

Supplement to TM-268, 1st printing

The Adventures of

MAJOR HAVOC™

Installation Instructions

This supplement documents the encoder wheel for the converted Major Havoc game. The exploded illustration of the encoder wheel assembly is on page 2, the parts list for the encoder wheel is on page 3, and the maintenance procedure for the encoder wheel is on page 4.

The encoder wheel assembly is designed for maximum performance with minimum maintenance. To maintain this control, put two drops of a lightweight machine oil on each bearing once every six months. Please refer to page 4 for this procedure.



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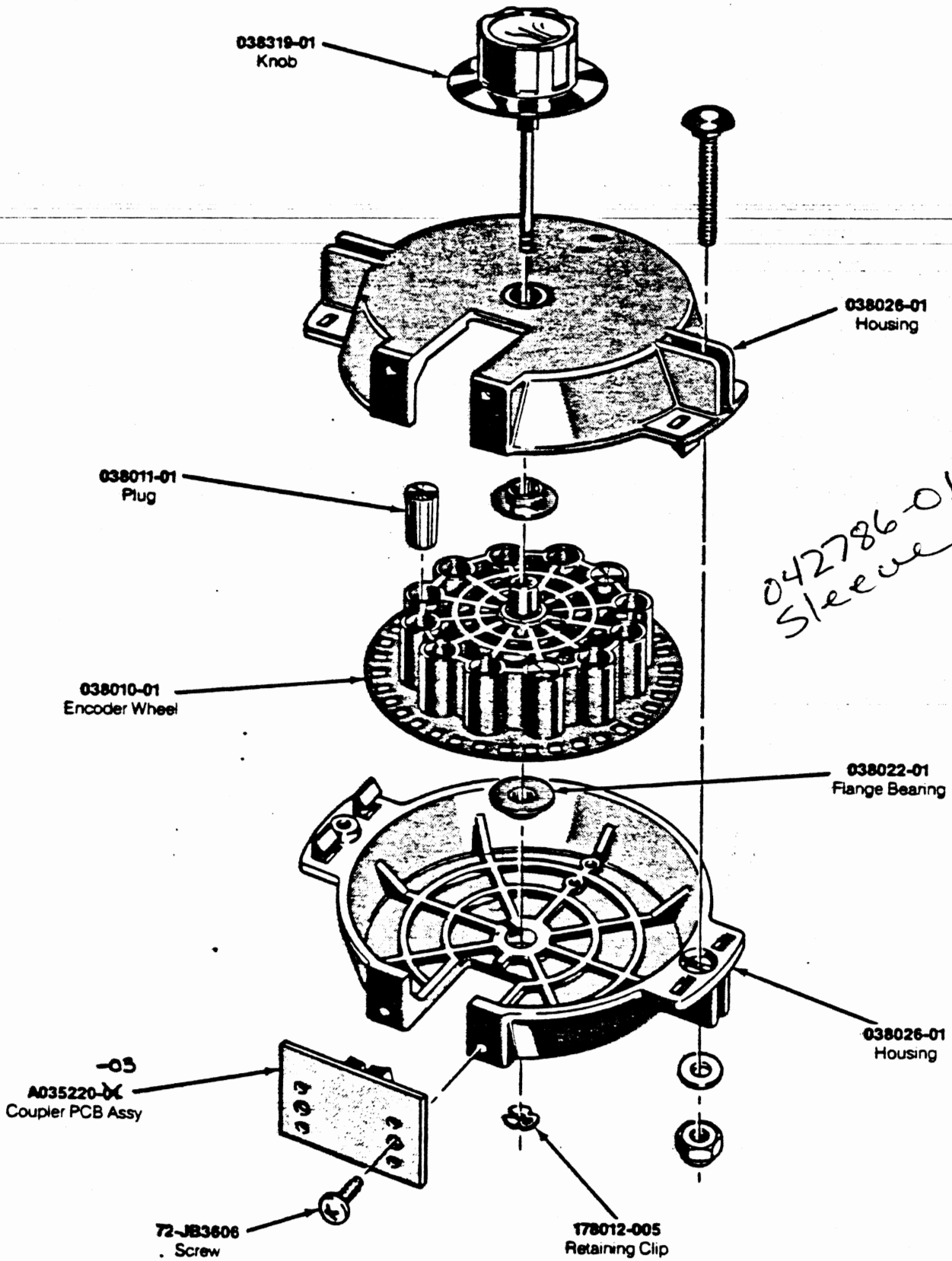
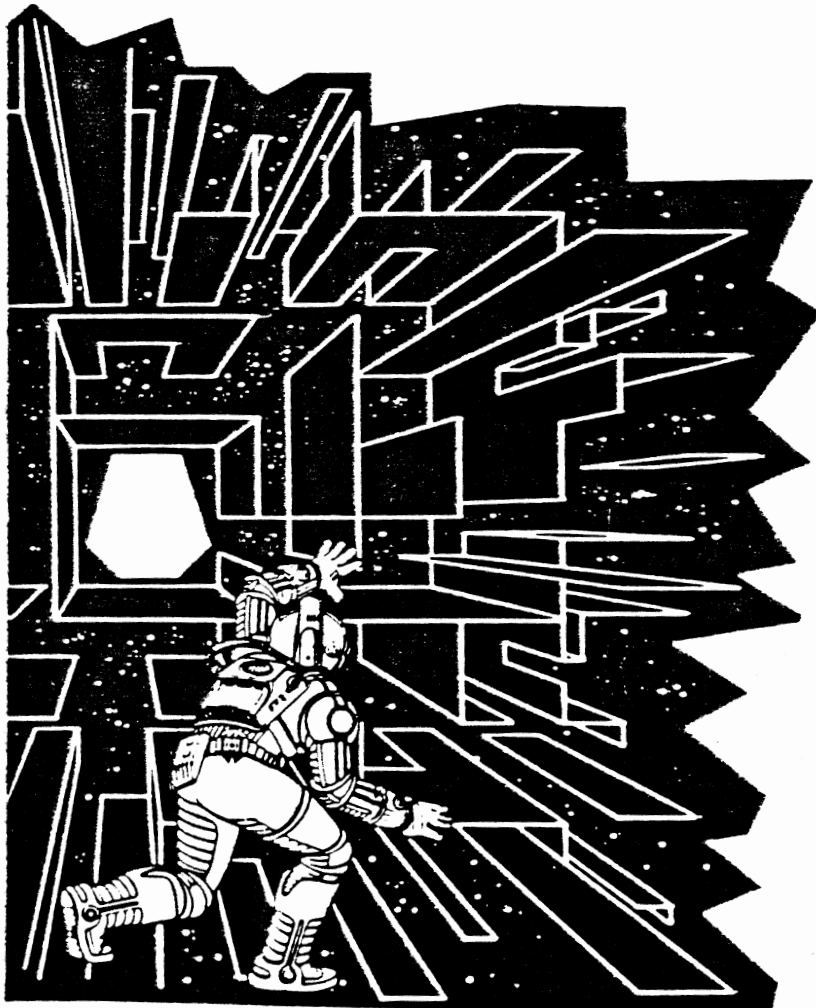


Figure 1 Encoder Wheel Assembly
A038023-01 A

Encoder Wheel Assembly Parts List

Part No.	Description
A035220-03	Coupler PCB Assembly
72-JB3606	#6 x $\frac{3}{8}$ -Inch Plastic Screw
038010-01	Encoder Wheel
038011-01	Encoder Wheel Plug
038022-01	Flange Bearing
038026-01	Encoder Wheel Housing
038319-01	Encoder Wheel Knob
178012-005	0.156-Inch Diameter Shaft Retaining Clip



Encoder Wheel Maintenance

WARNING

Unplug the game before you begin the following maintenance procedure.

Service Items Required

- #2 Phillips-head screwdriver
- Flat-tipped screwdriver
- $\frac{3}{8}$ -Inch hex driver
- Lightweight machine oil (Atari part no. 107013-001)

Open the Control Panel

1. Unlock and open the coin door.
2. Reach inside the coin door and up to the top of the control panel.
3. Open the two spring-draw latches located at the bottom of the display shield.
4. Close and lock the coin door.
5. Lift the top edge of the control panel and tilt it toward you.

Remove the Encoder Wheel Assembly From the Control Panel

1. Disconnect the 4-pin harness from the Coupler printed-circuit board (PCB).

NOTE

The retaining clip can fly loose at a high speed when you are prying it off. Be sure to cover the retainer with a rag or block it with your hand so that the retaining clip will not be lost if it flies off.

2. Use a flat-tipped screwdriver to pry the retaining clip off of the shaft of the knob. Save this retaining clip for reassembly.
3. Remove the encoder wheel knob by pulling it out of the assembly.
4. Use a $\frac{3}{8}$ -inch hex driver to loosen the nuts securing the encoder wheel to the control panel.
5. Remove the carriage bolts, nuts, and washers. Save this hardware for reassembly.

Open the Encoder Wheel Housing

1. Two identical parts snap together to form the housing for the encoder wheel. To unsnap these two parts, place two fingertips on the tabs that protrude on one end of the housing. Pull these tabs **firmly** away from the center of the housing, until they release. Turn the

housing over and place two fingertips on the tabs that protrude on the other end of the housing. Pull these tabs **firmly** away from the center of the housing until they release.

2. Separate the two parts that form the housing.
3. Use the Phillips-head screwdriver to remove the screws that attach the Coupler PCB to the housing. Carefully remove the Coupler PCB.

Lubricate the Bearings

1. Lift the encoder wheel out of the housing.
2. Make sure the plugs are evenly spaced. If they are not, poke them out from the back, and reposition them.
3. There are identical bearings on either side of the encoder wheel. Remove each of these bearings by sliding them off of the shaft. Apply two drops of a lightweight machine oil to the inside of each bearing.

Reassemble the Encoder Wheel Housing

1. Notice that each bearing has a key. This key is designed to fit inside the groove near the center hole of each housing. Place a bearing in each half of the housing making sure that the keys fit in the grooves. Place the encoder wheel inside a housing.
2. Place the empty housing on top of the housing that contains the encoder wheel. The housings should be a mirror image of each other. **Firmly** snap both housings together.
3. Use a Phillips-head screwdriver to reattach the Coupler PCB to the housing. (The screws go in the large holes on the Coupler PCB, and the encoder wheel should be able to spin freely between the sections of the black coupler.)

Attach the Encoder Wheel Assembly To the Control Panel

1. Place the encoder wheel housing against the control panel, with the coupler PCB away from the panel.
2. Insert each carriage bolt through the control panel, the encoder wheel housing, a washer, and a nut.
3. Use a $\frac{3}{8}$ -inch hex driver to tighten these nuts.
4. Connect the 4-pin harness to the Coupler printed-circuit board (PCB).
5. From the player side of the control panel, insert the encoder wheel knob into the housing.
6. Place the retaining clip on the shaft of the encoder knob, in the groove closest to the housing.

Close the Control Panel

1. Unlock and open the coin door.
2. Close the control panel.
3. Reach inside the coin door and up to the top of the control panel.
4. Close the two spring-draw latches located at the bottom of the display shield.
5. Close and lock the coin door.

WARNING

Players may receive an electrical shock if the control panel is not properly grounded! After servicing any parts on the panel, make sure that the green ground wire is firmly attached to the metal tab on the inside of the control panel. Only then should you lock up the game.

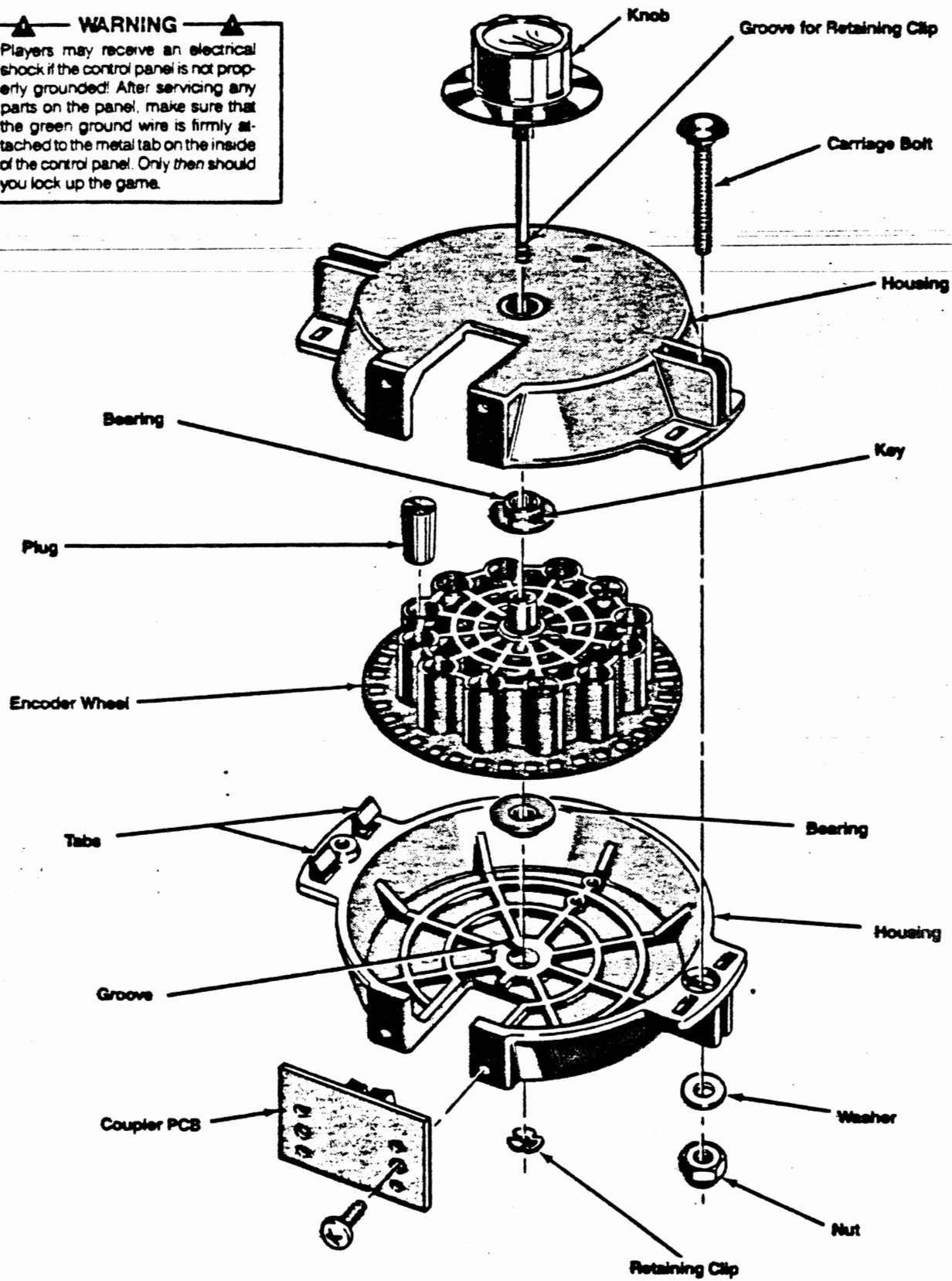


Figure 2 Disassembling the Encoder Wheel