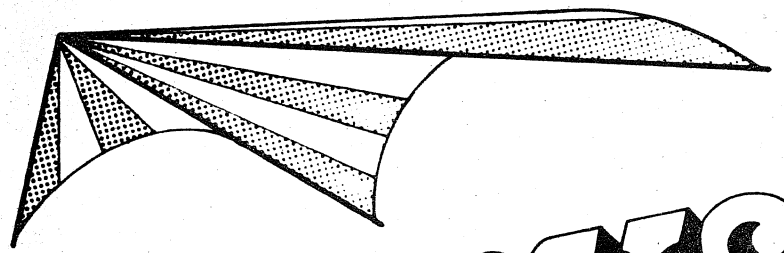
EURO

REGEL SPAIN S.A.
Manufactured in Madrid

FLIP



ICARUS

SERVICE MANUAL

ICARUS 1049-O

SERVICE MANUAL (035-605)

MADRID JUNE 1.977

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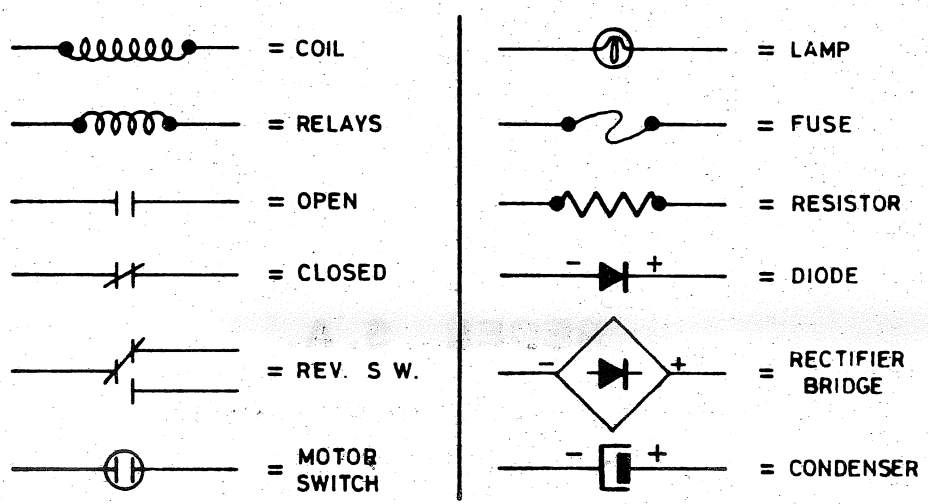
SPECIFICATION

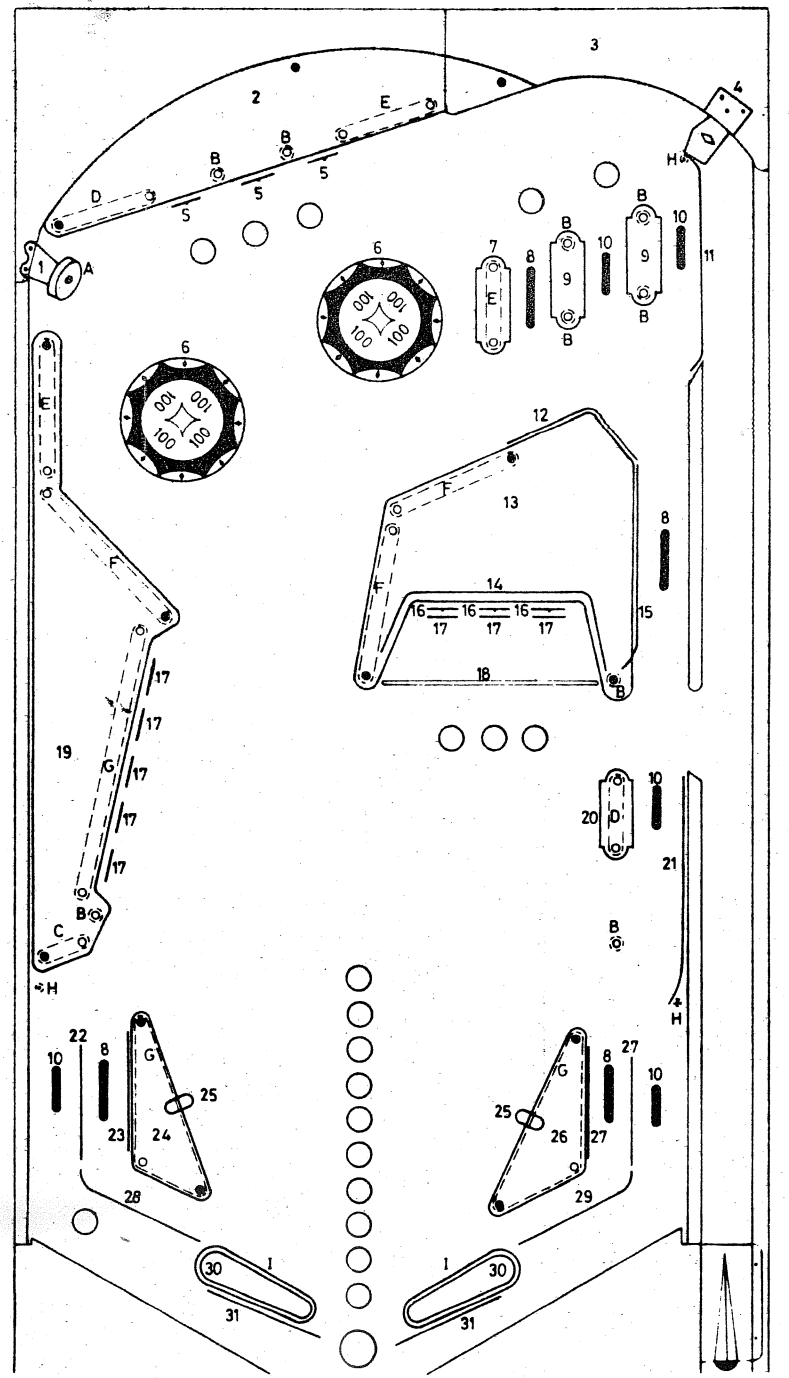
Depth	1330 mm.
Width	720 mm.
Height	1850 mm.
Nett weight	145 kg.
Power Supply	110–125–150–200–220 v. (50 cycles) A.C.
Consumption	130 watts (at rest) 280 watts (maximum)
Playfield inclination	3^{0} – 8^{0} (adjustable)

IMPORTANT

Before plugging in the machine, check that all the connector pins are in their proper setting and check that the transformer is set at the Mains voltage. All RECEL EUROFLIP machines leave our works set at 220 volts AC.

WIRING DIAGRAM SYMBOLS





COILS USED

REF.	COLOUR	DESCRIPTION
050-002	YELLOW	RELAY COIL (9.500)
050-003	PINK	RELAY COIL (11.500)
050-004	SLATE	RELAY COIL (13.500)
050-101	YELLOW	STEPPER RELAY COIL (107.950)
050-203	YELLOW	DC FLIPPER, DC BUMPER AND DC RUBBER KICKER COILS BALL RETURN KICKER COIL AND DRIVE COIL ON BALL COUNTER/PLAYER AND REPLAY UNITS
050-201	BLUE	KNOCKER AND REPLAY RESET COIL
050-301	WHITE	COUNTER UNIT COIL
050-302	RED	TARGET AND RELAY BANK RESET COIL

ICARUS

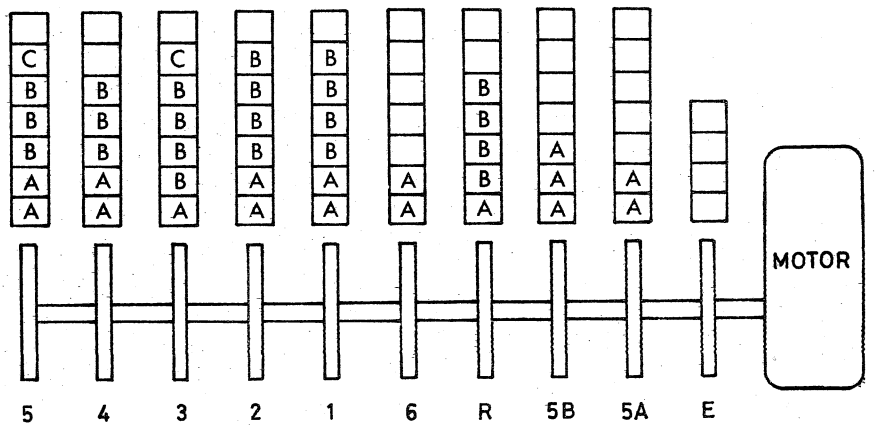
RECEL S.A.

HNOS. GARCIA NOBLEJAS 39
MADRID-17 SPAIN

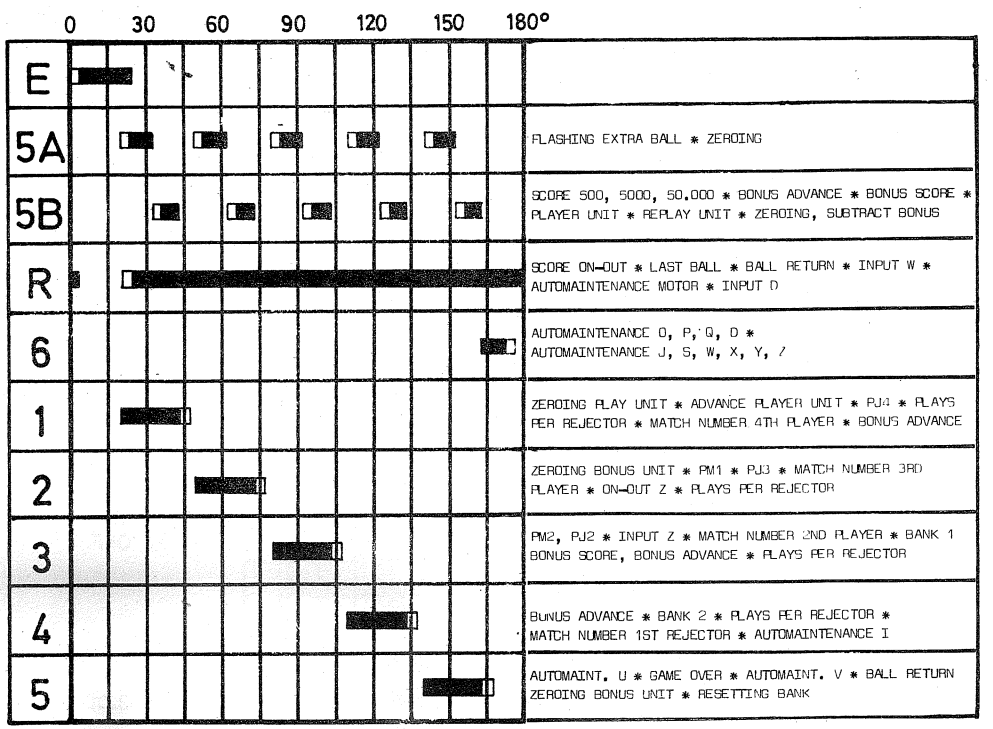
PLAYFIELD PARTS

A	REBOUND RUBBER	015-033
B	RUBBER RING Nº 1	015-021
C	RUBBER RING Nº 1 1/2	015-022
D	RUBBER RING Nº 2	015-023
E	RUBBER RING Nº 2 1/2	015-024
F	RUBBER RING Nº 3	015-025
G	RUBBER RING Nº 4	015-026
H	RUBBER RING Nº 0	015-020
I	FLIPPER RUBBER RING	015-046
1	RUBBER REBOUND	046-212
2	PLASTIC SHIELD	020-231
3	METAL GUIDE	001-268
4	BALL GATE ASSEMBLY	046-214
5	OCTGL. RED TARGET SW. ASSY	051-079
6	RED BUMPER BODY	018-352
	RED BUMPER CAP	018-370
7	RED CHANNEL GUIDE	018-152
8	RH ROLLOVER WIRE FORM	017-018
9	RED CHANNEL GUIDE	018-148
10	RH ROLLOVER WIRE FORM	017-020
11	METAL GUIDE	001-206
12	METAL GUIDE	001-238
13	PLASTIC SHIELD	020-233
14	METAL GUIDE	001-205
15	METAL GUIDE	001-231
16	OCTGL. RED TARGET SW. ASSY	051-094
17	DROP TARGET	018-480
18	REBOUND BRIDGE	001-256
19	PLASTIC SHIELD	020-232
20	WHITE CHANNEL GUIDE	018-147
21	METAL GUIDE	001-150
22	METAL GUIDE	001-197
23	METAL GUIDE	001-195
24	PLASTIC SHIELD	020-234
25	LH CONTACT KICKER	057-002
26	PLASTIC SHIELD	020-235
27	METAL GUIDE	001-196
28	METAL GUIDE	001-229
29	METAL GUIDE	001-230
30	FLIPPER HEAD	018-339
31	METAL GUIDE	001-291

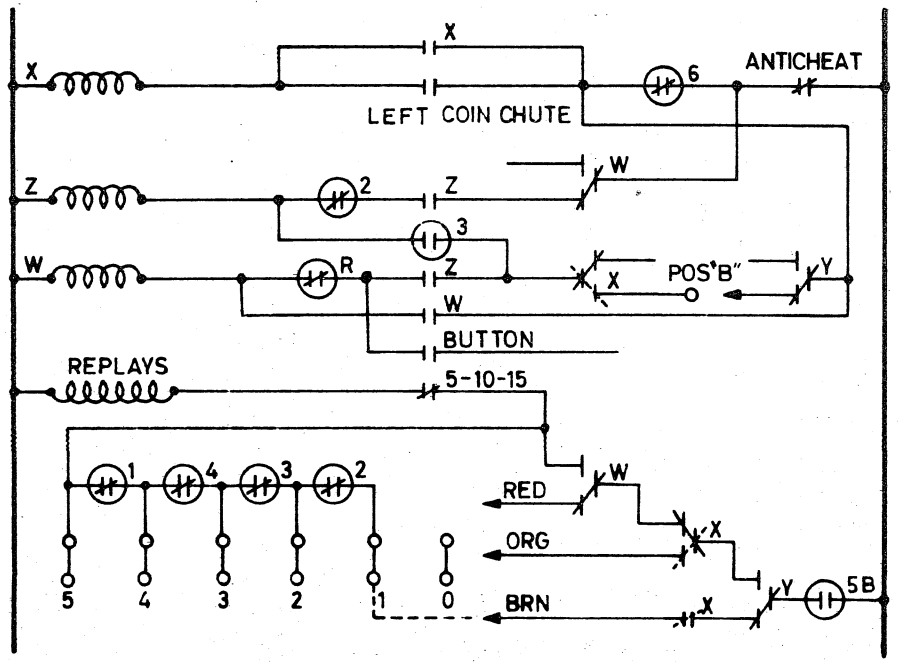
MOTOR



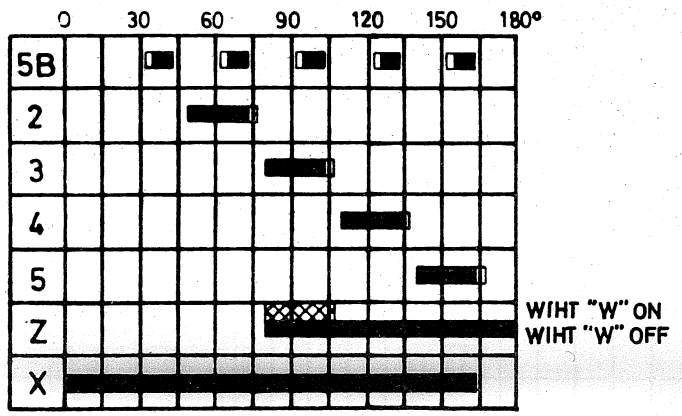
MOTOR SEQUENCE CHART



LEFT HAND COIN MECHANISM

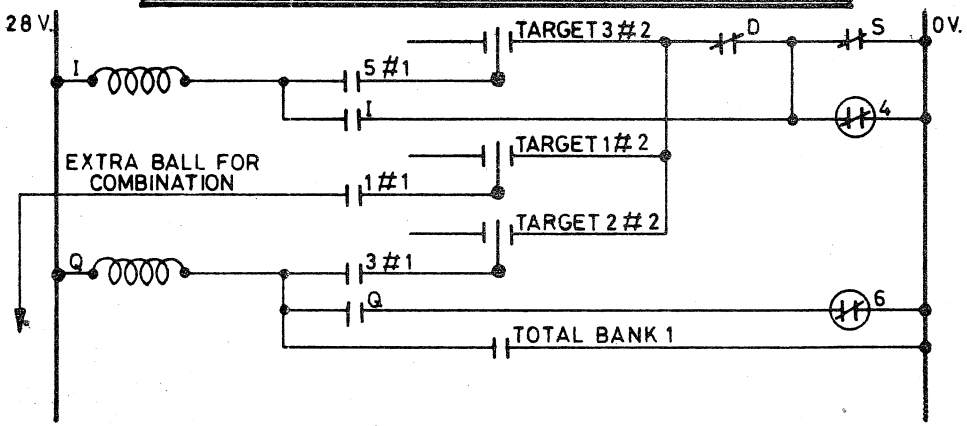


When inserting the coin, Relay X is activated which via circuit 5B, Y, X provides the number of plays (present for 1 to 5) (Brown Male).



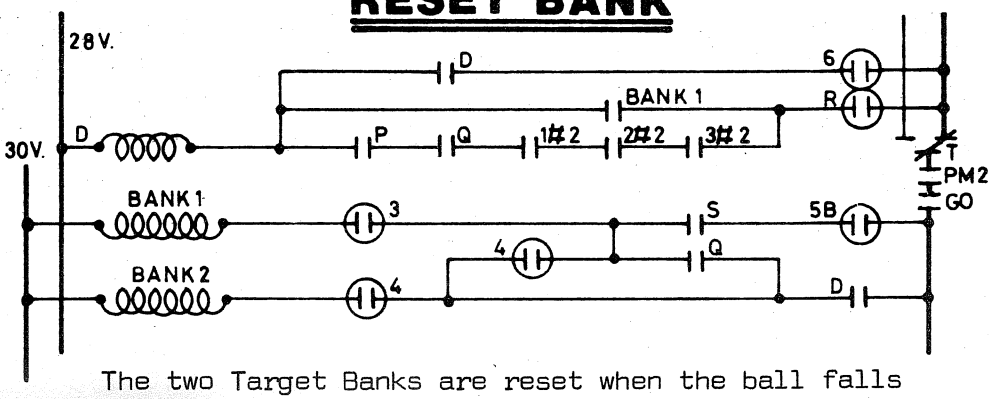
<u>One more play with the 2nd coin:-</u> Whilst the motor is in position 3, Relay X activates Relay Z which remains activated up to the end of the cycle, until Relay W is activated.

EXTRA BALL, DOUBLE BONUS AND 50.000 POINTS



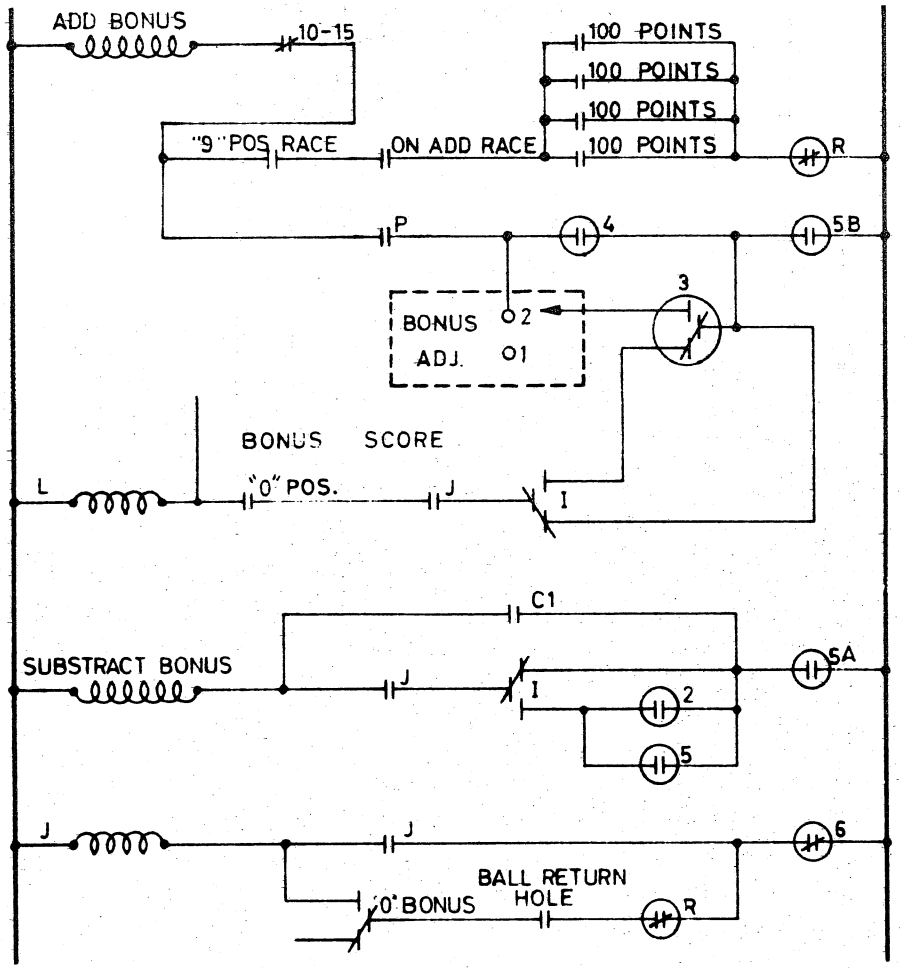
The three Targets on Bank Nº 2 (1-2-3) when Lit, give Extra Ball, 50.000 Points and Double Bonus respectively. The lites of these three Targets are lit when the Targets on Bank Nº 1 (1-3-5) are knocked down.

RESET BANK



The two Target Banks are reset when the ball falls into the hole (Relay S) or when all the Targets on Bank Nº 1 are knocked down.
Bank Nº 2 is reset when all three Targets are down.

BONUS



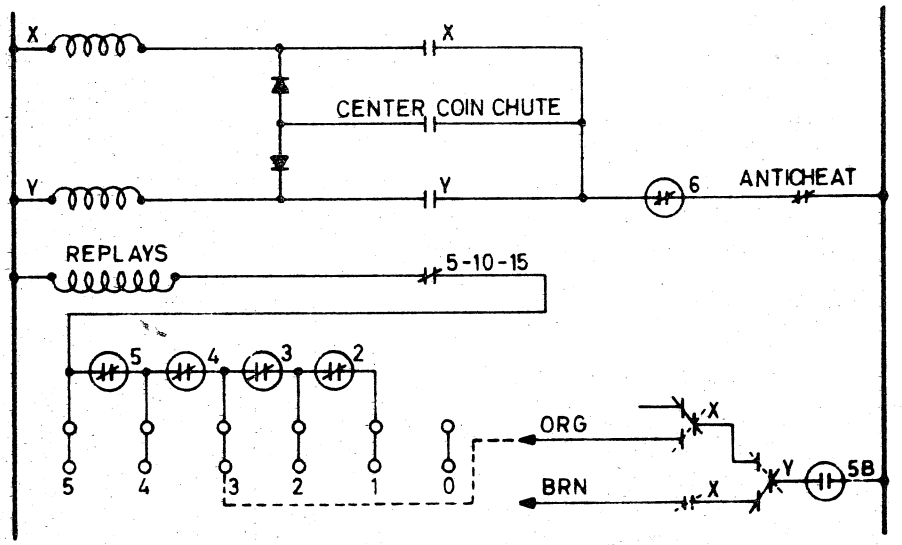
The Bonuses advance through the Drop Targets and roll-overs when lit, which score 5000 points (Relay P). With Relay P you can obtain 2 or 1 bonus advances, depending on whether the machine has been set at Easy or Difficult.

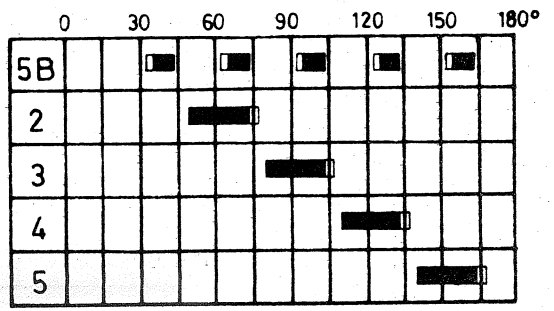
The zeroing of the bonuses is obtained via Relay J or with C1 (back to zero). The counter is brought back to zero in steps of 5 (simple bonus) or 2 (double bonus).

If you do not press the Play button when inserting the second coin, Relay X will be activated and will perform the same function as with the first coin, but also via circuit X, Y, Z and motor R it will activate Relay W which will give us the Start and will return Relay Z to the rest position.

Relay W can be tripped either by pressing the Play button or by inserting another coin.

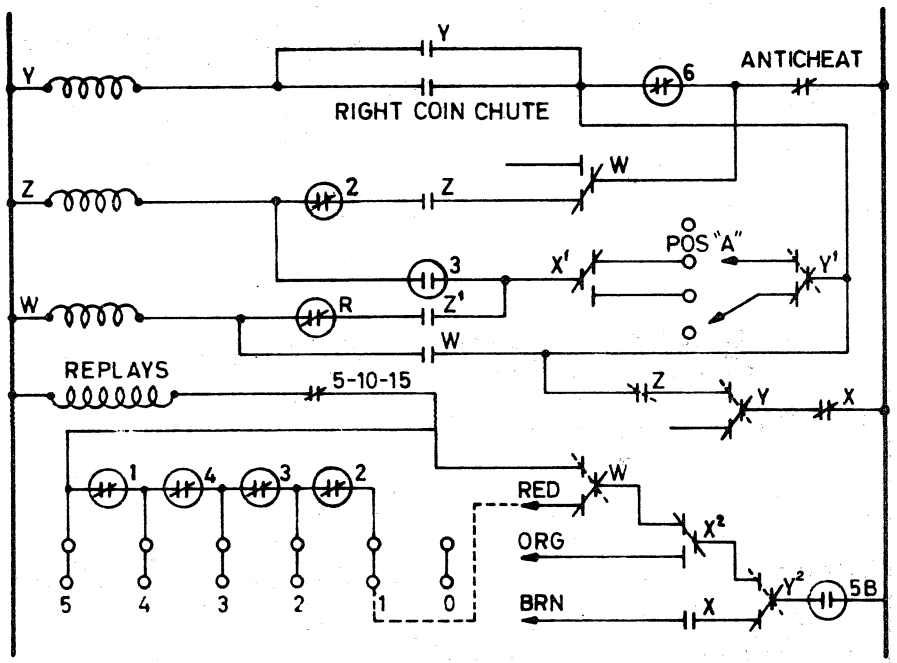
CENTER COIN MECHANISM

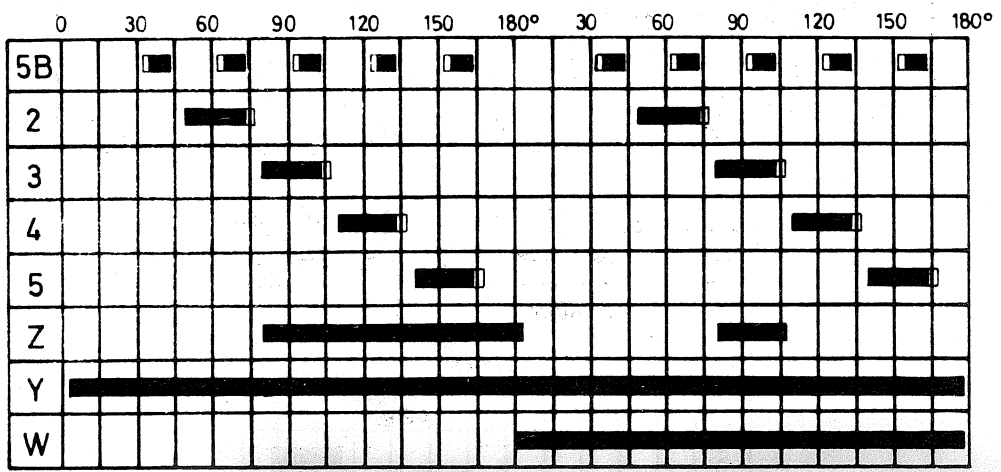




When inserting the coin, Relays X and Y are activated and remain so during the time that the motor is at position 6. The number of plays is set with the Orange male connector, offering a possibility from 1 to 5 plays.

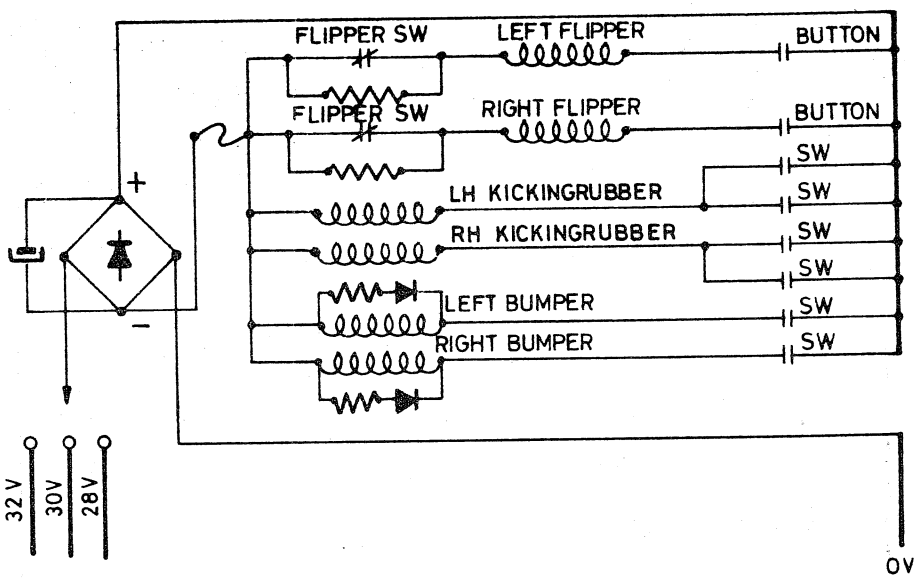
RIGHT HAND COIN MECHANISM





When inserting the coin, Relay Y is tripped, by which means we can obtain 1-5 plays adjusting the red Male connector.

BUMPERS, FLIPPERS AND R. KICKERS

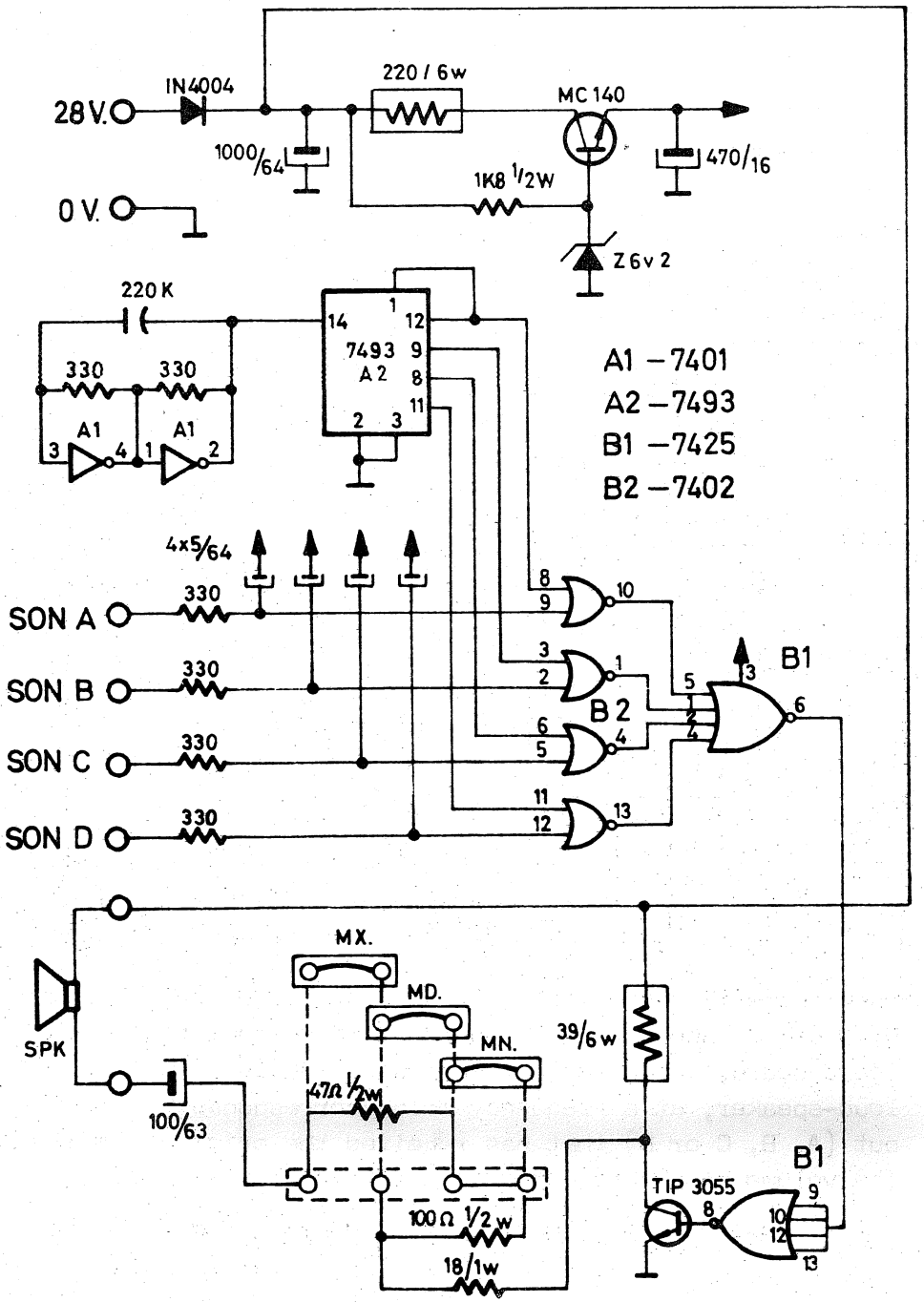


The machine is fitted with an AC rectifier in order to feed these mechanical elements with DC current, thereby achieving greater effectiveness. The voltage is determined by a setting at 28, 30 or 32 volts and therefore can be adjusted to obtain the desired power.

The flippers at the moment when the push-buttons are pressed, give their maximum force, and thereafter remain with medium force, when the on-add switch is opened because this remains in series with an 18 ohm. resistor thus avoiding any burn-out of the coil even if it remains activated for a long period of time.

On the rubber kicker coil we use a diode, and also on the bumper coil we mount a diode and resistor, in order to prolong the life of the switches on these elements.

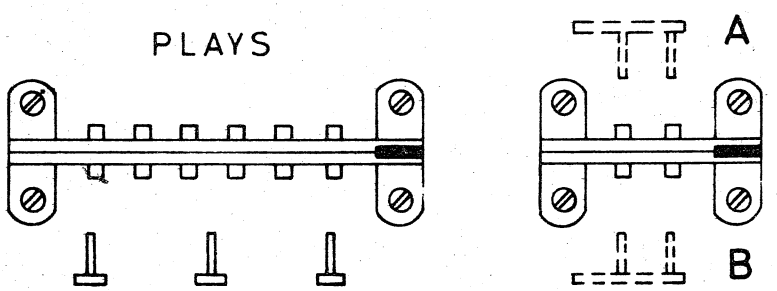
CIRCUIT SOUND



More than 5 plays

Whilst the motor is at position 3, relay Z is activated which via the circuit formed by X, Y, Z leaves us with the position 6 of the motor out of action, and therefore Relay Y is not disactivated at the end of the first cycle of the motor. On the second cycle Relay Z via circuit Y', X', Z', motor R trips Relay W which cuts the auto-maintenance of Relay Z. Relay W places the machine at the Start position and at the same time gives 5 plays more via the circuit 5B, Y^2, X^2, W.

REJECTOR ADJUSTMENT



REJECTORS: LEFT CENTER RIGHT

COLORS: BROWN ORANGE RED

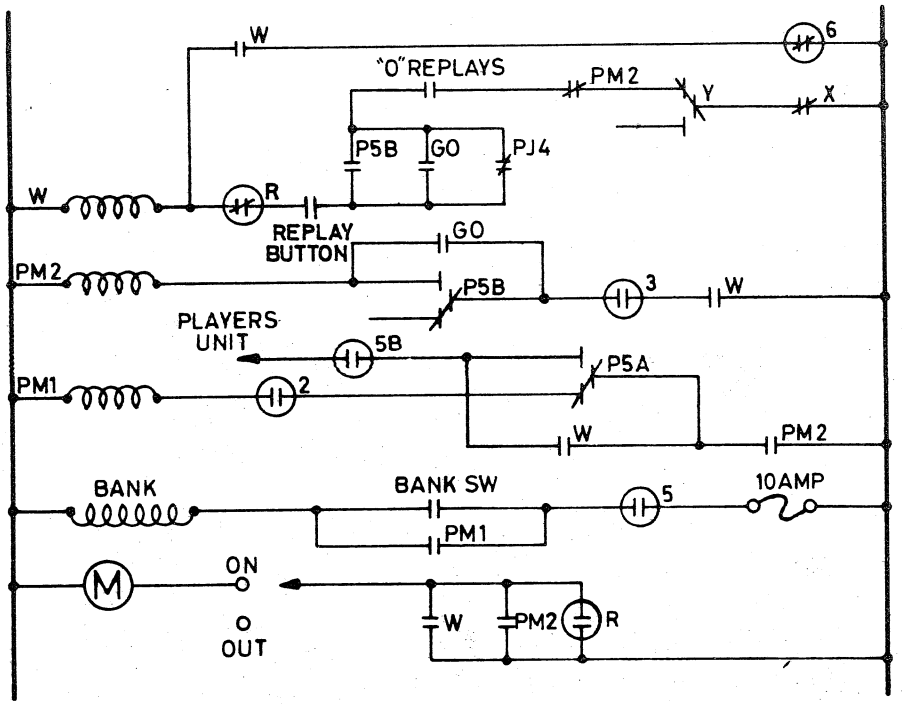
Left:- From 0 to 5 plays per coin; and a further play with the second coin, if set at position "B".

Center:- From 1 to 5 plays.

Right:- From 0 to 5 plays; and +6 plays if set at position "A".

N.B.:- In any one machine, regardless of the number of rejectors (1, 2 or 3), only one of the "A" "B" selections can be used.

START



After pressing the button, Relay W is activated as long as the circuit conditions are satisfied.

Whilst the motor is at position 3, Relay PM-2 is activated as long as the GO or P5B conditions are complied with.

Relay PM2 takes the ball/player counter back to zero and when this is at zero, activates Relay PM-1 whilst the motor is at position 2.

The ball counter when returning back to zero, provokes the zeroing of the score counters.

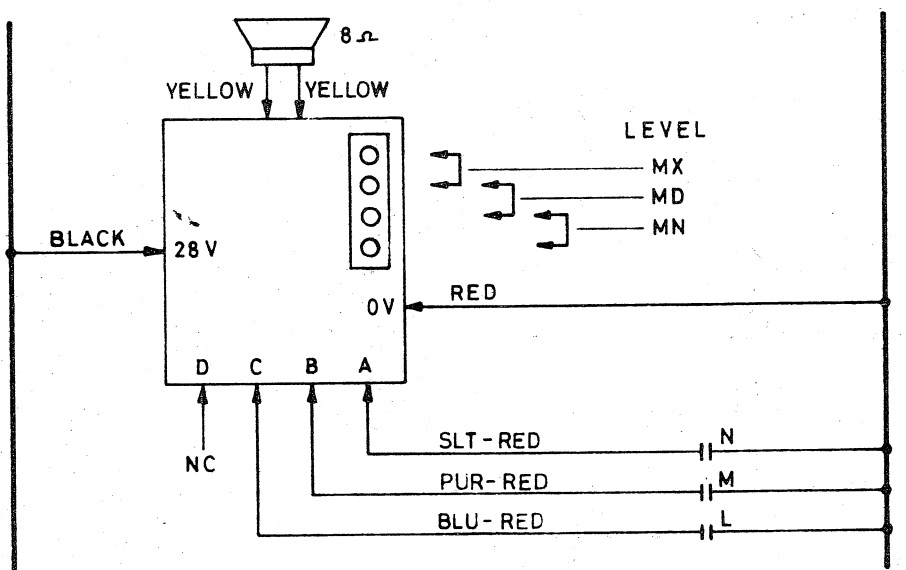
Relay PM-1 returns the ramp to rest position whilst the motor is at position 5, and then the machine is ready to play.

players respectively and in this order, and free play is given to the player who coincides with the Relay LT,

This same series (5B, S and UB) activates the Relay GO whilst the motor is at position 5, thereby terminating the play.

During the Start sequence and whilst Relay LT is advancing via Relay C1, the lite remains off because switch PM-2 is disconnected.

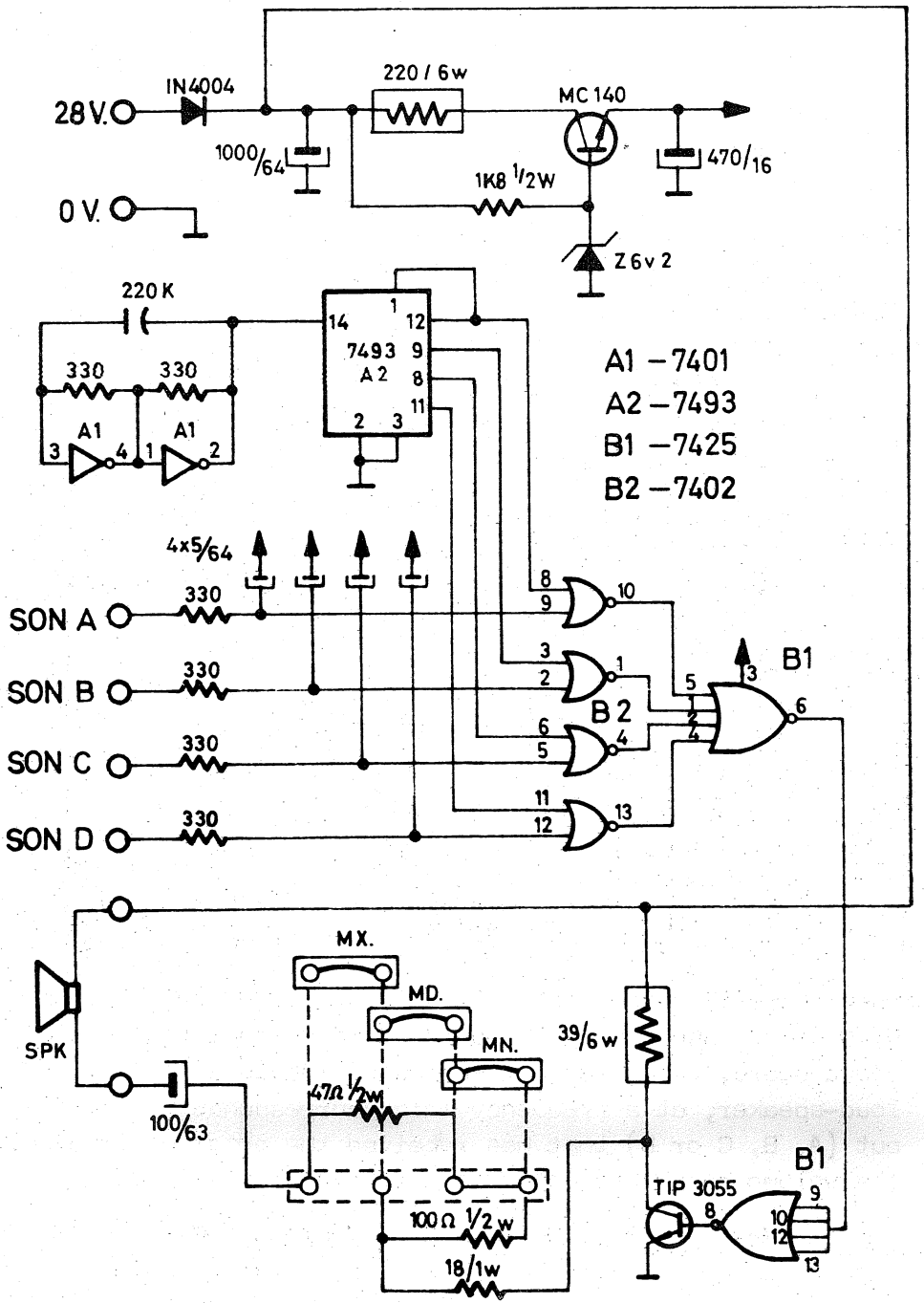
ELECTRONIC SOUND



When there is a score of 100, 1000 or 10.000 (via Relays N, M or L respectively), impulses are transmitted to the Sound board, which sends a series of impulses to the loud-speaker, at a frequency which corresponds to the input (A, B, C or D) that has received the original impulse. The volume can be adjusted to three levels :-

Maximum (MX), Medium (MD), Minimum (MN)

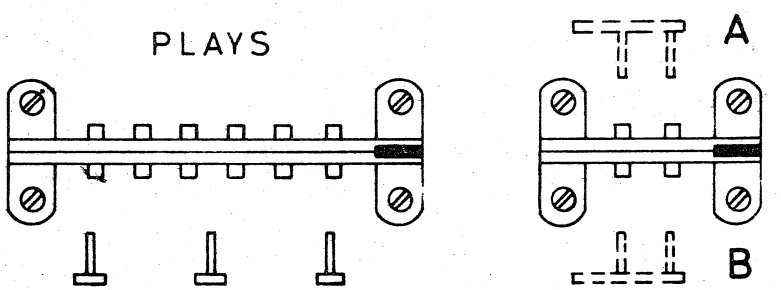
CIRCUIT SOUND



More than 5 plays

Whilst the motor is at position 3, relay Z is activated which via the circuit formed by X, Y, Z leaves us with the position 6 of the motor out of action, and therefore Relay Y is not disactivated at the end of the first cycle of the motor. On the second cycle Relay Z via circuit Y', X', Z', motor R trips Relay W which cuts the auto-maintenance of Relay Z. Relay W places the machine at the Start position and at the same time gives 5 plays more via the circuit 5B, Y^2, X^2, W.

REJECTOR ADJUSTMENT



REJECTORS: LEFT CENTER RIGHT

COLORS: BROWN ORANGE RED

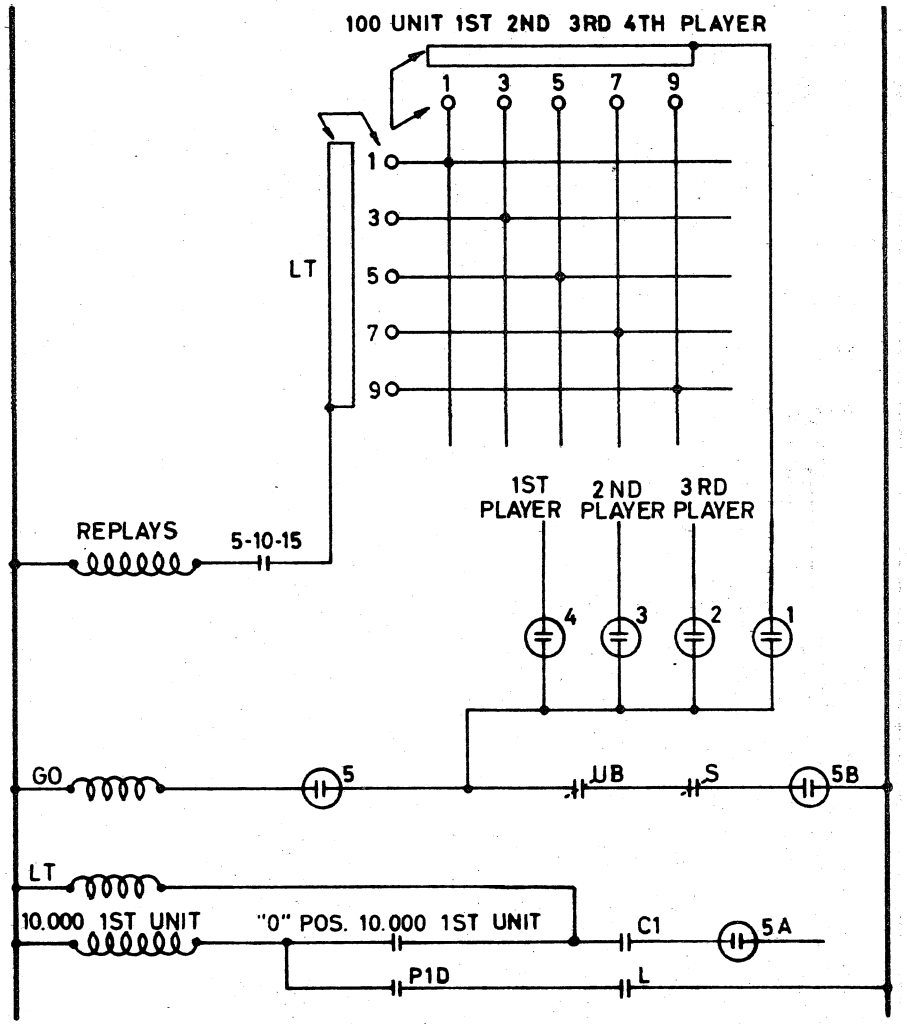
Left:- From 0 to 5 plays per coin; and a further play with the second coin, if set at position "B".

Center:- From 1 to 5 plays.

Right:- From 0 to 5 plays; and +6 plays if set at position "A".

N.B.:- In any one machine, regardless of the number of rejectors (1, 2 or 3), only one of the "A" "B" selections can be used.

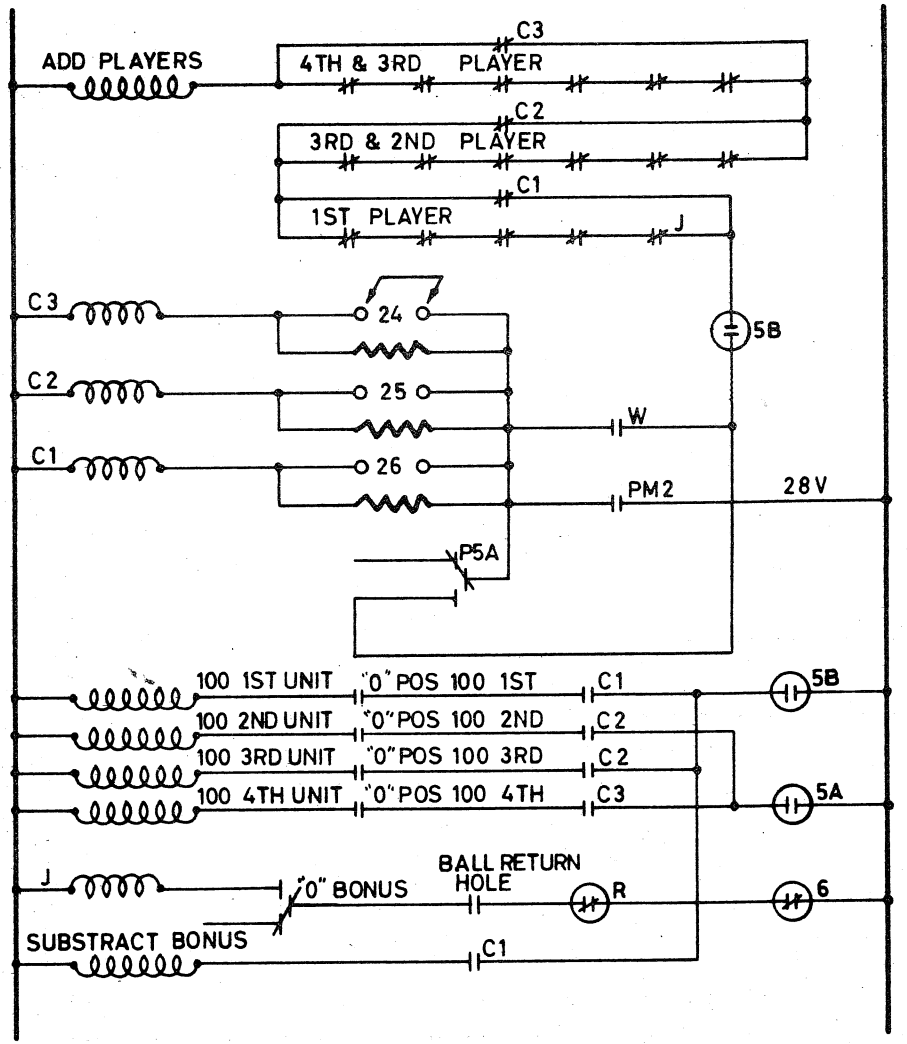
RELAY LT 000-900



The Relay LT (000-900) is activated by the 1st player's 10000 counter, at every impulse (except when at position "0"). During the zeroing of the score counters, it receives impulses via C1 and this makes it stay at an undetermined position.

When the last ball falls into the Ball Return hole, this activates UB and S (see Ball Return) via the series 5B, S, UB. Whilst the motor is at 1, 2, 3 and 4, the situation of the counters is scanned for the 4th, 3rd, 2nd and 1st

ZEROING OF SCORE COUNTERS



During the Start cycle, Relay PM2 carried out the zeroing of the player unit.

When the player unit reaches position 24, the PC disc activates Relay C3 thereby impeding any further advance of the unit until the mentioned relay takes the score counters within its circuit, back to zero (100.000 3rd, 10.000 3rd, 100.000 4th, 10.000 4th, 1.000 4th, and 100 4th).

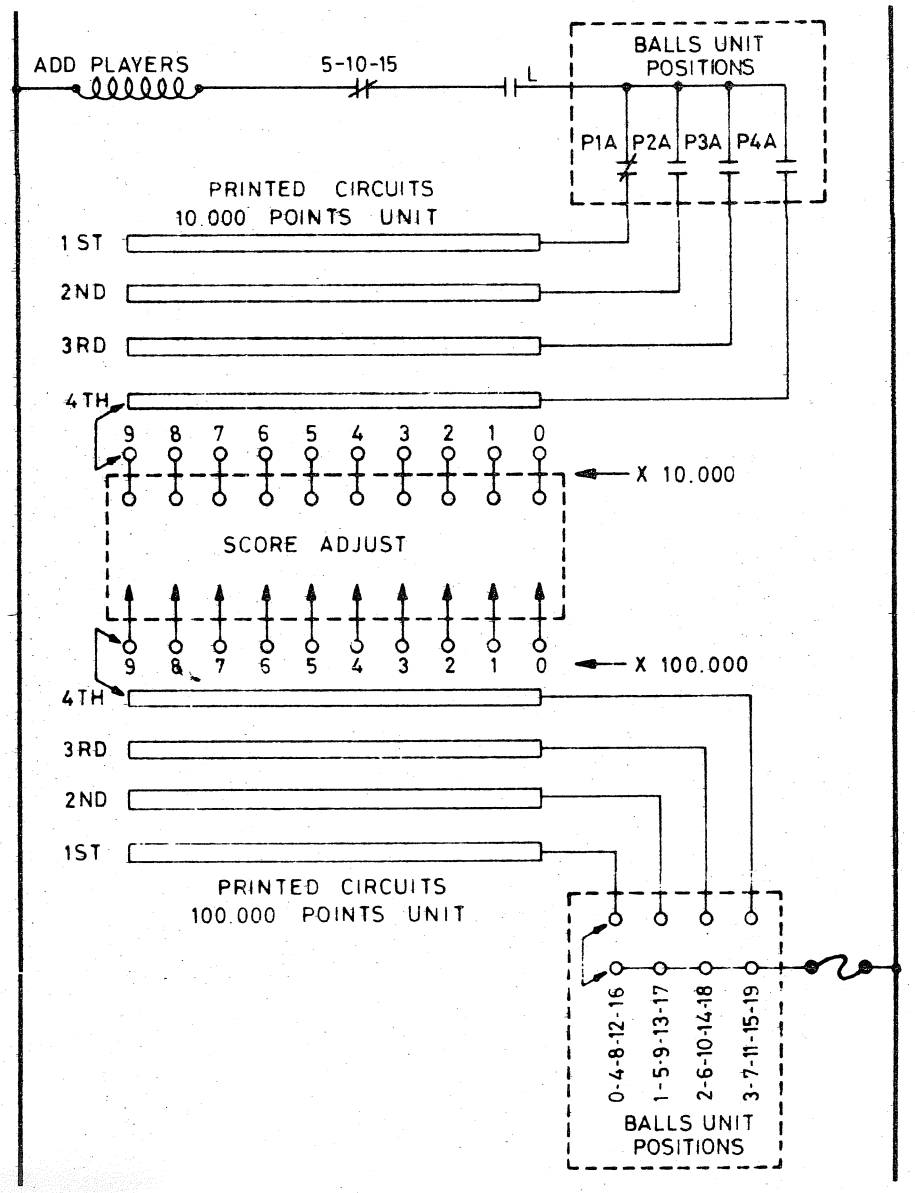
When Relay C3 has performed its function, the player counter moves on one step to position 25, activating Relay C2, thereby cutting out any further advance of the counter, and it remains in this position during the zeroing of the score counters which belong to the C2 circuit (1000 3rd, 100 3rd, 100.000 2nd, 10.000 2nd, 1000 2nd and 100 2nd).

Once these counters are back at zero, the C2 circuit is closed, thereby allowing a further impulse to penetrate to the player unit until this latter reaches position 27, where it activates Relay C1, which once again prevents any further advances of the player unit until completing the zeroing of the remaining score counters (100.000 1st, 10.000 1st, 1000 1st, and 100 1st). In this particular model, Relay J has been included for zeroing the Bonus counter, so that the player counter can continue until it reaches zero.

Whenever there is a fault in the machine, no matter how insignificant this might seem, put it right. The player loses interest in any game when he finds that certain elements are not working properly.

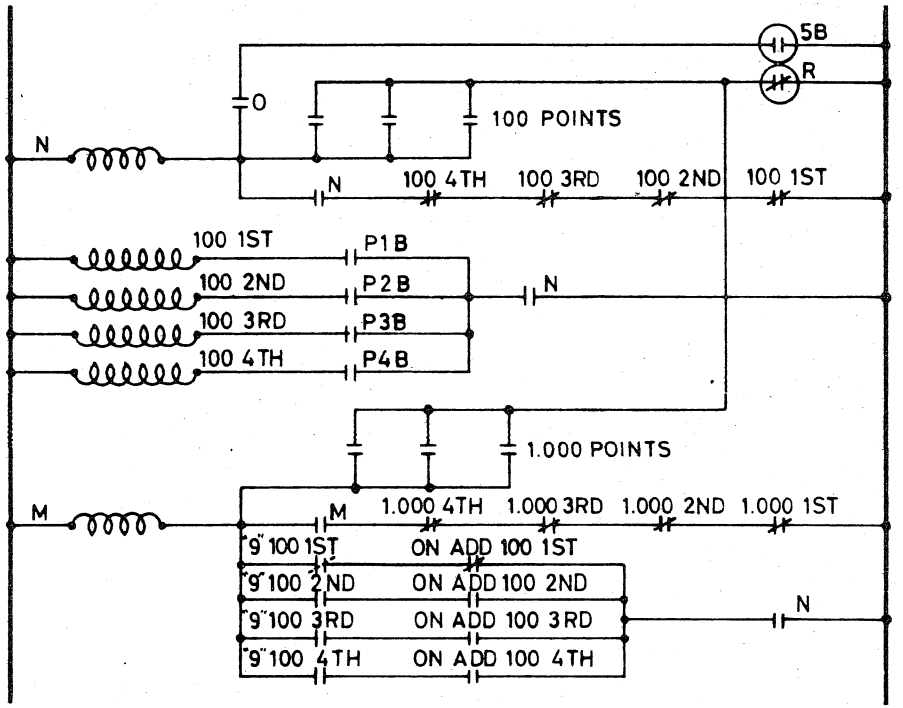
Watch your machine. The lighting both on the playfield and back screen, make it more attractive. Do not let the machine lose this characteristic just because a bulb needs replacing.

SCORE REPLAYS



The free plays given as a result of high scores, are obtained when the player counter coincides with the predetermined adjustment set on the 100.000 - 10.000 score counters (lite box) when an impulse is produced from Relay L.

SCORE UNIT



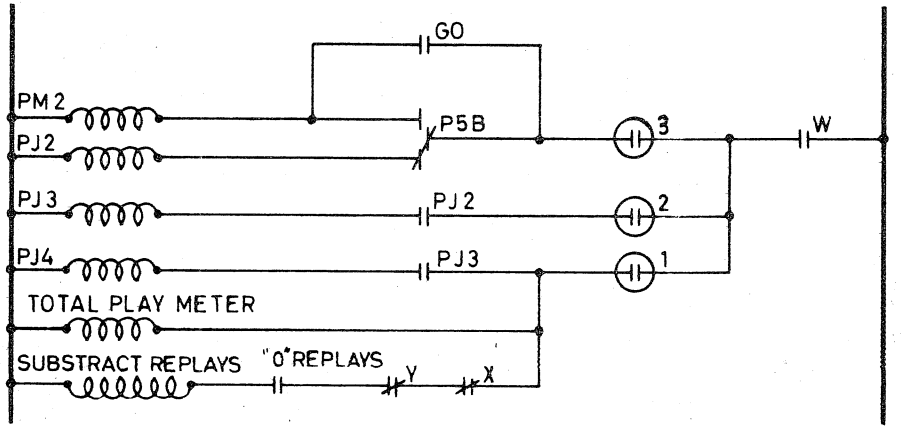
The score switches with a single impulse, are cut off by the motor in such a way that whilst the motor is turning, no score is given.

The multiple scores (for example, 500 points) activate their relevant relay (Relay O) and it is this latter, via motor position 5B that performs the score function.

Each impulse received by the score relays (for example N), is transmitted by the player counter (P1B, P2B, P3B, P4B) to the respective counter. This counter when activated, opens the relevant switch in the auto-maintenance sequence of the relay (N).

When a counter (100 1st) is at position "9", this closes the step switch to the following relay (M) and when a new impulse is received, the relevant series is closed giving the 10th impulse to the following relay (M).

ENTRY OF 2nd, 3rd AND 4th PLAYERS AND DEDUCTION OF PLAYS



When Relay W comes into circuit for the first time, it activates Relay PM2, as we have been able to see from the Start circuit.

After the machine has completed the Start sequence and during play of the first ball, more players can be marked up.

The schematic is shown at the "rest" position, that is to say after completion of the Start sequence.

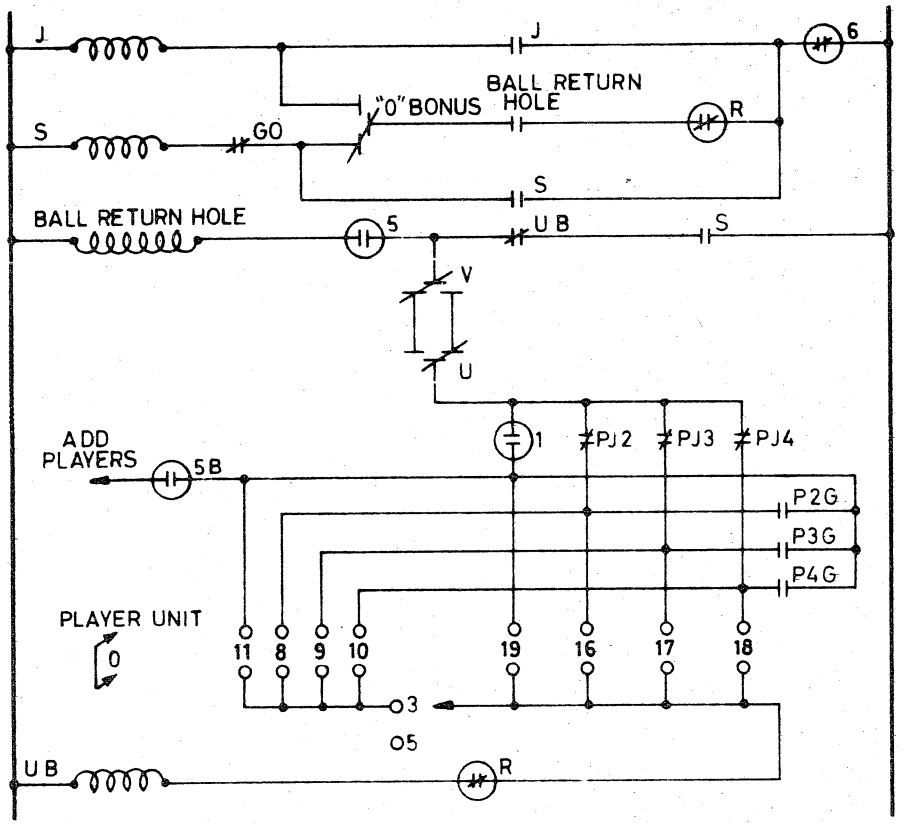
If Relay W is activated again, it trips PJ2, PJ3 and PJ4 in succession, and in each case the totalizer or playmeter will move one step.

Relay W will deduct the plays as long as it does not work via Relays X and Y, when it will activate the relevant player but without deducting the play, because in this case it is protected by two closed switch groups in Relays X and Y.

VERY IMPORTANT

Use only fuses of the same value as indicated for each function.

BALL RETURN



The Ball Return Relay S is activated with the ball in the hole after the Bonus counter has been returned to zero and with the motor at the rest position.

Relay S, working via a contact in the UB Relay (last ball) and with the motor at position 5, kicks the ball out of the hole

If condition V (beginning of ball) or U (extra ball) is met during the time that the motor is at position 1, the same contact in the Relay S sends an impulse to the player counter which will receive up to 4 successive impulses as long as Relays PJ2, PJ3 and PJ4 are not activated, thereby proceeding to return the next ball, or to move on to the next player if any of the PJ Relays are activated.

Relay T is connected to the Tilt contacts (Pendulum and Ball Roll Tilt) and is disconnected with the entry of Relay S, and the time in position 4 of the motor.

Relay T lites up the Tilt sign and cuts off the service to the play relays and mechanisms (Flippers, Bumpers and Kickers).

It ensures that Relay V (beginning of ball) remains activated whilst cutting off the auto-maintenance of Relay U (Extra Ball), thereby penalising the ball in play and the Extra Ball if this had been won.

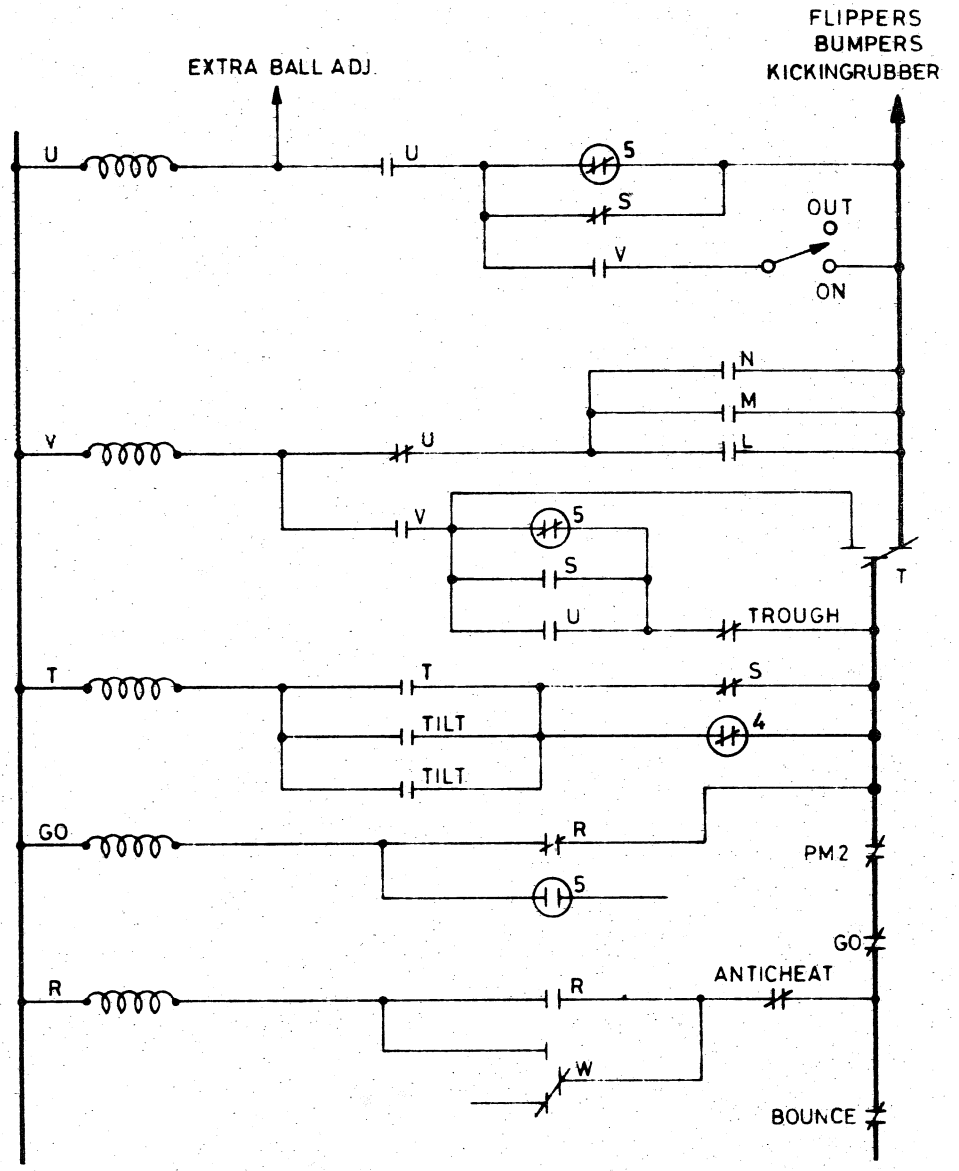
The heaviest penalty occurs when hitting against the front door or the lower part of the cabinet, because in such cases the auto-maintenance of Relay R is cut off, and the circuit passes on to Game Over (GO), thereby finishing the game at that particular point. Game Over and Tilt signs are then lit up for all players.

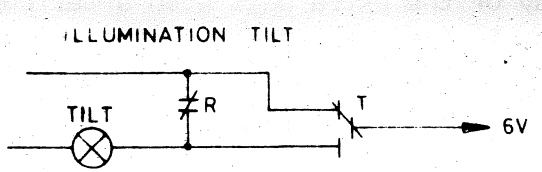
Relay R which is shown in the schematic at the "rest" position, is activated by the Start sequence (Relay W) and is held in auto-maintenance.

Once you have levelled up the machine, check that the pendulum and ball roll tilt units are set correctly, in order to prevent Tilt at involuntary or critical moments.

The mechanical playboard elements as well as the contacts are vital to achieve maximum efficiency of the game. Give your machine regular servicing.
THIS IS VERY IMPORTANT.

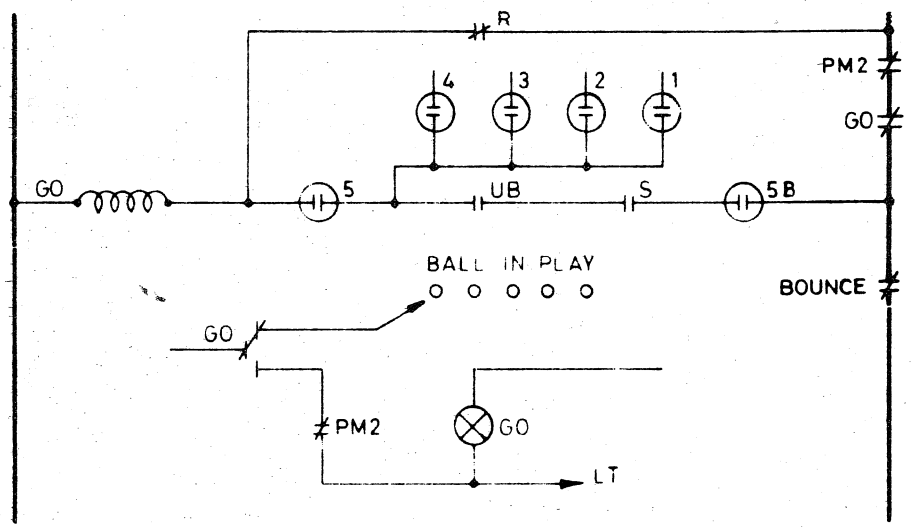
ANTI-CHEAT AND CUT-OUT UNITS





Should the last ball be in play (3-5), the wiper would then be against the relevant plot. As soon as the ball fell into the hole, Relay S would be tripped and therefore coinciding with the motor (positions 1-R) the Relay UB would be activated and this in turn would cut the impulse from the player counter before completing 1-5B, so that the counter could not advance any further and no ball would be returned to the playfield.

GAME OVER

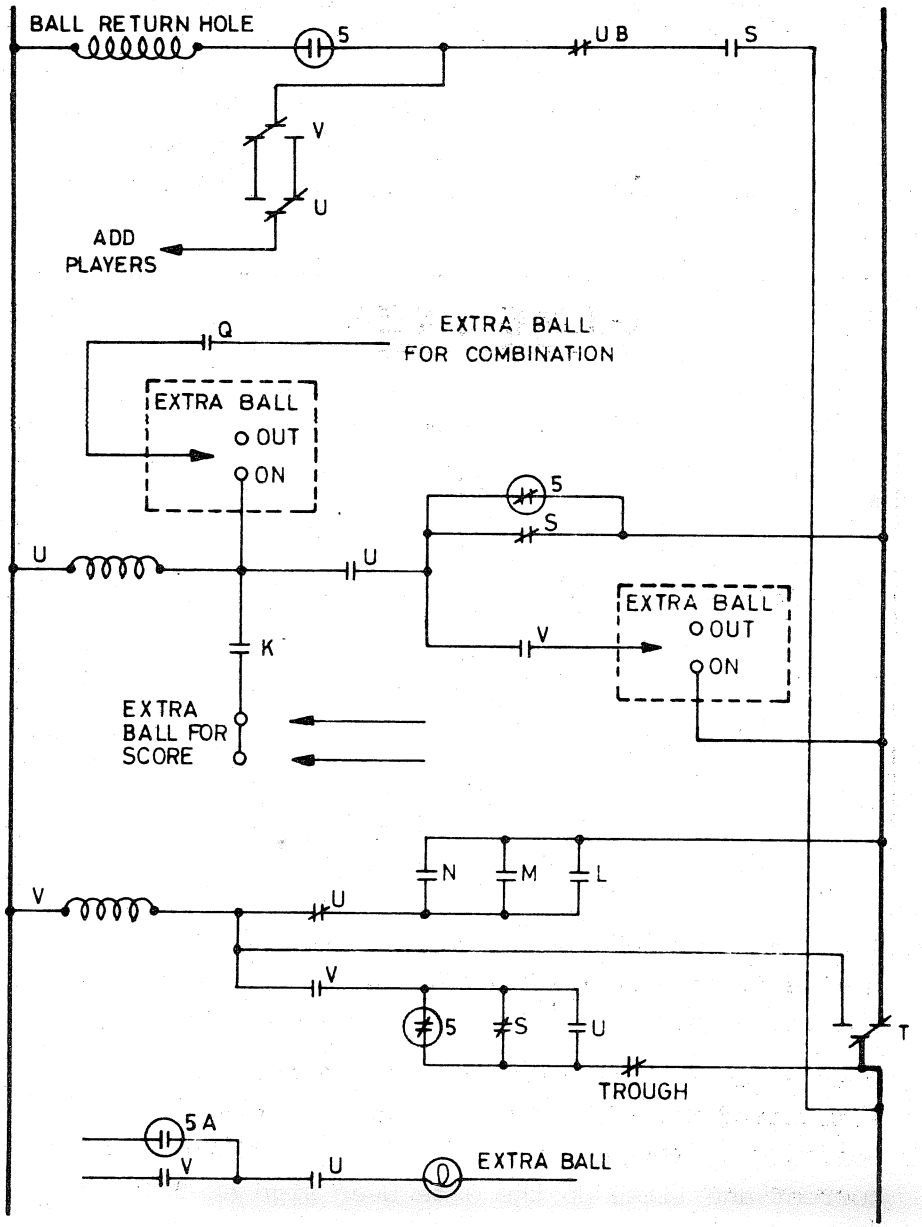


The Game Over (GO) Relay is activated in two ways: by activating the short-circuit (see Tilt circuit) or at the end of play.

When Relay S comes into play at the last ball, and after activating Relay UB (see Ball Return) with the motor at position 5, the GO Relay is activated which cuts off current and lites up the Game Over sign at the end of the play.

Before reaching position 5, and via the same GO circuit, the match number is scanned giving a free play if such has been won via the motor positions 1, 2, 3 and 4.

BEGINNING BALL AND EXTRA BALL



The Relay V is activated by means of Relays N, M and L (score relays) and remains activated until the ball re-enters the Ball Return hole.

I f Relay V has been activated during play, Relay S will count the ball, but in other cases the ball will be returned to the playfield without deduction.

In the case of Extra Ball, Relay U prevents the cut-out of Relay V by Relay S and it is not disconnected until the Ball passes through the Return Track.

Extra ball can be obtained directly by your score as per the preset levels, always using the lower male connector required (Lite Box), because if the male connector were set at 300.000, there would be no Extra Ball until Relay K had been reactivated, which would mean 400.000 points.

Extra ball by combination according to model, see p. 23.

When achieving Extra Ball, the combination of Relays U and V enables Relay S to be activated without deducting the ball.

Relay U continues in the activated position until Relay S is brought into action and passes through the motor position 5 thereby allowing a possible further Extra Ball.

With the adjustment for "No Further Extra Ball", we have achieved that the Relay U remains activated during the second ball, but Relay V cannot be activated and so the second ball will be taken into account and there will be no further extra ball.

Whilst playing the extra ball, and when the adjustment is such that this ball cannot win a further extra ball, the actual Extra Ball lite will be flashing throughout the play of this extra ball (motor 5B).

The extra ball lite when lit, will be turned off as soon as an extra ball is won and will continue unlit during the play of the extra ball even after completing the circuit. In the case of "No further extra ball", this lite will be switched off during the play of the extra ball.