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(54) Diagnostic device for a printing press

(57) A diagnostic device for a printing press (10) having a plurality of microprocessors (52) controlling various parts of the press (10), with said microprocessors (52) communicating with each other, a computer (56) having a display (58) and directly communicating with at least one of the microprocessors (52) and indirectly with others, said computer (56) displaying a plurality of tests to be performed on the press, and having a device for selecting one of the displayed tests, and device for providing information to an operator on the manner to perform a selected test.

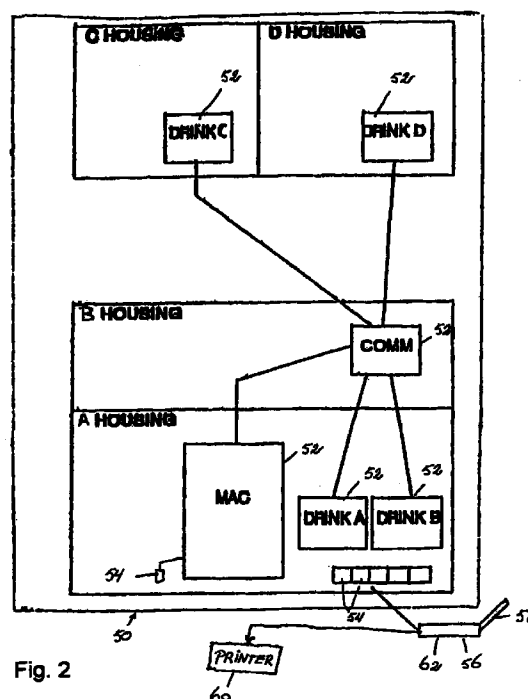


Fig. 2

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## Description

### BACKGROUND OF THE INVENTION

The present invention relates to diagnostic devices for a printing press.

When a press is delivered from a manufacturer to a customer it is necessary to assemble the press on the grounds of the customer. Such assembly is complex and time consuming, and it is desirable to expedite the assembly of the press into running operation.

### SUMMARY OF THE INVENTION

The present invention relates to a diagnostic device for a printing press.

The diagnostic device comprises, a plurality of microprocessors controlling various parts of the press, with said microprocessors communicating with each other, and a computer having a display and communicating directly with at least one of the microprocessors and indirectly with the others.

A feature of the invention is that the computer displays a plurality of tests to be performed on the press.

Another feature of the invention is that the computer has means for selecting one of the displayed tests.

Yet another feature of the invention is that the computer has means for providing information to an operator on the manner to perform a selected test.

Thus, a feature of the invention is that then device may be used in assembly of a new printing press.

Another feature of the invention is that the device greatly facilitates the assembly of the press in time and accuracy.

A further feature of the invention is that the device may be used in order to train new personnel assembling the press.

Further features of the invention will appear in the following detailed description of the invention, and from the appended claims.

### DESCRIPTION OF THE DRAWINGS

In the drawings:

Fig. 1 is a diagrammatic view of a unit for a printing press;

Fig. 2 is a block diagram of a control system for a unit of the press;

Fig. 3 is a flow chart of a diagnostic device for the control system of a unit of the printing press; and

Fig. 4 is a sample display on the screen of a computer used in conjunction with the diagnostic device.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Fig. 1, there is shown a unit of a printing press generally designated 10 for printing an image on a paper web 14. The unit 10 has a plurality of printing couples 28, 30, 32, and 34 for printing different colors of ink on the web 10. As shown, the printing unit 28 may print an ink having a color Cyan C, the printing unit 30 may print an ink having a color Magenta M, the printing unit 32 may print an ink having the color Yellow Y, and the printing unit 34 may print an ink having a color black K in a four-color press unit 10.

The printing units 28, 30, 32, and 34 each have a plurality of print rolls or cylinders 36 associated with a blanket cylinder or roll 40. During printing by the unit 10, an image of the ink is transferred from the print rolls 36 to the associated blanket rolls 40 to print the image on one surface of the web 14. In addition the unit 10 may have a plurality of printing couples having a plurality of print rolls 38 associated with a plurality of blanket rolls or cylinders 42 on an opposed side of the web 14 in order to transfer the ink image from the print rolls 38 to the blanket rolls 42 for printing an image on the other surface of the web 14. The following description of the print rolls is equally applicable to either the print rolls 36 or the print rolls 38 on the opposed sides of the web 14.

With reference to Fig. 2, the press 10 has a control system generally designated 50 having a plurality of microprocessors 52 termed COMM, MAC, DRINK A, DRINK B, DRINK C, and DRINK D which control different parts of the press 10. The microprocessors 52 each have a port 54 communicating with each of the separate microprocessors 52, with the microprocessors 52 communicating with each other.

There is shown a computer 56, such as a lap top or notebook computer, having a suitable memory and display 58 for displaying information, with the computer 56 having a printer 60 for printing information. The computer 56 has a diagnostic device 62 in the memory of the computer 56 for performing tests on the control system 50 and press 10 during initial assembly of the press 10. The diagnostic device 62 may be conducted on the control system 50 by connecting the computer 56 into the port 54 of any of the microprocessors 52.

With reference to Fig. 3, the diagnostic program is entered, after which the computer 56 displays information of plurality of tests to be performed on the control system 50 of the computer 56. If a test has not been selected by the operator, the program exits the program.

If a test has been selected, then the computer 56 either displays instructions on how to conduct the selected test on the computer display 58, or prints this information by the printer 60 in a report.

The tests are of 2 types. In one case, a feedback is provided in order to signal the program that the test has been satisfactorily completed, and a second type in which such a feed back is not provided to the computer 56, in which case the computer 56 exits the program

routine. In the event that the test is of a feed back type, then the program determines whether the test has been successfully completed. If the test has not been completed, the program enters a delay, and again checks whether the test has been completed. Once the test has been completed, the program displays or prints this result, and enters an exit from the program.

Some sample screens are shown in Fig. 4. In the upper part, some tests which may be selected are shown, along with a pop-up display providing information to the operator. In the lower part, more selectable tests are shown, and in some of the tests of the feed-back type it is indicated whether the tests have passed or failed. One test is shown as currently running, and other tests are indicated as pending in which case they have not yet been executed. In each case, the program exists the routine after completion of a test, and monitors the device for further tests to be selected.

Information may also be provided to the computer about the current configuration of the press, such as parts of the press being absent when a test has been selected, and the program takes account of the instructed configuration of the press.

Thus, in accordance with the present invention, the control system of the press has a diagnostic device in the form of a computer which is used by the operator in assembling a new press on the site of a customer. The diagnostic device simplifies the assembly of the press, and may also be used to train new personnel in assembling the press.

The foregoing detailed description of the invention is given for clearness of understanding only, and no limitations should be understood therefrom, as modifications will be obvious to those skilled in the art.

## Claims

1. A diagnostic device for a printing press, comprising:

a plurality of microprocessors controlling various parts of the press, with said microprocessors communicating with each other;

a computer having a display and communicating with at least one of the microprocessors, said computer displaying a plurality of tests to be performed on the press, and having means for selecting one of the displayed tests, and means for providing information to an operator on the manner to perform a selected test.

2. The device of claim 1 including means for indicating to the computer when a selected test has been completed.

3. The device of claim 2 wherein the computer displays information on the completed test.

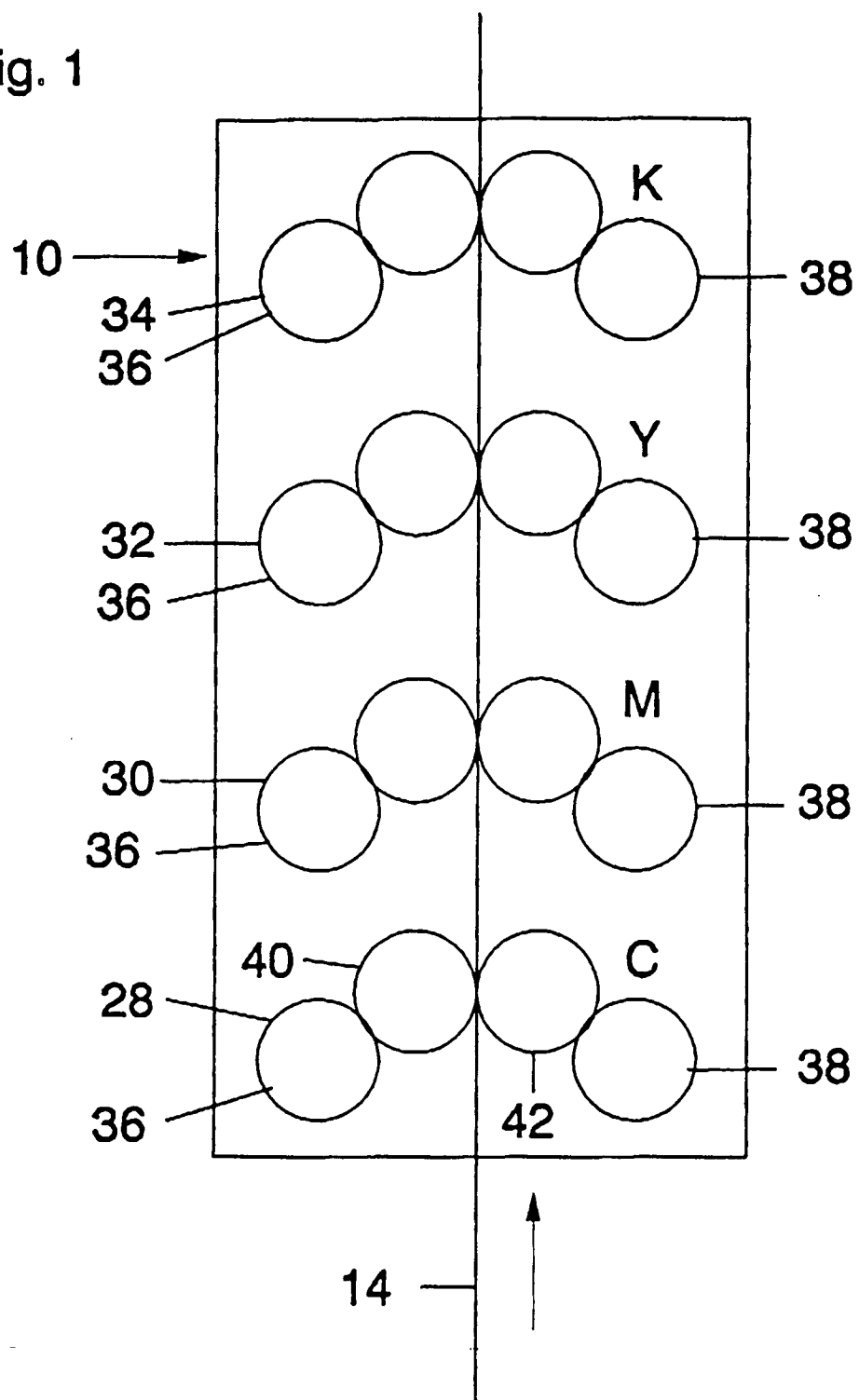
4. The device of claim 1 wherein the information pro-

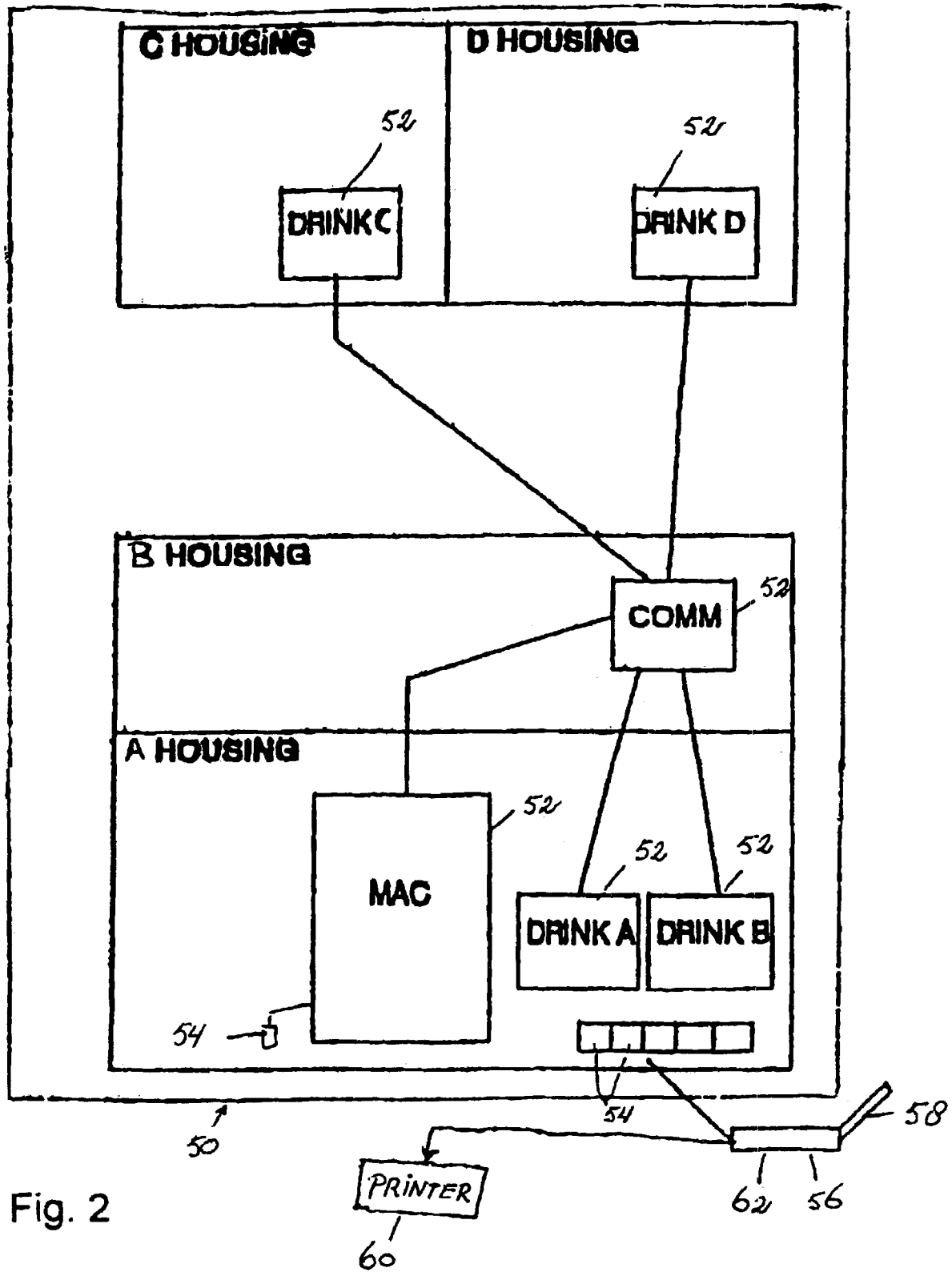
viding means comprises the display on the computer.

5. The device of claim 1 wherein the information providing means comprises a printer for printing instructions and/or test results to the operator.

6. The device of claim 1 including means for informing the computer the present configuration of the press, and in which the computer takes account of the configuration of the press in instructing the operator to perform tests.

Fig. 1





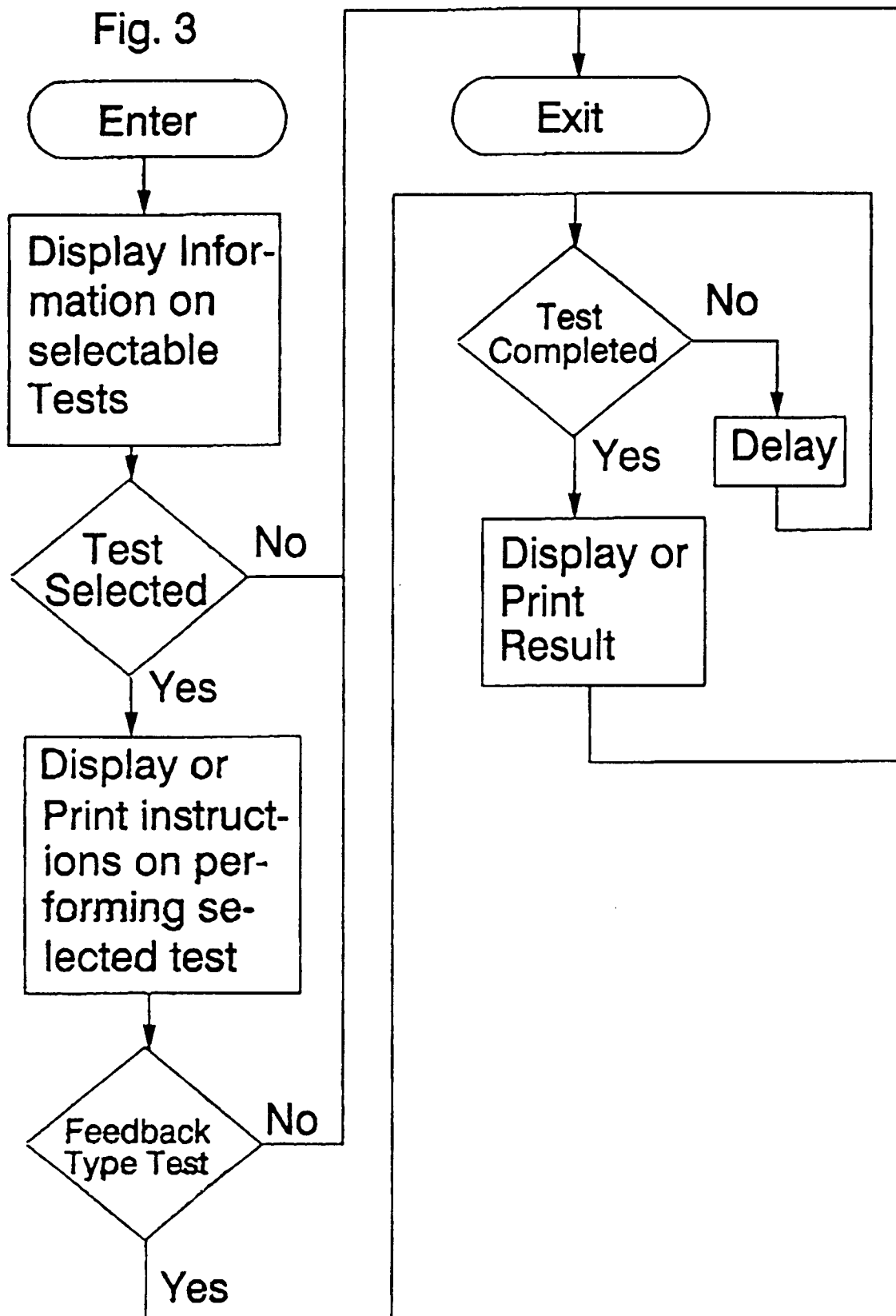


Fig. 4 SAMPLE SCREENS

COLORLINER INSTALLATION SYSTEM - GOSS PERSONNEL VERSION			
2.0.0 Installation Test Status Menu			
Number	Test Name	Pass	Fail
3.0.0	Serial Communications	X	
4.0.0	Inch Drive & Warning Bell		

System Info Window  
Cust: L.A. Times  
Press #: 50428  
Unit #: 8  
Plan Add: 0333  
Date: 04-02-89  
Time: 11:30:22  
Current Screen: 2.0.0  
Software Version: 2.1  
ESC - Continue

ESC = Abort | F1 = HELP | F3 = System Info | F10 = Exit

COLORLINER INSTALLATION SYSTEM - GOSS PERSONNEL VERSION					
2.0.0 Installation Test Status Menu					
Number	Test Name	Pass	Fail	Status	Date
3.0.0	Serial Communications	X			04-02-89
4.0.0	Inch Drive & Warning Bell	X			04-02-89
5.0.0	Level A testing		X		04-03-89
6.0.0	Level B testing			Running	
7.0.0	Level C testing			Pending	
8.0.0	Level D testing			Pending	
9.0.0	Auxiliary I/O			Pending	
10.0.0	Web Break Detection	X			04-04-89
11.0.0	Encoder Calibration			Pending	

ESC = Abort | F1 = HELP | F3 = System Info | F10 = Exit



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# EUROPEAN SEARCH REPORT

Application Number  
EP 96 11 4722

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP-A-0 419 811 (ROCKWELL INTERNATIONAL CORPORATION) * page 10, line 8 - page 11, line 41; figures 2,4-7 *	1-6	B41F33/00
X	EP-A-0 436 818 (HEIDELBERGER DRUCKMASCHINEN AG.) * the whole document *	1-6	
A	EP-A-0 530 432 (AUTOMATION, INC.)		
A	DE-U-92 15 547 (KOENIG & BAUER AG)		
A	FR-A-2 559 711 (DIDDE GRAPHIC SYSTEMS CORP.)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B41F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		13 December 1996	DIAZ-MAROTO, V
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document</p>			

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