

Quebec, June 1990

Gentlemen:

Your Manufacturer is very pleased to offer you the Instruction Handbook for your Bowlingo pinsetters Model 201E.

You are invited to read it very carefully, particularly the section dealing with the maintenance of the machines.

In referring to the Instructions Handbook, you will find that it is highly recommended to use Pneumatic Oil Z-400 and original parts exclusively, so as to insure a trouble free operation.

Yours very truly,

MENDES INC.

Lucien Rochefort
Product Manager

/mct



Déménagé à / Moved to
2425 Watt
Parc Colbert, Ste-Foy, Qc
G1P 3X2
Tél.: (418) 650-2425
Fax: (418) 650-3341

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All contracts or quotations are subject to delays caused by fire, accidents or any other cause beyond our control.

INSTRUCTION HANDBOOK
MENDES PNEUMATIC PINSETTER
BOWLINGO
MODEL 201E

Manufactured under licence from Jacob J. Leidl:

Canadian patent: no 963929

U.S. patent : no 3778057

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June 1990

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Order spare parts by part number and description. Always give serial and model numbers of machines when placing an order.

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Bulletin referring to the
functioning and maintenance of the

"MENDES"

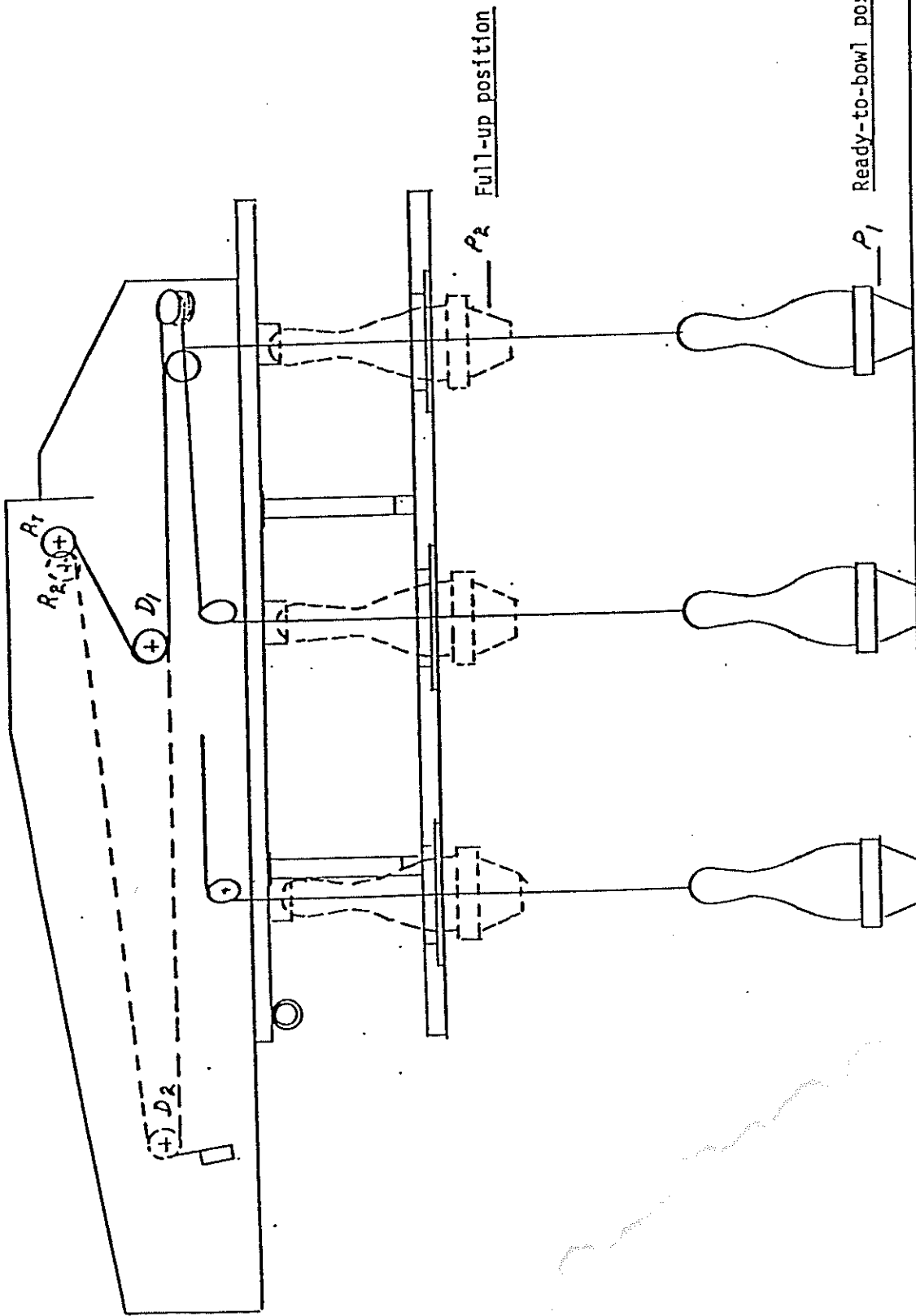
PINSETTER

It is understood that machines of any kind require a minimum of care and should operate according to standards.

You are cordially invited to read this instruction program and apply it carefully so that you may get the best out of your investment.

We also recommend you instruct your bowling lane superintendent on the functioning of the machines.

The simplicity of this pinsetter being its main characteristic, it is very easy for anyone to understand its concept.



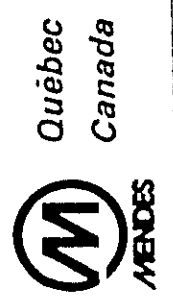
Full-up position

Ready-to-bowl position

PAR : ÉCHELLE :
PARTIE No.

SPÉCIFICATIONS
MODEL 201E

DESCRIPTION :
BASIC FUNCTIONING



VÉR. : APPR. : *[Signature]* DATE : 06/88

1. BASIC FUNCTIONNING:

The preceeding page shows a simplified diagram of the pinsetter. Solid lines show all main parts in the "ready-to-bowl" position, with pins on the deck. When a pin is bowled, the sensor is actuated, which causes cylinders to pull sheaves on the drawbar from D-1 position to D-2 position. The drawbar continues after the pins are fully lifted, extending spring loaded cord reels to move from R-1 position to R-2 position, to ensure the pins are securely seated in their respective rubber bumpers. When the reels reach R-2 position, the drawbar gives contact to L.S. switch, a reversing valve, causing cylinders to move drawbar sheaves back to D-1 position lowering pins to deck again.

The sensor-brake assembly contains a unit which is actuated by the string movement of a bowled pin. This unit trips and releases the brake unit to "hold" position. At the end of the "up" movement (D-2 position), another trip unit releases the brake to lock on "tensed" strings. In this manner, bowled pins are held in "up" position while the remaining pins are returned to the deck. When all the pins are bowled or when the solenoid valve button is pressed, a full set of pins is automatically set on the deck.

2- BASICS OF OPERATION:

A- MECHANICAL:

- Mounting frame:

The machine is mounted on a simple iron pipe frame.

- Cord system:

Here is the concept of the system. Whether the pinsetter is used for the games of Fivepin, Duckpin or Tenpin, an equal number of cords of fourteen feet (14'), approximately four feet (4') as spare cord wound on each reel, are attached to the top of the pins. These black nylon cords of the highest quality whiten slightly when wearing. The whitening is therefore, an inherent characteristic of the cord as the nylon is basically a white resin braided into cord and then dyed black. The only point of wear on the cord is immediately above the top of the pin. When the cord wears, it may be merely pulled through the pin, the worn out part cut, and the cord refastened.

In the head of the pin is a plastic insert wich allows the pin to spin and roll without twisting the cord. This greatly extends cord life and ensures more accurate spotting of pins.

- Sensor system:

The sensor unit is a four component mechanical unit, consisting of petro-chemical material of the highest quality, which are:

- finger P-003
- link P-005
- hook P-009
- arm P-010

The first three are essentially interlinked with the hook engaging the forward end of the brake arm (P-010).

- Braking system:

The braking system has three main parts, a lower adjustable bar MT-0012, a moveable upper rubber wheel and a moveable steel quadrant. Normally the moveable bar is held in an upper position with the cord passing freely between the wheels. When the brake is actuated the upper wheel falls onto the lower bar with the cord between.

- Ball lift system:

The ball lift system is simply a conveyor belt which takes the ball and places it on a return track. It is a totally automatic operation which is activated as soon as the machine is turned on.

B- AIR SYSTEM:

- Air supply system:

An adequate compressor supplies the air into the system with a minimum pressure never lower than 120 P.S.I. in main lines. The compressor is equipped with an air dryer to eliminate water going through the air components.

- Main cylinder SB-5003:

The pins are raised and lowered by a pair of 1 1/8" bore, 37" stroke, double acting pneumatic cylinders. The power is transferred to the drawbar by the cylinders.

- Function control system:

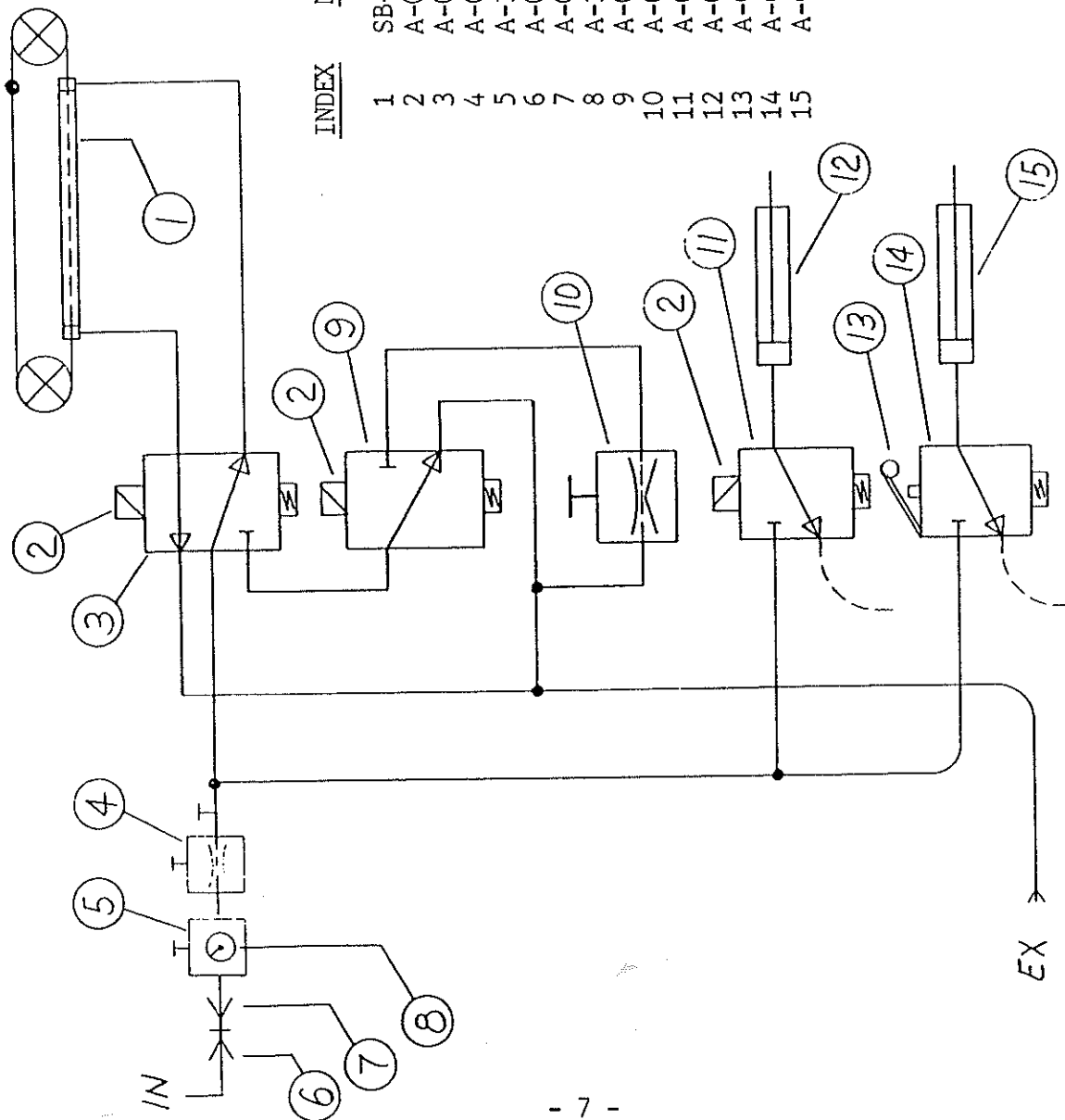
Components used for the control of all the different functions of the machine are:

A- Main valve	A-014-9982
B- Retarder valve	A-014-7877
C- Relatch cylinder valve	A-014-4450
D- Solenoid valve	A-014-67185-FS
E- Relatch cylinder	A-012E
F- Filter regulator	A-170
G- Needle valve	A-023
H- Part set switch	SB-ECIL325FS
I- Limit switch	SB-ECIL325LS

LISTE DES PIÈCES

MATERIAL LIST

INDEX	NO	DESCRIPTION
1	SB-5003	MAIN CYLINDER
2	A-014-6718	SOLENOID
3	A-014-9982	4 WAY VALVE
4	A-023-10	NEEDLE VALVE
5	A-170	FILTER REGULATOR
6	A-081	QUICK CONNECTOR
7	A-082	MALE THREAD ADAPTOR
8	A-162	GAGE
9	A-014-7877	3 WAY VALVE
10	A-023	NEEDLE VALVE
11	A-014-4450	3 WAY VALVE 10/32"
12	A-012E	FULL SET CYLINDER
13	A-029A	ACTUATOR ONE WAY
14	A-019	3 WAY VALVE 1/8"
15	A-012-120	CYLINDER 2" X 7/8"



DESCRIPTION: SCHEMATIC DRAWING	SPÉCIFICATIONS MODEL : 201E	PAR : <i>P. Boldus</i> ÉCHELLE : _____
	VÉR : APPR : <i>Super</i> DATE : 18-09-89	PARTIE NO. SD-201E

FUNCTION OF EACH COMPONENT:

A- Main valve (A-014-9982)

It is an electrically operated valve at 24V.A.C. Its function is to actuate the two (2) main cylinders, SB-5003, back and forth.

B- Retarder valve (A-014-7877)

Its function is to close temporarily the exhaust. This has for effect to slow the speed of the pins when sitting on the pindeck.

C- Relatch cylinder valve (A-014-4450)

Its function is to relatch all the P-10 and allow a full set of pins to be reset on the deck.

D- Solenoid valve (A-014-6718)

It is an electronical operator valve at 24 V.A.C. Its function is to actuate the relatch cylinder A-012-E.

E- Relatch cylinder (A-012-E)

Its function is to relatch all the P-010 and allow a full set of pins to be reset on the deck.

F- Filter regulator (A-170)

Its functions are: to control air pressure, filter the air and remove condensation partially.

G- Needle valve (A-023)

Its function is to slow down the falling of the pins on the pindeck.

H- Part set switch (SB-ECIL-325-FS)

It is actuated only when a full set of pins is bowled - it sends a positive signal directly to the electronic control.

I- Limit switch (SB-ECIL-325-LS)

It is actuated when the pins reach the full up position Pl. Its function is to send a positive signal to the electronic control.

C- ELECTRICAL SYSTEM:

- Power box:

Refer to diagram # EL-045-04 on page 11. A proper energy source is necessary to operate a pair of machines. The system operates on 220 volts A.C. 50/60 Hz.

The electrical system is mounted so as to supply two machines which need 19 amperes at 220 volts in single phase 50/60 Hz.

The electrical system input is protected by a 25 ampere breaker. A reset protects the lift and pump motors.

The resets, which are automatic, are inside the electrical panel. The fuses protect the T1 transformer and EZ Luster output.

- Electronic control box:

A specially designed computer is used to control the operations of each pair of alleys.

The basic pinsetter functions which control the pair of alleys are grouped together with the electronic display control (unites). See diagram # SB-6500-35-1.

LEDs indicate signals received from electronic sensors. The output signals of the solenoids are also connected to LEDs to facilitate comprehension of the system.

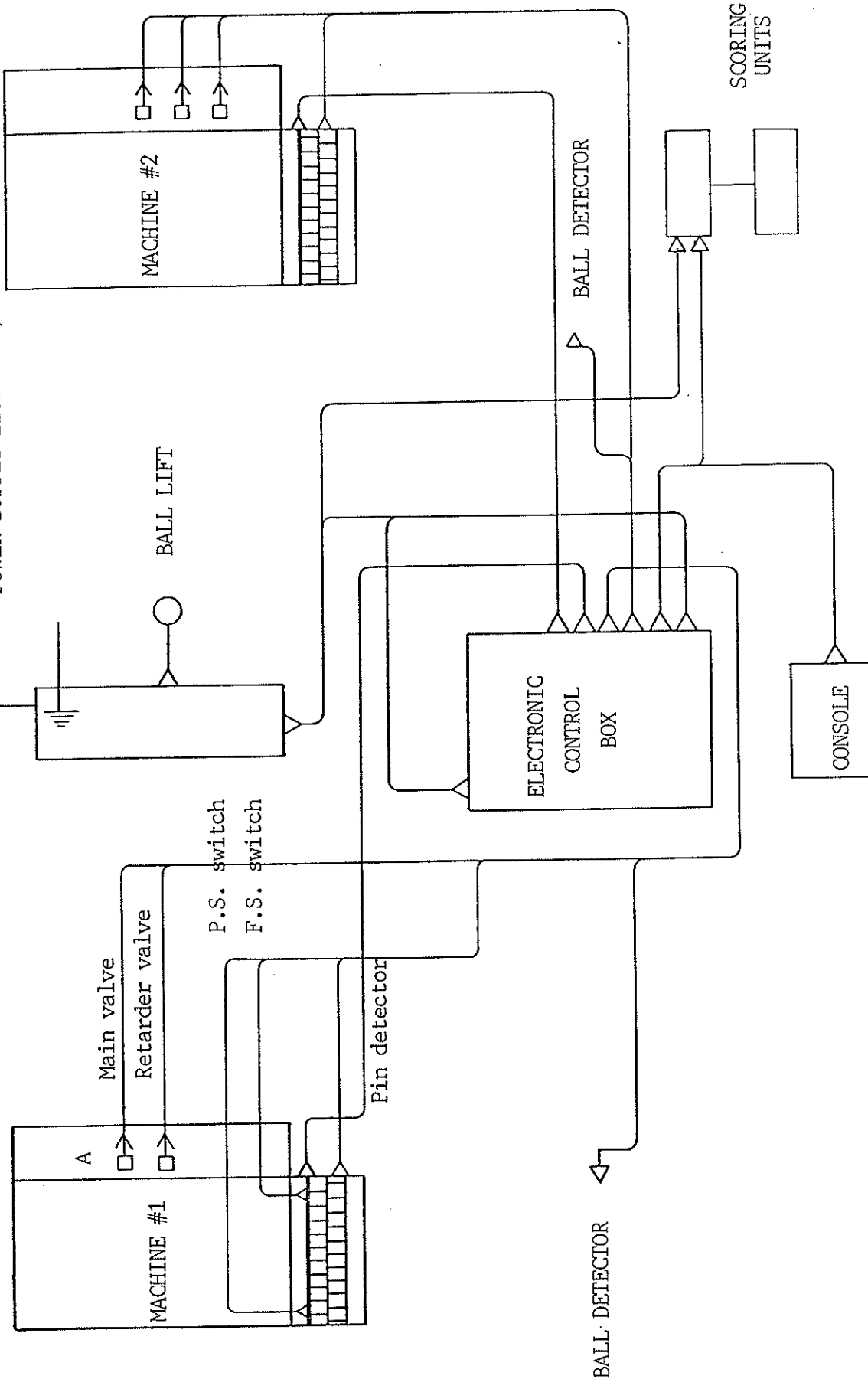
An IR (infrared) sensor placed on the ball return allows the detection of balls on the return. The minimum reaction time is 1.7 milli seconds which allows the detection of balls up to 70 K.H.

The detection of the bowling pins is done by an IR electronic sensor SB-ECIL-325PD placed on each P-010.

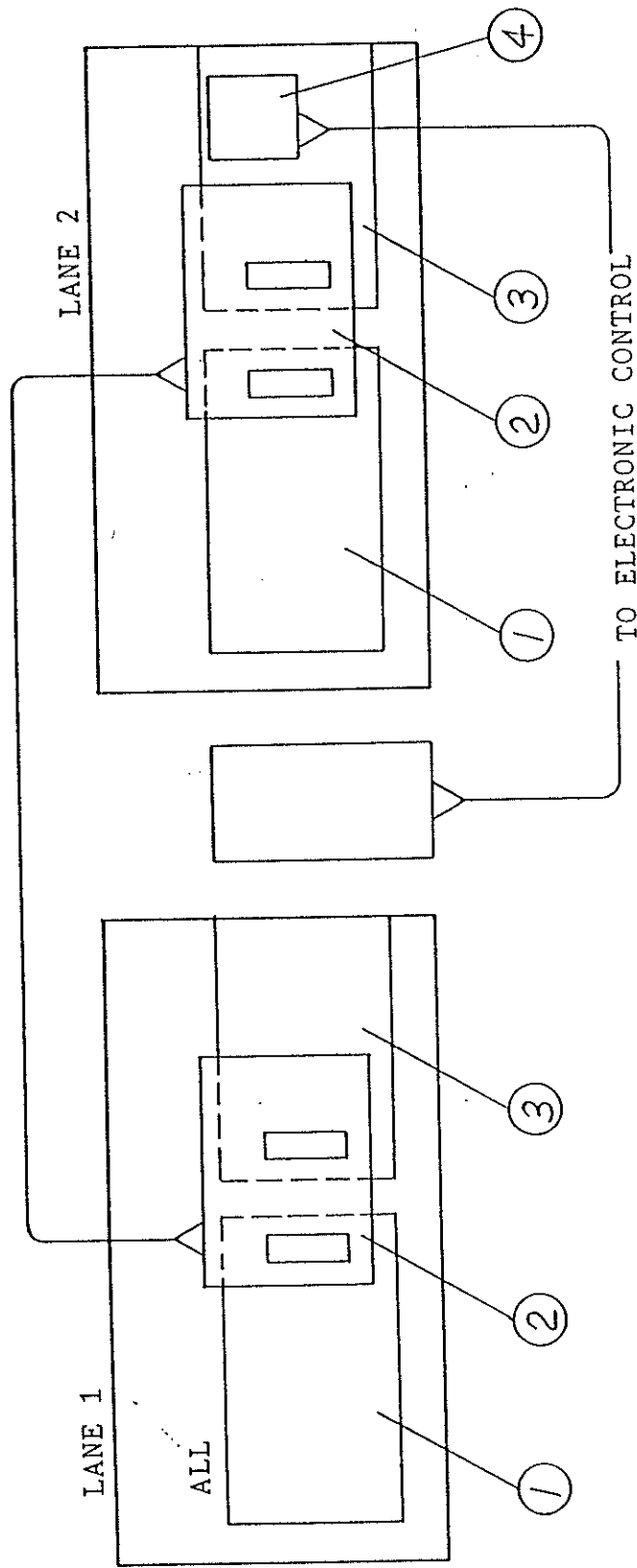
The same type of sensor is used for each of the following signals.

- P.S. Partial game starting signal
- F.S. Complete game starting signal
- L.S. End of run signal

POWER SUPPLY 220V - 50/60 HZ



Québec Canada  MENDES	DESCRIPTION : BOWLING DIAGRAM		SPÉCIFICATIONS MODEL 201E	PAR : _____ ÉCHELLE : _____
	VÉR. : APPR. : <i>gale</i>	DATE : 9/1/86	PARTIE No. EL-045-04	



- | | | | |
|---|----------|-----|----------------|
| 1 | E-MD3-01 | PCB | LED BOWLINGO |
| 2 | E-MD3-03 | PCB | DRIVER |
| 3 | E-MD3-02 | PCB | 7 SEGMENTS |
| 4 | E-MD3-04 | PCB | C.P.U. DISPLAY |

 Québec Canada	DESCRIPTION:	SPÉCIFICATIONS	PAR:	ÉCHELLE:
	--- BOWLINGO DISPLAY VÉR.: APPR.: <i>Exp</i> DATE: 90/06	MODEL: 403-1		
		PARTIE No. - EL-045-03		

BOWLINGO

PROSET Programming Facility

1. INTRODUCTION

Using the PROSET Programming Facility, you can change the default parameters in your BOWLINGO. You may also use the PROSET to display informative data. The remaining of this document will show you how to use your PROSET device.

2. FUNCTIONS

The following table shows all the parameters you could either display or display and modify. A short explanation of each function is also given in this table.

Function No.	Description and codes
00	Total number of coins in lane 1
01	Total number of coins in lane 2
02	Total number of Full Sets on lane 1
03	Total number of Full Sets on lane 2
04	Number of coins required to play 10 frames
05	Maximum time to play 10 frames (Frame Mode)
06	Number of minutes of play per coin (Time mode)
07	Extra time allowed to finish a frame (Time Mode)
08	Game Mode: Frame = code 0 Time = code 1
09	Sequence of play: 1 frame at a time: code 1 2 frames at a time (change player on even frames) code 2 2 frames at a time (change player on odd frames) code 3
10	Number of consecutive strikes required to win a free coupon (1 to 10)
11	Final Score required to win a free coupon (1 to 300)
12	Total number of coupons given
13	Number of coupons actually in machine
14	Number of coupons in machine after refill
15	Unique ID number of left lane (lane 1)
16	Unique ID number of right lane (lane 2)
17	Pin Setter delay after ball detection (1, 2 or 3 seconds)
18 (version 1.4)	Pin Setter delay before next frame (0 = longer; to 4 = shorter)
19 (version 1.4)	Reserved (don't modify)
20 (version 1.4)	Type of Game Bowling = code 0 (Play the "real" bowling game) Alternate = code 1 (Only one ball per frame)
21 (version 1.5)	With or without keyboard (1 = with, 0 = without)



3. Using the PROSET

3.1 Reading Information

To read information using the PROSET device, you have to execute the following steps:

- 1- Make sure that the "PROG" switch is in proper position
- 2- Enter function number (ALWAYS enter 2 digits - Function "1" is specified by "01")
- 3- Press the **Enter** key

You will now be able to see on the second display line the actual value of the specified function. You can repeat steps 2 and 3 as many times as you want to access the information you want to display. Make sure you toggle the "PROG" switch to its original position when you are finished.

3.1 Modifying data (Programming)

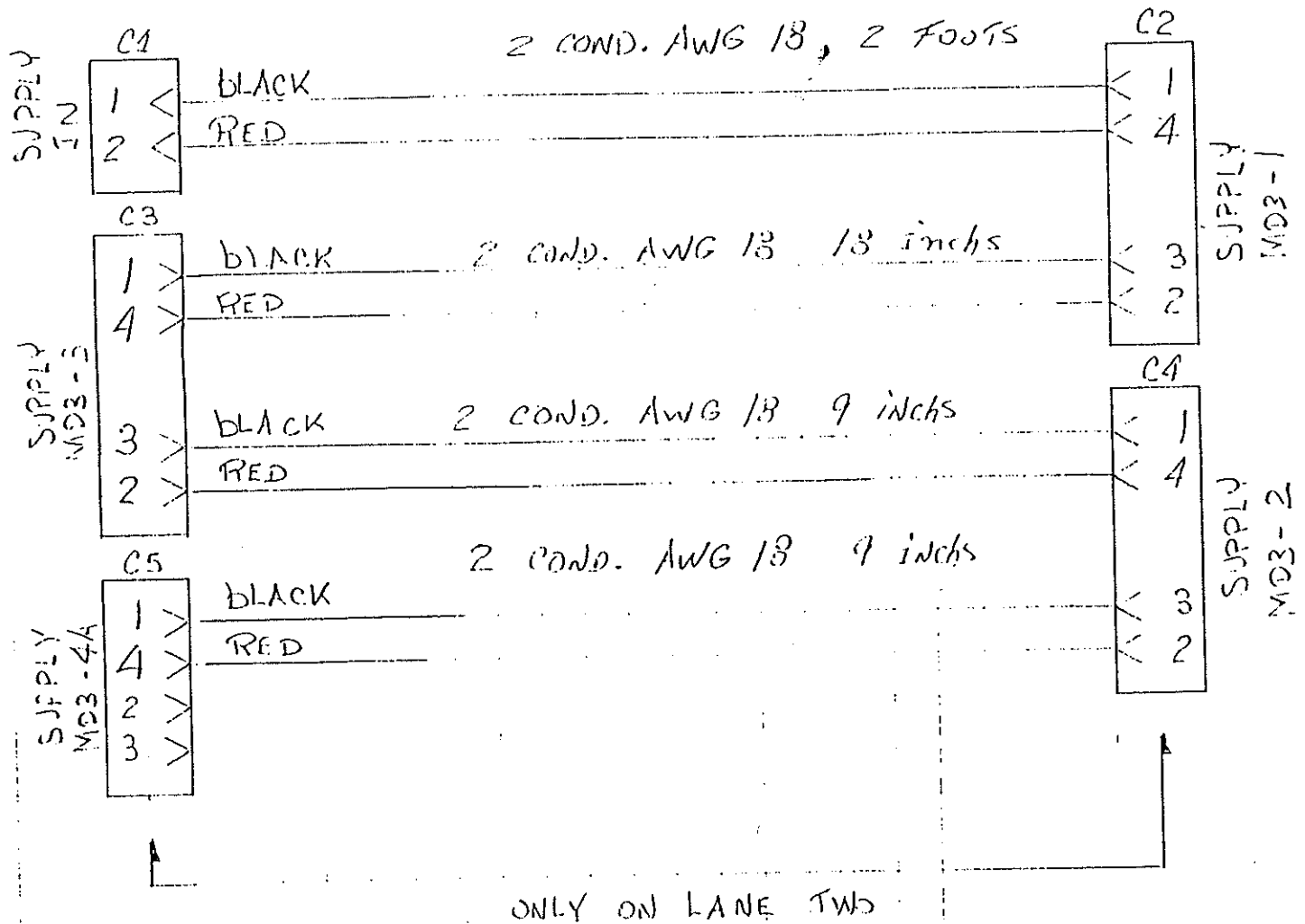
Execute the following steps to modify the actual values of your system's functions:

- 1- Make sure that the "PROG" switch is in proper position
- 2- Enter function number (ALWAYS enter 2 digits - Function "1" is specified by "01")
- 3- Press the **Enter** key
- 4- Press the **Clear** key
- 5- Enter new value
- 6- Press the **Enter** key

You may repeat steps 2 to 6 as many times as required. Remember to toggle the "PROG" switch to its original position when you are finished.

CABLE ASSEMBLY BOWLINGO PCB DISPLAY ALIMENTATION

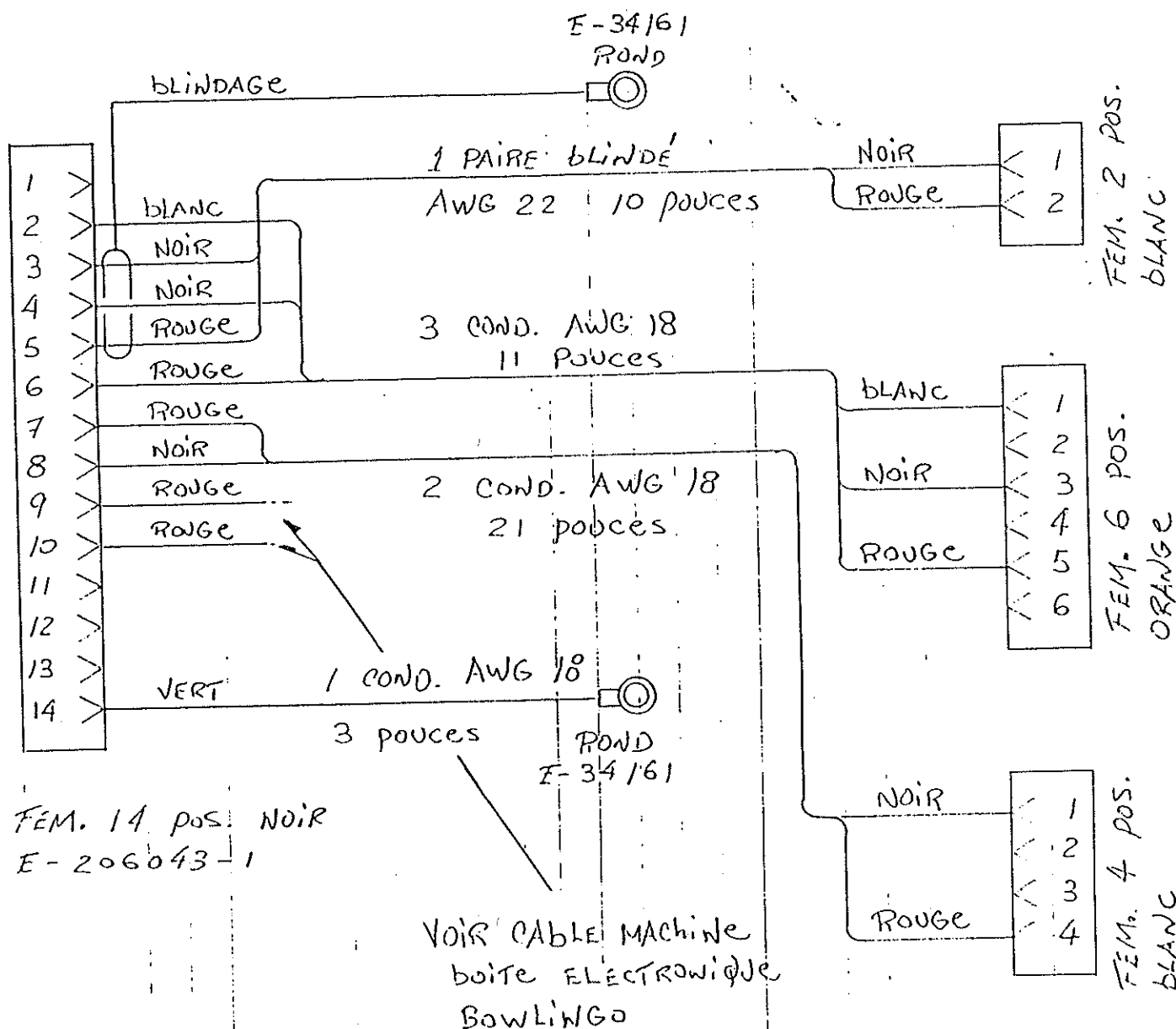
89/02/21



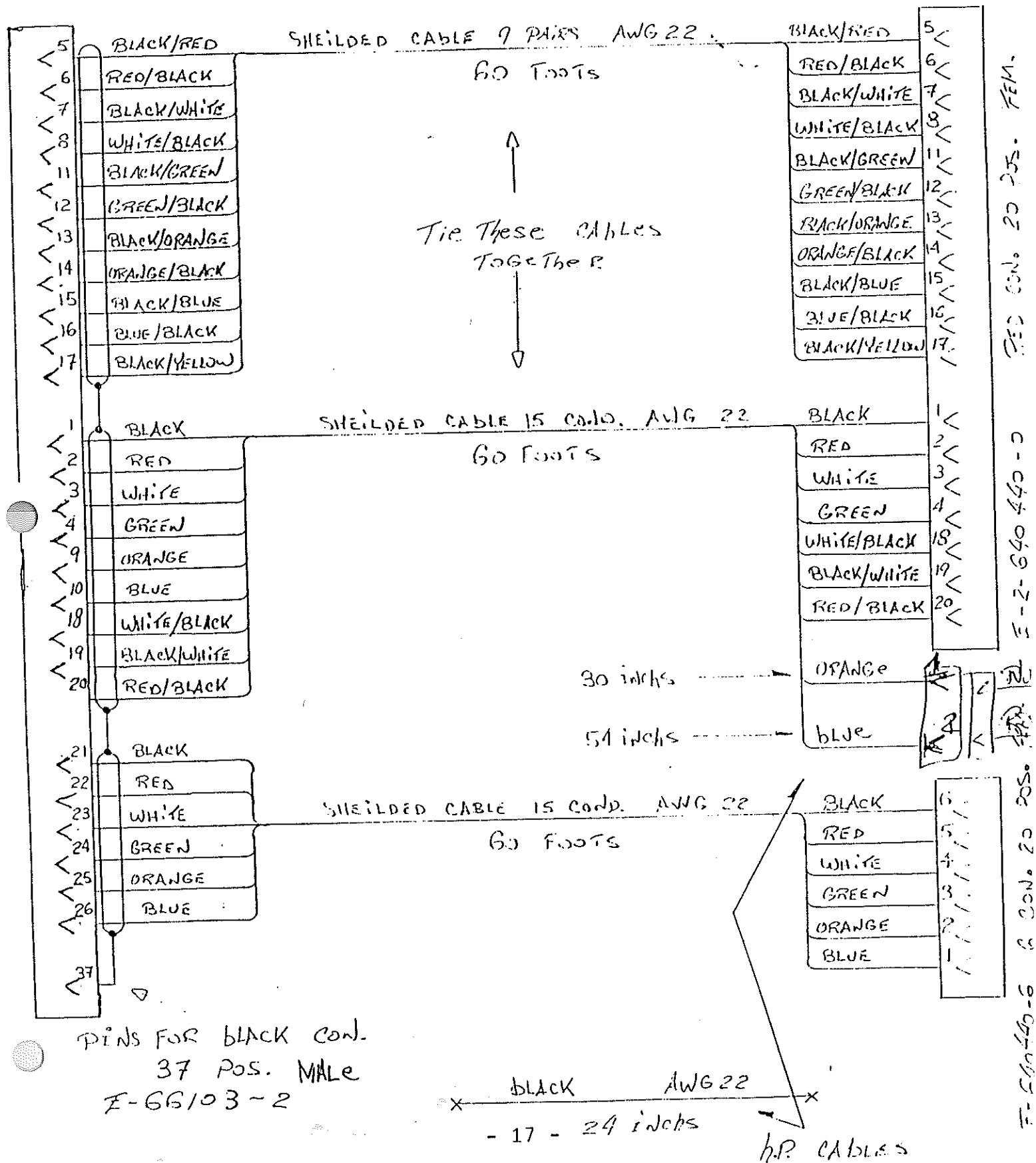
C1 WHITE CONNECTOR MALE 2 POS. E-1-430319-1
C2 to C5 WHITE CONNECTOR FEM 4 POS. E-1-430424-1

CABLE ALIMENTATION Boite ELECTRONIQUE BOWLINGO

89/02/08



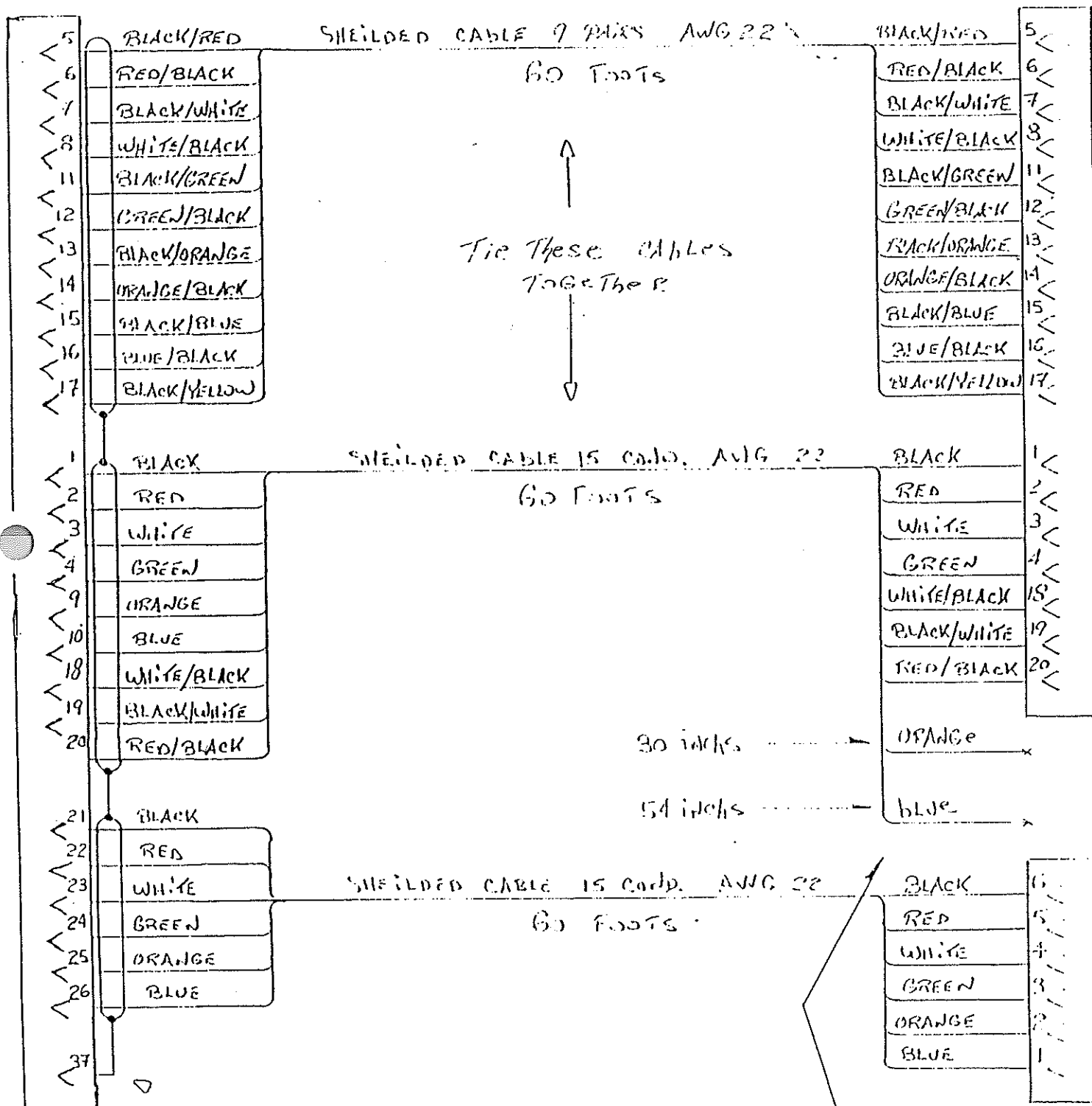
CABLE ASSEMBLY CONSOLE AND DISPLAY BOWLINGO BELGQUE



EC - 043 - 30

89/02/22

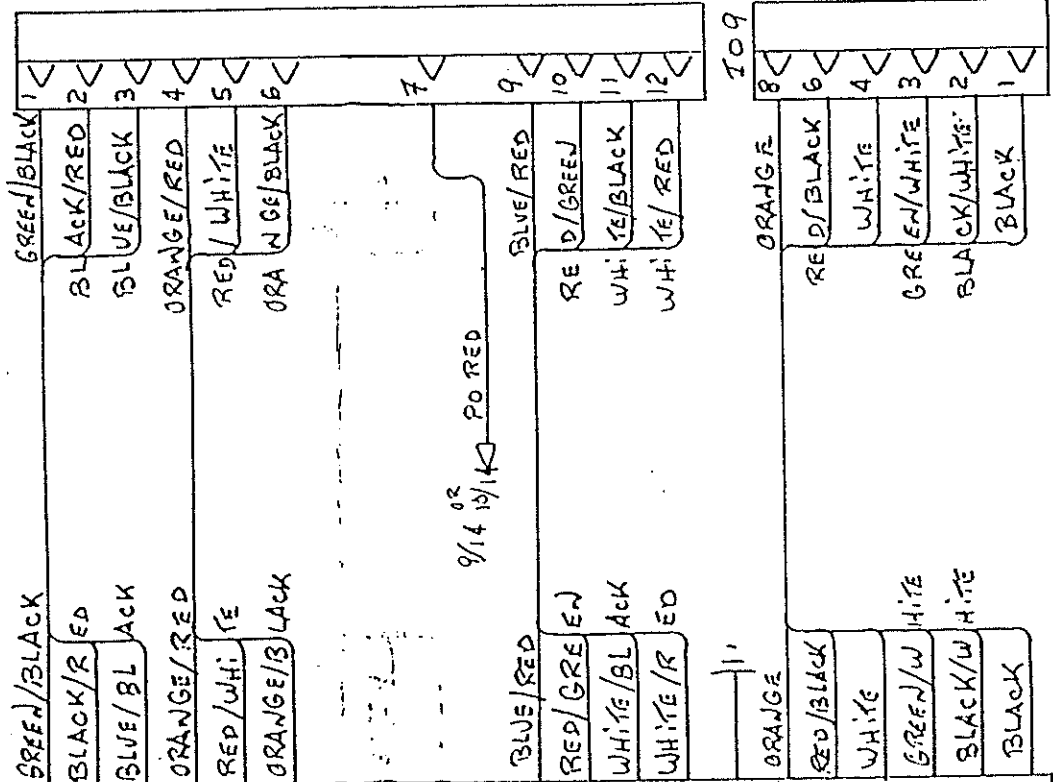
CABLE ASSEMBLY CONSOLE AND DISPLAY BOWLINGO BELGQUE



1012

C24

109



PAR: C.S.
PARTIE No.
53-890126

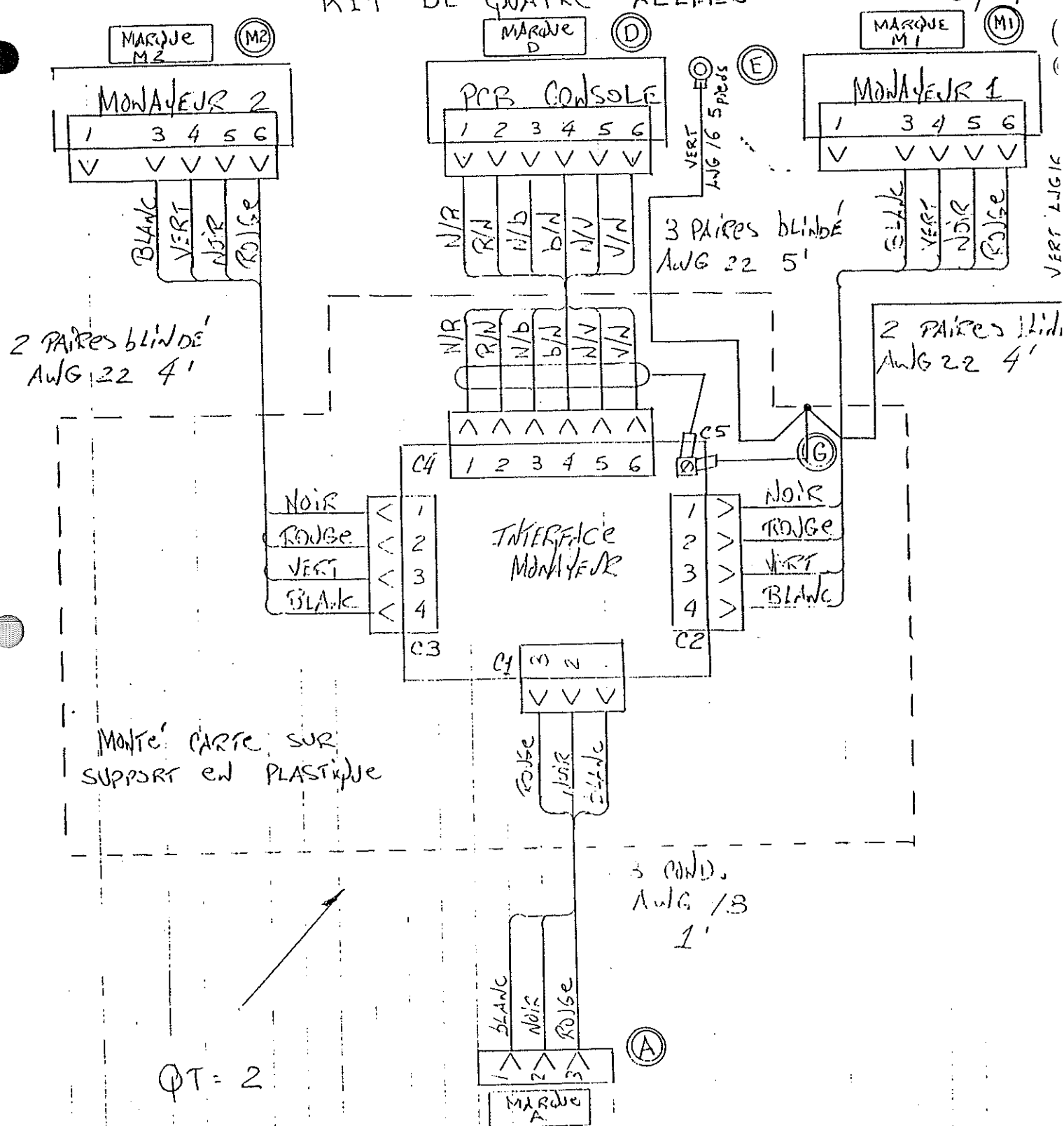
SPECIFICATIONS:
BOWLING
EUROPEAN
PNEUMATIC

DESCRIPTION:
CABLE LAYOUT
ELECTRONIC CONTROL BOX PINSETTER
DATE: 29/ 26
VER: APPR:

Boite INTERFACE MOWAYEUR BOWLINGO BELGIQUE
KIT DE QUATRE ALLES

KIT DE QUATRE ALLIES

MENDES
89/03/00



CONSOL

C37

IO #2

15
C
O
N
D.

9
P
A
I
R
S

1	BLACK
2	RED
3	WHITE
4	GREEN
5	BLACK/RED
6	RED/BLACK
7	BLACK/WHITE
8	WHITE/BLACK
9	ORANGE
10	BLUE
11	BLACK/GREEN
12	GREEN/BLACK
13	BLACK/ORANGE
14	ORANGE/BLACK
15	BLACK/BLUE
16	BLUE/BLACK
17	BLACK/YELLOW
18	WHITE/BLACK
19	BLACK/WHITE
20	RED/BLACK

6	BLACK
5	RED
4	WHITE
3	GREEN
2	ORANGE
1	BLUE

1	BLACK
2	RED
3	WHITE

1	BLACK
2	RED
3	WHITE

PRINTER
OUTPUT

PRINTER
INPUT

1	BLUE/WHITE	8
2	BLUE	7
3	BLUE/BLACK	6
4	ORANGE	5
5	ORANGE/BLACK	4
6	GREEN/WHITE	3
7	GREEN/BLACK	2
8	RED	1

9	RED	2
10	BLACK	1

11	BLACK/WHITE	10
12	RED/BLACK	9
13	RED/WHITE	8
14	WHITE/BLACK	7
15	BLUE	6
16	ORANGE	5
17	GREEN	4
18	WHITE	3
19	RED	2
20	BLACK	1

21	WHITE	3
22	GREEN	4
23	ORANGE	5
24	BLUE	6
25	RED	2
26	BLACK	1

31	WHITE/BLACK	1
32	WHITE/RED	2
33	BLACK/RED	3

34	BLACK/WHITE	1
35	RED/BLACK	2
36	RED/WHITE	3

SON2

CPU #6

CPU #4

CPU #3

CPU #2

DESCRIPTION:

CABLE LAYOUT - ELECTRONIC CONTROL BOX
TO CONSOL DISPLAY AND PRINTER

SPECIFICATIONS

PAR

C.S.

ECHELLE

BOWLING

PART NO:

51-350221-30R1

VER:

APPR:

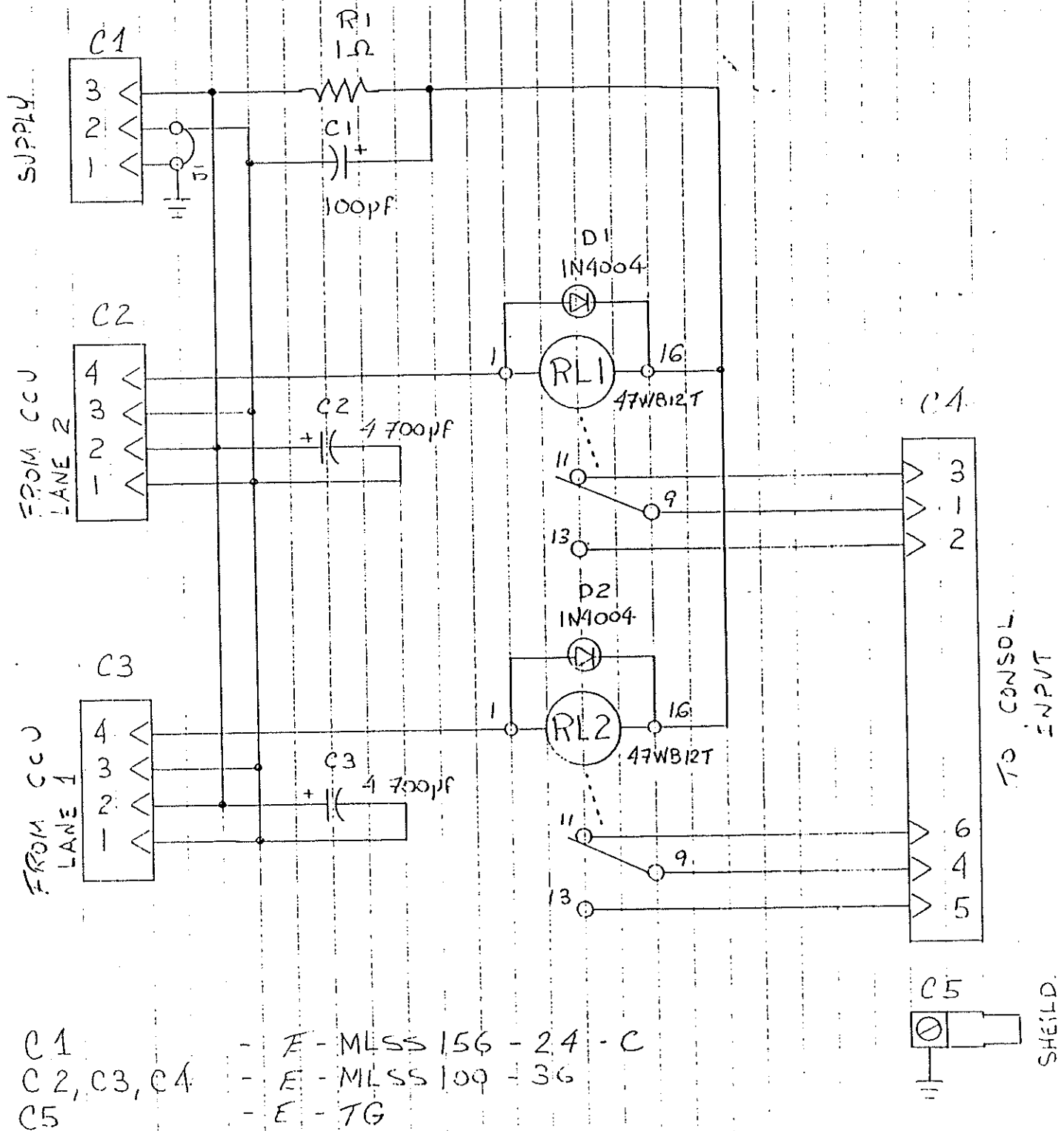
DATE

10/05/88

CREDIT CONTROL UNIT INTERFACE (CCUI)

BOWLINGO BELGIQUE

MENDES
89/03/09

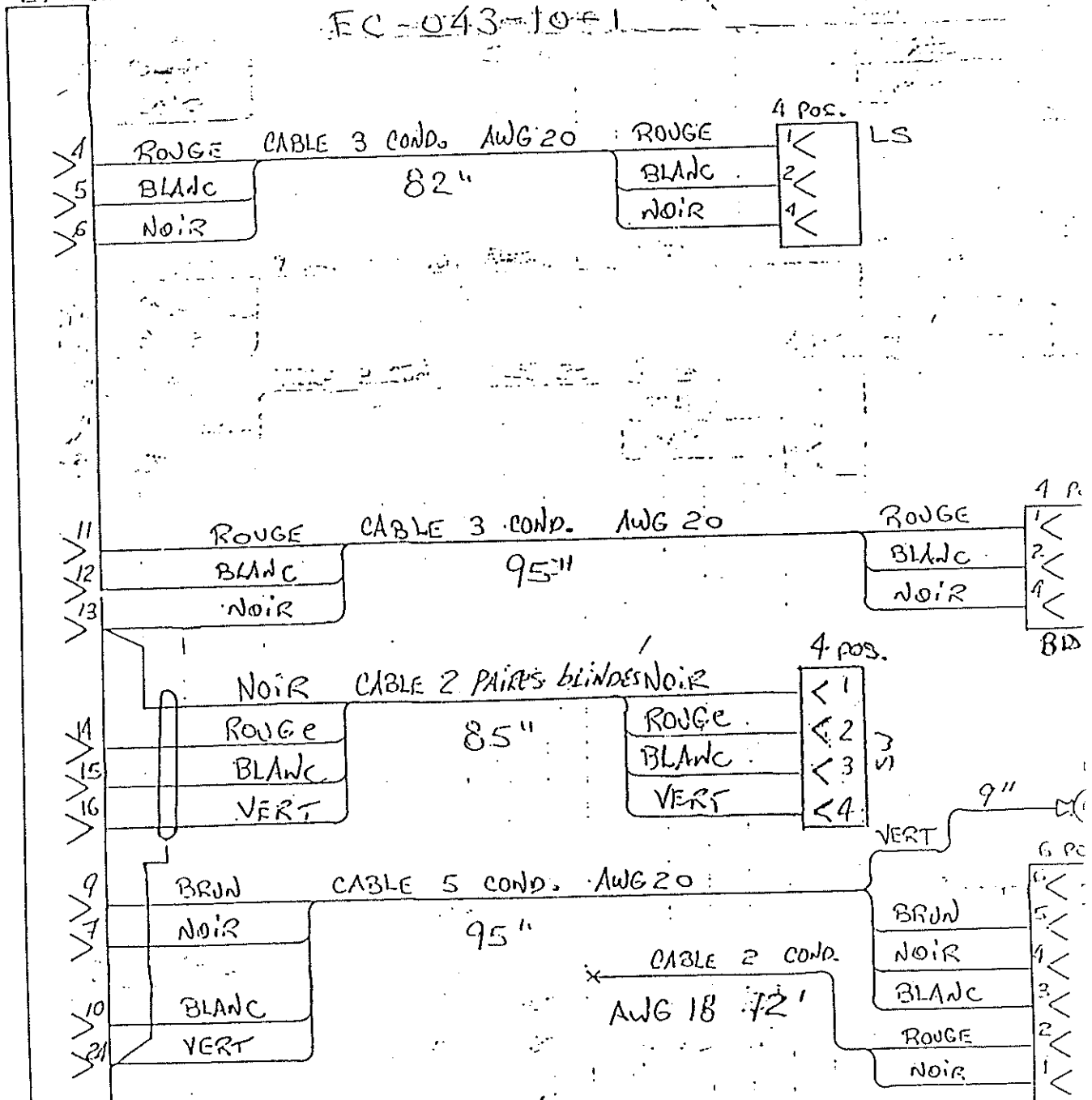


MENDES
89/03/09

CABLE ASSEMBLY MACHINE 1 BOWLINGO EUROPE

MACHINE
24 POS.

EC-043-10-1



MATÉRIEL

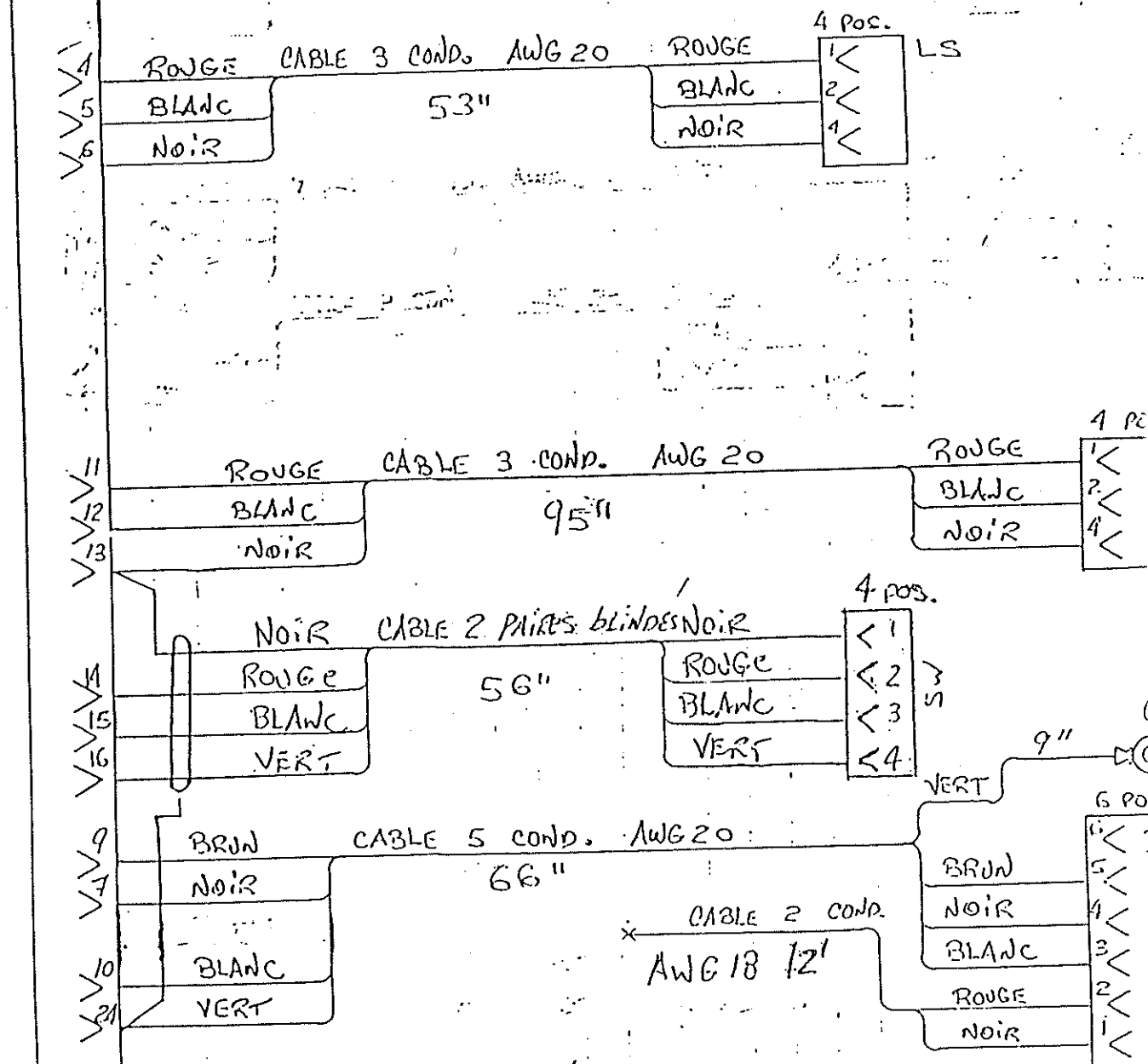
- | | | | | |
|---|------------|----------|-----------------------|----------|
| 1 | CABLE | 2 COND. | AWG 18 | |
| 2 | CABLE | 3 COND. | AWG 20 | E-9203- |
| 1 | " | 5 COND. | AWG 20 | E-92205 |
| 1 | CONNECTEUR | AMP NOIR | FEMMELLE 24 POS. | E-480426 |
| 4 | " | " | BLANC FEMMELLE 4 POS. | E-480424 |
| 1 | " | " | ROUGE " " 6 POS. | E-640433 |
| 1 | " | " | BLANC " " 6 POS. | E-24161 |

89/03/09

CABLE ASSEMBLY MACHINE 2 BOWLINGO EUROPE

MACHINE
24 pos.

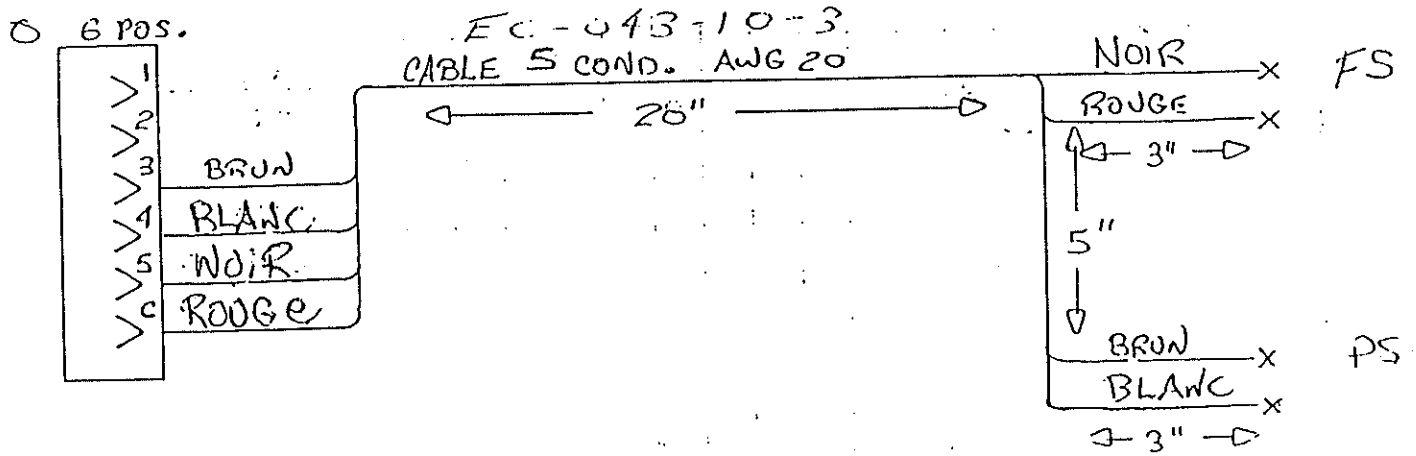
EC-043-10-2

MATÉRIEL

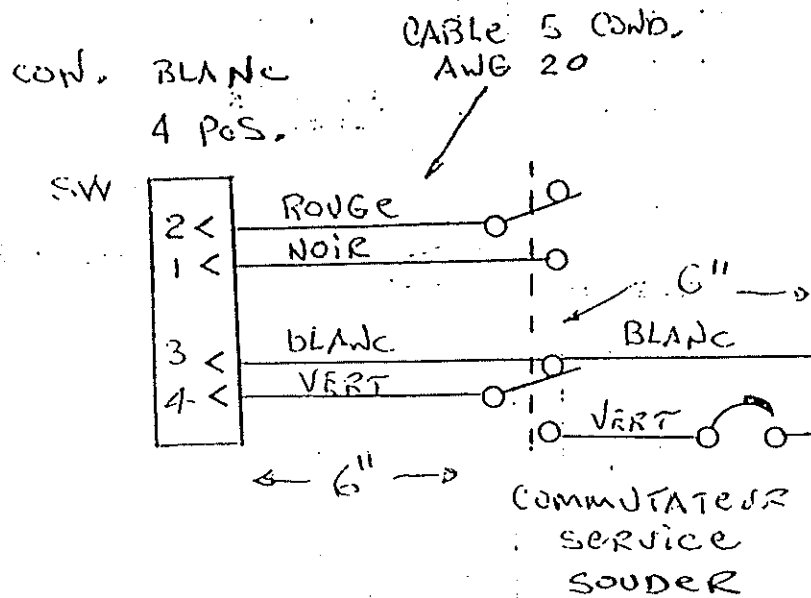
1	CABLE	2 COND.	AWG 18	E-9203-
2	CABLE	3 COND.	AWG 20	E-92205
1	"	"	5 COND.	AWG 20
1	CONNECTEUR	AMP NOIR FEMELLE	24 POS.	E-480426
4	"	"	BLANC FEMELLE 4 POS.	E-480424
1	"	"	ROUGE " " 6 POS.	E-640433-
1	"	"	" " " " 6 POS.	E-24161

MENDES
89/03/09

CABLE ASSEMBLY SELENOÏDE. MACHINE 1 et 2 BOWLING EUROPE



EC-043-10-4



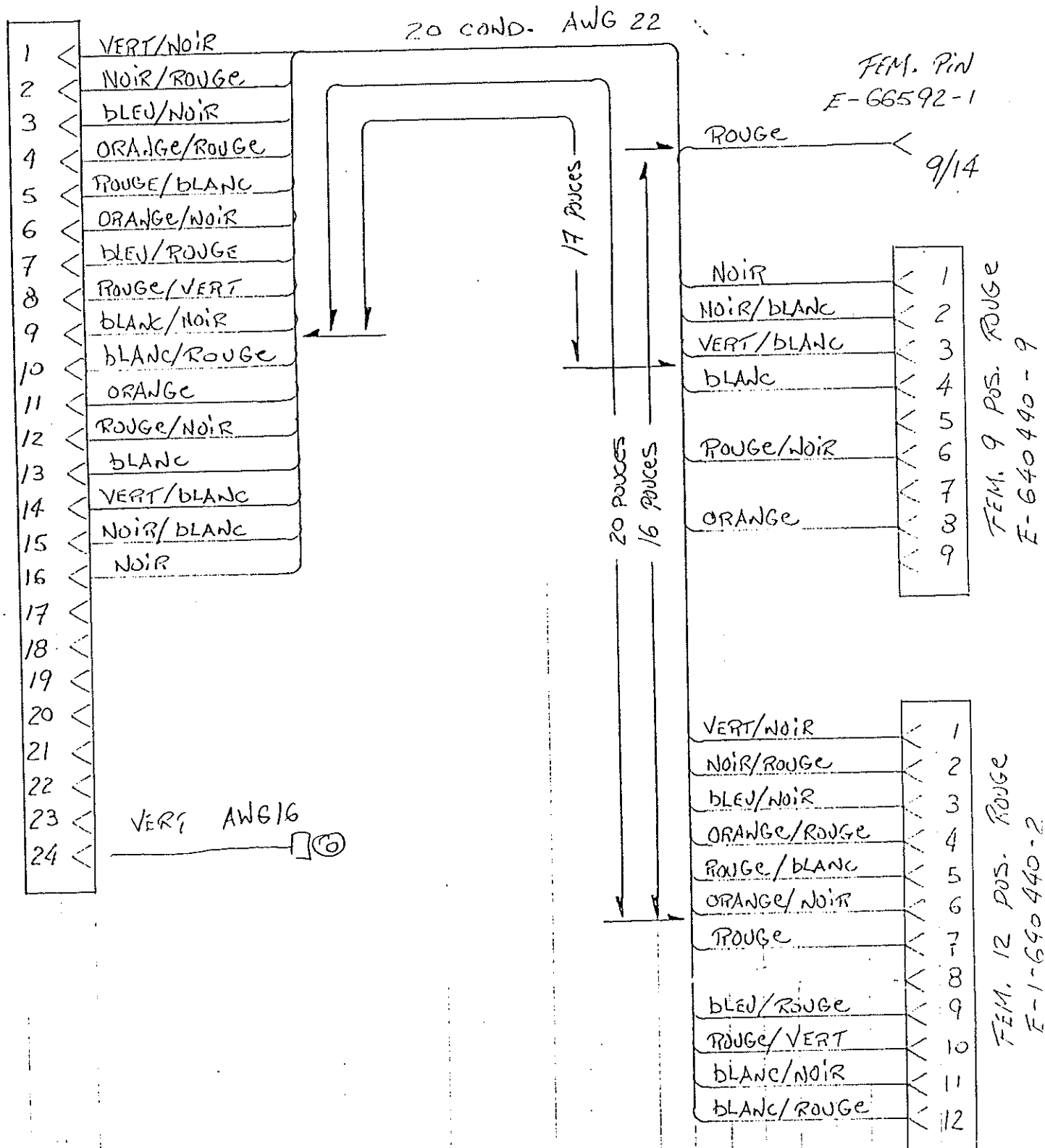
MATERIELS

- | | | |
|---|---------------------------------|------------|
| 1 | CONNECTEUR ROUGE FEMELLE 6 pos. | E-640433-6 |
| 2 | CABLE 5 COND. AWG 20 | E-92205-2 |
| 1 | COMMUTATEUR | E-7565K7 |
| 1 | INTERRUPTEUR MOMENTANE | E-590B |

CABLE MACHINE ALLÉE 1 BOWLINGO BOÎTE ELECTRONIQUE

89/02/08

MALE 24 POS. NOIR
E-206838-1

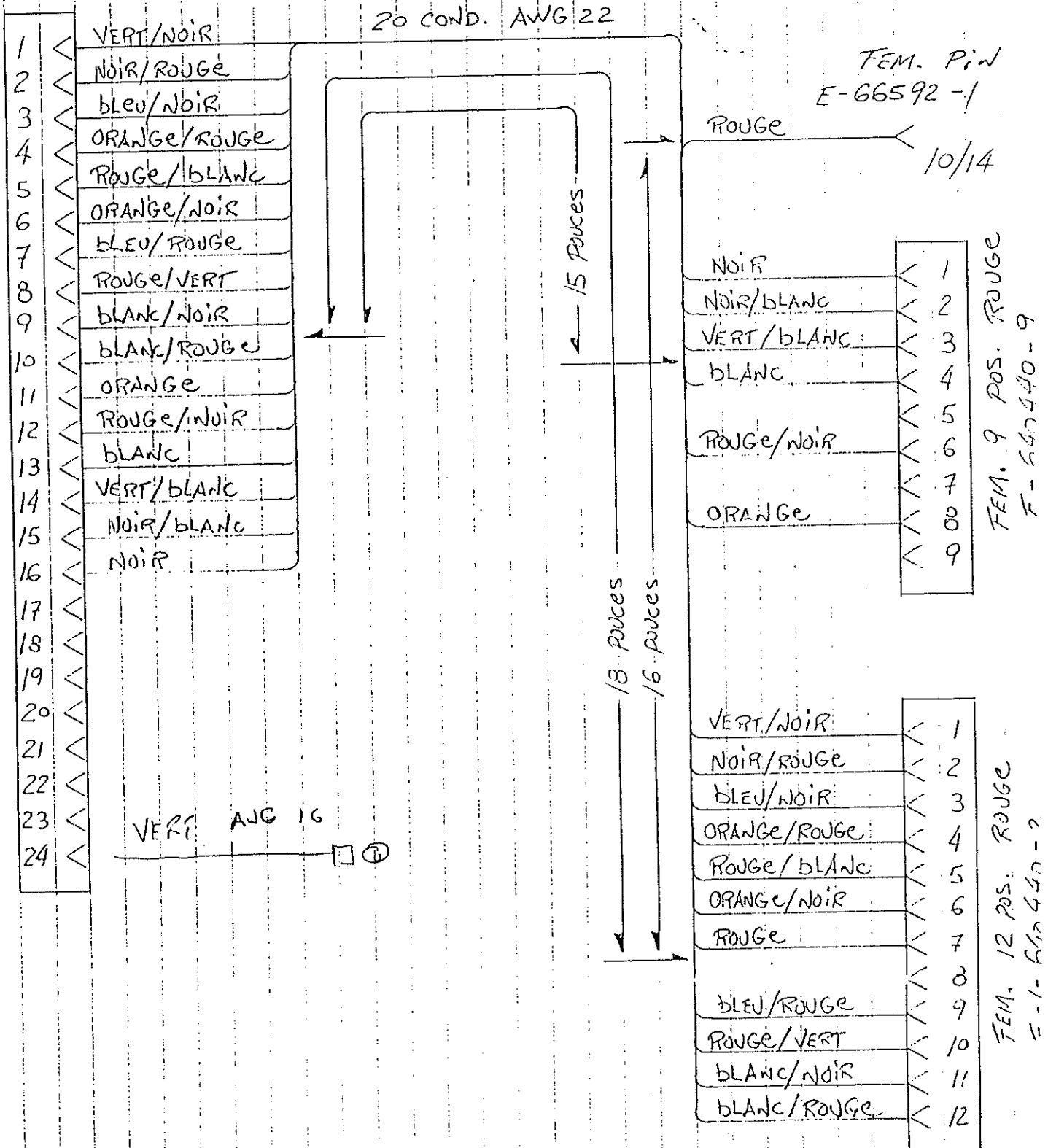


CABLE MACHINE ALLÉE 2, BOWLINGO

BOITE ELECTRONIQUE

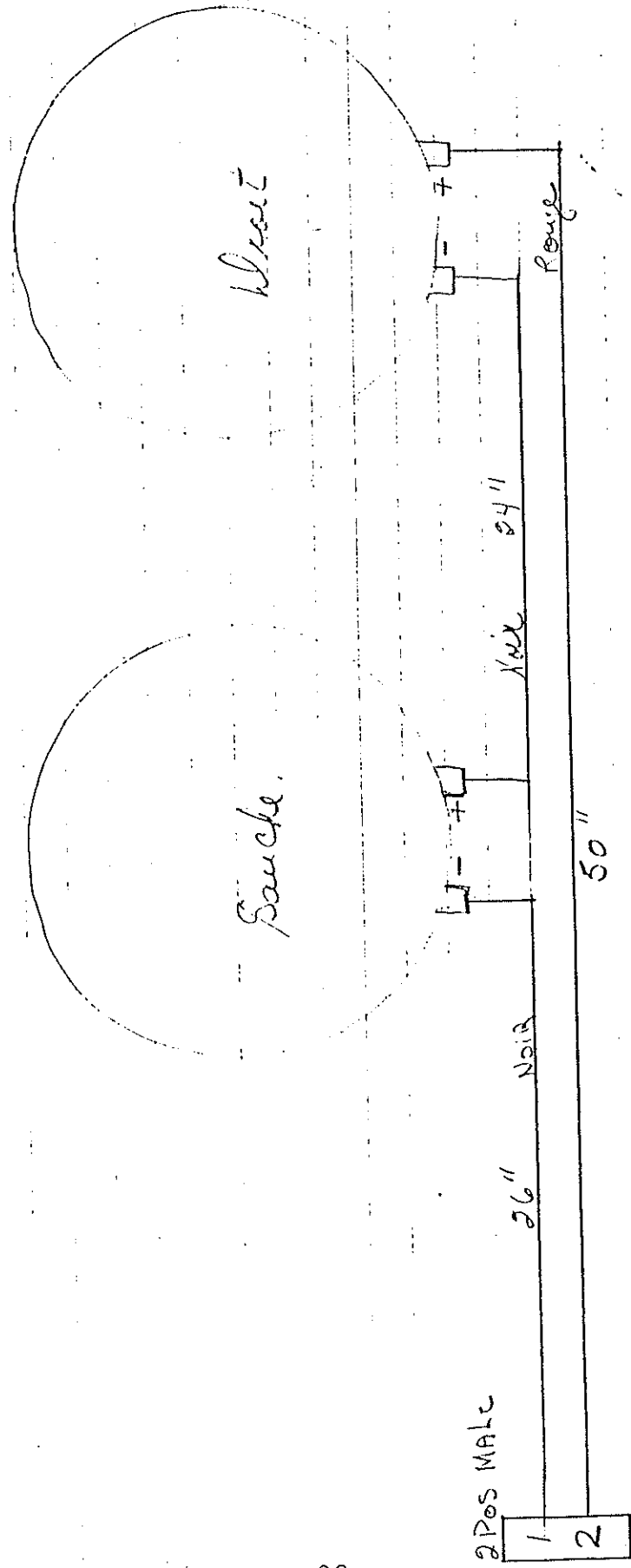
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MALE 24 POS. NOIR
E-206838-1



3/15/57

Lt & Haut. Ocean. European

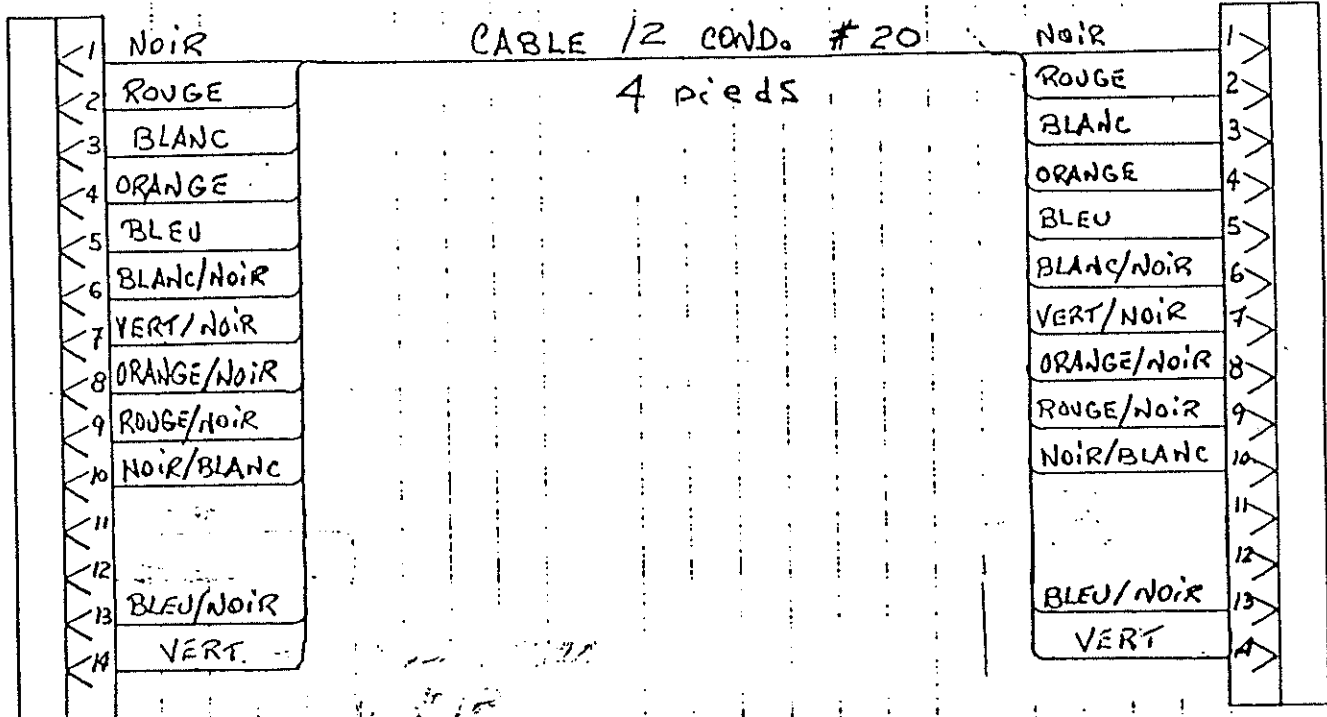


Lil 2 cord. #22

CABLE ASSEMBLY ALLIMENTATION BOWLINGO BELGIQUE

14 POSITIONS
MALE NOIR

14 POSITION
MALE NOIR



MATÉRIELS

- 1 CABLE 12 CONDUCTEURS, 4 pieds
- 2 CONNECTEURS 14 POS. MALE
- 2 CABLE CLAMB
- 1 CONNECTEUR 3 POS. FEM.
- 28 PIN MALE
- PIN FEMELLE

E-206044-1
E-206322-1
E-1-480303-0

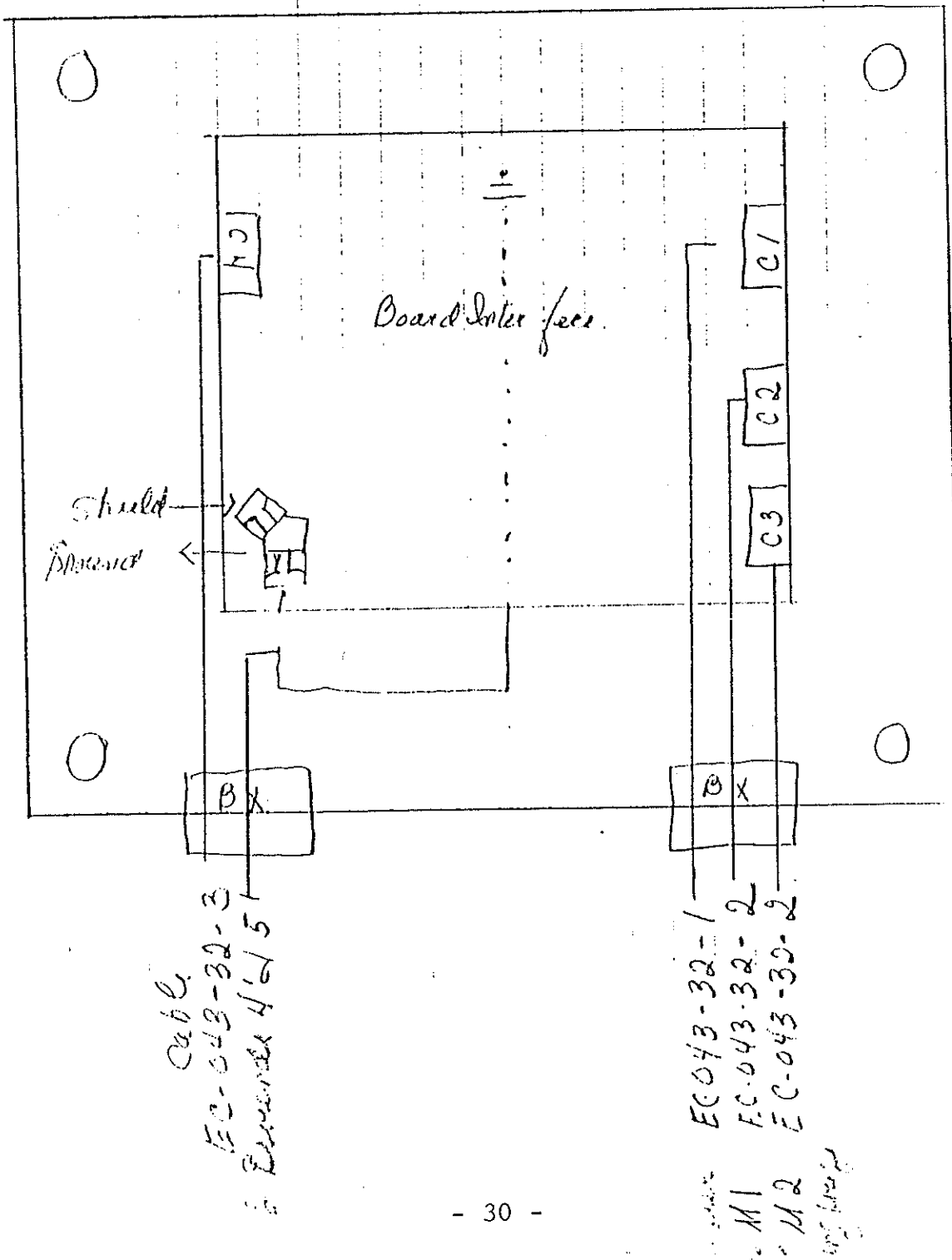
E-60618-1
E-60617-1

Despariterm Pte 6x6

89/8/03

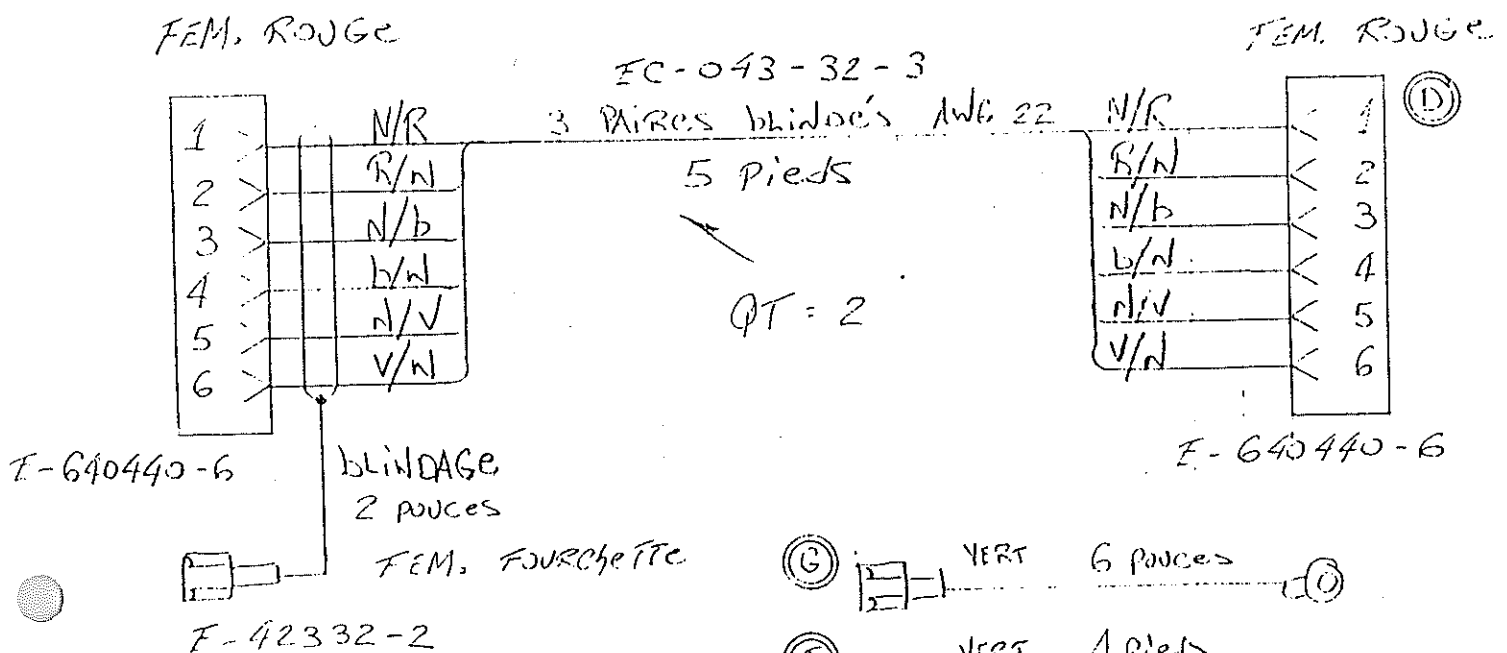
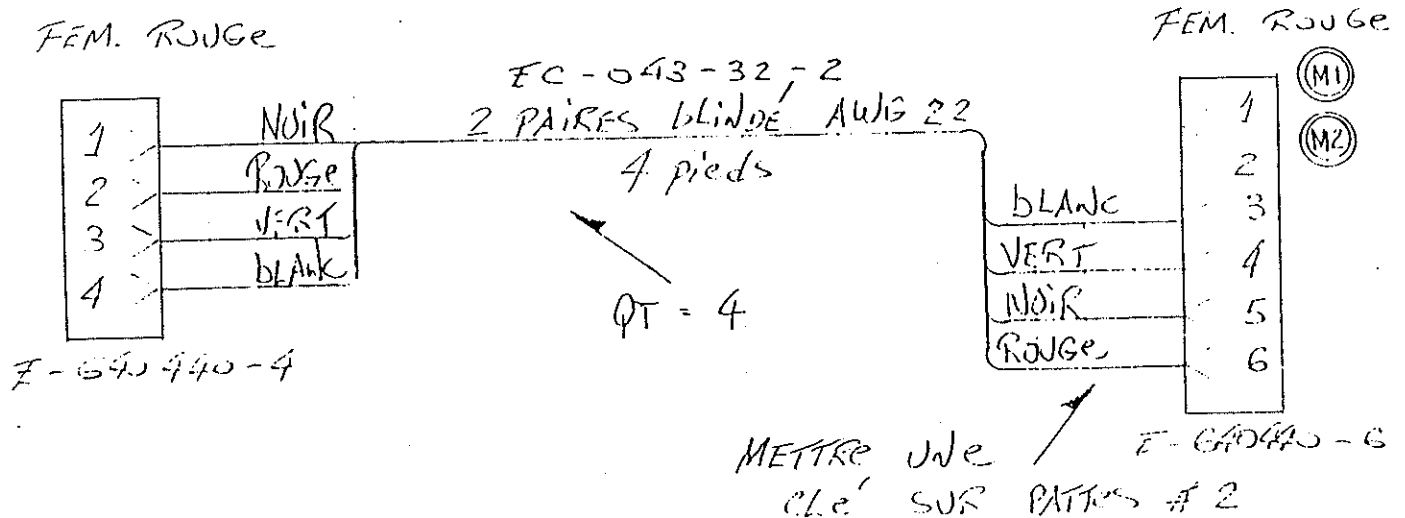
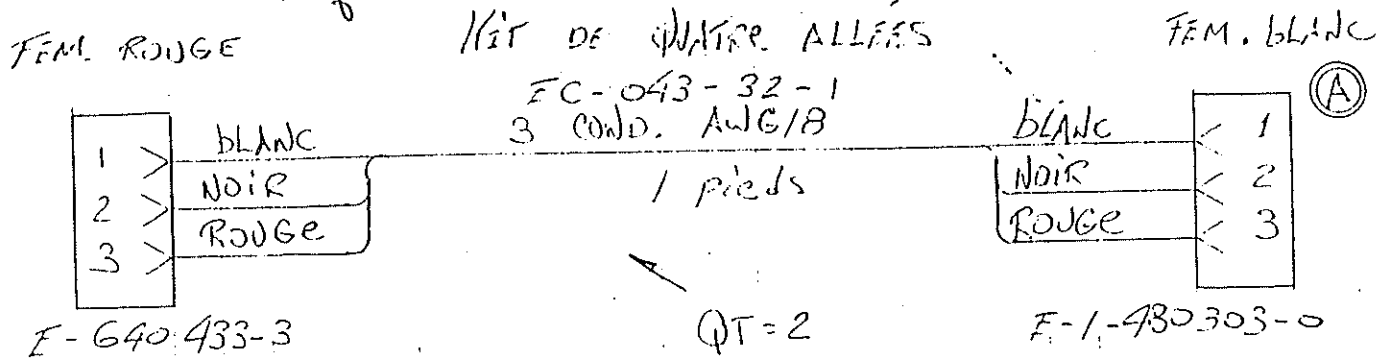
Interface. Belgique.

Placer patte collerage avec le board



MENDES
89/03/09

CABLE ASSEMBLY BOWLINGU MONAIEUR BELGIQUE boite interieur

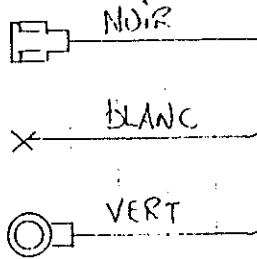


MENDES
87/03/09

CABLE ASSEMBLY BOWLING CO. ALIMENTATION MONAIEUR BELGIQUE

KIT DE QUATRE ALLÉES

E-42332-2
FEM. FOURCHETTE



Cable simple 3 cond. AWG 14

TC-043-33-1

5 pieds

(A)

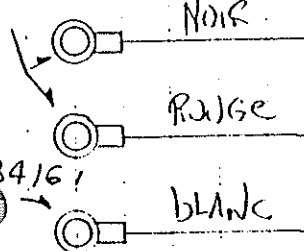
Aucune
connection

PT=1

DÉGANEZ 6 POUCES

E-34142

ROND



3 COND. AWG 18

EC-043-33-2

3 pieds

(B)

BLANC

NOIR

ROUGE

1

2

3

MARQUE

PT=1

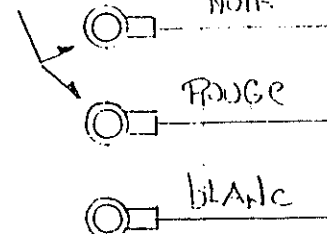
E-1-480305-0

DÉGANEZ 6 POUCES EN PLUS
SUR LE BLANC

MALE BLANC

E-34142

ROND



3 COND. AWG 18

EC-043-33-3

11 pieds

(C)

BLANC

NOIR

ROUGE

1

2

3

MARQUE

PT=1

E-1-480305-0

DÉGANEZ 6 POUCES EN PLUS
SUR LE BLANC

-34161

MENDES
89/03/09

FUSIBLE
2 A

T₁

240v

120v

0v

LSS-37-12

H

FG

N

ROUGE

NOIR

BLANC

VERT

NOIR

BLANC

ROUGE

NOIR

ROUGE

CABLE SOUPLE
3 COND. AWG 14

3 COND. AWG 18

3

(A)

(B)

(C)

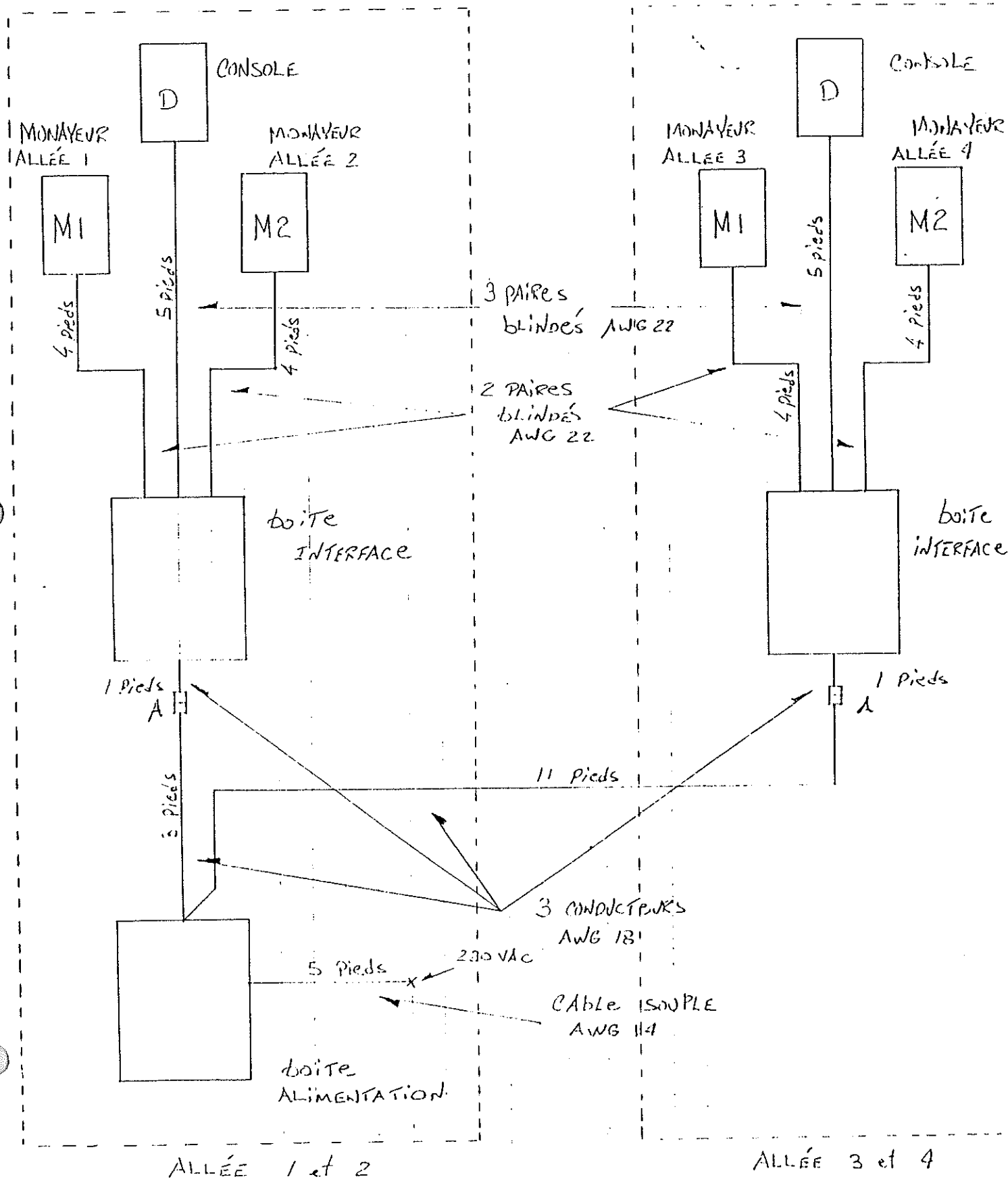
MARQUE A

MARQUE A

- 33 -

SCHEMA DE DISPOSITION SYSTEME ALIMENTATION ET INTERFACE MONAIEUR BOWLINGO BELGIQUE

MENDES
89/03/09

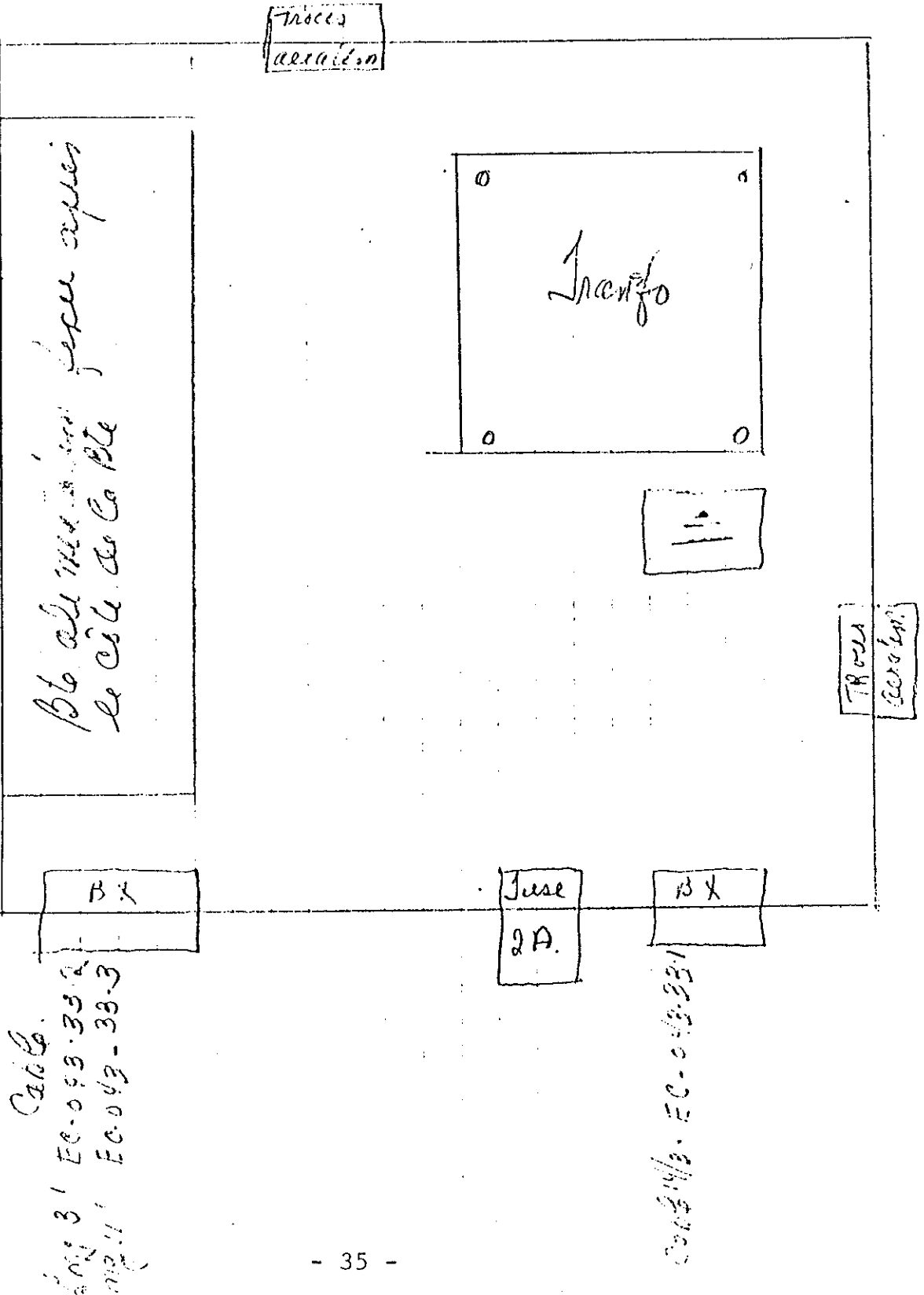


87/08/08

Bte alimentation Manœuvre 8x8"
des position.

ver 6/32

ver 6/32



MENDES
88/03/09

Row D

EC-043-288
2 COND. AWG 14

FEM. BLANC

Noir
BLANC

1 Pieds

QT = 1

VERT AWG 16
5 pieds

QT = 1

Noir
BLANC

E-1-480318-0

FEM. BLANC

Noir
BLANC

E-1-480318-0

E-1-480319-0
 MALE BLANK

QT = 2
 EC-043-28B1
 2 COND. AWG 14

(A) (B) FEM. BLANK

1 < NOIR
 2 < BLANC

4 Pieds

NOIR
 BLANC

< 1
 < 2

E-1-480318-0

FEM. Fourchette

EC-043-28B2

CABLE SOUPLE 3 COND.

(C)

NOIR

5 piers AWG 14

BLANC

VERT

PT = 1

AUCUNE CONNECTION

DÉGANEZ 6 POUCE

POND

E-34161

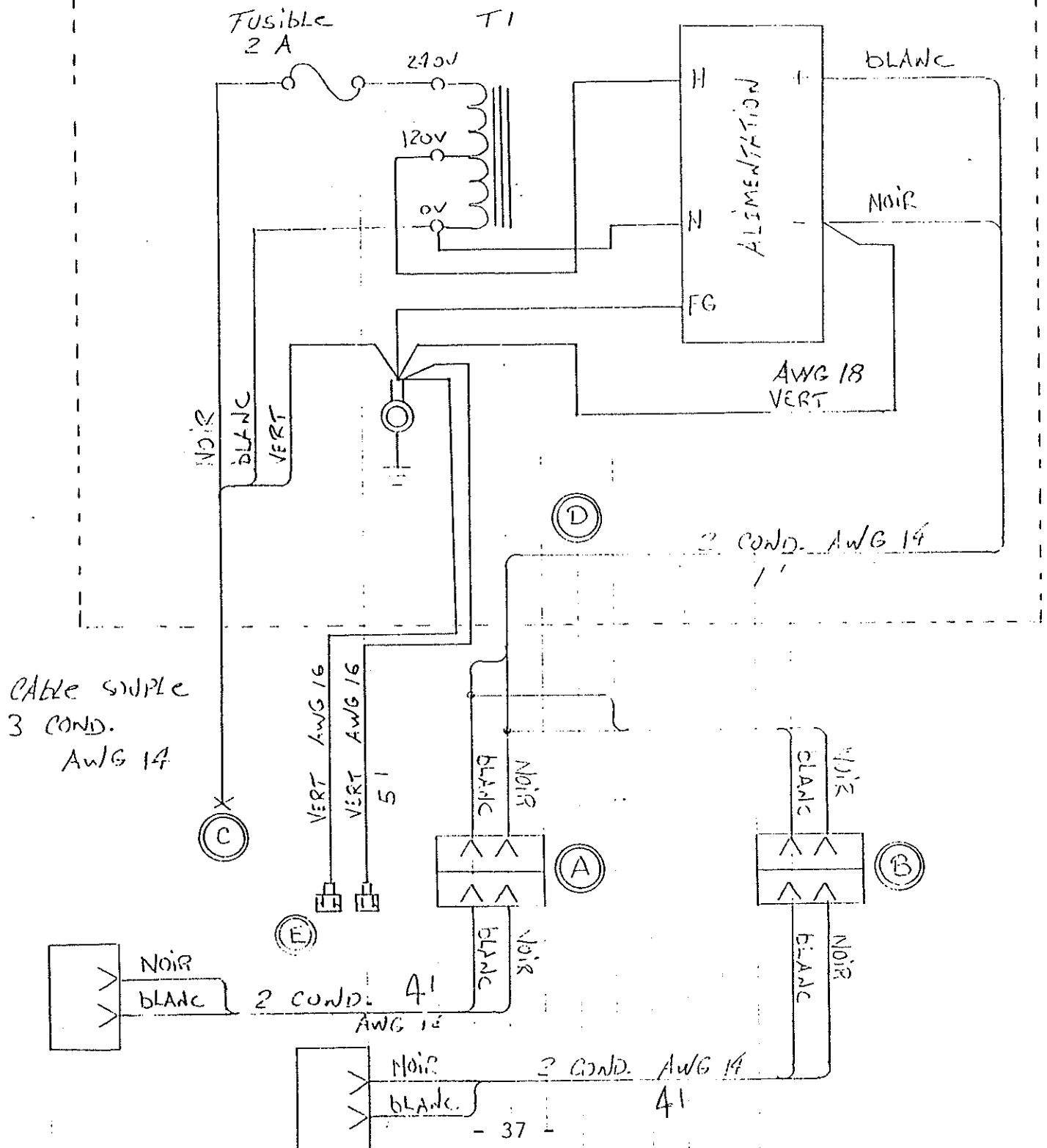
Boîte ALIMENTATION AFFICHAGE
BOWLINGO BELGIE

MENDES
39/03/09

KIT DE 2 ALLÉES

Boîte ÉLECTRIQUE

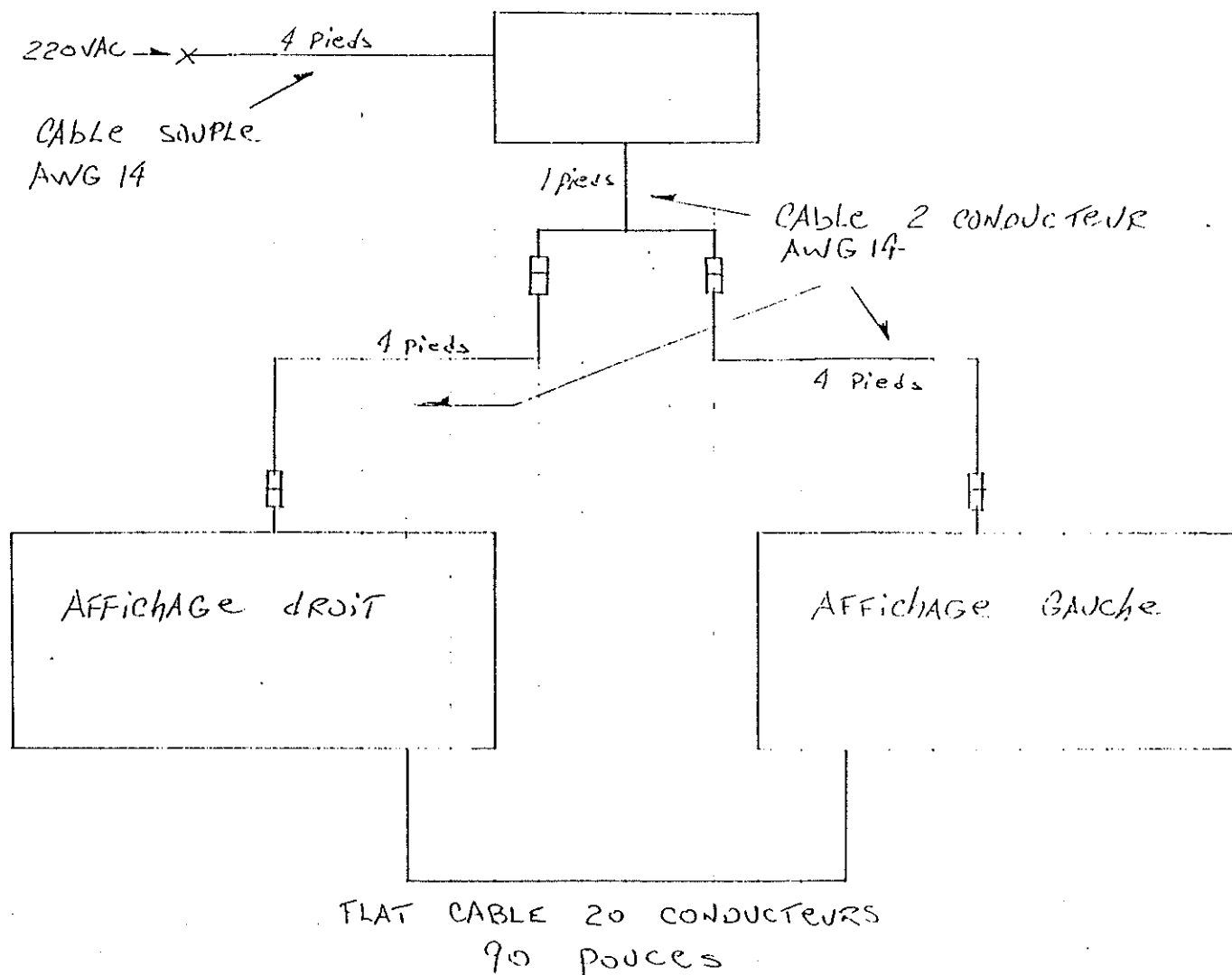
LUS-10A-9

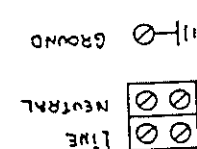


SCHEMA DE DISPOSITION SYSTEME ALIMENTATION BOWLINGO BELGIQUE

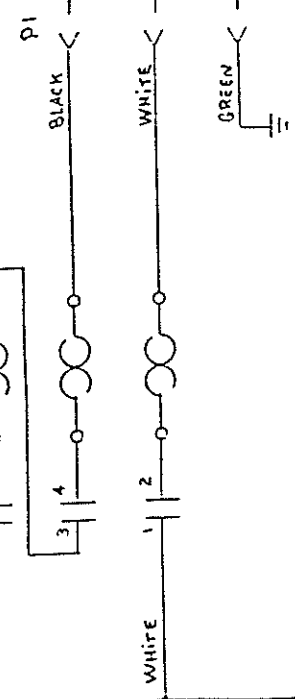
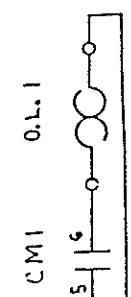
MENDES
89/03/09

boite électrique

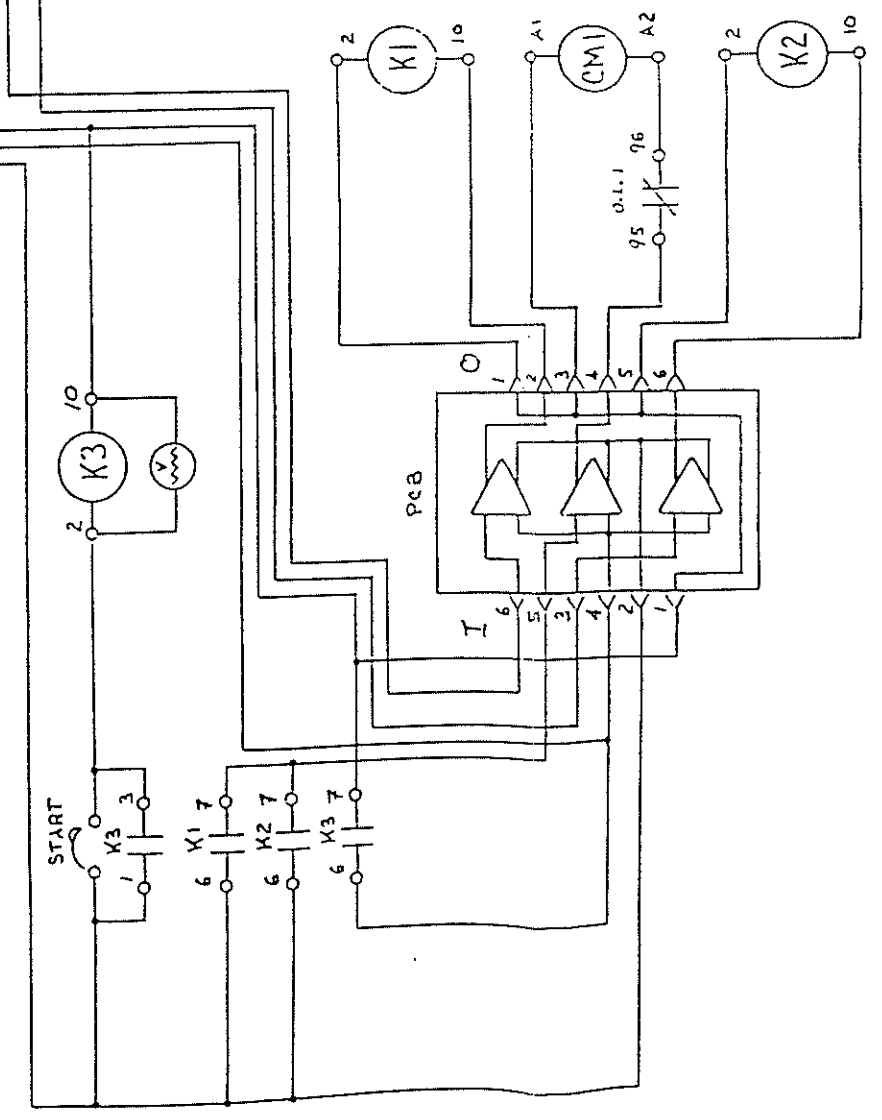
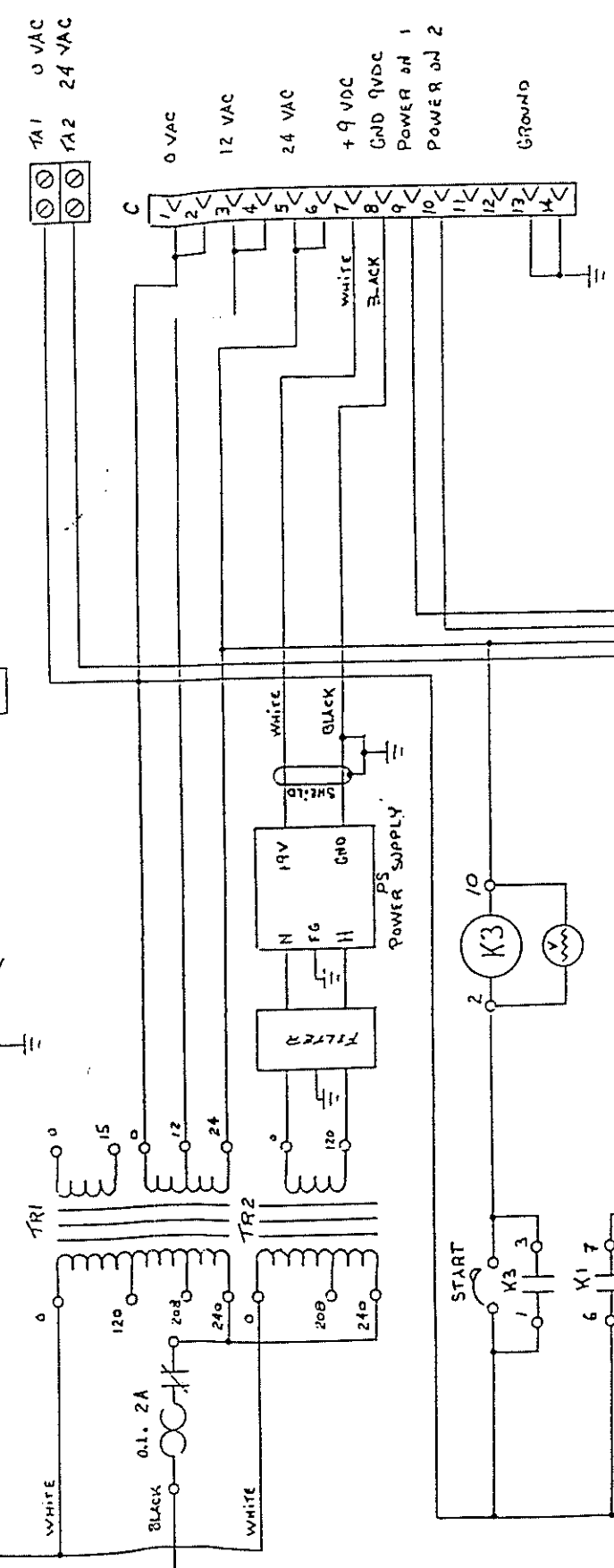
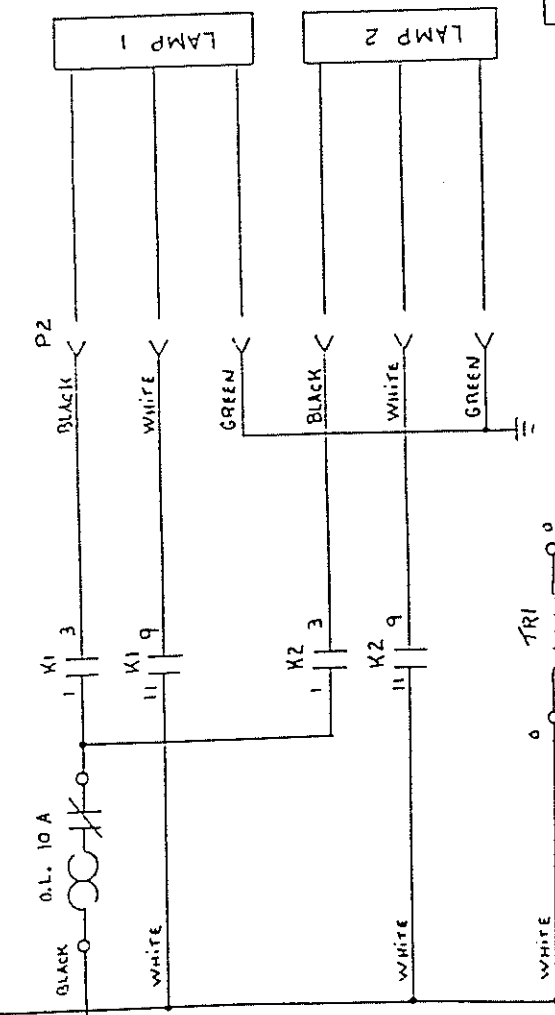




MAIN BREAKER



BALL LIFT



DESCRIPTION

K1	START RELAY
K2, K3	POWER ON RELAY
CM1	CONTACTOR
TR1	TRANSFORMER 1
TR2	" 2
F	LINE FILTER
PS	SWITCHING POWER SUPPLY
PCB	INTERFACE PRINTED CIRCUIT BOARD
TA1, TA2	SUPPLY FOR MACHINE CABLE
C	ALIMENTATION CONNECTOR
P1	BALL LIFT MOTOR PLUG
P2	LAMP PLUG

FAIT PARTIE DU :		
REVISIONS		
NO	DATE	REPÈRES
1	13/01/86	
SCEAU		
		
APPROUVÉ PAR :		
BOWLINGO		
MENDES		
MODÈLE		
EUROPEEN CIRCUIT 220V. - 3 PHASES 50 HZ		
DOSSIER	DATE	
	05-01-89	
DESSINÉ	ECHELLE	
CS	—	
NOM DU DESSIN		
ELECTRICAL LAYOUT - HIGH VOLTAGE BOX		
NO DU DESSIN		
53-890105-90		