) into the area at the cursor on the P190 screen. Before the value or reference number is inserted it is validated; illegal data is not inserted even if the ENTER key has been pressed.



The ERASE/GET key and the SHIFT key are used to call references to the screen or to erase references which are currently displayed on the screen. Press the ERASE/GET key to call up the network, register, or discrete currently referred to in the AR. Press the SHIFT key and the ERASE/GET key simultaneously to erase the reference or network at the cursor position.

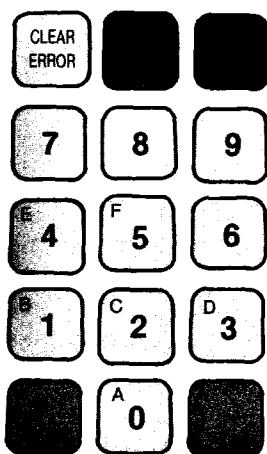




The Get Previous/Get Next (PREV GET NEXT) key and the SHIFT key are used to call references or networks to the screen without entering values into the AR. To use this function, the cursor must be positioned over a reference or in a network. To call up the reference or network previous to the one at the cursor position, press the SHIFT key and the PREV GET NEXT key simultaneously. To call up the reference or network following the one at the cursor position, press the PREV GET NEXT key.



The INIT and INIT LOCK keys are the red keys located at the top of the numeric keys section on the panel. These keys are pressed simultaneously to load or reload the tape in the P190 tape drive into the P190's memory. It is not necessary to press these keys immediately after power-up; the first tape is automatically loaded.



The numeric keys are located at the right side of the P190 Keyboard. There are ten keys: A/0, B/1, C/2, D/3, E/4, F/5, 6, 7, 8, and 9. These keys are used to enter decimal or hexadecimal data into the P190 assemble register for use as reference numbers, network numbers, constants, or register contents. To enter a letter, press the appropriate key and the SHIFT key simultaneously.



The PRINT key is used to print the screen display if an RS-232-C compatible device is connected to port 2 on the P190 Programmer.



Press the SHIFT key and the RESET/EXIT key to place the P190 at the RESET Level mode of operation (see Section 2.1). The RESET/EXIT key is used to place the P190 at the EXIT Level (see Section 2.2).

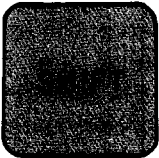


The Retrace/Trace (RETRCE/TRACE) key and the SHIFT key are used to trace relay contacts to a particular network and then return to the network where the trace was performed. Position the cursor over a relay contact which is referenced to a coil and press the RETRCE/TRACE key; the network containing this coil is displayed. To return to the network in which the trace was initiated, press the SHIFT key and the RETRCE/TRACE key simultaneously.

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The Rubout/Backspace (RUBOUT/BKSP) and SHIFT keys are used to erase a whole line or a number of characters and reposition the cursor. The RUBOUT/BKSP key is used to backup the cursor position on the screen and erase the character positioned to the left of the cursor. It is active when a TITLE or CONTROLLER NAME is being entered. Press the RUBOUT/BKSP key and the SHIFT key to erase a whole line or entry and reposition the cursor to the start of the line or entry.



The SHIFT keys are located at the lower right and lower left corners of the alphabetic key section. These keys are used to gain access to the upper case functions of all the double function keys on the P190 keyboard. You must press the SHIFT key and the desired function key simultaneously to access the key's upper function.



The START NEXT key is used to start a new network. The new network is inserted after the network currently displayed on the P190 screen or as the first network in the program if no networks exist.

### 1.2 P190 CONNECTIONS

The P190 must be connected to a J470 Adapter or J474/J475 Interface which in turn is connected to a 484 PC. A J470 Adapter is used for a local, direct connection to a 484 PC. A J474 or J475 Interface is used for remote and Modbus connections. When using a J474 or J475 Interface, a J478 Modem must be used. For more information on the J470 Interface, see a 484 Programmable Controller User's Manual (ML-C484-000). For more information on the J474/J475 Interface, see the J474/J475 Interface User's Manual (PI-J474-001).

Figures 1-2, 1-3, and 1-4 show the various equipment which can be used and the necessary cable connections.

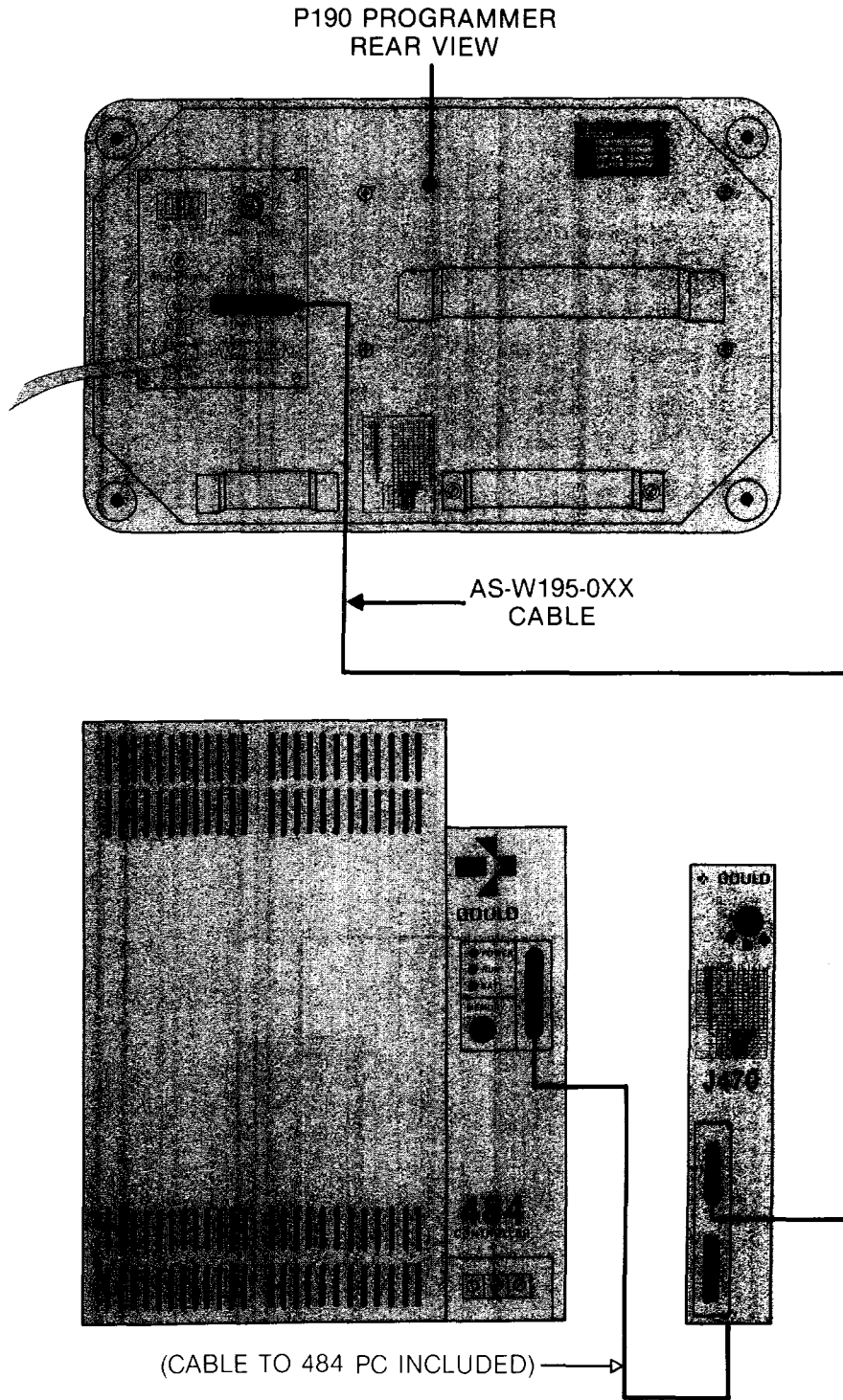


Figure 1-2. Equipment Outline — P190/J470/484

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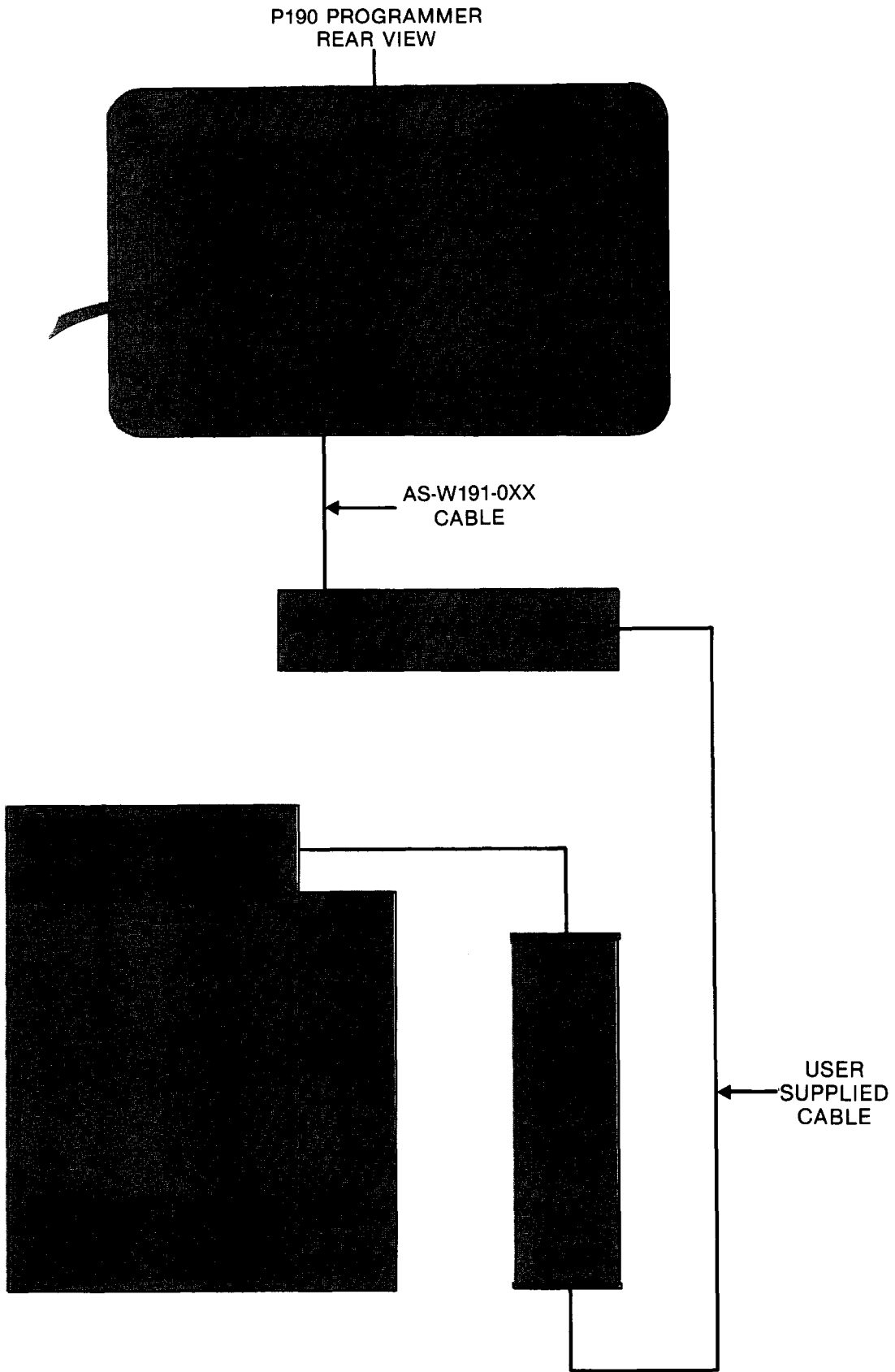


Figure 1-3. Equipment Outline — P190/J478/J474/484

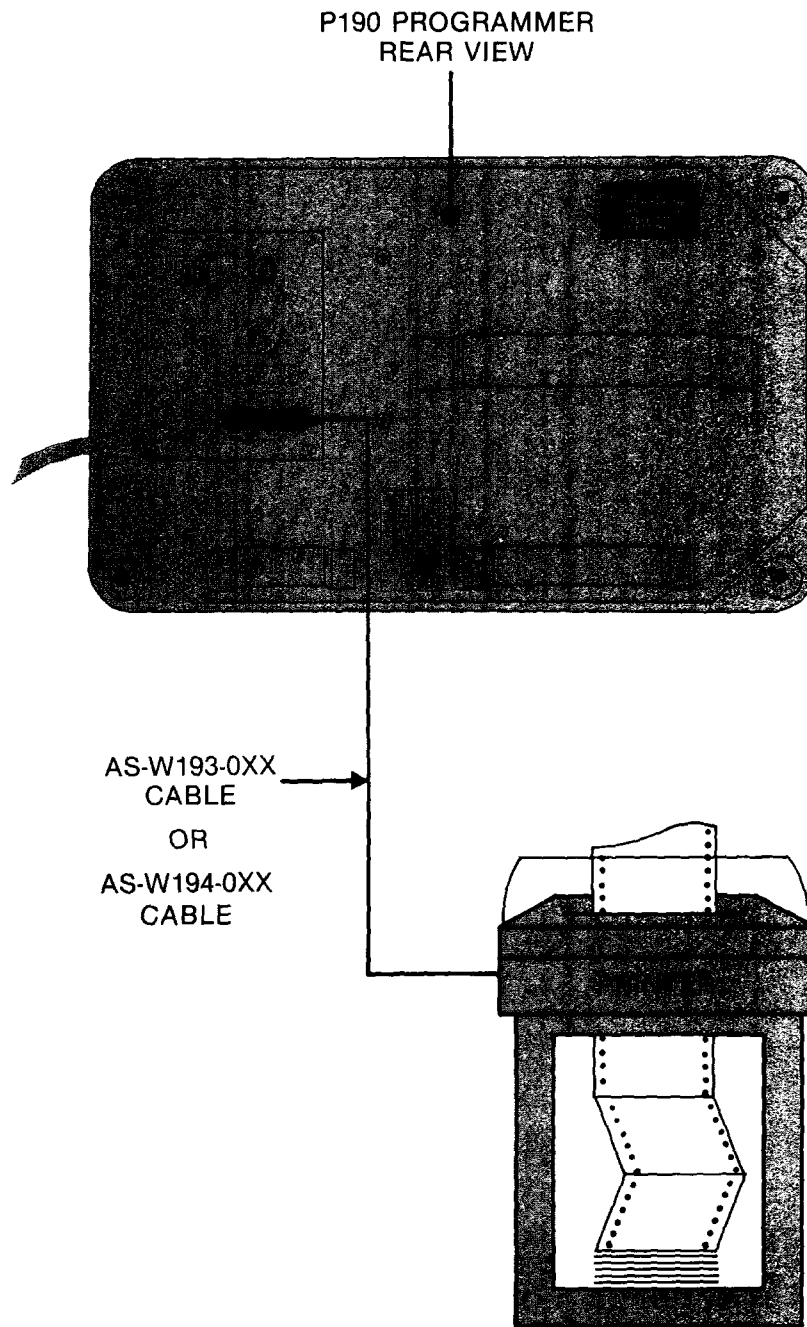


Figure 1-4. Equipment Outline — P190/Printer

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Cable pin-outs are found in Figure 1-5.

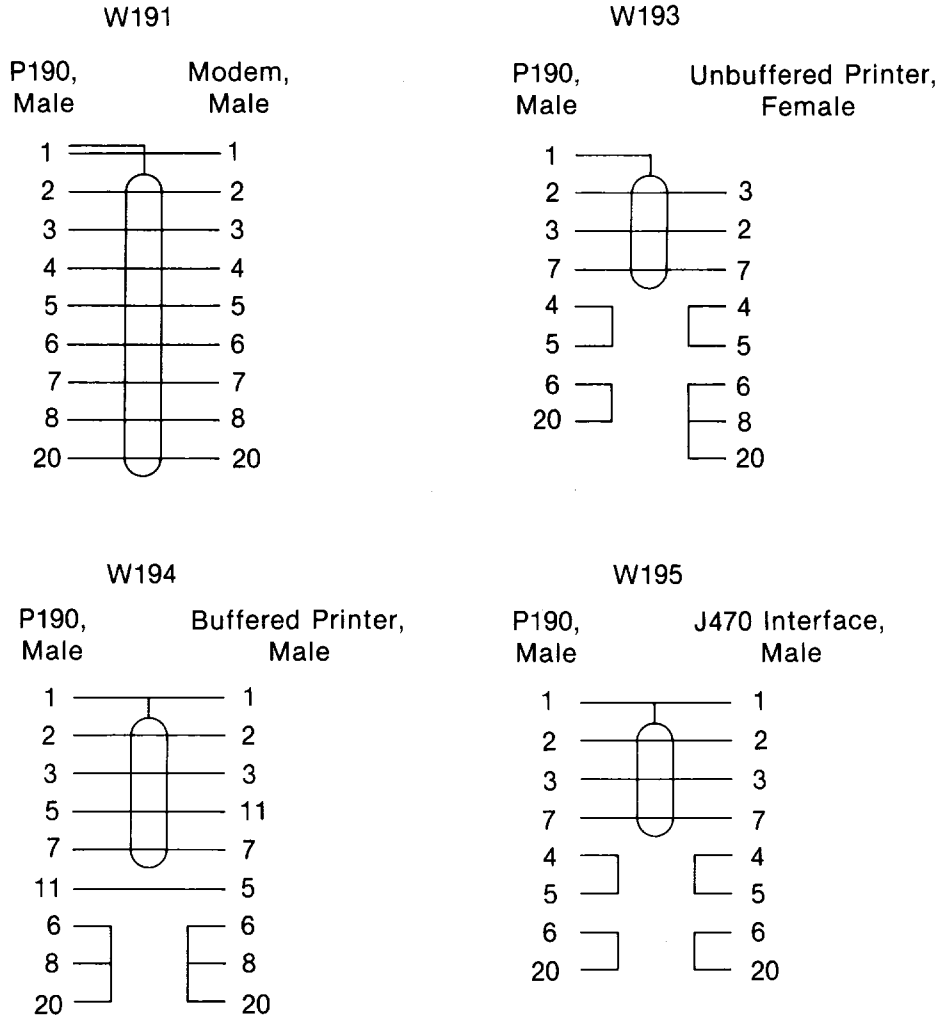


Figure 1-5. Cable Pin-Outs

- 1 — Protective Ground
- 6 — Data Set Ready
- 2 — Transmitted Data
- 7 — Signal Ground
- 3 — Received Data
- 8 — Carrier Detect
- 4 — Request To Send
- \*11 — Buffer Full
- 5 — Clear To Send
- 20 — Data Terminal Ready

\*Some printers do not use pin 11 as Buffer Full. In this case, appropriate changes must be made to the cable.

The baud rates, parity and start/stop bits on the P190 and J470 or J474/J475 must agree. These P190 parameters are set via DIP switchpacks inside the back of the P190. These switchpacks are located behind the plate to the left of the P190 parameter selection sticker. See Figure 1-2, 1-3, or 1-4 for the P190 rear view. The left switchpack is for the port 1 parameters and the right switchpack is used to set port 2 parameters.

The parameters are set by placing the switches in a combination of up and down positions; up equals 1 or ON, down equals 0 or OFF. The possible switch settings are shown in Figure 1-6 which is a copy of the parameter selection sticker from the back of the P190. For further details on setting P190 port parameters, see the P190 Programmer User's Manual.

BAUD RATE	S1	S2	S3	S4
19,200	1	1	1	1
9,600	1	1	1	0
7,200	1	1	0	1
4,800	1	1	0	0
3,600	1	0	1	1
2,400	1	0	1	0
2,000	1	0	0	1
1,800	1	0	0	0
1,200	0	1	1	1
600	0	1	1	0
300	0	1	0	1
150	0	1	0	0
134.5	0	0	1	1
110	0	0	1	0
75	0	0	0	1
50	0	0	0	0
S5	1	PARITY ENABLE		
	0	PARITY DISABLE		
S6	1	EVEN PARITY		
	0	ODD PARITY		
S7	1	1 STOP BIT		
	0	2 STOP BIT		
S8	1	8 DATA BIT		
	0	7 DATA BIT		

Figure 1-6. P190 Parameter Selection

### 1.3 INSERTING A TAPE INTO THE TAPE DRIVE

To insert a tape into the P190, open the tape drive door located in the upper right-hand corner of the P190 front panel (see Figure 1-7). Hold the tape so that the metal plate is on the underside and the exposed tape area is toward the tape drive. Insert tape and press firmly until tape clicks into place. Press the INIT and INIT LOCK keys simultaneously to load the tape into the programmer. If it is the first tape inserted after power-up, it loads automatically.

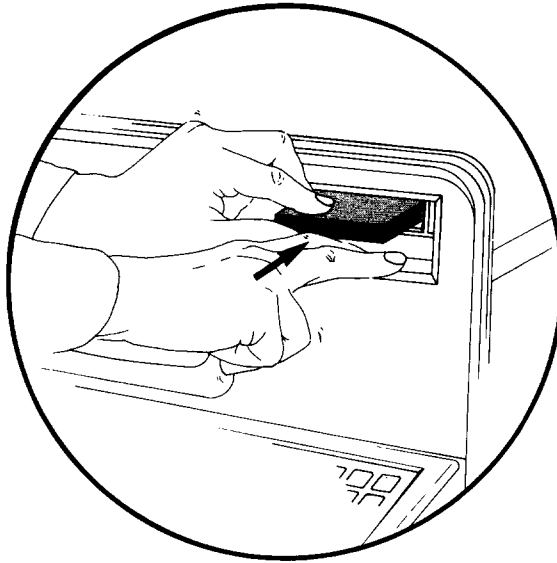
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After the tape has been loaded, or when you have finished using the tape, open the tape drive door and push the eject pushbutton to remove the tape; the contents of the tape are in the P190's memory. To clear the P190's memory, press the INIT and INIT LOCK keys as you did to load the tape.

### NOTES

The INIT and INIT LOCK keys must be pressed simultaneously in order for the contents of the tape to be entered or the P190's memory to be cleared.

Slide the tape's RECORD tab in the direction opposite that indicated by the arrow on the tab, unless you are using the tape loader tape DUMP 484 function. Doing this prevents the tape from being accidentally written over.



*Figure 1-7. Inserting a Tape into the Tape Drive*