Bally – Universal – Keeney – Gottlieb

MULTI-RACES

OPERATING INSTRUCTIONS AND PARTS CATALOG

Part numbers are marked on illustrations and a list of miscellaneous parts appears on back cover.

FOR QUICKEST SERVICE
Specify correct part number
when ordering parts

INSTALLATION INSTRUCTIONS

Unlock and open back-door and fasten the backbox to cabinet with bolts and washers furnished.

Plug power line into 110-120 volt 60 cycle Alternating Current only. Verify power to monitor, computer, and network switch are secure after movement. Examine plugs for cabinet and Playboard plugs to ensure all are secure. Turn on power by turning toggle-switch on. Toggle-switch is located under the playboard.

ACCESS TO MECHANISM AND LIGHT BULBS

Back-glass may be removed from either side by unlocking the back-door and removing the brackets.

After removing back-glass, the light panel can be removed and access to mechanism may be obtained by removing monitor from head (removing eight screws and four blocks), or simply opening back door. Mechanisms are placed for serviceability from the back door position. Unlike electro-mechanical games, switch adjustments are not necessary from the light panel.

BE SURE TO LEVEL GAME

Place level under side of cabinet. Ensure level back to front, then place level sideways to ensure side-to-side level. Place 1 (1") ball in game.

GAME OPERATION

1. When power is applied, game will boot to a menu.
2. Use Horseshoe and Feature flag buttons on footrail to select a game. Games are listed in chronological order.
3. Once game desired is shown, press the Play All button on the footrail to enter the chosen game.
4. Game play proceeds as indicated by score and instruction displays.
5. Free play can be toggled on and off via switch located to the left of the total play meter inside the coin door.
6. Pressing switch located on the underside of the cabinet will remove credits.
7. To return to the menu, hold down Horseshoe and Feature Flag buttons on footrail and press the Star button. The screen will be black while the games are loading.

MAINTENANCE AND ADJUSTMENT

1. GENERAL

NEVER EXPERIMENT with any of the mechanisms or computer boards. Locate any trouble with the aid of Wiring Diagrams or Operating & Servicing Information supplied with the machine, then check for proper adjustment of the units involved before making any changes to the game code itself. Improper adjustment or makeshift repair will only cause serious damage to other parts of the machine or repeated failure of the part.

NOTE: Always look for a possible loose wire, bad connection at computer board plug, jones plug or socket or unhooked springs on step-ups, relays, etc., before adjustments are made or wires connected.

2. FUSES

IMPORTANT: Never replace fuses with any rating other than specified on the schematic, fuse block, or driver board. Fuse block is mounted on transformer board assembly in the backbox, and driver boards are located inside the front door.

3. LUBRICATION

Over-lubrication causes far more trouble in coin-operated equipment than under-lubrication. Practically all cases of poor contact on switches is due to oil or grease, or oil vapor which forms a film or residue on the contacts and will not allow current to pass through.

IMPORTANT: NEVER USE VASELINE FOR LUBRICATION OF ANY PART OF THE MACHINE. Vaseline is not a true lubricant. It leaves a dirty and gummy residue and it becomes very thick when cold. A special Coin Machine Lubricant is supplied with each machine.

Solenoid Plungers should not have a lubricant of any kind. Should there be a sluggish tendency or if plungers are sticking, the parts should be cleaned with a solvent and flaked graphite applied on reassembly.

4. CONTINUITY CHECKS

Continuity of coils, contacts, wire connections, etc. may be checked with an Ohmmeter or several types of Test Lites. If regular equipment is not available, an efficient Test Lite may be made from a few miscellaneous parts. The following paragraphs describe this equipment and give information that will prove helpful to the service person.

(a) Battery Test Lite should be used only with all current in the machine tuned OFF. When the leads from the Lite are places across the wires leading to the Coils, Switches, etc., the bulb will light if there is contact through the unit being checked. If the bulb does not light, there is a break in the circuit. However, only open circuits on coils may be located by this method since shorted coils will also show contact through the coil. If a short is suspected, use the Test Prod to check the coil.

(b) The Test Prod must be used with current turned ON. The clip on the end of the lead wire may be attached to any common ground line in the machine. This would be any Green wire in the machine. The prod end of the tester may then be touched to various connections or contact points in the circuit

being checked. Using the tester in this manner leaves the service person with one hand free to manually operate relays or other units.

If a particular Coil on a Relay, Solenoid, etc., is not energized, place the clip end of the Test Prod on the ground side of the coil. Touch the test prod to the opposite side of the coil (Red for 48VDC, Yellow for 5VDC). If the bulb lights but the Relay Coil, or other unit being checked, is not energized, then the coil is faulty and must be replaced.

Broken Wires may be located by placing the leads of the Battery Test Lite on each end of the wire in question. If the bulb fails to light, a break in the circuit is indicated.

5. RELAY ADJUSTMENTS

All Relays are adjusted by the factory and should require little or no servicing in the field. Should a Relay fail to actuate the Unit or Lights to which its switches are connected, the difficulty might possibly be due to dirty Switch Contacts, loose wires or a broken wire between the Relay and other Units.

NOTE: DO NOT make any adjustments to the Relay itself until all other possibilities in the troublesome circuit have been checked.

The Gap between the Coil and the Armature of the Relay should be approximately 3/64 of an inch. This allows for about 3/32 of an inch movement at the end of the Armature into which the switch blades are inserted. The Gap may be adjusted (if necessary) by bending the short switch leaf.

CAUTION: The Armature Stop Arm on all Relays is carefully adjusted at the factory. Do not change this adjustment unless absolutely necessary.

The Armature Spring should have enough tension to bring the Armature against the Armature Stop Arm when the Relay is not energized. SEE THAT PRESSURE, FROM POORLY ADJUSTED SWITCHES, IS NOT AFFECTING THE ARMATURE BEFORE ATTEMPTING ADJUSTMENTS ON THE SPRING.

If a Relay "chatters" or "hums", but does not pull in, check to see that switches, located on it, are not out of adjustment and causing too much tension on the Armature or that a burr on top of the Relay Coil is not interfering with the action of the Armature. Burrs on the core of the Coil may be removed with a small contact file.

The Continuity of the Relay Coil may be checked with an Ohmmeter, or if one is not available, see Paragraph 4 for use of Test Prod.

6. SWITCH ADJUSTMENT - GENERAL

The majority of switches used in this machine are composed of a series of blades and spacers built up with normally open and/or normally closed contacts as required to perform the specific function for which the switch is intended. These switches may be actuated by Relays, Solenoids, or by other mechanical factors. However, the adjustment of the switch contacts and blades remain fairly constant, as shown in the following paragraphs.

With the exception of a few cases, in which special adjustment instructions are given, all blade type switches should have at least 1/32" gap beyond the point at which the contacts close. This follow-thru

action provides a wiping motion between the contacts, keeping them clean and insuring good contact between the points.

When adjusting blade type switches, first adjust the blade actuated by other parts of the machine with relation to the part it contact and then set the gap and follow through. Specific instructions pertaining to each switch are given, where necessary, in other paragraphs and may be found by referring to the index.

CAUTION: NEVER BEND BLADES SHARPLY, at the spacers or otherwise. Sharp bends tend to straighten out slightly with use, and will weaken the Blade. Blades should be formed by a stroking action over the entire length of the blade, using a blade tool or duck-bill pliers.

7. SWITCH ADJUSTMENTS - PLAYBOARD POCKET

All Pocket Switches are mounted either underneath the Masonite Shuffle-board or on the Masonite Shuffle-board, and can be easily serviced by removing the screws on the edge of the Playboard and raising the front end as far as desired, or by removing the clips that hold the Masonite Shuffle-board in place, allowing the Masonite Shuffle-board to hinge downwards.

8. SWITCH ADJUSTMENT - RELAY

GENERAL - Unless special instructions are given, all blade-type switches mounted on relays should be adjusted according to the instructions for General Switch Adjustments as given in Paragraph 6.

9. SWITCH ADJUSTMENTS - TILT

SLAM TILT switches are the blade type switch with one blade weighted. Rough handling of the machine will cause the weighted blade to vibrate, closing the switch contacts and Tilting the mechanism. The gap between points on these switches may be set as close as desired (depending on how rough the Players treat the machine). Average gap for this type of switch is approximately 1/16". However, closer settings will soon discourage rough players.

THE PENDULUM TILT, located in the front right corner of the front door (alongside the cash-box) can be set by loosening the thumb screw and sliding up or down or moving the ring forward or back.

10. SWITCH ADJUSTMENTS - BALL SHOOTER

The Ball Shooter Switch is located directly ahead of the Ball Shooter Plunger on the Playboard and is operated by the weight of the Ball resting on the small wire form that protrudes through the Playboard. Be sure the wire form is not rubbing the sides of the opening and that its movement is great enough to operate the switch. Also, check to see that the wire form is not bent back far enough to be struck by the plunger during play. The contacts on this switch should have at least 1/32" gap and 1/32" follow-through.

WHAT TO DO IF:

1. Lights are out, game is inoperative:
    1. Check A.C. cord and plug for breaks, cuts or other damage.
    2. Check fuses, located on transformer panel inside back door.
    3. Check master switch, in cabinet bottom under playboard.

4. Check plugs and jacks for proper installation.

2. Lights are on, game is inoperative:
   5. Check to insure that the fakepinproc is commented out in config.yaml, located in the root of the game directory.
   6. Check plugs for Playboard and Cabinet.

3. Lights are out, game operates:
   7. Check the 10 Amp fuse.
   8. Check plugs and jacks.
   9. Check bulbs.

4. No Replays are shown, coin chute rejects coins.
   10. Check coin lock-out coil, if it is not energized, check free play toggle switch setting.
   11. If Coin lock-out coil is energized, check coin chute for cleanliness and general maintenance.
   12. Check to ensure game is selected by pressing the Play All button on the footrail.

5. Coin is accepted, game is inoperative:
   13. Check coin switch.
   14. Check to ensure game is selected by pressing the Play All button on the footrail.

6. Ball Lift fails to operate:
   15. Check motor connections.
   16. Ensure 1 ball is loaded in the game.

7. Replays score incorrectly:
   17. Ensure scoring features are enabled correctly per the score and instruction cards on the game selected.
   18. Verify appropriate number is in the selections list. If a change is needed, submit your change back to the master repository (see Appendix for details).

MECHANISMS/BOARDS AND THEIR FUNCTION

19. COMPUTER: The computer within the game is an off-the-shelf Intel NUC running Linux. Game logic and operating system are stored on a solid state drive within this computer. It is important not to remove power from this computer until the system is properly shut down. Located on the right side of the front cabinet pedastal.
20. REPLAY REGISTER: This is a dual-solenoid driven mechanism that provides audio for replays earned in every game. It is located at the top of the left wall of the backbox.
21. SHUTTER RELAY: Provides 120VAC to Shutter Motor. This is located in the front door.
22. 48VDC POWER SUPPLY: This provides power to each solenoid within the game. It is located in the middle of the left side of the front door.

23. 5VDC POWER SUPPLY: This provides logic power, as well as General Illumination power to the game. It is located in the bottom of the left side of the front door.
24. PLUG PANEL/TRANSFORMER PANEL/FUSE PANEL: This panel allows for playfields and cabinet to be separated from the head, and contains fuses for the main line power and 50VAC. The Transformer provides 120VAC as well as 50VAC to the game.
25. RASPBERRY PI 3 - INSTRUCTION CARD: This computer handles the display of the instruction card for the selected game. It is connected via a local network through the Network Switch inside the front door. This item is located on the floor of the cabinet under the Playboard.
26. RASPBERRY PI 3 - SCORE CARD: This computer handles the display of the score card for the selected game. It is connected via a local network through the Network Switch inside the front door. This item is located on the floor of the cabinet under the Playboard.
27. P3-ROC: This board interprets switch presses and gives directions to fire coils as the game code stored on the computer dictates. It also provides other functions, such as serial addressing, for Switch and Driver boards. It is located to the inside the front door, beside the computer.
28. DRIVER BOARD #1: Provides power to 16 of the coils within the game (as shown on the Schematic). It is located below the relays, inside the front door.
29. SWITCH BOARD #1: Connects the first 16 switches (as shown on the Schematic). Located inside the front door.
30. SWITCH BOARD #2: Connects the second 16 switches (as shown on the Schematic). Located inside the front door.
31. SWITCH BOARD #3: Connects the third set of 16 switches (as shown on the Schematic). Located inside the front door.
32. SWITCH BOARD #4: Connects the fourth set of 16 switches (as shown on the Schematic). Located inside the front door.
33. NETWORK SWITCH: Provides network connectivity between the two Raspberry Pi 3 computers and the Intel NUC computer. Located inside the front door.
34. MONITOR: Located in the center of the Head, inside the back door. Any 32" TV or monitor can be used, as long as it has HDMI input and supports 720p resolution.

APPENDIX A - PARTS LIST

- 1x Victory Derby/Victory Special cabinet
- 2x Raspberry Pi 3 Computers
- 1x Network Switch (any speed)
- 1x Intel NUC with HDMI output and solid state disk drive.
- 1x P3-ROC Remote Operations Controller Board
- 1x PD-16 Power Driver 16 Boards
- 4x SW-16 Switch 16 Boards
- 1x 48VDC Switching Power Supply
- 1x 5VDC Switching Power Supply
- 1x 50V Relays
- 1x 32" Monitor
- 1x Transformer/Fuse/Plug panel
- 1x Turf King playboard