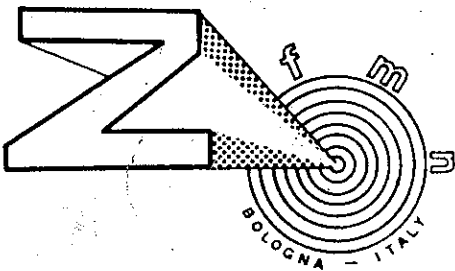


# Intruction Manual and Technical Manual for "Fire Mountain"



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# SERVICE MANUAL «FIRE MOUNTAIN»

## PART I - INSTRUCTION MANUAL

TABLE OF CONTENTS	PAGE
I. INSTALLATION	5
II. GENERAL GAME OPERATION	6
III. BOOK-KEEPING FUNCTIONS	7
IV. GAME ADJUSTMENT	7
V. PROGRAMMING	10
VI. ROUTINE MAINTENANCE ON LOCATION	12
VII. GENERAL INFORMATION	13

### LIST OF ILLUSTRATIONS

Fig. 1 ASSEMBLY DRAWING	15
Fig. 2 PLAYFIELD (Contacts)	16
Fig. 3 PLAYFIELD (Lamps)	17
Fig. 4 PLAYFIELD (Solenoids)	18

## PART II - TECHNICAL INSTRUCTION

I. BLOCK DIAGRAM	21
II. TROUBLESHOOTING	22
III. CONNECTOR CHART	26

## PART III - PARTS CATALOG

### LIST OF ENCLOSED ILLUSTRATIONS:

CPU BOARD	- WIRING DIAGRAM
	- COMPONENTS ARRANGEMENT
INTERFACE BOARD	- WIRING DIAGRAM
	- COMPONENTS ARRANGEMENT
POWER SUPPLY BOARD	- WIRING DIAGRAM
	- COMPONENTS ARRANGEMENT
DRIVER DISPLAY BOARD	- WIRING DIAGRAM
	- COMPONENTS ARRANGEMENT
AUDIO CARD	- WIRING DIAGRAM
	- COMPONENTS ARRANGEMENT



**PART I**

**INSTRUCTION MANUAL**



## **I. INSTALLATION**

Assemble the game as follows:

1. Bolt legs to the cabinet (use special bolts in coin box).
2. Gently extract electric cable and place it in the proper cavity, checking that non-skid knot is there.
3. Remove the elastic band that secures the light board and lift it to a vertical position. During this operation make sure that the cable is not crushed between the parts. The same care has to be used when disassembling so as not to squeeze the cables between the parts.  
The light board has an automatic coupling that keeps it in a vertical position to ease the assembly of the 4 bolts. Always make sure that the automatic coupling is securely into operation. Open light board and fasten it to the cabinet with the 4 bolts and washers in the coinbox.

## **VISUAL INSPECTIONS**

On all games there are certain items that should be checked after shipment. These are visual inspections which may avoid some time consuming service work later. Minor troubles caused by abusive handling in shipment are unavoidable.

Cable connectors may be loosened, switches (especially tilt switches) may go out of adjustment.

Plumb bob tilt switch should always be adjusted after game is set on location

1. Check that cabinet cable is connected to the light board cable.
2. Check for any wires that may have become disconnected.
3. Check that cables are clear of all moving parts.
4. Check that there are no tin residue of foreign material due to loose solder between contacts or on the connectors.
5. Check wires for proper soldering. Cold solder connections may not show up in the factory inspection, but vibrations in shipment may break contact.
6. Check that all fuses are making good contact.
7. Check wiring of transformer to correspond to location voltage.
8. Check and adjust tilt switches sensitivity as follows:
  - a. Plumb bob tilt switch (tilt 1)  
Adjust the length of plumb bob tilt according to desired sensitivity.
  - b. Rail tilt and ball (tilt 1)  
Insert ball in the guide, check that the ball rolls free closing contact when the cabinet is raised.
  - c. Shockproof tilt (tilt 2)  
There are 2:  
the 1st. near plumb bob tilt, the 2nd. near coin chutes.  
Adjust contact distance to desired sensitivity.

## II. GENERALE GAME OPERATION

1. Place ball into hole, plug in line cord.

Score displays are set to zero, display for max. score shows the highest score ever obtained (to obtain zero follow instructions, chapter V). « Credit » display shows remaining credits.

2. « Game over » light is lit. If « tilt » light is lit check the adjustment of tilt contacts which should be open.

3. Check that the machine properly accepts coins and advances corresponding credits (see chapter V).

Remember that the machine should not accept any coin when turned off or if the number of credits has reached the programmed max. (see chapter V).

4. If, after ignition, all displays were to alternate figures 6 and 9, it will be necessary to make some controls, since the data in storage memory, will be of no value. This is very likely to happen, if the machine was switched off for many weeks.

If, on the contrary, it has been recently used, and shows alternatively figures 6 and 9 it could well be that the battery or its input circuits are out of order.

When newly starting the machine re-programming will be necessary (see chapter V.).

5. Press « Credit » button - « GAME OVER » and possible « TILT » lights should be turned off.

a. 1st player warning light should be lit.

b. Lamp showing 1st player in game will light up.

c. Credits will be decreased by one point.

d. BALL TO PLAY lamp will have to be lit.

e. Playfield is ready and the ball ejected from the hole.

6. Each new pressure on « Credit » button will decrease the bumper of credits and increase indication of numbers of players in game.

7. Maximum number of credits which can be required is 4.

## GENERAL REMARKS ON THE GAME

1. The number of balls to be played for each game is regulable (see chapter V).

2. The ball won during the game is immediately thrown in again.

3. The games won while playing for combinations accomplished or for achievement of winning scores are immediately awarded.

4. The games won by exceeding the maximum score (regulable) are awarded at the end of the game.

5. At the end of the game, the match lamp comes on (if programmed) and a game is awarded to each player having the last two figures of score equal to the match number. The games won are awarded only if the number of maximum credits (regulable) is not reached.

6. At the end of the game, the player (or players) who has got the superbonus win, is indicated by the winking of the corresponding lights.

**N.B.** This indication is of no value if the «SUPERBONUS» is programmed on «HIGHEST SCORE». In this case it will be shown on the displays.

7. When 3 balls are programmed per each game, dropping targets scores of top holes are increased.



8. If the score of any player exceeds 999.990, the last hand digit of the display will flash to indicate the over the top score.

9. When highest score is set on «Random» each time a new game is started a new and changeable score will be shown in the programmed range of scores (see test n° 21).

### III. BOOK-KEEPING FUNCTIONS

« Meter display » button is designed to help operators perform certain accounting functions such as the number of coins dropped and number of total plays.

The operator will know these data at any time.

For this purpose he will have to open the coin chute door and push the SELF TEST/METER/PROGRAMMING button.

1st. player display will show total coins in left coin chute.

2nd. player display will show total coins in right coin chute.

3rd. player display will show total coins in central coin chute.

4th. player display will show total plays.

Max. score display will show total replays.

Same data can be obtained using special print-out unit.

For this purpose, it will be necessary to connect the print-out to the special connector placed inside the cabinet on the right hand side.

Press « Stampa » button on the printer.

All displays and lamps will be turned off and a coupon will be printed as the sample below:

#### FIRE MOUNT

SERIAL N 0000

WINNED G 000006

PLAYED G 000013

COINS 1 000003

COINS 2 000002

COINS 3 000000

At the end of the printing the machine is ready for a new game.

In this model it has been foreseen the possibility of using an electromechanical scaler so that if the machine loses its programme no data of the bookkeeping function for the coins or superbonuses will be lost.

This scaler should be applied to the printer service and will count coins value (weight) or how many «SUPERBONUSES» have been given.

To select one of the two possibilities, one should change the programming on test «21» as it follows:

To count how many coins have been inserted, programme test «21» on «00» if, on the contrary, one wishes to count «SUPERBONUSES», programme test «21» on «01» or «02» or «03». See, for example chapter V «PROGRAMMING» test 21.

#### Ex. for COIN CALCULATIONS

100 Lit. 1 impulse

200 Lit. 2 impulses

10 P. 1 impulse

50 P. 5 impulses

#### Ex. for SUPERBONUS CALCULATIONS

EACH TIME THE HIGHEST SCORE «RANDOM» IS OBTAINED ONE IMPULSE IS COUNTED ON THE SCALER (to have a correct accounting function see instruction «Chapter V» ).

To avoid that operators or other extract the scaler, thus making impossible to count coins and Superbonuses put a seal on the connector.

#### IV. GAME ADJUSTMENT

Once the machine has been set up, it is ready to play.

It is, however, advisable to carry out a general inspection in order to make sure that all parts work correctly.

For this purpose there is a « self test » program which is activated each time the « SELF TEST/METER/PROGRAMMING » button is pressed.

#### TEST THEORY OF OPERATION

1. Press button once.

« Match » display will show test number (01).

This test verifies book-keeping functions as in chapter III.

2. Press button again.

« Match » display will show test number (02). This test checks all displays.

Automatically the digit displays will go from 0, 1, 2 etc. to 9 and repeat continuously. Use this test to check if some digit segments have been damaged.

3. Press button again.

« Match » display will show test number (03). This test checks that all contacts are correct.

For this purpose it will be necessary to manually close all playfield contacts and those of the cabinet one at the time. Refer to the following list to check that the closed contact number is on « Credit » display.

#### CABINET CONTACT LIST

- 00 Meter display button
- 01 Plumb bob tilt «ROLL BALL»
- 02 Shock proof tilt «SLAM TILT»
- 03. Credit button
- 04 Coin chute 1 (left hand side)
- 05 Coin chute 2 (right hand side)
- 06 Coin chute 3 (centre)
- 14 Reset highest score button

#### PLAYFIELD - CONTACT LIST (see table 2)

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| 16 Bottom hole                        | 32 Center bumper                      |
| 17 Left hand kicker                   | 33 Top left hand contact              |
| 18 Right hand kicker                  | 34 Top right hand contact             |
| 19 Bottom inside right hand rollover  | 35 Left hand spinning target          |
| 20 Bottom outside right hand rollover | 36 Outside lateral contacts           |
| 21 Bottom outside left hand rollover  | 37 Right and spinning target          |
| 22 Bottom inside left hand rollover   | 38 Back target bank contacts          |
| 23 Top left hand hole.                | 39 Single moving target               |
| 24 Right hand bumper                  | 40 1st. left hand bank moving target  |
| 25 Top left hand rollover             | 41 2nd. left hand bank moving target  |
| 26 Top centre rollover                | 42 3rd. left hand bank moving target  |
| 27 Top right hand rollover            | 43 4th. left hand bank moving target  |
| 28 Top left hand fixed target         | 44 5th. right hand bank moving target |
| 29 Top right hand fixed target        | 45 6th. right hand bank moving target |
| 30 Left hand bumper                   | 46 7th. right hand bank moving target |
| 31 Top right hand hole                | 47 8th. right hand bank moving target |

4. Press button again.

« Match » display will show test number. (04).

This test checks that all pilot lamps are working properly.  
All lamps except those fix will flash ON and OFF about 3 times per second.

5. Press button again.

« Match » display will show test number. (05).

This test checks all solenoids.

These are activated in sequences from 1 to 20 and corresponding number will be shown on « Credit » display.

#### **SOLENOID LIST (Table n° 4)**

- 01 Side holes
- 02 Moving target
- 03 Left hand target bank
- 04 Coin mechanism stop
- 05 Left hand kicker
- 06 Right hand kicker
- 07 Right hand target bank
- 08 Left hand bumper
- 09 Right hand bumper
- 10 Centre bumper
- 11 Outhole
- 12 Knocker
- 13 Coil 1
- 14 Coil 2
- 15 Coil 3
- 16 Coil 4
- 17 Coil 5
- 18 Coil 6
- 19 Coil 7
- 20 Coil 8

**N.B.** Flipper relay and gate are in this model piloted by two lamp exits.

Functional tests have now been completed.

Push again the "Self Test/Programming" push-button to set the pinball for a new game.

#### **V. PROGRAMMING**

Games are factory programmed according to their destination. Programming elements may however be changed following procedure below.

It is assumed that such procedures will be left EXCLUSIVELY to technicians. Wrong programming could be the cause of malfunction. To verify or to change programming proceed as indicated in points 1 ÷ 24 excluding the setting to zero phase.

1. Open light board with game-up.

To have a total or partial re-programming, set memories to zero as it follows:

A) Press "Programming Enable" pushbutton placed on top left hand side of CPU BOARD.

B) Make a short circuit between TP19 and TP20, which are placed on bottom right hand side of CPU board; to do so one can use special tester push rod or isolated copper wire with peeled ends.

C) Proceed to the programming as indicated in points 2 ÷ 24.

2. Press "Programming Enable" button on the upper left hand side of CPU circuit.

3. Close light board without turning power off.

4. Press "SELF TEST/PROGRAMMING" button in coin chute.

"Match" display will show test number (06). The number of balls per game can be programmed.

Display «Credit» will show the programmed number. To change programme use «Credit» button. The number of balls can be changed from 0 to 7.

5. Press self test button.

«Match» display will show present test number (07).

«Match» can be programmed. Such possibility can be included or excluded by pressing «Credit» button.

CREDIT DISPLAY

— 00 excluded match.

— 01 included match.

6. Press «self test» button again.

«Match» display will show test number (08). Now the type of wins upon reaching winning score can be programmed.

(With wins programmed on superbonus, the number of credits is not increased but book-keeping function meters are equally up-dated).

Pressing «Credit» button, the following possibilities are available:

CREDIT DISPLAY — 00 SUPERBONUS

CREDIT DISPLAY — 01 ONE REPLAY

CREDIT DISPLAY — 02 BONUS BALL

7. Press «self-test» button.

«Match» display will show presente test number (09).

Max. number of replays can be programmed. «Credit» display shows present programmed number.

By pressing «credit» button programming is changed from 10 to 60.

8. Press «self test» button.

«Match» display will show the present test number (10).

Now it is possible to program the type of win awarded upon exceeding maximum score.

«Credit» button shows present programmed number.

Press «credit» button to change programming from 0 to 3.

— Display credit = 00 SUPERBONUS

— Display credit = 01 1 replay

— Display credit = 02 2 replays

— Display credit = 03 3 replays

9. Press «self test» button.

«Match» display will show test number (11).

The «weight» (value) of the coins accepted by coin chute 1 can be programmed (see table 1).

«Credit» display will show the present programmed value wich can be changed by pressing «credit» button from 0 to 15.

10. Press «self test» button.

«Match» display will show number of test (12).

Number of additional credits can be programmed by introducing the coin into coin chute n° 1 (see figure 1). Go on as shown at point 9, to change programming from 0 to 15.

11. Press « self test » button.  
 « Match » display will show the test number (13).  
 The « weight » (value) of the coins accepted by coin chute 2 can be programmed (see figure 1). Go on as shown at point 9 to change programming from 0 to 15.
12. Press «self test» button.  
 »Match display will show test number (14).  
 Number for additional credits can be programmed by introducing the coin in coin chute n° 2. Go on as shown at point 9.
13. Press «self test» button.  
 «Match» display will show test number (15).  
 The «weight» (value) of the coins accepted by coin chute 3 can be programmed. Go on as shown at point 9.
14. Press «self test» button.  
 «Match» display will show test number (16).  
 The number of additional credits can be programmed by introducing the coin into coin chute n° 3. Go on as shown at point 9. (see chapter VII: programming examples).
15. Press «Self test» button. «Match» display will show test number (17).  
 The first game variation can be programmed to light the word «ERUPTION» in order to reach the special:
- CREDIT DISPLAY = 00, normal game for 5 balls.
  - CREDIT DISPLAY = 01, easy game for 3 balls. (double advancement).
  - CREDIT DISPLAY = 02, easy game for 3 balls. (triple advancement).
16. Press «Self test» button again. «Match» display will show test number (18).  
 Second game variation can be programmed. By operating the credit button it is possible to select one of the following possibilities:
- CREDIT DISPLAY = 00, when hitting lit SPECIAL a SUPERBONUS is given.
  - CREDIT DISPLAY = 01, when hitting lit SPECIAL a REPLAY is given.
  - CREDIT DISPLAY = 02, when hitting lit SPECIAL a BONUS BALL is given.
  - CREDIT DISPLAY = 03, when hitting lit SPECIAL 50.000. points are given.
17. Press «Self test» button again. «Match» display will show test number (19).  
 Third game variation can be programmed:
- CREDIT DISPLAY = 00, the SPECIAL of the right hand hole gives one BONUS BALL.
  - CREDIT DISPLAY = 01, the SPECIAL of the right hand hole gives 50.000 points.
18. Press «Self Test» button. «Match» display will show test number (20).  
 Fourth game variation can be programmed. It relates to left hand rollover special. By operating the credit button it is possible to select one of the two following possibilities:
- CREDIT DISPLAY = 00, normal SPECIAL lighting.
  - CREDIT DISPLAY = 01, easy SPECIAL lighting.
19. Press «Self Test» button. «Match» display will show test number (21).  
 Variation can be programmed on the max. score:
- CREDIT DISPLAY = 00, normal max. score and inserted coins accounting.
  - CREDIT DISPLAY = 01, Random score from 600.000. to 1.700.000. makes low scores more frequent and counts SUPERBONUS.
  - CREDIT DISPLAY = 02, as above makes medium scores more frequent and counts SUPERBONUS.
  - CREDIT DISPLAY = 03, as above makes top scores more frequent and counts SUPERBONUS.
20. Press «Self test» button. «Match» display will show test number (22).

On the «HIGHEST SCORE» display the max. score obtained is reported.  
Press the credit button if zero setting is desired.

21. Press «Self Test» button. «Match display will show test number (23).  
«Credit» display shows 1st. winning score (hundred of thousands and tens of thousands).

To change it act on «Credit» button until the new wished score has been obtained.

22. Press «Self test» button. «Match» display will show test number (24).  
«Credit display» shows 2nd. winning score (see point n° 21).

23. Press «Self test» button. «Match» display will show the last test number (25).  
«Credit» display shows 3rd. winning score (see point n° 21).

24. Press «Self Test» button.

«Match» display will show the last test number (26).

Displays show book-keeping functions (see chapter III).

To clear meters press «credit» button. Press «Self Test» button again. The machine is now ready to play.

**N.B.** On tests number 23,24,25 one cannot programme a score higher than 990.000.

**N.B.** The «Highest score reset» button placed on the coin mechanism shall be used to position the max. score at the desired level.

Each time the button is pressed the score advances 100.000 points and when 1.900.000 is totalled, it starts again.

### **IMPORTANT INFORMATIONS TO PROGRAMME THE MACHINE WITH RANDOM SCORE AND CORRECT SUPERBONUS ACCOUNTING.**

To have a correct «Superbonuses» accounting, programme the machine as it follows:

1. «Match» programming has to be excluded (test 07 = 00).
2. The scores which can be programmed with tests 23,24,25 have to be at «Bonus Ball». Programme to zero tests 23,24,25 if «Bonus Ball» is not required.
3. The programme has to be «Superbonus» upon exceeding max. score (test 10 = 00)
4. The programme on Special Target has to be «Bonus Ball» or 50.000. points (test 18 = 02, or 03).
5. Test 21 has to be programmed on 01 or 02 or 03, one of the 3 score ranges to be used each time starts a new game.

— There is a melody each time «Random Score» is overcome. Book-keeping will record 1 point at the end of the game. (See chapter III - Book-keeping functions).

**N.B.** With two or more than two players only one «Superbonus» is awarded to the highest score, also indicated on «Highest score» display.

### **VI. ROUTINE MAINTENANCE ON LOCATION**

The purpose of this chapter is to give a general line to follow, so as to maintain the machine in proper operation.

The operations shown have to be carried out each time one operates on the machine, even when on power-up.

1. Follow first 5 tests as shown in chapter IV to check the correct operation of each flipper component.
2. Carefully check that securing screws of electronic boards do not work loose. Same  
— Check bumpers the rod.
3. Playfield (upper side)  
— Check and, if necessary, tighten the screws of the rubber post.

— Check the conditions of the rubber rings and, if necessary, change them. (remember to check the adjustment of contacts each time the rubber rings are replaced).

— Carefully clean playfield. Do not use highly caustic cleaners.

#### 4. Playfield (lower part).

— Check flipper assembly (tie rod, pin joints and contacts)

— Check bumpers

— Check contact adjustments.

— Check wiring harness to avoid tractions on the wires and obstacles to the moving parts.

#### 5. Check and adjust tilt sensitivity.

Remember: an effective periodic maintenance greatly improves flipper life time and avoids the possibility of damages.

### VII. GENERAL INFORMATION

The purpose of this instruction Manual is to help operators perform several simple procedures such as installation, maintenance, and game adjustments.

For more complicated problems more detailed procedures are available in the Technical Instruction Manual.

### COINS/CREDITS PROGRAMMING EXAMPLES

This game can be programmed for whatever combination of coins and credits. one has only to take into account the following data:

— The weight (value) of the coins can range from 0 to 15.

— The number of credits relevant to each coin can be changed from 0 to 15.

— Possible ratios of coin values:

a) 1-2-5 or

b) 2-5-10 or

c) 5-10-15 or has to be adapted to such ratio

#### Example n° 1:

1 DM = 2 credits

2 DM = 5 credits (1 x 2 DM or 2 x 1 DM)

5 DM = 14 credits (1 x 5 DM or 2 x 2 + 1 DM or 3 x 1 DM + 2 DM or 5 x 1 DM).

#### Programming:

Test 11 = 1

Test 12 = 2

Test 13 = 2

Test 14 = 5

Test 15 = 5

Test 16 = 14

In this case the coin chute n° 1 shall accept 1 DM coins and coin chute n° 2 shall accept 2 DM coins.

Coins chute n° 3, shall accept 5 DM coins.

#### Example n° 2:

1 FR = 1 credit

2 FR = 3 credits (2 x 1 FR) (1 credit allowance)

#### Programming:

Test 11 = 1

Test 12 = 1

Test 13 = 2  
Test 14 = 3  
Test 15 = 4  
Test 16 = 6

In this case coin chute n° 1 shall accept 1 FR coins. Coin chutes n° 2 and n° 3 are not provided.

Example n° 3:

1 FR = 0 credits

2 FR = 1 credit (2 x 1 FR)

5 FR = 3 credits (5 x 1 FR) (1 credit allowance).

Programming:

Test 11 = 1  
Test 12 = 0  
Test 13 = 2  
Test 14 = 1  
Test 15 = 5  
Test 16 = 3

It has to be pointed out that in this case coin chute n° 1 has to accept 1 FR coins and coin chutes n° 2 and n° 3 cannot be installed.

Example n° 4:

5 P = 1 credit (1 x 5 P)

10 P = 2 credits (2 x 5 P or 1 x 10 P)

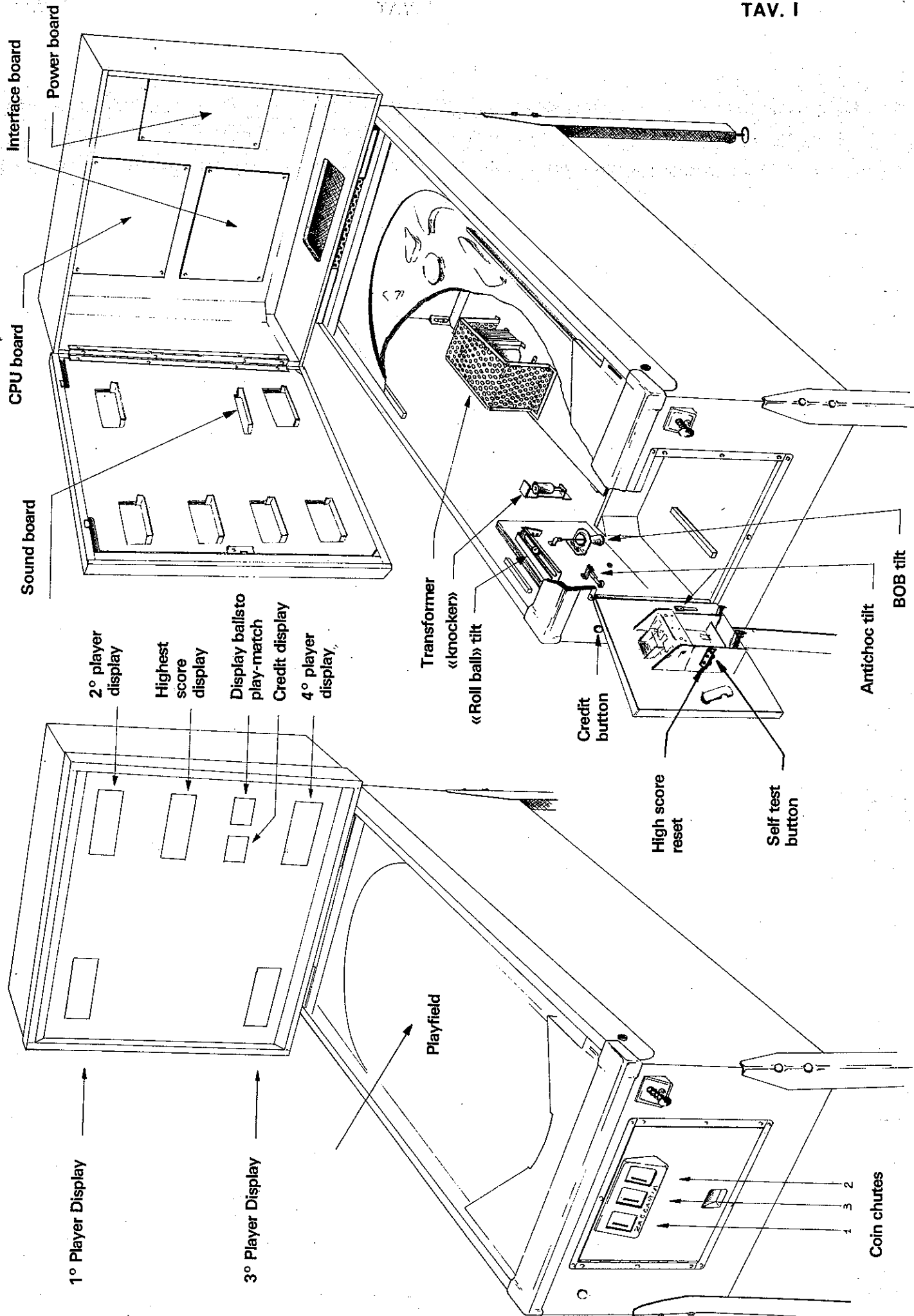
Programming:

Test 11 = 5 or 1  
Test 12 = 1 or 1  
Test 13 = 10 or 2  
Test 14 = 2 or 2  
Test 15 = 15 or 3

In this case the coin chute n° 1 shall accept 5 P coins - coin chute n° 2 shall accept 10 P coins.

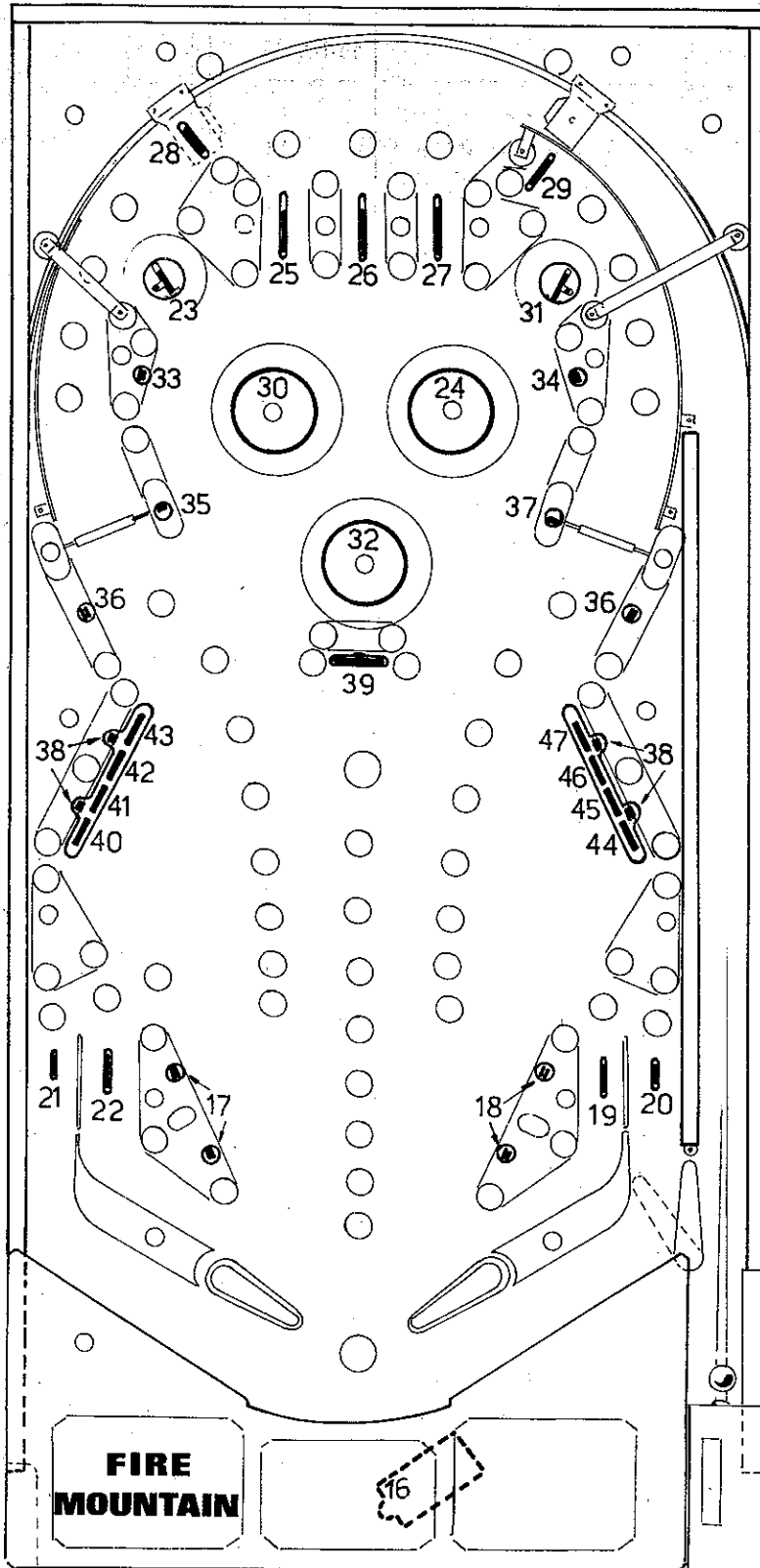
**VERY IMPORTANT:** Position from 11 to 16 have always to be programmed regardless the number of installed coin chutes.



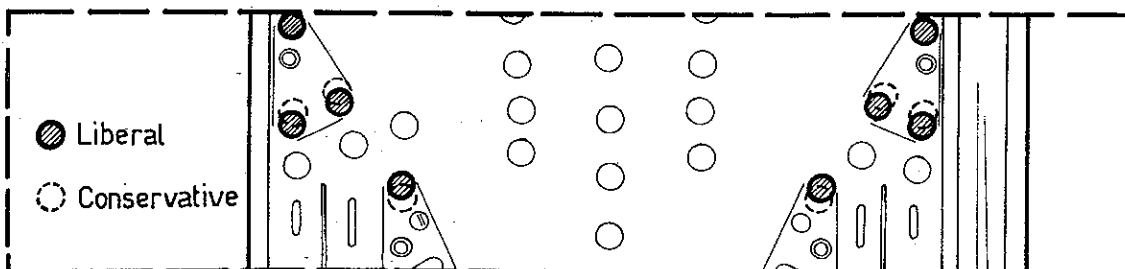


**CONTACT ARRANGEMENT**

**TABLE II**



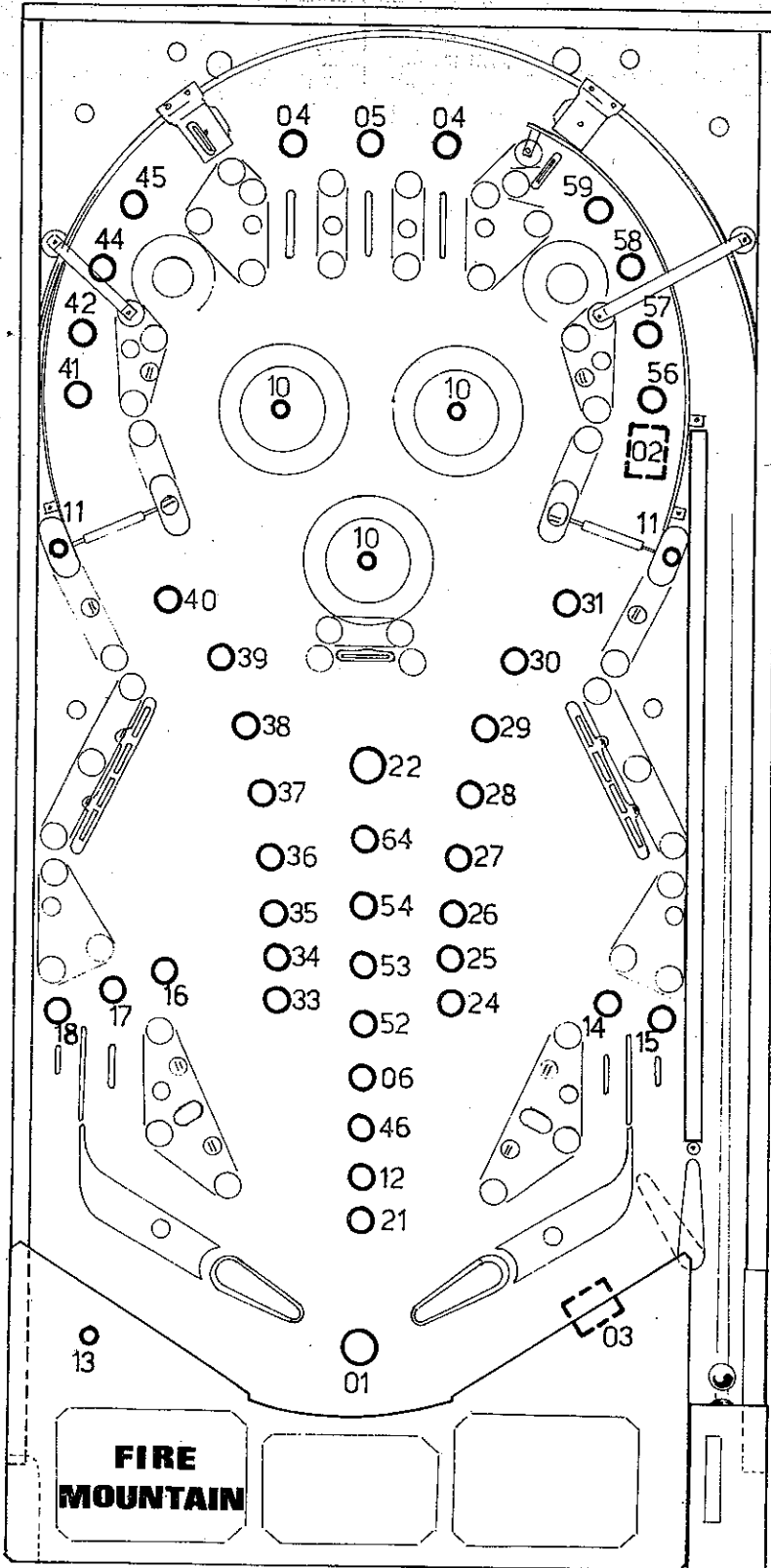
Contact Number	Description
16	Bottom hole
17	Left hand kicker
18	Right hand kicker
19	Bottom inside right rollover
20	Bottom outside right rollover
21	Bottom outside left rollover
22	Bottom inside left rollover
23	Top left hand hole
24	Right hand bumper
25	Top left hand rollover
26	Top centre rollover
27	Top right hand rollover
28	Top left hand fixed target
29	Top right hand fixed target
30	Left hand bumper
31	Top right hand hole
32	Centre bumper
33	Top left hand contact
34	Top right hand contact
35	Left hand spinning target
36	Outside lateral contacts.
37	Right hand spinning target
38	Back target bank contacts.
39	Single moving target
40	1st. left bank moving target.
41	2nd. left bank moving target.
42	3rd. left bank moving target.
43	4th. left bank moving target.
44	5th. right bank moving target.
45	6th. right bank moving target.
46	7th. right bank moving target.
47	8th. right bank moving target.



# LAMP ARRANGEMENT

TABLE III

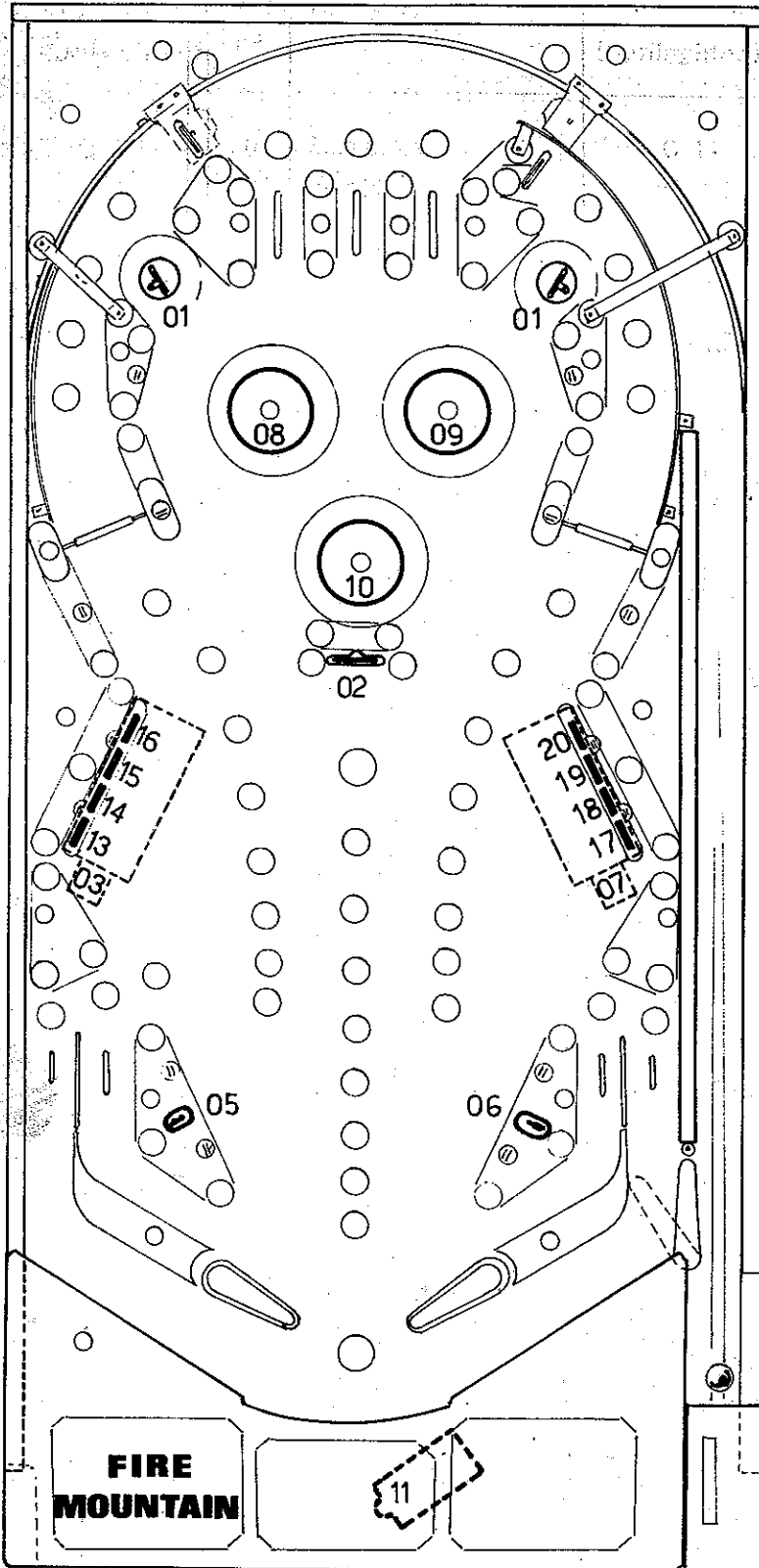
+ Head lamps  
 ++ Head and playfield lamps.



Lamp n°	Description	Driver n° (SCR)
+ + 01	Bonus Ball	SCR 57
02	Flipper relay	SCR 61
03	Gate relay	SCR 62
04	Top side rollovers	SCR 54
05	Top centre rollover	SCR 55
06	"P" lamp	SCR 56
+ 07	Game over	SCR 59
+ 08	Match	SCR 58
09	Spare	SCR 53
10	Bumper lamps	SCR 64
11	Spinning target lamps	SCR 60
12	"R" Lamp	SCR 63
13	Credit	SCR 44
14	Bottom right rollover	SCR 43
15	Bottom right rollover	SCR 26
16	Bottom left rollover	SCR 25
17	Bottom left rollover	SCR 27
18	Bottom left special rollover	SCR 45
+ 19	Superbonus	SCR 51
20	Spare	SCR 36
21	"E" lamp	SCR 15
22	Special lamp	SCR 8
+ 23	Ball to play	SCR 42
24	Bonus 1000	SCR 24
25	Bonus 2000	SCR 23
26	Bonus 3000	SCR 28
27	Bonus 4000	SCR 50
28	Bonus 5000	SCR 33
29	Bonus 6000	SCR 9
30	Bonus 7000	SCR 46
31	Right special bonus	SCR 7
32	Spare	SCR 41
33	Bonus 1000	SCR 11
34	Bonus 2000	SCR 29
35	Bonus 3000	SCR 32
36	Bonus 4000	SCR 14
37	Bonus 5000	SCR 49
38	Bonus 6000	SCR 22
39	Bonus 7000	SCR 5
40	Left hand special bonus	SCR 48
41	Left hand bonus x 2	SCR 12
42	Left hand bonus x 3	SCR 21
43	Spare	SCR 30
44	Left hand bonus x 4	SCR 39
45	Left hand bonus x 5	SCR 4
46	"U" lamp	SCR 38
+ 47	Can play 1	SCR 3
+ 48	Can play 2	SCR 13
+ 49	Can play 3	SCR 2
+ 50	Can play 4	SCR 37
+ 51	Tilt	SCR 20
52	"T" lamp	SCR 31
53	"I" lamp	SCR 19
54	"O" lamp	SCR 36
55	Spare	SCR 1
56	Right bonus x 2	SCR 18
57	Right bonus x 3	SCR 47
58	Right bonus x 4	SCR 34
59	Right bonus x 5	SCR 40
+ 60	Play 1	SCR 52
+ 61	Play 2	SCR 17
+ 62	Play 3	SCR 6
+ 63	Play 4	SCR 16
64	"N" lamp	SCR 10

SOLENOID LIST TABLE IV

TABLE IV



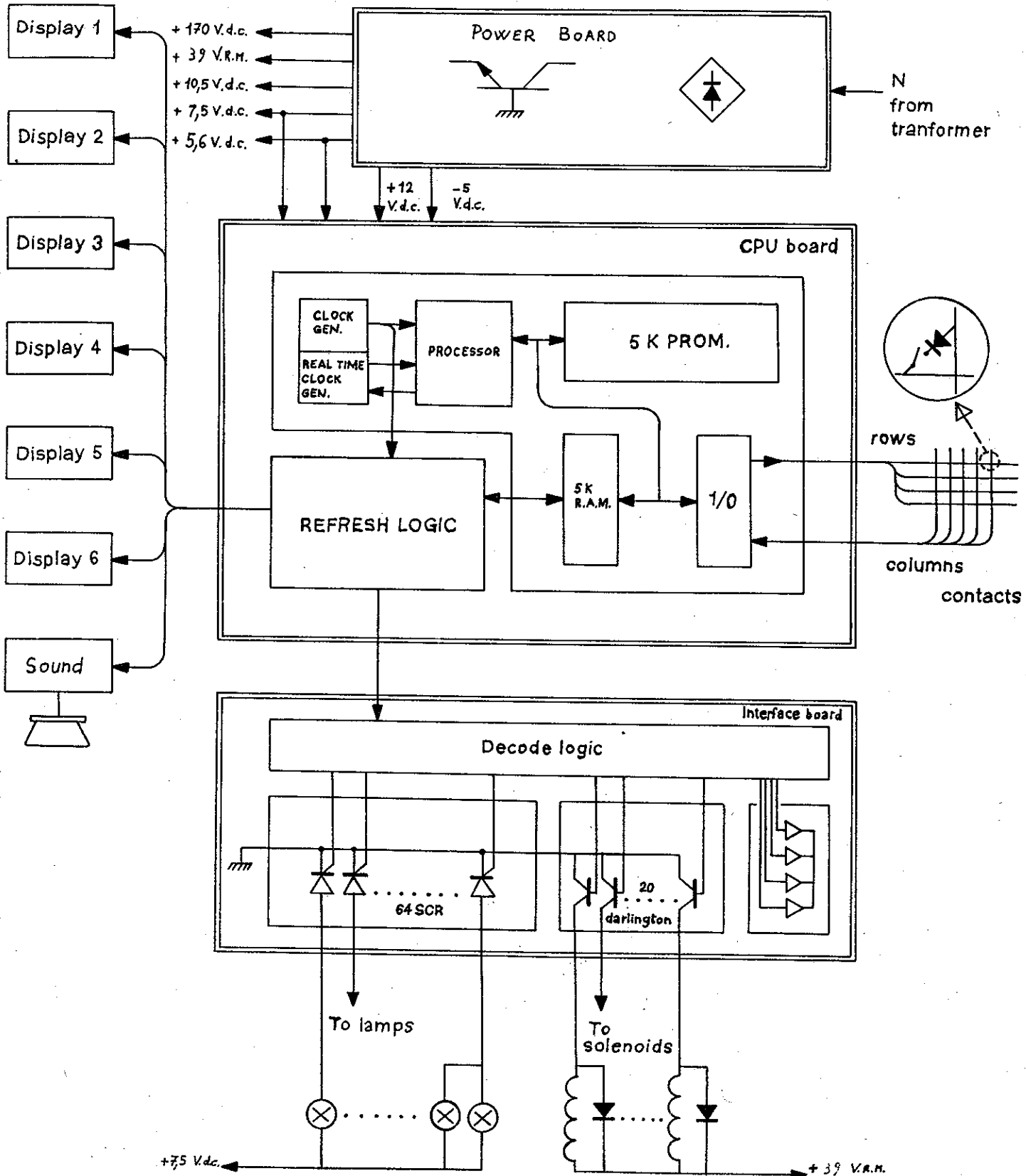
Sol. n°	Description	Driver n° (Darlington)
01	Side holes	Q 14
02	Moving target	Q 5
03	Left hand target bank	Q 18
04	Coin mechanism stop	Q 17
05	Left hand kicker	Q 6
06	Right hand kicker	Q 7
07	Right hand target bank	Q 8
08	Left hand bumper	Q 4
09	Right hand bumper	Q 13
10	Centre bumper	Q 3
11	Out hole	Q 19
12	Knocker	Q 15
13	Coil 1	Q 9
14	Coil 2	Q 12
15	Coil 3	Q 20
16	Coil 4	Q 1
17	Coil 5	Q 2
18	Coil 6	Q 11
19	Coil 7	Q 10
20	Coil 8	Q 21

PART II

**TECHNICAL INSTRUCTIONS**



# BLOCK DIAGRAM



# I. TROUBLESHOOTING

## LAMPS (insert test number 04)

POSITION	FIXED LAMPS	CONTROLLED LAMPS	
		ONE OR MORE LAMPS	ALL LAMPS
<b>ALWAYS OFF</b>	<ol style="list-style-type: none"> <li>1. Check fuse F7 on the feeder. (Fuses 15 AMP).</li> <li>2. Check for 7.5 Vac on feeder.</li> <li>3. Check for 7.5 Vac on feeder CN1 connector.</li> <li>4. Check mains fuse (near the transformer).</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the lamp</li> <li>2. Check connection</li> <li>3. Connect lamp exit wire from interface board. If the lamp is lit, replace the board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fuse F3 on the feeder (15 AMP)</li> <li>2. Check for +7,5 VRM voltage on the feeder.</li> <li>3. Replace interface board.</li> <li>4. Replace connecting cable CPU interface</li> <li>5. Replace CPU board.</li> </ol>
<b>ALWAYS ON</b>	<b>NORMAL</b>	<ol style="list-style-type: none"> <li>1. Check connections to find short circuits.</li> <li>2. Replace interface board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace interface board.</li> <li>2. Replace connecting cable CPU interface.</li> <li>3. Replace CPU board.</li> </ol>
<b>GLOWS DIM</b>	<ol style="list-style-type: none"> <li>1. Check for 7.5 Vac on feeder.</li> <li>2. Check for mains voltage and transformer connection.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for + 7.5 VRM voltage</li> <li>2. Check for mains voltage and connection of the transformer.</li> </ol>	



<b>DISPLAY: (insert test number 02)</b>		
<b>POSITION</b>	<b>ONE DISPLAY</b>	<b>ALL DISPLAYS</b>
<b>OFF</b>	<ol style="list-style-type: none"> <li>1. Check connections and flat-cable connections.</li> <li>2. Check for + 5 Vdc + 170 Vdc on display board.</li> <li>3. Replace display.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for + 5Vdc + 170 Vdc on the feeder.</li> <li>2. Check for fuse F3.</li> <li>3. Check for + 5Vdc on the interface board.</li> <li>4. Replace the interface board.</li> </ol>
<b>INCORRECT DISPLAYS</b>	<ol style="list-style-type: none"> <li>1. Check connections and flat-cable connections.</li> <li>2. Replace display.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check connections of the CPU board output flat-cable.</li> <li>2. Check if the problem remains also with the interface removed from the CPU board.</li> <li>3. If YES replace CPU board, if NO replace the interface board.</li> </ol>
<b>GLOWS DIM OR EXCESSIVE</b>	<ol style="list-style-type: none"> <li>1. Check for + 170 Vdc on feeder and if it is not possible to adjust it, replace the feeder board.</li> </ol>	

<b>SOLENOIDS (insert test n° 05)</b>		
<b>POSITION</b>	<b>ONE OR MORE</b>	<b>ALL</b>
<b>NEVER ACTUATED</b>	<ol style="list-style-type: none"> <li>1. Check connection.</li> <li>2. Check fuse 2 A under playfield.</li> <li>3. If broken solenoid is the Klocker, check fuse from 1A in the cabinet near the knocker.</li> <li>4. Check fuse F2 on the feeder (5 AMP).</li> <li>5. Check for +39 VRM voltage on the feeder.</li> <li>6. Check for 43 Vac voltage on CN1 connector of the feeder.</li> <li>7. Ground for 1 second the output interface board solenoid. If solenoid is activated replace the board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fuse F2 on the feeder (5 AMP)</li> <li>2. Check for +39 VRM on the feeder.</li> <li>3. Check for 43 Vac voltage on connector CN1 of the feeder.</li> <li>4. Replace the interface board.</li> </ol>
<b>ALWAYS ACTUATED</b>	<ol style="list-style-type: none"> <li>1. Check connections to single out possible short circuits.</li> <li>2. Replace the interface board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the CPU board.</li> <li>2. Replace the interface board.</li> </ol>
<b>INSUFFICIENTLY ACTIVATED</b>	<ol style="list-style-type: none"> <li>1. Check connections.</li> <li>2. Ground for a moment the output wire of the interface board. If the solenoid is regularly activated, replace the board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for +39 VRM on the feeder.</li> <li>2. Check for 43 Vac voltage on the feeder connector.</li> <li>3. Replace the feeder.</li> </ol>

**CONTACTS (insert test 03)**

<b>POSITION</b>	<b>ONE OR MORE CONTACTS</b>	<b>ALL CONTACTS</b>
<b>INOPERATIVE</b>	<ol style="list-style-type: none"><li>1. Check that the contact is normally open (be careful when contacts are in parallel).</li><li>2. Check operation by directly bridge connecting the input wires on the contact.  If in this way the contact is activated, replace the diode.  If the contact is not yet activated, check the connection up to connectors CN8 or CN9.</li><li>3. Insulate the contact wires and make sure that there are no short circuits with other wires.</li><li>4. Replace CPU board.</li></ol>	<ol style="list-style-type: none"><li>1. Replace CPU board.</li></ol>

### III. CONNECTOR CARD FOR «FIRE MOUNTAIN»

#### INPUT / OUTPUT POSITION ON THE CONNECTORS

#### FEEDER BOARD

CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN1	1	Red	165 Vac 0.2 A
»	2	Red	165 Vac 0.2 A
»	3	Blue	43 Vac 10 A
»	4	Blue	43 Vac 10 A
»	5	White	7.5 Vac 15 A
»	6	Green	7.5 Vac 15 A
»	7	Yellow	10.5 Vac 3 A
»	8	Yellow	10.5 Vac 3 A
»	9	Brown	10.5 Vac 0.5 A
»	10	brown	10.5 Vac 0.5 A
»	11	Black	17 Vac 0.5 A
»	12	Black	17 Vac 0.5 A
»	13	White	7.5 Vac 15 A
»	14	Green	7.5 Vac 15 A
CN2	1	White-black	GND
»	2	—	
»	3	Blue-green	7.5 Vac cabinet fixed lamps
»	4	Brown-red	7.5 Vac cabinet fixed lamps
»	5	—	
»	6	Light blue-red	+50 VRM common for all the solenoids in the cabinet.
»	7	Brown-yellow	CABINET-PLAYFIELD INTERCONNECTIONS FOR FLIPPER CONTROL
»	8	Blue-white	
CN3	1	Pink-yellow	7.5 Vac cabinet fixed lamps 7.5 Vac cabinet fixed lamps + 7.5 VRM common for all controlled playfield lamps +50 VRM common for playfield solenoids
»	2	Pink-white	
»	3	Blue	
»	4	Yellow	
»	5	Brown	
»	6	Violet-white	
CN4	1	Blue	7.5 Vac light board fixed lamps
»	2	Yellow	7.5 Vac light board fixed lamps
»	3	Red-White	+7.5 VRM common light board controlled lamps
»	4	Brown-light green	+12 VRM common for loudspeaker

CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN5	1	Black	GND
»	2	Red	+ 5 Vdc
CN6	1	White	- 5 Vdc
»	2	Blue	+ 5 Vdc
»	3	Red	+ 12 Vdc
»	4	Green	+ 7.5 VRM
»	5	Black	GND
»	6	Yellow	+170 Vdc

### CPU BOARD

CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN7	1	Yellow	+170 Vdc
»	2	Black	GND
»	3	Green	+ 7.5 VRM
»	4	Red	+ 12 VRM
»	5	Blue	+ 5 Vdc
»	6	White	- 5 Vdc
CN8	1	White-grey	Printer - RX+
»	2	Yellow-grey	Printer - RX-
»	3	White-black	Printer - TX-
»	4	Brown-grey	Printer - TX+
»	5	—	
»	6	White	Contacts - line 0
»	7	Grey	contacts - line 1
»	8	—	
»	9	—	
»	10	Green-blue	Contacts - column 0
»	11	Yellow-green	Contacts - column 1
»	12	Orange-white	Contacts - column 2
»	13	Brown-orange	Contacts - column 3
»	14	Black-violet	Contacts - column 4
»	15	Green-violet	Contacts - column 5
»	16	□	
»	17	Pink-white	Contacts - column 6
»	18	Orange-yellow	Contacts - column 7

CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN9	1	—	
»	2	—	
»	3	Red	Contacts - line 2
»	4	Yellow	Contacts - line 3
»	5	Black	Contacts - line 4
»	6	Green	Contacts - line 5
»	7	—	
»	8	—	
»	9	—	
»	10	Grey-white	Contacts - column 0
»	11	Black-white	Contacts - column 1
»	12	Red-green	Contacts - column 2
»	13	Black-yellow	Contacts - column 3
»	14	Black-orange	Contacts - column 4
»	15	Red-Yellow	Contacts - column 5
»	16	Brown-violet	Contacts - column 6
»	17	Yellow-violet	Contacts - column 7
»	18	□	

### INTERFACE BOARD

CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN 13	1	—	
» »	2	□	
» »	3	Orange-light blue	Coin mechanism
» »	4	Green-grey	Knocker
» »	5	—	
» »	6	—	
» »	7	—	
CN 14	1	Red-light green	Side holes
» »	2	Orange-white	Right hand kicker
» »	3	Light green-white	Left hand bumper
» »	4	Brown-white	Outhole
» »	5	Black-white	Right hand bumper
» »	6	Blue-light green	Right hand target bank
» »	7	Orange-yellow	Centre bumper
» »	8	Red-orange	Left hand target bank small coil (15)
» »	9	Red-light blue	Left hand target bank small coil (14)
» »	10	Yellow-violet	Left hand target bank small coil (13)
» »	11	Brown-yellow	Right hand target bank small coil (17)
» »	12	Yellow-white	Right hand target bank small coil (20)

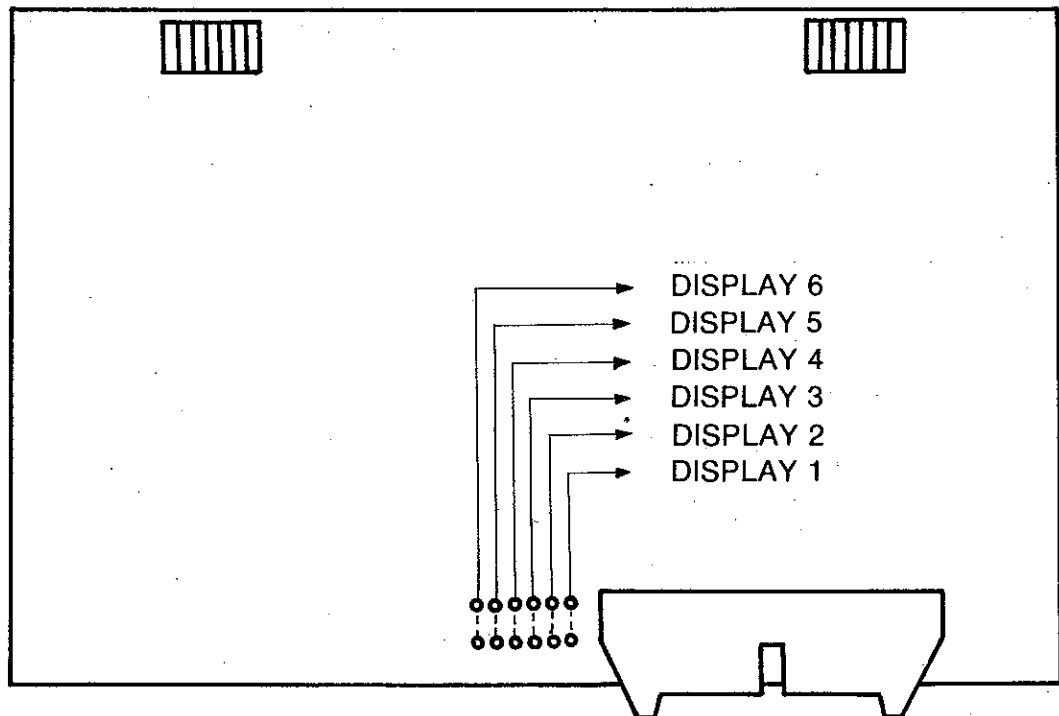
CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN 15	1	Brown-dark green	Right hand target bank small coil (18)
» »	2	Light blue-pink	Right hand target bank small coil (19)
» »	3	Violet-light green	Top centre rollover lamp signal
» »	4	□	
» »	5	Pink-white	"P" lamp (06)
» »	6	Orange-white	Flipper relay
» »	7	Orange yellow	Gate relay
CN 16	1	Light blue	Top side rollover lamps
» »	2	Orange	Bonus Ball lamp
» »	3	Light blue-grey	Spinning target lamps
» »	4	Blue	"R" lamp (12)
» »	5	Pink-dark green	Bumpers lamps
» »	6	□	
» »	7	Dark green-blue	Left hand target bank
» »	8	Dark green - light blue	Moving target
» »	9	Violet-light blue	Left hand kicker
» »	10	Light green-white	Special lamp
» »	11	Red-white	Bottom left hand rollover lamp (16)
» »	12	Orange-light green	Bottom right hand rollover lamp (15)
» »	13	White	Bottom right hand rollover lamp (14)
» »	14	Brown	Credit lamp
» »	15	yellow-dark green	Right hand special bonus lamp
» »	16	Blue-light green	Right hand bonus 6000 lamp
» »	17	Blue-grey	Right hand bonus 1000 lamp
» »	18	Black red	Bottom left hand rollover lamp (17)
CN 17	1	Pink	Bottom left hand rollover special lamp
» »	2	—	
» »	3	Brown-light green	"N" lamp (64)
» »	4	Violet-red	Right hand bonus 2000 lamp
» »	5	Violet-white	Right hand bonus 3000 lamp
» »	6	Brown-grey	Right hand bonus 7000 lamp
» »	7	Brown-orange	Left hand bonus 7000 lamp
» »	8	□	
» »	9	Yellow-grey	Left hand bonus 1000 lamp
» »	10	Violet-orange	Left hand bonus 6000 lamp
» »	11	Brown-yellow	Left hand bonus 2000 lamp
» »	12	Violet	Right hand bonus × 5 lamp
» »	13	Blue-violet	Right hand bonus × 3 lamp
» »	14	Black-grey	Left hand bonus × 5 lamp
» »	15	Black-blue	Left hand bonus × 2 lamp
» »	16	Pink-blue	Left hand bonus × 3 lamp
» »	17	Red-grey	Left hand bonus × 4 lamp
» »	18	Yellow-pink	Left hand special bonus lamp

CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN 18	1	Yellow-white	"U" lamp (46)
» »	2	Blue-red	Left hand bonus 5000 lamp
» »	3	Blue-yellow	"T" lamp (52)
» »	4	Light green-grey	Left hand bonus 4000 lamp
» »	5	White-dark green	"I" lamp (53)
» »	6	Pink-brown	Left hand bonus 3000 lamp
» »	7	—	
» »	8	Brown-blue	Right hand bonus 4000 lamp
» »	9	Yellow-light green	"E" lamp (21)
» »	10	□	
» »	11	Light green-red	Right hand bonus x 2 lamp
» »	12	Violet-black	Right hand bonus 5000 lamp
» »	13	White-brown	"O" lamp (54)
» »	14	—	
» »	15	Orange-dark green	Left hand target bank small coil (16)
» »	16	Blue-orange	Right hand bonus x 4 lamp
» »	17	—	
» »	18	—	
CN 19	1	—	
» »	2	—	
» »	3	Light-blue	Bonus ball lamp
» »	4	—	
» »	5	—	
» »	6	—	
» »	7	—	
» »	8	—	
» »	9	Blue-white	Player 1 lamp
» »	10	Red-yellow	Ball to play lamp
» »	11	—	
» »	12	□	
» »	13	Black-grey	Superbonus lamp
» »	14	—	
» »	15	—	
» »	16	White	Can play 4 lamp
» »	17	Blue-pink	Game over lamp



CONNECTOR	PIN	WIRE COLOUR	SIGNAL
CN20	1	—	
»	2	Black-orange	player 3 up lamp
»	3	Violet-white	match lamp
»	4	Black-green	tilt lamp
»	5	—	
»	6	Black-yellow	player 2 up lamp
»	7	—	
»	8	—	
»	9	yellow	can play 2 lamp
»	10	—	
»	11	Green-white	player 4 up lamp
»	12	—	
»	13	—	
»	14	□	
»	15	Green	can play 1 lamp
»	16	Red	Can play 3 lamp
»	17	—	
»	18	—	
CN 22	1	—	
» »	2	—	
» »	3	Brown-light green	+ 12 VRM
» »	4	Yellow-dark green	GND
CN 23	1	White-dark green	Loudspeaker
» »	2	White-yellow	Loudspeaker

## DISPLAY DRIVER BOARD



### LINKERS:

DISPLAY 1 = 1st PLAYER DISPLAY  
DISPLAY 2 = 2nd PLAYER DISPLAY  
DISPLAY 3 = 3rd PLAYER DISPLAY  
DISPLAY 4 = 3rd PLAYER DISPLAY  
DISPLAY 5 = HIGHEST SCORE DISPLAY  
DISPLAY 6 = BALL TO PLAY / CREDIT DISPLAY

THE « DRIVER DISPLAY BOARD » IS VALID FOR ALL THE DISPLAYS, AND CAN BY USED BY PLUGGING THE PIN INTO THE DESIRED POSITION (SEE DRAWING).

# CATALOGO

# RICAMBI

# ORIGINALI

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**MOD. Fire Mountain**

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## ZACCARIA

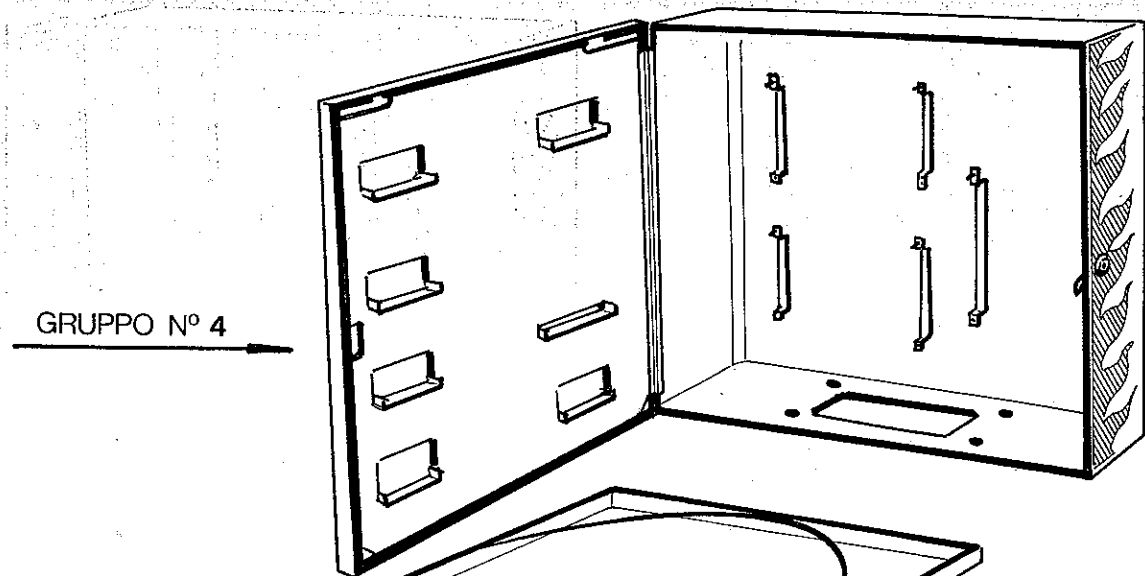
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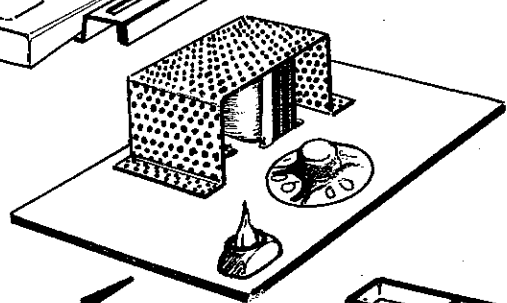
Gruppo N° 1 - Piano di gioco.....	pagg. 35-36-37-38-49-40-41-42-43
Gruppo N° 2 - Sportello .....	pagg. 44-45-46
Gruppo N° 3 - Mobile e piano interno .....	pagg. 47-48-49-50
Gruppo N° 4 - Testata .....	pagg. 51-52
Gruppo N° 5 - Componenti elettronici .....	pagg. 53-54-55-56-57-58-59-60-61-62
Gruppo N° 6 - Vetro, piano di gioco, isole .....	pag. 63
Gruppo N° 7 - Testing .....	pag. 64

**ONDE EVITARE INUTILI DISGUIDI SI PREGA PER LA RICHIESTA DEI MATERIALI DI RICAMBIO di SPECIFICARE:**

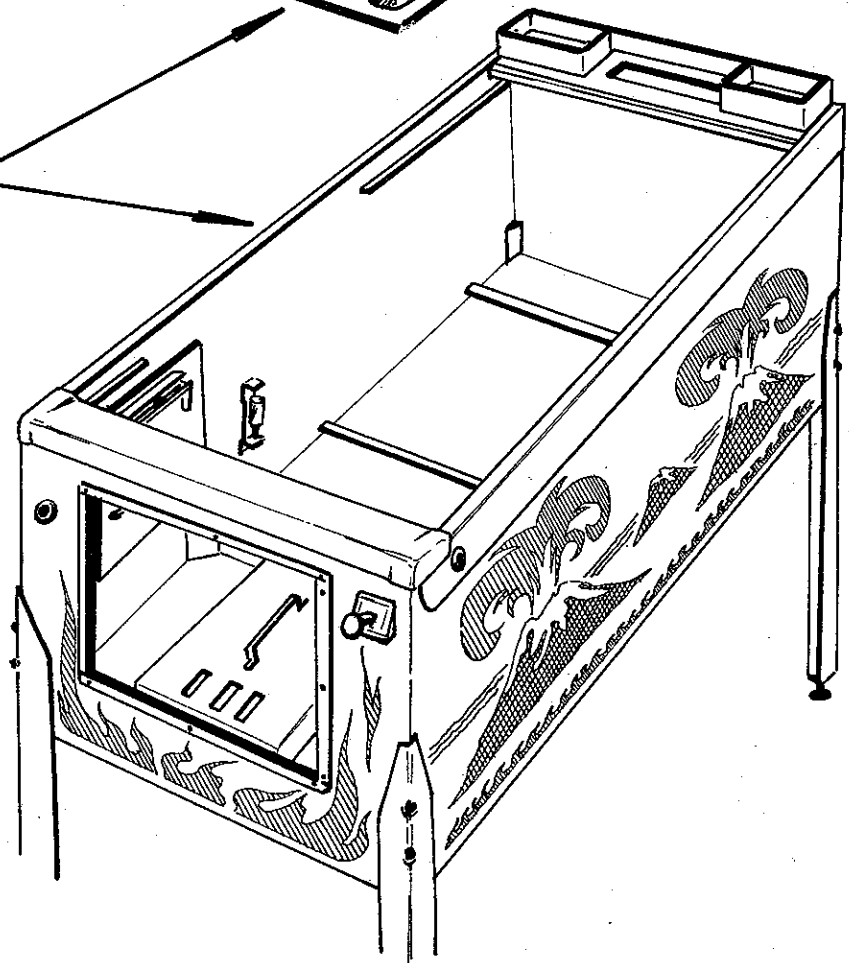
**MODELLO - GRUPPO - PAGINA  
a cui appartengono**



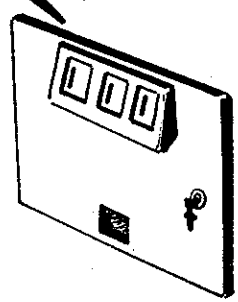
GRUPPO N° 1

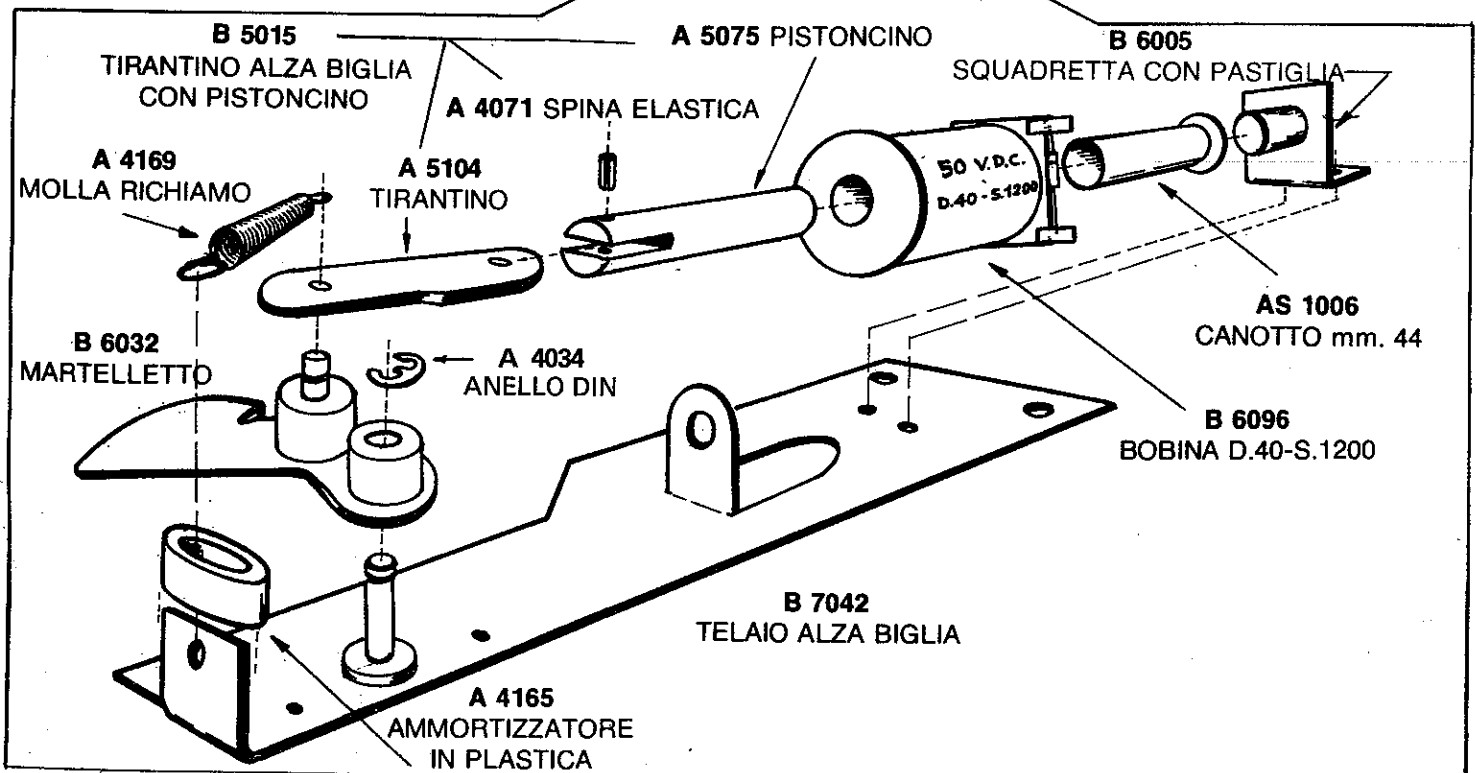
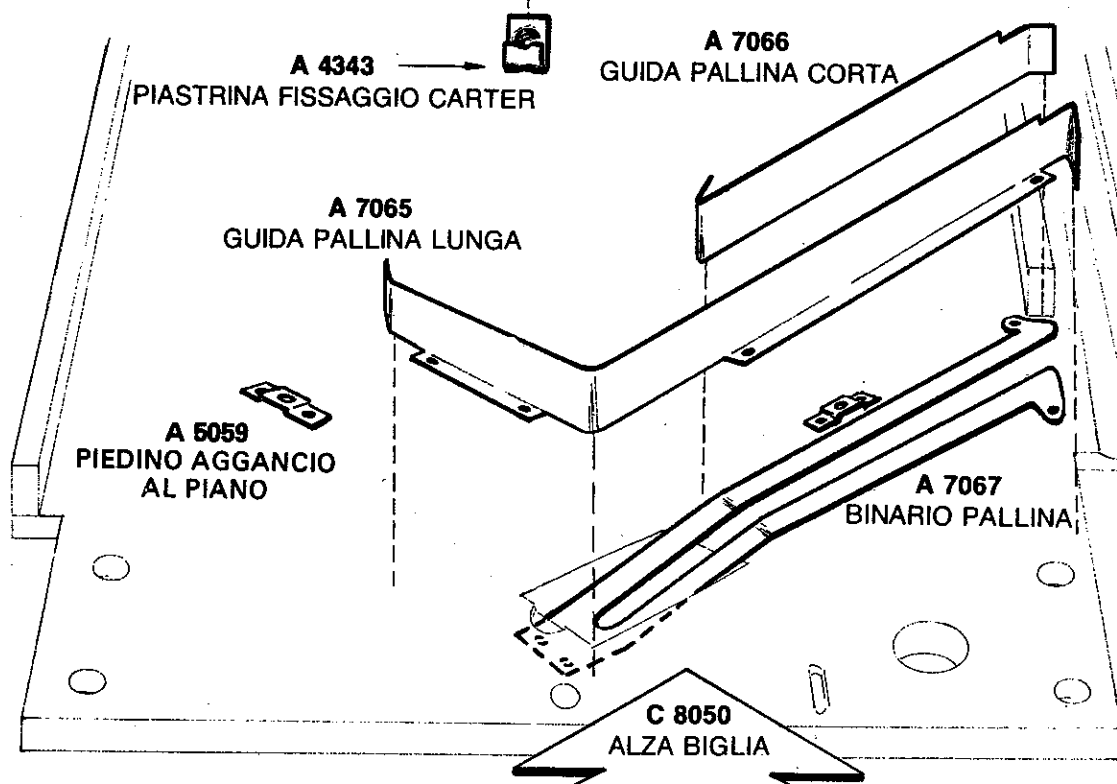
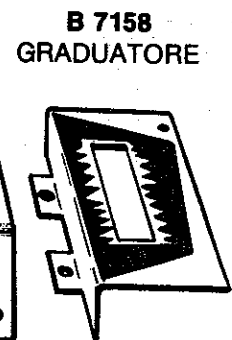
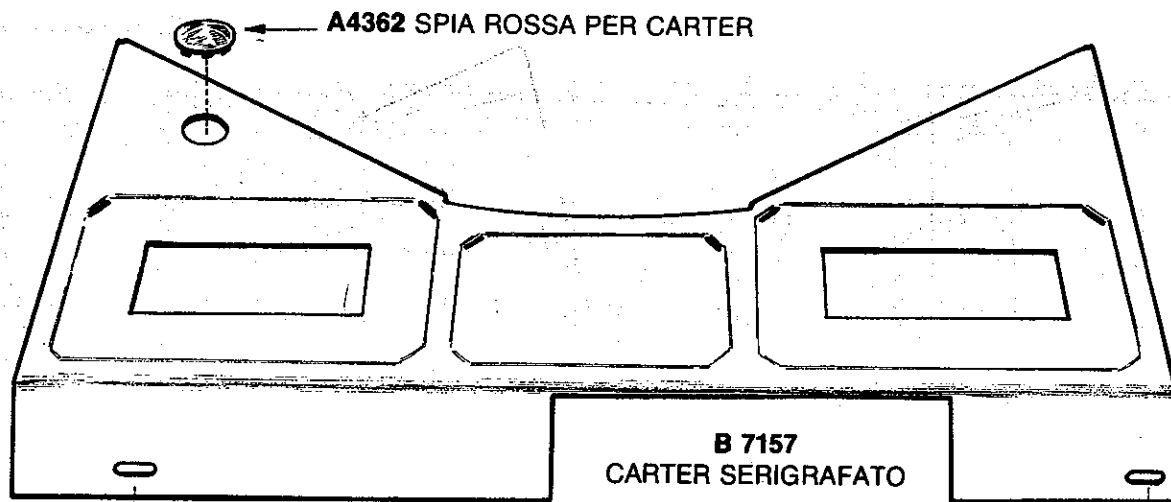


GRUPPO N° 3



GRUPPO N° 2

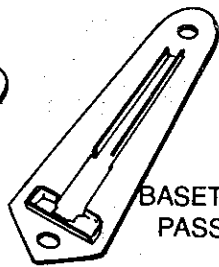




AS 1042  
BASSETTA IN  
PLASTICA PASSAGGI  
GRANDI



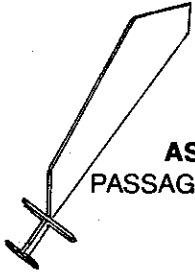
AS 1043  
BASSETTA IN PLASTICA  
PASSAGGI PICCOLI



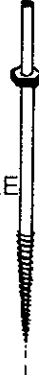
AS 1036  
PASSAGGI PICCOLI



AS 1035  
PASSAGGI GRANDI



A 7055  
VITE  
PORTAISOLE



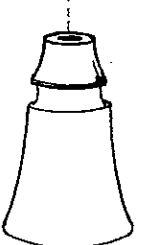
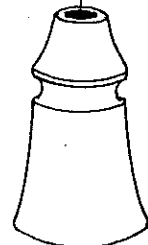
A 7063 VITE PORTAISOLE 4 MA



A 7064  
mm. 27

COLONNETTE

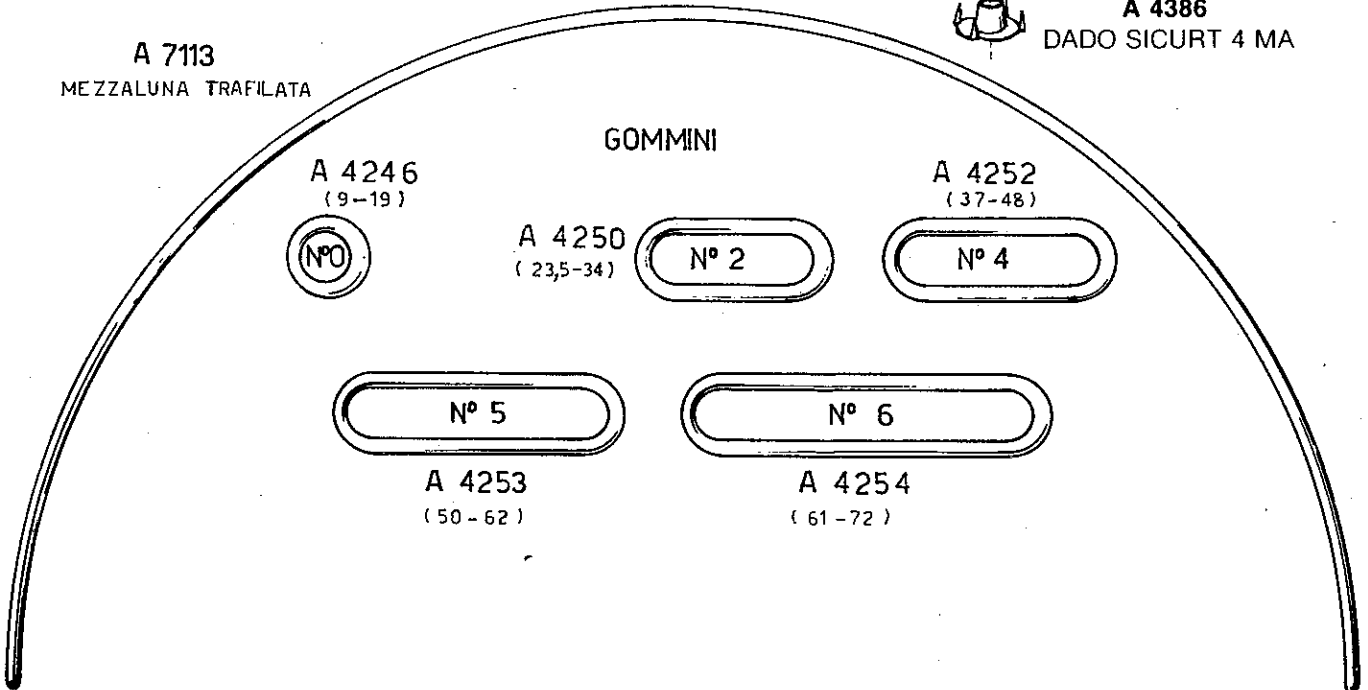
A 7138  
mm. 25



A 4386  
DADO SICURT 4 MA



A 7113  
MEZZALUNA TRAFILATA



X 037 PONTICELLO mm.48



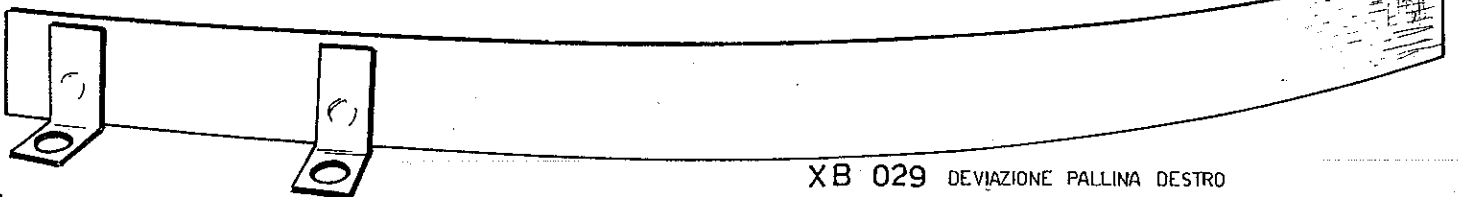
X 035 FERRETTO UNIDIREZIONALE per mm.48

X 038 PONTICELLO mm.94



X 036 FERRETTO UNIDIREZIONALE per mm.94

XB 030 DEVIATIONE PALLINA SINISTRO



XB 029 DEVIATIONE PALLINA DESTRO

C 8094 RESPINGENTE BUCA

A 7214  
PIASTRINA  
DESTRA



A 4148  
FORCELLINA

A 4141  
RONDELLA

A 7215  
PIASTRINA  
SINISTRA



A 4149  
TIRANTINO

B 5039  
SQUADRETTA  
SUPPORTO

A 5075  
PISTONCINO

A 6111  
MOLLA

A 5185  
MOLLA

B 5037  
COMPONENTE PRIMARIO

B 5038  
COMPONENTE SECONDARIO

A 5072  
SQUADRETTA

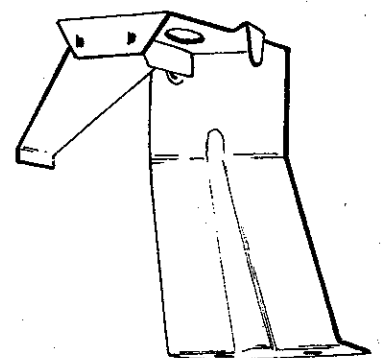
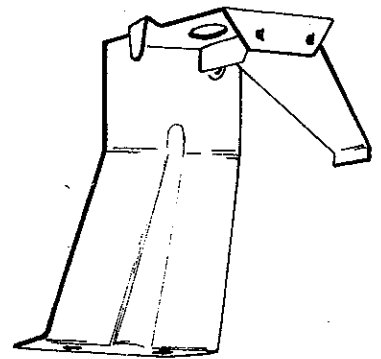
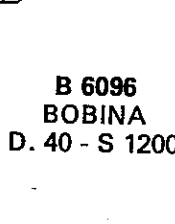
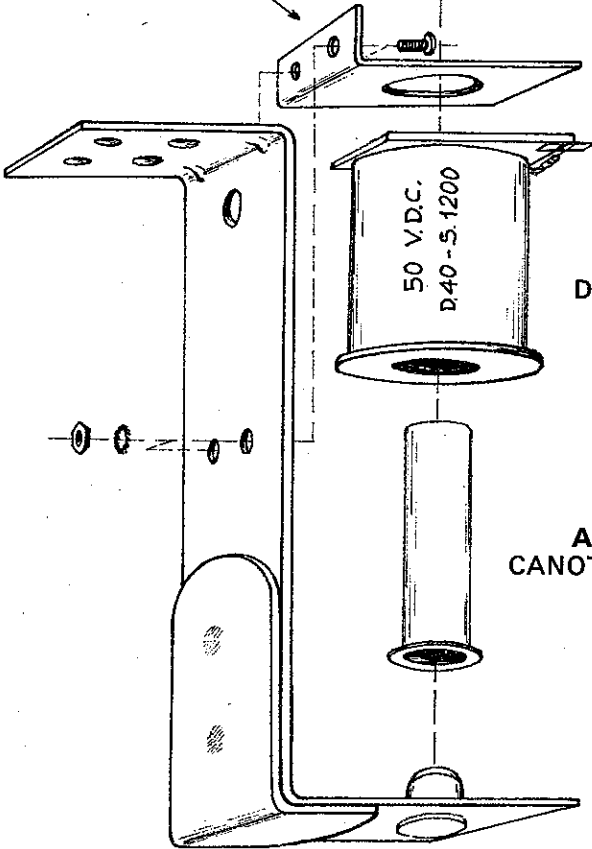
B 6031  
RIMBALZO PALLINA DESTRO

B 6096  
BOBINA  
D. 40 - S. 1200

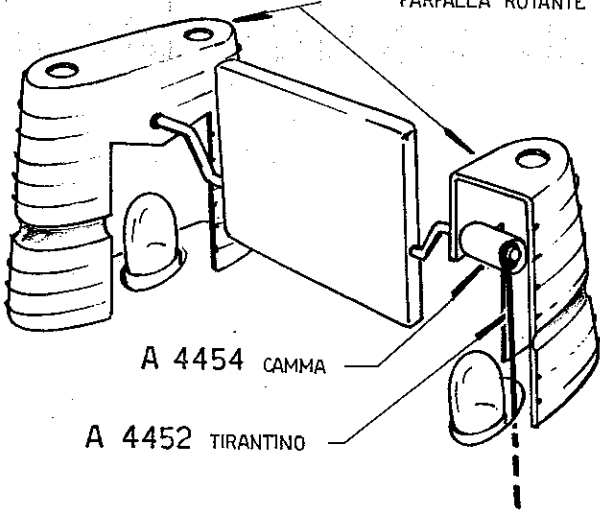
AS 1006  
CANOTTO mm. 44

B 6066  
RIMBALZO PALLINA SINISTRO

B 7159  
STAFFA A Z  
CON PASTIGLIA

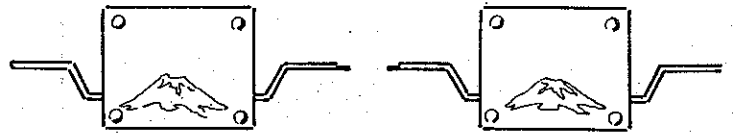


A 7196 COLONNETTA PORTA FARFALLA ROTANTE



A 4454 CAMMA

A 4452 TIRANTINO

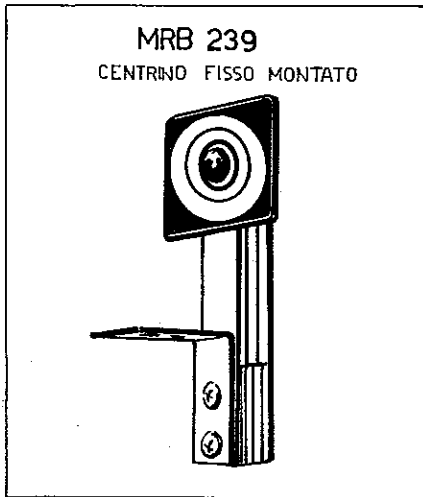


MRB 288

FARFALLA ROTANTE SINISTRA

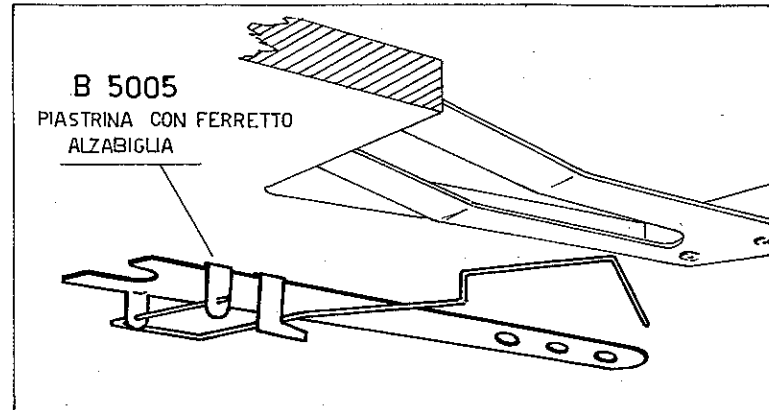
MRB 287

FARFALLA ROTANTE DESTRA



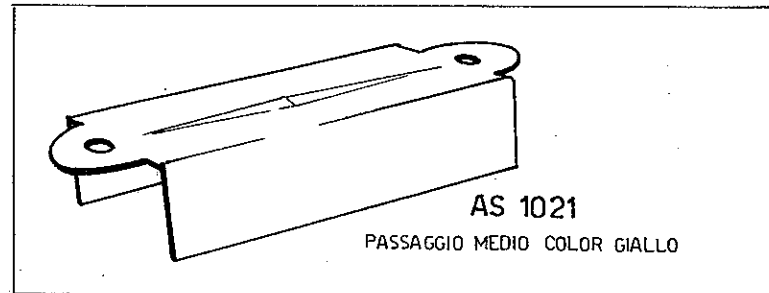
MRB 239

CENTRINO FISSO MONTATO



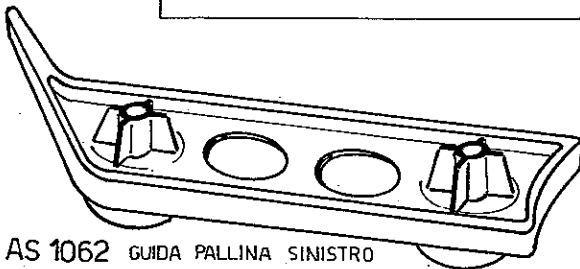
B 5005

PIASTRINA CON FERRETTO ALZABIGLIA

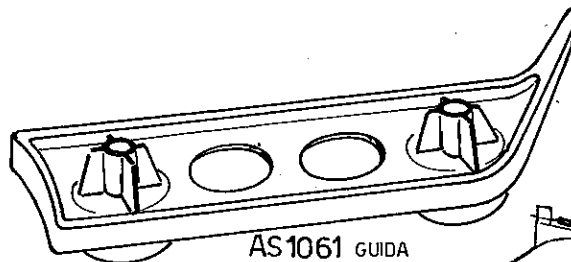


AS 1021

PASSAGGIO MEDIO COLOR GIALLO



AS 1062 GUIDA PALLINA SINISTRO

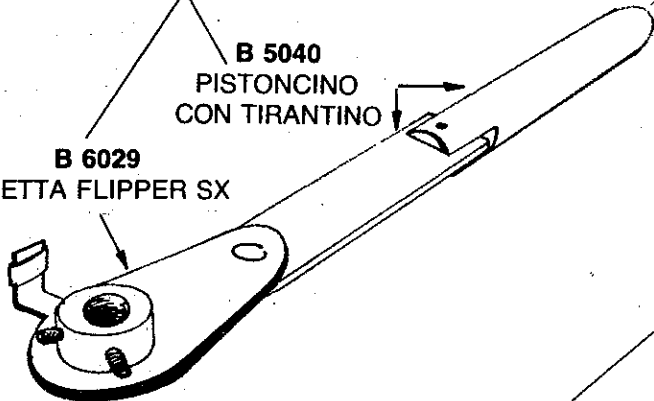


AS1061 GUIDA PALLINA DESTRO

C 8043 ALETTA FLIPPER SINISTRA MONTATA

B 5040 PISTONCINO CON TIRANTINO

B 6029 ALETTA FLIPPER SX

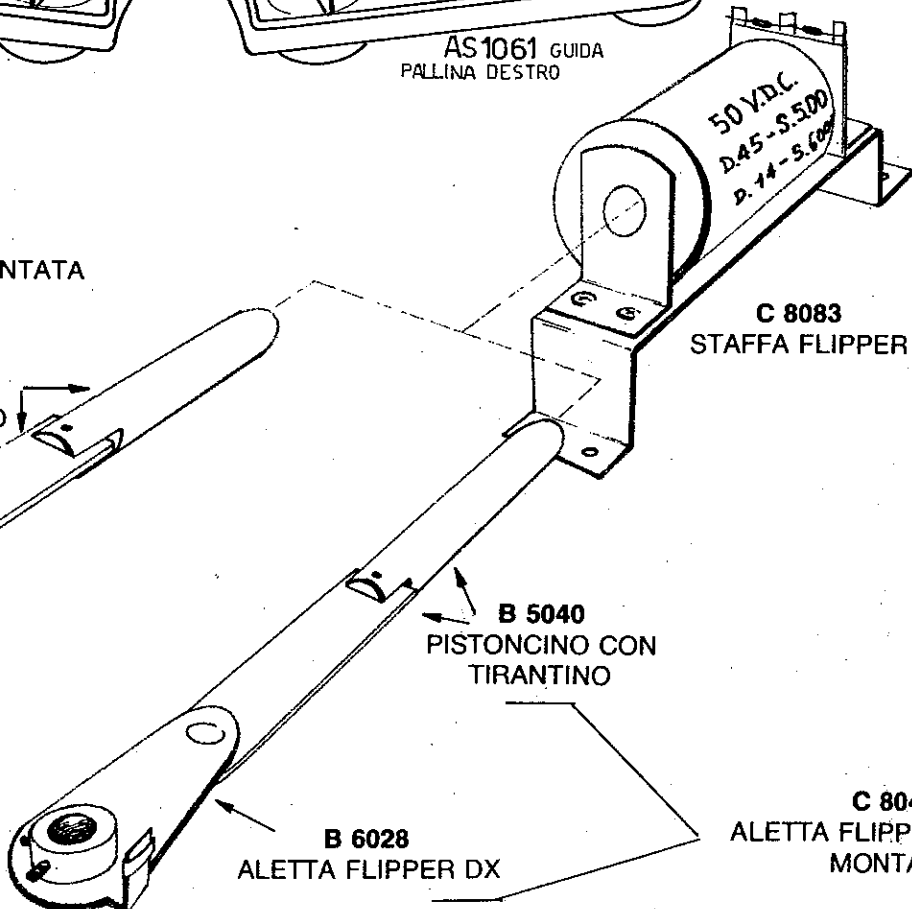


C 8083 STAFFA FLIPPER

B 5040 PISTONCINO CON TIRANTINO

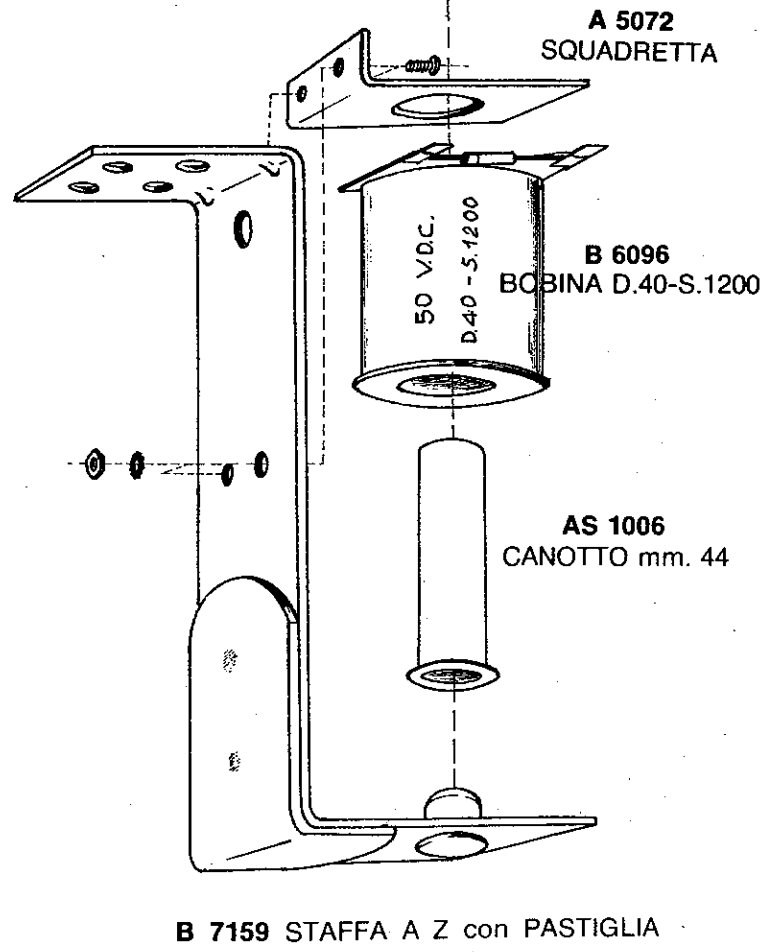
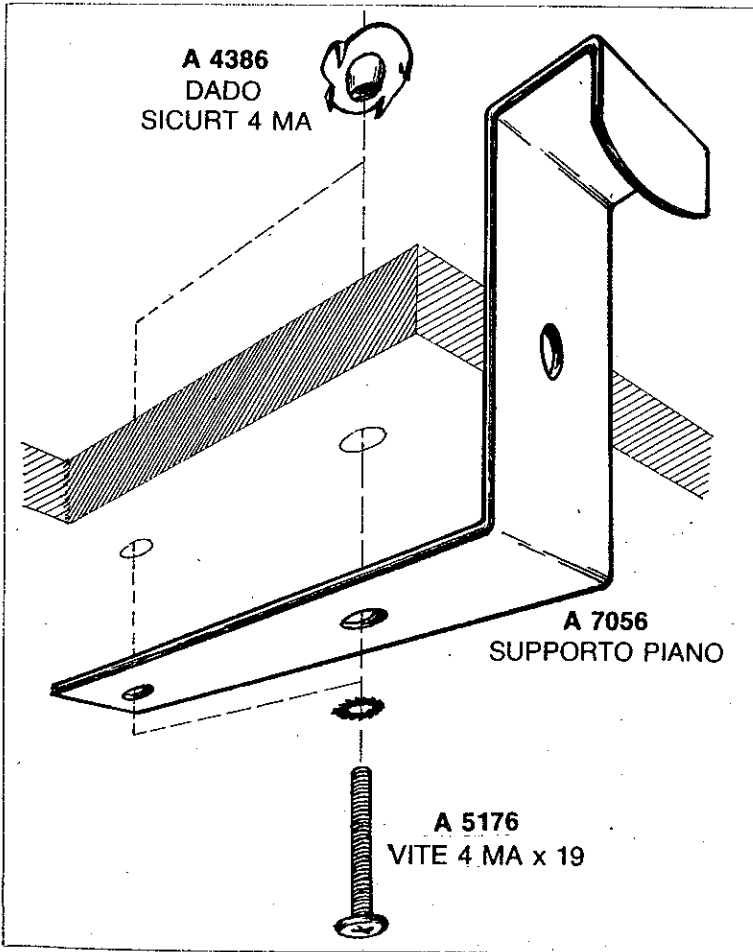
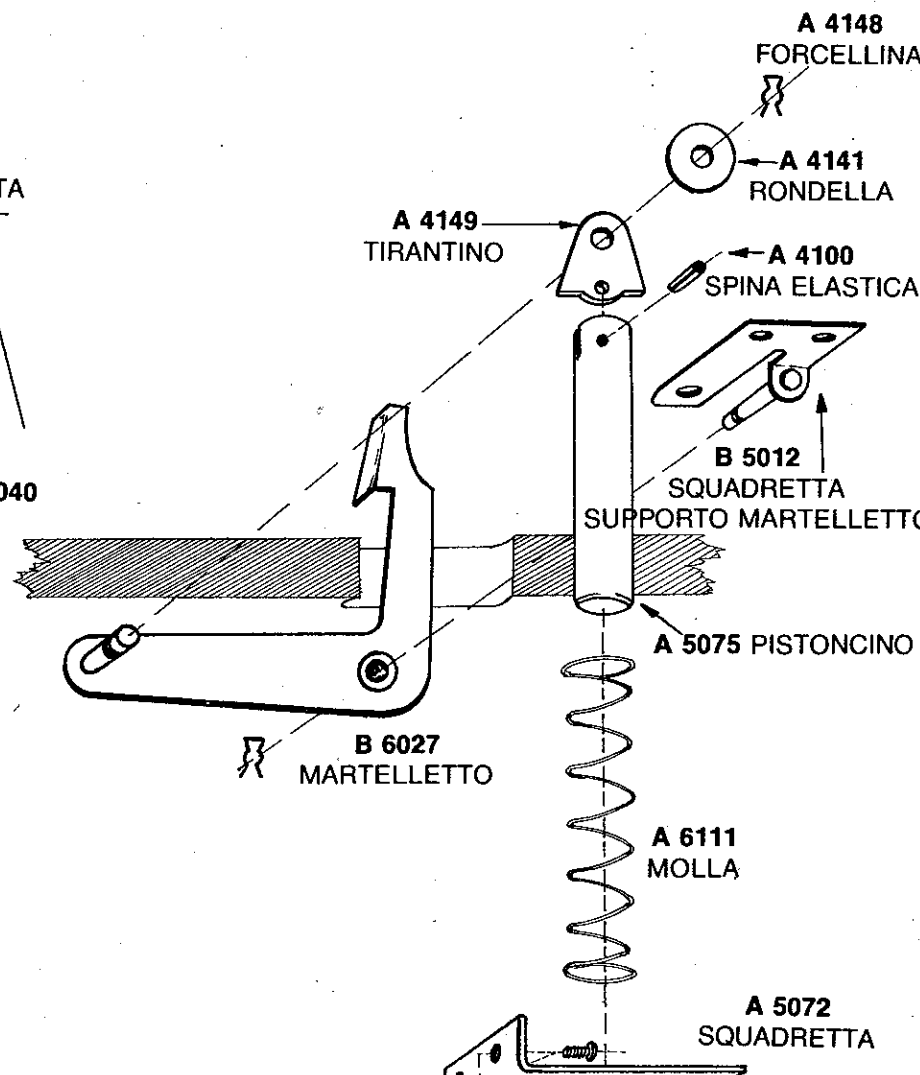
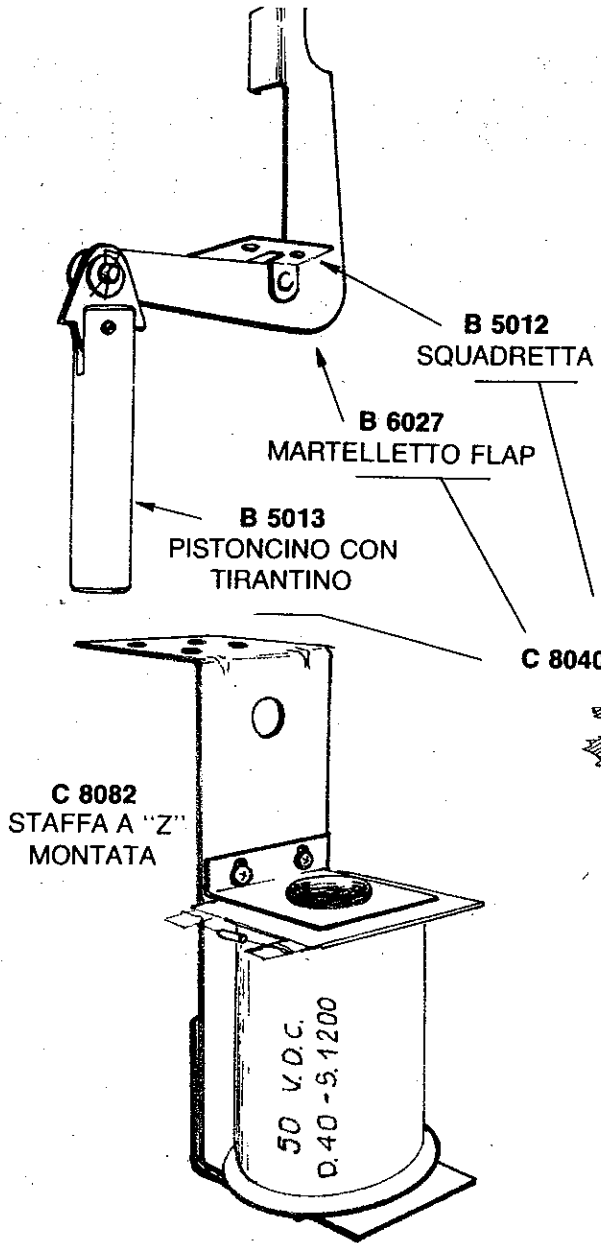
B 6028 ALETTA FLIPPER DX

C 8042 ALETTA FLIPPER DESTRA MONTATA

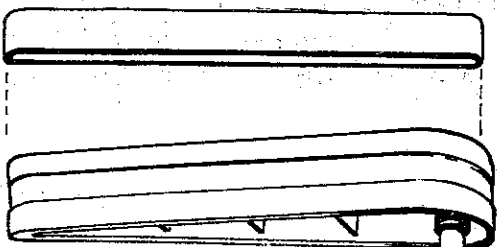


50 V.D.C.  
D.45 - S.500  
D.14 - S.600





**A 4245 FASCETTA FLIPPER**

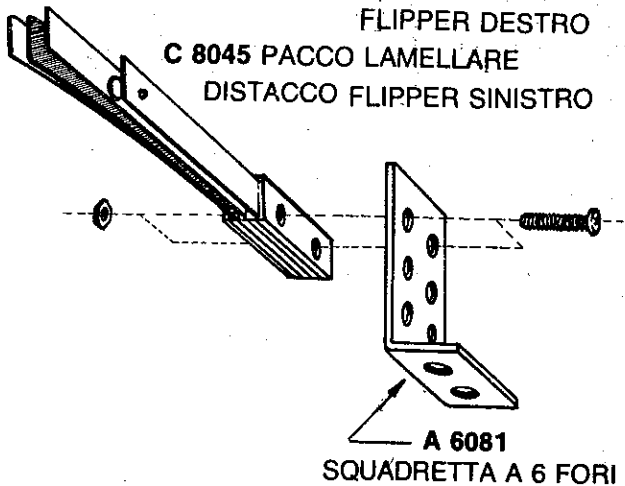


**B 7053 PENNA FLIPPER**



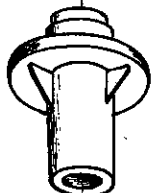
**C 8044 PACCO LAMELLARE DISTACCO FLIPPER DESTRO**

**C 8045 PACCO LAMELLARE DISTACCO FLIPPER SINISTRO**



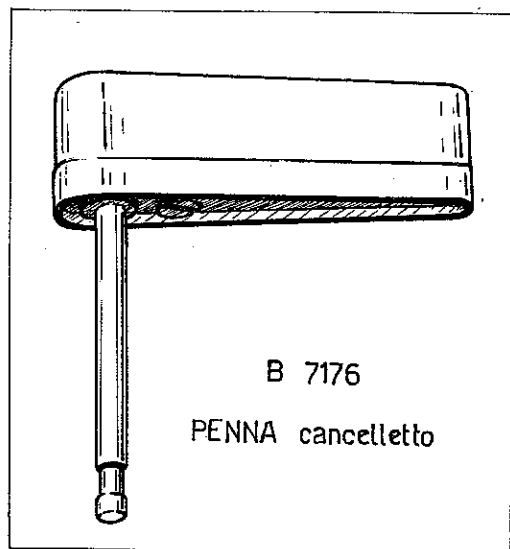
**A 6081 SQUADRETTA A 6 FORI**

**A 6107 BOCCOLA FLIPPER**



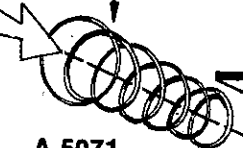
**A 7057 SQUADRETTA ARRESTO ALETTA FLIPPER**

**A 7052 CAVALLOTTO RINFORZO BOCCOLA**



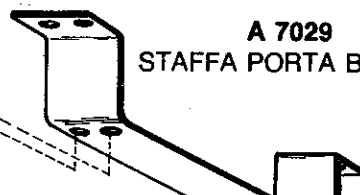
**B 7176 PENNA cancelletto**

**A 6110 MOLLA RICHIAMO**



**A 5071 SQUADRETTA LARGA FORO GRANDE**

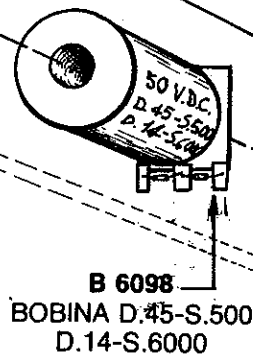
**A 7029 STAFFA PORTA BOBINA**



**A 4150 VITE TESTA CAVA**

**AS 1006 CANOTTO mm. 44**

**B 6028 ALETTA FLIPPER DESTRA**



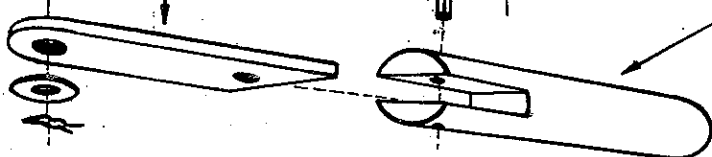
**B 6024 SQUADRETTA LARGA CON PASTIGLIA**

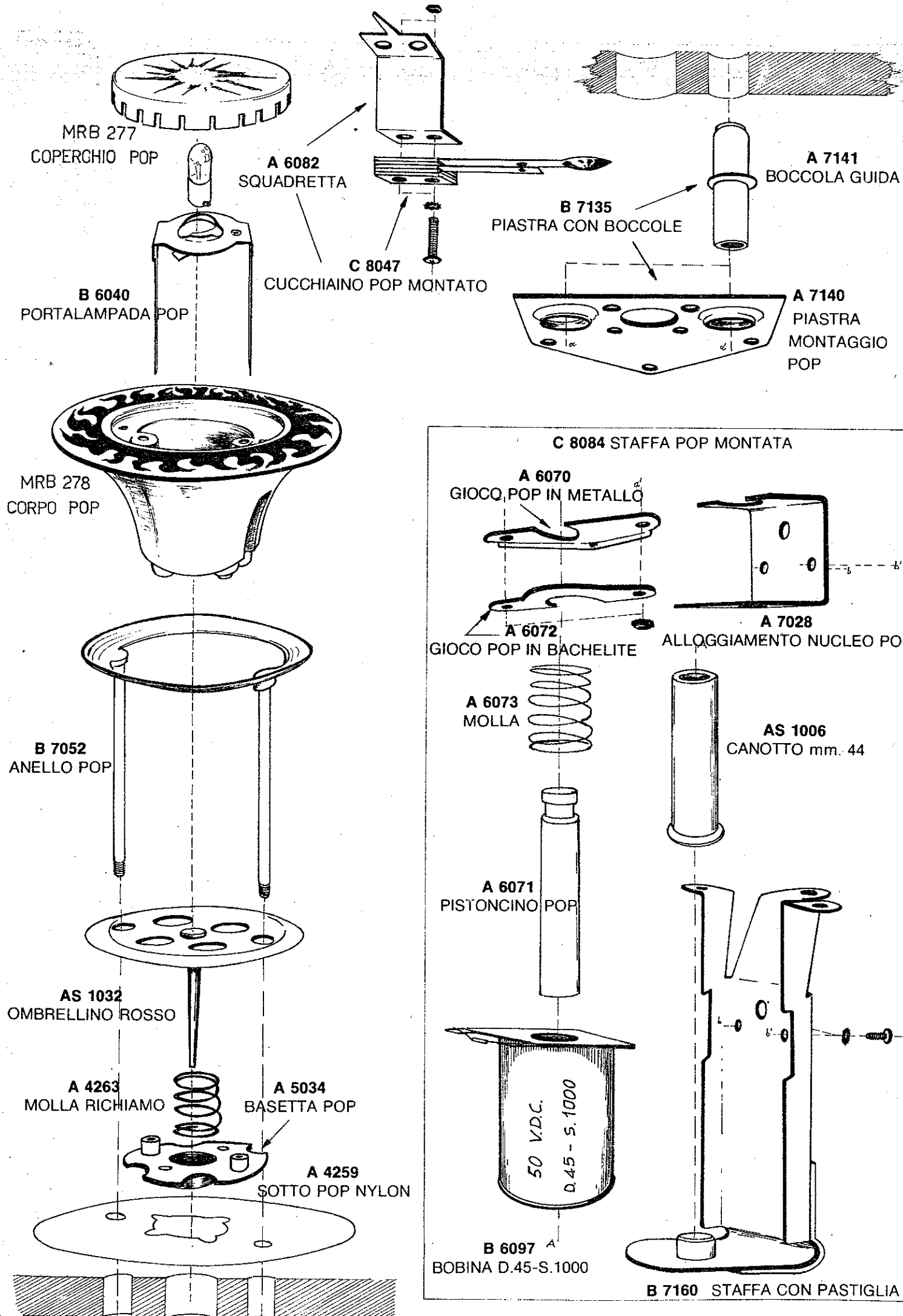
**A 5076 TIRANTINO**

**A 4347 SPINA ELASTICA**

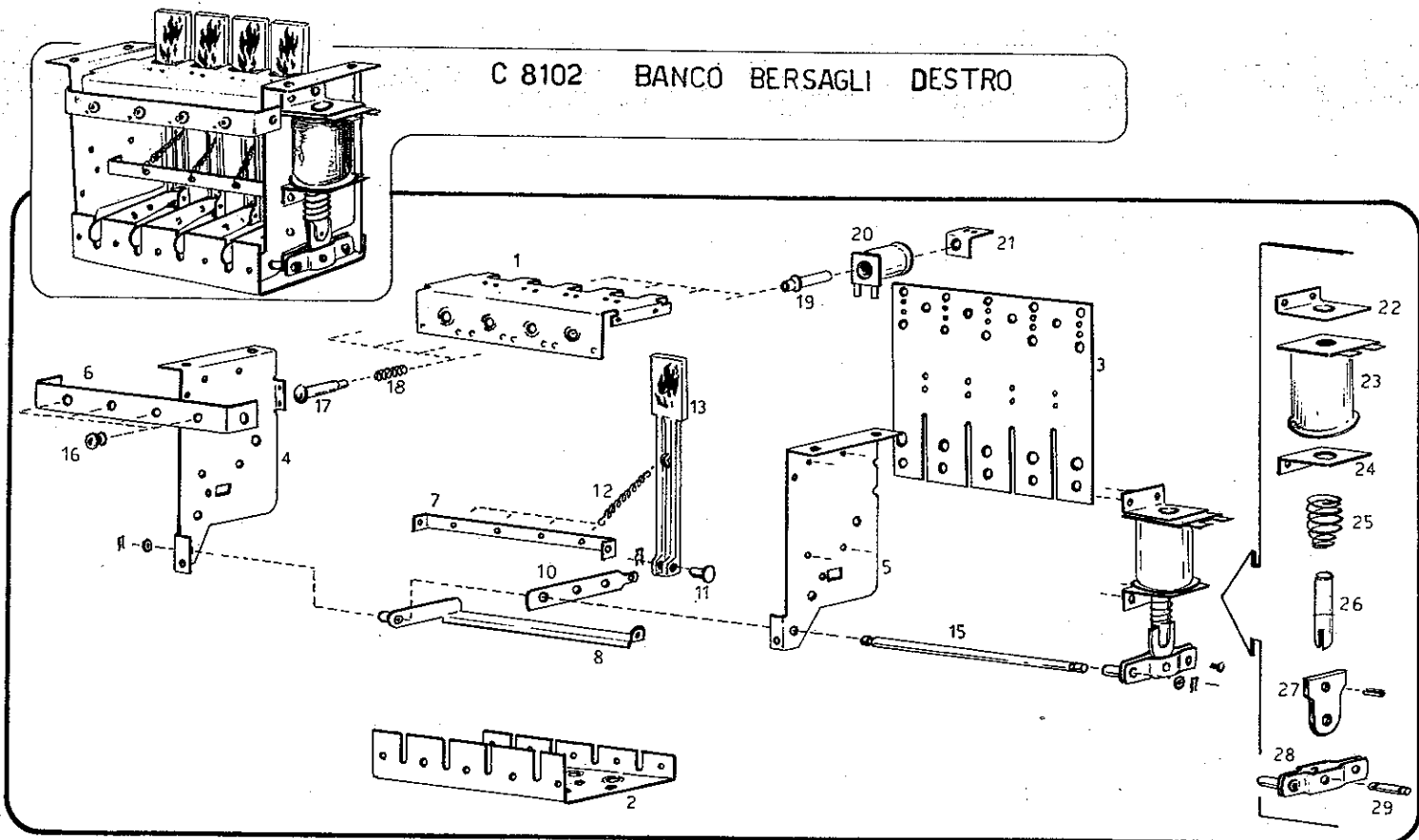
**A 5188 PISTONCINO**

**B 6029 ALETTA FLIPPER SINISTRA**





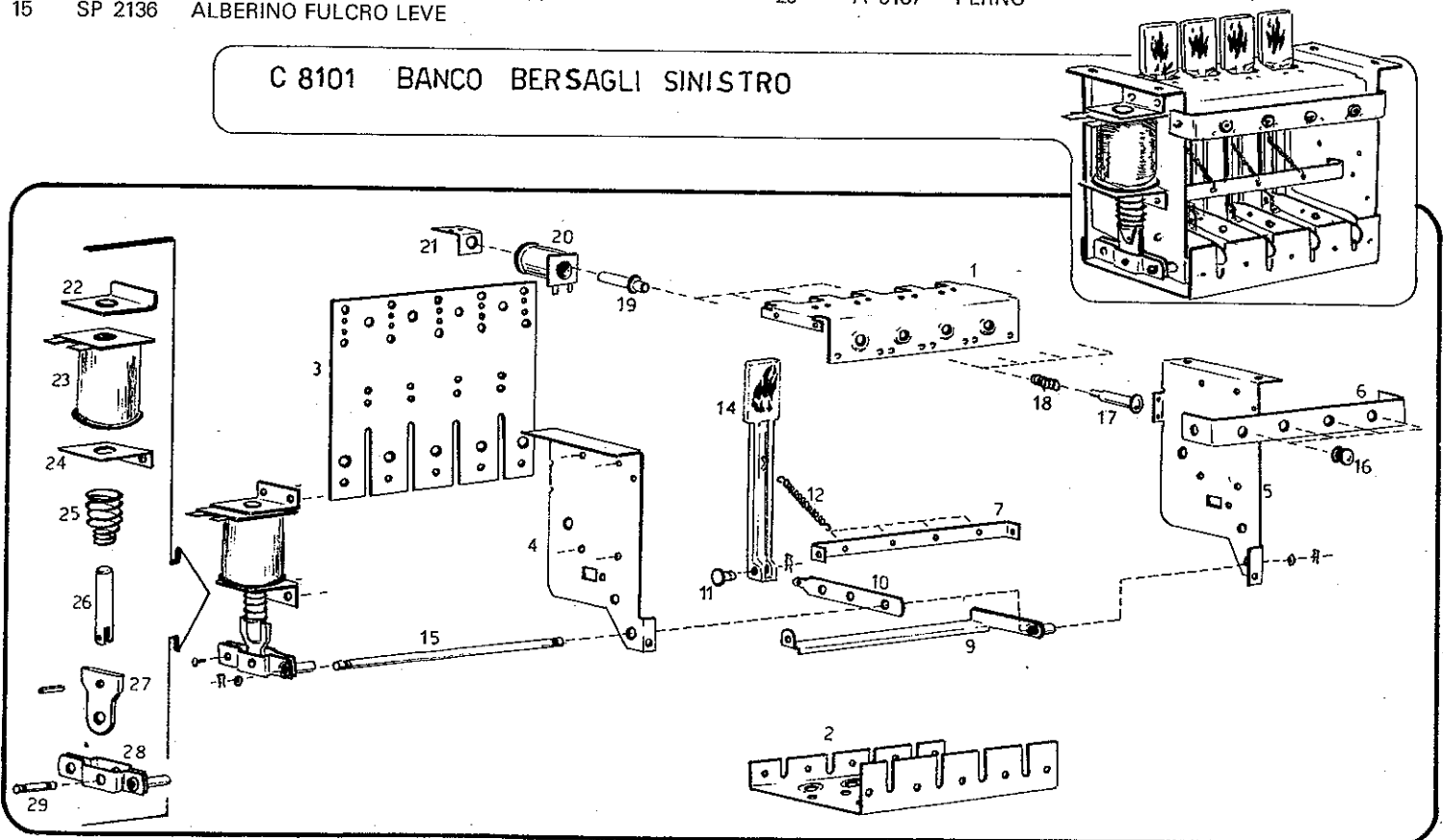
## C 8102 BANCO BERSAGLI DESTRO



- |    |         |                                 |
|----|---------|---------------------------------|
| 1  | SP 2131 | STAFFA FISSAGGIO BOBINE PICCOLE |
| 2  | SP 2135 | STAFFA FINE CORSA PER BERSAGLI  |
| 3  | SP 2134 | PIASTRA GUIDA LEVA              |
| 4  | A 6177  | STAFFA LATERALE SINISTRA        |
| 5  | A 6178  | STAFFA LATERALE DESTRA          |
| 6  | SP 2130 | TRAVE FINE CORSA PISTONCINI     |
| 7  | SP 2133 | TRAVE PER AGGANCIAMENTO MOLLE   |
| 8  | BSP 015 | TRAVE DI COLLEGAMENTO           |
| 9  | BSP 017 | TRAVE DI COLLEGAMENTO           |
| 10 | SP 2102 | LEVETTA COMANDO BERSAGLI        |
| 11 | A 6185  | PERNO FISSAGGIO LEVA            |
| 12 | A 5221  | MOLLA                           |
| 13 | MRB 282 | BERSAGLIO ARANCIO CON FIAMMA    |
| 14 | MRB 283 | BERSAGLIO GIALLO CON FIAMMA     |
| 15 | SP 2136 | ALBERINO FULCRO LEVA            |

- |    |         |   |
|----|---------|---|
| 16 | A 4438  | GOMMINO                                 |
| 17 | B 6122  | PISTONCINO CON PUNTALE                  |
| 18 | A 4263  | MOLLA RICHIAMO                          |
| 19 | AS 1053 | CANOTTO IN OTTONE                       |
| 20 | B 6120  | BOBINA D. 355 - S. 1200                 |
| 21 | A 6181  | SQUADRETTA PER BOBINA PICCOLA           |
| 22 | B 6121  | SQUADRETTA CON PASTIGLIA                |
| 23 | B 6112  | BOBINA D. 50 - S. 1450                  |
| 24 | A 6179  | SQUADRETTA FORO GRANDE                  |
| 25 | A 6110  | MOLLA RICHIAMO                          |
| 26 | A 6188  | PISTONCINO                              |
| 27 | A 6184  | TIRANTINO                               |
| 28 | B 6123  | PIASTRINE PER LEVA LATERALE CON BOCCOLA |
| 29 | A 6187  | PERNO                                   |

## C 8101 BANCO BERSAGLI SINISTRO





MRB 281

B 6142

B 6140

B 7095

B 6097

BOBINA D.45-S1.000

A 5072

B 4068

A 4346

A 4034

A 5182

A 4348

A 7060

A 5201

A 4148

B 6054

B 6043

PORTALAMPADA BASSO

B 6045  
PORTALAMPADA ALTO

B 6041  
PORTALAMPADA TESTATA

A 5203  
PIASTRINA FISSAGGIO RELAY

CEC 005  
RELAY 50V.

A 4431  
Fer. mm. 80  
ALTO

A 4368  
Fer. mm. 80  
BASSO

A 4235  
Fer. mm. 61  
ALTO

CE 1329

MASCHIO CIS

CE 1346 CONNETTORE  
PORTA MASCHI 7 vie

CE 1335 CONNETTORE  
PORTA FEMMINE 6 vie

CE 1345 CONNETTORE PORTA  
MASCHI 18 vie

CE 1341 CONNETTORE PORTA  
FEMMINE 12 vie

CE 1349  
FEMMINA MODU 1

C 8001 SPORTELLO MONTATO

A 6098 CORNICE LUNGA E STRETTA

A 4032

COMPONENTE PER  
PULSANTE

A 4031

PULSANTE SCARTO  
MONETA

A 6004

CORNICE CORTA

A 4383 PIASTRINA SEMIDOPPIA

A 7005  
COMPONENTE  
FISSAGGIO  
ACCESSORI

A 6008

GUIDA MONETA  
IN PLASTICA

A 5009  
PIASTRINA con MARCHIO

ASB 116

FRONTALINO SPORTELLO  
CON CERNIERA

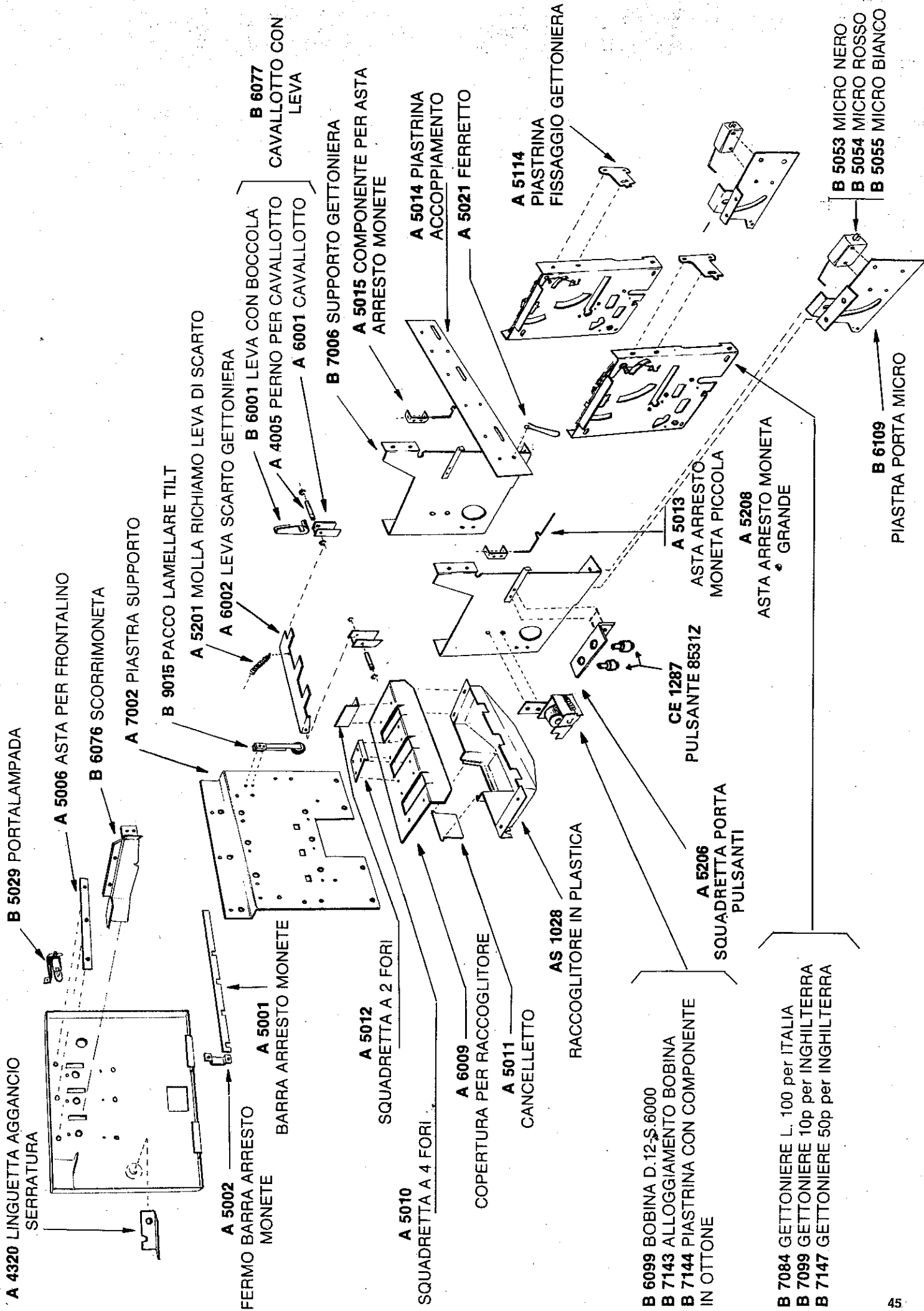
B 7091  
SERRATURA

B 7001

SPORTELLO CON CERNIERA

A 6099  
CORNICE LUNGA E LARGA

I CODICI PER LE PIASTRINE INTRODUZIONE MONETA IN METALLO  
SI TROVANO NELLE FASCE A PAG. 14 E SONO RELATIVE  
ALLE PIASTRINE SERIGRAFATE



# PIASTRINE SERIGRAFATE

& Introduzioni Monete

**AUSTRALIA**

20  
CENTS  
PLAY

p.ser. B 5056  
in. m. A 5007

**AUSTRIA**

5 ös

p.ser. B 5045  
in. m. A 5008

10 ös

p.ser. B 5047  
in. m. A 5007

**BELGIO**

5  
Frs

p.ser. B 5035  
in. m. A 5008

10  
Frs

p.ser. B 5034  
in. m. A 5007

p. ser. =  
PIASTRINA  
serigrafata

**DANIMARCA & SVEZIA**

1 Kr

p.ser. B 4074  
in. m. A 5007

5 Kr  
3 PLAYS

p.ser. B 5065  
in. m. A 4401

10 Kr  
7 PLAYS

p.ser. B 5066  
in. m. A 5007

**FRANCIA & SVIZZERA**

1 Fr

p.ser. B 5024  
in. m. A 5008

2 Fr

p.ser. B 5025  
in. m. A 5007

5 Fr

p.ser. B 5060  
in. m. A 4401

**GERMANIA**

1  
DM

p.ser. B 4059  
in. m. A 5008

2  
DM

p.ser. B 4060  
in. m. A 5007

5  
DM

p.ser. B 4041  
in. m. A 5007

**GIAPPONE**

50 円  
1プレイ

p.ser. B 5051  
in. m. A 4399

100 円  
2プレイ

p.ser. B 5052  
in. m. A 4398

in. m. =  
PIASTRINA  
introduzione  
moneta

**INGHILTERRA**

10<sup>P</sup>

p.ser. B 4062  
in. m. A 5007

50<sup>P</sup>

p.ser. B 4091  
in. m. A 4401

**ITALIA**

100  
LIRE

p.ser. B 5001  
in. m. A 5007

200  
LIRE

p.ser. B 6136  
in. m. A 5242

**JUGOSLAVIJA**

1  
DIN

p.ser. B 4081  
in. m. A 5008

2  
DIN

p.ser. B 4082  
in. m. A 5007

**LIBANO**

25<sup>PL</sup>

p.ser. B 5059  
in. m. A 5008

50<sup>PL</sup>

p.ser. B 5058  
in. m. A 5007

**OLANDA**

1  
G

p.ser. B 4085  
in. m. A 5008

**UNGHERIA**

2  
FORINT

p.ser. B 6139  
in. m. A 5008

**U.S.A. & CANADA**

25¢

p.ser. B 5046  
in. m. A 5008

50¢

p.ser. B 5061  
in. m. A 5007



A 7073 ANGOLARE VETRO

A 7074 COLLETTO CASSONE

A 7219  
SPONDA  
SINISTRA

A 7218  
SPONDA DESTRA

A 7039  
GUIDA VETRO

MV 015 VETRO PIANO DI GIOCO

A 7039  
GUIDA VETRO

B 7090 POGGIAMANO

B 7085  
AGGANCIO POGGIAMANO

B 7044  
LEVA AGGANCIO  
POGGIAMANO

A 7099  
SQUADRETTA FISSAGGIO  
LEVA AGGANCIO POGGIAMANO

C 8006

TAVOLETTA TILT ASSEMBLATA

A 7046 SCATOLA TILT

A 6105 SQUADRETTA SOSTEGNO ASTA TILT

B 7082 SCATOLA TILT CON SFERA E PACCO LAMELLARE MONTATI

A 4185 SFERA

A 5033 ASTA TILT

A 4452 INTERRUOTTORE

A 6081 SQUADRETTA A 6 FORI

B 9004

B 9016

A 5112 PIASTRINA PORTA INTERRUOTTORE

A 6103 ANELLO TILT

B 7172

A 4312 VITE TESTA CAVA 5 MA

A 6104 PENDOLINO TILT

B 7173

CE 1326 CONNETTORE PER STAMPARE

A 7174 SQUADRETTA PER CONNETTORE STAMPANTE

CE 1325 CONTATTO FEMMINA

B 7177 PULSANTE ASSEMBLATO

A 5243 CORPO PULSANTE GIALLO

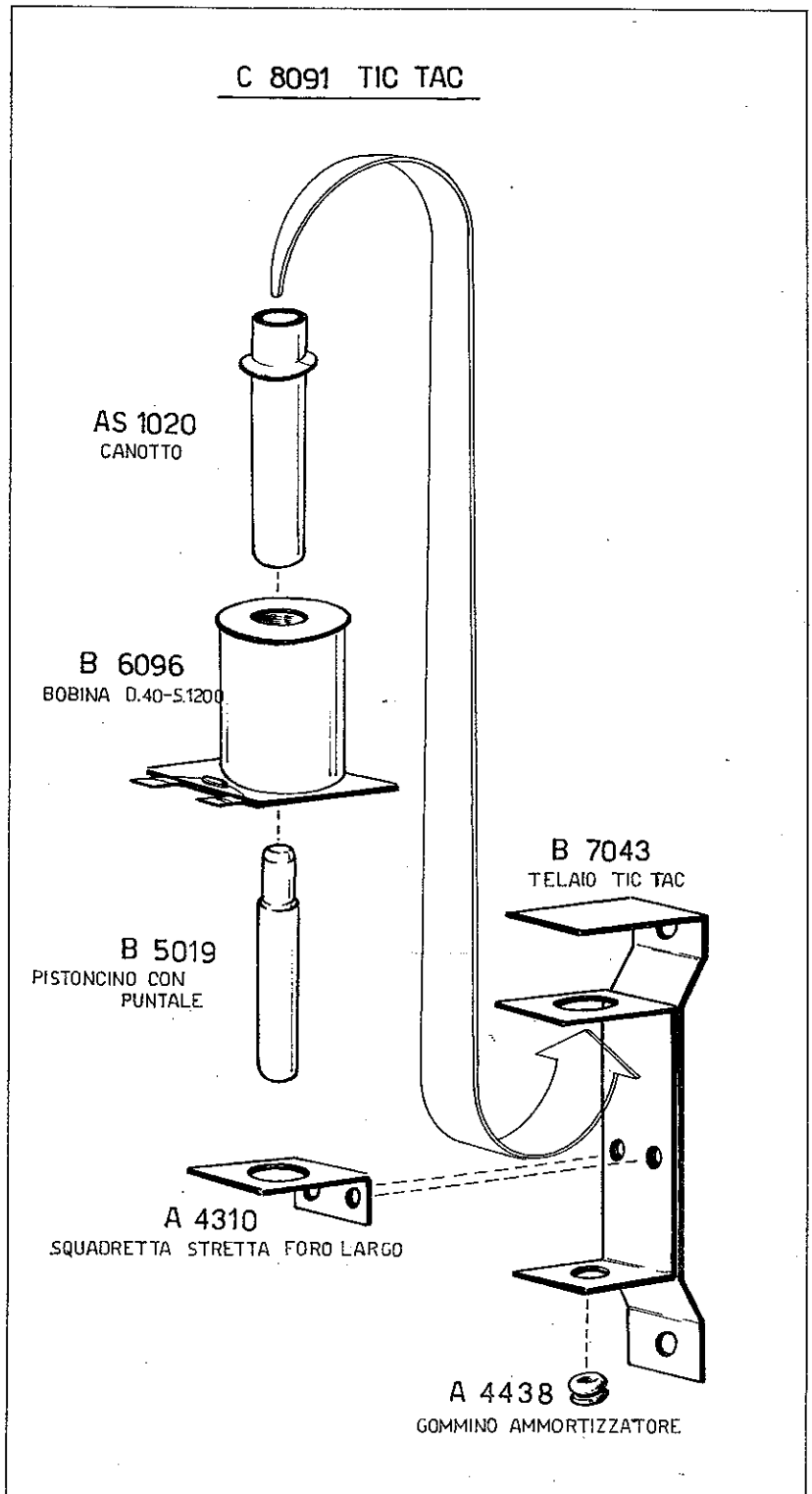
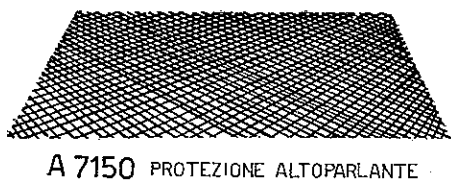
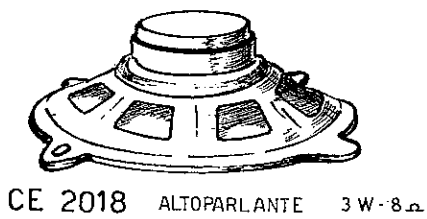
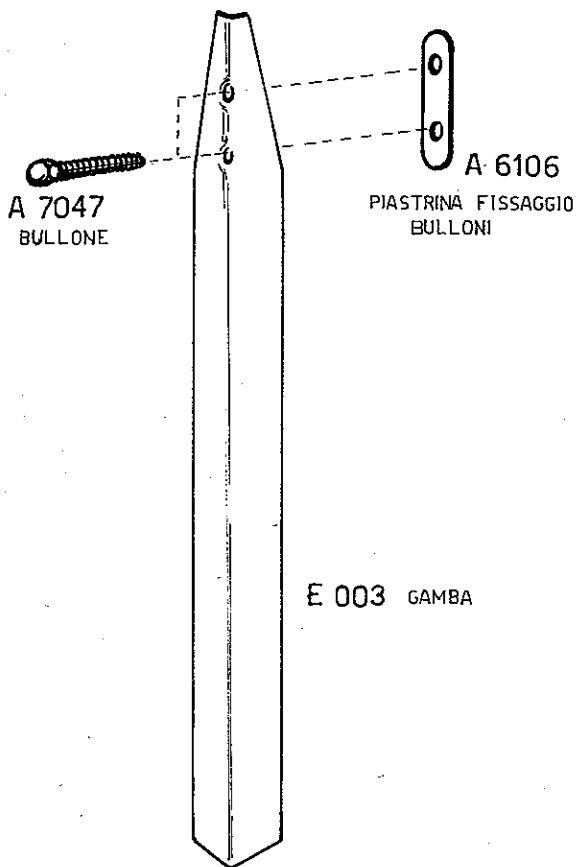
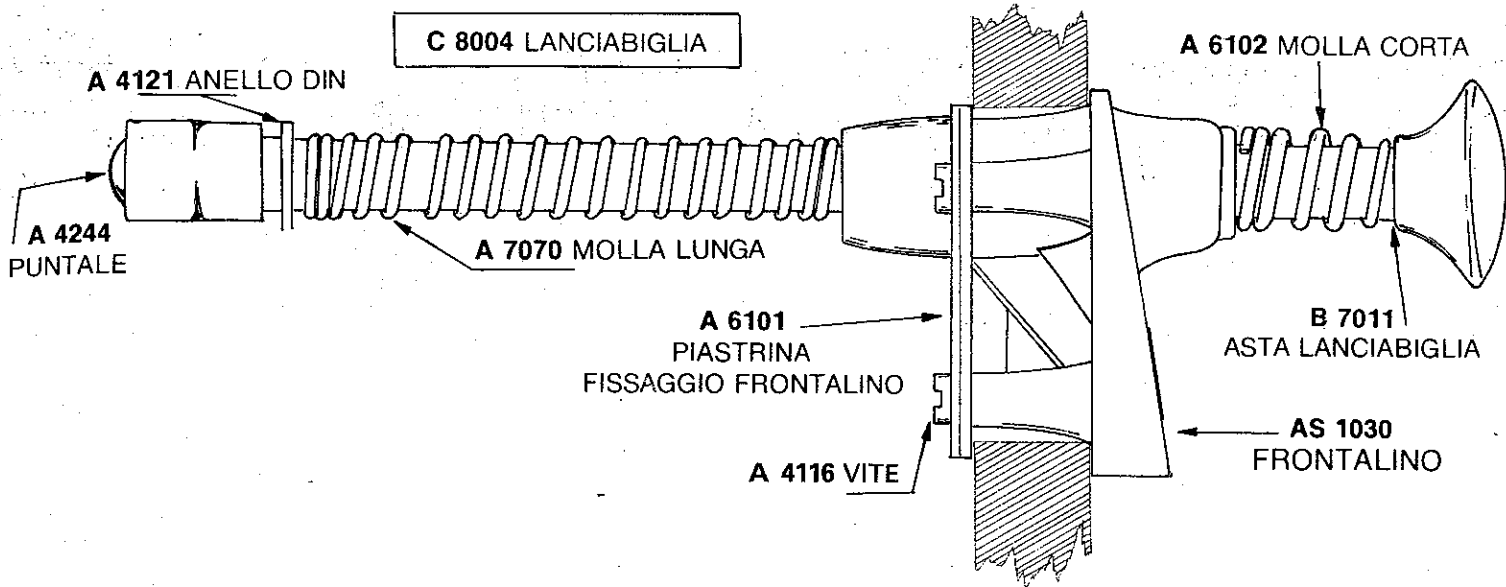
B 6130 PULSANTE ROSSO

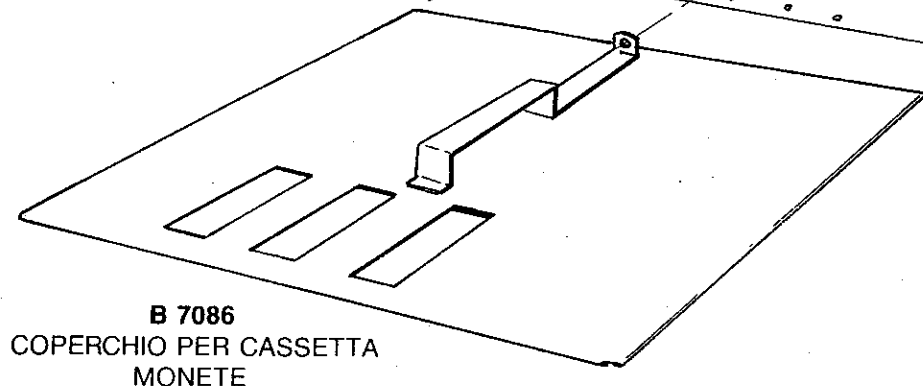
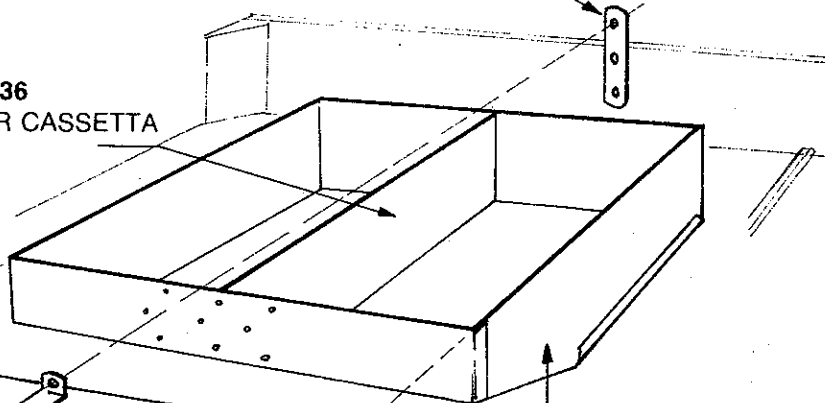
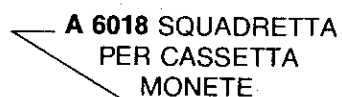
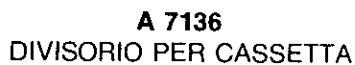
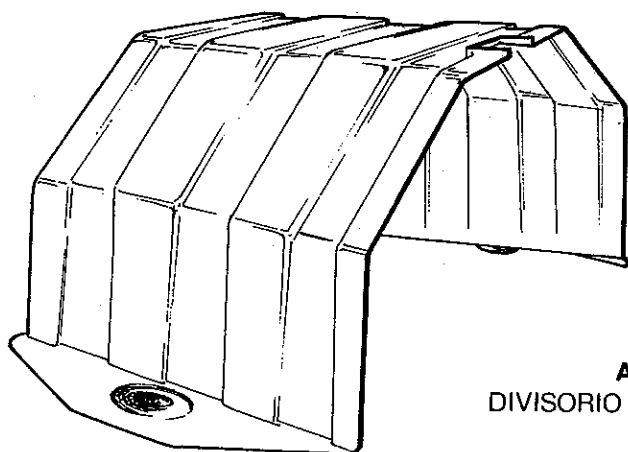
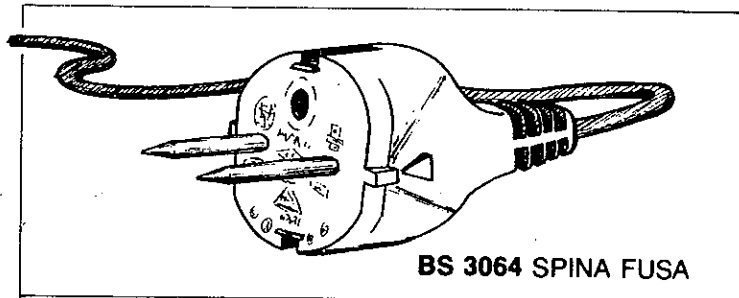
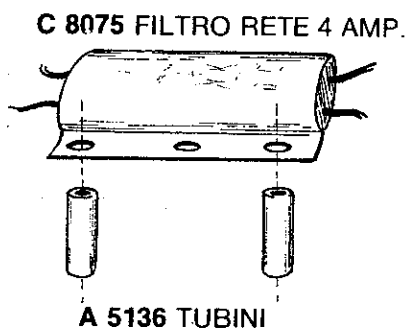
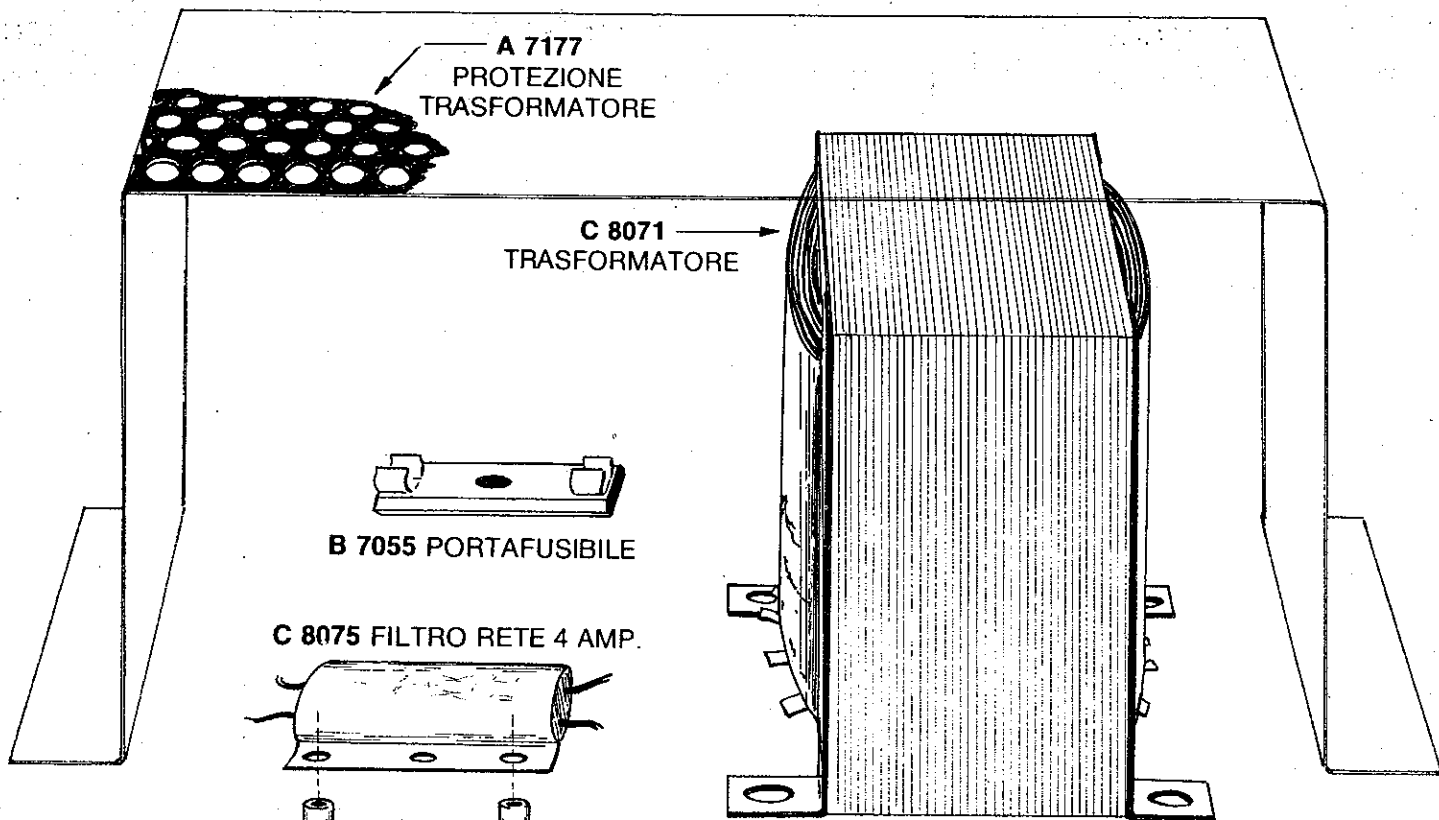
A 4272 MOLLA RICHIAMO

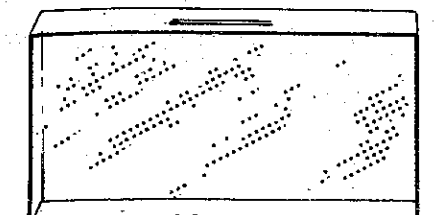
A 4202 ANELLO DIN

A 5214 DADO BLOCCAGGIO PULSANTI

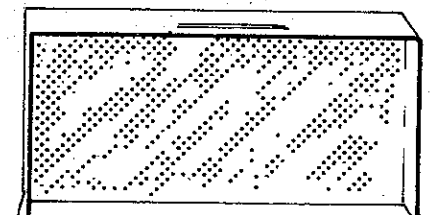
A 6034 SQUADRETTA AGGANCIO SERRAT. SPORTELLI



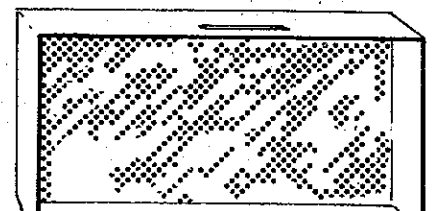




**AS 1046**  
MASCHERINA DISPLAY FUME

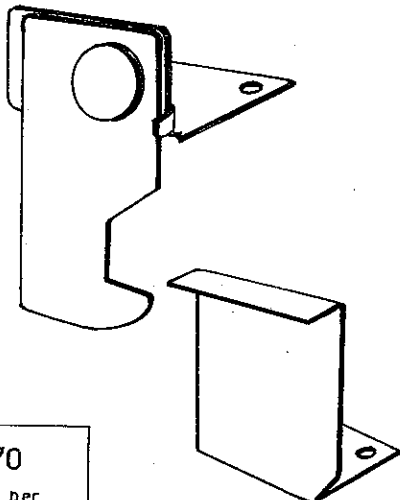


**AS 1044**  
MASCHERINA DISPLAY ROSSA



**AS 1045**  
MASCHERINA DISPLAY BLEU

**B 7141**  
SQUADRETTA CON  
LINGUETTA PER  
AGGANCIAMENTO AUTOMATICO

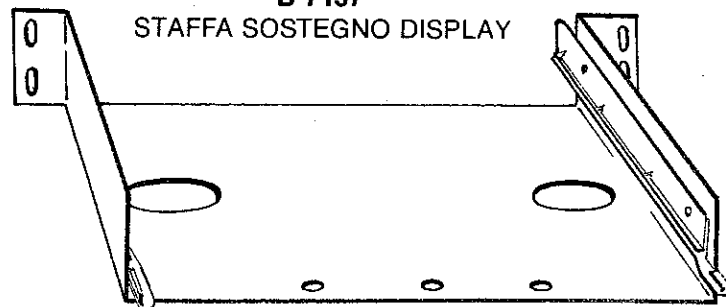


**B 7170**  
COMPLETO per  
AGGANCIAMENTO AUTOMATICO

**A 7158**  
SQUADRETTA AGGANCIAMENTO  
AUTOMATICO

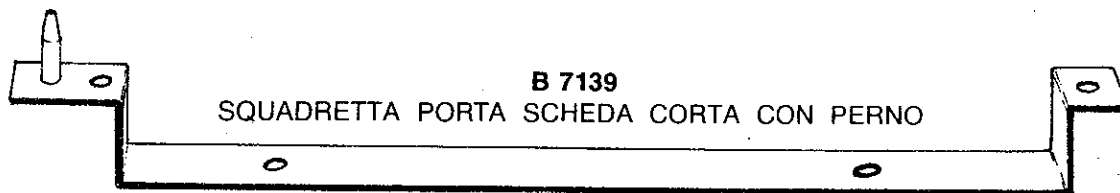
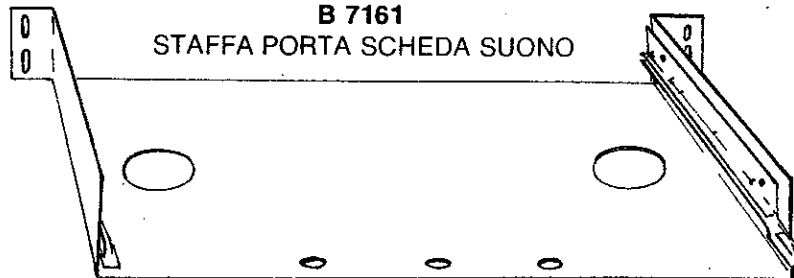
**B 7137**

STAFFA SOSTEGNO DISPLAY



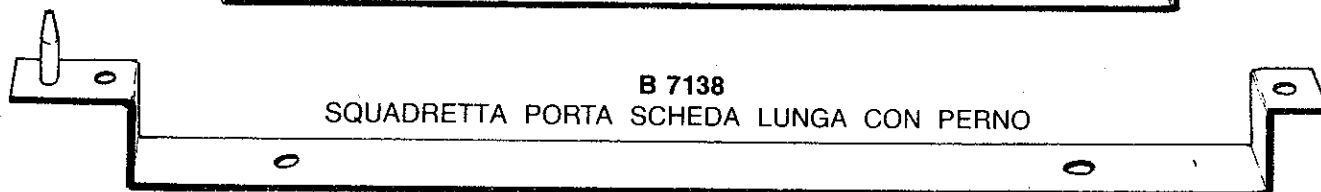
**B 7161**

STAFFA PORTA SCHEDA SUONO



**B 7139**

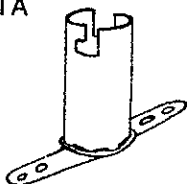
SQUADRETTA PORTA SCHEDA CORTA CON PERNO



**B 7138**

SQUADRETTA PORTA SCHEDA LUNGA CON PERNO

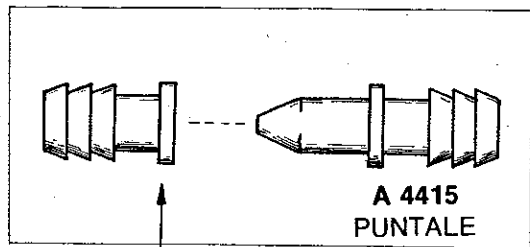
**B 6041**  
PORTALAMPADA  
TESTATA



**A 7143**  
SQUADRETTA FISSAGGIO  
VETRO

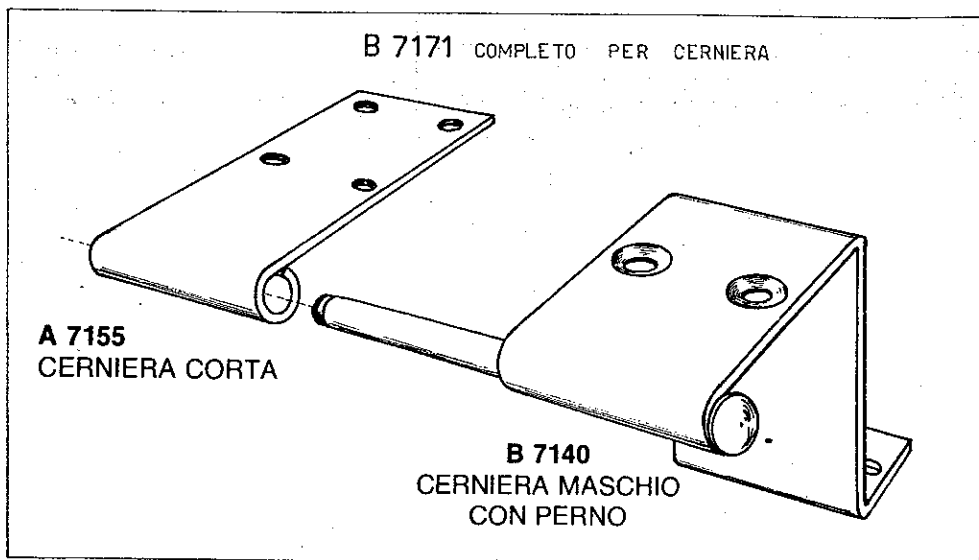


**A 7205** ASTA SOSTEGNO VETRO



**A 4414**  
BOCCOLA PER  
PUNTALE

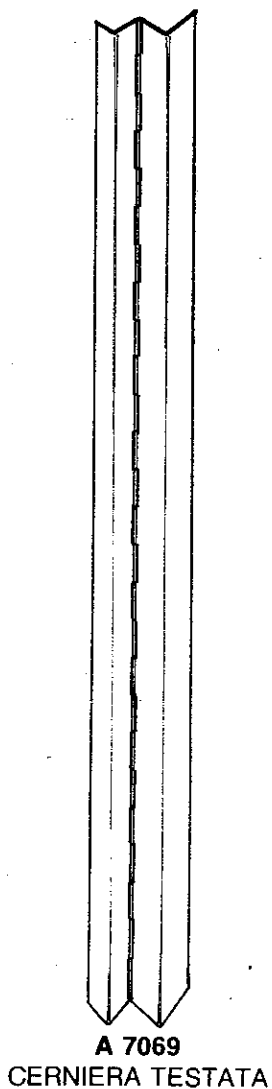
**A 4415**  
PUNTALE



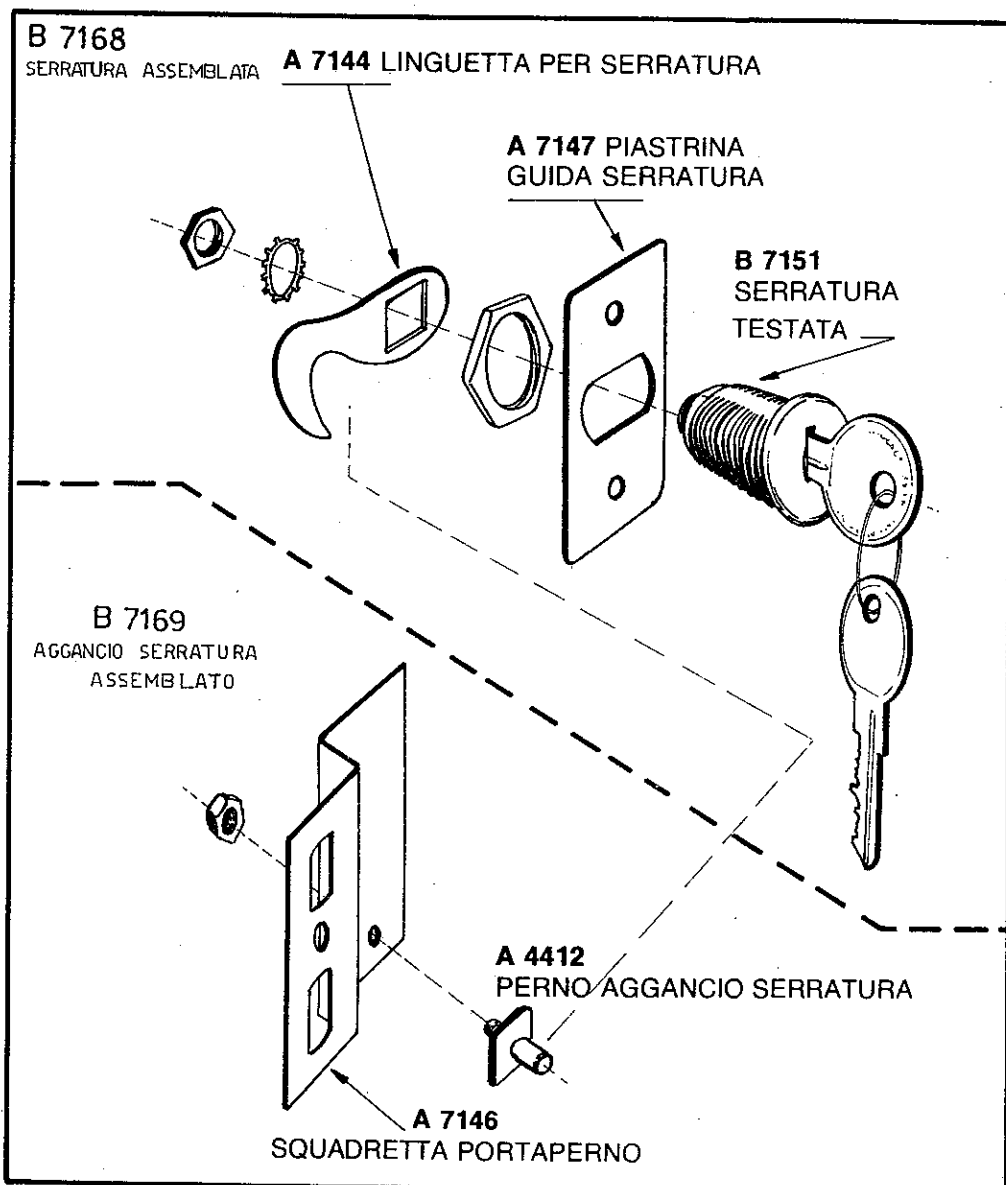
**B 7171** COMPLETO PER CERNIERA

**A 7155**  
CERNIERA CORTA

**B 7140**  
CERNIERA MASCHIO  
CON PERNO



**A 7069**  
CERNIERA TESTATA



**B 7168**  
SERRATURA ASSEMBLATA

**A 7144** LINGUETTA PER SERRATURA

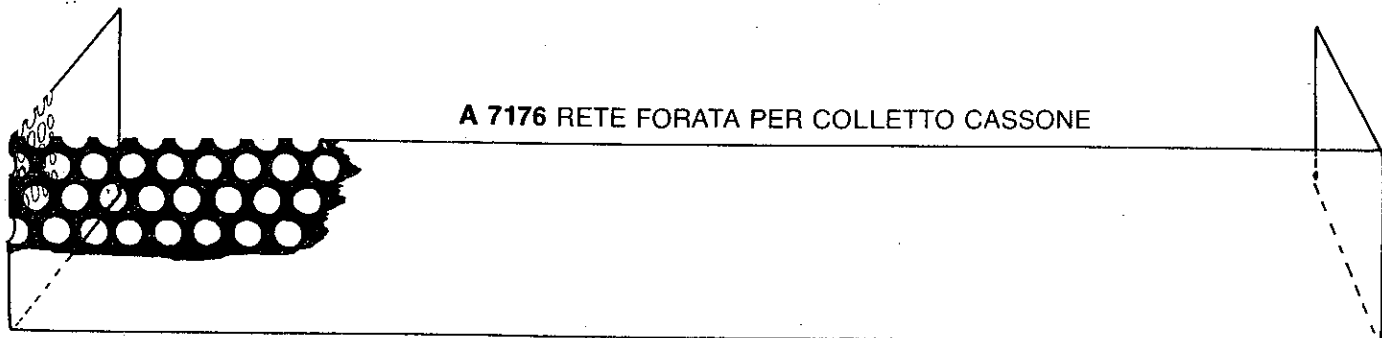
**A 7147** PIASTRINA  
GUIDA SERRATURA

**B 7151**  
SERRATURA  
TESTATA

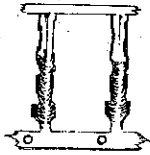
**B 7169**  
AGGANCI SERRATURA  
ASSEMBLATO

**A 4412**  
PERNO AGGANCI SERRATURA

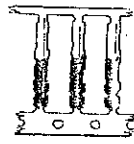
**A 7146**  
SQUADRETTA PORTAPERNO



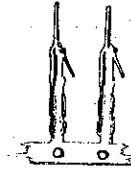
**A 7176** RETE FORATA PER COLLETTO CASSONE



**CE 1349**  
FEMMINA MODU 1



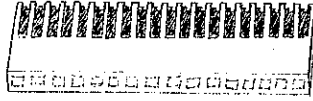
**CE 1340**  
FEMMINA MODU 2



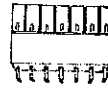
**CE 1329**  
MASCHIO CIS



**CE 1348**  
MASCHIO MODU 2



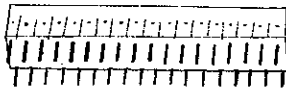
**CE 1345** CONNETTORE PORTA  
MASCHI 18 VIE



**CE 1337** CONNETTORE  
PORTA FEMMINE 7 VIE



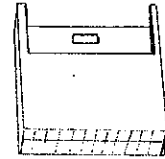
**CE 1339**  
CONNETTORE FEMMINA



**CE 1336** CONNETTORE PORTA  
FEMMINE 18 VIE



**CE 1346** CONNETTORE  
PORTA MASCHI 7 VIE



**CE 1338**  
CONNETTORE MASCHIO

**CONNETTORI PORTA CONTATTI MASCHI**

2 VIE



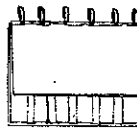
**CE 1350**

4 VIE



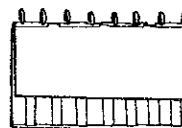
**CE 1331**

6 VIE



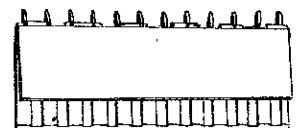
**CE 1332**

8 VIE



**CE 1361**

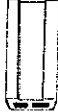
12 VIE



**CE 1330**

**CONNETTORI PORTA CONTATTI FEMMINE**

2 VIE



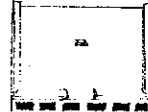
**CE 1334**

4 VIE



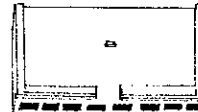
**CE 1333**

6 VIE



**CE 1335**

8 VIE



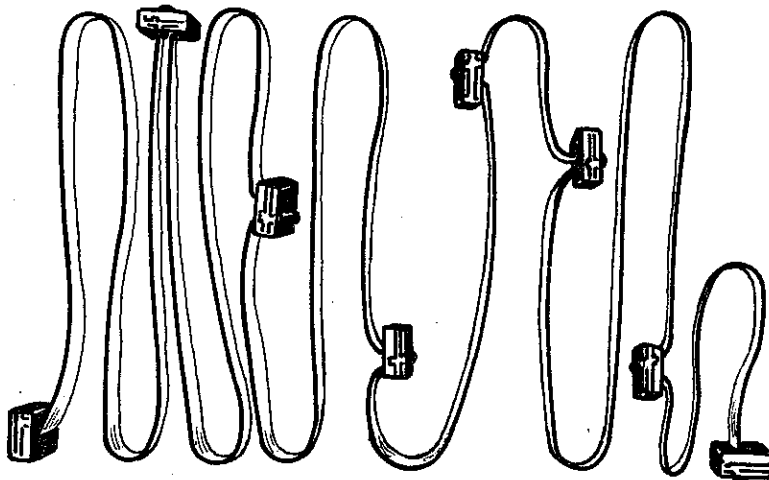
**CE 1362**

12 VIE



**CE 1341**

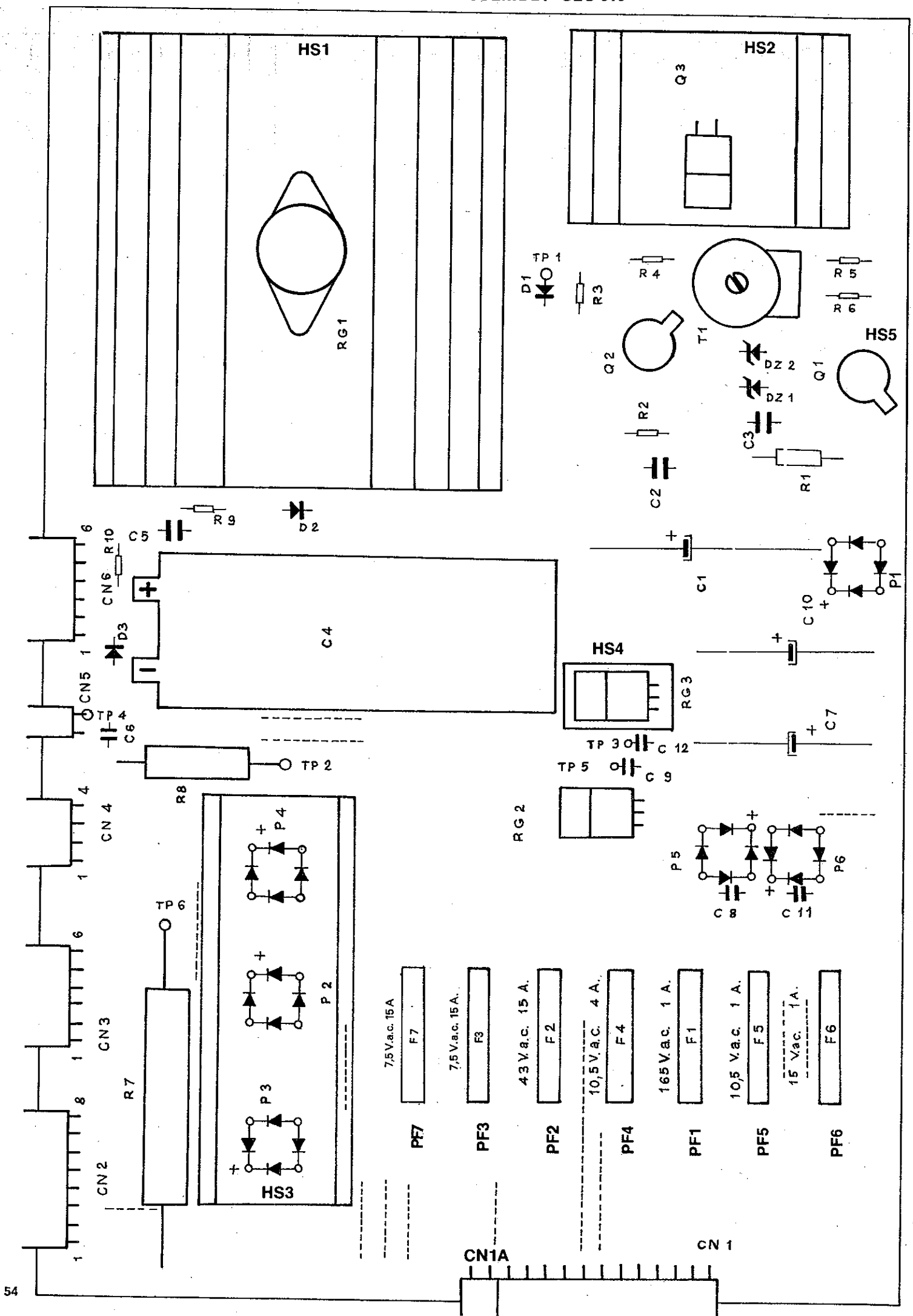
**FLAT CABLE CON 8 CONNETTORI  
CEB 016**



**CEB 006  
FLAT CABLE  
C.P.U. - INTERFACE**



POWER BOARD ASSEMBLY CEC 010

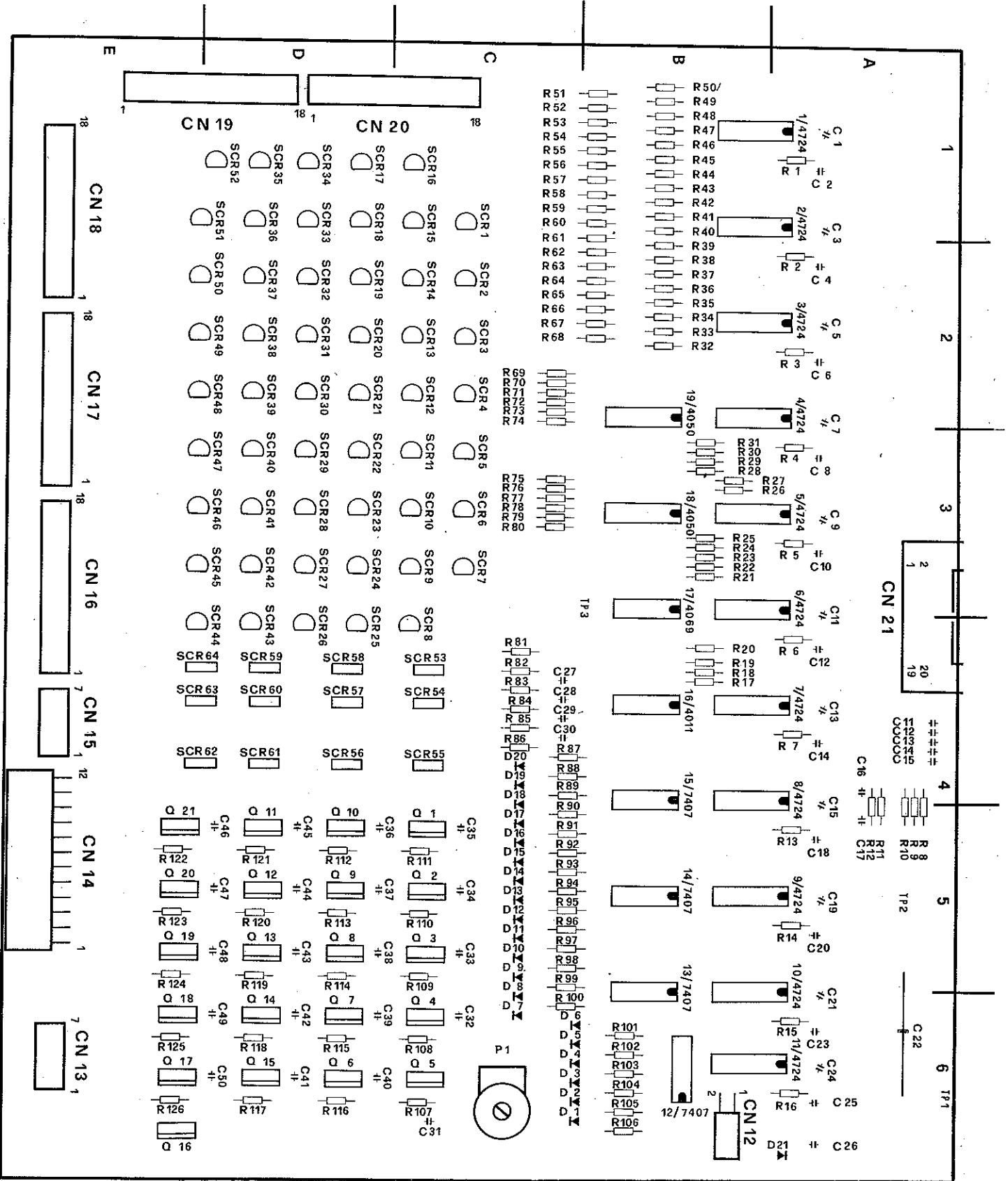




**POWER BOARD ASSEMBLY CEC010**

ITEM NO.	PART DESIGNATION	CODE PART NO.	DESCRIPTION	REQ'D NO.
1	P.C. 1 B 1109/0	CE 2029	Printed circuit 1B 1109/0	1
2	CN. 1	CE 1330	12 PIN Modu 1 Male Connector	1
3	CN. 2	CE 1361	8 PIN Modu 1 Male Connector	1
4	CN. 3; CN. 6	CE 1332	6 PIN Modu 1 Male Connectors	2
5	CN. 4	CE 1331	4 PIN Modu 1 Male Connector	1
6	CN. 5; CN 1A	CE 1350	2 PIN Modu 1 Male Connectors	2
7	RG. 1	CE 1238	+ 5V; 5 AMP voltage regulator ( $\mu$ A78H05Kc)	1
8	RG. 2	CE 1270	- 5V; 0,5 AMP voltage regulator ( $\mu$ A79M05AUC)	1
9	RG. 3	CE 1240	+ 12V; 0,5 AMP voltage regulator ( $\mu$ A78M12UC)	1
10	P. 1	CE 1274	400V; 1 AMP Rectifier Bridge (W 04)	1
11	P. 2	CE 1105	200V; 10 AMP Rectifier Bridge (KBPC 10 02)	1
12	P. 3	CE 1405	50V; 10 AMP Rectifier Bridge (KBPC 10 005)	1
13	P. 4	CE 1471	50V; 8 AMP Rectifier Bridge (KBPC 8 005)	1
14	P. 5; P 6	CE 1233	50V; 1 AMP Rectifier Bridges (W 005)	2
15	TR. 1; TR. 2	CE 1272	2 N 3440 NPN Transistors	2
16	TR. 3	CE 1271	2 N 3584 NPN Transistor	1
17	D. 1	CE 1009	1 N 4004 Diode	1
18	D. 2; D. 3	CE 1539	1 N 4003 Diodes	2
19	Dz 1; Dz 2	CE 1220	75 V; 0,5W Zener Diodes (BZ 79 c75)	2
20	C. 1	CE 1284	100 $\mu$ F 350V Electrol. Capacitor axial leads	1
21	C. 2; C. 3	CE 1399	10 KpF 250V Ceramic Capacitors	2
22	C. 4	CE 1384	10.000 $\mu$ F 16V Electrol. Capacitor single ended	1
23	C. 5; C. 9	CE 1261	0,33 $\mu$ F 50V Polyester Film Capacitors	2
24	C 6; C 8; C 11; C12	CE 1005	0,1 $\mu$ F 50V Ceramic Capacitors	4
25	C 7; C 10	CE 1026	1000 $\mu$ F 24V Electrol. Capacitors axial leads	2
26	R 1	CE 1282	100 K $\Omega$ 1W 5% Carbon Resistor	1
27	R 2	CE 1042	22 K $\Omega$ 1/2W 5% Carbon Resistor	1
28	R 3; R 10	CE 1269	390 $\Omega$ 1/4W 5% Carbon Resistors	2
29	R 4	CE 1171	10 K $\Omega$ 1/4W 5% Carbon Resistor	1
30	R 5	CE 1266	82 K $\Omega$ 1/4W 5% Carbon Resistor	1
31	R 6	CE 1170	1 K $\Omega$ 1/4W 5% Carbon Resistor	1
32	R 7	CE 1263	680 $\Omega$ 10W 10% Wire Resistor	1
33	R 8	CE 1660	33 $\Omega$ 3W 10% Wire Resistor	1
34	R 9	CE 1305	100 $\Omega$ 1/2 W 5% Carbon Resistor	1
35	PF 1 + PF 7	CE 1401	CLIPS For P.C.B. For 6 x 30 mm Fuse	14
36	F 1; F 5; F 6	CE 1368	Fuses 1A (6 x 30 mm)	3
37	F 2	CE 1439	Fuse 5A (6 x 30 mm)	1
38	F 3; F 7	CE 1370	Fuses 15A (6 x 30 mm)	2
39	F 4	CE 1369	Fuse 4A (6 x 30 mm)	1
40	HS 1	CE 1278	Heat Sink 41/100/B	1
41	HS 2	CE 1279	Heat Sink 17/40/C	1
42	HS 3	CE 1110	Heat Sink 16/100/Dis	1
43	HS 4	CE 1099	Heat Sink ML 26 - TO - 220	1
44	HS 5	CE 1280	Heat Sink ML 61 - TO - 5	1
45	T 1	CE 1302	10 K $\Omega$ 1 Turn Vertical Trimmer	1
46	J 1 + J 14		Wire Jump	
47		AS 1040	80 x 110 mm	
48		A 4413	6 x 30 mm Hexagonal Spacers	
49		A 4279	Islands Pressure Caps	
50		CE 1092	Eyelet Terminal	
51		CE 2017	TY 232 M Long Blocking Clamp	
52		CE 2024	TY 232 M Short Blocking Clamp	

# INTERFACE BOARD ASSEMBLY CEC 009

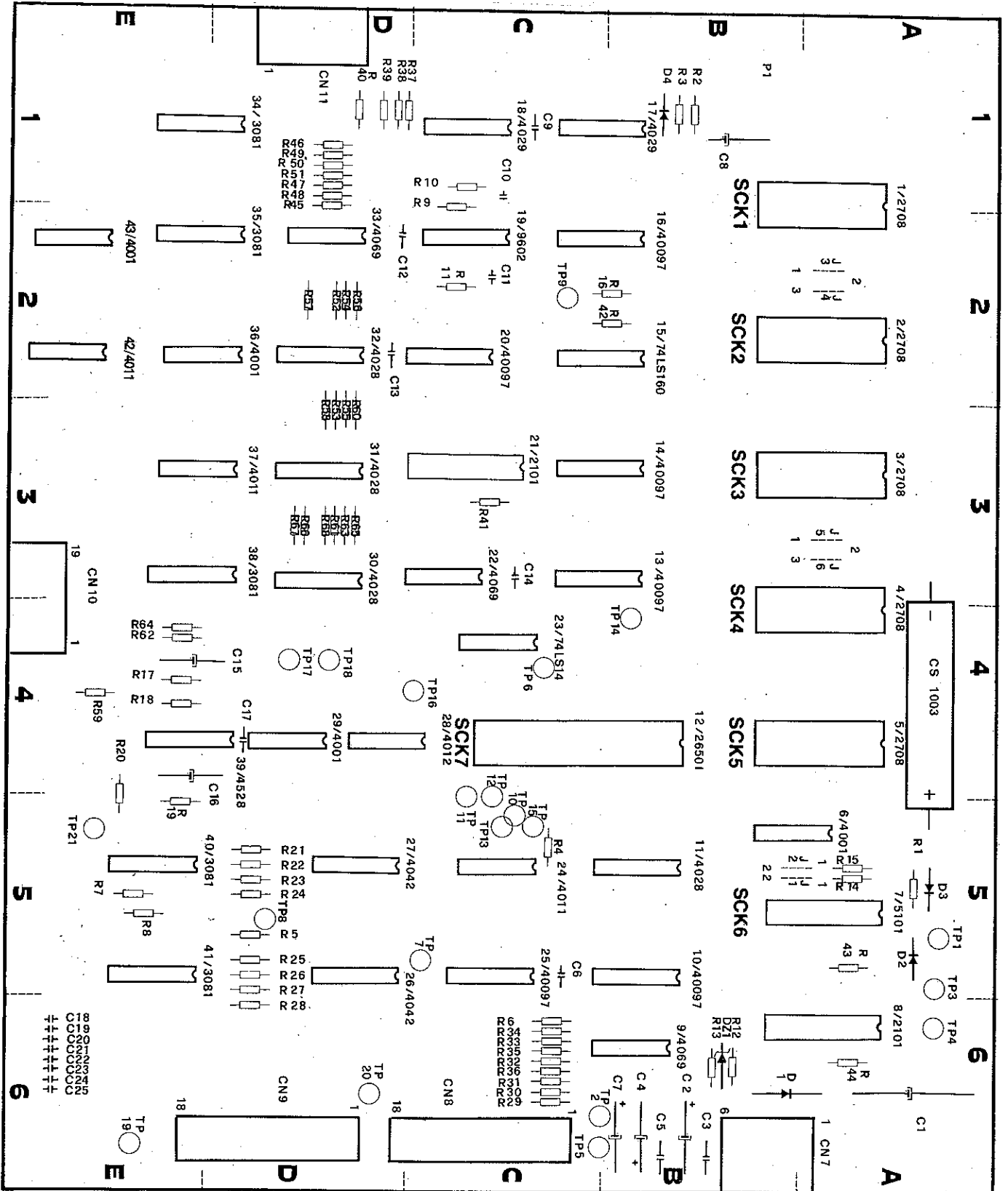


**INTERFACE BOARD ASSEMBLY CEC 009**

ITEM NO.	PART DESIGNATION	CODE PART NO.	DESCRIPTION	REQ'D NO.
1	P.C. 1B 1111/0	CE 2031	Printed Circuit 1B1111/0	1
2	CN 12	CE 1350	2 PIN Modu 1 Male connector	1
3	CN 13; CN 15	CE 1337	7 PIN CIS Receptacle Connectors	2
4	CN 14	CE 1330	12 PIN Modu 1 Male Connector	1
5	CN 16 + CN 20	CE 1336	18 PIN CIS Receptacle Connectors	5
6	CN 21	CE 1351	20 PIN Flat Cable Male Connector	1
7	IC1 + IC11	CE 1236	4724 BP C - MOS I.C. 8 Adressable catches	11
8	IC12 + IC15	CE 1304	N7407N TTL I.C. Hex buffer	4
9	IC16	CE 1016	40 11 BP C - MOS I.C. Quad HAND GATE	1
10	IC17	CE 1015	40 69 UBP C - MOS I.C. Hex Inverter	1
11	IC 18; IC 19	CE 1215	40 50 BP C - MOS I.C. Hex buffer	2
12	D 1 + D 20	CE 1539	1N 4003 Diodes	20
13	SCR 1 + SCR 52	CE 1249	2N 5060 PNP Thiristors (0,8AMP; 30V)	52
14	SCR 53 + SCR 64	CE 1250	BR 62 PNP Thiristors (4AMP; 30V)	12
15	Q1 + Q21	CE 1218	BD 649 NPN Darlingtontons (10AMP; 100V)	21
16	D 21	CE 1299	1N 5400 Diode	1
17	C 1; C 5; C 9; C 13; C 19; C 24;	CE 1005	0,1 $\mu$ F 50V Ceramic Capacitors	6
18	C 2; C 4; C 6; C 8; C 10;	CE 1159	1 KpF 50V Ceramic Capacitors	17
	C 11 + C 18; C 20; C 23; C 25; C 26;			
19	C 22	CE 1162	100 $\mu$ F 25V Electrol. Capacitor axial leads	1
20	C 27 + C 30	CE 1399	10 KpF 50V $\pm$ 10% Ceramic Capacitors	4
21	C 31 + C 50	CE 1260	2,2 KpF 100V Ceramic Capacitors	20
22	R 1 + R 16	CE 1170	1 K $\Omega$ 1/4W 5% Carbon Resistors	16
23	R 17 + R 80; R 82	CE 1164	2,2 K $\Omega$ 1/4 W 5% Carbon Resistors	65
24	R 81	CE 1023	5,6 K $\Omega$ 1/4 W 5% Carbon Resistor	1
25	R 83	CE 1035	56 K $\Omega$ (100 K $\Omega$ ) 1/4 W 1% Film Resistor	1
26	R 84	CE 1200	68 K $\Omega$ (220K $\Omega$ ) 1/4 W 1% Film Resistor	1
27	R 85	CE 1193	47 K $\Omega$ (47 K $\Omega$ ) 1/4 W 1% Film Resistor	1
28	R 86	CE 1197	39 K $\Omega$ (15 K $\Omega$ ) 1/4 W 1% Film Resistor	1
29	R 87 + R 106	CE 1268	150 $\Omega$ 1/4 W 5% Carbon Resistor	20
30	R 107 + R 126	CE 1269	390 $\Omega$ 1/4 W 5% Carbon Resistor	20
31	T 1	CE 1033	22 K $\Omega$ 1 Turn Vertical Trimmer	1
32		CE 1397	Cis Connector Centering Key	7

C.P.U. BOARD ASSEMBLY SENZA MEMORIE CEC 008

C.P.U. BOARD ASSEMBLY CON MEMORIE CEC 041

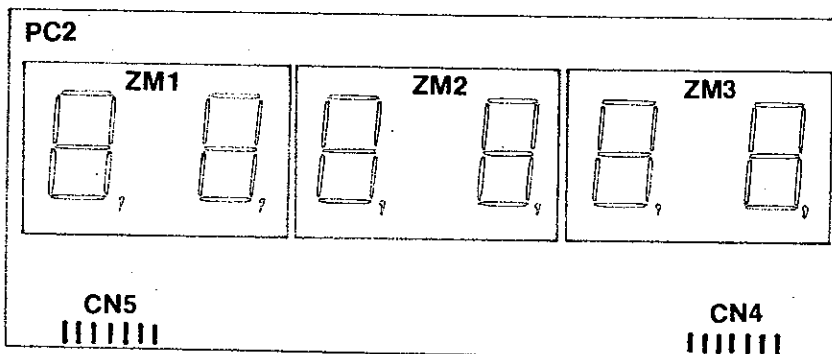
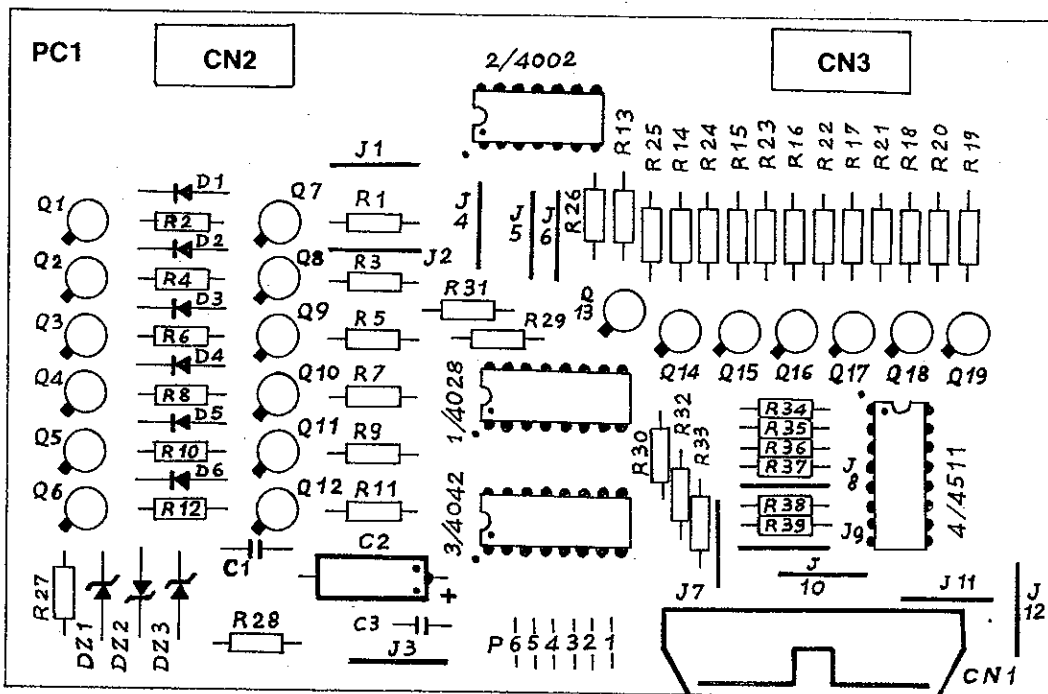


**CPU BOARD ASSEMBLY WITHOUT MEMORIES CEC 008**

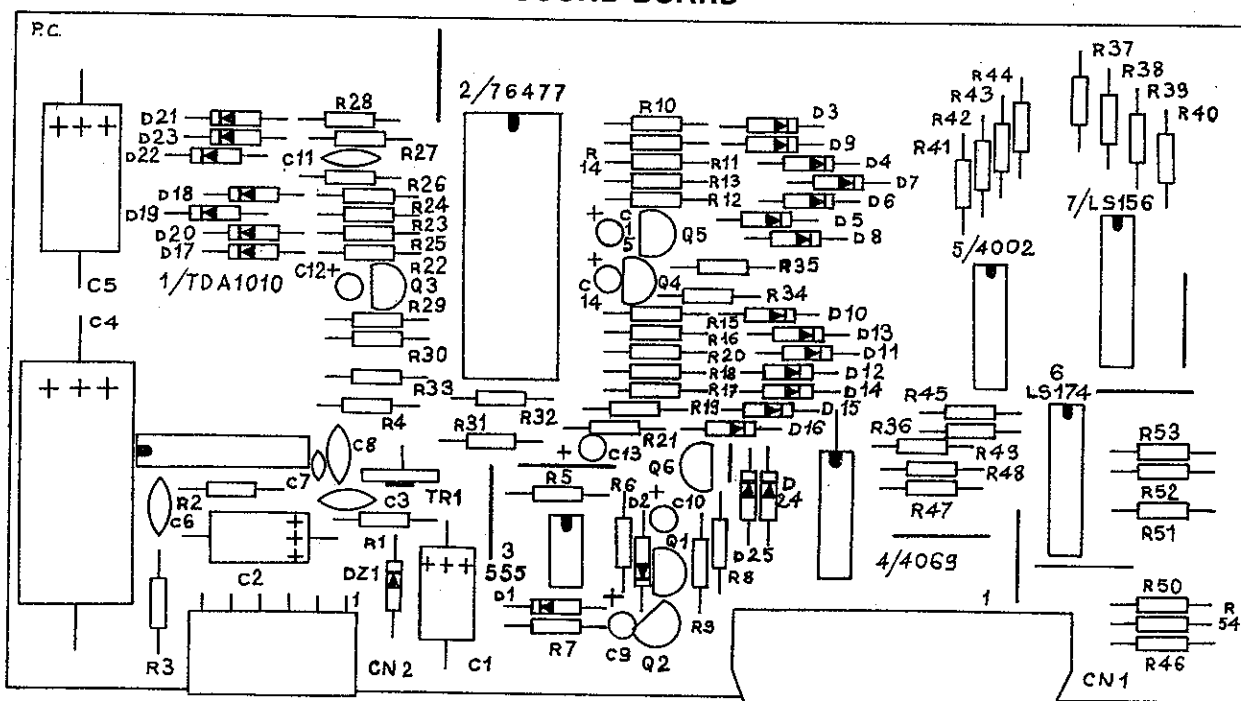
**CPU BOARD ASSEMBLY WITH MEMORIES CEC 041**

ITEM NO.	PART DESIGNATION	CODE PART NO.	DESCRIPTION	REQ'D NO.
1	P.C. 1B 1110/0	CE 2030	Printed Circuit 1B1110/0	1
2	CN 7	CE 1332	6 PIN Modu 1 Male Connector	1
3	CN 8; CN 9	CE 1336	18 PIN CIS Receptacle Connectors	2
4	CN 10; CN 11	CE 1351	20 PIN Flat Cable Male Connectors	2
5	IC 6; IC 29; IC 36; IC 43;	CE 1014	4001 BP C - MOS I.C. Quad NOR GATE	4
6	IC 7	CE 1226	5101 L-3 C - MOS I.C. 256x4 RAM	1
7	IC 8; IC 21	CE 1227	2101 AL-4 MOS I.C. 256x4 RAM	2
8	IC 9; IC 22; IC 33	CE 1015	4069 UBP C - MOS I.C. Hex Inverter	3
9	IC10; IC13; IC14; IC16; IC20; IC25	CE 1055	40097BP C - MOS I.C. Hex Non Inverting 3 - State	6
10	IC 11; IC 30; IC 31; IC 32	CE 1230	4028 C - MOS I.C. BCD To Decimal Decoder	4
11	IC 12	CE 1223	2650A MOS I.C. 8 Bit Micro Processor	1
12	IC 15	CE 1275	74LS160 TTL-LS I.C. Decode Counter	1
13	IC 17; IC 18	CE 1237	4029BP C - MOS I.C. UP-DOWN Binary Counter	2
14	IC 19	CE 1360	9602 TTL I.C. Monostable Multivibrator	1
15	IC 23	CE 1177	74LS14 TTL-LS I.C. Hex Smith Trigger	1
16	IC 24; IC 37; IC 41	CE 1016	4011 BP C - MOS I.C. Quad NAND GATE	3
17	IC 26; IC 27	CE 1231	4042 BP C - MOS I.C. Quad D-Type Catch	2
18	IC 28	CE 1228	4012BP C - MOS I.C. Dual NAND GATE	1
19	IC 34; IC 35; IC 38; IC 40; IC 41	CE 1225	3081 7 NPN Transistors Array	5
20	IC 39	CE 1216	4528 BP C - MOS I.C. Monostable Multivibrator	1
21	Dz 1	CE 1476	4,7V; 0,4 W Zener Diode (Bz 79 C4V7)	1
22	D 1	CE 1299	1N 5400 Diode	1
23	D 3; D 4	CE 1011	1N 4148 Diodes	2
24	C1	CE 1162	100µF 16V Electrol. Capacitor axial leads	1
25	C 2; C 4	CE 1100	10µF 16V Electrol. Capacitor axial leads	2
26	C3; C5; C6; C9; C12; C13; C14; C17	CE 1005	0,1µF 50V Ceramic Capacitors	8
27	C 7; C 8	CE 1398	10µF 25V Tantalum Capacitors axial leads	2
28	C 10; C 11	CE 1257	100 pF ± 10% NPO Ceramic Capacitors	2
29	C 15; C 16	CE 1190	1µF 35V Tantalum Capacitors	2
30	C 18 + C 25	CE 1159	1 KpF 50V Ceramic Capacitors	2
31	SCK1 + SCK5	CE 1152	24 PIN I.C. Sockets (524 AG 11 D)	5
32	SCK6	CE 1383	22 PIN I.C. Socket (522 AG 11 D)	1
33	SCK7	CE 1245	40 PIN I.C. Socket (540 AG 11 D)	1
34	CS 1003	CE 1396	3,6V; 100 mA Ni-Cd, Battery	1
35	P. B - 1	CE 1277	N.O. Push Button (85 31 C)	1
36	R 1; R 6	CE 1409	100 Ω 1/4W 5% Carbon Resistors	2
37	R2; R4; R9; R14 + R16; R18; R37 + R41; R43; R44	CE 1171	10 K Ω 1/4 W 5% Carbon Resistors	14
38	R 3	CE 1164	2,2 K Ω 1/4W 5% Carbon Resistor	1
39	R5; R7; R20 + R28; R45 + R68	CE 1023	5,6 K Ω 1/4 W 5% Carbon Resistors	35
40	R 8; R 29 + R 36; R 42	CE 1170	1 K Ω 1/4 W 5% Carbon Resistors	10
41	R 10	CE 1292	30,1 K Ω 1/4 W 1% Film Resistor	1
42	R 11	CE 1205	15,1 K Ω 1/4 W 1% Film Resistor	1
43	R 12	CE 1269	390 Ω 1/4 W 5% Carbon Resistor	1
44	R 17	CE 1422	22, 1 K Ω 1/4 W 1% Film Resistor	1
45	R 19	CE 1167	100 K Ω 1/4 W 5% Carbon Resistor	1
46	J 1 + J 6		Wire Jump	6
47	TP 1 + TP 21		Wire Test Points	21
48	D 2	CE 1539	1N 4003 Diode	1
49		CE 1397	Cis Connector Centering Key	
50		CE 2024	Blocking Clamp	
51	IC 2 + IC 5	CE 1364	B2708 MOS I.C. 1024x8 EPROMS (Not Programmed)	4
52	IC 1	CE 1584	ZAC 001 MOS I.C. 2048x8 ROM (Programmed)	1
53	IC 2	RE 081	B2708 MOS I.C. 1024x8 EPROM (F.M. Vers. N° 2)	1
54	IC 3	RE 082	B2708 MOS I.C. 1024x8 EPROM (F.M. Vers N° 3)	1
55	IC 4	RE 083	B2708 MOS I.C. 1024x8 EPROM (F.M. Vers N° 4)	1
56	IC 5	RE 084	B2708 MOS I.C. 1024x8 EPROM (F.M. Vers. N° 5)	1

## DISPLAY BOARDS



## SOUND BOARD



**DISPLAY BOARD ASSEMBLY CEC.**

ITEM NO.	PART DESIGNATION	CODE PART NO.	DESCRIPTION	REQ'D NO.
1	P.C.1/ 1B1104/0	CE 2035	Printed Circuit 1B1104/0	1
2	CN. 1	CE 1351	20 PIN Flat Cable Male Connector	1
3	CN. 2; CN. 3	CE 1377	7 PIN CIS Receptacle connectors	2
4	IC1	CE 1230	4028 BP C - MOS I.C. BCD To Decimal Decoder	1
5	IC2	CE 1394	4002 BP C - MOS I.C. Dual 4 Input NOR GATE	1
6	IC3	CE 1231	4042 BP C - MOS I.C. Quad. D - Type Catch	1
7	IC4	CE 1235	4511 BP C - MOS I.C. BCD To 7 Segment Decoder	1
8	Q1 + Q6	CE 1234	BF 423 PNP Transistors	6
9	Q7 + Q19	CE 1217	BF 422 NPN Transistors	13
10	DZ1	CE 1220	75V; 0,4W Zener Diode (BZ 79 C 75)	1
11	DZ2; DZ3	CE 1219	33V; 1W Zener Diodes (BZ 61 C 33)	2
12	D1 + D7	CE 1539	1 N 4003 Diodes	7
13	C1	CE 1060	10 KpF; 250V Ceramic Capacitors	1
14	C2	CE 1028	1μF; 16V Electrol. Capacitor axial leads	1
15	C3	CE 1005	0,1 μ F; 50V Ceramic Capacitor	1
16	R1;R3;R5;R7;R9;R11;R29 + R39	CE 1171	10 K Ω 1/4W 5% Carbon Resistors	17
17	R2; R4; R6; R8; R10; R12	CE 1167	100 K Ω 1/4W 5% Carbon Resistors	6
18	R 13 + R 19	CE 1164	2,2 K Ω 1/4W 5% Carbon Resistors	7
19	R 20 + R 26; R 40 + R 45	CE 1267	1,5 K Ω 1/4W 5% Carbon Resistors	13
20	R 27	CE 1036	1 M Ω 1/4W 5% Carbon Resistors	1
21	R 28	CE 1200	68 K Ω 1/4W 5% Carbon Resistor	1
22	J1 + J12		Wire Jumps	
23	P1 + P6		Display's Selectors	6
24				
25	P.C.2/1B1105	CE 2034	Printed Circuit 1B 1105	1
26	CN 4; CN 5	CE 1347	7 PIN CIS Male Connector	2
27	ZM1 + ZM3	CE 1222	ZM 1550 GAS Discharge Display	3

**SOUND BOARD ASSEMBLY CEC.**

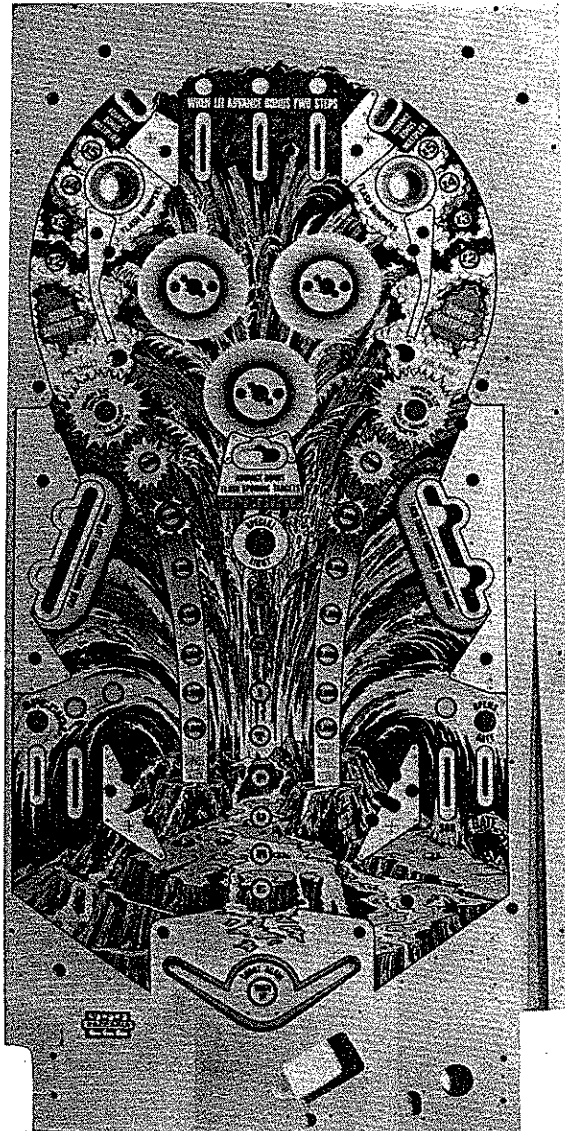
ITEM NO.	PART DESIGNATION	CODE PART NO.	DESCRIPTION	REQ'D NO.
1	P.C. 1B1125	CE 2058	Printed Circuit 1 B 1125	1
2	CN 1	CE 1351	20 PIN Flat Cable Male Connector	1
3	CN 2	CE 1332	6 PIN Modu 1 Male Connector	1
4	IC1	CE 1434	TDA 1010 I.C. AUDIO AMPLIFIER	1
5	IC2	CE 1426	SN 76477N I.C. Sound Generator	1
6	IC3	CE 1031	555 I.C. TIMER	1
7	IC4	CE 1015	4069 C - MOS I.C. Hex Inverter	1
8	IC5	CE 1394	4002 C - MOS I.C. Dual. 4 Input NOR GATE	1
9	IC6	CE 1547	40174 C - MOS I.C. Hex D - Type Catch	1
10	IC7	CE 1432	74LS156 TTL - LS I.C. 3 to 8 Decoder	1
11	DZ1	CE 1540	8,2V; 0,4W Zener Diode (BZ 79 C8V2)	1
12	Q1 + Q6	CE 1438	BC 548 NPN Transistors	6
13	D1 + D25	CE 1011	1 N 4148 Diodes	25
14	C1	CE 1100	10 $\mu$ F; 16V Electrolytic Capacitor axial leads	1
15	C 2; C 3; C 6; C 8	CE 1005	0,1 $\mu$ F; 50V Ceramic Capacitors	4
16	C4	CE 1026	1000 $\mu$ F; 25V Electrol. Capacitor axial leads	1
17	C 5	CE 1162	100 $\mu$ F; 25V Electrol. Capacitor axial leads	1
18	C 7	CE 1473	330 pF 50V Ceramic Capacitor radial leads	1
19	C9; C13	CE	0,22 $\mu$ F 16V Tantalum Capacitors radial leads	2
20	C 10	CE 1465	10 $\mu$ F 16V Tantalum Capacitor radial leads	1
21	C 11	CE 1569	2,2KpF 50V Ceramic Capacitor radial leads	1
22	C 12; C 14; C 15	CE 1189	2,2 $\mu$ F 16V Tantalum Capacitors radial leads	3
23	R 1	CE 1305	100 $\Omega$ 1/2W 5% Carbon Resistor	1
24	R 2	CE 1447	330 K $\Omega$ 1/4W 5% Carbon Resistor	1
25	R 3	CE 1306	4,7 $\Omega$ 1/2W 5% Carbon Resistor	1
26	R 4; R 23; R 28; R 33 + R 54	CE 1252	220 K $\Omega$ 1/4W 5% Carbon Resistors	25
27	R 5; R 7; R 8; R 9; R 12; R 18	CE 1171	10 K $\Omega$ 1/4W 5% Carbon Resistors	6
28	R 6; R 16	CE 1036	1 M $\Omega$ 1/4W 5% Carbon Resistors	2
29	R 10	CE 1196	470 K $\Omega$ 1/4W 5% Carbon Resistor	1
30	R 11	CE 1452	150 K $\Omega$ 1/4W 5% Carbon Resistor	1
31	R 13; R 14	CE 1296	1,5 M $\Omega$ 1/4W 5% Carbon Resistors	2
32	R 14; R 20	CE 1167	100 K $\Omega$ 1/4W 5% Carbon Resistors	2
33	R 15; R 18	CE 1251	33 K $\Omega$ 1/4W 5% Carbon Resistors	2
34	R 17; R 30	CE 1193	47 K $\Omega$ 1/4W 5% Carbon Resistors	2
35	R 21; R 22; R29	CE 1165	4,7 K $\Omega$ 1/4W 5% Carbon Resistors	3
36	R 25	CE 1408	27 K $\Omega$ 1/4W 5% Carbon Resistor	1
37	R 26	CE 1164	2,2 K $\Omega$ 1/4W 5% Carbon Resistor	1
38	R 31; R 32	CE 1301	680 K $\Omega$ 1/4W 5% Carbon Resistors	2
39	P 1	CE 1303	100 K $\Omega$ 1 Turn Horizontal Trimmer	1
40				



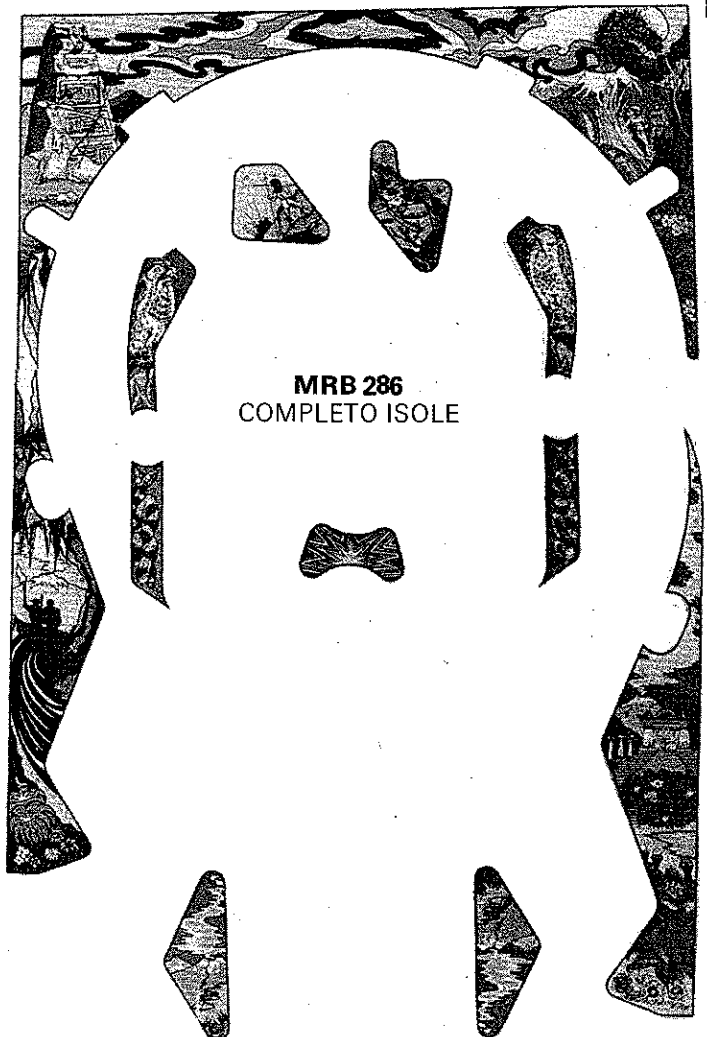


**MRB 284**  
VETRO

MEZZALUNA  
**MRB285**

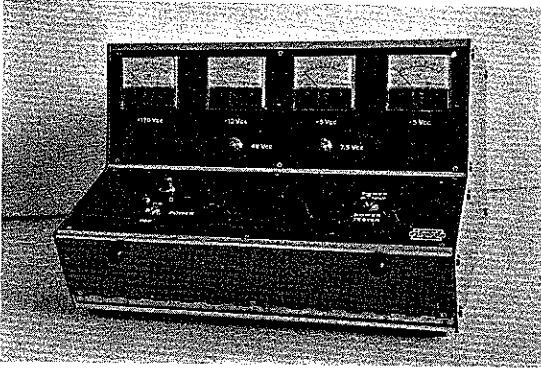


**MRB 276**  
PIANO DI GIOCO

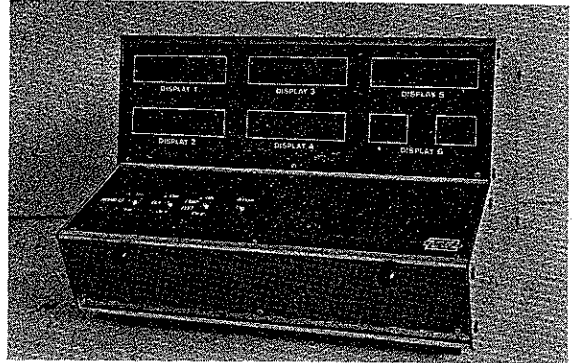


**MRB 286**  
COMPLETO ISOLE

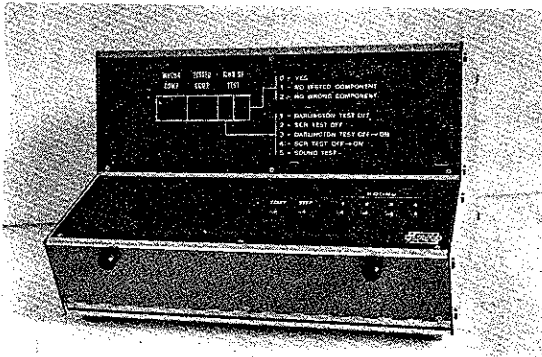
# TESTING



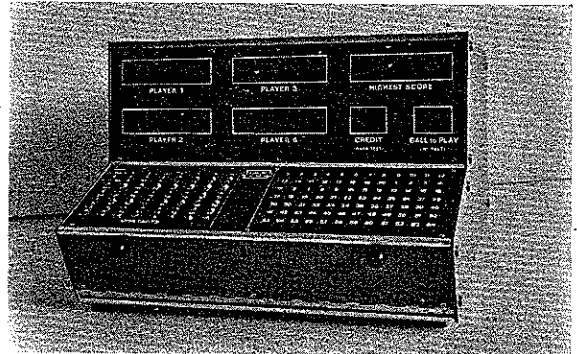
**ALIMENTATORE**



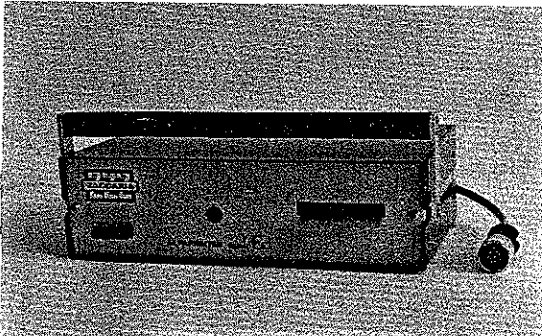
**DISPLAY**



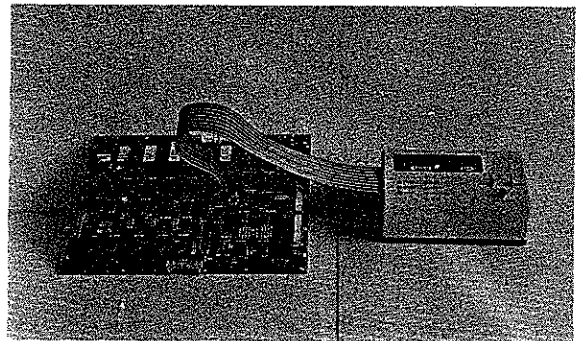
**INTERFACCIA**



**C.P.U.**



**STAMPANTE**



**STEP BY STEP**