ZACCARIA

MANUALE D'ISTRUZIONI

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INDICE

INHALTSVERZEICHNIS

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CONNECTOR CARD FOR **FARFALLA**

INSTALLATION

ASSEMBLING

Assembling should be done as follows:

1. Bolt legs to the cabinet (use special bolts in coin box).
2. Gently extract electric cable and place in the proper cavity, checking that non-skid knot is there.
3. Remove the elastic strip 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 light board has an automatic coupling that keeps it in a vertical position, to ease the fitting of the 4 bolts with the relevant washers, that can be found in the coin box too.

VISUAL INSPECTIONS

On all games there are certain points that should be always checked after transport.
Same are visual inspections which may be helpful to avoid some time consuming service work later.
Minor damages caused by rough handling during the transport are practically unavoidable.
Cable connectors may be loosened, switches (especially tilt switches) may loose their proper adjustment.
Especially the plumb bob tilt switch should always be adjusted after game is set on location.

1. Check whether cabinet cable is connected to the light board cable.
2. Check for any wires that may have become disconnected.
3. Make sure that the cables do not obstacle the moving parts.
4. Check that all fuses are making good contact.
5. Check whether the transformer is connected for the proper main voltage.
6. Check and adjust the sensitivity of tilt contacts as follows.
   A. Plumb bob tilt switch.
   Adjust the plumb bob tilt length according to the required sensitivity.
   B. Rail tilt and ball.
   Put the ball into the rail and check whether it moves properly and closes the contact when the cabinet is raised.
   C. Shockproof tilt
   There are two:
   The first one near plumb bob tilt, the second one near coin chutes. Adjust contact distance to desired sensitivity.

GENERAL GAME OPERATION

1. Put one the ball into the bottom hole
   Connect voltage and start the game.
2. The «GAME OVER» lamp is lit (if the TILT lamp lights up, check the sensitivity of the normally open tilt contacts).
3. Check whether the machine accepts properly the coins and increments the relevant credits. Please keep in mind that the machine shall not accept any coins when turned off or if the number of credits has reached the max. programmed amount.
4. If after having started the game the GAME OVER lamp is lit, it is necessary to carry out some control functions, because the data stored in the battery memory, are not valid anymore. If the game has been disconnected for many weeks, this is very likely to happen.
   If on the other hand the machine has been recently used, and the GAME OVER lamp blinks, it is possible that the battery or its reloading circuit are out of order.
   In any case, before starting the machine it is advisable to reprogram it.
5. Act on credit push-button. The «GAME OVER» lamp shall extinguish.
   A. First player lamp shall be lit.
   B. The credits are decreased by one.
   C. «BALLS TO PLAY» lamp shall be lit.
   D. The playfield is ready and the ball is ejected from the hole.
6. Each time the credit push-button is operated, the number of credits is decreased by one and the number of players is updated.
7. The max. number of credits available is four.

time the rubber rings are replaced).
— Carefully clean playfield. Do not use highly caustic cleaners.

2. Playfield (lower part).
   — Check flipper assembly (tie rod, pin joints and contacts).
   — Check bumpers.
   — Check contact adjustments.
   — Check wiring harness to avoid stresses on the wires and obstacles to the moving parts.
3. Check and adjust tilt sensitivity.
   Remember: an efficient periodic maintenance greatly improves the pintable lifetime and avoids the possibility of damages.

NOTE

Games are factory programmed, according to the special requirements of their designation. The main programming elements may l changed, however, by following procedures below.
We remind you that these procedures shall be performed EXCLUSIVELY by skilled technicians, because wrong programming cou cause malfunctions.

GENERAL TECHNICAL INFORMATION

To avoid that any cause (battery discharged or others) causes the loss of the data stored in RAM C-MOS, and thus the failure of th pintable, the basic program contains some typical programmings (to replace the switches that had been used with the precede series).
When the microcomputer notes that the programming data of RAM C-MOS do not apply anymore, recall one of the 8 lists of typic programming (see table I).
For the CHOICE OF THE TYPICAL LIST, that will be called in case of necessity, the DIP SWS. 1, 2 and 3 are used, that are mounted c the C.P.U. board (see figure 1).
On the sound board there are 2 trimmers provided for the separate tuning of the max. volume of sounds and talking.
For the final tuning of the loud-speaker volume, both for sound and for talk, there is a potentiometer provided, that is located inside th cabinet on the right side of the door. At the front board of the cabinet there is a plug for the headset, whose volume shall be adjuste on the headset itself (see figure 3).
To operate on the «TESTS» with the pintable in GAME OVER position, on the door there is an «ADVANCE-RETURN» switch wit central rest position (or 2 push-buttons, of which one «ADVANCE» and the other one «RETURN»). By acting on «ADVANCE» at eac control the tests progress 1 by 1 from 0 through 37 and then again 0, 1, 2 etc. When pushing again «RETURN», each time the te number is decreased by one (contrary to what happens with «ADVANCE»).
The test number is indicated on the 2 figures of the «BALLS TO PLAY» display (see fig. 2). To leave the test, and return thus to GAM OVER, it is sufficient to stop and then start again the game, or to push ADVANCE or RETURN until the display shows 00.
To clear the «accounting» tests or in any case to amend the programming tests, it is necessary that SW n. 4 on the C.P.U.-board (se fig. 1) points to ON (PROGRAM), and then call the test to be changed, and act on the «CREDIT» push-button. After having cleared c programmed the test, to return in GAME OVER condition and thus to be able to play, call test 00 and then put SW n. 4 in OGG (GAM position.
If the SW n. 4 has not been reset, and you are still in ON (PROGRAM) condition with the 00 (GAME OVER) test, there will be a buzzin sound and the TILT lamp will be blinking, to inform on the anomalous condition that doesn't allow to use the game.
IMPORTANT: each time the battery or RAM C-MOS 6514-9 are replaced, or in any case of interruption of the memory feeding, it necessary to act as follows to enter the new program:

a) Clear the accounting tests (6, 7, 8, 9) even if they apparently are already cleared.
b) Program the tests from 10 through 37, without forgetting to program also those tests that apparently are already programmed For example, if you wish to program the test 10 with 00, and on the display 00 has already appeared, then push the CREDIT pusl button until 00 appears again.

Once the programming has been terminated, the GAME OVER LAMP shall remain lit.
If it is blinking this means that the programming has not been accepted, and thus it has to be repeated in the proper way.

Now we are going to analyse the technical performances in a detailed manner, starting with the self-test function, followed by the accounting functions and eventually the various programming functions.

SELF TEST

DISPLAY (Test n1). By this we check optically the proper operation of the display (5 groups of 7 figures each covering a total of 35 figures). The 5 groups are the the following: **1st player display; 2nd player display; 3rd player display; 4th player display; HIGHEST SCORE TO DATE display or DISPLAY CREDIT, TIME BONUS and BALLS TO PLAY.** When this test is entered, all the figures show the same numbers, starting, with «0» that immediately becomes «1» then «2» and so on until «9»; then they restart at «0» and so on.
By acting on CREDIT push-button the 7 figures of each display indicate 7 numbers in continuous succession.
Example: 6 5 4 3 2 1 0
7 6 5 4 3 2 1

CONTACTS: (Test n. 2). By this test function it is possible to check the proper operation of the 64 INPUT contacts numbered from 00 through 64. When this test is entered, on the 2 figures of the CREDIT display appears the "closed" contact highest in number, and after having opened it, follows the number of the closed contact next in order. If none of the 64 contacts is "closed" no number is indicated. Under these circumstances it is possible to check whether all the contacts work properly, by closing them one by one and making sure that each time the corresponding number appears on the special display provided.
For the numbering of contacts see fig. 4

LAMPS (Test n. 3). All the «piloted» lamps, that have been divided into two groups, are lit and extinguished alternatively at regular intervals. Check whether there are any lamps that are not operative.

SOLENOIDS (Test n. 4). All the solenoids (coils) are energized in sequence from 1 through 24. The number of the energized solenoid appears on the CREDIT display in that very moment.
NOTE THAT EACH SINGLE PINTABLE MODEL MAY USE ONLY PART OF THE 24 AVAILABLE SOLENOIDS.
In the test all the solenoids are treated in the same way (either used or not), and thus on the CREDIT display the numbers of all the 24 possible solenoids are indicated. Those that are not operative and are missing do not cause any effect (mechanical noise).
The number of employed solenoids is indicated on fig. 6.

SOUND AND TALKING (Test n. 5). This test serves to hear the various sounds and phrases programmed for the model and to check whether they are correct; in the same time on the CREDIT display appears the number of the sound or of the phrase being executed.
To check the proper operation of the SOUND board, use the special self-test program, that is on the board itself (see paragraph self-test sound and talking board).

ACCOUNTING FUNCTIONS

TIME (Test n. 6). Same contains the accounting data relevant to the time (minutes) of pintable operation (1st player display), to the actual duration of the game (minutes) (2nd player display), the number of TILTS (3rd player display) and to the average duration of games (4th player display). The average duration of games is expressed in minutes, and is determined by the ratio between the play time and the number of games that have been played.
The above accounting functions can be cleared simultaneously, by keeping pressed the CREDIT push-button for about 5 seconds, provided SW n. 4 on the C.P.U. board is on ON (PROGRAM).

TAKINGS (Test n. 7). The number of coins collected by the first coin chute (on the left side) is indicated on the 1st player display. The number of coins collected by the second coin chute (on the right side) is shown on 2nd player display. The 3rd player display accounts for the number of coins introduced into the third coin chute (the central one). On the 4th player display the number of «service» games is reported, that is those games obtained by pressing the «SERVICE» push-button that is located inside the door on the left side.
NOTE THAT THE «SERVICE» PUSH-BUTTON DOES NOT CHANGE THE NUMBER OF CREDITS, BECAUSE IT ENTERS DIRECTLY FROM 1 THROUGH 4 GAMES, AND ALSO THE ELECTROMECHANICAL COIN COUNTE IS NOT AFFECTED.
To clear it, SW n. 4 on the C.P.U. board (see figure 1) shall be in position ON (PROGRAM), and then act on the CREDIT push-button for about 5 seconds.

WINNINGS (Test n. 8 and 9). Test n. 8 indicates the winnings listed per types, that is: on the 1st player is indicated the overall quantity of games that have been played (the addition of the paid games, the won ones and the SERVICE games).
On the 2nd player display appear the won games.
On the 3rd player display one can see the number of won balls. Finally the 4th player display shows the quantity of awarded SUPERBONUSES.
— The test n. 9 shows how the winnings have been obtained.
The 1st player display indicates how many times the HIGHEST SCORE has been exceeded (NORMAL if test 10 is programmed with 00, RANDOM if test 10 is programmed with 01).
The 2nd player display shows the number of winnings obtained with winning scores.
The 3rd player display shows the number of winnings obtained with SPECIAL 1. Finally, on the 4th player display appears the number of winnings obtained with SPECIAL 2.
To clear the winnings, SW n. 4 shall be in position ON (PROGRAM); then enter test n. 8 and act on the CREDIT push-button for about 5 seconds; then enter test n. 9 and again press the CREDIT push-button for about 5 seconds.

countries, a highly sophisticated method for programming the cost of one «credit» (one game) has been adopted. The m features of this method are:

a) the possibility of giving one credit with several coins,

b) same number of allowances if the value of the introduced coins is the same, regardless of their number and type.

c) the possibility of establishing a cost per credit that differs from the value of the various coins.

To achieve proper programming of the cost of one credit, when allowances shall be granted, it is necessary to keep in mind t the cost ratio between the more expensive credit and the less expensive one shall be less than «2».
The tests 11, 13 and 15 shall be given the unit «value» of the coins that can be introduced respectively into coin chute n. 1 the left side), coin chute n. 2 (on the right side) and coin chute n. 3 (in the middle).
Do not forget that the coins shall be introduced into the 3 coin chutes in GROWING ORDER. The coin with the lowest value sl be introduced into the first coin chute, to the second coin chute can be assigned a coin of the same or higher value than the f one.
The third coin chute shall receive the coin that has or higher or at least the same value as the coin introduced into the sec coin chute.
The tests, 12, 14 and 16 shall be programmed with the number of credits to be given to each coin introduced respectively i coin chutes 1, 2 and 3.
If several coins are needed to get one credit, it is necessary to program 00.
The coin attributed to the third coin chute, shall have the same or higher value than the cost of one credit. (The figure to programmed on test n. 16 shall be equal to or higher than 1).
THE UNIT VALUE OF COINS IS THE FIGURE OBTAINED BY DIVIDING THE ACTUAL VALUE OF THE COINS BY THE M. COMMON DIVISOR.

Example: 10 p; 50 p;: 10 = 1 + 5
100 L.; 200 L.; 500 L.: = 1 + 2 + 5

As a further guidance for the operators on Table II some actual coin chute programming examples are reported, that are us for some European countries.

HIGHEST SCORE (Tests n. 10, 17 and 25). There exists the possibility to choose among 2 different types of H.S.: NORMAL (Test 10 = and RANDOM (Test 10 = 01). NORMAL H.S. represents the max. score value achieved by one player. When this score exceeded by one or more players, it is replaced by the score obtained by the player who has totalled the highest score. T players that follow shall exceed the new H.S. value to have their winning score recorded.
RANDOM H.S. on the contrary consists of a casual score, ranging within an area of 12.000.000 points, that is set forth at beginning of each game.
The minimum value is given by the figure programmed with test 17, and that can range from 0.000.000 through 7.990.000
The same test is used to program a NORMAL H.S. at the beginning, when the pintable is installed, or in any case to clear change the existing H.S. value. To do so, press several times the CREDIT push-button, if slow progressing is required, otherw keep it pressed for fast progress. To change the initial value of Random H.S. it is necessary that SW4 on the C.P.U. board is ON (PROGRAM) position, while it may be both on ON (PROGRAM) or OFF (GAME) to change the initial value of NORMAL H The player who exceeds the NORMAL or RANDOM H.S. wins the prize established by the programming of test n. 25, with t following possibilities:

Test 25 = 00 = no win
01 = 1 replay
02 = 2 replays
03 = 3 replays
04 = 1 superbonus

Both test 10 and test 25 require SW n. 4 to be in ON (PROGRAM) position to change their programming, and then it is necessa to press the CREDIT push-button.

FOR NORMAL H.S., THE WIN IS AWARDED ONLY TO THE PLAYER WHO OBTAINS THE HIGHEST SCORE, EVEN WHEN T PLAYERS EXCEEDING THE PRESET HIGHEST SCORE VALUE ARE MORE THAN ONE.
IN THE CASE OF RANDOM H.S. THE WIN IS GIVEN TO ALL THE PLAYERS WHO EXCEED THE PRESET H.S. VALUE.

MAX CREDIT (Test n. 19). Same represents the max. number of credits that can be recorded before the coin chute locking mechanism is rel sed, thus preventing further introduction of coins. Same represents also the figure beyond which the credits are not icreased anymore cause of any won games. It is programmable from 10 through 30 by acting on the CREDIT push-button, provided SW4 is set on ON (R/ DOM).

BALLS (Test n. 20). Same represents the number of balls that are available during each game. It can be programmed from 01 through 02 acting on the CREDIT push-button while SW4 shall be on ON.

MATCH (Test n. 20). Match is the possibility to award one replay to the player or to the players, who have managed to get a score on th display the two right end figures correspond to those of MATCH (see figure 2). If it is programmed with 00, it is excluded, while if the p grammed figure is 01, it is connected. To change the programming act on the CREDIT push-button. SW n.4 shall be set ON (PROGRA

WINNING SCORES (Test n . 22, 23, 24 and 26). There are three scores, that can be programmed within a range from 0.00 throu 9.990.000, respectively with tests 22, 23 and 24. The player or the players who exceed one or more (max. 3) winning scores, are award a prize as determined on test n. 26, for each exceeded winning score.
The scores programmed with 0.0 to are not enabled (they do not award any, win even when test 26 is programmed for wins). The test n. determines the type of win at each winning score limit that can be chosen among:

Test 26 = 00 = non win
01 = 1 bonus ball
02 = 1 replay
03 = 1 superbonus
04 = 500.000 points

For the programming of these tests it is necessary that SW n.4 is on ON (PROGRAM), and then act on CREDIT push-button.
For the scores (test 22, 23, 24) push repeatedly the CREDIT push-button to progress 1 by 1 (corresponding each to 10.000 points). Wh the button is kept pressed, the progress is fast.

00 = Difficult
01 = Medium difficulty
02 = Easy
03 = Easy

For adjustement or changes, act on CREDIT button when SW 4 is ON (PROGRAM).
Test 27 determines the type of win to be awarded when the Special target is nit while corresponding lamp is lit.

00 = no win
01 = 1 bonus ball
02 = 1 replay
03 = 1 superbonus
04 = 1.000.000 points

For adjustment or changes, act on CREDIT button when SW 4 is ON (PROGRAM).

SPECIAL 2 ORANGE (Test 28, 34 and 36). It is possible, moreover, to tune the difficulty for obtaining lighting up of the bank "special" lamp, by modifying test n. 34.

00 = Lamp lighting one by one
01 = Lamp lighting two by two
02-03 = Lamps lit in front of the bank

Test n. 28 determines the type of win be awarded when the orange Special target is hit the corresponding lamps is lit.

00 = no win
01 = 1 bonus ball
02 = 1 replay
03 = 1 superbonus
04 = 300.000 pointes

For adjustment or changes, act on CREDIT button when SW 4 is ON (PROGRAM)

SOUND BACKGROUND (Test 29). If during the game a sound background is required, this test shall be programmed with 01, if non with 00.
To program or modify, act on CREDIT push-button, provided SW 4 is in ON (PROGRAM) position

COIN METER (Test n. 30). Same is an electromechanical impulse meter, to be connected with the circular 8-way connector located in the cabinet and that the «UNIT VALUE» of the coins introduced into 3 coin chutes.
It is never modified by the wins or the service games (obtained throught the SERVICE push-button). The game can be played regularly both with connected and cut-off coin meter, if the test it programmed with 00. Note that the impulse meter is programmed with 00. Note that the impulse meter is always operatin regardless of the type of programming used for test 30.
To program or to change, act on CREDIT push-button, provided SW 4 is in ON (PROGRAM) position.
The impulse meter and relevant wiring are available upon request

GAME TIME BONUS (Test n. 31). After having used the available balls (see test 20 + possible winned balls), it is possible to get a game time extention that may range from a minimum of 10 seconds to a maximum of 99 seconds, determined by the play of the last normal ball. This time is indicated by 2 digits in the center of the HIGHEST SCORE TO DATE display (see figure 2). Upon play time ezpiry, all the controis are stopped, and thus the ball to play runs straight to the hole.
If the test has been programmed 00, the game is terminated normally (game time bonus excluded), while with 01 programming game time bonus is connected. To program or change, act on CREDIT push-button, provided SW 4 is in ON (PROGRAM) position.

BONUS BALL NUMBER VARIATION (Test 32). Maximum number of possible bonus balls, while one ball on play, is determined.

00 = 1 bonus ball
01 = 3 bonus ball
02 = 3 bonus ball
03 = 3 bonus ball

To program or change, act on CREDIT push-button, provided SW 4 is set on ON (PROGRAM).

TOP SPECIAL VARATION (Test 35). Win op topo special is determined.

00 = 150.000 points
01-02-03 = bonus ball

To program or change act on the CREDIT push-button, provided SW 4 is set on ON (PROGRAM)

REACT FEATURE (Test 36). Determine the difficulty to obtain the lighting of the "react" lamp.

00 = Easy
01 = Difficult
02 = Difficult
03 = Difficult

To program or change act on the CREDIT push-button, provided SW4 is set ON (PROGRAM).

SOUND AND TALK BOARD SELF TEST

With the pintable in GAME OVER condition, act on push-button located on the AUDIO-board; the LED shall start blinking, and each blinking indicates the proper performance of a test, covering a total of 5 blinkings (5 tests).
The 1st blinking inidicates that the RAM store inside the microprocessor is regularly operating.
The 2nd blinking indicates that PIA 1 (IC 15) that is to be used for the dialogue with the «generated sound» (AY-3-8910) is operating.
The 3rd blinking indicates that PIA 2 (IC 14) that serves for the dialogue with the «speech synthetizer» (TMS 5200) is operating.
The 4th blinking indicates that the «sound generator» (AY-3-8910) is operating
The 5th blinking indicates that the «special-synthetizer» is operating.
If everything operates properly, LID 1 is extinguished and remains in such conditions only after a certain number of sample phrases.
Keep in mind, that the completion of the SELF TEST does not mean at all that the AUDIO-board is correctly operating in all its parts, but it supplies avery good indication.

			1° All the displays show equal figures that follow each other 0,1,2 and so on. 2° By keeping the «CREDIT» push-button pressed, the displays show numbers in sucession.
02	Contact test	88	Number of closed contact
03	Lamp test	/	All the piloted lamps are continuously lit and extinguished.
04	Solenoid test	88	The solenoids (from 1 through 24) are energized one after another. The indicates the energized solenoid. When it is operative it must be perc
05	Sound and talking test	88	Sounds and works are repeated one after another. The figure indicat sound and the phrase being executed.

ACCOUNTING

N. TEST	FUNCTION	DESCRIPTION	HOW TO CLEAR
06	Duration	Player 1 display = Time of pintable operation (minutes) Player 2 display = Game time (minutes) Player 3 display = Tilt number Player 4 display = Average game duration expressed in minutes	Whith SW4 on ON (PR GRAM) push-button a 5 sec.
07	Takings	Player 1 display = Coins in coin chute 1 Player 2 display = Coins in coin chute 2 Player 3 display = Coins in coin chute 3 Player 4 display = SERVICE games	With SW4 ON act on CREDIT push-button a 5 sec.
08	Wins	Player 1 display = Games played in total Player 2 display = Won games Player 3 display = Won balls Player 4 display = Won superbonus	With SW4 ON act on (DIT push-button for ab 5 sec.
09	Wins	Player 1 display = H.S. is exceeded Player 2 display = Winning scores are exceeded Player 3 display = Special 1 Player 4 display = Special 2	With SW4 in ON act fo about 5 seconds on CI DIT button.

PROGRAMMING

N. TEST	FUNCTION	PROGRAMMED VALUE	DESCRIPTION	DATA FOR THE PROGRAMMER
10	High-Score types	00 01	NORMAL H.S or max. scores achieved by one player. RANDOM H.S. or casual scores that may change at the beginning of each game.	With SW4 on ON act o CREDIT-push-button.
11	Coin value 1st coin chute.	from 01 to 10	Value of the coins for the 1 st coin chute (at the left side close to the hinge).	Whit SW4 on ON act o CREDIT-push-button.
12	Coin credits 1st coin chute.	from 00 to 15	Credits per each single coin introduced into the first coin chute.	
13	Coin value 2nd coin chute.	from 01 to 10	Value of the coins for the 2nd coin chute (at the right side, close to the key).	
14	Coin credits 2nd coin chute	from 00 to 15	Credits per each single coin introduced into the second coin chute.	
15	Coin value 3rd coin chute	from 01 to 10	Value of the coin for the 3rd coin chute (in the center).	
16	Coins credit 3rd coin chute	from 00 to 15	Credits per each single coin introduced into the third coin chute	
17	Hihg-Score initial value	from 0.00 to 9.99	When test 10 is programmed with 00, initial NORMAL H.S. is programmed. If test 10 is programmed 01, the min. RANDOM H.S. is programmed.	NORMAL H.S. can be p also in Game-over (SW4 OFF), RANDOM H.S. ca preset only in PROGRAM SW4 in ON). Push CRED keep pushed for fast pro gress.

N. TEST	FUNCTION	VALUE PROGRAMMED	DESCRIPTION	DATA FOR THE PROGRAMMER
18	Not used			
19	Max credits	from 10 to 30	Max number of credits beyond which coin chutes are locked, and no won games are attributed anymore	Act on CREDIT pusch-button with SW4 on ON
20	Balls	from 01 to 07	Balls per play	Act on CREDIT pusch button with SW 4 on ON
21	MATCH	00 01	Match exluded (no wins) Match connected (1 Replay)	Act on CREDIT pusch-button with SW4 on ON
22	1st winning scores	from 0.00 to 9.99	1st winning score, which awards the win programmed on test n.26 when exceeded. 0,0,0 = no win	With SW4 on ON act stepwise on CREDIT push-button for slow progress. For fast progress keep it pressed
23	2nd winning scores	from 0.00 to 9.99	2nd winning score wich awards the win programmed on test n. 26 when exceeded. 0,00 = no win	
24	3rd winning scores	from 0.00 to 9.99	3rd winning score which awards the win programmed on test n.26 when exceeded, 0,00 = no win.	
25	Wins with HIGHEST SCORE	00 01 02 03 04	No win 1 Replay 2 Replay 3 Replay 1 Superbonus	With SW4 on ON act on CREDIT push-button
26	Wins with scores (see test 22, 23, 24)	00 01 02 03 04	No win 1 Bonus Ball 1 Replay 1 Superbonus 500.000 points	With SW4 on ON act on CREDIT push-button
27	Multispecial	00 01 02 03 04	No win 1 Bonus Ball 1 Replay 1 Superbonus 1.000.000 points	With SW4 on ON act on CREDIT push-button
28	Wins with Special 2	00 01 02 03 04	No win 1 Bonus Ball 1 Replay 1 Superbonus 300.000 points	With SW4 on ON act on CREDIT push-button
29	Background Sound	00 01	Background sound excluded Background sound connected	With SW 4 on ON act on CREDIT push-button
30	Coin meter	00 01	Normal operation both with excluded and with connected impulse meter When impulse meter is disconnected the pin table cannot be used	With SW4 on ON act on CREDIT push-button
31	Game Time Bonus	00 01	«Game time bonus» disconnected Count down connected	With SW4 on ON act on CREDIT push-button
32	Bonus Ball number variation	00 01 02 03	1 Bonus Ball 3 Bonus Ball 3 Bonus Ball 3 Bonus Ball	Press CREDIT button when SW4 is ON
33	Multispecial	00 01 02 03	Difficult Medium difficulty Medium-easy Easy	Press CREDIT button when SW4 is ON
34	Special 2 ORANGE	00 01 02-03	Difficult Medium difficulty Easy	Press CREDIT button when SW4 is ON
35	Top special variation	00 01-02-03	150.000 points Bonus ball	Press CREDIT button when SW4 is ON
36	React feature	00 01-02-03	Easy Difficult	Press CREDIT button when SW4 is ON
37	Not used			

	– Plug is off – The 3-way connector (CN-«line») of the feeder rack is not connected – Mains fuse burned – The 9-way connector (CN «Ja») on the feeder rack disconnected – Mains switch open – Connetor (CN 1) on feeder and connectors (CN «J1»-«J2»-«J3») on feeder rack disconnected – Voltage change over not or insufficiently connected	Plug in Connect Replace Replace Close Connect Correct	If they burn again, means that there i short circuit The voltage change o unit contains also mains fuse
All stationary lamps are not lit	– Fuse F2 on the feeder rack thrown out. – CN J1-J2-J3 connector not connected – Electric wire disconnected	Replace Plug in Connect	Shall not be more th 20A; if it is thrown again there is a short-c cuit
All the piloted lamps are not operating	– 5 VRM is not available – The connector between C.P.U. and the interface is disconnected – Interface (CN 16) feeding connector is not plugged in – The connectors of the lamps on Interface (CN 18-19-20-21-22) are not connected – The connectors at the feeder board output are disconnected (CN 2-3-4) – At the C.P.U. input and at the Interface 5,6 V d.c. are missing – C.P.U. is always cleared – Others	Fuse F3 (15A) on Power-board is burned Tighten the loose connectors Fuse F2 (5A) is burned and shall therefore be replaced. If it is thrown out again, there is a short circuit. Replace feeder board. Replace feeder and then replace C.P.U. Replace interface	Test carefully with tes
All displays are extinguished. On all the displays wrong figures are appearing	– + 170 V d.c. is missing because fuse F1 (1A) is burned. Or high voltage regulator is damaged. Or high voltage regulator safety circuit is actuated. – At C.P.U. –input +5,6 V is missing – CN 14 or all connectors of displays are disconnected – Display damaged – C.P.U. damaged – Cable damaged – C.P.U. damaged	Replace the fuse. Check with the tester whether the high-voltage feeder operates. When safety device is actuated, try to disconnect the displays. If the feeder operates at 170 V this means that on the displays there exists a short circuit. To restore +170 V it is necessary to stop the pintable and then to start it again Check and if necessary replace the F2 (5A) fuse on the feeder board Plug in connectors Replace the cable Replace C.P.U.	
One or more figures on one or more displays are wrong.	– Display damaged – Cabel damaged		
All figures are too bright	– +170 V feeder damaged	Replace the feeder board	
All the solenoids do not work	– 39 VRM input is missing – CN 17 connector is not plugged in – Interface damaged – C.P.U. damaged	Reset the fuse . If it is thrown out again there is a short circuit. Plug in the connector Replace the Interface Replace the C.P.U.	
One or more solenoids do not work	– Coils burned – Darlington burned – Electric wires loose – The fuses under the playfield have been thrown out	Replace coil and the relevant Darlington Replace the Darlington and check the diode on the coil. Connect the loose wires Reset the burned out fuses	
One or more solenoids are always energized	– Interface-board damaged – C.P.U. damaged – Short circuit	Replace the Interface-board Replace the C.P.U. board	
All the contacts remain inactive	– CN 10-11 connectors are loose – C.P.U. is damaged	Plug in Replace C.P.U.-board	

One or more contacts do not work	– Loose wires – Interrupted or loose – Contact oxydized	Connect all the loose wires Reset the diode Clean the contact	
One or more contacts are wrongly read	– The contact wires are short circuited and also with respect to the lamp and solenoid wires – Diode contacts are short circuited – C.P.U. is damaged	Eliminate the short circuit Replace the short circuited diode Replace C.P.U.	
All sounds and words are missing	– The loudspeaker is not connected or damaged – Loudspeaker potentiometer cut off – CN 6 connector (Sound board) disconnected – 5 V d.c. feeding voltage is missing – +12 V d.c. feeding voltage missing – +5 V d.c. feeding voltage missing – Sound and talk board damaged	Connect, if necessary replace Replace another one having similar features Plug in the connector Replace fuse F4 (1A) on the feed board, if burned Replace fuse F2 (5A) on the feed board, if burned If +5 V d.c. are missing, but +12 V d.c. are available, replace the regulator 78H05 Replace the sound and talk board	

VERY IMPORTANT. Never connect or disconnected the connectors while the game is running

The game is supplied with a special plug to connect a print-out unit that is very useful to print on paper all the most important accounting functions, as well as the serial number of the game.
Hereafter a fac-simile print out.
The same plug is to be used also for the coin meter.

FARFALLA
SERIAL N 1532
WINNED G 000000
PLAYED G 000003
COINS # 1 000003
COINS # 2 000003
COINS # 3 000003
****

CONNECTOR	PIN	WIRE COLOUR	SIGNAL

POWER Board

CN1	→	□	—
»	1	Red	165 Vac 0,3 A
»	2	Red	165 Vac 0,3 A
»	3	Brown	10 Vac 0,5 A
»	4	Brown	10 Vac 0,5 A
»	5	Yellow	10,5 Vac 6 A
»	6	Yellow	10,5 Vac 6 A
»	7	Blue	43 Vac 5 A
»	8	Blue	43 Vac 5 A
»	9	White	6,5 Vac 15 A
»	10	White	6,5 Vac 15 A
»	11	Green	6,5 Vac 15 A
»	12	Green	6,5 Vac 15 A
CN2	→	□	—
»	1	—	—
»	2	Black	GND
»	3	—	—
»	4	Violet	+39 Vrm common for al the solenoid in the cabinet
»	5	Pink	Cabinet - Playfield interconnections
»	6	White	For flipper control
CN3	→	□	—
»	1	White	Cabinet - Playfield interconnections
»	2	Phink	For flipper control
»	3	—	—
»	4	Brown	+5 Vrm common all controlled playfield lamps
»	5	Violet	+39 Vrm common for playfield solenoids
»	6	—	—
CN4	→	□	—
»	1	—	—
»	2	Brown	+5 Vrm common light board controlled lamps
»	3	—	—
»	4	—	-
CN5	→	□	—
»	1	Grey	Flipper Relay
»	2	Black	GND
»	3	Black	GND
»	4	Red	+ 5,6 Vdc
»	5	Red	+ 5,6 Vdc
»	6	White	Power Failure
»	7	Black	GND
»	8	Yellow	170 Vcc
»	9	Black	GND
»	10	Green	— 5 Vdc
»	11	Red	+ 5,6 Vdc
»	12	Blue	+ 12 Vdc

SOUND Board

CN6-T	→	□	—
»	1	Black	GND
»	2	Green	— 5 Vdc
»	3	Red	+ 5,6 Vdc
»	4	Blue	+ 12 Vdc
CN6-C	5	Yellow-grey	Output Sound e Speech
»	6	Violet-whitw	Output Sound e Speech

C.P.U. board

CN9	→	□	—
»	1	Yellow	170 Vcc
»	2	Black	GND
»	3	White	Power Faillure
»	4	Red	+ 5,6 Vdc
CN10	1	Yellow-orange	Printer — RX +
»	2	Grey-yellow	Printer — RX —
»	3	White-pink	Printer — TX —
»	4	Pink-black	Printer — TX +
»	5	—	—
»	6	White	Contacts — row ∅
»	7	Grey	Contacts — row 1

CN10		—	—
»	9	—	—
»	10	White-grey	Contacts - column ∅
»	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	—	—
»	17	Violet-brown	Contacts - column 6
»	18	Yellow-violet	Contacts - column 7
»	19	—	—
»	20	—	—
CN11	1	—	—
»	2	—	—
»	3	Red	Contacts - row 2
»	4	Yellow	Contacts - row 3
»	5	Black	Contacts - row 4
»	6	Green	Contacts - row 5
»	7	Blue	Contacts - row 6
»	8	—	—
»	9	—	—
»	10	Grey-white	Contacts - column ∅
»	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	—	—
»	19	—	—
»	20	—	—

INTERFACE Board

CN16		□	—
''	1	Black	GND
''	2	Red	+ 5,6 Vdc
''	3	Black	GND
''	4	Orange	Flipper Relay
CN17-C		□	—
''	1	Pink-white	Knocker
''	2	White-red	Coin mechanism coil
CN17-P	3	Yellow-Pink	Moving up warol
''	4	White-Violet	Left fricher flipper
''	5	Yellow-White	Left bank
''	6	Brown-White	Out hole
''	7	White-Blue	Right kicher flipper
''	8	Green-White	Right flap
''	9	Brown-Green	Left flap
''	10	Red-Green	Botton right pop
''	11	Yellow-Orange	Flipper relay
''	12	Orange-White	Right bank
''	13	Brown-Yellow	Right pop
''	14	Grey-White	Central bank
''	15	Black-White	Central pop
''	16	Green-Black	Top bank
''	17	Yellow-Grey	Left pop
CN17	18	—	—
''	19	—	—
''	20	—	—
''	21	—	—
''	22	—	—
''	23	—	—
''	24	—	—
CN18	1	Yellow-white	Right innex canal
''	2	Light blue	Pop 2
''	3	Blue-Yellow	1.000 Pts central bank
''	4	Light green-Grey	3.000 Pts central bank
''	5	White-Pink	Pop 1
''	6	—	—
''	7	—	—
''	8	—	—
''	9	Yellow-Orange	Left innex canal
''	10	White-Green	1.000 Pts right bank
''	11	Red-White	5.000 Pts right bank
''	12	Light green-Orange	3rd lamp blue special
''	13	White	Left up ward
''	14	Brown	8.000 pts central bank
''	15	Blue-Red	1st lamp red special
''	16	Orange-Violet	Left outer exit
''	17	Blue-Grey	1st lamp blue special
''	18	Red-Black	2nd lamp blue special
''	19	Blue-Orange	Mult special
''	20	Blue-White	Central bank up ward

"	4	Violet-Red	Bonus 4
"	5	—	—
"	6	Brown	Blue special
"	7	Brown-Orange	Bonus 6
"	8	Pink-Violet	Bonus 2
"	9	Yellow-Grey	Bonus 7
"	10	Green-Blue	Bonus ball 1
"	11	Yellow-Brown	Bonus 3
"	12	Violet	Bonus 9
"	13	Violet-Blue	Bonus 5
"	14	—	—
"	15	Black-Blue	Bonus 11
"	16	Pink-Blue	Bonus 10
"	17	Red-Grey	Bonus 16
"	18	Pink-Yellow	Bonus 8
"	19	Pink-Black	Bonus 13
"	20	Green-Yellow	Bonus 19
CN20	1	Yellow-White	Bonus multiplier × 10
"	2	Light-Blue	Bonus multiplier × 20
"	3	Brown-Blue	Top special
"	4	Light green-Grey	Special bonus
"	5	Pink-White	Bonus 15
"	6	Pink-Brown	Bonus 14
"	7	Orange-Grey	2nd lamp yellow special
"	8	Light green-Violet	1st lamp yellow special
"	9	Yellow-Orange	3rd lamp yellow special
"	10	Green-White	Yellow special
"	11	Black-Violet	Bonus multiplier × 5
"	12	White-Brown	5.000 Pts left bank
"	13	Black-Green	"O" top canal
"	14	Blue-Yellow	3.000 Pts left bank
"	15	Blue-Red	1.000 Pts left bank
"	16	Green-Blue	"E" top canal
"	17	Grey-Blue	"V" top canal
"	18	Black-Red	8.000 Pts left bank
"	19	Blue-Orange	"L" top canal
"	20	—	
CN21	1	—	—
"	2	Orange-Grey	5.000 Pts central bank
"	3	Light green-Violet	Right outer exit canal
"	4	Pink-Brown	3.000 Pts right bank
"	5	—	—
"	6	—	—
"	7	—	—
"	8	Orange-White	Bonus 17
"	9	—	—
"	10	—	—
"	11	—	—
"	12	White-Red	Bonus 20
"	13	—	—
"	14	White-Violet	Bonus 1
"	15	Black-Grey	Bonus 18
"	16	Orange-Brown	Bonus 12
"	17	—	—
"	18	Red-Violet	Orange special
"	19	—	—
"	20	—	—
CN22	1	—	—
"	2	Blue-White	Bonus ball 2
"	3	Violet-Brown	UP game time bonus
"	4	Orange-Black	Ball to play
"	5	Yellow-Red	Credit
"	6	Yellow-Black	Match
"	7	Violet-White	—
"	8	Green	Can play 1
"	9	Violet-Pink	Bonus ball 3
"	10	White-Black	Tilt
"	11	—	—
"	12	Yellow	Can play 2
"	13	Black	Can play 4
"	14	Violet - Yellow	Down game time bonus
"	15	White-Grey	Game over
"	16	Green-Red	Super bonus
"	17	Red	Can play 3
"	18	Blue	Highes score
"	19	Green-Blue	Bonus ball 1
"	20	—	—

Printer service optional	A	Red	43 Vac
»	B	Black	43 Vac
»	C	Yellow-violet	Column 7
»	D	Grey	Row 1
»	E	Yellow-orange	Printer RX +
»	F	Yellow-grey	Printer RX—
»	G	White-pink	Printer TX—
»	H	Black-pink	Printer TX +
J4	1	Brown	Electric wier
»	2	Yellow	Service socket
»	3	Red	Service socket
»	4	Yellow-green	Eletric wier
»	5	Red	43 Vac
»	6	Black	Eletric filter
»	7	Light blue	Eletric wier
»	8	Black	43 Vac
»	9	Blue	Eletric filter

TAV. I

Programmi base › **Basic programs** › **Programmes de base** › **Grundprogramme**

N° test	ITALIA 1			ITALIA			GREAT BRITAIN			FRANCE			DEUTSCH.			BELGIQUE			JUGOSLA.			U.S.A.		
	SW			SW			SW			SW			SW			SW			SW			SW		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	on	on	on	off	on	on	on	off	on	off	off	on	on	on	off	off	on	off	on	off	off	off	off	off
10 High score	0			1			0			0			0			0			0			0		
11	01			01			01			01			01			01			01			01		
12	00			00			00			00			01			00			01			01		
13	02			02			05			05			02			02			02			01		
14	01			00			03			03			03			01			02			01		
15	02			03			05			10			05			02			02			01		
16	01			01			03			07			07			01			02			01		
17	3,00			4,00			4,00			4,00			4,00			4,00			4,00			4,00		
18	—			—			—			—			—			—			—			—		
19	15			15			15			15			15			15			15			15		
20	03			03			03			03			03			03			03			03		
21	1			1			1			1			1			1			1			1		
22	1,00			1,50			1,50			1,50			1,50			1,50			1,50			1,50		
23	2,00			3,00			3,00			3,00			3,00			3,00			3,00			3,00		
24	000			000			000			000			000			000			000			000		
25	1			1			1			1			1			1			1			1		
26	1			2			2			2			2			2			2			2		
27	2			2			2			2			2			2			2			2		
28	1			1			1			1			1			1			1			1		
29	1			1			1			1			1			1			1			1		
30	0			0			0			0			0			0			0			0		
31	1			1			1			1			1			1			1			1		
32	1			1			1			1			1			1			1			1		
33	1			1			1			1			1			1			1			1		
34	1			1			1			1			1			1			1			1		
35	1			1			1			1			1			1			1			1		
36	0			0			0			0			0			0			0			0		
37	—			—			—			—			—			—			—			—		

NATION	COINS	CREDITS	Value Test 11	Credits Test 12	Value Test 13	Credits Test 14	Value Test 15	Credits Test 16	(coin count.)
ITALY	1 coin m. = 100 £	2x100 = 1 Pl.	01	00	01	00	02	01	x 100 £
	2 coin m. = 100 £	3x100 £ = 1 Pl.	01	00	01	00	03	01	
	1 coin m. = 100 £ 2 coin m. = 200 £	2x100 £ = 1 Pl. 1x200 £ = 1 Pl.	01	00	02	01	02	01	x 100 £
		3x100 £ = 1 Pl. 1x200 £ = +1x100 £ = 1 Pl.	01	00	02	00	03	01	x 100 £
	1 coin m. = 200 £	1x200 £ = 1 Pl.	01	01	01	01	01	01	x 200 £
	2 coin m. = 200 £	3x200 £ = 2 Pl.	02	00	02	00	03	01	x 200 £
ENGLAND	1 coin m. = 10 p 2 coin m. = 50 p	1x10 p = 1 Pl. 1x50 p = 6 Pl.	01	01	05	06	05	00	x 10 p
		2x10 p = 1 Pl. 1x50 p = 3 Pl.	01	00	05	03	05	03	x 10 p
BELGIUM (AUSTRIA) (HUNGARY)	1 coin m. = 5 FRS 2 coin m. = 10 FRS	2x5 FRS = 1 Pl. 1x10 FRS = 1 Pl.	01	00	02	01	02	01	x 5 FRS
		3x5 FRS = 1 Pl. 1x10 FRS = 1 Pl. +1x5 FRS	01	00	02	00	03	01	X 5 FRS
FRANCE (DANM.) (SWEDEN)	1 coin m. = 1 FR 2 coin m. = 5 FR 3 coin m. = 10 FR	2x1 FR = 1 Pl. 1x5 FR = 3 Pl. 1x10 FR = 7 Pl.	01	00	05	03	10	07	x 1 FR
WEST. GERM. (SWITZERL.)	1 coin m. = 1 DM 2 coin m. = 2 DM 3 coin m. = 5 DM	1x1 DM = 2 Pl. 1x2 DM = 5 Pl. 1x5 DM = 14 Pl.	01	02	02	05	05	14	x 1 DM (FS)
		1x1 DM = 1 Pl. 1x2 DM = 3 Pl. 1x5 DM = 7 Pl.	01	01	02	03	05	07	x 1 DM (FS)
YUGOS.	1 coin m. = 5 DIN 2 coin m. = 10 DIN	1x5 DIN = 1 Pl. 1x10 DIN = 2 Pl.	01	01	02	02	02	02	x 5 DIN
		2x5 DIN = 1 Pl. 1x10 DIN = 1 Pl.	01	00	02	01	02	01	x 5 DIN
SWITZERL.	1 coin m. = 1 FS 2 coin m. = 2 FS	1x1 FS = 2 Pl. 1x2 FS = 5 Pl. 5 FS = 14 Pl.	01	02	02	05	05	14	x 1 FS
		1x1 FS = 1 Pl. 1x2 FS = 3 Pl. 5 FS = 7 Pl.	01	01	02	03	05	07	X 1 FS

FIG.1

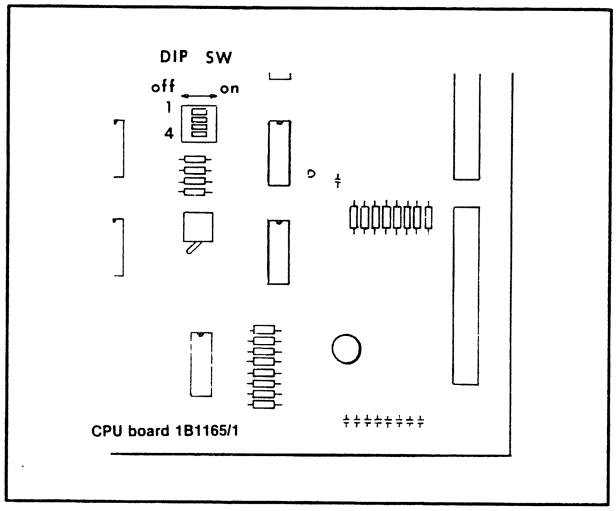
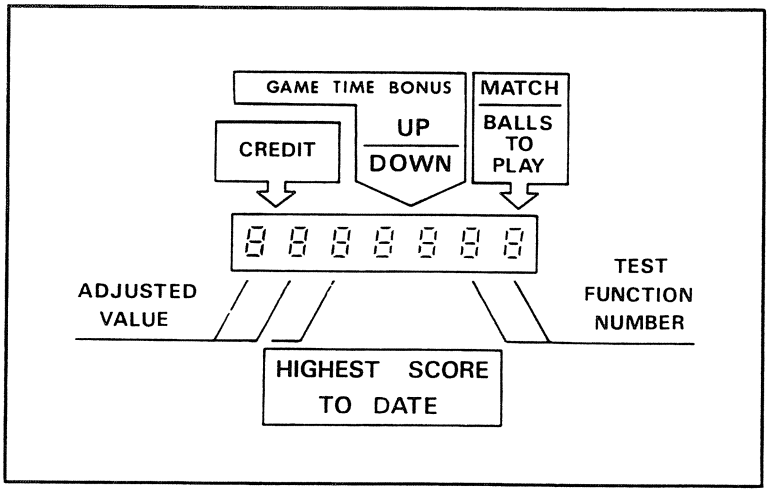
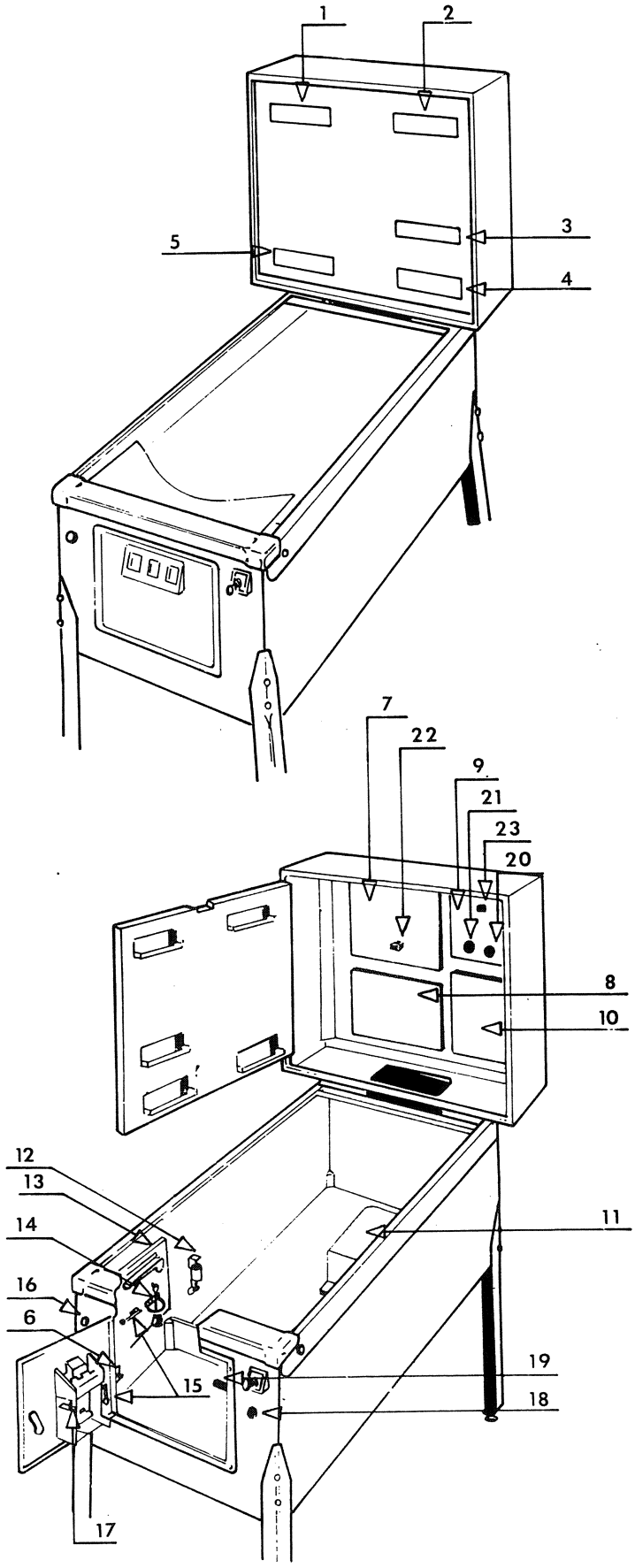

DIP SW
off
on
1
4
CPU board 1B1165/1

FIG.2


GAME TIME BONUS
MATCH
BALLS TO PLAY
CREDIT
UP
DOWN
ADJUSTED VALUE
TEST FUNCTION NUMBER
HIGHEST SCORE TO DATE



1 - 1st player display
Highest score display

2 - 2nd player display

3 - Credit display
Display ball to play
Match
Game time bonus

4 - 4th player display

5 - 3rd player display

6 - Service button

7 - C.P.U. board

8 - Interface board

9 - Sound board

10 - Power board

11 - Transformer

12 - Knocker

13 - Roll ball tilt

14 - Bob tilt

15 - Antichoc tilt

16 - Credit button

17 - Advance & Return test

18 - Head phone jack

19 - General vol.

20 - Maximum speach vol.

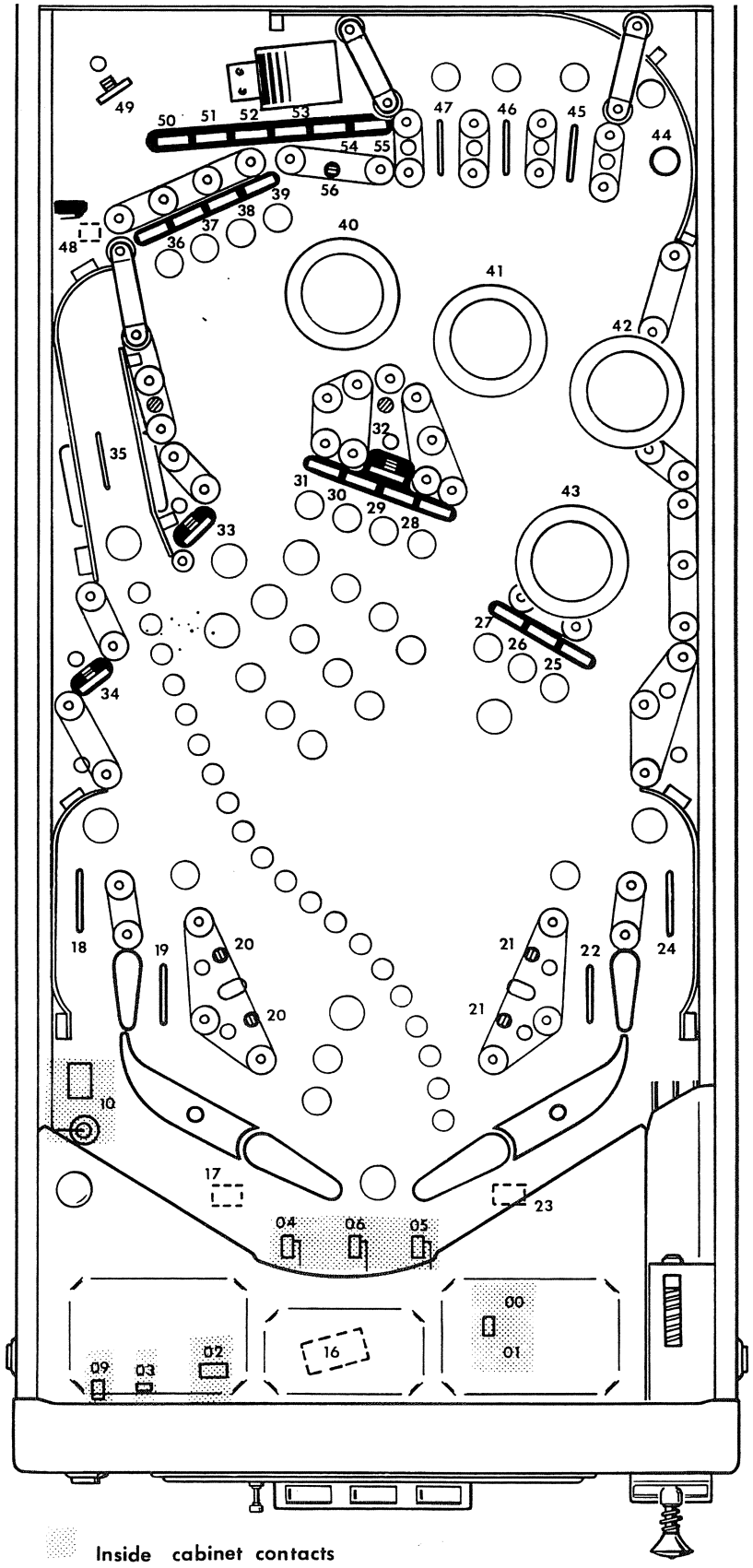
21 - Maximum sound vol.

22 - Dip SWS

23 - Sound self-test button

FIG. 4

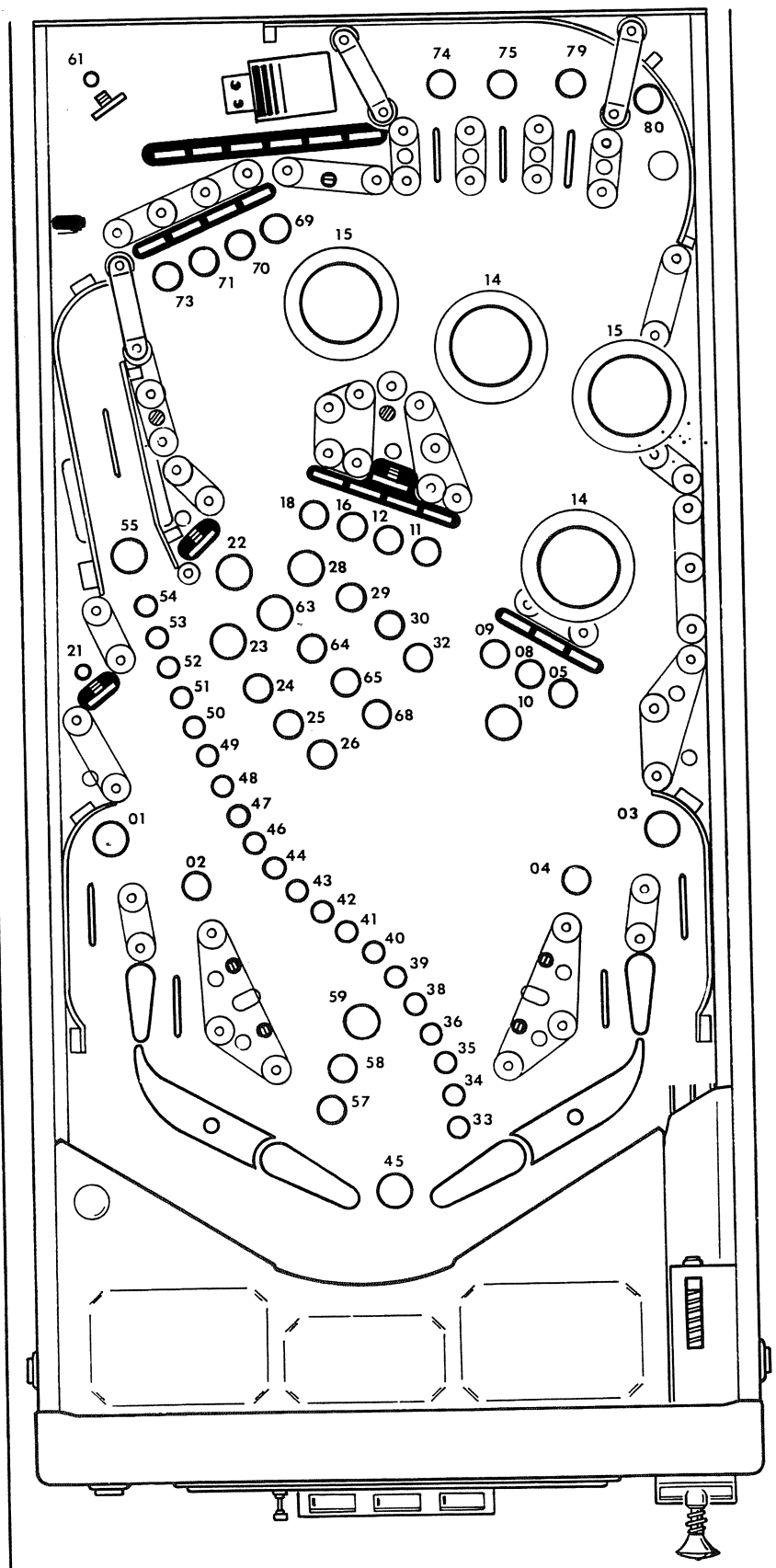
Contact arrangement



Inside cabinet contacts

Contact Number	Description
00	Advancement test
01	Return test
02	Tilt 2
03	Credit Service
04	Coin Switch 1
05	Coin Switch 2
06	Coin Switch 3
07	—
08	—
09	Credit
10	Tilt
11	Factory burn test
12	—
13	—
14	—
15	Printer contact
16	Out hole
17	Left flipper
18	Left outer exit canal
19	Left innex canal
20	Left flap
21	Right flap
22	Right innex canal
23	Right flipper
24	Right outer exit canal
25	1st moving target right bank
26	2nd moving target right bank
27	3rd moving target right bank
28	1sd moving target central bank
29	2nd moving target central bank
30	3rd moving target central bank
31	4th moving target central bank
32	Central mowing up ward on
33	Fixed special red target
34	Left moving up ward on
35	Moving up ward canal
36	1st moving target left bank
37	2nd moving target left bank
38	3rd moving target left bank
39	4th moving target left bank
40	Left pop
41	Central pop
42	Top right pop
43	Botton right pop
44	1st top canal
45	2nd top canal
46	3rd top canal
47	4th top canal
48	Top flipper up ward on
49	Top special
50	1st moving target top bank
51	2nd moving target top banky
52	3rd moving target top bank
53	4th moving target top bank
54	5th moving target top bank
55	6th moving target top bank
56	Top fixed contact

Lamp arrangement

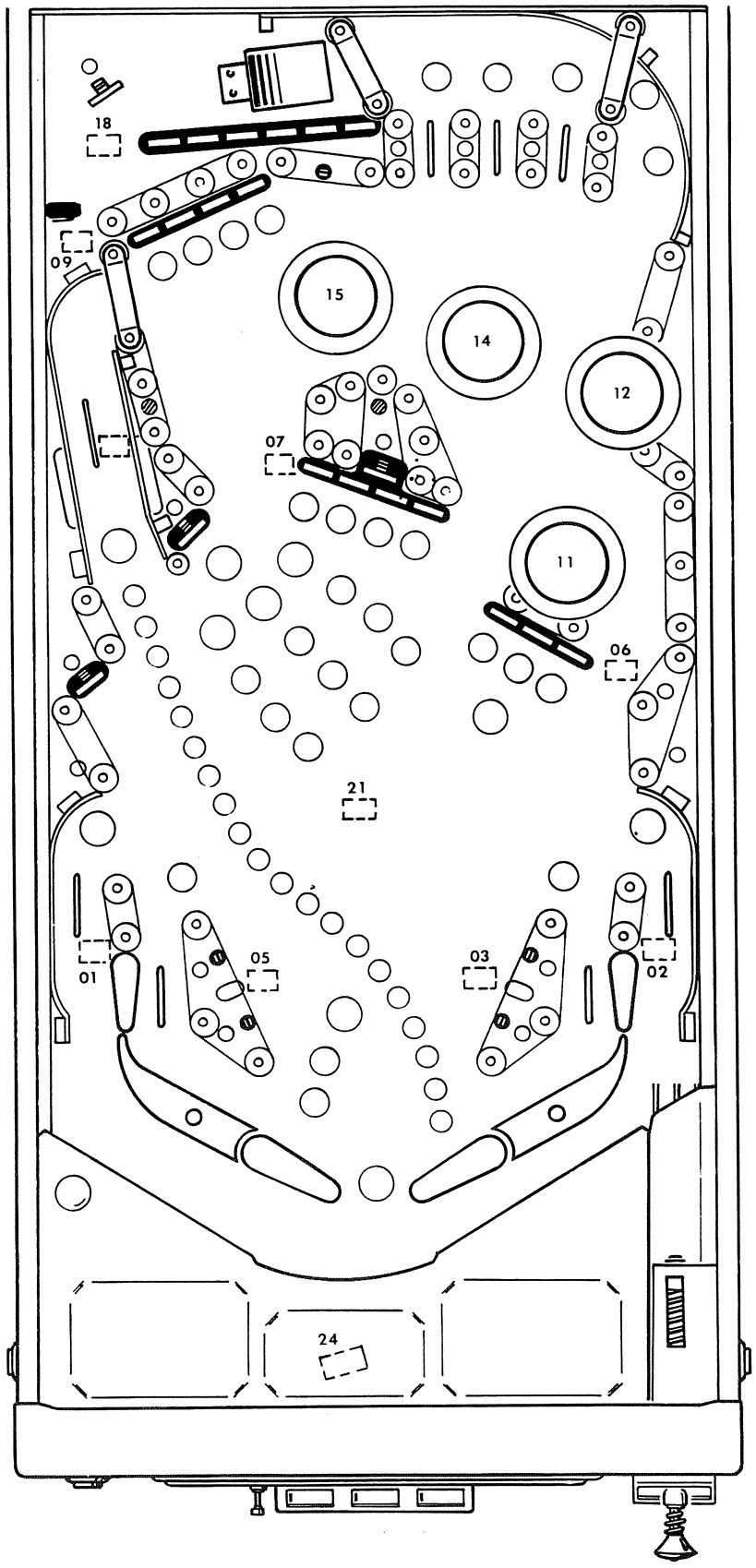


01	Left outer exit canal
02	Left innex canal
03	Right outer exit canal
04	Right innex canal
05	1.000 Pts right bank
+06	Game over
+07	Tilt
08	3.000 Pts right bank
09	5.000 Pts right bank
10	Orange special
11	1.000 Pts central bank
12	3.000 Pts central bank
+13	Match
14	Pop 1
15	Pop2
16	5.000 Pts central bank
+17	Ball to play
18	8.000 Pts central bank
19	Central up ward
+20	Flipper relay
21	Left up ward
22	Multi special
23	Blue special
24	3rd lamp blue special
25	2nd lamp blue special
26	1st lamp blue special
+27	Credit
28	Red special
29	3rd lamp red special
30	2nd lamp red special
+31	Up game time bonus
32	1st lamp red special
33	Bonus 1
34	Bonus 2
35	Bonus 3
36	Bonus 4
38	Bonus 5
39	Bonus 6
40	Bonus 7
41	Bonus 8
42	Bonus 9
43	Bonus 10
44	Bonus 11
+ +45	Bonus ball 1
46	Bonus 12
47	Bonus 13
48	Bonus 14
49	Bonus 15
50	Bonus 16
51	Bonus 17
52	Bonus 18
53	Bonus 19
54	Bonus 20
55	Special bonus
+56	Super Bonus
57	Bonus multiplier × 5
58	Bonus multiplier × 10
59	Bonus multiplier × 20
+60	Can play 1
61	Top special
+62	Can play 2
63	Yellow special
64	3rd lamp yellow special
65	2nd lamp yellow special
+66	Can play 3
+67	Can play 4
68	1st lamp yellow special
69	1.000 Pts left bank
70	3.000 Pts left bank
71	5.000 Pts left bank
+72	Down game time bonus
73	8.000 Pts left bank
74	"L" top canal
75	"O" top canal
+76	Bonus ball 2
+77	Highest score
+78	Bonus ball 3
79	"V" top canal
80	"E" top canal

+ : head lamps
+ + : head and playfield lamps

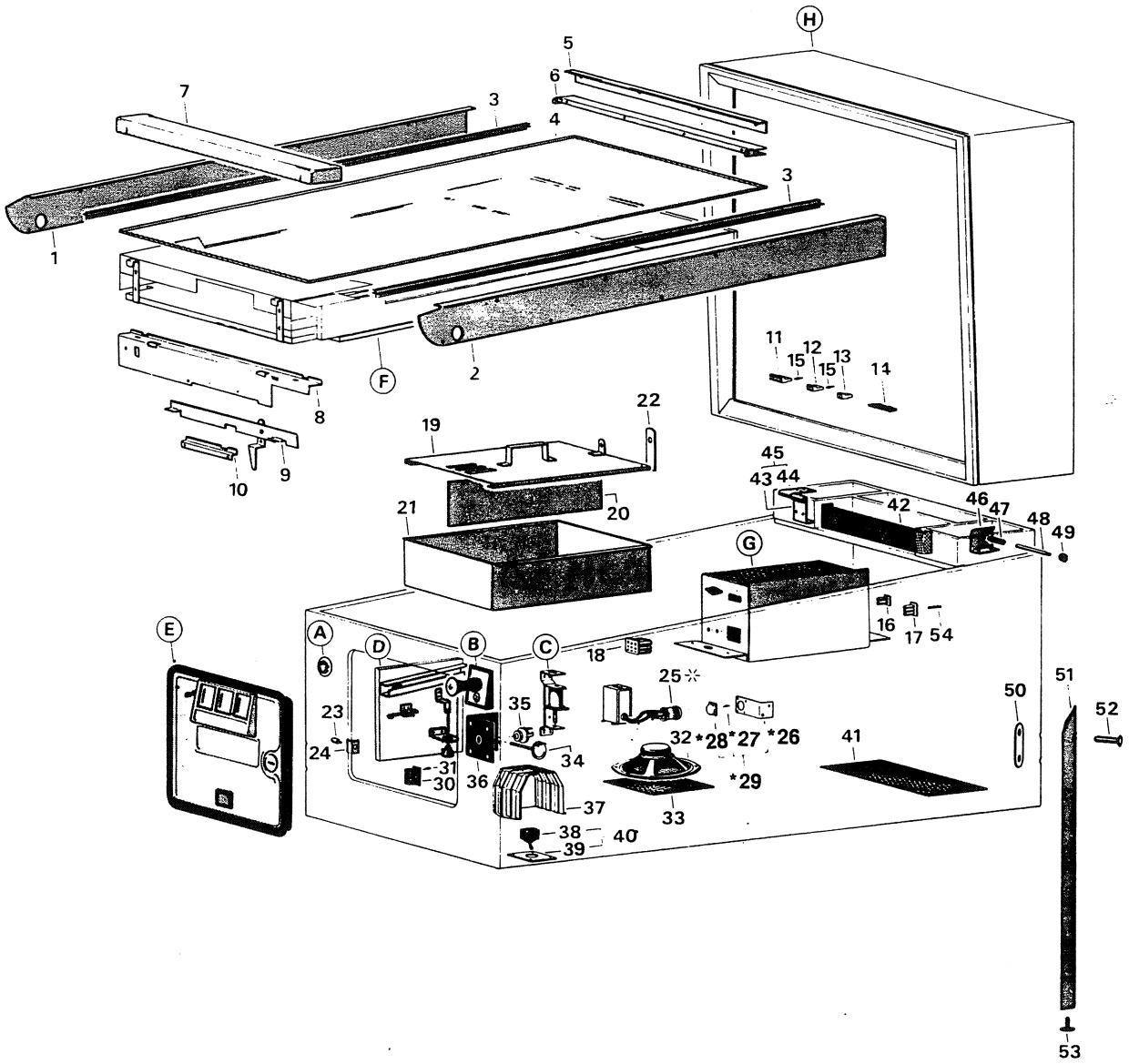
FIG. 6

Solenoid arrangement



Sol n°	Description
01	Left kicker flipper
02	Right kicker flipper
03	Right flap
04	Knocker
05	Left flap
06	Right bank
07	Central bank
08	Coin mechanism coil
09	Left bank
10	—
11	Botton right pop
12	Top right pop
13	—
14	Central pop
15	Left pop
16	—
17	—
18	Top bank
19	—
20	—
21	Flipper relay
22	Moving up ward
23	—
24	Out hole

TAV. I



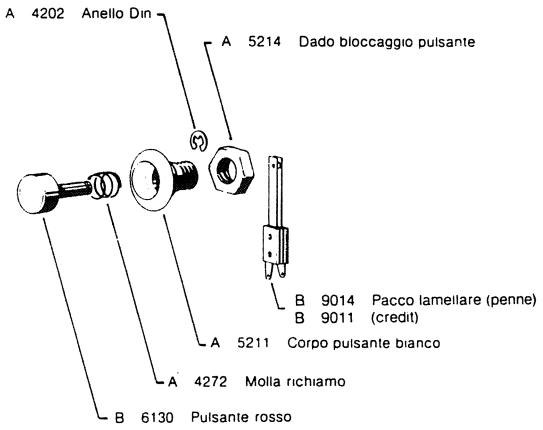
1	A 7219	Sponda sinistra
2	A 7218	Sponda destra
3	A 7039	Guida vetro
4	MV 015	Vetro del piano di gioco
5	A 7073	Angolare vetro
6	A 7074	Colletto cassone
7	B 7090	Poggiamano
8	B 7085	Aggancio poggiamano
9	B 7044	Leva aggancio poggiamano
10	A 7099	Squadretta fissaggio leva
11	CE 1986	Connettore 7 vie arancio (femmina)
12	CE 1989	Connettore 3 vie giallo (femmina)
13	CE 1988	Connettore 2 vie giallo (femmina)
14	CE 1984	Connettore 20 vie nero (femmina)
15	GE 1993	Chiave di polarizzazione 640630-1
16	CE 1808	Connettore 2 vie AMP volante
17	CE 1764	Connettore 3 vie AMP volante
18	CE 1765	Connettore 9 vie AMP volante
19	B 7217	Coperchio cassetta monete
20	A 7272	Divisorio cassetta monete
21	B 7216	Cassetta monete
22	A 6018	Squadretta fissaggio cassetta monete
23	CE 3002	Pulsante a saldare 9633 - 9433
24	A 5317	Squadretta a «L» porta pulsante credit
*25	CEB 145	Contatore «Valore» delle monete
*26	A 7174	Squadretta porta connettore
*27	CE 1325	Contatto femmina
*28	CE 1326	Connettore per stampante UTG porta femmina
*29	B 7173	Connettore per stampante montato e cablato
30	CE 1339	Connettore femmna 2 x 8 MODU 2
31	CE 1340	Contatto femmina MODU 2
32	CE 2018	Altoparlante 7W 4 Ω
33	A 7150	Rete protezione altoparlante
34	CE 1753	Potenziometro 100 Ω
35	CE 3082	Jack cuffia
36	A 7406	Staffa supporto potenziometro e Jack
37	A 7217	Protezione interruttore
38	A 4425	Interruttore
39	A 5112	Piastrina porta interruttore
40	B 7172	Interruttore montato
41	A 7398	Lamiera forata 320 x 160
42	A 7176	Rete protezione colletto cassone
43	B 7140	Cerniera maschio con perno
44	A 7155	Cerniera corta
45	B 7171	Completo cerniera
46	A 6256	Squadretta guida asta aggancio automatico
47	A 6258	Molla aggancio automatico
48	A 6257	Asta aggancio automatico
49	A 6220	Manopola zigrinata 5 MA
50	A 6106	Piastrina fissaggio bulloni
51	E 003	Gamba flipper
52	A 7047	Bullone
53	B 7045	Piedino
54	CE 1966	Contatto AMP maschio

*OPTIONAL

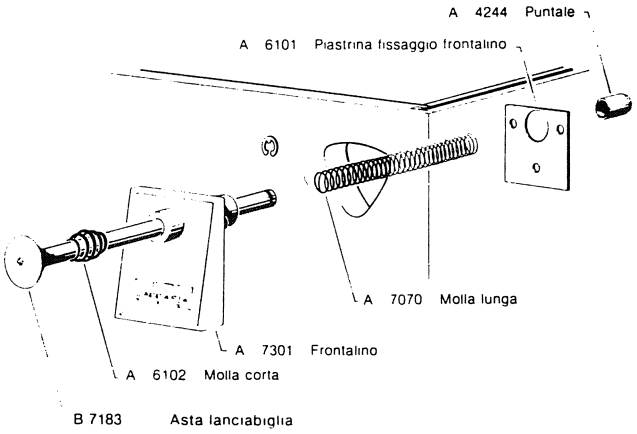
A	Vedi:	TAV. II	pag. 5
B	Vedi:	TAV. II	pag. 5
C	Vedi:	TAV. II	pag. 5
D	Vedi:	TAV. II	pag. 5
E	Vedi:	TAV. III	pag. 6-7
F	Vedi:	TAV. IV	pag. 8-9
G	Vedi:	TAV. XIII	pag. 18
H	Vedi:	TAV. XIV	pag. 19

TAV. II

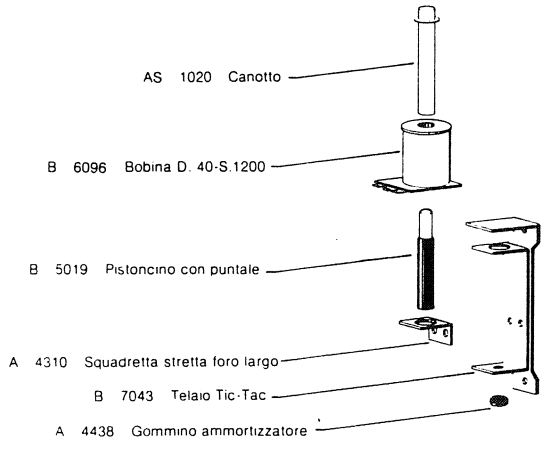
A PULSANTE



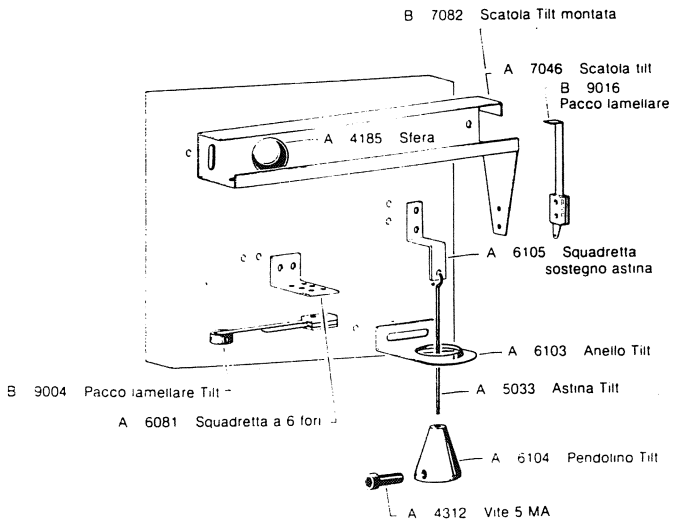
B C 8004 LANCIABIGLIA



C C 8091 TIC-TAC

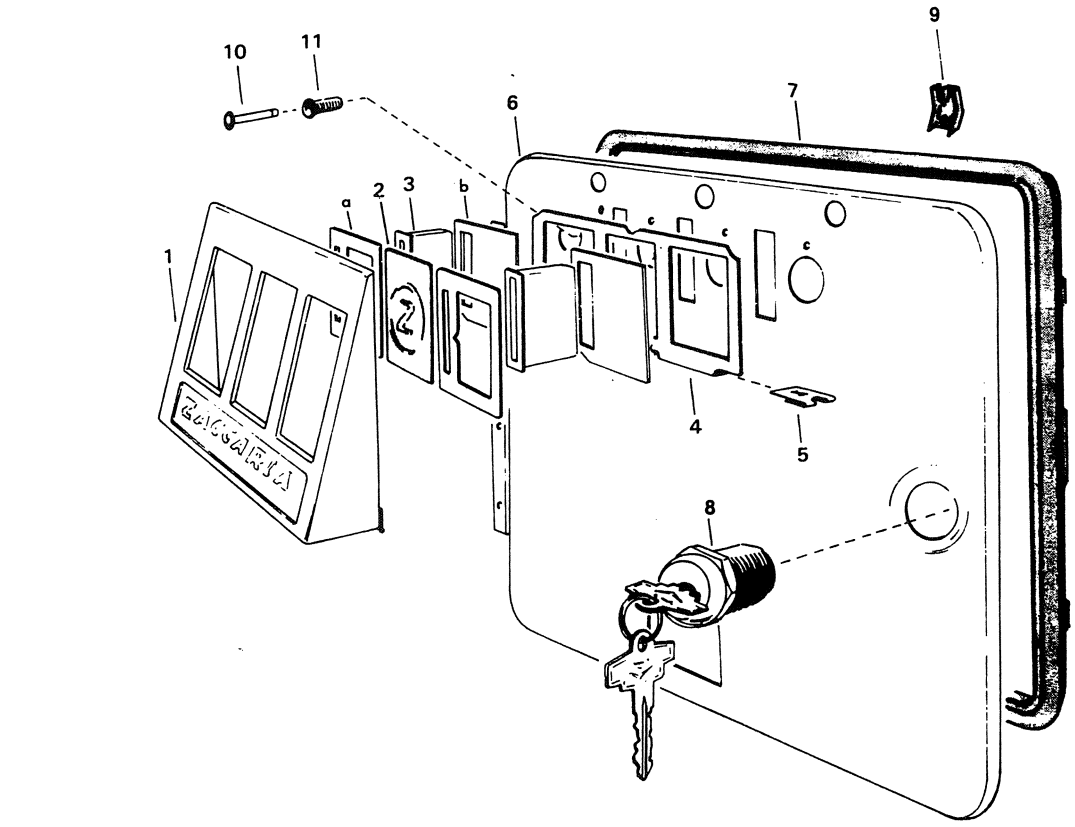


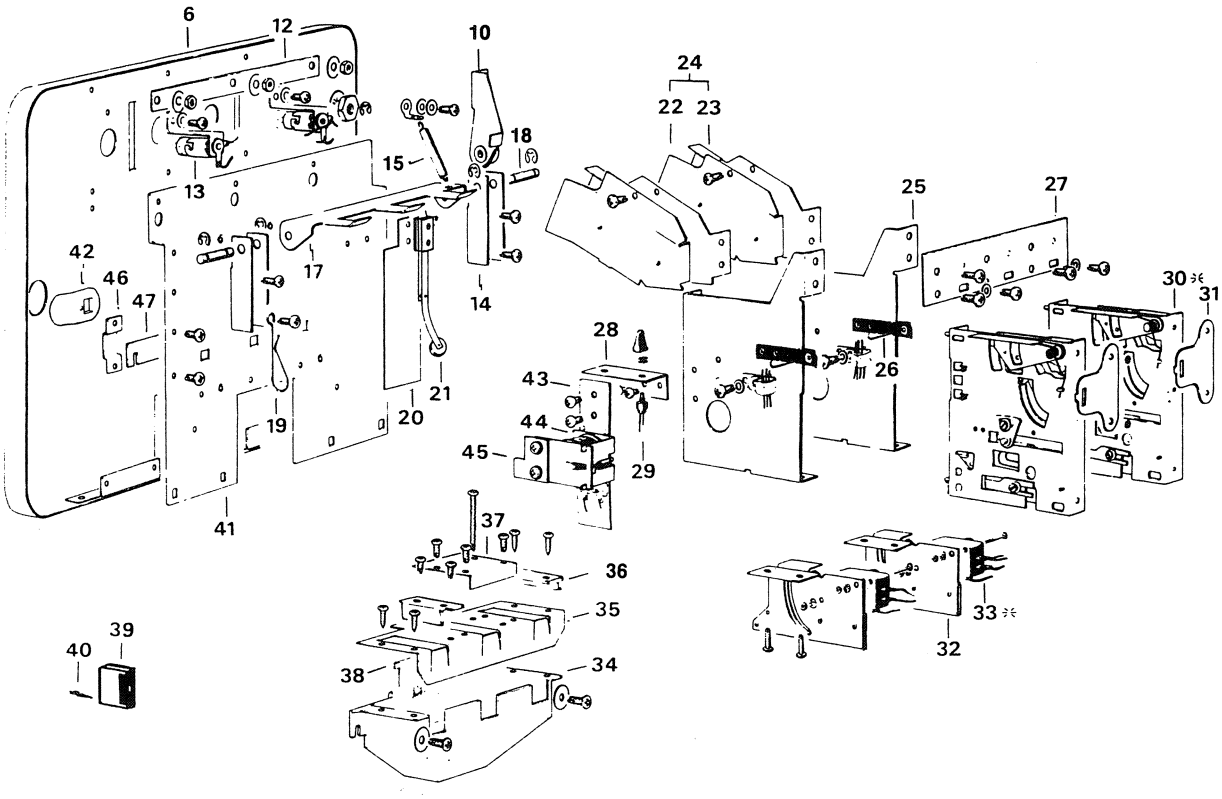
D C 8006 TAVOLETTA TILT



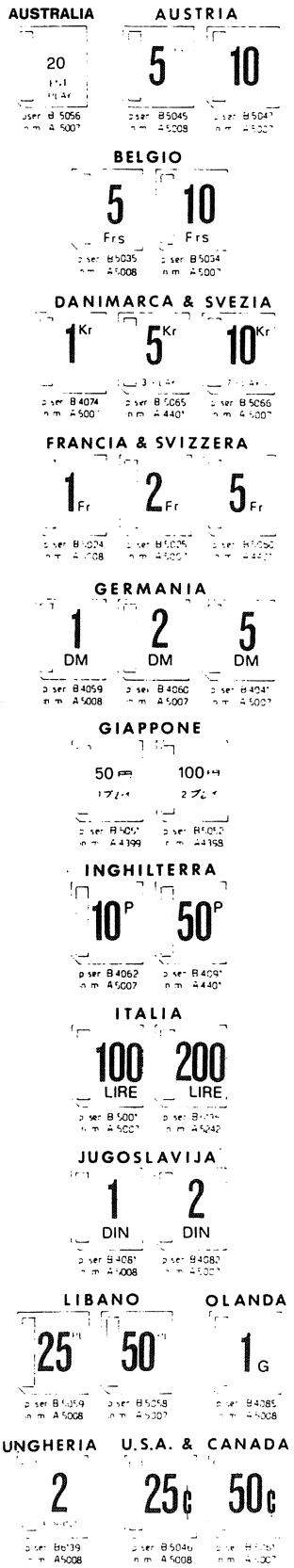
E

C 8140 SPORTELLO PORTA GETTONIERE





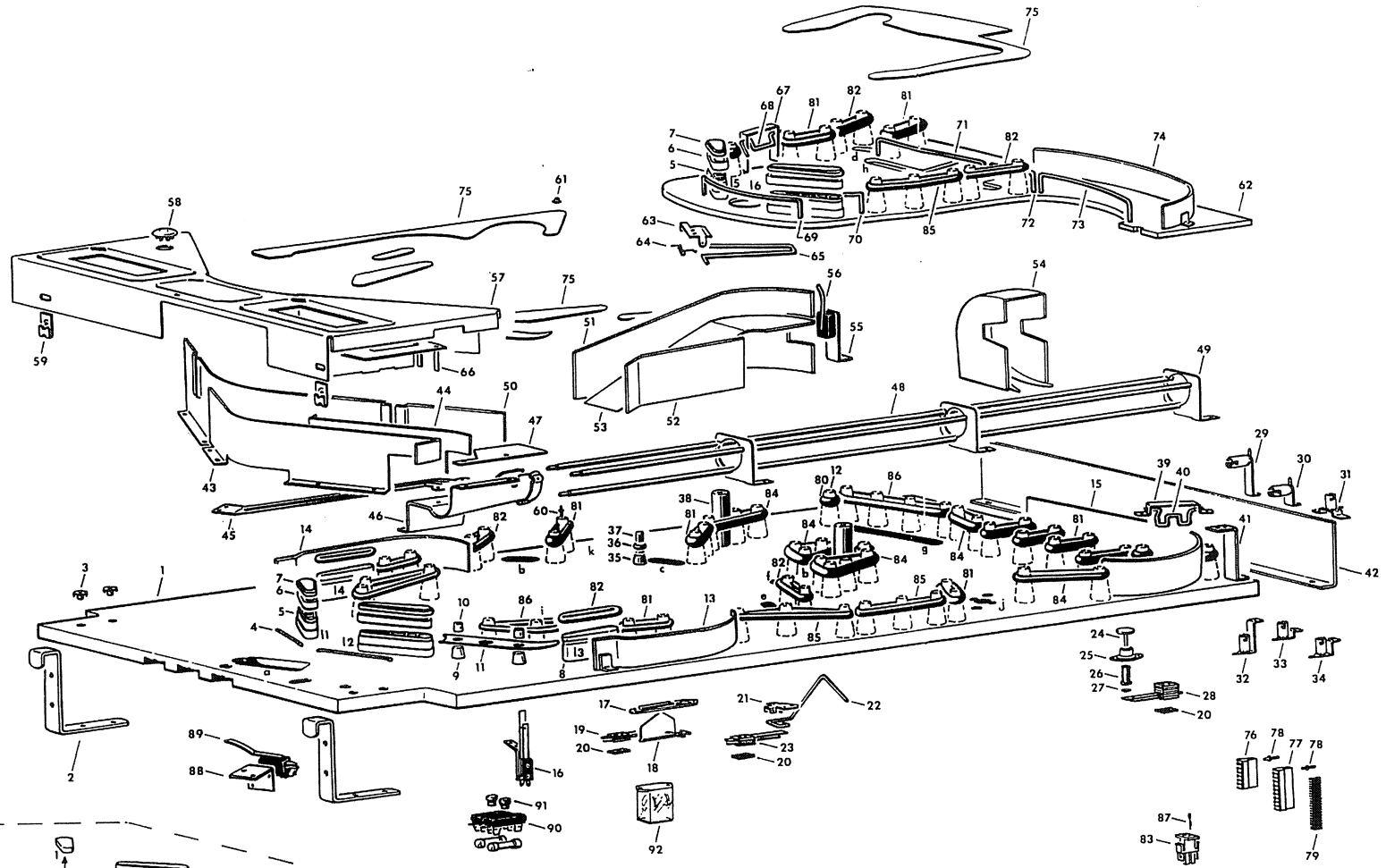
EL. COMP. TAV. III

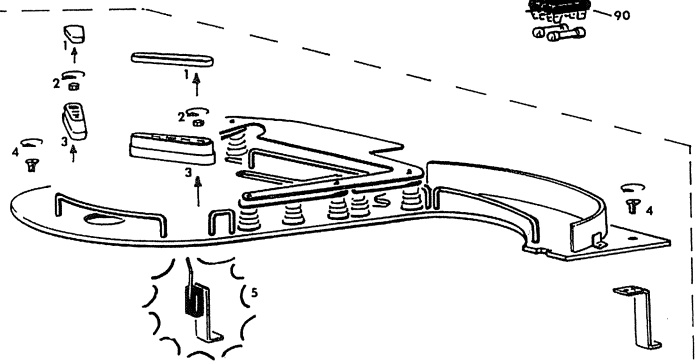


a = introduzione moneta (in m.)
b = introduzione serigrafata (p.ser.)

1	ASB 116	Frontalino sportello con cerniera
2	A 5009	Piastrina con marchio
3	A 6008	Guida moneta in plastica
4	A 7005	Componente fissaggio accessori
5	A 4383	Piastrina semidoppia
6	B 7194	Sportello con cerniera
7	A 7236	Cornice in alluminio pressofuso
8	B 7196	Serratura
9	A 4460	Staffa fissaggio cornice
10	A 4031	Pulsante scarto moneta
11	A 4032	Componente per pulsante
12	A 5006	Asta per frontalino
13	B 5029	Porta lampada alto sportello
14	A 6001	Cavallotto sportello
15	A 5201	Molla richiamo leva di scarto
16	B 6001	Leva con boccola
17	A 6002	Leva di scarto gettoniera
18	A 4005	Perno per cavallotto sportello
19	A 5021	Ferretto porta chiave sportello
20	A 5205	Cartoncino isolatore sportello
21	B 9015	Pacco lamellare tilt
22	A 7009	Scorrimonete maschio
23	A 7008	Sorrimonete femmina
24	B 6076	Scorrimonete assemblato
25	B 7006	Supporto gettoniera
26	A 5252	Forcellina fissaggio gettoniera
27	A 5014	Piastrina accoppiamento supporti
28	A 5206	Squadretta porta pulsanti
29	CE 3085	Deviatore con ritorno
30	*B 7084	Gettoniera L. 100
	B 7175	Gettoniera L. 200
	B 7092	Gettoniera 25 C
	B 7096	Gettoniera 5 F
	B 7097	Gettoniera 10 F
	B 7098	Gettoniera 5 P
	B 7099	Gettoniera 10 P
	B 7147	Gettoniera 50 P
	B 7111	Gettoniera 0,50 pfg
	B 7112	Gettoniera 1 DM
	B 7113	Gettoniera 2 DM
	B 7114	Gettoniera 5 DM
	B 7128	Gettoniera 1 FS
	B 7129	Gettoniera 2 FS
	B 7148	Gettoniera 10 Fr Belgi
	B 7233	Gettoniera 5 Dinari
	B 7234	Gettoniera 10 Dinari
31	A 5114	Piastrina fissaggio gettoniera
32	B 6109	Piastra porta micro
33	*B 5053	Micro nero
	B 5054	Micro rosso
	B 5055	Micro bianco
34	B 7300	Raccoglitore in lega
35	A 6009	Copertura per raccoglitore monete
36	A 7279	Squadretta unidirezionale antifrode
37	A 5010	Squadretta a 4 fori
38	A 5011	Cancelletto
39	CE 1338	Connettore maschio 2×8 vie MODU 2
40	CE 1348	Contatto maschio MODU 2
41	A 7002	Piastra supporto gettoniere
42	A 4328	Leva per serratura sportello anteriore
43	B 7143	Alloggiamento bobina
44	B 6101	Bobina D. 12-S. 6.000 con nucleo
45	B 7144	Piastrina con componente in ottone
46	A 5002	Fermo barra arresto moneta
47	A 5001	Barra arresti moneta

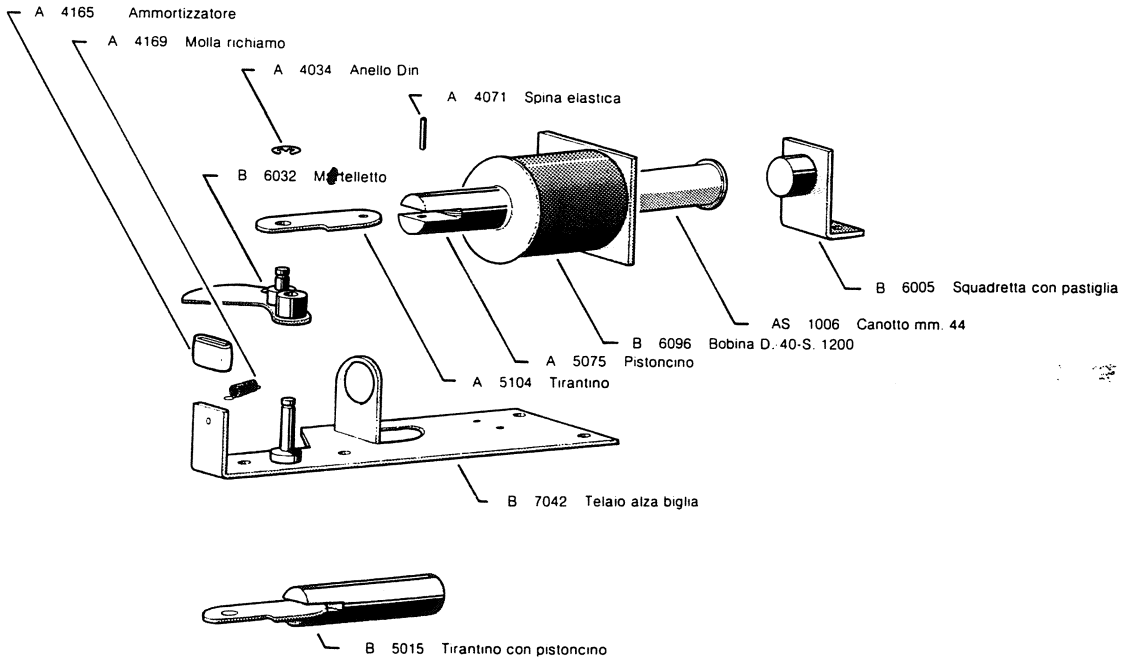
F PIANO DI GIOCO « FARFALLA »





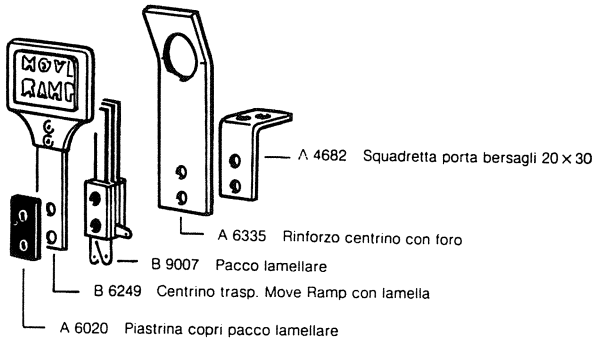
1	MRB 687	Piano di gioco "sergrafato mod. "Farfalla
2	A 7364	Supporto alto per piano di gioco
3	A 4386	Dado sicurit ∅M4
4	A 4368	Ferretto basso mm. 80
5	AS 1079	Corpo penna smontabile rosso
6	A 4245	Fascetta flipper
7	AS 1080	Coperchio penna flipper rosso
8	B 7362	Penna smontabile piccola perno mm. 62
9	A 5194	Colonnetta spaccata base rossa
10	A 5195	Colonnetta spaccata coperchio rossa
11	A 6274	Piastrina recupero pallina
12	AS 1200	Colonnetta mm. 27 color arancio
13	XB 066	Guida pallina canale bassa destro
14	XB 065	Guida pallina canale basso sinistro
15	XB 068	Guida pallina canale alto
16	B 9019	Pacco lamellare flap
17	AS 1042	Basetta in plastica grande
18	AS 1035	Passaggio grande
19	B 9008	Pacco lamellare passaggi
20	A 6020	Piastrina copri pacco lamellare
21	A 6084	Farfalla passaggio sinistro
22	A 6268	Ferretto per farfalla sinistra
23	B 9010	Pacco lamellare buca bassa
24	A 5066	Pulsante a stella rosso
25	A 5199	Basetta per pulsante
26	A 5233	Inserto di regolazione in ottone
27	A 4260	Quiclok
28	B 9009	Pacco lamellare per pulsante a stella
29	B 6045	Portalampada alto
30	B 6222	Portalampada piatto alto mm. 15
31	B 6177	Portalampada piano bingo
32	B 6045	Portalampada alto
33	B 6043	Portalampada basso
34	B 6044	Portalampada medio
35	A 4533	Componente minipost
36	A 4537	Gommino minipost
37	A 4570	Minipost mm. 51
38	A 7551	Boccola prolungamento penna gruppo flipper farfalla
39	X 037	Ponticello mm. 48
40	X 035	Ferretto unidirezionale mm. 48
41	A 4574	Staffa a "Z" supporto piano rialzato e isola
42	A 7480	Angolare rinforzo piano di gioco
43	A 7359	Guida pallina lunga alta
44	A 7360	Guida pallina corta alta
45	A 7363	Binario pallina alto
46	B 7293	Staffa raccoglitore pallina P.C.
47	A 6319	Copertura lancia biglia
48	A 7550	Traflia lancio mm. 747
49	A 6269	Supporto trafila a 90°
50	A 7361	Angolare rialzo carter
51	B 7361	Guida pallina sinistro rampa mobile
52	B 7363	Guida pallina destra rampa mobile
53	B 7364	Supporto con molla rivettata rampa mobile
54	B 7288	Canale risalita pallina assemblato
55	A 5347	Squadretta supporto microinterruttore ponticello
56	B 6185	Microinterruttore E51-60-B-R
57	MRB 684	Carter serigrafato farfalla
58	A 4362	Spia rossa
59	A 4343	Piastrina semidoppia fissaggio carter
60	A 7055	Vite portalsole legno (A 7063 vite portalsole ∅M4)
61	A 4279	Coperchiotto isole
62	MRB 685	Piano rialzato in plexiglas serigrafato farfalla
63	A 1723	Supporto ferretto discesa pallina piegato 90°
64	A 4564	Molla a torsione richiamo ferretto discesa pallina
65	A 4562	Ferretto discesa pallina
66	MRB 688	Graduatore serigrafato farfalla
67	A 4619	Ponticello supporto ferretto
68	X 105	Ferretto sinistro comando micro
69	X 108	Ferretto filettato 3MA mm. 134 farfalla
70	X 109	Ferretto filettato 3MA mm. 37 piegato
71	X 107	Ferretto filettato 4MA mm. 164
72	X 106	Ferretto filettato 3MA mm. 45
73	X 110	Ferretto filettato 3MA mm. 174 piegato
74	XB 067	Guida pallina plexiglass "farfalla"
75	MRB 686	Isole piane "farfalla"
76	CE 1986	Connettore 7 vie AVG femmina, arancio
77	CE 1991	Connettore 10 vie AVG femmina, giallo
78	CE 1993	Chiavetta di polarizzazione
79	CE 1984	Connettore 20 vie AVG femmina, nero
80	A 4246	Gommino n° 0
81	A 4248	Gommino n° 1
82	A 4250	Gommino n° 2
83	CE 1808	Connettore 2 vie AMP volante
84	A 4252	Gommino n° 4
85	A 4253	Gommino n° 5
86	A 4254	Gommino n° 7
87	CE 1966	Contatto AMP maschio
88	A 5298	Supporto micro della buca finale
89	B 6164	Micro interruttore della buca finale
90	B 7054	Portafusibile
91	A 4068	Gommino per minipost
92	CEC 005	Relay PR 41B 0048

Fa C 8050 ALZA BIGLIA



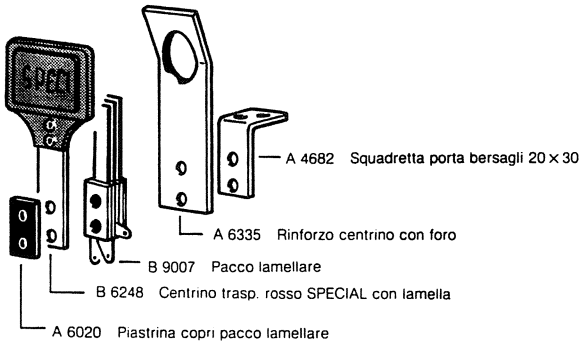
Fb

C 8363 CENTRINO TRASP. MOVE RAMP ASS.



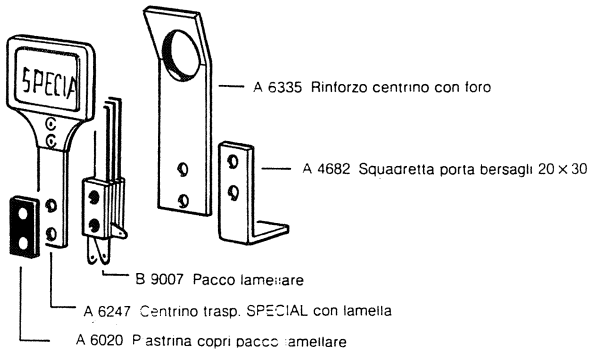
Fc

C 8362 CENTRINO TRASP. ROSSO SPECIAL ASS.



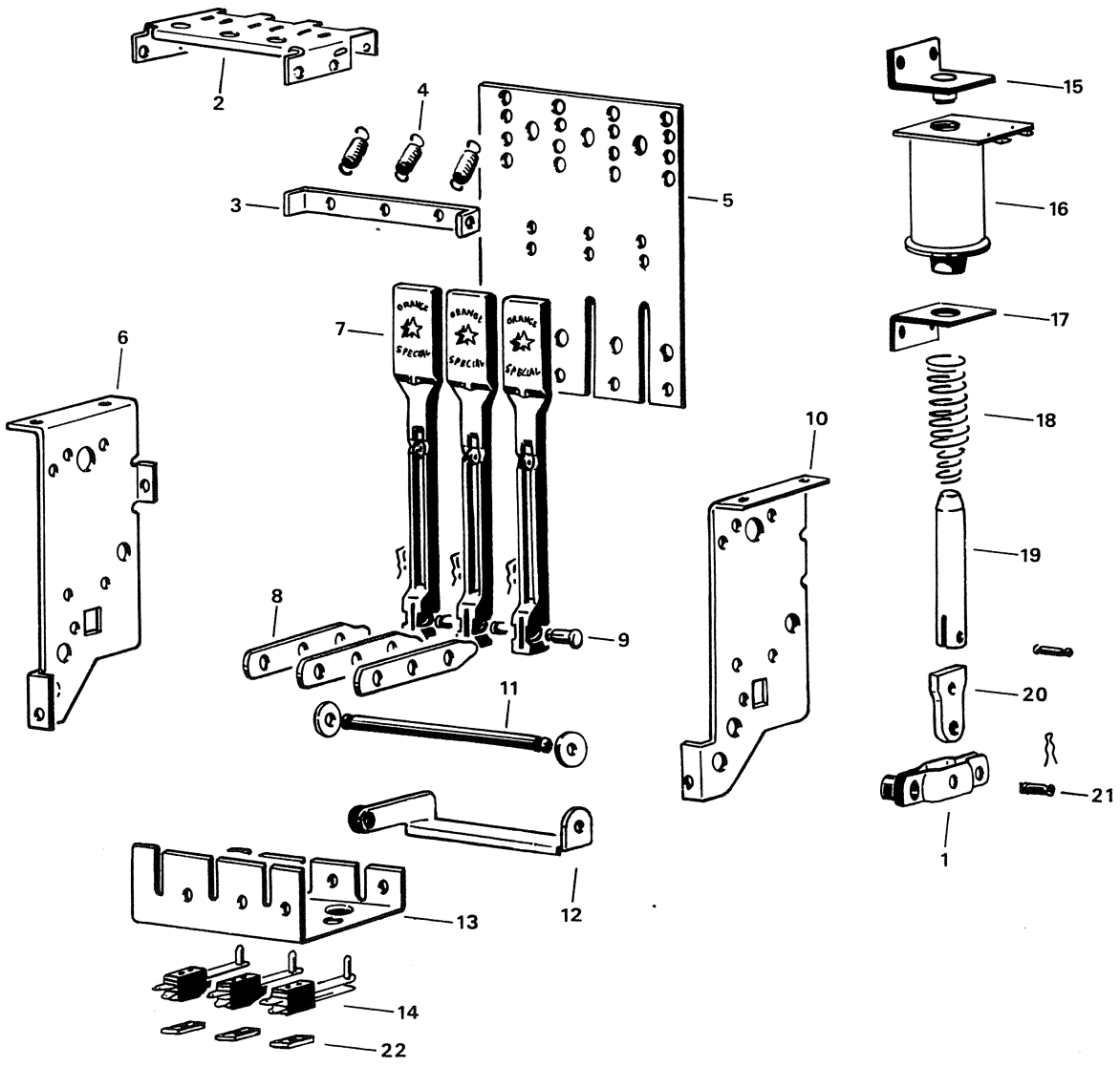
Fd

C 8361 CENTRINO TRASP. SPECIAL ALTO ASS.



TAV. VI

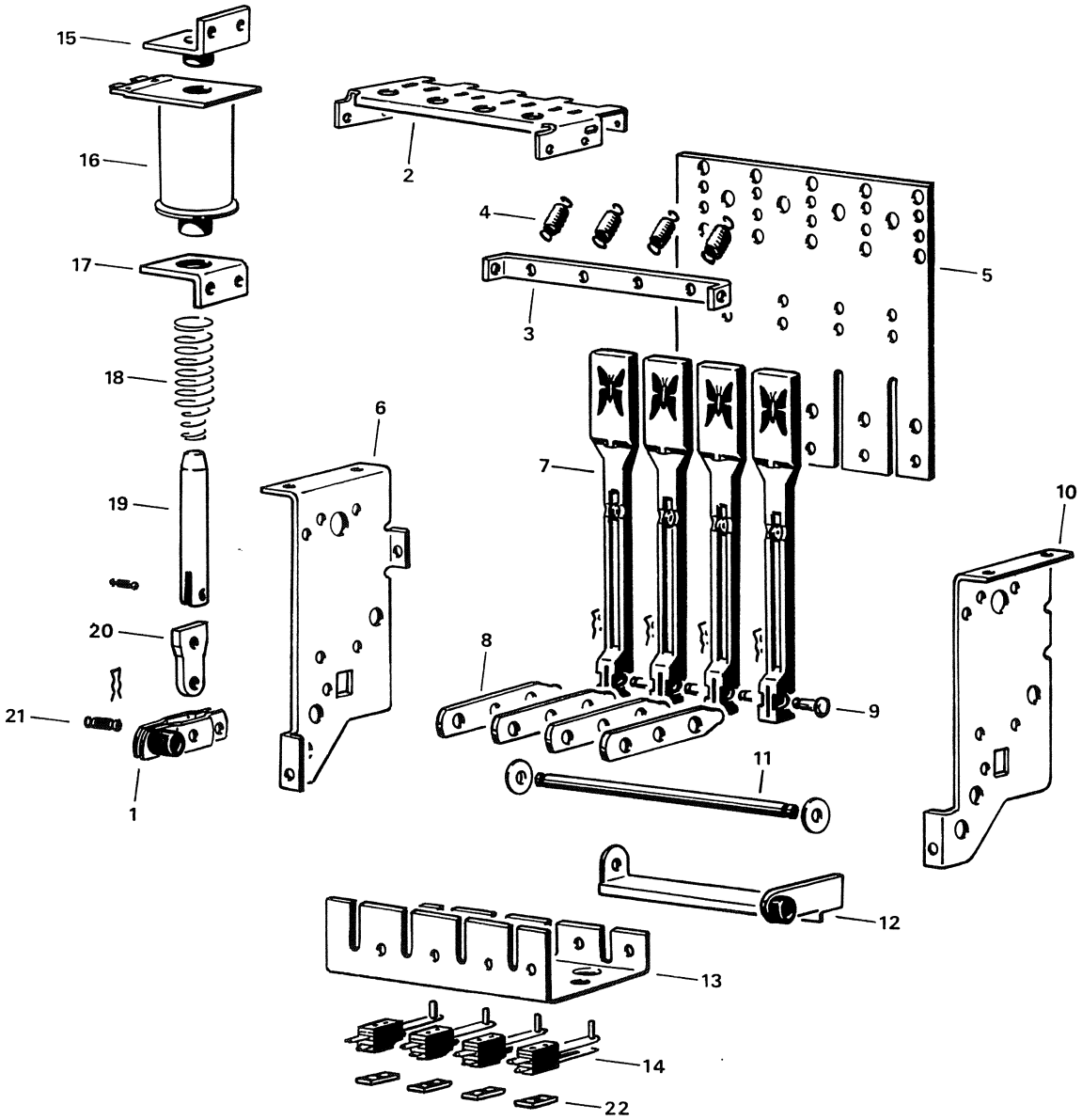
Fe C 8357 BANCO BERSAGLI A TRE POSIZIONI "SPECIAL" FLIPPER "FARFALLA"



1	B 6123	Piastrine con boccola
2	SP 2145	Staffa ancoraggio
3	SP 2140	Trave per aggancio molle
4	A 6249	Molla a trazione
5	SP 2143	Piastra guida leve
6	A 6177	Staffa laterale sinistra
7	MRB 689	Bersaglio arancio serigrafato "orange special"
8	SP 2102	Levetta comando bersagli
9	A 6185	Perno fissaggio leva
10	A 6178	Staffa laterale destra
11	SP 2144	Alberino fulcro leve
12	BSP 019	Trave di collegamento destro
13	SP 2142	Staffa fine corsa
14	B 9006	Pacco lamellare
15	B 6121	Squadretta con pastiglia
16	B 6112	Bobina D.50 - S.1600
17	A 6179	Squadretta foro grande
18	A 6110	Molla richiamo
19	A 6188	Pistoncino
20	A 6184	Tirantino
21	A 6187	Perno
22	A 6020	Piastrina copri pacco lamellare

TAV VII

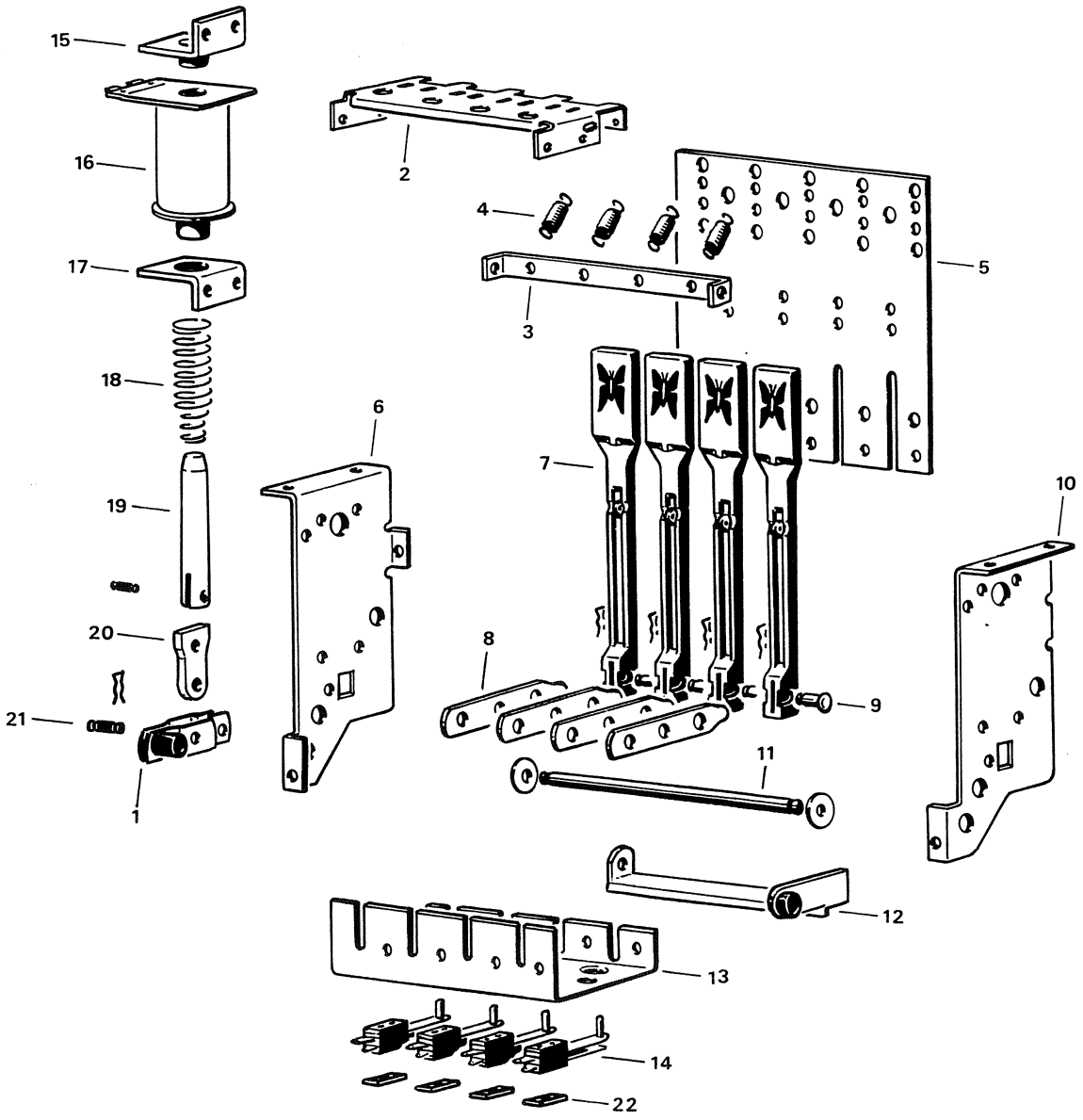
Ff C 8358 BANCO BERSAGLI A 4 POSIZIONI "CENTRALE"



1	B 6123	Piastrine con boccola
2	SP 2152	Staffa ancoraggio 4 fori
3	SP 2133	Trave per aggancio molle
4	A 6249	Molla a trazione
5	SP 2134	Piastra guida leve
6	A 6177	Staffa laterale sinistra
7	MRB 690	Bersaglio azzurro - farfalla
8	SP 2102	Levetta comando bersagli
9	A 6185	Perno fissaggio leva
10	A 6178	Staffa laterale destra
11	SP 2136	Alberino fulcro leve
12	BSP 017	Trave di collegamento sinistro
13	SP 2135	Staffa fine corsa
14	B 9006	Pacco lamellare
15	B 6121	Squadretta con pastiglia
16	B 6112	Bobina D.50 - S.1600
17	A 6179	Squadretta foro grande
18	A 6110	Molla richiamo
19	A 6188	Pistoncino
20	A 6184	Tirantino
21	A 6187	Perno
22	A 6020	Piastrina copri pacco lamellare

TAV. VIII

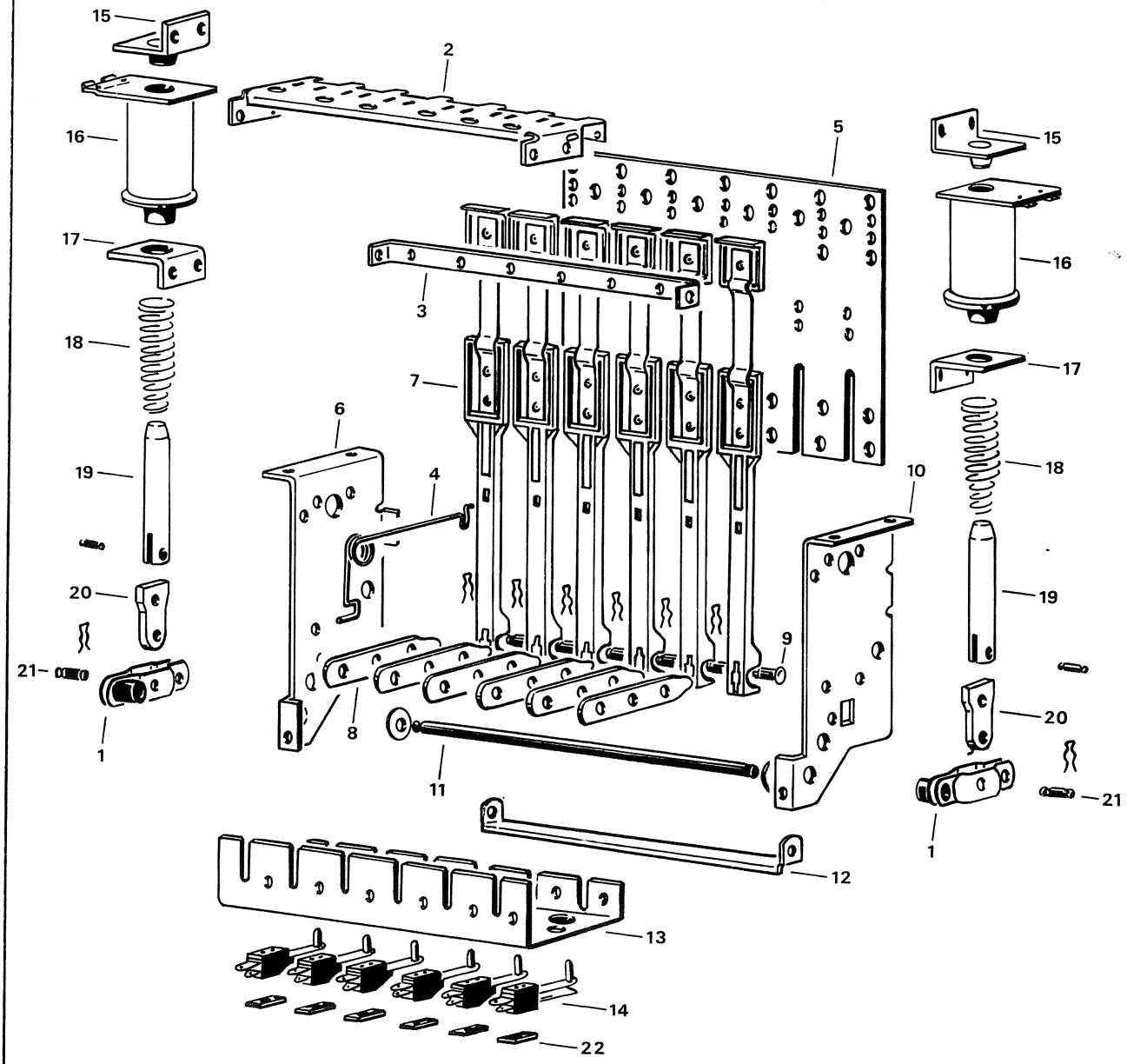
Fg C 8359 BANCO BERSAGLI A 4 POSIZIONI "SINISTRO"



1	B 6123	Piastrine con boccola
2	SP 2152	Staffa ancoraggio 4 fori
3	SP 2133	Trave per aggancio molle
4	A 6249	Molla a trazione
5	SP 2134	Piastra guida leve
6	A 6177	Staffa laterale sinistra
7	MRB 690	Bersaglio azzurro "farfalla
8	SP 2102	Levetta comando bersagli
9	A 6185	Perno fissaggio leva
10	A 6178	Staffa laterale destra
11	SP 2136	Alberino fulcro leve
12	BSP 017	Trave di collegamento sinistro
13	SP 2135	Staffa fine corsa
14	B 9006	Pacco lamellare
15	B 6121	Squadretta con pastiglia
16	B 6112	Bobina D.50 - S.1600
17	A 6179	Squadretta foro grande
18	A 6110	Molla richiamo
19	A 6188	Pistoncino
20	A 6184	Tirantino
21	A 6187	Perno
22	A 6020	Piastrina copri pacco lamellare

TAV. IX

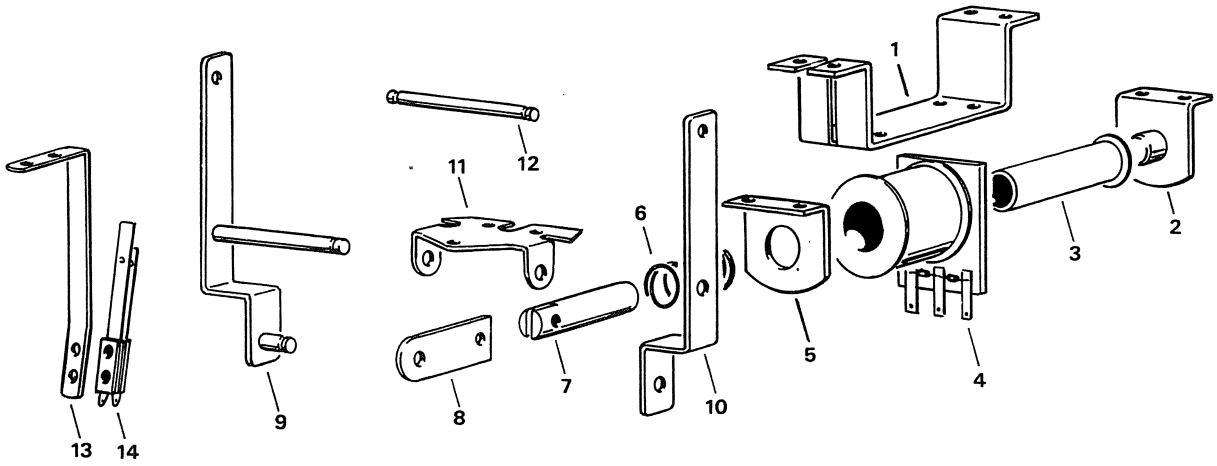
Fh C 8360 BANCO BERSAGLI A 6 POSIZIONI "ALTO"



1	B 6123	Piastrine con boccola
2	SP 2149	Staffa ancoraggio bersaglio a 6 posiz.
3	SP 2150	Trave per aggancio molle girate (nuovo)
4	A 4724	Molla bersaglio girato B.B. a 6
5	SP 2151	Piastra guida leve B.B. girato a 6
6	A 6177	Staffa laterale sinistra
7	MRB 692	Bersaglio giallo alto farfalla
8	SP 2102	Levetta comando bersagli
9	A 6185	Perno fissaggio leva
10	A 6178	Staffa laterale destra
11	SP 2124	Albero fulcro leve
12	SP 2082	Trave di collegamento
13	SP 2118	Staffa fine corsa
14	B 9006	Pacco lamellare
15	B 6112	Squadretta con pastiglia
16	B 6121	Bobina D-50 — S.1600
17	A 6179	Squadretta foro grande
18	A 6110	Molla richiamo
19	A 6188	Pistoncino
20	A 6184	Tirantino
21	A 6187	Perno
22	A 6020	Piastrina copri pacco lamellare

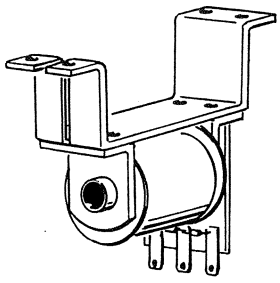
TAV. X

Fk ALZA RAMPA

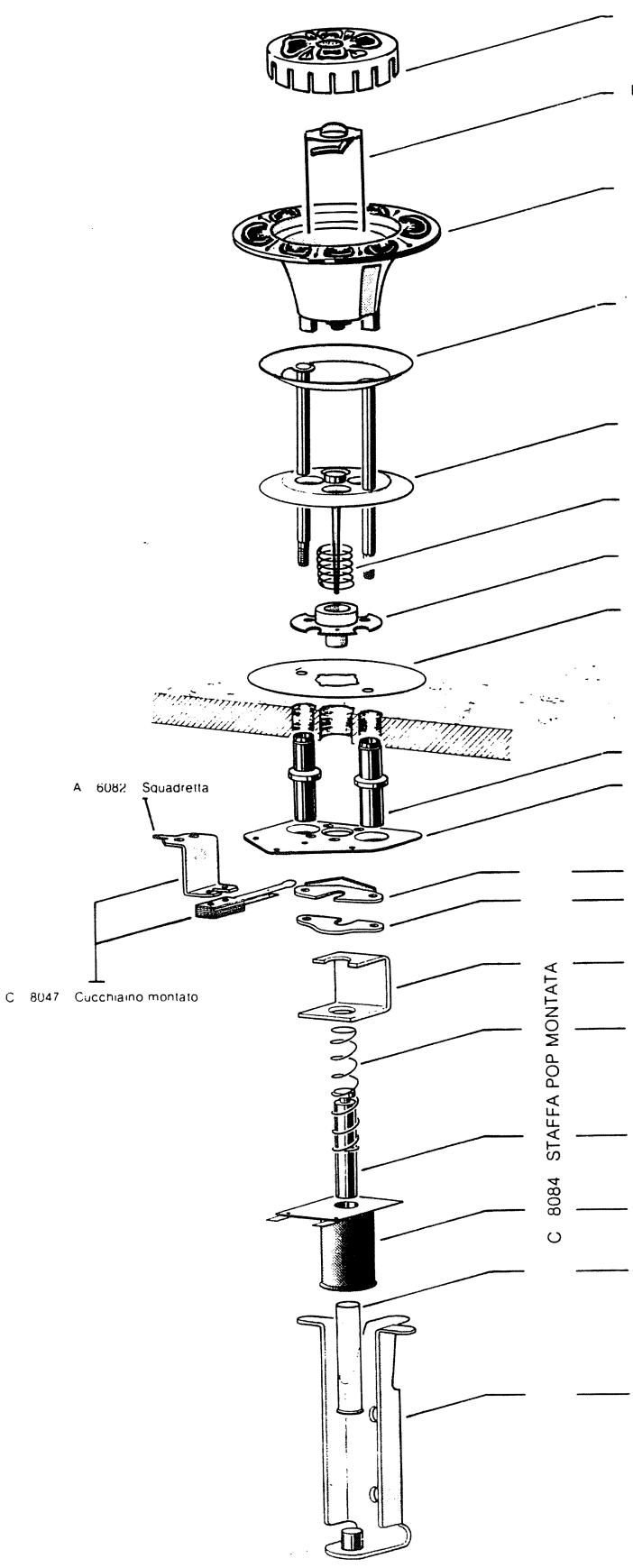


1	A 7545	Staffa porta bobina con scasso
2	B 6100	Squadretta larga con pastiglia
3	AS 1006	Canotto mm. 44
4	B 6179	Bobina D.335 - S.1.000; D.14 - S.6.000
5	A 5071	Squadretta larga
6	A 6110	Molla
7	A 5188	Pistoncino
8	A 5076	Tirantino
9	B 6250	Staffa sinistra con perni
10	A 6360	Staffa destra
11	A 6362	Supporto sagomato per rampa
12	A 4719	Perno ∅5×57
13	A 6361	Supporto pacco distacco flipper alto
14	B 9002	Pacco lamellare distacco flipper

C 8364 STAFFA RAMPA MOBILE ASS.

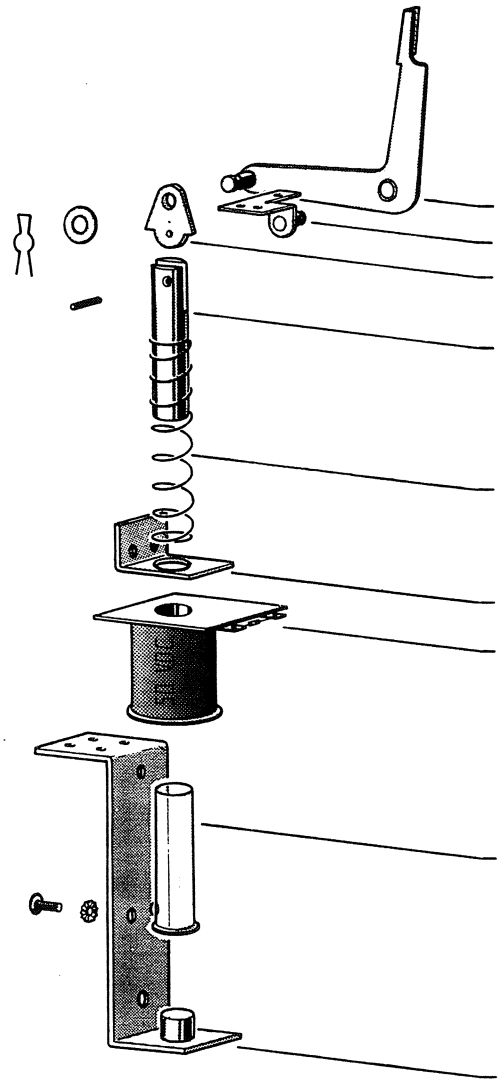


Fi POP

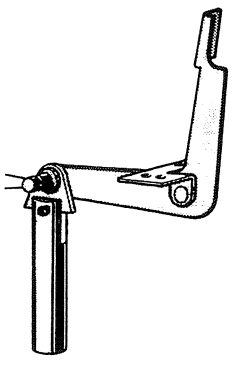

MRB 694 Coperchiotto pop serigrafato "farfalla"
B 6040 Portalampada pop
MRB 693 Corpo pop serigrafato "farfalla
B 7052 Anello pop
AS 1032 Ombrellino rosso
A 4263 Molla richiamo
A 5034 Basetta Pop
A 4259 Sottopop nylon
A 7141 Boccola guida
A 7140 Piastra montaggio pop
A 6082 Squadretta
A 6070 Gioco pop in metallo
A 6072 Gioco pop in bachelite
C 8047 Cucchiaino montato
A 7028 Alloggiamento nucleo pop
A 6073 Molla
A 6071 Pistoncino pop
B 6097 Bobina D 45 - S 1000
AS 1006 Canotto mm 44
B 7160 Staffa con pastiglia
C 8084 STAFFA POP MONTATA

TAV. XII

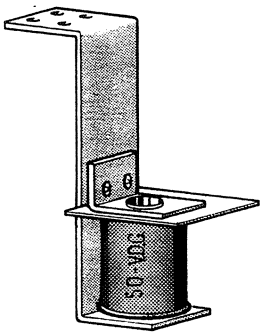
Fi FLAP



C 8040 Martelletto Flap montato

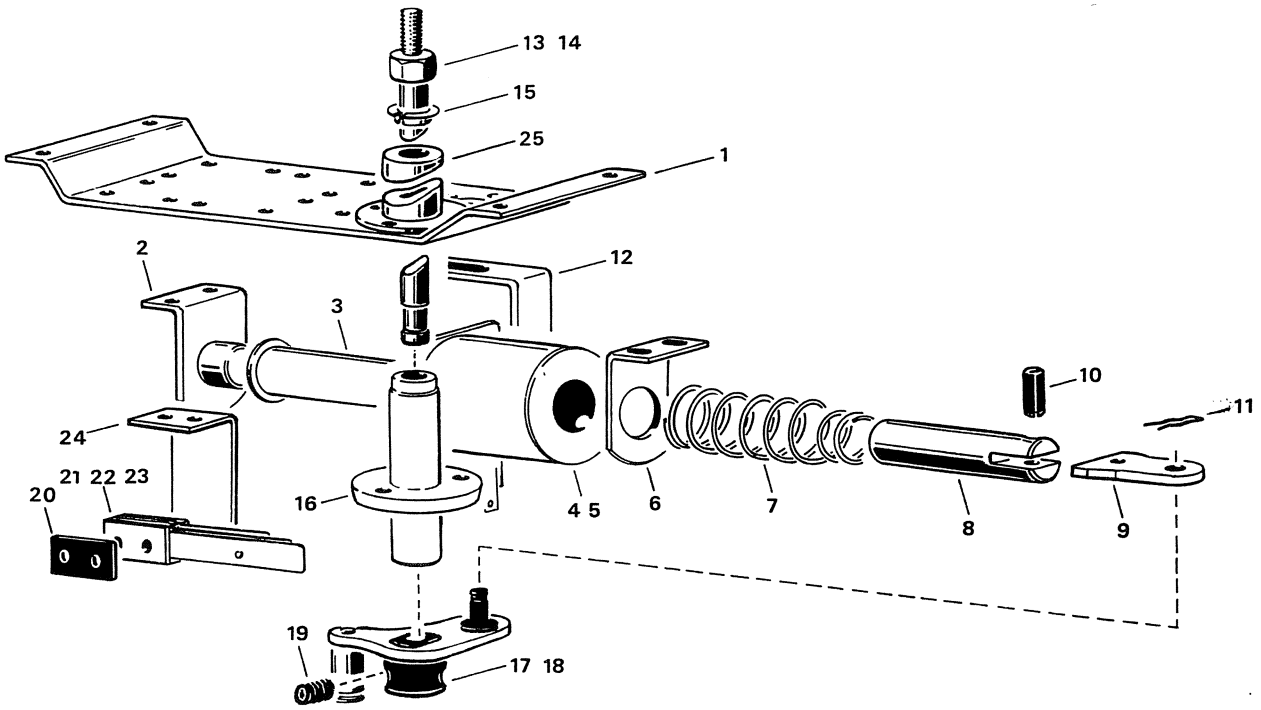


C 8082 Staffa a "Z" montata



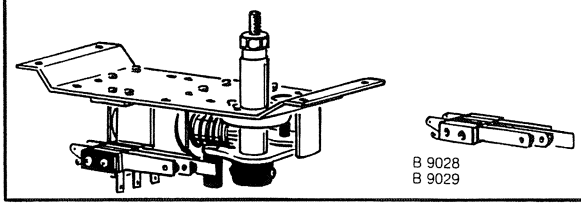
TAV. XIII

FI 1,2,3,4,5,6 PENNE FLIPPER

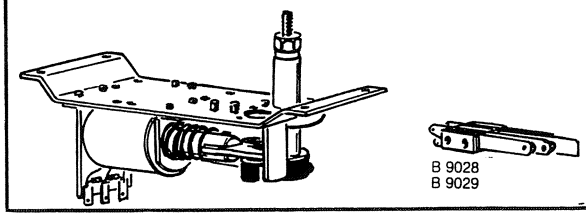


1	A 7491	Staffa supporto gruppo penna	
2	B 6100	Squadretto larga con pastiglia	
3	AS 1006	Canotto mm. 44	
4	B 6098	(I1, I2) Bobina D.45 - S.500, D.14 - S.6.000	
5	B 6179	(I3, I4, I5, I6,) Bobina D.355-S.1.000 -D.14-S.6.000	
6	A 5071	Squadretta larga	
7	A 6110	Molla richiamo aletta flipper	
8	A 5188	Pistoncino	B 6243 Tirantino con pistoncino ass.
* 9	A 6184	Tirantino	
10	A 4347	Spina elastica 4 × 12	
11	A 4148	Forcella di 6	
12	A 6336	Squadretta arresto aletta flipper	
13	A 6337	(I1, I2, I3, I4) Perno penna flipper mm. 77	
14	A 6294	(I5, I6) Perno penna flipper mm.131	
15	AS 1142	(I5, I6) Boccola in plastica	
16	AS 1113	Boccola flipper n.t.	
17	B 6226	(I1, I3, I5) componente aletta flipper ass. sinistro	
18	B 6225	(I2, I4, I6) Componente aletta flipper ass. destro	
19	A 4150	Vite testa cava	
20	A 6020	Piastrina copri pacco lamellare	
21	B 9002	Pacco lamellare distacco flipper	
22	B 9029	Pacco lamellare distacco flipper S.K.	
23	B 9028	Pacco lamellare contatto su flipper	
24	A 4638	Squadretta porta pacchi lamellari	
25	A 7551	(I5, I6) Boccola prolungamento penne	

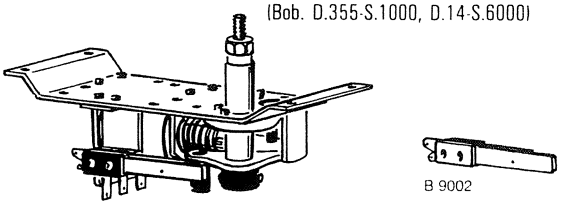
I1 - C 8365 GRUPPO FLIPPER CON CONTATTO SINISTRO



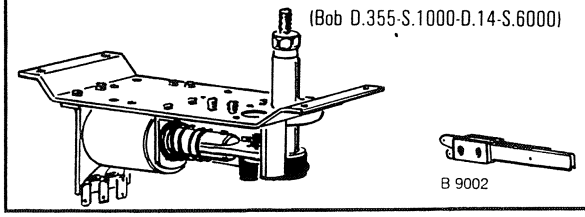
I2 - C 8366 GRUPPO FLIPPER CON CONTATTO DESTRO



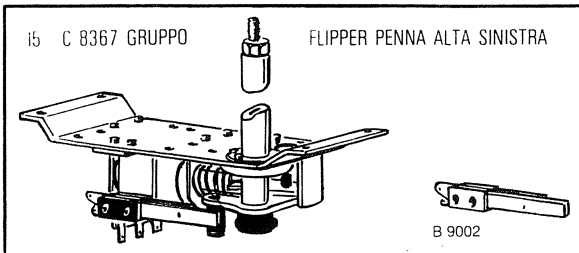
I3 - C 8369 GRUPPO FLIPPER SINISTRO (Bob. D.355-S.1000, D.14-S.6000)



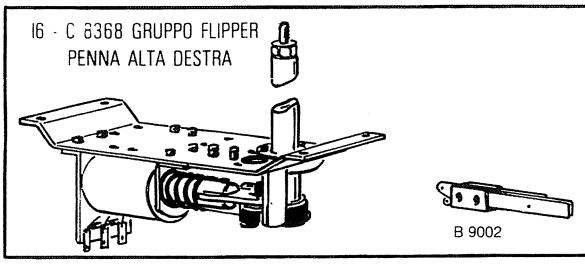
I4 - C 8370 GRUPPO FLIPPER DESTRO (Bob D.355-S.1000-D.14-S.6000)



I5 C 8367 GRUPPO FLIPPER PENNA ALTA SINISTRA

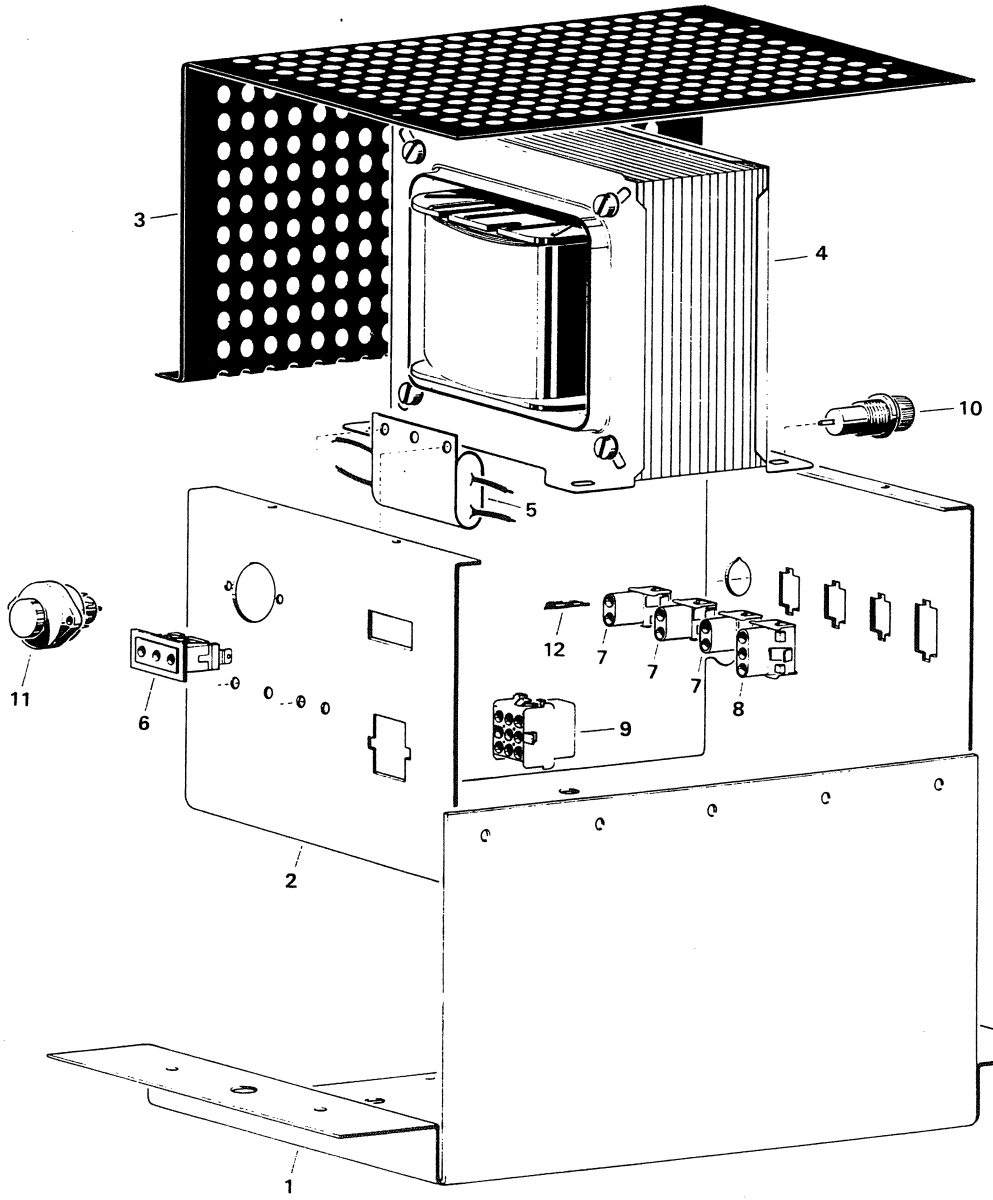


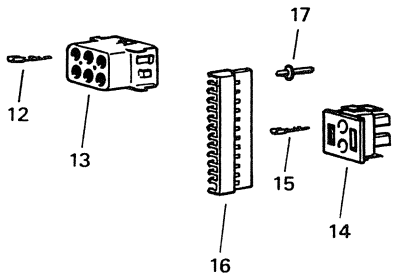
I6 - C 8368 GRUPPO FLIPPER PENNA ALTA DESTRA



TAV. XIV

G CEC 286 TELAIO ALIMENTAZIONI

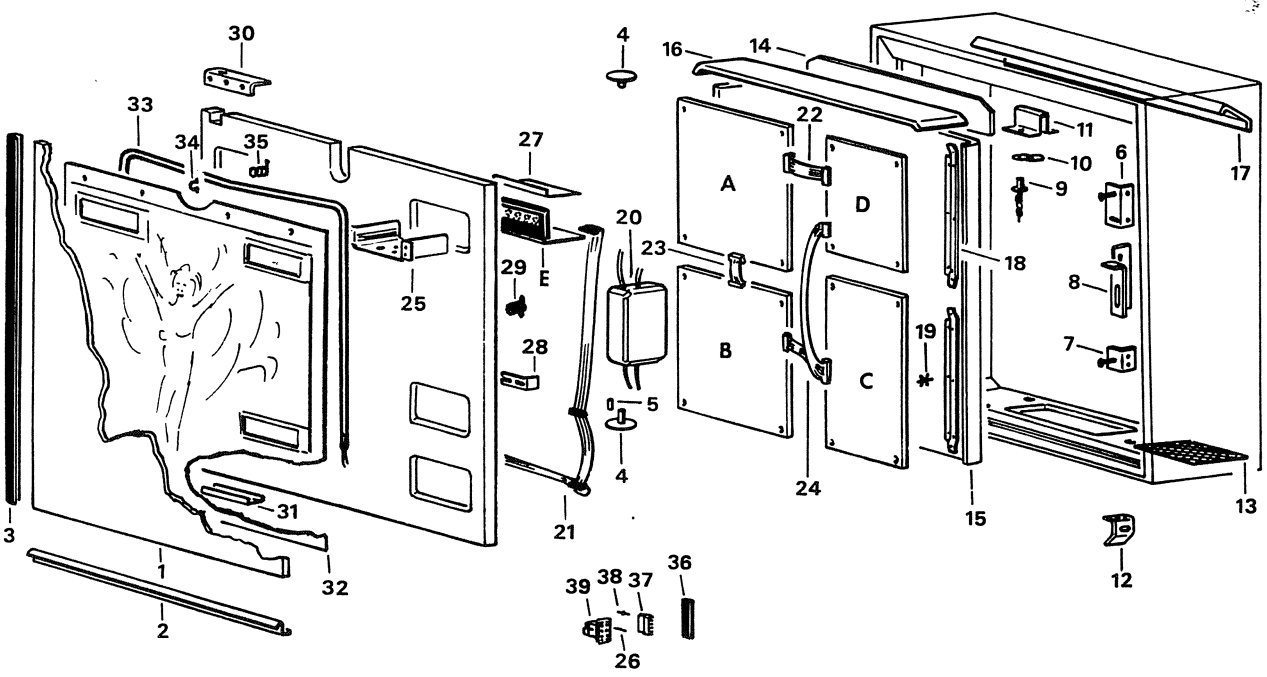




1	A 7396	Staffa rinforzo telaio
2	A 7395	Telaio in alluminio
3	A 7397	Lamiera forata protezione telaio
4	C 8188	Trasformatore 2C 1019
5	C 8068	Filtro di rete 5A
6	A 6281	Presa bipolare con massa
7	CE 1809	Connettore AMP 2 vie da pannello
8	CE 1706	Connettore AMP 3 vie da pannello
9	CE 1744	Connettore AMP 9 vie da pannello
10	CE 1758	Portafusibili da pannello
11	CE 1763	Cambio tensioni
12	CE 1965	Contatto AMP femmina
13	CE 1872	Connettore 6 vie AMP da pannello
14	CE 1808	Connettore 2 vie AMP volante
15	CE 1966	Contatto AMP maschio
16	CE 1985	Connettore AVG 13 vie femmina, arancio
17	CE 1993	Chiave da polarizzazione

TAV. XV

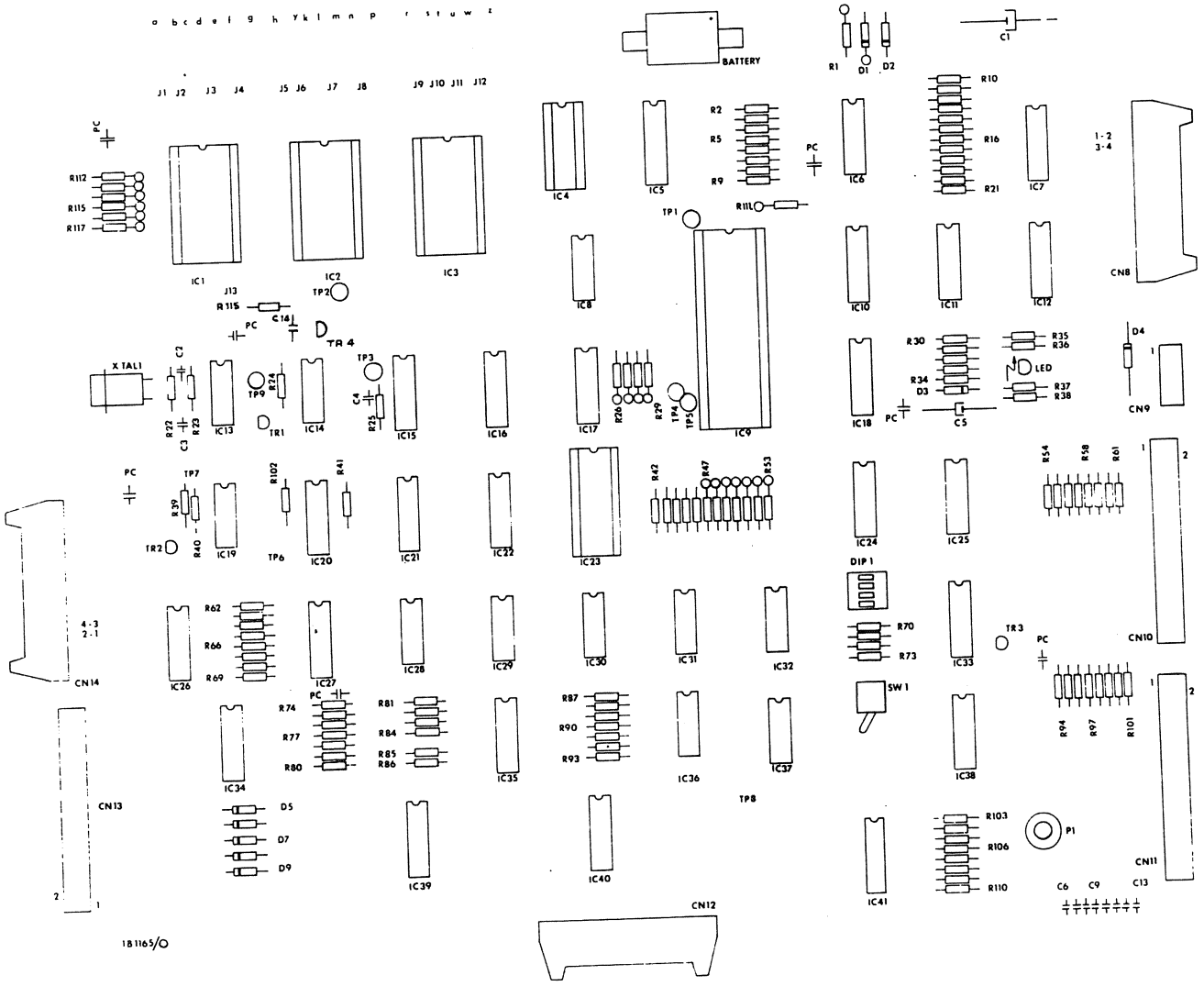
H TESTATA



1	MRB 695	Vetro serigrafato "FARFALLA"
2	A 7205	Asta sostegno vetro mm. 695
3	MV 009	Cornice vetro
4	B 6186	Piastrina fulcro testina
5	A 4568	Distanziale in metallo 4,8 × 8 × 14
6	A 6282	Squadretta grande riscontro catenaccio con foro
7	A 6255	Squadretta riscontro catenaccio
8	A 6342	Staffa a 3 asole
9	B 7151	Serratura
10	A 4320	Linguetta aggancio serratura
11	A 6253	Riscontro porta serraggio
12	A 6259	Squadretta aggancio automatico
13	A 7220	Protezione in lamiera stirata mm. 110 × 130
14	A 7401	Lamiera protezione aereazione
15	A 7322	Lamiera schermo testata
16	A 7207	Piastra parte superiore mm. 600 × 95
17	A 7400	Bandella protezione liquidi
18	A 7399	Staffa supporto schede
19	A 4111	Supporto per circuiti stampati
20	C 8304	Trasformatore per neon
21	CEB 142	Flat Cable a 6 connettori 20 vie femmine
22	CEB 141	Flat Cable a 2 connettori 20 vie femmine C.P.U.-SOUND
23	CEB 006	Flat Cable a 2 connettori 20 vie femmine C.P.U.-INTERFACE
24	CEB 196	Cablaggio alimentazione schede
25	B 7137	Staffa supporto Display
26	CE 1966	Contatto AMP maschio
27	A 6171	Tettoia protezione Display
28	A 6251	Catenaccio chiusura testina
29	B 6041	Portalampada testina
30	A 6261	Rinforzo ad "L" testata superiore
31	A 6252	Rinforzo ad "U" testata inferiore
32	MRB 696	Termoformatura serigrafata Farfalla
33	B 7366	Tubo al neon Farfalla
34	A 4685	Molla ancoraggio neon
35	A 4686	Molla a compressione fissaggio neon
36	CE 1984	Connettore a 20 vie AVG femmina nero
37	CE 1987	Connettore a 5 vie AVG femmina arancio
38	CE 1993	Chiavetta di polarizzazione
39	CE 1871	Connettore AMP vie volante

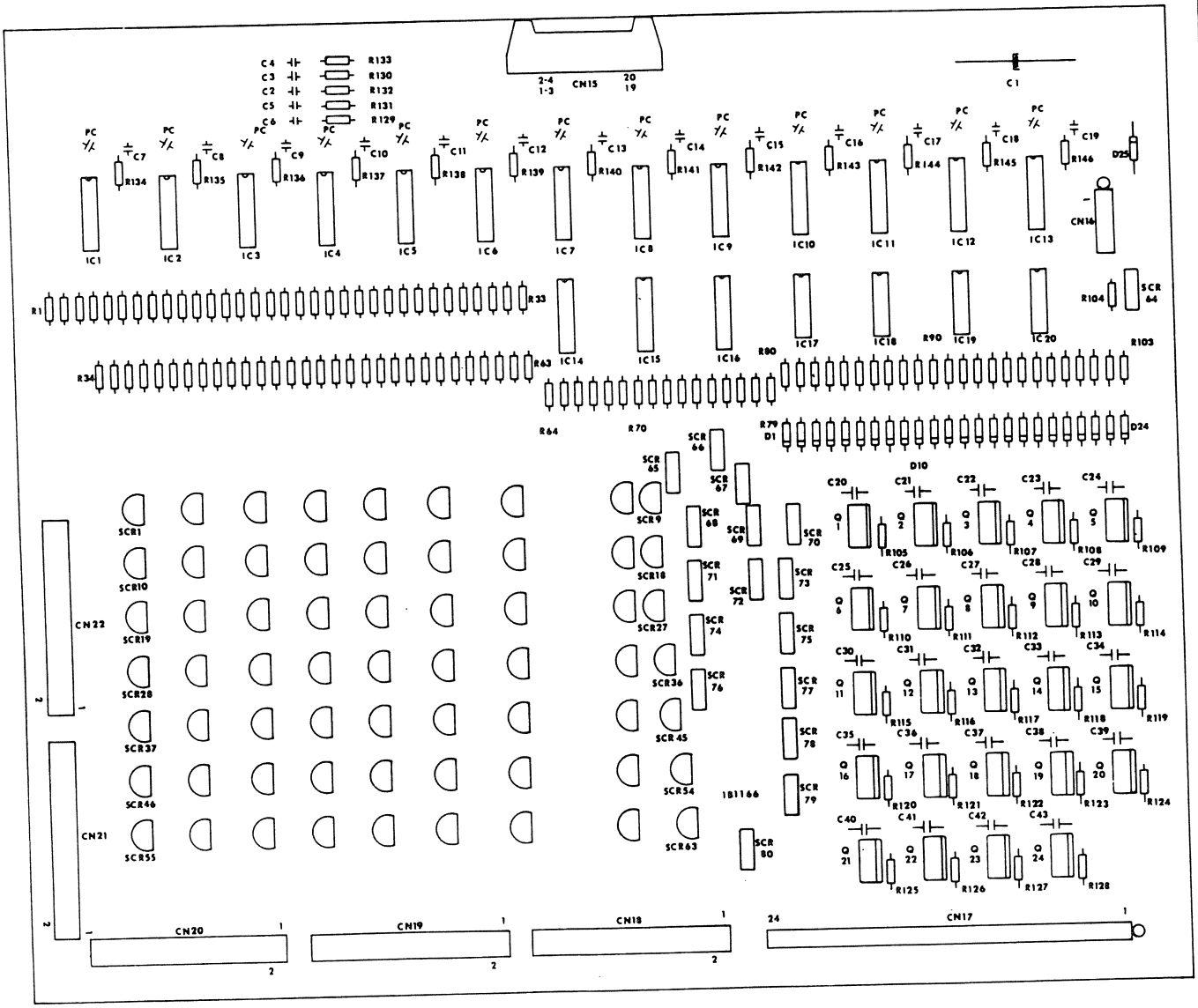
CEB 222 C.P.U. BOARD ASSEMBLY WITHOUT MEMORIES

CEC 287 C.P.U. BOARD ASSEMBLY WITH MEMORIES



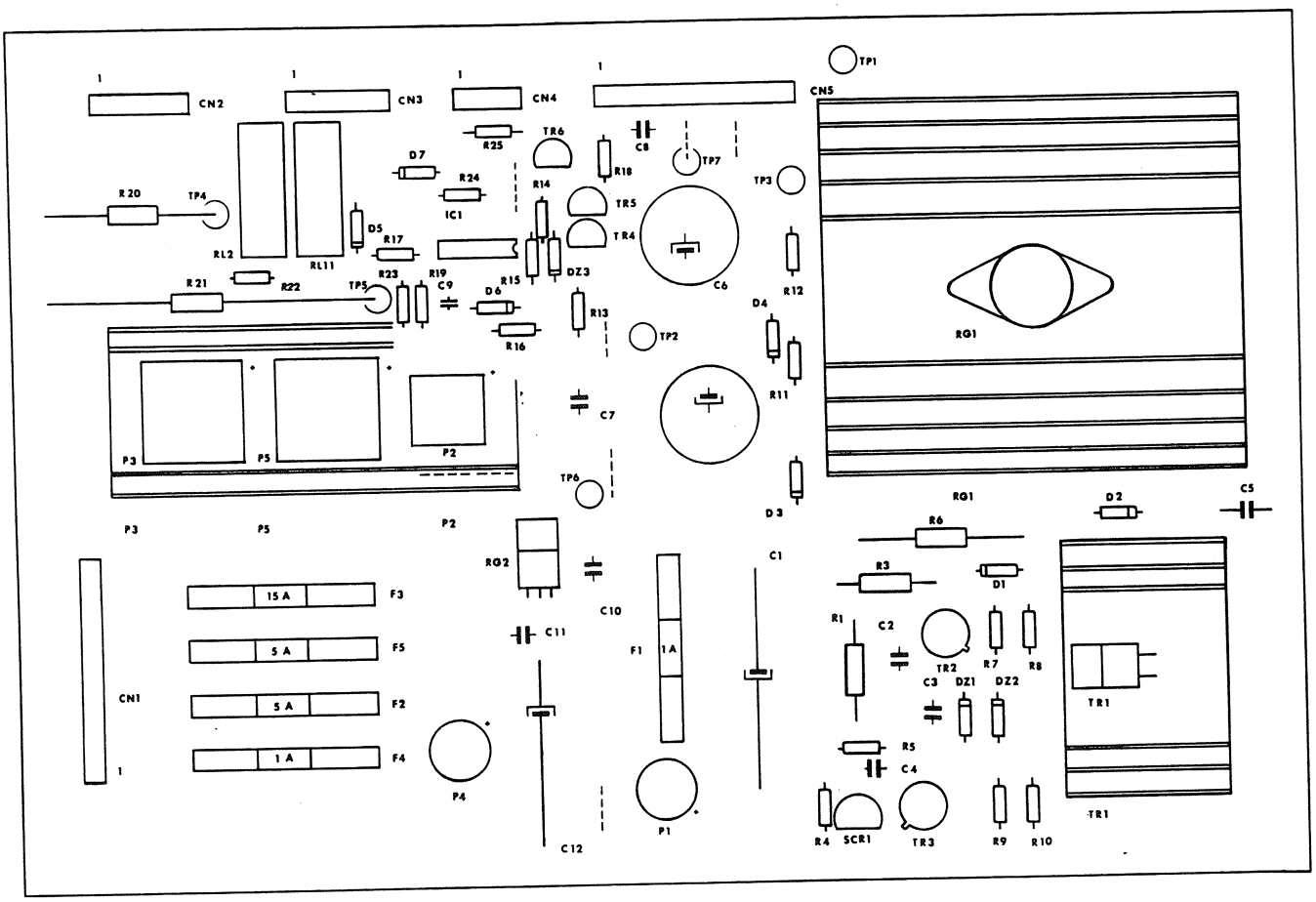
	Ic1	RE 386	B2764 MOS IC8192×8 EPROM (Tipe Farfalla N. 1)
	Ic2	RE 387	B2764 MOS IC8192×8 EPROM (Tipe Farfalla N.2)

1	PC 1B 1165/1	CE 2155	Printed circuit board TB1165/1
2	CN9	CE 1980	4 pin male conn. MTA 640 383-4
3	CN 10 CN 11	CE 1981	20 pin male conn. MTAS4-826379-0
4	CN8 CN12 CN14	CE 1351	20 flat cable male conn.
5	Ic9	CE 1668	2650 - A-1 MOS Ic 8 bit M.Proc
6	Ic23	CE 1227	2101 AL-4 MOSC Ic 256 × 4 RAM
7	Ic5	CE 1661	2114 L MOS Ic 1K × 4 ram
8	Ic4	CE 3004	6414 -9 CMOS Ic IK × 4 ram
9	Ic19	CE 1014	4001 BP CMOS Ic quad nor gate
10	Ic28	CE 1394	4002BP CMOS Ic dual 4-in nor gate
11	Ic37	CE 1016	4011 BP CMOS Ic quad 2-in nand gate
12	Ic31	CE 1228	4012BP CMOS Ic dual 4-in nand gate
13	Ic27 Ic35 Ic36 Ic41	CE 1230	4028BP CMOS Ic 10f10 decoder
14	Ic6 Ic10 Ic11 Ic33	CE 1231	4042BP CMOS Ic quad D latch
15	Ic15 Ic21	CE 1995	4040BP CMOS Ic 12 stage bynari count
16	Ic29 Ic30	CE 1015	4069BP CMOS Ic hey inverter
17	Ic32	CE1883	455BP CMOS Ic dual 10f4 deco.
18	Ic18 Ic18 Ic24 Ic25	CE 1055	40097BP CMOS Ic 3 state non inverter buffer
19	Ic8	CE1134	74LS00 TTL Ic quad 2-in nand gate
20	Ic13	CE 1177	74LS 14 TTL Ic hey Schmmit trigger
21	Ic17	CE 1432	74LS156 TTL Ic dual 10f4 decord
22	Ic16 Ic22	CE 1433	74LS157 TTL Ic quad 2-in MPX
23	Ic20	CE 1131	74LS171 TTL Ic sync. bynary count.
24	Ic14	CE 1788	74LS39 TTL Ic dual 4 bit bynary count
25	Ic7 Ic12 Ic26 Ic34 Ic38 Ic40	CE 1225	TDA 3881 seven transistor array
26	TR1-TR3	CE 1438	BC548 NPN silicon transistor
27	TR4	CE 1290	BC 337 NPN silicon Transistor
28	D4	CE 1299	1N5400 diode
29	D1 D2 D5 - D9	CE1009	1N4003 diodes
30	D3	CE 1011	1N4148 diode
31	BATT	CE 1396	3,6V 100mA N. cd battery
32	Ic9	CE 1245	40 pin Ic socket (540 AG11D)
33	Ic1 Ic2	CE 3236	28 pin IC socket /528 AG11D)
34	Ic4	CE 3080	18 pin IC socket (518 AG11D)
35	C1	CE 1118	100uF 16VL elect. cap. radials leads
36	C5	CE 1100	10uF 16VL tantalum cap. vert lead
37	PC	CE 1005	0,1 uF 50VL ceramic capacitors
38	C4	CE 3095	10Kpf 50VL NPO ceramic. cap.
39	C6-C13	CE 1159	1kpF NPO ceramic cap.
40	C2	CE 1513	470 pF 50VL NPO ceramic cap.
41	C14	CE 1381	220 pF NPO ceramic cap.
42	C3	CE 1906	10pF 50VL NPO ceramic cap.
43	R2-R9-R25-R42-R102 R113 R117	CE 1171	10K 1/4W 5% carbon resistors
44	R10-R21 R24 R35 R39 R40		
	R54-R69 R74-R93 R103 R111	CE 1023	5,6K 1/4 5% carbon resistors
45	R26-R34	CE 1164	2,2K 1/4W 5% carbon resistors
46	R27 R70-R73 R94-R101	CE 1170	1K 1/4W 5% carbon resistors
47	R22 R23	CE 1392	680 1/4W 5% carbon resistor
48	R36	CE 1269	390 1/4W 5% carbin resistor
49	R1	CE 1409	100 1/4W 5% carbon resistor
50	R38	CE 3094	22 1/2W 5% carbon resistor
51	R115	CE 1194	22 K 1/4 W 5% carbon resistor
52	XTAL 1	CE 1743	6MHZ cristal quartz Hc 18/U
53	DIP 1	CE 1356	Dip swirch 4 way
54	LED 1	CE 1542	FLV110 red led
55	Ic1 Ic2	CE 1962	B2764 MOS IC 8192 × 8 EPROM


CN15
2-4
1-3
20
19
C1
C4
C3
C2
C5
C6
R133
R130
R132
R131
R129
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
CN16
D25
R104
SCR 64
R103
R90
R80
R64
R70
R79
D1
D24
D10
SCR1
SCR10
SCR19
SCR28
SCR37
SCR46
SCR55
SCR9
SCR18
SCR27
SCR36
SCR 45
SCR54
SCR63
SCR 65
SCR 66
SCR 67
SCR 68
SCR 69
SCR 70
SCR 71
SCR 72
SCR 73
SCR 74
SCR 75
SCR 76
SCR 77
SCR 78
SCR 79
SCR 80
1B1166
CN22
CN21
CN20
CN19
CN18
CN17
R105
R106
R107
R108
R109
R110
R111
R112
R113
R114
R115
R116
R117
R118
R119
R120
R121
R122
R123
R124
R125
R126
R127
R128

1	PC 1B1166	CE 2156	Printed circuit board 1B1166
2	CN16	CE 1980	4 pin male conn. MTA 640383-4
3	CN17	CE 1982	12 pin male conn. MTA 640383-12
4	CN18 ÷ CN22	CE 1981	20 pin male conn. MTIS4-826379-0
5	CN15	CE 1351	20 pin flat cable male conn
6	Ic1 ÷ Ic13	CE 1236	4724BC MOS Ic 8 bit. Abb. LATCH
7	Ic17 ÷ Ic20	CE 1304	7407 TTL Ic hex buffer
8	Ic14 Ic15 Ic16	CE 1215	4050BC MOS Ic hex buffer
9	D1 ÷ D24	CE 1539	1N4003 diodes
10	D25	CE 1299	1N5400 diode
11	SCR1 ÷ SCR63	CE 1249	2N5060 PNPN SCR (0,8A 30V)
12	SCR64	CE 1267	BF422 NPN SCR
13	SCR65 ÷ SCR80	CE 1250	BAX62 PNPN SCR (4A 200V)
14	Q1 ÷ Q24	CE 1218	BD649 NPN Darlinghton (10A 100V)
15	PC	CE 1005	0,1uF 50V ceramic cap.
16	C2 ÷ C19	CE 1159	1KpF 50V ceramic cap.
17	C1	CE 1118	100uF 50V ceramic cap.
18	C20 ÷ C43	CE 1260	2,2KpF 100VL polyester cap.
19	R129 ÷ R146	CE 1170	1K 1/4W 5% carbon resistor
20	R1 ÷ R79 R104	CE 1164	2,2K 1/4W 5% carbon resistor
21	R80 ÷ R103	CE 1268	150 1/4W 5% carbon resistor
22	R105 ÷ R128	CE 1269	390 1/4W 5% carbon resistor

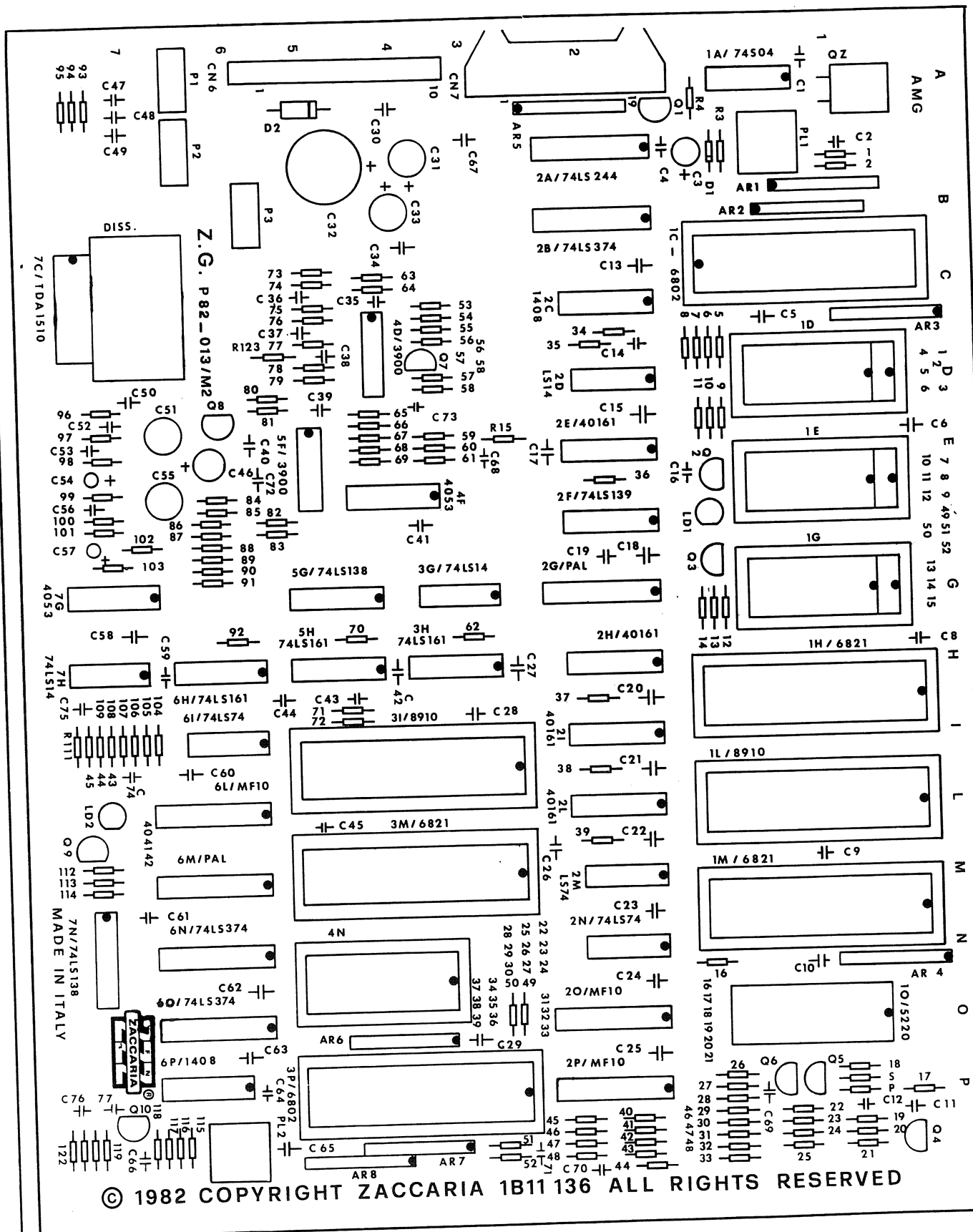
TED
26807305



1	PC 1B1167/0	CE 2157	Printed circuit 1B1167/0
2	CN1 CN5	CE 1982	12 Pin mate MTA1-640 383-2
3	CN3 CN2	CE 1983	6 Pin male connector MTA1-640 383-6
4	CN 4	CE 1980	4 Pin male connector MTA1-640 383-4
5	RG1	CE 1238	+ 5 5A Voltage regulator 078H05K
6	RG2	CE 1648	-5 1A Voltage regulator 07905VC
7	P1	CE 1274	400V 1A Rectifier Bridge (W04)
8	P5	CE 1105	200V 10A Rectifier Bridge (KBPC 1002)
9	P3	CE 1994	50V 25A Rectifier Bridge (KBPL 25005)
10	P2	CE 1471	50V 8A Rectifier Bridge (KBPL 8005)
11	P4	CE 1233	50V 1A Rectifier Bridge (W005)
12	TR1	CE 1271	2N3585 (2N3584) NPN Transistor
13	TR2-TR3	CE 1272	2N3439 (2N3440) NPN Transistor
14	TR4-TR5	CE 1290	BC 337 NPN Transistor
15	TR6	CE 1290	BC 337 NPN Transistor
16	D1-D2-D3	CE 1009	1N4004 diodes
17	D4-D5-D6-D7	CE 1539	1N4003 diodes
18	D21-D22	CE 1220	75V 0,4W zener diodes (Bz x 79c75)
19	D23	CE 1966	5,6 0,4W zener diodes (Bz x 79c5V6)
20	Ic1	CE 1803	LM 339 Linear quad comparator
21	ScR1	CE 3006	2N6564 PN PN SCR
22	C1	CE 1284	100uF 350VL electr cap axial L.
23	C2 C3	CE 1399	10kpf 250 VL Poliester cap
24	C4 C8 C11	CE 1005	0,1 uF 50VL ceramic cap
25	C5	CE 1261	0,33uF 250VL poliester cap
26	C6 C6/	CE 1979	10.000uF 16V elec cap axial L.
27	C7 C10	CE 1261	0,33 uF 50VL poliester cap.
28	C9	CE 1903	1uF 16V elec. cap. vert.
29	C12	CE 1026	1.000uF 25VL elec cap axal L.
30	R1	CE 1282	100K IW 5% C.R.
31	R3	CE 3072	22K 4W 5% ceramic resistor
32	R4	CE 1305	100 1/2W 5% C.R.
33	R5	CE 3038	2,2 1/4W 5% C.R.
34	R6 R20	CE 1659	47 3W 5% ceramic resistor
35	R7 R11 R14 R15 R16 R18 R23 R24	CE 1170	IK 1/4W 5% C.R.
36	R8 R19	CE 1171	10K 1/4W 5% C.R.
37	R9	CE 1165	4,7K 1/4W 5% C.R.
38	R10	CE 1167	100K 1/4W 5% C.R.
39	R12	CE 1269	100 1/4 W 5% C.R.
40	R13 R22	CE 1267	1,5K 1/4W 5% C.R.
41	R.17	CE 1163	470 1/4W 5% C.R.
42	R.21	CE 1263	68010W 5% ceramic resistor
43	F1 ÷ F5	CE 1401	Clips for P.C.B. for 6 x 30 fuse
44	F1 F4	CE 1368	Fuse 6,3 x 32 1A
45	F2 F5	CE 1439	Fuse 6,3 x 32 5A
46	F3	CE 1441	Fuse 6,3 x 32 20A
47	RG1	CE 1278	Heat sink 41/100/B
48	TR1	CE 1279	Heat sink 17/40/C
49	P2 P3 P5	CE 1110	Heat sink 17/100/D
50	TR3	CE 1280	
51	RL1 RL2	CEC 155	Relay V 23027 B13 A101

Hd CEB 223 SOUND & SPEECH BOARD ASSEMBLY WITHOUT MEMORIES

CEC 293 SOUND & SPEECH BOARD ASSEMBLY WITH MEMORIES «ITALIANO»
CEC 294 SOUND & SPEECH BOARD ASSEMBLY WITH MEMORIES «FRANCESE»
CEC 295 SOUND & SPEECH BOARD ASSEMBLY WITH MEMORIES «INGLESE»
CEC 296 SOUND & SPEECH BOARD ASSEMBLY WITH MEMORIES «TEDESCO»



1	P.C 1B11 136	CE 2242	Printed circuit P82-013/M2
2	CN6	CE 3069	Male connector 1-640383-0
3	CN7	CE 1351	Male connector 20PIN 90° F.C.
4	IC1A	CE 1647	Integrated circuit 74S04
5	IC1C	CE 1714	Integrated circuit 6802P
6	IC1D-1E-1G		Integrated circuit see note 1
7	IC1H-1M	CE 1715	Integrated circuit 6821P
8	IC IL	CE 1844	Integrated circuit AY-3-8910
9	IC10	CE 3330	Integrated circuit TMS 5220NL Speach
10	IC2A	CE 1589	Integrated circuit 74LS244
11	IC 2B	CE 1843	Integrated circuit 74LS374
12	IC 2C	CE 1730	Integrated circuit MC 1408L6 (8N)
13	IC2D-3G	CE 1177	Integrated circuit 74LS14
14	IC2E-2H-2I-2L	CE 1131	Integrated circuit MC 74LS161
15	IC2F	CE 1670	Integrated circuit 74LS139
16	IC2G	CE 3297	Pal 14L4 or 14H4-or 16L8
17	IC2M-2N	CE 1141	Integrated circuit 74LS74
18	IC20	CE 3296	Integrated circuit MF10CN
19	IC4D-5F	CE 1148	Integrated circuit LM3900N
20	IC4F	CE 1435	Integrated circuit 4053B
21	IC5G	CE 1144	Integrated circuit 74LS138
22	IC7C	CE 3045	Integrated circuit TDA1510
23	R1-2-12-85	CE 1448	Carbon Resistor 470 1/4W
24	R3	CE 1408	Carbon Resistor 27K 1/4W
25	R4-37 ÷ 39	CE 1165	Carbon Resistor 4K7 1/4W
26	R5 ÷ 11-14-34	CE 1024	Carbon Resistor 3K3 1/4W
27	R13	CE 1576	Carbon Resistor 8K2 1/4W
28	R23-29-36-43-48-56-59 ÷ 61-93-94-	CE 1171	Carbon Resistor 10K 1/4W
	81		
29	R18-53-55-66-67-80-82-83-98 ÷ 100-	CE 1167	Carbon Resistor 100K 1/4W
	102-103		
30	R17-19-20 ÷ 22-24-25-58-69-73-101-	CE 1164	Carbon Resistor 2K2 1/4W
	15		
31	R26 ÷ 28-40 ÷ 42-45 ÷ 47	CE 1251	Carbon Resistor 33K 1/4/W
32	R16-33-44	CE 1417	Carbon Resistor 3K9 1/4W
33	R35	CE 1214	Carbon Resistor 3M3 1/4W
34	R54-64	CE 1196	Carbon Resistor 470K 1/4W
35	R57	CE 1194	Carbon Resistor 22K 1/4W
36	R63-65-75 ÷ 78-R123	CE 1034	Carbon Resistor 820K 1/4W
37	R68	CE 1193	Carbon Resistor 47K 1/4W
38	R74	CE 1252	Carbon Resistor 220K 1/4W
39	R79	CE 1056	Carbon Resistor 1M8 1/4W
40	R96-99	CE 1306	Carbon Resistor 4,7
41	R97	CE 1392	Carbon Resistor 680
42	ICR1 ÷ 4	CE 1936	Resistor networks LO9-1R-10K
43	ICR5	CE 3031	Resistor networks LO9-1R-4K7
44	C1-4 ÷ 11-13-15-18-20 ÷ 25-30--34-	CE 1005	Capacitor 0,1 uF disc ceramic
	35-40-41-47-48-50-52-56-67		
45	C2-17-19-26	CE 1159	Capacitor 1000 pF disc Ceramic
46	C3-54	CE 1375	Capacitor 4,7 uF Elect. Vert.
47	C12	CE 1298	Capacitor 22pF disc Ceramic
48	C14-C37-C38-C39	CE 1721	Capacitor 47pF disc Ceramic
49	C16	CE 1029	Capacitor 10.000 pF disc Ceramic
50	C31-C33-C51-C55	CE 1118	Capacitor 100 uF elect. vert 16V
51	C32	CE 1580	Capacitor 1000 uF elect vert. 16V
52	C36	CE 1513	Capacitor 470 pF disc ceramic
53	C46	CE 1610	Capacitor 47 uF electr. vert. 16V

ITEM No	PART DESIGNATION	CODE PART No	DESCRIPTION
54	C53	CE 1473	Capacitor 330 pF disc ceramic
55	C57-C68 ÷ C73	CE 1541	Capacitor 0,22 uF Tantalium
56	P2-P3	CE 1598	Trimmer 10K
57	Q1-Q7-Q8	CE 1438	Transistor BC 548
58	Q2	CE 1732	Transistor 2N4401
59	Q3-Q4	CE 1694	Transistor 2N3904
60	Q5-Q6	CE 1814	Transistor BC327
61	D1	CE 1011	Diode 1N4148
62	D2	CE 1299	Diode 1N5402/1
63	QZ1	CE 3066	Crystall oscillator 3,579 Mhz
64	PS1	CE 1277	Push button N.O.
65	LE1	CE 1542	Leed FLV 110
67	HS1	CE 3100	Heat Sink for TDA 1510 ML9/30
68	20-2P	CE 3305	20 Pin Socket for I.C.
69	1D-1E-1G-10	CE 3236	28 Pin Socket for I.C.
70	IC-1H-1L-1M	CE 1245	40 Pin Socket for I.C.
71		A 5299	Vite 3MA x 8 TC
72		A 4023	Vite 3MA x 12 TC
73		A 4132	Dado 3MA
74		A 4161	Rondella dentellata 3MA

Note 1: Of above integrated circuits, only ics for game sounds are assembled.

1D RE 388 B 2764 MOS IC 8192 x 8 EPROM (Type Italiano n. 1)
1E RE 389 B 2732 MOS IC 4096 x 8 EPROM (Type Italiano n. 2)
1G RE 390 B 2764 MOS IC 8192 x 8 EPROM (Type Italiano n. 3)

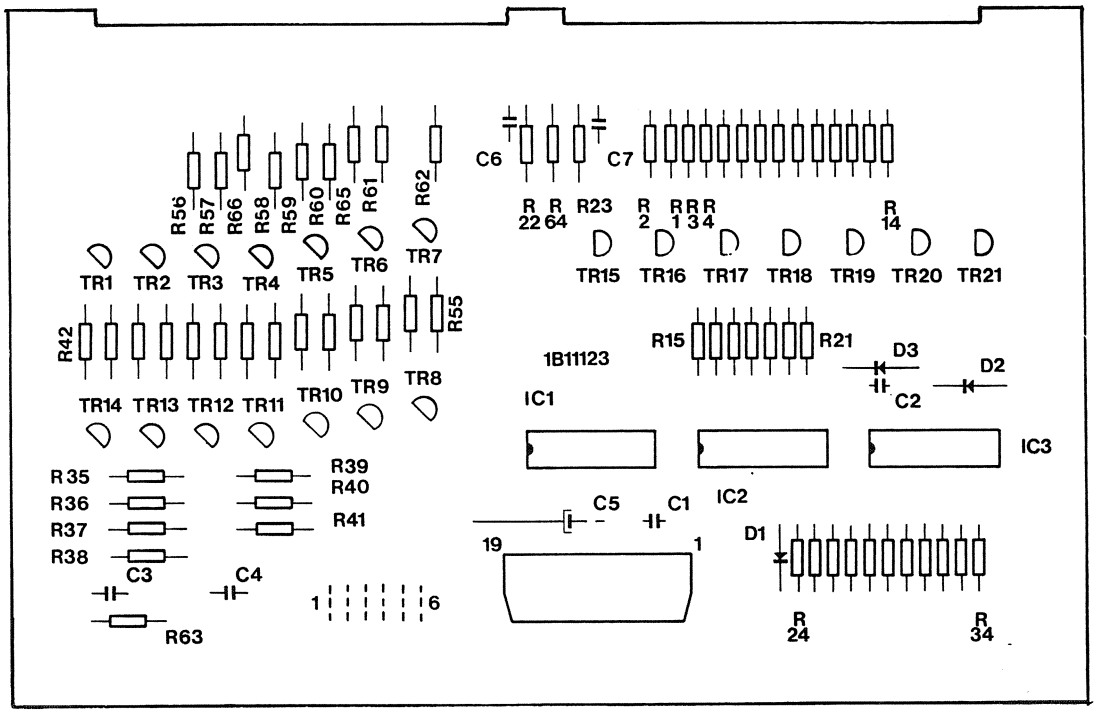
1D RE 391 B 2764 MOS IC 8192 x 8 EPROM (Type Inglese n. 1)
1E RE 392 B 2732 MOS IC 4096 x 8 EPROM (Type Inglese n. 2)
1G RE 393 B 2764 MOS IC 8192 x 8 EPROM (Type Inglese n. 3)

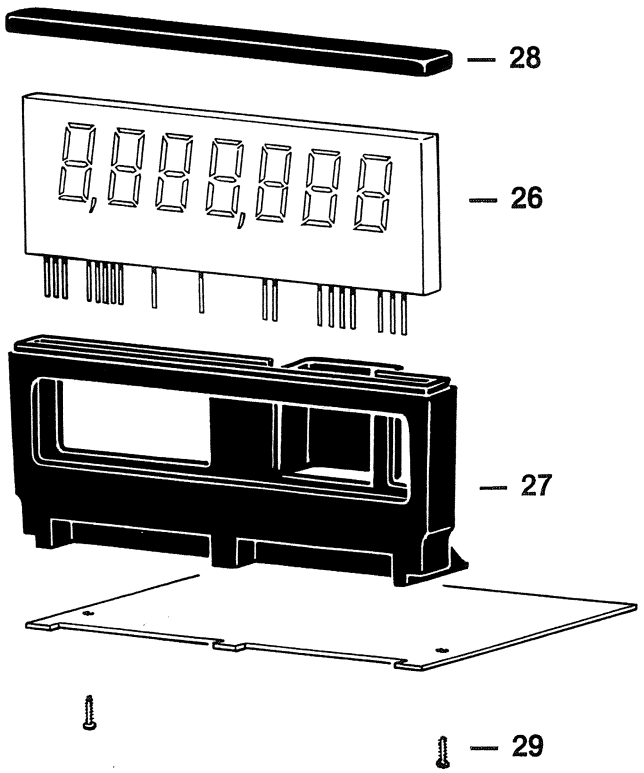
1D RE 394 B 2764 MOS IC 8192 x 8 EPROM (Type Tedesco n. 1)
1E RE 395 B 2732 MOS IC 4096 x 8 EPROM (Type Tedesco n. 2)
1G RE 396 B 2764 MOS IC 8192 x 8 EPROM (Type Tedesco n. 3)

1D RE 397 B 2764 MOS IC 8192 x 8 EPROM (Type Francese n. 1)
1E RE 398 B 2732 MOS IC 4096 x 8 EPROM (Type Francese n. 2)
1G RE 399 B 2764 MOS IC 8192 x 8 EPROM (Type Francese n. 3)

TAV. XX

HE CEC 247 DISPLAY BOARD ASSEMBLY 7 DIGIT

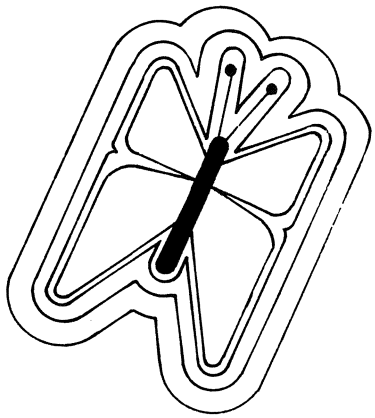




ITEM No.	PART DESIGNATION	CODE PART. No.	DESCRIPTION
1	PRINTED CIRCUIT	CE 2222	P.C. 1B 11123
2	CN	CE 1351	20 PIN FLAT CABLE MALE CONNECTOR
3	I.C. 1	CE 1230	4028 BP C MOS I.C. BCD TO DEC. DECO.
4	I.C. 2	CE 1231	4042 BP C MOS I.C. QUAD. TYPE LATCH
5	I.C. 3	CE 1235	4511 BP C MOS I.C. BCD 7 SEG. DEC.
6	TR 1 ÷ TR 7	CE 1234	BF 423 PNP TRANSISTOR
7	TR 8 ÷ TR 21	CE 1217	BF 422 NPN TRANSISTOR
8	D1	CE 1539	1 N 4004 DIODE
9	D2-D3	CE 1011	1 N 4148 DIODE
10	C1	CE 1005	0,1 M 50VL CERAMIC CAP.
11	C3-C6-C7	CE 1004	0,1 M 250 VL POLIESTER CAP.
12	C4	CE 1399	10 n 250 VL POLIESTER CAP.
13	C5	CE 1028	1M 16 VL ELECTROLITIC CAP.
14	R1 ÷ R7	CE 1196	470 K 1/4 W 5% CARBON RESISTOR
15	R8 ÷ R14	CE 1164	2,2K 1/4W 5% CARBON RESISTOR
16	R15 ÷ 21; 42-44-46-48-50-52-54	CE 1267	1,5K 1/4W 5% CARBON RESISTOR
17	R22	CE 1576	8,2K 1/4W 5% CARBON RESISTOR
18	R23	CE 1408	27K 1/4W 5% CARBON RESISTOR
19	R24	CE 1170	1K 1/4W 5% CARBON RESISTOR
20	R25 ÷ R41	CE 1171	10K 1/4W 5% CARBON RESISTOR
21	R43-45-47-49-51-53-55	CE 1167	100K 1/4W 5% CARBON RESISTOR
22	R56 ÷ R62	CE 1447	330 K 1/4 5% CARBON RESISTOR
23	R63	CE 1408	27K 1/2W 5% CARBON RESISTOR
24	R64-R66	CE 1737	1,2M 1/4W 5% CARBON RESISTOR
25	R65	CE 1194	22 K 1/4W 5% CARBON RESISTOR
26	DISPLAY	CE 3211	DISPLAY 7 CIFRE BECKMAN O BURROUGHS
27	N° 27	AS 1123	SUPPORTO IN NYLON PER DISPLAY A 7 CIFRE
28	N° 28	AS 1124	COPERCHIO SUPPORTO DISPLAY
29	N° 29	A 4074	Vite 2,9 × 6,4

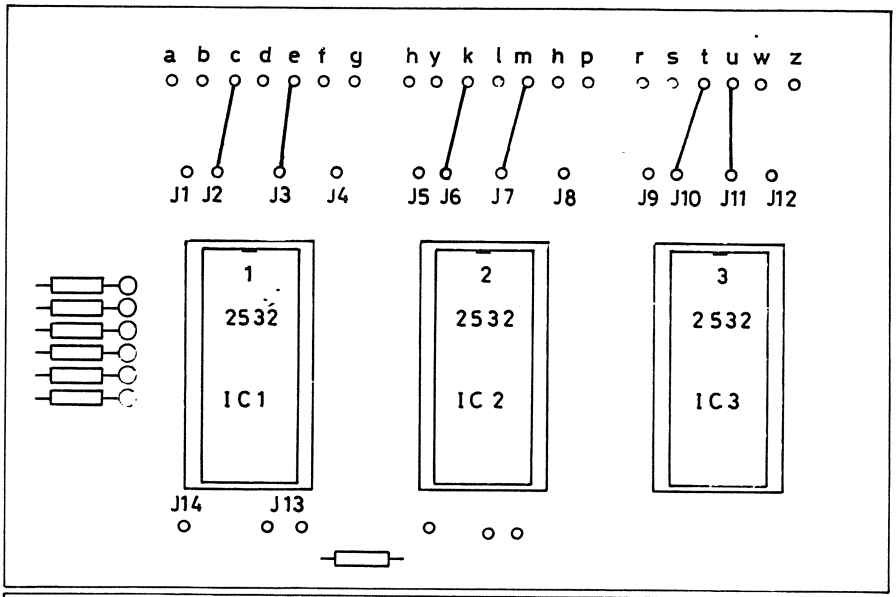
FARFALLA

ELECTRICAL DIAGRAMS



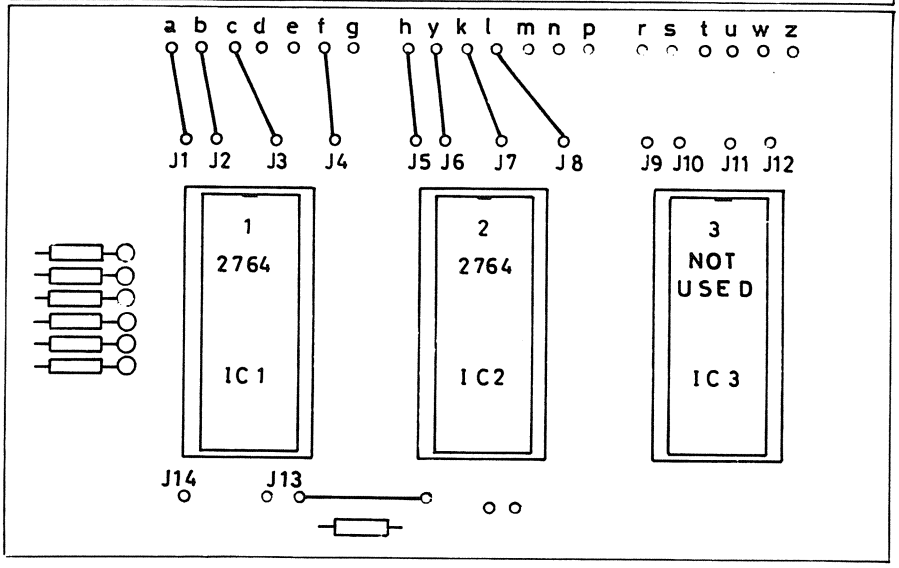
ZACCARIA®

JUMP LIST FOR MEMORIES SELECTION



PINBALL CHAMP
SOCCER KINGS
TIME MACHINE

C.P.U.
P.C. 1B1165 , 65/0 , 65/1



FARFALLA

C.P.U.
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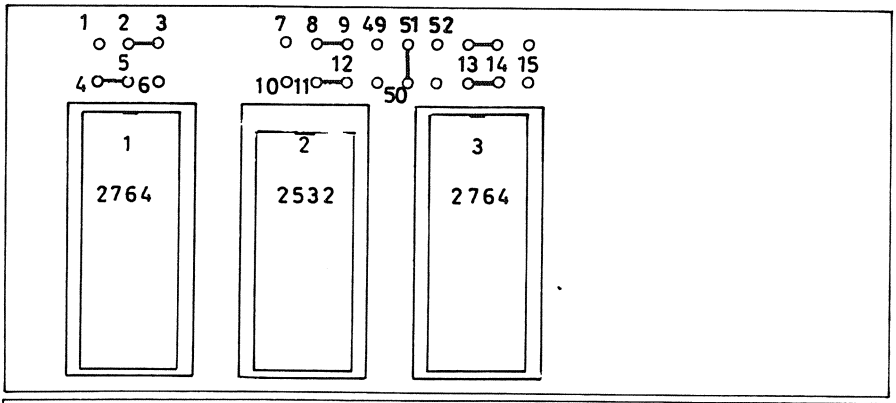
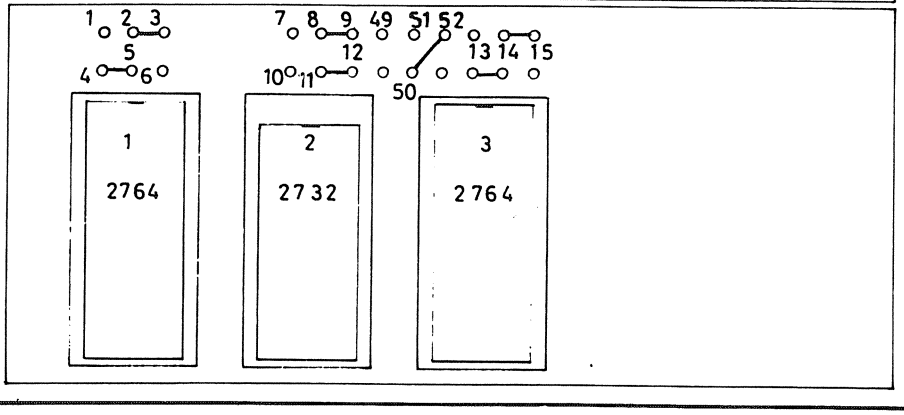


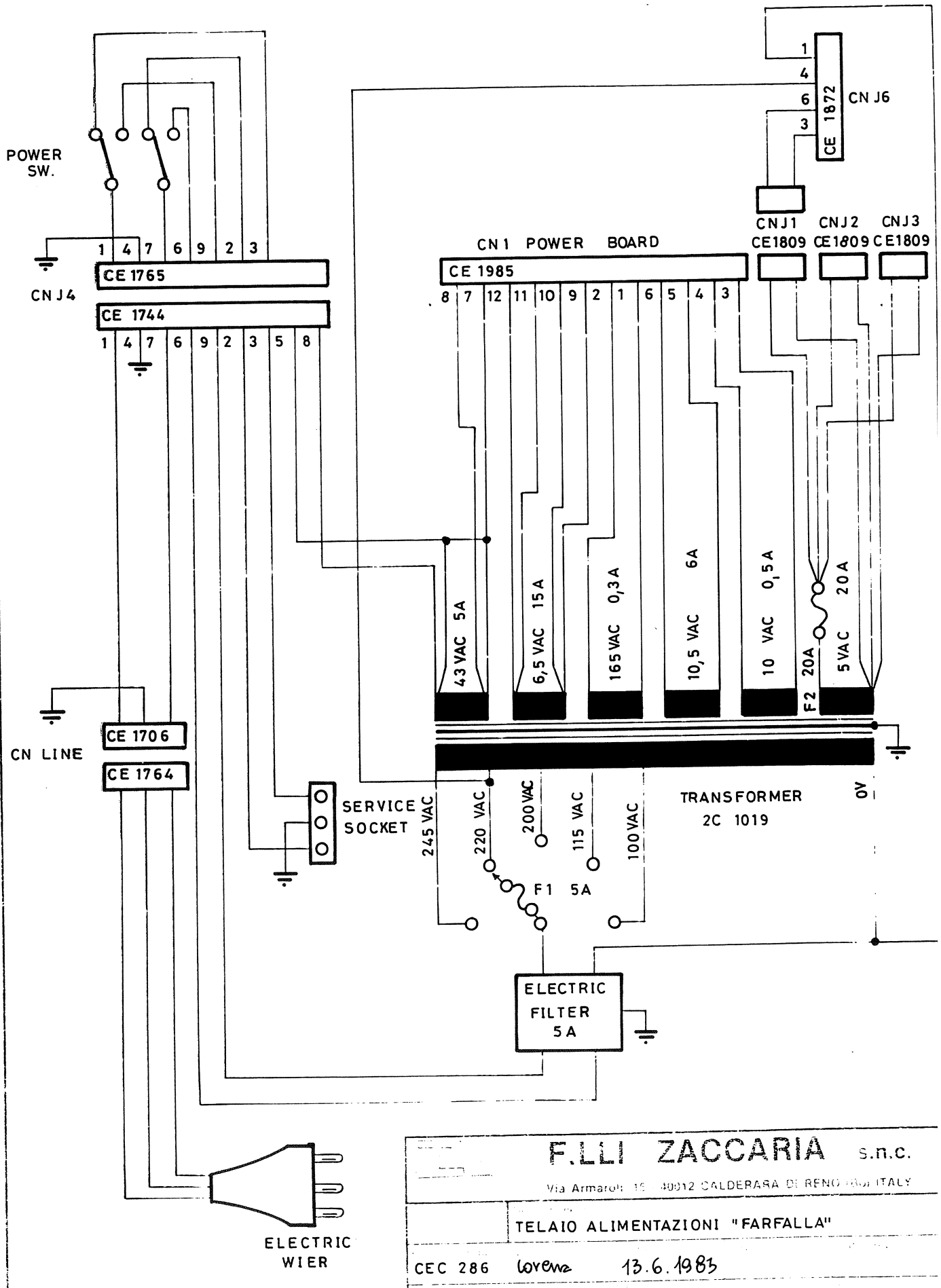
TIME MACHINE

SOUND
PC. 1B11136



FARFALLA

SOUND
PC. 1B11136



F.LLI ZACCARIA S.n.c.

Via Armaroli 15 40012 CALDERARA DI RENO (BO) ITALY

TELAIO ALIMENTAZIONI "FARFALLA"

CEC 286 Lorena 13.6.1983

COLOR CODE

Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Grey	8
White	9
Pink	11
Light Blue	12

WIRES CUTAWAY VIEW LIST

mm^2 0,22	/1
mm^2 0,35	/2
mm^2 0,5	/3
mm^2 0,9	/4
mm^2 1,5	/5