

INSTALLATION & GENERAL OPERATION INSTRUCTIONS

On all games there are certain items that should be checked after shipment. These are visual inspections which may avoid time consuming service work later. Minor troubles caused by abusive handling in shipment are unavoidable. Cable plugs & sockets may be loosened, switches (especially tilt switches) may go out of adjustment. Plumb bob tilt switch should always be adjusted after game is set on location and leg levelers are adjusted.

Visual Inspections before plugging in line cord:-

1. Check that all cable plugs are firmly seated in proper sockets.
2. Check that cables are clear of all moving parts and relays.
3. Check for any wires that may have become disconnected.
4. Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of contacts.
5. Check wires on relay coils for proper soldering, especially the bare (common) wire connecting a row of relay coils. Cold solder connections may not show up in factory inspection, but vibration in shipment may break contact.
6. Check that fuses are firmly seated & making good contact.
7. Check (manually) the stepping and resetting of all step-up units.
The wiper action should not be sluggish.
8. Check transformer for any foreign material shorting across wiring lugs.

INSTALLATION & GENERAL OPERATION INSTRUCTIONS

BEFORE LINE CORD IS PLUGGED IN:

Check all plugs and sockets and dress cables:

- (A) Plugs in correct sockets.
- (B) Plugs securely seated in sockets.
- (C) Dress cables away from relays.

Check adjustment of the three (normally open) tilt switches:

- (A) Panel tilt on bottom of playfield panel.
- (B) Plumb-bob tilt on left side of cabinet near front door.
- (C) Ball tilt above plumb-bob tilt.
Insert one of the two balls into ball tilt assembly and adjust bracket so ball will roll over switch blade if front of cabinet is raised.

PLUG IN LINE CORD:

Check adjustment of the four (normally closed) anti-cheat switches that hold-in anti-cheat relay:

- (A) On front door.
- (B) On mounting board, next to alternator unit.
- (C) On mounting board, next to hole score unit.
- (D) On mounting board, next to bonus unit.
Adjust switches so long blade is not touching actuating pin.

NOTE: Adjustment of above switches should be checked after game is plugged in. If not properly adjusted the anti-cheat relay will drop out during normal playing of game.

SEQUENCE OF OPERATION:

Set-up prior to starting game:

1. Check wiring on transformer to correspond to location voltage. (Transformer wiring chart shown on schematic.)
2. Place ball on playfield by outhole.
3. Turn game power on.

Insert coin (lowest denomination): (2 coins if adjusted for 2 coins per play)

1. 1st coin chute relay energizes.
2. Coin chute relay energizes start trip relay.
3. Start relay energizes anti-cheat relay thru #1 score motor cam switch and general illumination lites go on.
4. Start relay energizes reset relays, which resets all score units to zero thru #2 & #11 cam switches.
5. Start relay resets player up unit.
6. Start relay/reset relay operate score motor.
7. Start relay advances total play meter thru #3 cam switch.
8. Start relay trips clutch trip relay thru #5 cam switch which operates reset motor to reset all trip relays.
9. #10 cam switch drops out 1st coin chute relay.
10. Ball in outhole energizes outhole relay thru #1 cam switch.
11. Outhole relay energizes ball return relay thru #1 cam switch.
12. Outhole relay/ball return relay operate score motor.
13. Ball return relay operates ball return kicker thru #3 cam switch.
14. Ball trough switch energizes player advance relay.
15. Player advance relay advances player up unit from sub-zero thru

TO MAKE 2nd PLAYER ELIGIBLE TO PLAY:

After game has been set up for one player and before 1st ball has been played, insert 2nd coin or coins.

1. Coin chute relay will energize multiple play relay.
2. Multiple play relay will operate score motor.
3. Multiple play relay will advance total play meter thru #3 cam switch.
4. Multiple play relay will trip 2 can play trip relay thru #5 cam switch, which lites 2 can play lite on back glass.
5. #10 cam switch will drop out coin chute relay and multiple play relay.

BALL IN PLAY OPERATION:-

In this game, the player up unit serves a dual purpose, to count the balls played, and to determine which player is to shoot. When 2 players are eligible to play, the player up unit advances only 1 step when ball returns to outhole. When only 1 player is eligible to play, the player up unit advances 2 steps each time the ball returns to outhole.

When two players are eligible to play, 2nd player up relay is energized on every other ball delivered to shooter alley, except when player has earned an extra ball, at which time the shoot again lite is lit. The 2nd player up relay determines which player gets credit for score being made.

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FEATURES & SCORING INSTRUCTIONS

BONUS LITES FEATURE:

The purpose of this feature is to lite all (9) bonus lites to be eligible for bonus 10,000 score. There are also other bonus scores of 3,000 and 5,000 for lighting some bonus lites. Only highest bonus score is registered at any time.

Bonus 10,000 is scored when all (9) bonus lites are lit, and ball rolls over bottom button of bonus alley, at which time all bonus lites are turned off and player can try for another bonus 10,000 score with same ball.

Bonus 10,000 is also scored when all (9) bonus lites are lit when ball returns to outhole.

Bonus 3,000 is scored when bonus lites from 1 thru 6 are lit when ball returns to outhole.

Bonus 5,000 is scored when bonus lites 7, 8 & 9 are lit when ball returns to outhole.

Bonus lites are lit by bonus alley roll-over buttons, each button lighting respective bonus lite. In addition, bonus lites 1, 2, 4 and 6 are lit by hitting respective mushroom-bumpers. Bonus lite #5 is lit by ball in skillhole when hole lite is lit. Skillhole lite is lit by top right rebound and remains lit until 100 point relay is energized.

Bonus alley roll-over buttons, trip respective trip relay when lit at which time no score is registered. The buttons score 100 when not lit. All bonus lites are turned off at start of game and when each ball played returns to outhole.

FREE BALL GATE FEATURE:

Free ball gate is opened by free ball roll-over button hit when lit. Roll-over button is lit when the red mushroom-bumper is hit. Lite is off while flippers are closed.

Free ball gate closes when flippers are closed.

Free ball gate closes when ball goes thru the free ball gate, when ball returns to outhole and when game is tilted.

FLIPPER-ZIPPER FEATURE:

Flippers close when white mushroom-bumper is hit.

Flippers open when yellow mushroom-bumpers are hit, when bottom bonus alley button is hit, when ball returns to outhole, and when game is tilted.

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GAME ADJUSTMENTS

PLAYFIELD PANEL POST ADJUSTMENTS:

The playfield panel has posts that can be moved at operators discretion to increase or decrease games scoring potential. A sketch showing liberal and conservative positions of these posts will be found in game.

BELL ADJUSTMENT PLUG:

Located on back box insert. This plug provides positions to ring bell for 100 point scores, 1000 point scores, or both 100 and 1000 point scores.

BALLS PER GAME ADJUSTMENT PLUG:

Located on back box insert. This plug provides positions to operate game on 5 ball or 3 ball play.

HI-SCORE ADJUSTMENT PLUGS:

Located on back box insert. These (2) plugs combine to provide a wide range of coverage at which replays or added balls* can be awarded for hi-scores. Recommended plug settings corresponding to score cards shipped with game will be found on hi-score adjustment chart inside back door.

HI-SCORE FEATURE ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions to award replays or added balls* for pre-set hi-scores.

MATCH FEATURE ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions to operate game with or without match number feature (replay) award.

2ND & 3RD COIN CHUTE ADJUSTMENT PLUG:

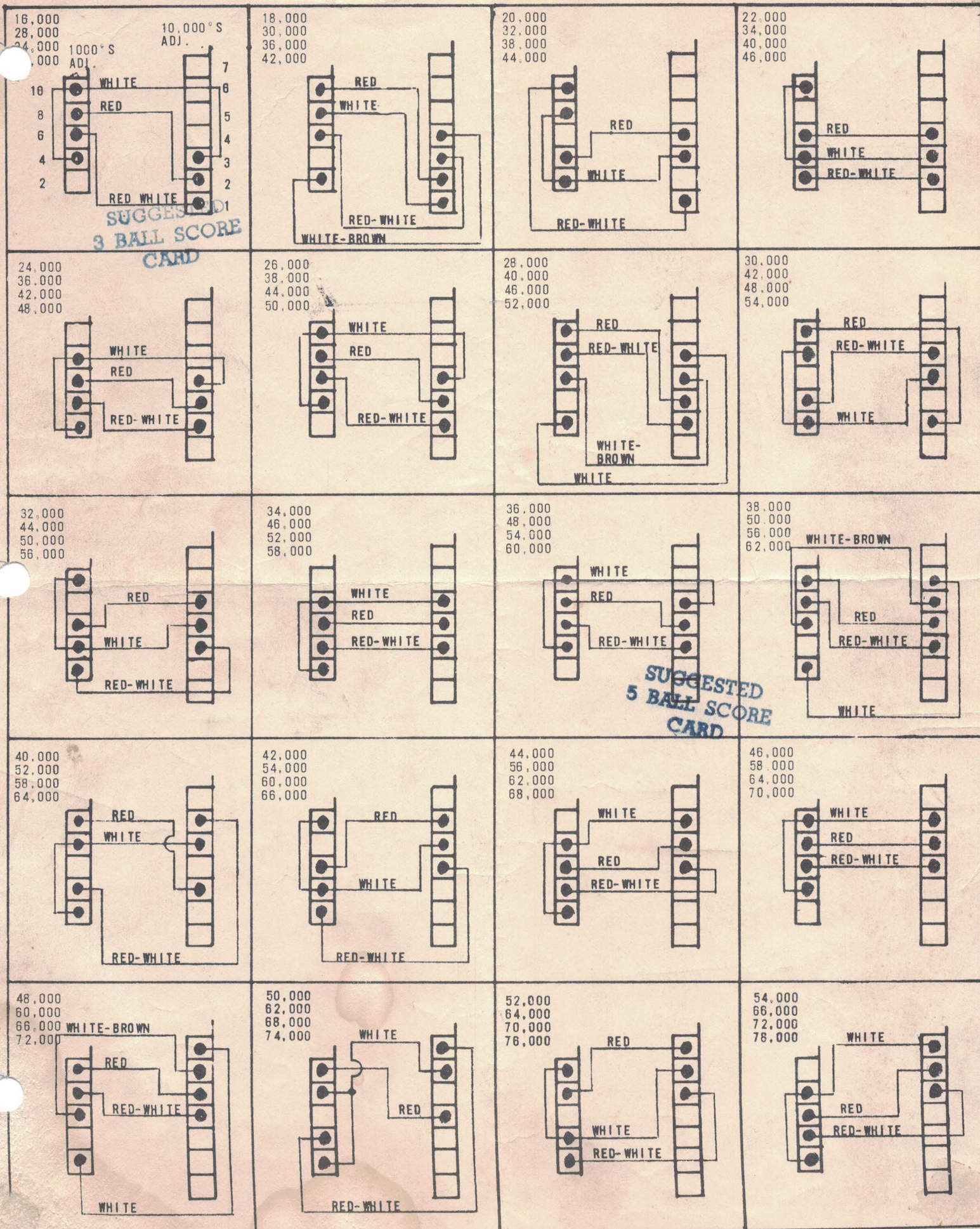
Located on mounting board. This plug provides positions to give 2 to 6 plays per coin thru 2nd and 3rd coin chutes.

1ST COIN CHUTE ADJUSTMENT PLUG:

Located on the alternator unit, on mounting board. This plug provides positions to give 1 play per coin or 1 play per 2 coins thru 1st coin chute.

*When converted to add-a-ball operation.

JOUST #349 HIGH SCORE ADJUSTMENT CHART

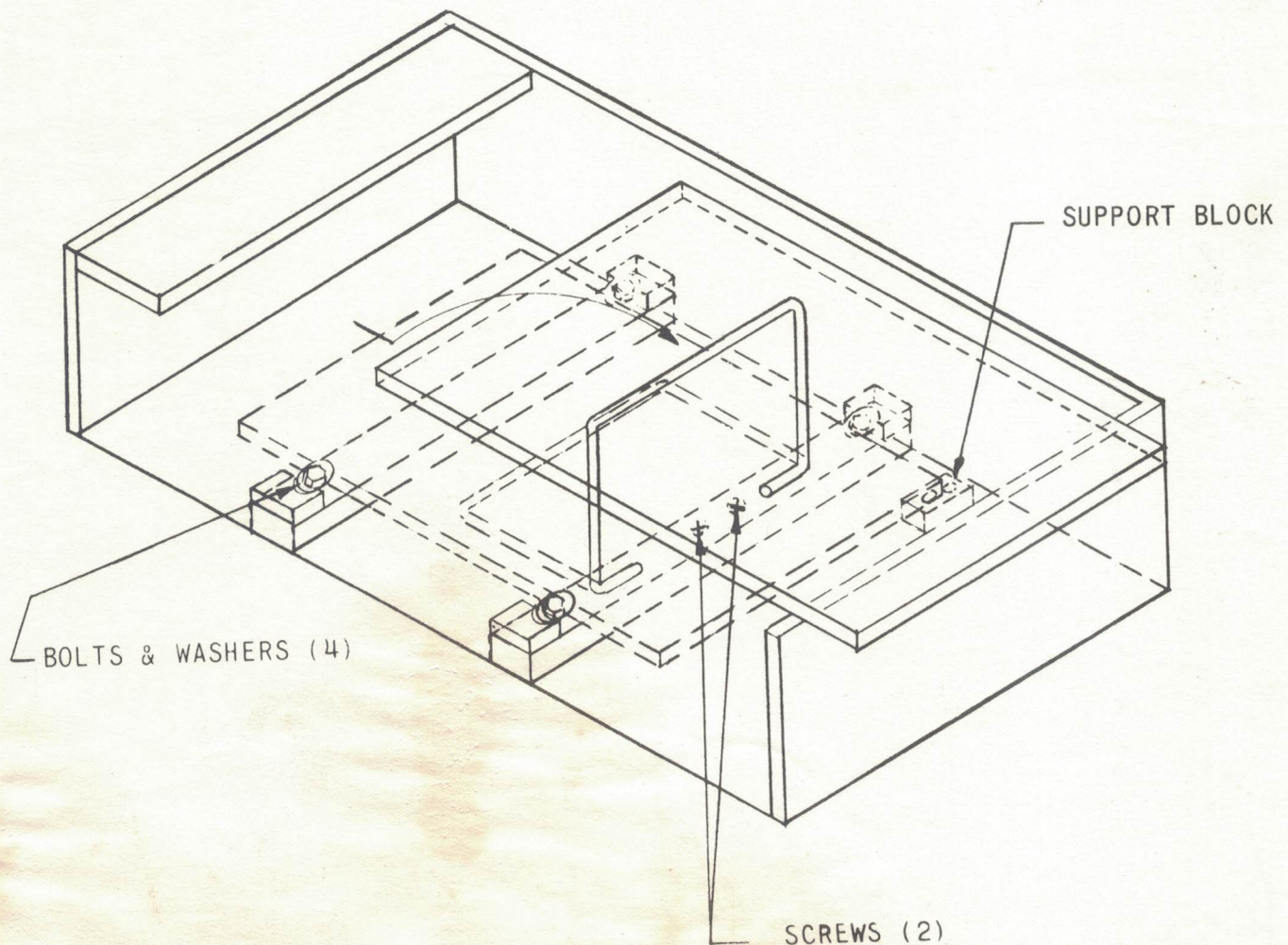


New Lift-Out Mounting Board

1. REMOVE FRONT MOLDING ASSEMBLY AND CASH BOX. RAISE PLAYFIELD PANEL TO ITS HIGH POSITION.
2. REMOVE (4) BOLTS & WASHERS AND (2) SCREWS THAT SECURE MOUNTING BOARD TO CABINET.
3. WITH POWER TO GAME OFF, DIS-CONNECT (2) PLUGS AT LEFT FRONT CORNER OF MOUNTING BOARD.
4. SLIDE MOUNTING BOARD FORWARD ABOUT AN INCH, THEN SLOWLY PULL BOARD FORWARD AND UP, WATCHING REAR OF BOARD FOR CLEARANCE OF PLAYFIELD PANEL. INSERT SUPPORT BLOCK ATTACHED TO UNDERSIDE OF MOUNTING BOARD INTO RECESSED AREA OF FRONT MOLDING LOCK PLATE TO SECURE BOARD.
5. RE-CONNECT ONLY THE FRONT DOOR PLUG AND TURN POWER TO GAME ON. GAME CAN NOW BE OPERATED FOR SERVICING, WITH EASY ACCESS TO ALL GAME COMPONENTS ON RAISED MOUNTING BOARD.
6. WHEN RETURNING MOUNTING BOARD TO CABINET, ALWAYS TURN POWER TO GAME OFF FIRST, THEN DIS-CONNECT THE FRONT DOOR PLUG AND SLOWLY LOWER BOARD BACK INTO CABINET. RE-CONNECT THE (2) MOUNTING BOARD PLUGS, TURN POWER ON, AND GAME IS AGAIN READY FOR REGULAR OPERATION.

NOTE;

WHEN GAME IS INSTALLED ON LOCATION, THE (4) MOUNTING BOARD BOLTS & WASHERS CAN BE REMOVED PERMANENTLY. THE (2) SCREWS ARE SUFFICIENT TO PREVENT ANY MOVEMENT OF BOARD WHILE GAME IS IN OPERATION.



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REPLAY TO ADD-A-BALL CONVERSION INSTRUCTIONS

1. SET ADJUSTMENT PLUGS LOCATED AT FRONT OF CABINET MOUNTING BOARD AS FOLLOWS:
 - (A) HI-SCORE FEATURE PLUG IN SHOOT-AGAIN POSITION.
 - (B) MATCH FEATURE PLUG IN OFF POSITION.
2. REPLACE REPLAY HI-SCORES AWARD CARD WITH DESIRED ADD-A-BALL VERSION AND SET HI-SCORE ADJUSTMENT PLUGS LOCATED ON BACK BOX INSERT TO CORRESPOND TO SCORE CARD USED.
3. REMOVE NUMBERED REEL FROM REPLAY UNIT IN BACK BOX AND APPLY WATER TYPE DECAL REPLAY UNIT WINDOW MASK TO BACKGLASS. (BACKSIDE)

GAME IS NOW CONDITIONED FOR ADD-A-BALL OPERATION AS FOLLOWS:

- (A) WHEN A PLAYER ATTAINS HI-SCORES THAT GAME IS SET FOR, ADDED BALL AWARDED IS RETURNED TO SHOOTER ALLEY, "SHOOT-AGAIN" LITES ON PLAYFIELD AND BALL IN PLAY OR PLAYER-UP LITE DOES NOT ADVANCE.
- (B) MATCH NUMBER FEATURE IS ELIMINATED.

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PARTS LIST

PART NO.

TRIP RELAY COILS:

Start	E-184-156
Game Over	E-184-156
2 Can Play	E-184-156
Clutch	E-184-156
Tilt	E-184-156
#9	E-184-155
#8	E-184-155
#7	E-184-155
#6	E-184-155
#5	E-184-155
#4	E-184-155
#3	E-184-155
#2	E-184-155
#1	E-184-155

KK RELAY COILS:

#6 M.B.	C-7800-3316
#4 M.B.	C-7800-3316
#2 M.B.	C-7800-3316
#1 M.B.	C-7800-3316
Shoot Again	C-7800-332
Match	C-7800-333
Player Advance	C-7800-333
Ball Return	C-7800-331
Outhole Special	C-7800-331
Anti-Cheat	C-7800-3312
Multi-Play	C-7800-331
3rd Coin Chute	C-7800-331
2nd Coin Chute	C-7800-331
1st Coin Chute	C-7800-331
Exit Alley	C-7800-3316
Free Ball R.O.B.	C-7800-341
Free Ball Gate	C-7800-341
Series	C-7800-351
Close Flipper	C-7800-3312
Skill Hole	C-7800-331
500 Point	C-7800-331
3000 Point	C-7800-331
5000 Point	C-7800-331
10,000 Point	C-7800-331
#2 Reset	C-7800-331
#1 Reset	C-7800-331
1000 Point	C-7800-333
100 Point	C-7800-333
10 Point	C-7800-332
1 Point	C-7800-333
Left T.B.	C-7800-334
Lower T.B.	C-7800-334
Right T.B.	C-7800-334
Top Rebound	C-7800-341
2nd Player Up	C-7800-332

ASSEMBLY COILS:

Ball Return Kicker	CO-25-A-7
Left T.B.	E-184-190
Lower T.B.	E-184-190
Right T.B.	E-184-190
Left Slingshot	CO-25-A-7
Right Slingshot	CO-25-A-7
Skill Hole Kicker	E-184-56
Left Flipper	E-184-190
Right Flipper	E-184-190
Open Flippers	E-184-248
Close Flippers	E-184-239
Free Ball Gate	E-184-204
Sounder	CO-27-R-11
Bell	CO-31-O-55

PART NO.

UNIT COILS:

Player Up (Step Up)	E-184-205
Player Up (Reset)	CO-28-R-15
O-9 Match (Step-Up)	E-184-205
Replay (Step-Up)	CO-26-GG-9
Replay (Reset)	CO-28-R-15
Score (All)	E-184-206
Alternator	E-184-206

UNIT CONTACT DISC'S:

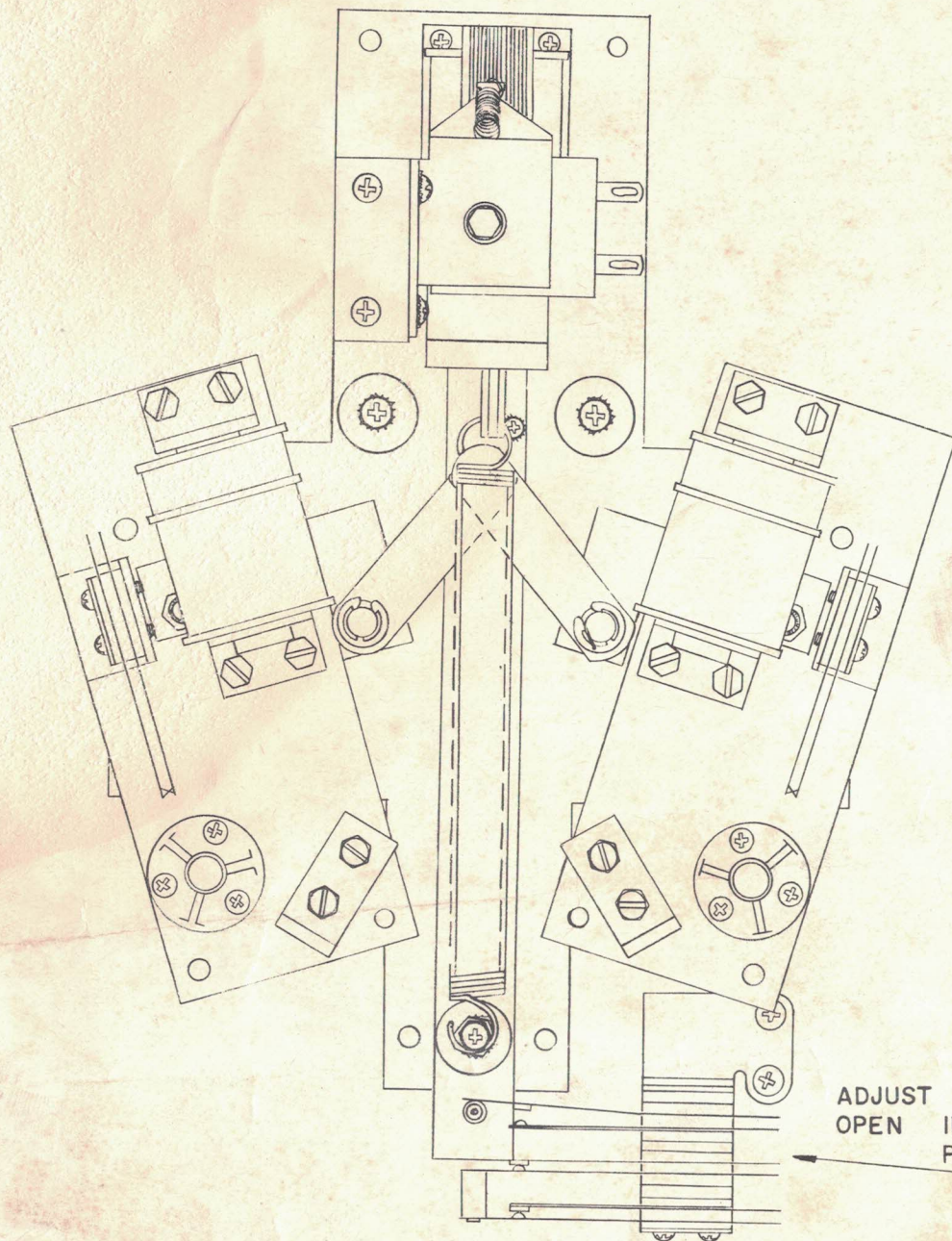
Player Up	W-1004-23
O-9 Match	W-1034-9
1's Score	A-2212-7
1000's Score	A-2212-7
10,000's Score	A-2212-7

UNIT WIPER ASSEMBLIES:

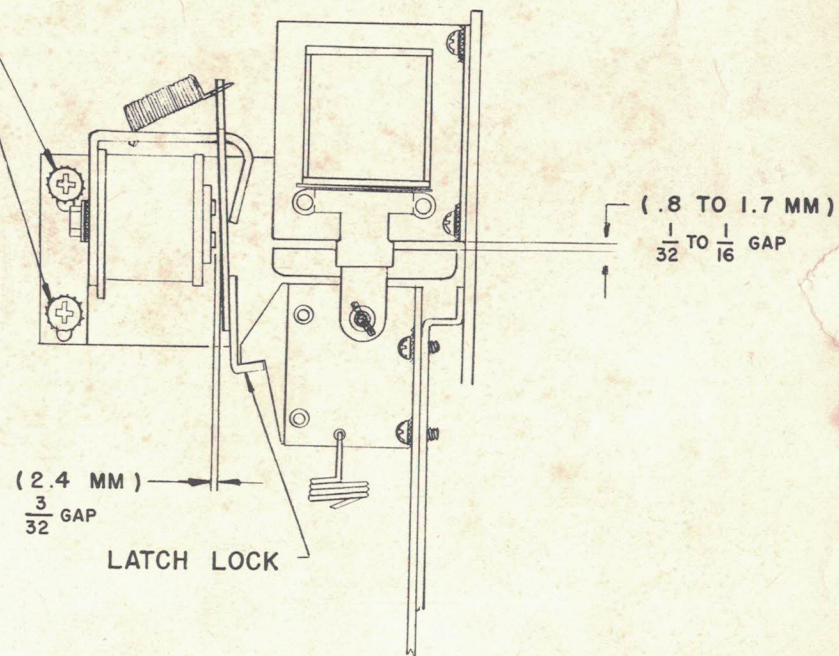
Player Up	AS-1046-573
O-9 Match	AS-1046-501
1's Score	A-1618-3
1000's Score	A-1618-3
10,000's Score	A-1618-3

MISCELLANEOUS

Transformer	E-122-95
Score Motor (Domestic)	E-119-354
Score Motor (Export)	E-119-372
Trip Bank Motor (Domestic)	E-119-362
Trip Bank Motor (Export)	E-119-385

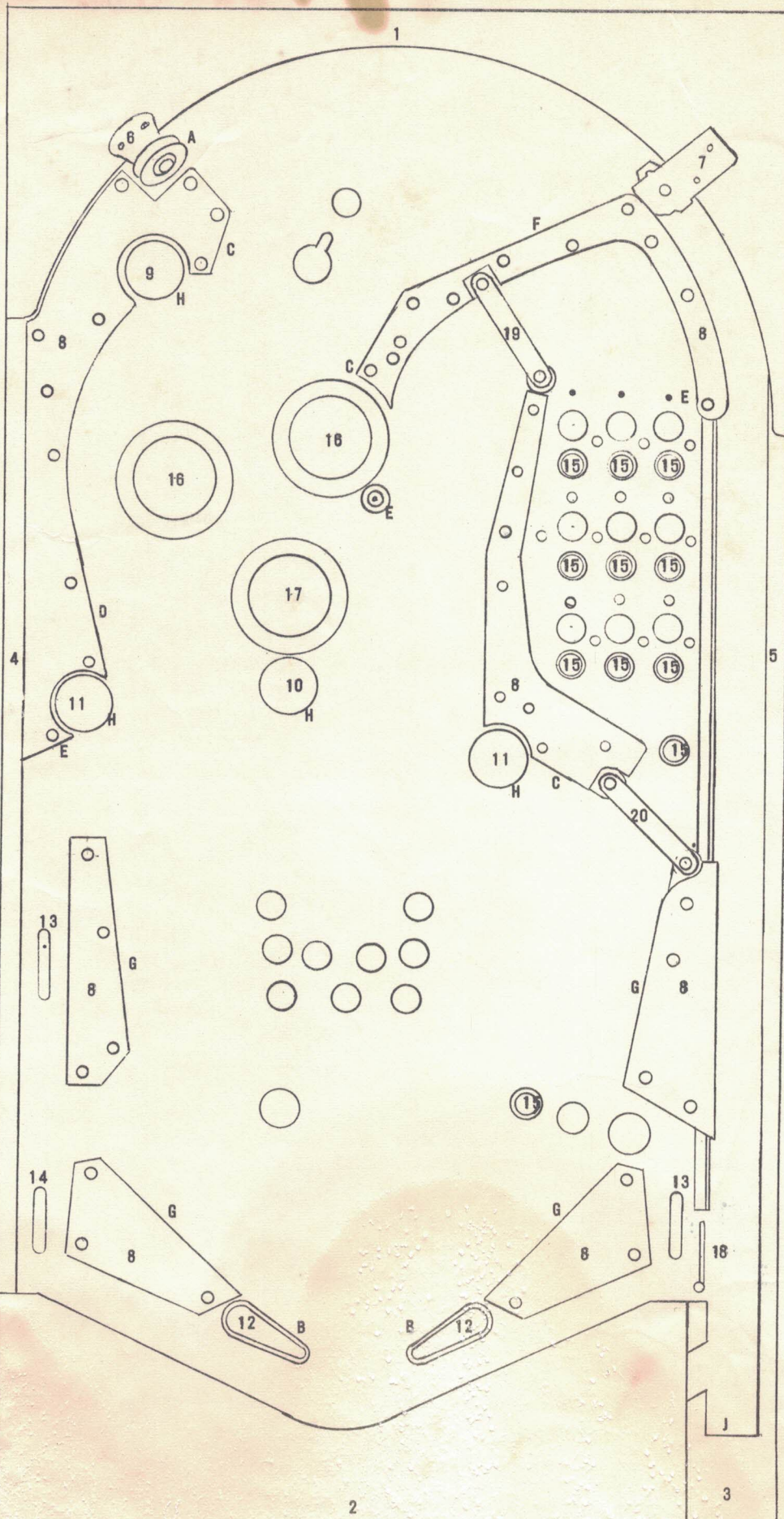


ADJUSTMENT SCREWS
ON LATCH RELAY



EFFECTIVE ADJUSTMENTS ON MOVEABLE FLIPPER ASSEMBLY

ADJUST SWITCH TO
OPEN IN LATCHED
POSITION



RUBBER-RINGS

- A- R-115-4a REBOUND (1)
- B- R-137-2a 3/4" (4)
- C- R-141a 1-1/2" (3)
- D- R-196a 2" (1)
- E- R-243a 5/16" (3)
- F- R-284-5a 2-1/2" (1)
- G- R-295-5a 3" (4)
- H- R-392a 15/32" (4)
- J- R-108-3a SHOOTER TIP (1)

PARTS

- 1- TOP ARCH P-5839-50c
- 2- BOTTOM ARCH P-5871-38c
- 3- SHOOTER GAUGE P-6359-10b
- 4- SIDE RAIL (LEFT) P-6360-33b
- 5- SIDE RAIL (RIGHT) A-2900-20b
- 6- BALL REBOUND AS-493-3a
- 7- BALL GATE AS-1315-4a
- 8- LIGHT SHIELD & BUSHING A-2890-51c
- 9- MUSHROOM BUMPER (WHITE) AS-2291-2b
- 10- MUSHROOM BUMPER (RED) AS-2291-1b
- 11- MUSHROOM BUMPER (YELLOW) AS-2291b
- 12- FLIPPER & PIN AS-2214-14 ND
- 13- ROLLOVER WIRE M-1336-2a
- 14- ROLLOVER WIRE M-1336-3a
- 15- ROLLOVER BUTTON C-387-5a
- 16- BUMPER CAP (RED) C-719-1a
- 17- BUMPER CAP (YELLOW) C-719-3a
- 18- CHANNEL GATE WIRE M-1335-1a
- 19- TOP GATE AS-2250-20 ND
- 20- EXIT GATE AS-2250-11 ND