

MCI, LTD.

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INSTRUCTION MANUAL

FLYING ACE

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TIPS TO THE OPERATOR

1. The sound level is factory set on maximum volume (see volume control VI-A).
2. Length of game can be set with timer switch (SW-1) option of 60 seconds, 90 seconds, 120 seconds.
3. The player must track target and hold target in sights for about one-half second to record hit (see game sequence).
4. Fire at airplane engine.
5. CAUTION: The game has been properly aligned at the factory. There should be no need for further alignment.
6. Do not make any adjustment without reading the manual.

I. GAME SEQUENCE

The game is started by inserting a quarter.

Inserting a quarter will:

- 1.) Reset the score to zero
- 2.) Start the main timer motor
- 3.) Start the target disc motor
- 4.) Start the fan motor
- 5.) Turn on the projector lamp
- 6.) Turn on the photo-transistor lamp
- 7.) Start the tracer motor (tracers will not be seen until player shoots)
- 8.) Apply power to the sound system causing the airplane motor sound

The player can now align the targets in the sight by moving the control stick. When the player pushes the trigger bar, the machine gun sound is heard, and the tracers appear on the screen.

The player must track (while shooting) the target for about a half second in order to score a hit.

When the player scores a hit:

- 1.) An explosion is seen
- 2.) The hit disc starts and a smoke screen is seen
- 3.) A dive sound is heard
- 4.) An explosion is heard
- 5.) A red flash is seen
- 6.) The player is credited with a hit on the score panel

If, at any time in the game, the player scores eight hits, he is awarded a bonus time of thirty (30) seconds. The main timer motor stops during the bonus period. At the end of the bonus time, the player continues until the main time runs out. A light on the front panel flashes to indicate the bonus situation.

Fourteen hits makes the player an "ACE." The red dome light flashes and a siren is heard to indicate that ACE has been reached. The player is also awarded an ACE token.

When the main timer motor is used up, all of the motors stop and the flashing screen light and flashing dome light come on.

II. RELAY FUNCTIONS

A. Start Relay (K1)

Energized by inserting a quarter, and remains energized until the Main Timer Cam Switch (M4-CS1) switches.

- 1.) Keeps game relay (K2) energized until the Main Timer cam switch (M4-CS1) switches.

B. Game Relay (K2)

Energized by inserting a quarter, and held energized first by the start relay (K1) and then by the Main Timer cam switch until the game is over.

- 1.) Turns off flashing red dome light and screen back light.
- 2.) Starts the tracer motor and fan motor, turns on projector lamp and energizes the sound system.
- 3.) Allows the ACE and BONUS circuits to operate.
- 4.) Allows the machine gun trigger to operate.

C. Machine Gun Relay (K3)

Energized only as long as the Trigger bar is pushed.

- 1.) Turns on the tracer lamp
- 2.) Energizes the Hit Relay (K6) if the player is on target
- 3.) Starts the machine gun sound

D. Explosion Relay (K4)

Energized when the machine is plugged in.

De-energized when the crash disc cam switch (M1-CS2) switches. The following occur when K4 de-energizes.

- 1.) Energizes score unit step up coil, adding one point to the player's score
- 2.) Starts explosion sound
- 3.) Energizes Bonus timer board if bonus level has been reached

E. Hit Relay (K5)

Energized by a player being on target (photo-transistor board PC-1) and the Machine Gun Relay (K3). It remains energized until crash disc cam switch (M1-CS2) switches.

- 1.) Starts the crash disc motor
- 2.) Energizes the projector lamp for the visual explosion
- 3.) Stops the machine gun sound
- 4.) Starts the dive sound

F. Bonus Relay (K6)

Energized by the Bonus timer board when the player scores the 8th hit. It remains energized until the timer board times out (factory set at 30 seconds).

- 1.) Stops the main timer motor
- 2.) Turns on flashing Bonus light

G. Ace Relay (K7)

Energized by the Ace Timer Board when the player scores the fourteenth hit. It remains energized until the timer board times out or the game is over, whichever occurs first.

- 1.) Energizes the token dispenser relay (K8)
- 2.) Energizes the token dispenser solenoid
- 3.) Turns on the Ace light (red flashing dome light)

H. Token Dispenser Relay (K8)

Energized by the Ace Relay (K7). Remains energized until K7 de-energizes.

- 1.) De-energizes Token dispenser solenoid
- 2.) Starts siren sound

III. MOTORS

A. Crash Disc Motor (M1)

Started by Hit Relay (K5). The Crash Disc motor cam

switch (M1-CS1) closes when the motor starts and keeps it running for one-half revolution. The cam switch then opens stopping the motor.

B. Target Disc Motor (M2)

Started and stopped by the Game Relay (K2). The tracers are not seen on the screen until the player pushes the trigger which turns on the tracer lamp.

D. Main Timing Motor (M4)

Started by inserting a quarter and kept running by start relay (K1) until the Main Timer Cam switch switches. The Main Timing Cam switch (M4-CS1) then keeps M4 running for one revolution at which time the cam switch opens de-energizing the motor. M4 is stopped during the bonus period by the Ace Relay (K6).

E. Fan Motor (M5)

Started and stopped by the Game Relay (K2).

IV. CAM SWITCH FUNCTIONS

A. Crash Disc Motor Cam Switch (M1-CS1)

One contact is open when the crash sequence starts. A complete hit sequence consists of one-half revolution of the Crash Disc. A hit starts the Crash Disc Motor causing the open contact to close after approximately one-eighth revolution and remain closed for one-half revolution. This contact keeps the Hit Disc Motor running until M1-CS1 opens again. The other contact is closed when the crash sequence starts. The Explosion lamp is energized through the closed contact. After approximately one-eighth revolution of the crash disc, the contact opens turning off the Explosion lamp.

B. Crash Disc Motor Cam Switch (M1-CS2)

One contact is closed when a crash sequence starts. After approximately three-eighths ($3/8$) of a revolution of the Crash Disc, the closed contact opens briefly. This de-energizes Explosion Relay (K4) and Hit Relay (K6) and adds one point to the player's score. The other contact is open when the crash sequence starts. After approximately three-eighths ($3/8$) of a revolution of the Crash Disc, it closes briefly, shorting out the charge on capacitor C3.

C. Crash Disc Motor Cam Switch (M1-CS3)

Opens when the crash sequence starts. After approximately three-eighths (3/8) of a revolution of the Crash Disc, it closes briefly energizing the 150 watt, red lamp momentarily causing a red flash to be seen.

D. Main Timing Motor Cam Switch (M4-CS1)

One contact is open when the game is ready to start. Starting the game starts the Main Timer Motor, causing the open contact to close and remain closed for one revolution. The other contact is closed when the game is ready to start. It opens when the Timer Motor starts, which de-energizes the Start Relay (K1).

V. PHOTOTRANSISTOR BOARD (PC-1)

The phototransistor board has an output when light from the phototransistor lamp passes through a code hole in the target disc and is sensed by the phototransistor. This energizes the Hit Relay (K5). To check the board, open the lower front door and stop the airplane disc with switch SW-1. Line up a code hole directly under the phototransistor lamp and push the trigger on the control stick. (Do not stop disc for more than 20 seconds).

VI. ADJUSTMENTS

A. Volume

The volume of all the sounds (motor, machine gun, dive, explosion) is set with the potentiometer on the audio chassis.

B. Treble

The treble control (short control arm) is pre-set at the factory for the higher pitch sounds. It is recommended for maximum sound effects that the setting remain at this position.

C. Game Timing Switch (SW-1)

The length of the game can be adjusted for either 60 seconds, 90 seconds or 120 seconds. The time can also be stopped by turning to the OFF position.

D. Bonus and Ace Timing

The length of additional playing time for bonus and the length of time the siren and flashing light are on for Ace are individually adjustable. The trimpots located on the printed circuit boards at the rear of the lower chassis set these times.

E. Focus

The focus is pre-set at the factory and should not need adjustment. If, however, adjustment is needed, the procedure is as follows:

- 1.) Stop target in the center of the screen by

turning off the switch SW-1.

CAUTION: Do not leave airplane stopped
excessively long since heat from
the projector lamp can damage the
disc. (20 second maximum).

- 2.) Loosen the set screw of the lens (located under
the lower chassis) and move the lens up or down
as required until the picture is in focus and
re-tighten the set screw.

ALIGNMENT PROCEDURE

The Flying Ace requires alignment between the projected image on the screen and the code holes on the disc to score hits.

This procedure will tell you how to do this.

A hit is scored when the trigger bar is pressed for at least 1/2 second while the photocell sees light through a target score hole in the airplane disc. In order for the player to tell when he is aligned, the projection of the airplane image on the screen must be aligned with the point of the "V" formed by the tracers aimed at the engine.

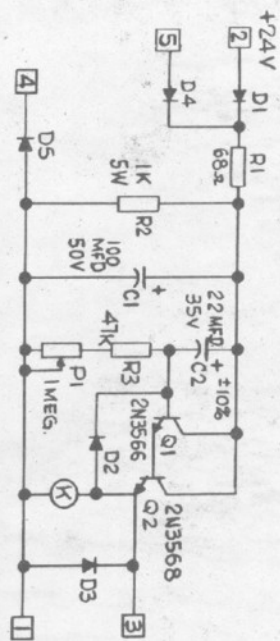
Each machine is aligned at the factory, no further alignment should be necessary unless the adjustable mirror has been tampered with or damaged in shipment.

For any alignment modifications use only the mirror for minor adjustments.

Check for correct alignment as follows:

- 1.) Open rear and lower front doors
- 2.) Make sure lower chassis is properly secured in the original factory set position. The lower chassis is

- secured in place with one 1/4 inch machine bolt located left front lower chassis (access through front door).
- 3.) Start game - watch screen for large red broadside triplane. (W.W. II Disc large broadside Folcke Wulf). Push control stick 3/4 forward and to the right center. Stop airplane disc with stop switch. Push machine gun bar. The tracers should point to a "V" on the forward part of fuselage or engine. A hit should be recorded.
 - 4.) Start airplane disc and track the other airplanes always shooting slightly below the engine and allow the plane to fly into the tracer pattern.
 - 5.) Play the game further. Try shooting a little high, a little low, a little to the left, a little to the right of the engine. Give the mirror a slight adjustment if needed.
 - 6.) NOTE: Each plane is coded with the control stick in a different position, generally with the stick 3/4 forward to all the way forward.



BONUS & ACE TIMER CIRCUIT

NOTE:

1. ALL RESISTORS 1/2 WATT EXCEPT AS NOTED
2. ALL DIODES IN5059

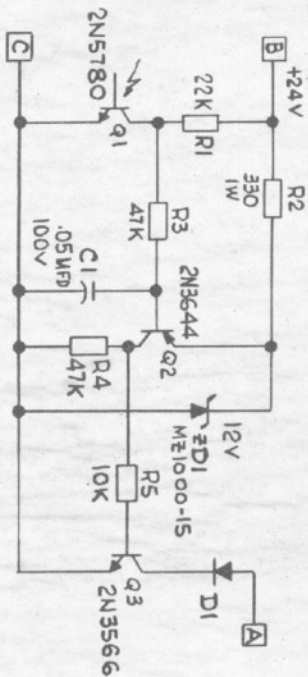


PHOTO TRANSISTOR CIRCUIT