

STERN'S GAMES

GENERAL BOOK



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I. INSTALLATION

Assemble the game as follows:

Bolt legs to cabinet. Using flat washers under bolt heads, bolt back box to cabinet. Feed cable connectors and ground braid through cable port in back box. Screw ground braid to braid in back box. Insert connectors so they are completely seated on printed circuit board assemblies.

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

Visual inspections before plugging in line cord:

1. Check wiring of transformer to correspond to location voltage. See figure 1.
2. Check the transformer for any foreign material shorting across wiring lugs.
3. Check that fuses are firmly seated and making good contact.
4. Check wire on coils for proper soldering. Cold solder connections may not show up in factory inspection, but vibration in shipment may break contact.
5. Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of contacts.
6. Check for any wires that may have become disconnected.
7. Check that all cable connectors are completely seated on printed circuit board assemblies.
8. Check that cables are clear of all moving parts.

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

1. Plumb bob tilt on left side of cabinet near front door.
2. Ball tilt above plumb bob tilt. Insert the smaller ball (gold 15/16" dia.) into the ball tilt assembly, and adjust the bracket so the ball will roll free to contact the switch blade, if front of cabinet is raised.
3. Panel tilt on bottom of playfield panel.

NOTE

TO PROTECT SOLID STATE COMPONENTS
BEFORE TOUCHING ANY COMPONENT IN THE
BACK BOX, DISCHARGE ANY POSSIBLE STATIC
BUILD-UP BY TOUCHING ANY GROUND
CIRCUIT, e.g. SIDE ARMOR, GROUND BRAID.

FIGURE 1

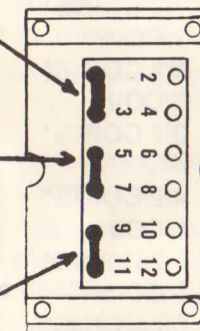
STERN 16B-3 TRANSFORMER WIRING CONNECTION INSTRUCTIONS

115/120V., 50/60 Cycle Input.
Varistor - Soldered to Line Filter on Left Side of Cabinet
Must Be Stern Part No. 25A-18-1.

Solder Lugs 1 & 3
Together. Solder Heavy
Red Wire To Lug 1

120V
Solder Lugs 5 & 7
Together. Solder Heavy
Yellow Wire To Lug 5

115V
Solder Lugs 9 & 11
Together. Solder Heavy
Yellow Wire To Lug 9



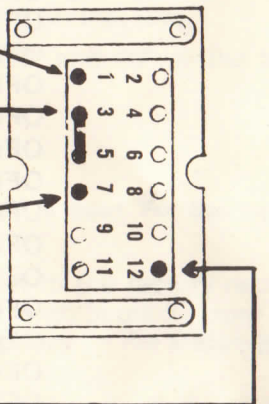
220/240V., 50/60 Cycle Input.
Varistor - Soldered to Line Filter on Left Side of Cabinet
Must Be Stern Part No. 25A-18-2.

Solder Heavy Red Wire
To Lug 1

Solder Lugs 3 & 5
Together

240V
Solder Heavy Yellow
Wire To Lug 7

220V
Solder Heavy Yellow
Wire To Lug 12



II. BOOKKEEPING FUNCTIONS

The game is designed to help the operator perform certain accounting functions. The game can display the number of total plays and replays (free games)*. It can display the number of coins inserted into each coin chute. Each bookkeeping function is displayed on all player score displays simultaneously. An identification number 05 to 11 appears on the Match/Ball-in-Play window as follows:

DESCRIPTION

Current Credits	= 05 00000 to 000040
Total Plays (Played & Free Games)	= 06 00000 to 999999
Total Replays (Free Games)	= 07 00000 to 999999
Total Times "High Game to Date" is beat	= 08 00000 to 999999
Coins Dropped Thru Coin Chute 2"	= 09 00000 to 999999
Coins Dropped Thru Coin Chute 1"	= 10 00000 to 999999
Coins Dropped Thru Coin Chute #3**	= 11 00000 to 999999

The game displays the first bookkeeping entry if the Self-Test Button (See Fig. 3) on the inside of the front door is pushed and released nine times at one second intervals. The number 05 now appears in the "Match/Ball-in Play" window. Current credits appear on all player score displays. Each additional press of the button causes the next entry to be displayed.

After the data in each bookkeeping register is recorded, it can be set to zero simply by pressing switch button S33, located on the MPU module in the back box. Any or all registers can be cleared by alternating between the Self-Test button and the switch button on the MPU module. The operator is given this option as a possible convenience and can elect to use or not use it as needed.

Pressing the button once more with the eleventh entry displayed causes the game to play the power-up tune and light the Game-Over Light.

* Some tunes and feature can be disabled by operator if so desired. See Back Box Adjustments.

** If Coin Chute is not used in game, number displayed (if other than 00) on Player Score Displays has no significance.

CREDITS/COIN ADJUSTMENTS:

The #1 coin chute (next to hinge) is adjustable by means of switches 28-30 inclusive — Eight different credit ratios are available.

The credits given per coin are selectable by means of switches. 1-5 incl. for coin chute #2 and switches 9-13 incl., for coin chute #3. Thirty-one different credit ratios are available for each coin chute. The switch settings and resultant credits/coin are listed below:

CREDITS/COIN ADJUSTMENTS

COIN CHUTE	SWITCHES					CREDITS/COIN
#2 (CENTER CHUTE)	5	4	3	2	1	
OR #3 (RIGHT CHUTE)	13	12	11	10	9	
OFF	OFF	OFF	OFF	OFF	OFF	 3/2 COINS**
OFF	OFF	OFF	OFF	OFF	ON	3/2 COINS**
OFF	OFF	OFF	OFF	ON	OFF	1/COIN
OFF	OFF	OFF	ON	ON	ON	 1/2 COINS*
OFF	OFF	ON	OFF	OFF	OFF	2/COIN
OFF	OFF	ON	OFF	ON	ON	2/2 COINS*
OFF	OFF	ON	ON	ON	OFF	 3/COIN
OFF	ON	OFF	OFF	OFF	OFF	3/2 COINS*
OFF	ON	OFF	OFF	ON	ON	4/COIN
OFF	ON	OFF	OFF	ON	OFF	 4/2 COINS*
OFF	ON	OFF	ON	ON	OFF	5/COIN
OFF	ON	OFF	ON	ON	ON	5/2 COINS*
OFF	ON	ON	OFF	OFF	OFF	 6/COIN
OFF	ON	ON	OFF	ON	ON	6/2 COINS*
OFF	ON	ON	ON	ON	OFF	7/COIN
OFF	ON	ON	ON	ON	ON	 7/2 COINS*
ON	OFF	OFF	OFF	OFF	OFF	8/COIN
ON	OFF	OFF	OFF	ON	ON	8/2 COINS*
ON	OFF	OFF	ON	OFF	OFF	 9/COIN
ON	OFF	OFF	ON	ON	ON	9/2 COINS*
ON	OFF	ON	OFF	OFF	OFF	10/COIN
ON	OFF	ON	OFF	ON	ON	 10/2 COINS*
ON	OFF	ON	ON	ON	OFF	11/COIN
ON	OFF	ON	ON	ON	ON	11/2 COINS*
ON	ON	OFF	OFF	OFF	OFF	 12/COIN
ON	ON	OFF	OFF	ON	ON	12/2 COINS*
ON	ON	OFF	ON	OFF	OFF	13/COIN
ON	ON	OFF	ON	ON	ON	 13/2 COINS*
ON	ON	ON	OFF	OFF	OFF	14/COIN
ON	ON	ON	OFF	ON	ON	14/2 COINS*
ON	ON	ON	ON	ON	OFF	 15/COIN
ON	ON	ON	ON	ON	ON	15/2 COINS*

* No credits until second coin dropped.

** One Credit for first coin. Two Credits for second coin provided that no scoring occurred between 1st and 2nd coin drops. If scoring occurred, second coin gives one credit.

COIN CHUTE #1			CREDITS/COINS
30	29	28	
OFF	OFF	OFF	1/1 Coin
OFF	OFF	ON	1/2 Coins
OFF	ON	OFF	2/1 Coin
OFF	ON	ON	2/2 Coins
ON	OFF	OFF	3/1 Coin
ON	OFF	ON	3/2 Coins
ON	ON	OFF	4/1 Coin
ON	ON	ON	5/1 Coin

III. FRONT DOOR GAME ADJUSTMENTS:

HIGH SCORE FEATURE ADJUSTMENTS:

The game is designed to award an extra ball or a free game (option) at three score levels. (See High Score Feature in game book). The recommended levels are on the score card on the game.

Any level from 10,000 or 990,000 can be set, as desired. It is also possible to reset or turn off (00) any or all of the levels, if desired.

1. Push and release Self-Test button at one second intervals five times or until number 01 appears on the Match/Ball in Play display.
2. The number on the Player Score Displays is the first score level*. It can be increased, if desired, by holding the credit button in. To decrease the score level, reset to '00', and then hold the credit button in. Release the credit button when the desired High Score appears. Note that the level changes 10,000 points at a time. If the number '00' is left on the displays, the high score feature is eliminated for that level.
3. Repeat steps 1 and 2 for the second and third high score levels. The number '02' and '03' on the Match/Ball-in-Play display are for the second and third levels, respectively.

NOTE: Only One Extra Ball Can Be Achieved Per Ball In Play.

HIGH GAME TO DATE FEATURE:

The game is designed to award up to 3 free games (option) when "High Game to Date" is beat. For the recommended, factory present level, see game book.

It is recommended that the level, which will build with game play, be periodically reset to the factory recommended level to encourage game play. The adjustment procedure is the same as for the High Score Feature Adjustment, Steps 1 and 2. Continue pushing the Self-Test button until the number '04' appears on the Match/Ball-in-Play display and then do Step 2.

Any level from '00' to 990,000 can be set as described. It is to be noted that '00' does not turn off the feature, as it does on High Score feature. The feature is turned off by positioning switches to the "OFF" position.

*Can be quickly set to '00' by pressing S33 on the MPU assembly in the back box.

IV. ROUTINE MAINTENANCE ON LOCATION:

Self tests, which are programmed into the design of the game, are very helpful. As with any solid state piece of equipment the three prong grounding receptacle is a important piece part of the game, that must not be tampered with and must be used properly.

MPU MODULE SELF-TEST:

During power up, the MPU assembly tests itself, which can visibly be seen by the flashing of a LED on the board. When the game is turned on, the LED will flash once, pause, then flash six more times and go out. A tune is then played to announce game readiness. This indicates proper MPU game operating conditions.

GAME SELF-DIAGNOSTIC TESTS:

Pressing the Self-Test button inside the coin door one time activates the game into its self-diagnostic test.

1. Feature lamps: All feature lamps will flash on and off continuously, determining any burnt lamps.
2. Pressing the Self-Test button again causes each digit on all displays to cycle from 0 thru 9, and repeat continuously.
3. Pressing the Self-Test button again causes each solenoid to be energized, one at a time, in a continuous sequence. Holding both flipper buttons "in" during this test will cause the flipper coils to be energized. The number appearing on the Player Score displays is the same as the number assigned to the solenoid. The sound of a solenoid pulling-in as a number appears indicates proper operation. The absence of a sound shows a fault. If sound is absent, see Solenoid I.D. page in game book for help in Solenoid identification.
4. Pressing the Self-Test button again causes the MPU to look at each switch assembly for stuck contacts.* If there are any stuck, the number of the first set encountered is flashed on the Player Score displays. The number remains until the fault is corrected. See Switch I.D. page in game book for help in Stuck Switch identification. Other numbers may follow if more stuck contacts are present. If there are no stuck switches, the Match/Ball in Play display flashes '0'. DO NOT BURNISH OR FILE GOLD PLATED SWITCH CONTACTS.
*Flipper Button Switches are not included.
5. Pressing the Self-Test button eleven more times causes the MPU to step thru the game levels and book-keeping functions described previously and finally to repeat the power-up test. To by-pass these functions, turn the game off, then on. The game is now ready to play, after the MPU Self-Test.

Set the game up for play, after successful completion of the Self Diagnostic Test procedure. Exercise each roll-over, thumper-bumper, slingshot, etc., by hand until each switch assembly on the playfield has been checked for proper operation. If actuating a switch assembly results in intermittent or no response, clean contacts by gently closing them on a clean business card or piece of paper and wiping until they wipe clean. Regap, if necessary, to 1/16". Do not burnish or file Gold Plated Switch Contacts.

V. CONTACT SWITCH ADJUSTMENTS

All contact switches should be adjusted to have a gap of 1/16" in the open position, and have .010" overtravel closed. All contact switches (except for flipper button & flipper end of stroke) are plated to resist corrosion and, **SHOULD NOT BE FILED OR BURNISHED**. If contacts have dirt or dust on them, a clean piece of paper should be used to clean them, by closing the contacts and wiping gently.

FLIPPER BUTTON & FLIPPER END OF STROKE SWITCHES ONLY. Tarnish or pitted contacts can be corrected with a contact file followed by a burnishing tool. Severely pitted contacts must be replaced as an assembly.

PLAYFIELD

Stern playfields have a durable long life playing finish. Its life expectancy, as well as playing appeal can be greatly extended by periodic cleaning. Inspect and hand polish the ball with a clean cloth. A chipped ball must be replaced, as it will ruin the finish on the playfield. Do not use water in large quantities, highly caustic cleaners, abrasive cleaners or cleaning pads on the playfield surface.

BLOCK DIAGRAM

