

No motion/ encoder failure "0" and unit does detect home position. Everything else works fine.
Optical encoder failure which is located on the motor assy with chopper wheel. cpu is not rec. signal.
Check alignment /may have come loose/check wiring /defective bd.or bad input cpu.

namco

Blowing Breaker in wall circuit -Mtr Drv board could be cause.

Grainger brush kit & 90vdc permanent mag mtr - MTR# 2M170D Brush kit # 2ZB84
remove encoder then cover under encoder and there should be another panel. ?

TURRET TOWER

Power supply VG88-10064-00 BOT OF COIN TOWER
HAPP# 80-0215-00

VG88-09710-00 POWER SUPPLY MAIN BY MTR
DRV

OPERATION MANUAL

The actual product may differ slightly from the illustration.



WARNING

- To ensure safe operation of the machine, be sure to read this Operation Manual before use.
- Store the Operation Manual in a safe place for quick access.

Important

**INSTRUCTIONS and INSTALLATION
before operating game**

FCC Notice

tested and found to comply with the limits for a Class A
15 of the FCC Rules. These limits are designed to
protect against harmful interference when the equipment is
used in a home environment. This equipment uses, and can radiate radio
frequency energy that, if not installed and used in accordance with the instruction
manual, may cause interference to radio communications. Operation of this
equipment is likely to cause harmful interference in which case the
user is advised to take the following steps to correct the interference at his own expense.

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a retrieval system, or otherwise copied for public or private use, without
the prior written permission of AMCO AMERICA INC.

INTRODUCTION

THANK YOU VERY MUCH FOR PURCHASING NAMCO'S TURRET TOWER.

This Operation Manual describes:

- How to install and maintain the machine.
- How to operate the machine correctly to make full use of its functions.
- How to ensure safety for players and observers.

When the game needs a repair:

- For information about the game and its repairs, contact your distributor.

MAINTENANCE NOTICE TO OWNERS / OPERATORS FOR YOUR TURRET TOWER GAME

To insure safe reliable operation of your Turret Tower game, the operator is required to:

1) Check and maintain the operation of all features as noted in your "Scheduled Maintenance Log" (see scheduled maintenance log, page 41 of your operator's manual).

Reference Section 13.1 "Required Maintenance" of your operator's manual.

2) Check that all warning and caution labels are in place and readable with no obstructions that would prevent the player from seeing them.

Your Turret Tower game must be maintained as noted in your Scheduled Maintenance Log with reference to Section 13.1 of your operator's manual to insure that all assemblies are held securely in place. The manufacturer is not responsible for any incidents that may occur due to insufficient maintenance.

1. SAFETY PRECAUTIONS

—Be sure to read this chapter to ensure safe operation.—

To Owners

If you entrust other persons to engage in operation, installation, transport, maintenance or disposal of this machine, please instruct them to read this manual and follow the instructions.

Turret Tower is a one player game only. The operator must check the safety features of the game on a regular basis to ensure proper functionality. These features include DOOR LOCK, SEAT BELT and FLOOR MAT lock-outs, as well as an EMERGENCY STOP BUTTON. The operator must confirm that the game will not function if any of these safety features are activated. If the door is not closed, or the seat belt is not fastened or someone or something is placed on the floor, the game will not start. The operator must also confirm that the EMERGENCY STOP BUTTON is working properly.

If any of these safety features are not working properly, the operator must correct them before the game is used.

1-1. Danger Classification

The safety precautions or possible damages are classified into two categories of danger as shown below.



Warning Disregarding this instruction may result in death or serious injury.



Caution Disregarding this instruction may result in minor injury or property damage.

Notes on functions, which are not included in the safety precautions, are indicated with the following symbol.



Notice Notice: Notes on functions and protection of the product.

1-2. Definition of the Term "Technician"

This manual is for game arcade personnel. Some sections, however, are only for technicians. If a section is marked – To be conducted by a technician only – in the table of contents, the task the section covers must be done by technicians only.

"Technician"

The term "technicians" is defined as those engaged in design, manufacture, inspection or maintenance at amusement equipment manufacturers or those with technical knowledge of electrics, electronics and mechanical engineering equal or superior to that of technical high school graduates and engage routinely in maintenance including repairs of amusement equipment.

1-3 Top-priority safe precautions



- Should any problem occur, turn off the power immediately and stop operating the machine. Then unplug the power cord from the service outlet. Operating the machine with a problem unresolved may cause a fire or accident.
- Some parts of the monitor remain hot or at high voltage even after the power is turned off. To prevent electric shock or burns, take great care not to touch parts other than those specified.
- Dust accumulated on the power plug may cause a fire. Check regularly and remove any dust.
- Insert the power cord plug into the main socket securely. Poor contact may cause overheating, resulting in a fire or burns.
- Damage to the power cord may cause a fire, electric shock, or leakage. Observe the following instructions.
 - Keep the cord away from heating devices.
 - Do not twist the cord.
 - Do not bend the cord excessively.
 - Do not alter the cord.
 - Do not bundle the cord.
 - Do not pull the cord. (Always unplug by pulling the plug and not the power cord.)
 - Do not place anything on the cord.
 - Do not allow the cord caught by the machine, other products, or the wall.
 - Do not do anything else that might damage the power cord.
- Do not wet the power cord or plug. This may result in electric shock or leakage.
- Do not touch the power cord plug with wet hands. This may result in electric shock.
- The power rating for the machine is 110V AC, 20 A. To prevent a fire or electric shock, use indoor wiring that conforms to the machine's power specifications.
- Operate the machine with a supply voltage in the range 110-120V AC. Using the machine with supply voltages outside this range may result in a fire or electric shock. To ensure that the machine operates at optimum conditions, use the rated voltage whenever possible.
- Use only specified parts to replace consumables and service parts (including screws). To order parts, contact your distributor.
- Do not convert the machine without permission. Do not carry out any work that is not described in this Operation Manual. Unauthorized conversion of the machine may create unforeseen hazards.
- When transferring ownership of the machine, be sure to attach this Operation Manual with the machine.

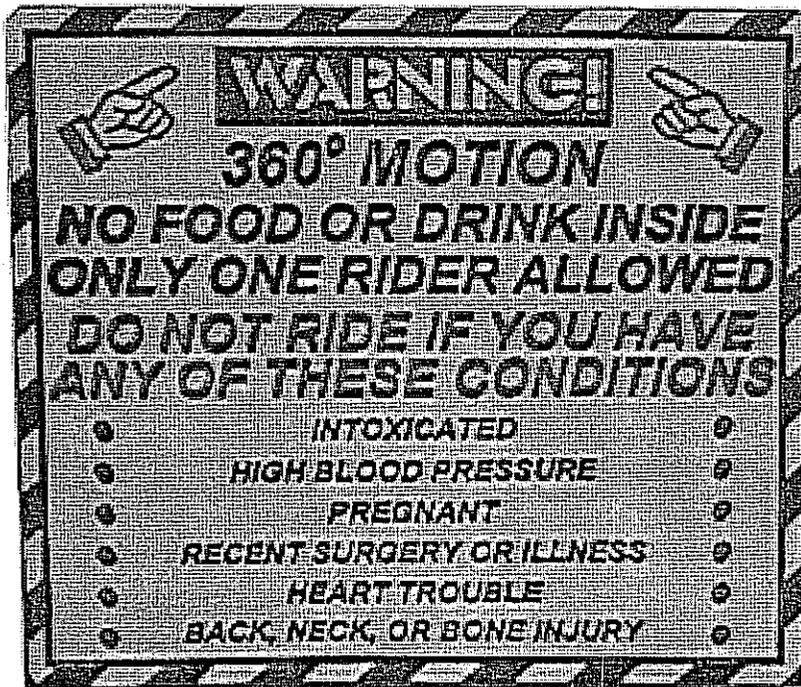
1- 4 Explanation of Warning Labels attached to this game.

This warning label has been placed on the entry door of this game.

It **MUST NOT** be removed.

It **MUST NOT** be blocked.

If damaged in any way, it must be replaced.

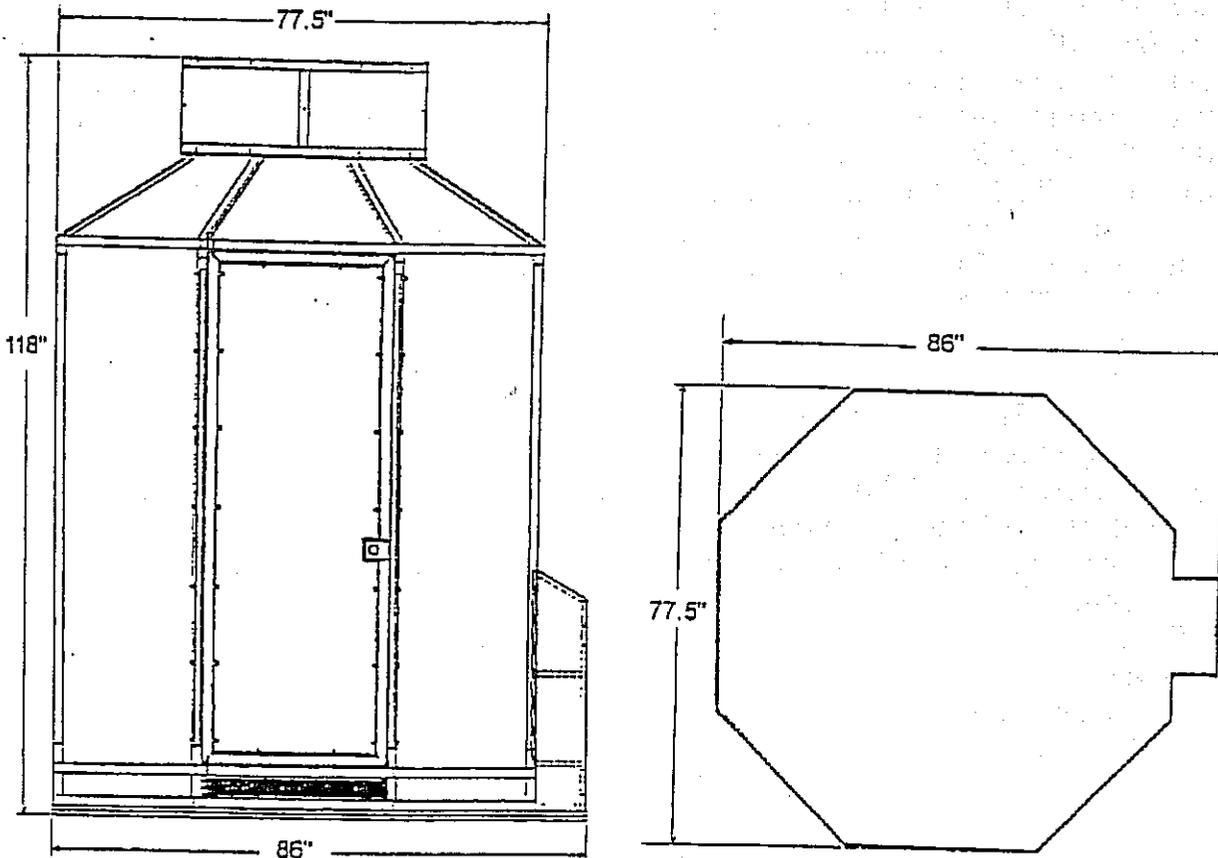


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2.0 SPECIFICATIONS

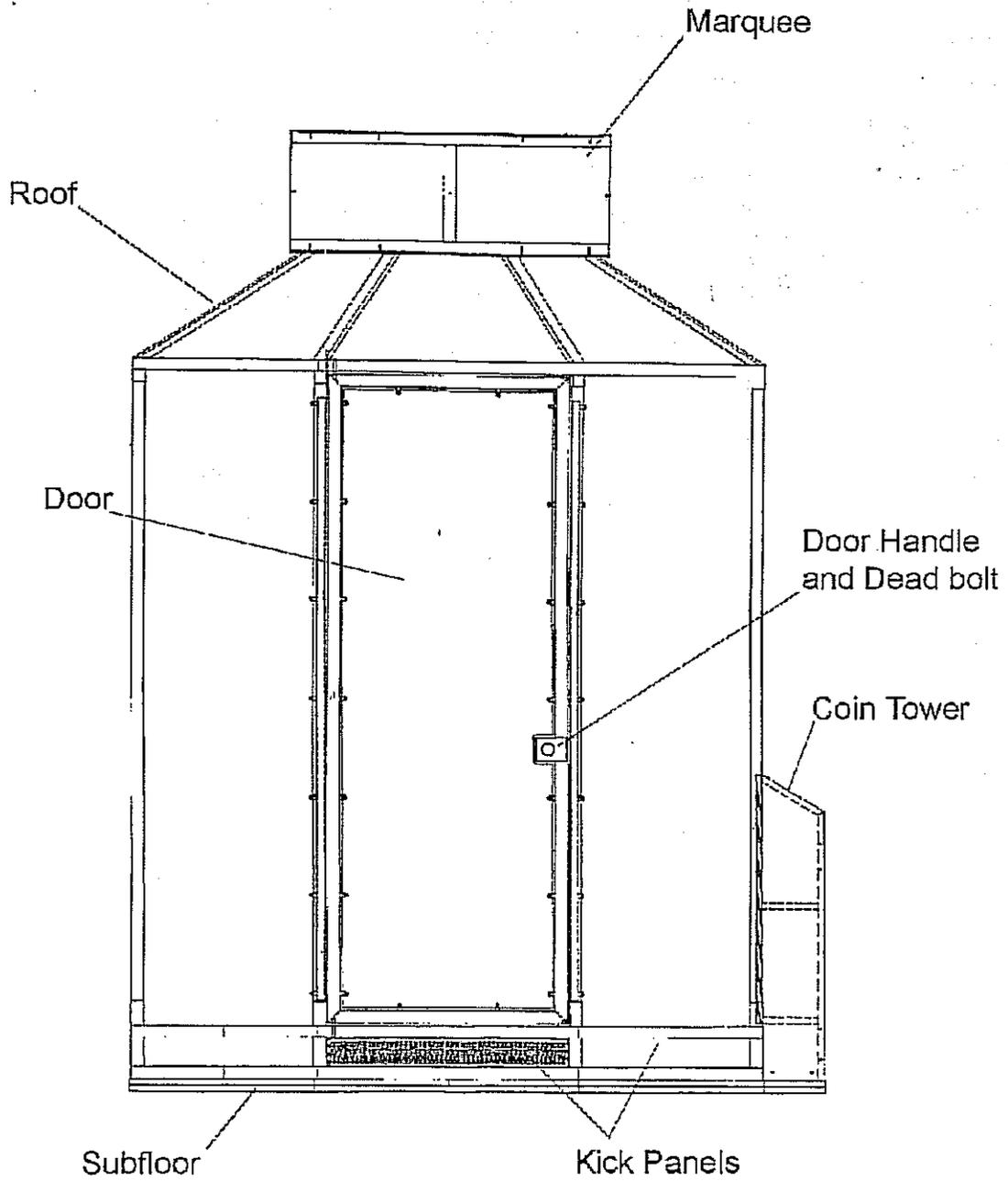
Input Power:	120 VAC, 60 Hz, 20 Amp
	200 Watts Maximum
Dimensions:	86" W 77.5" D 118" H
Weight:	1722 lbs.
Dimensions, Shipping:	13 containers, various sizes
Weight, Shipping	2208 lbs.
TORQUE SPECS:	Chain Tensioner Bolt 12 Ft Lbs
	Motor Mount Bolts 65 Ft Lbs
	Center Gear Mounting Bolts 32 Ft Lbs



3.0 PACKAGING CONTENTS

CONTAINER	CONTENTS	SIZE	CONTENTS	SHIPPING
			WEIGHT	WEIGHT
Pack #1	Base	80" x 80" x 14"	426 Lbs	650 Lbs
Pack #2	Rotating Disc	75" x 75" x 9"	310 Lbs	372 Lbs
Pack #3	Motor Assy	16.75" x 15" x 30"	135 Lbs	175 Lbs
Pack #4	Motor Cabinet	19" x 17" x 23.5"	35 Lbs	40 Lbs
Pack #5	Monitor and Console Frame	36" x 26" x 36"	70 Lbs	81 Lbs
Pack #6	Monitor and Cab	48.5" x 26" x 31.25"	216 Lbs	238 Lbs
Pack #7	Operator Console	48.25" x 14.25" x 17.5"	55 Lbs	64 Lbs
Pack #8	Seat	26" x 22.25" x 49.75"	43 Lbs	55 Lbs
Pack #9	Coin Tower	17.75" x 11.25" x 38.75"	50 Lbs	54 Lbs
Pack #10	Acrylic Panels/Tube uprights	86.25" x 37.5" x 10"	209 Lbs	250 Lbs
Pack #11	Roof	81" x 21.5" x 42"	120 Lbs	151 Lbs
Pack #12	Marquee Bottom (Ceiling)	36" x 36" x 13"	22 Lbs	34 Lbs
Pack #13	Marquee Top	40.25" x 40.25" x 16.25"	31 Lbs	44 Lbs
TOTAL SHIPPING WEIGHT				2208 Lbs

4.0 OVERALL CONSTRUCTION



5.0 PRECAUTIONS

WARNING

REMOVAL OF SERIAL NUMBERS AND/OR BAR-CODES FROM PRODUCT OR
COMPONENTS WILL VOID THE WARRANTY

5.1 INSTALLATION

This game is designed for indoor use only. It must *not* be installed outdoors. The following conditions must be avoided.

1. Direct exposure to sunlight, high humidity, direct water contact, dust, high heat, or extreme cold.
2. Vibration. The game must be installed on a level surface.

Do not install in an area such that the game would present an obstacle in case of an emergency (i.e., near fire equipment or emergency exits).

5.2 HANDLING

1. Before operating the game, make sure that the main AC power hookup includes a safety ground. This will ensure safe operation as well as compliance with FCC and UL regulations. Measure the AC power line voltage. Verify that the voltage source is between 110 and 125 VAC.
2. Before replacing any parts, turn the AC power OFF and unplug the game.
3. When unplugging the game from an electrical outlet, always grasp the plug, not the line cord.
4. The game power supply includes areas of high voltage. Take care at all times to avoid electrical shock whenever inspecting or adjusting the game.
5. Do not attempt to repair the Printed Circuit Boards (PCBs) on-site. They contain sensitive integrated circuit chips that could be easily damaged, even by the small internal voltage of a multimeter. Always return the PCBs to your distributor for any repairs.

WARNING

When packing PCB's for shipment, enclose in anti-static wrap. NAMCO America Inc. is not responsible for damage to components due to static discharge.

6.0 INSPECTION

To ensure a successful startup following shipment, the TURRET TOWER game components should be inspected before initial power-up.

1. Carefully remove the game from its shipping containers and inspect it for visible signs of damage.

If your game exhibits signs of damage be sure to document it and contact your distributor and transportation carrier immediately.

2. Refer to the SET UP INSTRUCTIONS found on page 11 of this manual and follow those instructions closely.
3. Inspect the game PCB's located in the control panel and the coin tower, verifying that all connections are properly seated. Inspect the power supply area for any loose components.

7.0 SET UP INSTRUCTIONS

Follow these set up instructions to ensure a safe and correct set up of TURRET TOWER.

BASE ASSEMBLY

1. Start by removing the base assembly section from the packaging. Locate container #1. It contains the base (sub floor) assembly. This section is easily identified by the casters attached to it. This section lays flat on the floor, **CASTER SIDE UP**.

The base sections are HEAVY. Enough manpower must be provided to ensure a safe procedure. The manufacturer is not responsible for any injury sustained in the set up or operation of this game.

Position the base assembly on a flat, level surface. Make sure there is enough floor space to access the coin tower door and for the entry door to swing open without blocking an aisle. The game will not be movable once it is set up, so pick the spot carefully. Ensure proximity to AC power, preferably a separate, 20A circuit.

Position the rectangular extension of the sub floor section (see position 8 in figure 1) closest to your power source. This is where the coin tower will be attached and where the main AC cable will be located. One position from the coin tower extension, in the clockwise direction, (looking down onto the sub floor) will be the "front" of the game (position 1 in figure 1) and should be oriented toward the best viewing angle as determined by the installer. One more position in the clock-wise direction (position 2 in figure 1) is where the door will be located. Be sure there is enough clearance for the door to swing open without blocking an aisle.

2. Remove the kick panels and neon lights located at positions 1, 3, 5 and 7. (See figure 1).
3. Remove the flashing.
4. Next, identify the roller chain. Wrap one end of the chain around the large gear in the center of the sub floor (see figure 1) and place the other end of the chain toward the outer edge of the base, one position to the left (counter clock wise) of the coin tower extension (position 7 in figure 1), or positions 1, 3 or 5 as shown in figure 1 will also work. The end of the chain will now be in position to be attached to the motor, once that step is reached.

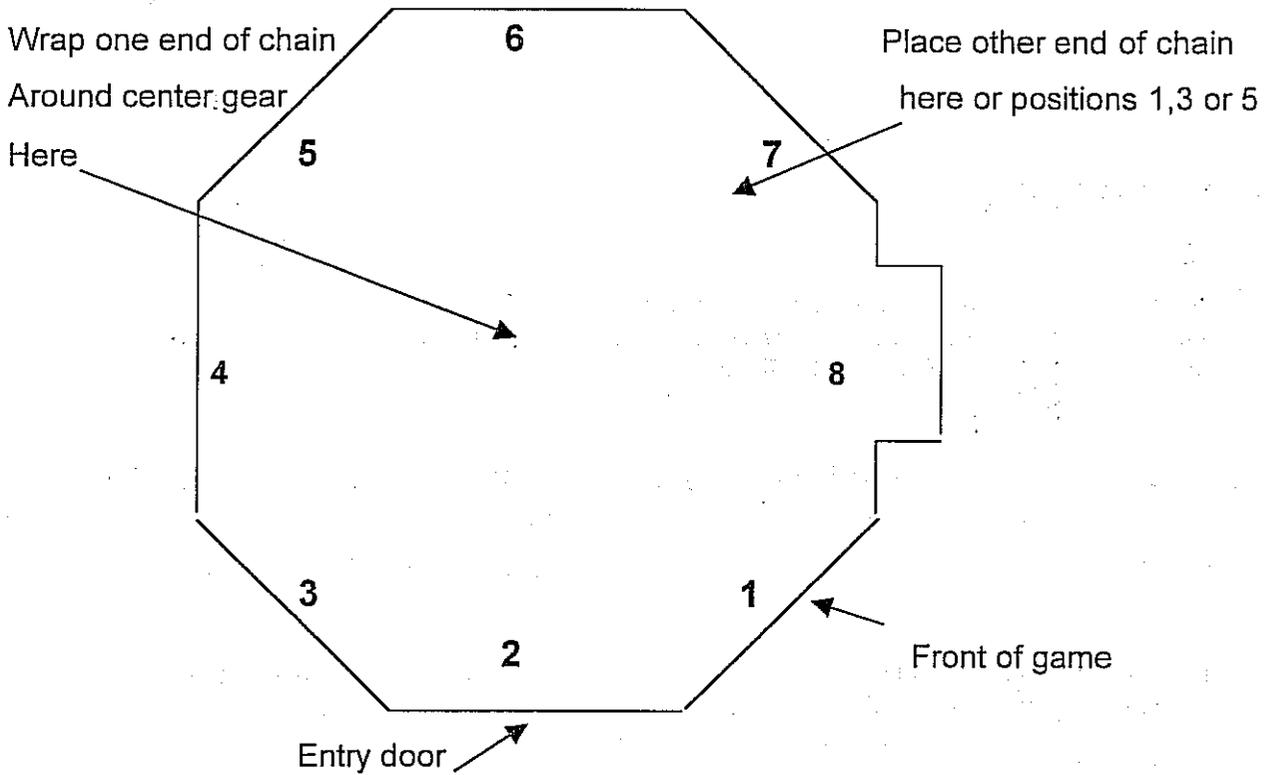


Figure 1

5. Next install the floor (See figure 2). The floor is a round wooden platform, with a large metal "rail" attached to it.

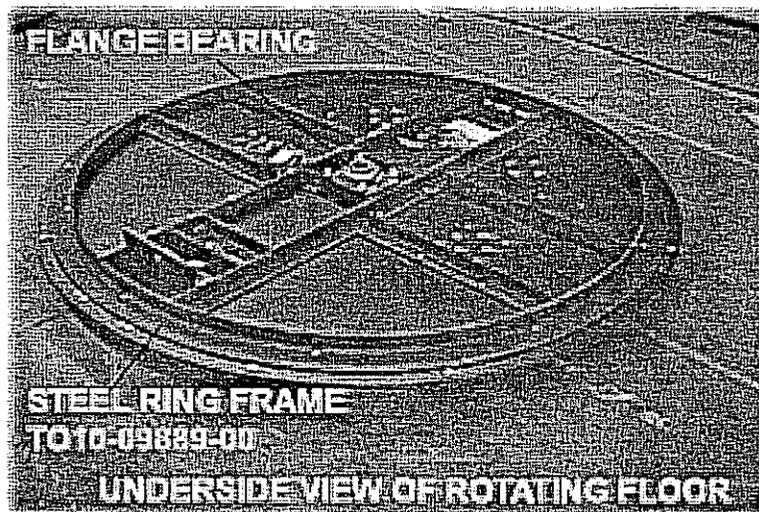


Figure 2

Lay the floor, rail side down, onto the sub floor. The casters of the sub floor should come in contact with rail of the floor (See figure 3).

CAUTION! Rotate the disc and make sure the HOME SENSOR (see figure 2A) does not come into contact with the BOLT on the sub floor. Refer to Appendix A in this manual for a full size picture of the rotating floor installed onto the sub floor.

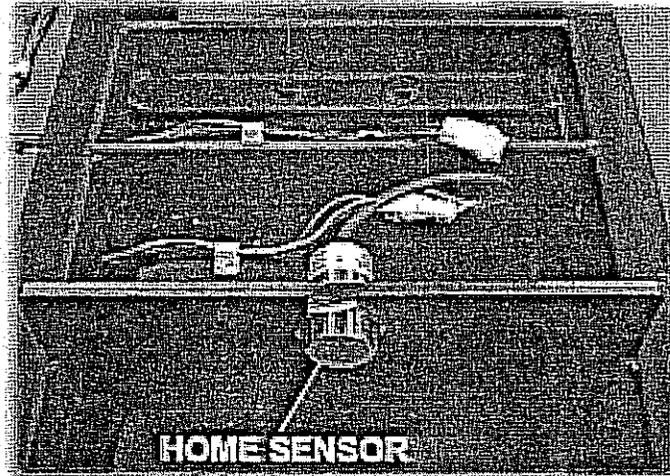


Figure 2A

NOTE* FIGURE 3 IS FOR ILLUSTRATION PURPOSES ONLY. IT DOES NOT SHOW THE METAL FRAME THAT WILL BE INSTALLED ONTO THE SUBFLOOR AT THE FACTORY.

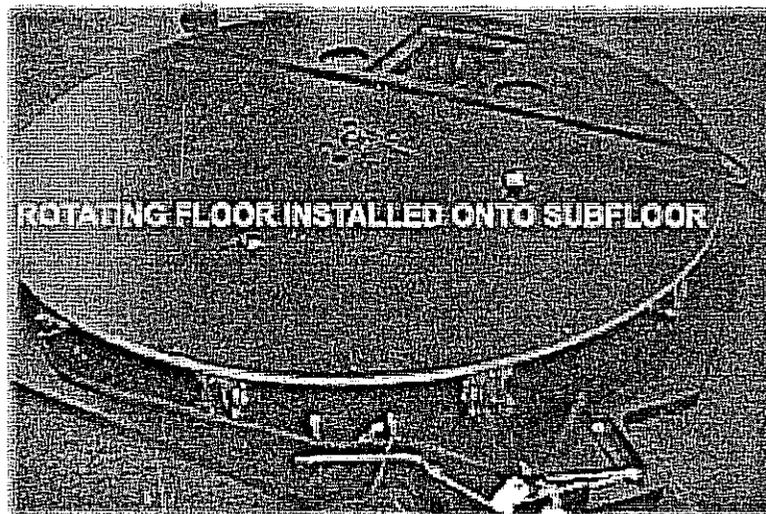


Figure 3

6. Remove the tape covering the hole in the middle of the floor and install the rotary contact and retainer flange into the center gear. Connect the wire harness to the rotary contact located in the center of the floor. (See figures 4 through 7).

CAUTION! Pull the slack out of the harness from the opposite end (located near the coin door location) while inserting the rotary switch. The harness must not be pinched at the rotary contact end.

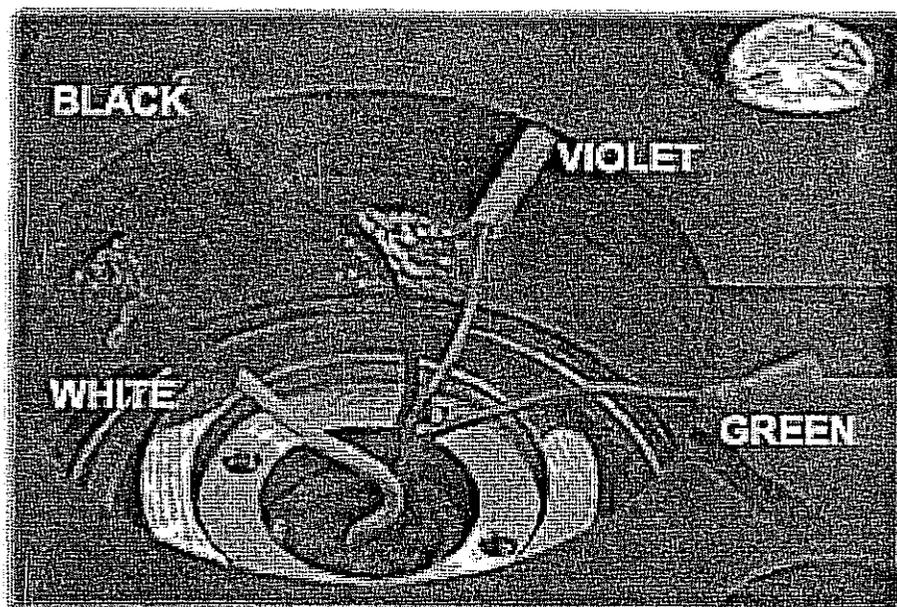


Figure 4

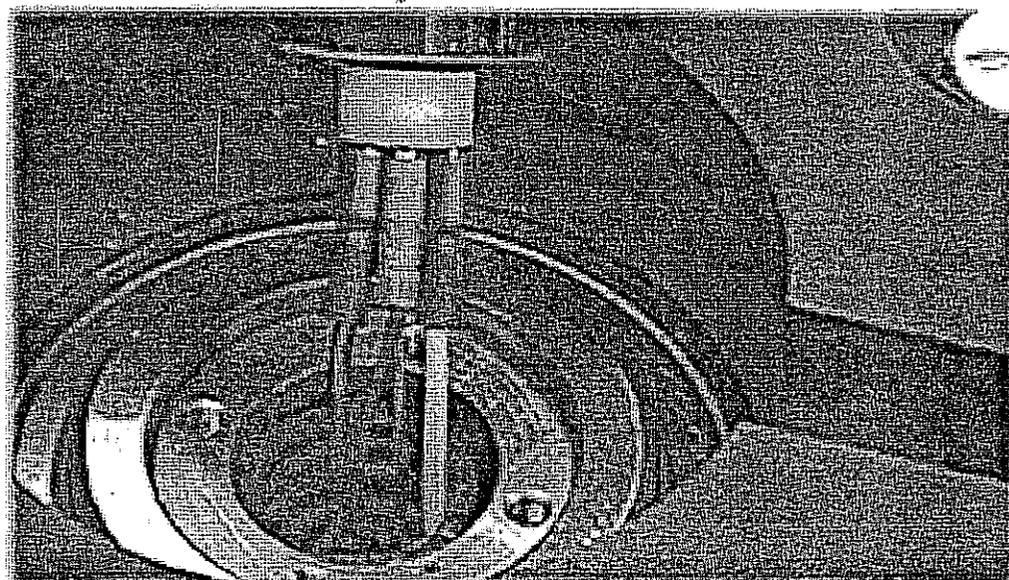


Figure 5

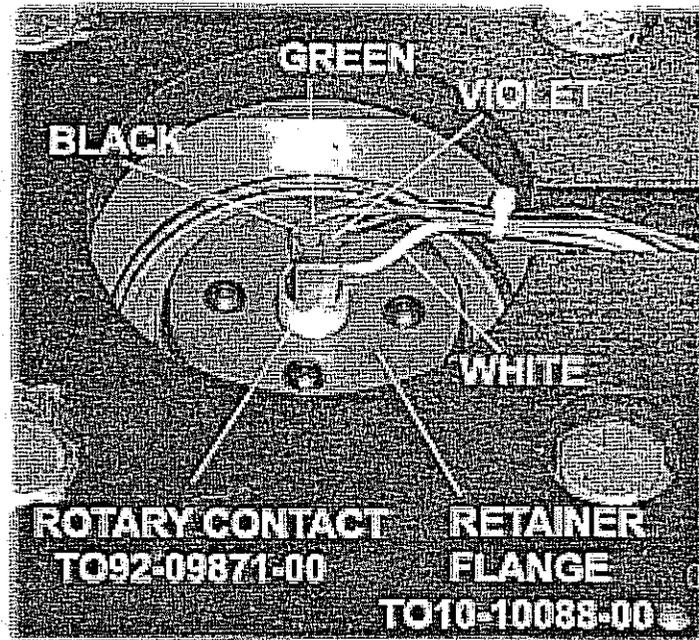


Figure 6

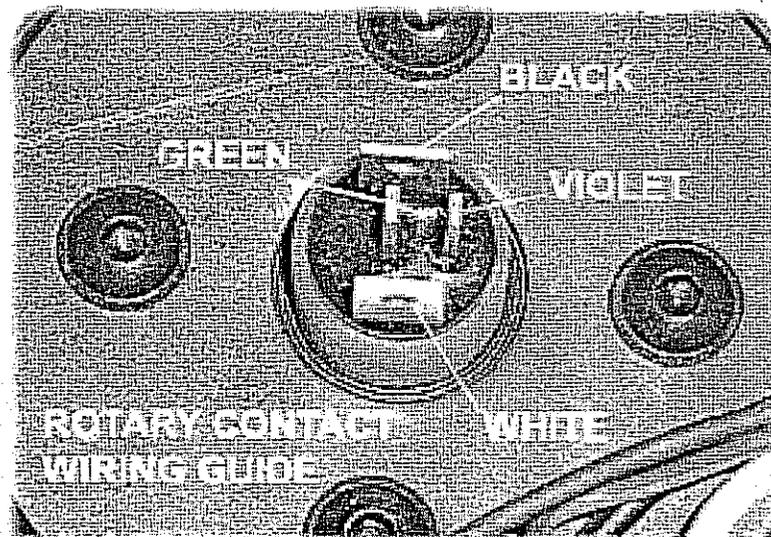


Figure 7

7. Place the motor into place on the floor. Reach under the floor and wrap the ends of the chain around the motor gear. (See Figure 10). Install the bolts provided into the angle iron rails. These bolts thread into the metal rail that is attached to the underside of the floor (See figure 8). Plug in harness.

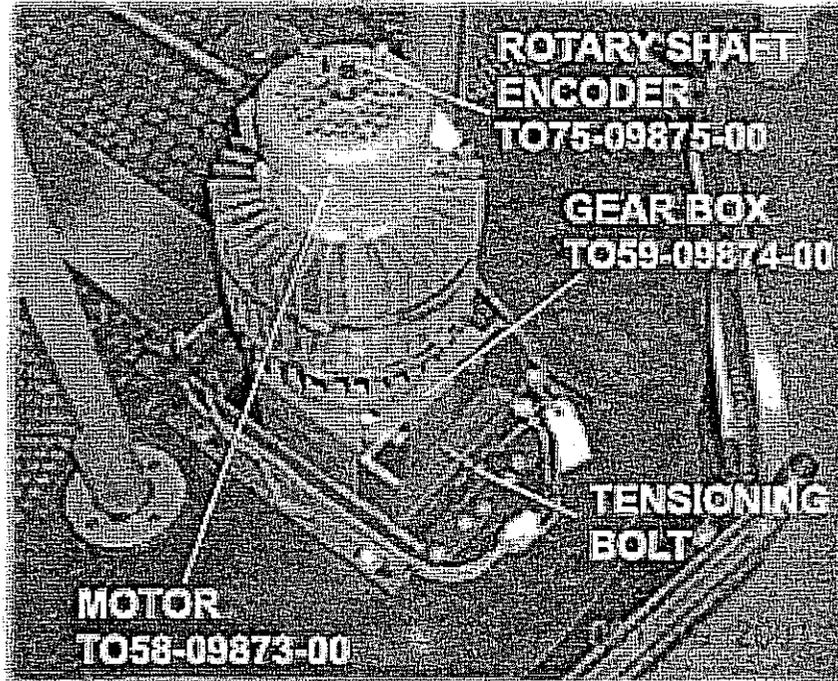


Figure 8

CAUTION!!! THE ROTARY SHAFT ENCODER LOCATED ON TOP OF THE MOTOR IS FRAGILE. HANDLE WITH CARE!!!!

8. Install the motor box. (See figure 9). Place harness onto hook inside motor box. Install motor box cover, plugging in the fan harness.

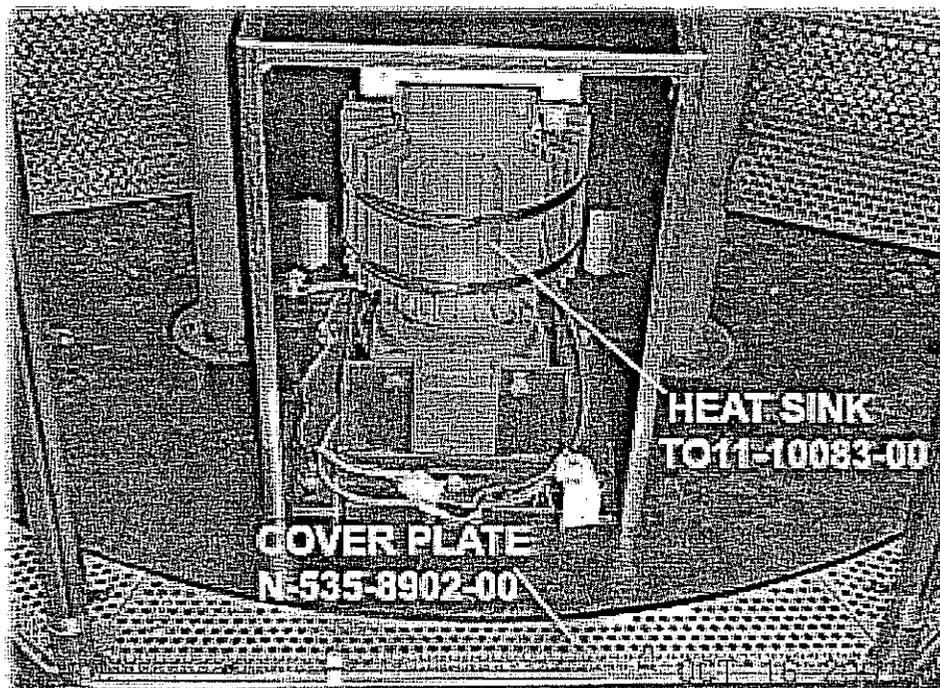


Figure 9

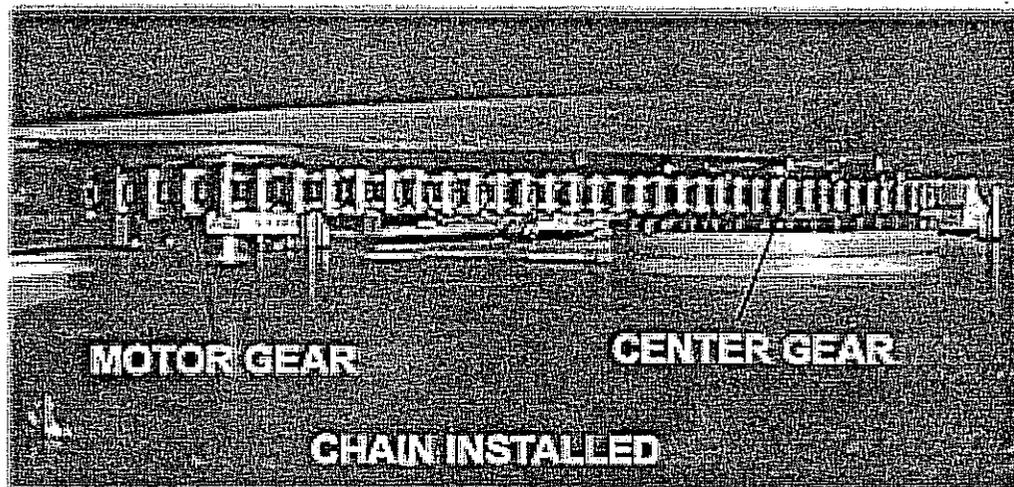


Figure 10

9. Using a torque wrench, apply 12 ft-lbs of torque to the tensioning bolt. (See figure 11).

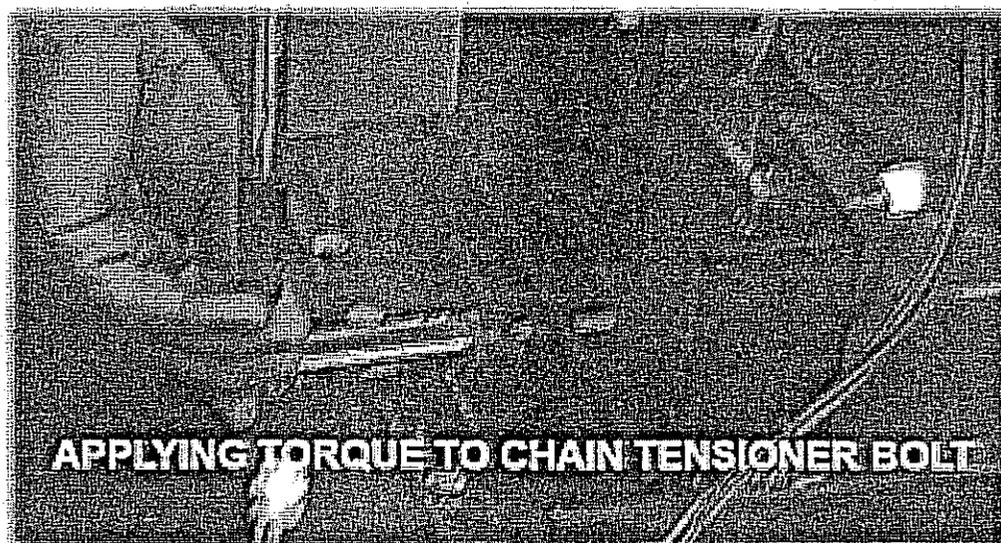


Figure 11

10. During this step, insert all hardware finger tight. Do not tighten until assembly is complete. Place the console stands into position on the rotating disc, with the baskets on the outside of the stands. Place the control console onto the stands, running the harness down through the right side stand. Plug in the connector at the base of the right side stand, install and finger-tighten the hardware.

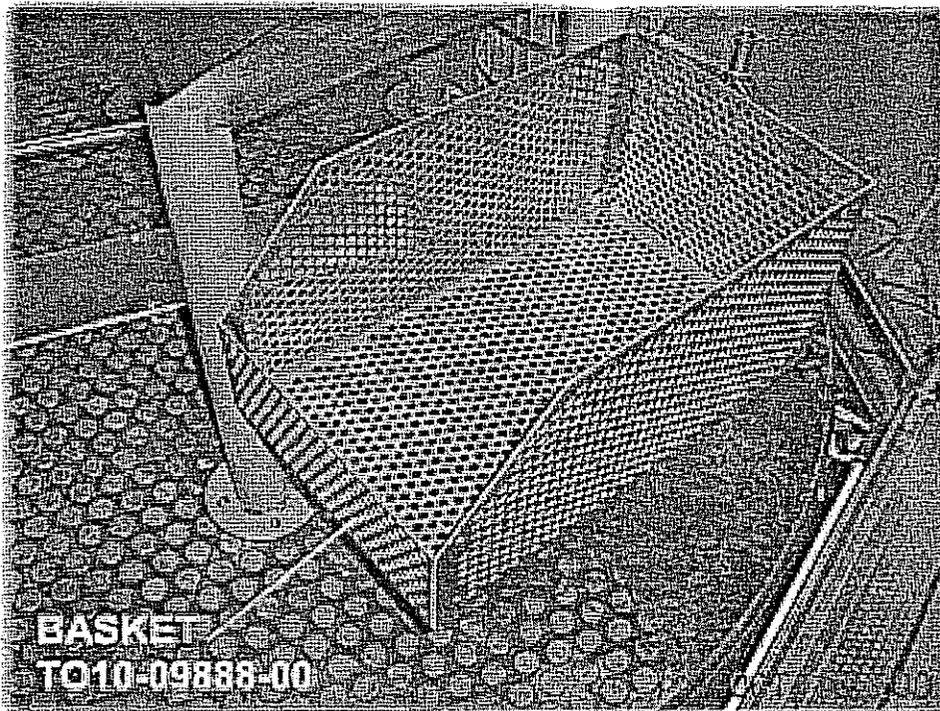


Figure 12

11. Install the monitor cabinet (monitor installed), plugging in the harness connectors as required.

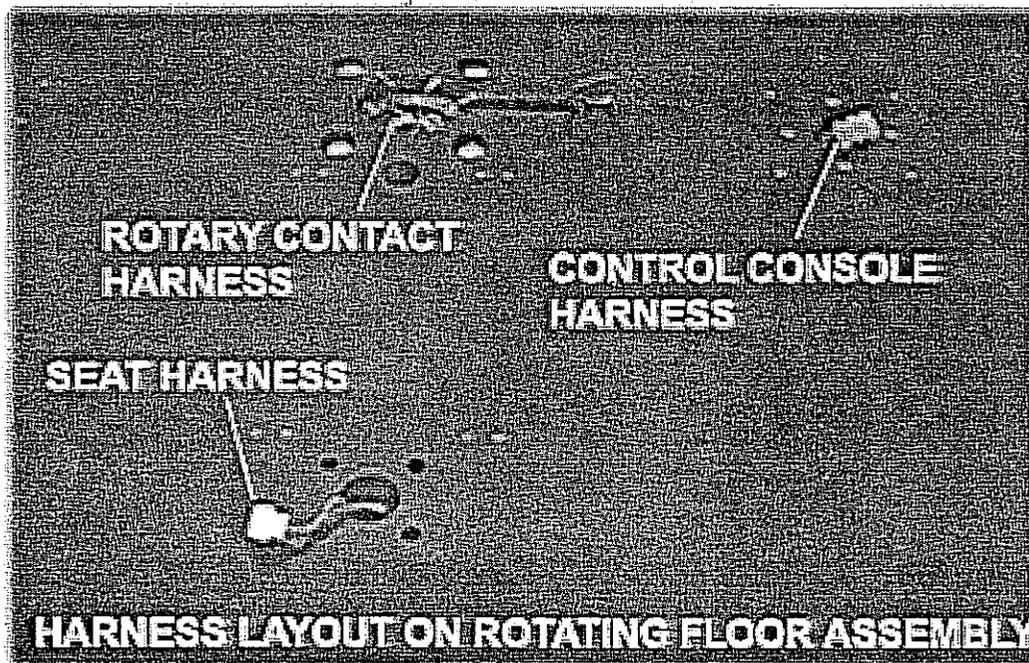


Figure 13

12. Attach the seat post, plugging in the harness that runs up inside the post. (See figures 14 and 15).

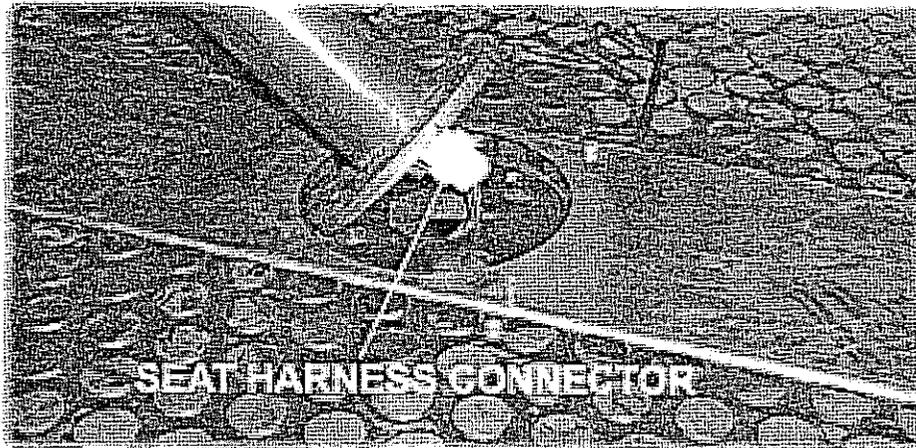


Figure 14

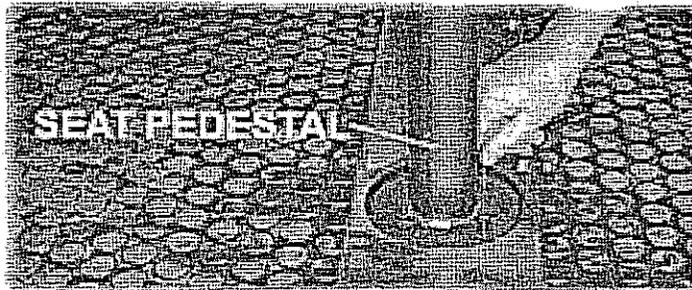


Figure 15

Proceed to the ENCLOSURE ASSEMBLY on the next page.

ENCLOSURE ASSEMBLY

Install all hardware finger-tight during enclosure assembly. Once the enclosure is assembled, tighten all hardware.

1. Remove nine pipes from the packaging. Identify six with double-ended tabs, one with single-ended tabs and one with single-ended tabs and a dead bolt hole. There will also be a slightly undersized, shorter pipe with no tabs, which contains the deadbolt sensor.

Look at the base assembly and identify the door threshold. It is position #2 in figure 1. There will be a pin in the left of the panel. This pin is the lower pivot point for the door. (See figure 16).

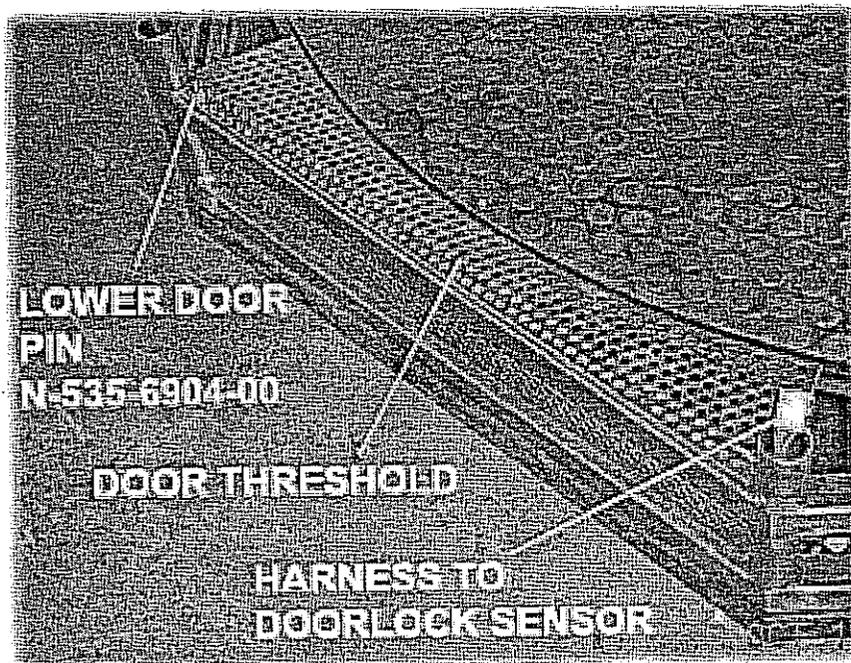


Figure 16

Locate the short pipe with no tabs. Insert it into the receiver at the right end of the door threshold, plugging in the harness just before inserting the pipe into the receiver. Locate the pipe with the single-ended tabs and the DEAD BOLT HOLE and slid it over the short pipe, inserting it into the pipe retainer. Locate the pipe with the single-ended tabs and NO DEAD BOLT HOLE and slide it into the pipe retainer at the left end of the door threshold adjacent to the pin in the floor panel. You've just installed the right and left doorframe.

One of the six pipes with double-ended tabs will have a harness inside. This is the harness for the marquee. Place this pipe one position to the right of the dead bolt side (right side) of the door frame, plugging in the connectors just before sliding the pipe into the receiver.

(See figure 17). Continue working in the counter-clockwise direction (to the right), and install the rest of the pipes.

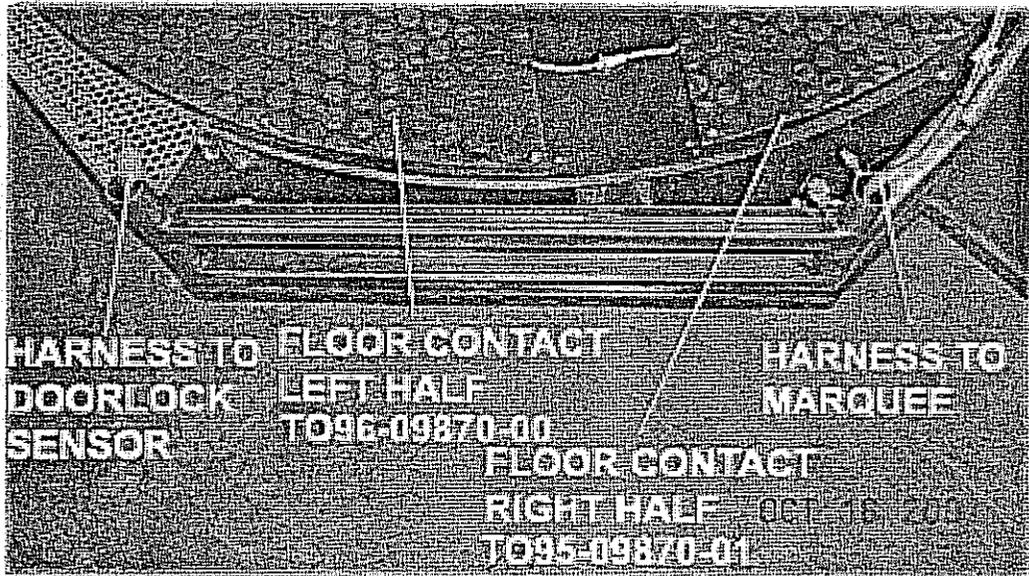


Figure 17

2. Identify the two roof sections. One is the front section, the other is the back section. The front section will have the upper door pin bracket welded onto it. (See figure 18).



Figure 18

Identify the harness installed onto the roof section. This must line up with the harness in one of the pipes, which will lead to the marquee. Place the roof sections one at a time on top of the pipes just installed. Make sure the junction bars are fully retracted into the tube frame.

Once both sections are in place, slide the junction bars into place (see figures 19 and 20) to attach the roof sections to each other.

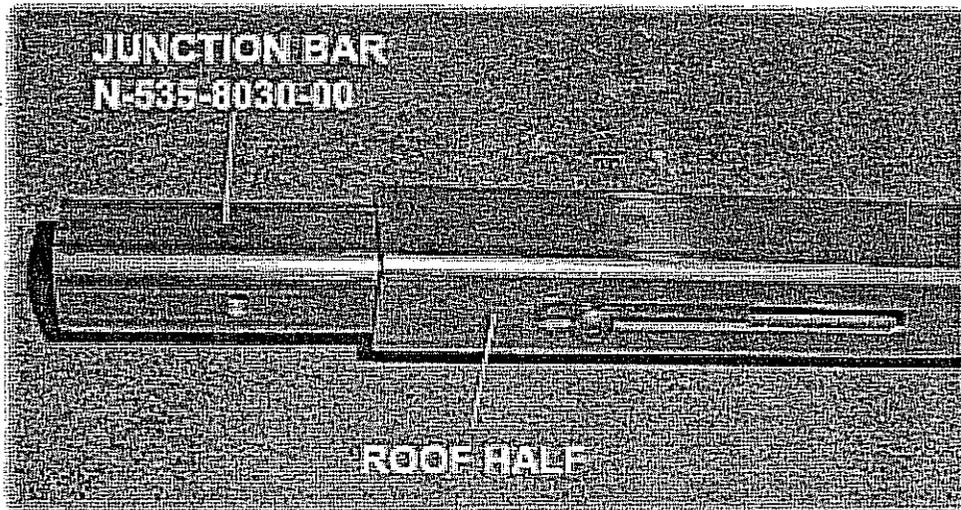


Figure 19

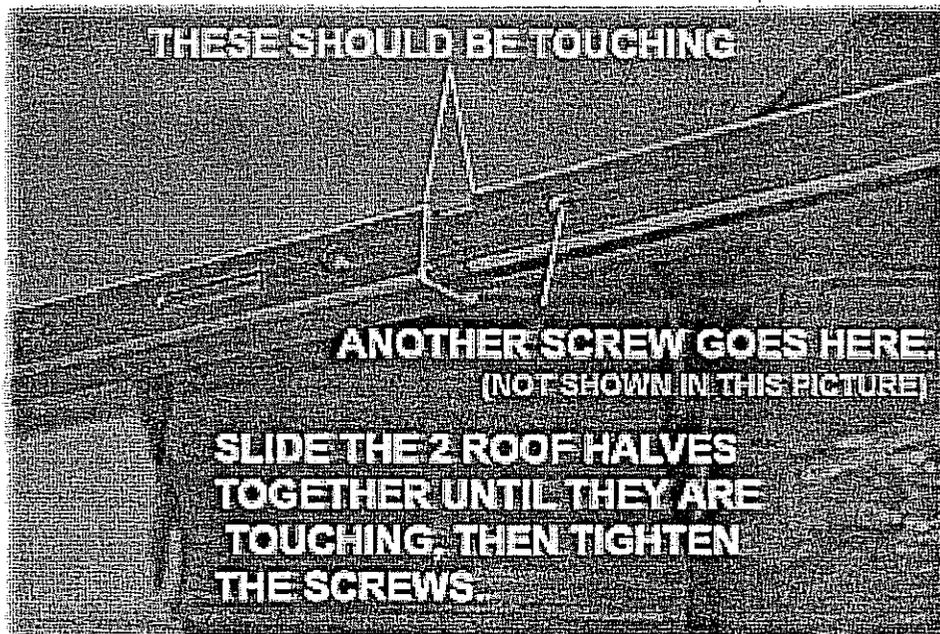


Figure 20

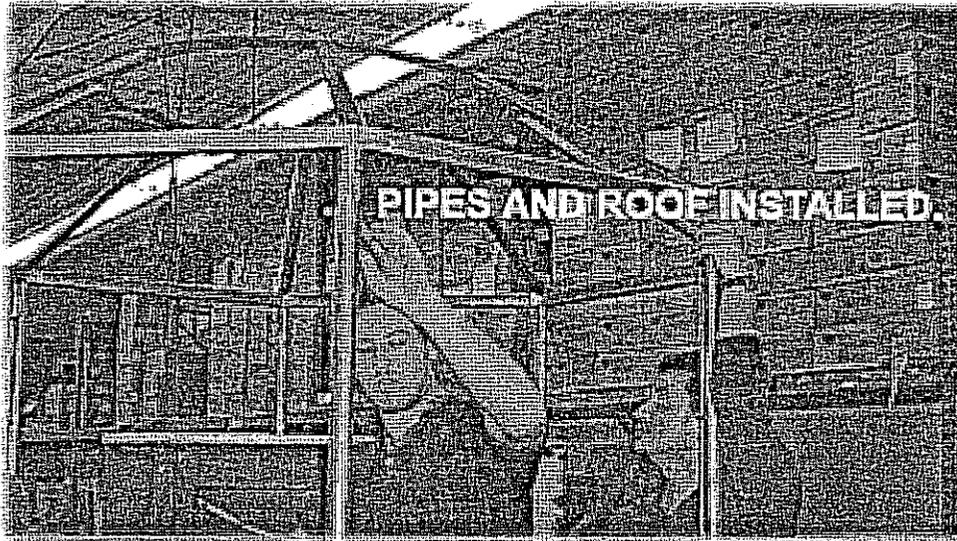


Figure 21

3. Identify the marquee. Lift the marquee into place on top of the roof section, being careful to line up the harness and plugging the connectors together as you position the marquee into place. The marquee will only fit one way due to the bolt hole pattern. Use enough people to avoid injury. (See figure 22).

NOTICE! THE PICTURES SHOW THE MARQUEE PANELS REMOVED. IT IS NOT NECESSARY TO REMOVE THE PANELS FOR INSTALLATION.

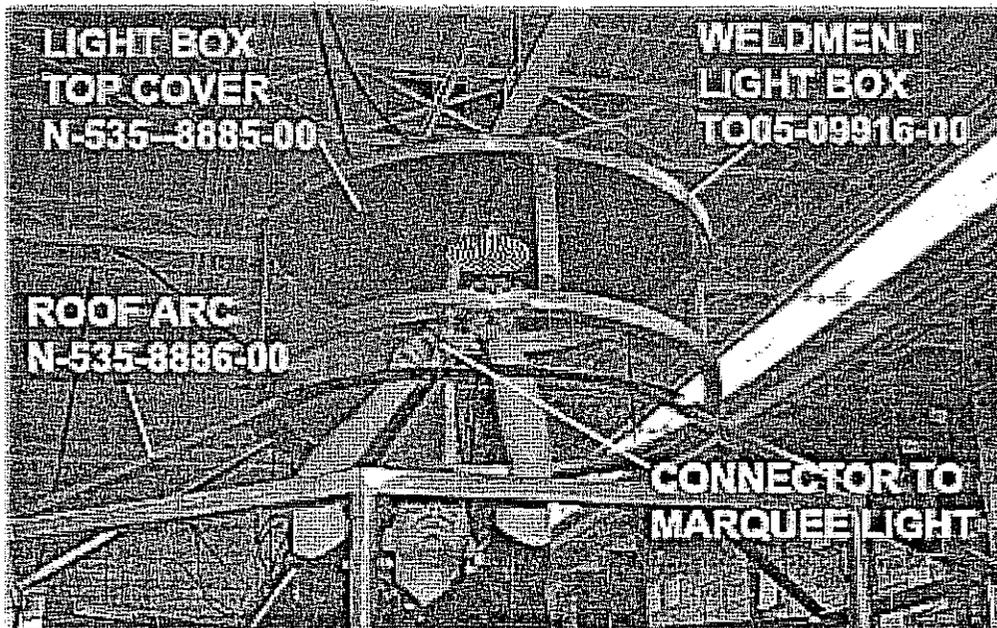


Figure 22

Once the marquee is in place, install the ten screws (10-32 x 1/2") that connect the marquee to the roof section. (See figures 23 and 24).

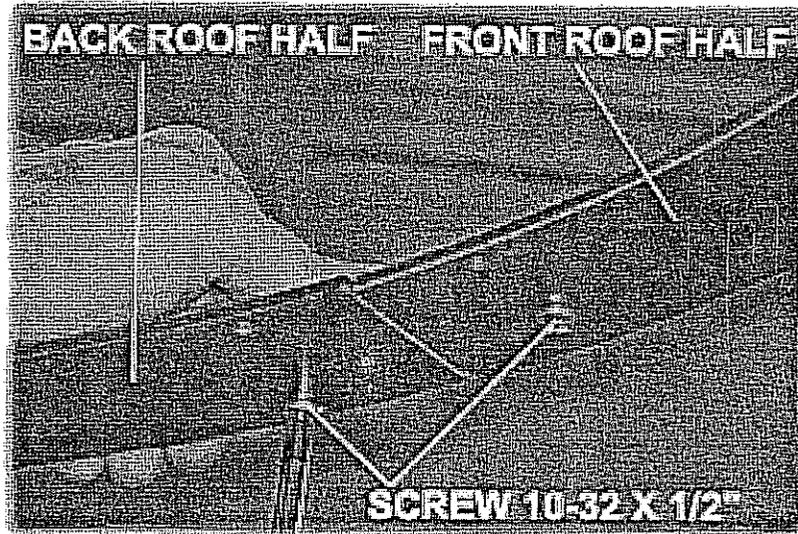


Figure 23

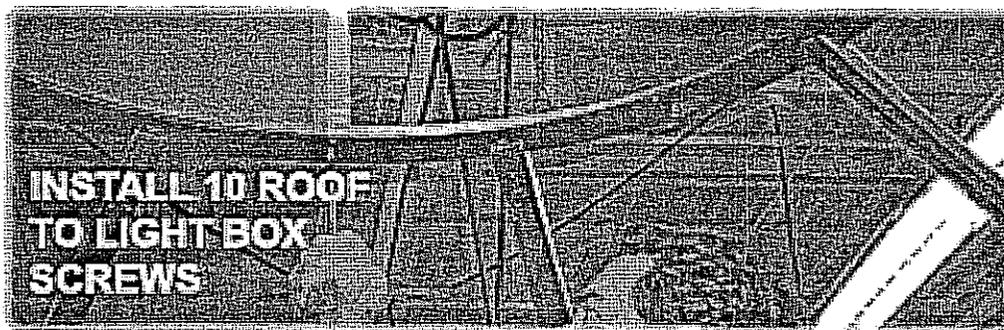


Figure 24

Identify the marquee bottom and attach the rotating beacon light, the fluorescent light socket and the light diffusers to it using the hardware provided. (See figures 25 and 26).

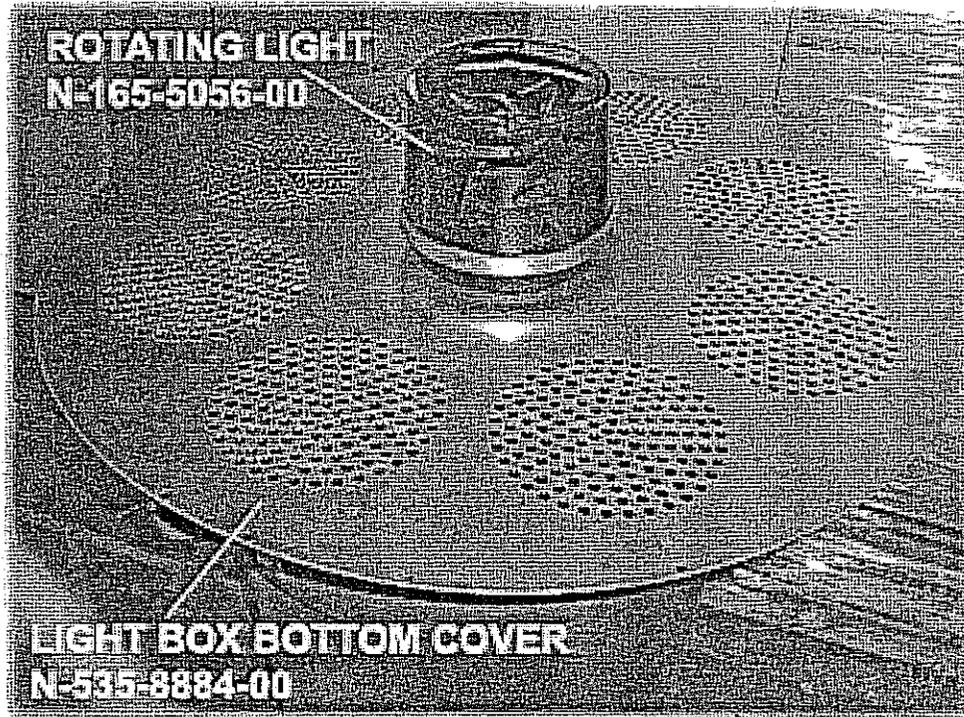


Figure 25

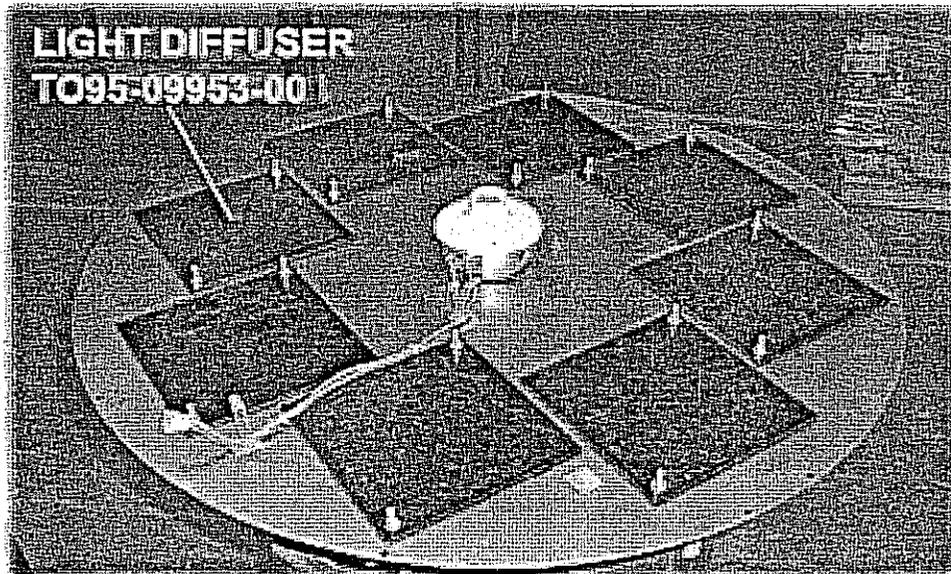


Figure 26

Working from inside the enclosure assembly, lift and attach the marquee bottom, using the hardware provided (1/4-20 screws). Plug in the harness to the fluorescent light. (See figures 27 and 28).



Figure 27

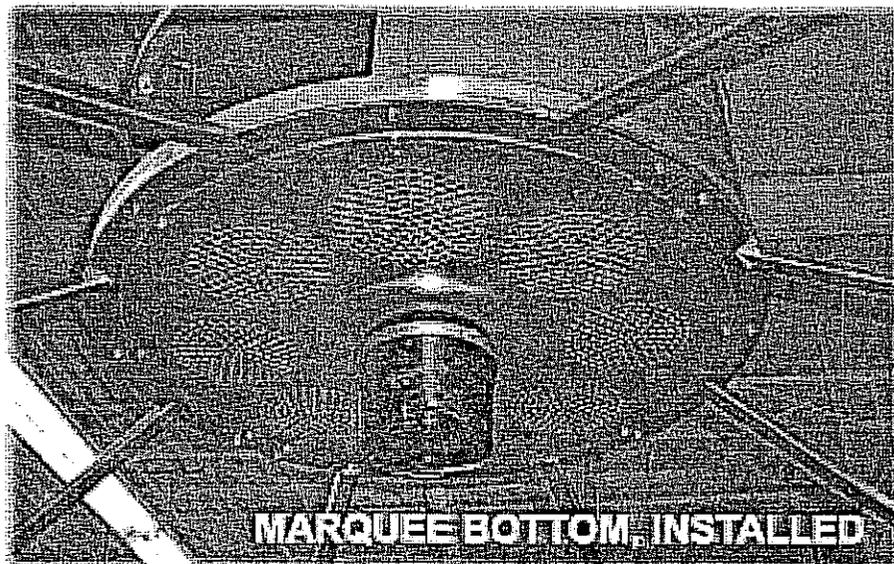


Figure 28

4. Install the coin tower, connect the harness. (See Figures 29 and 30).

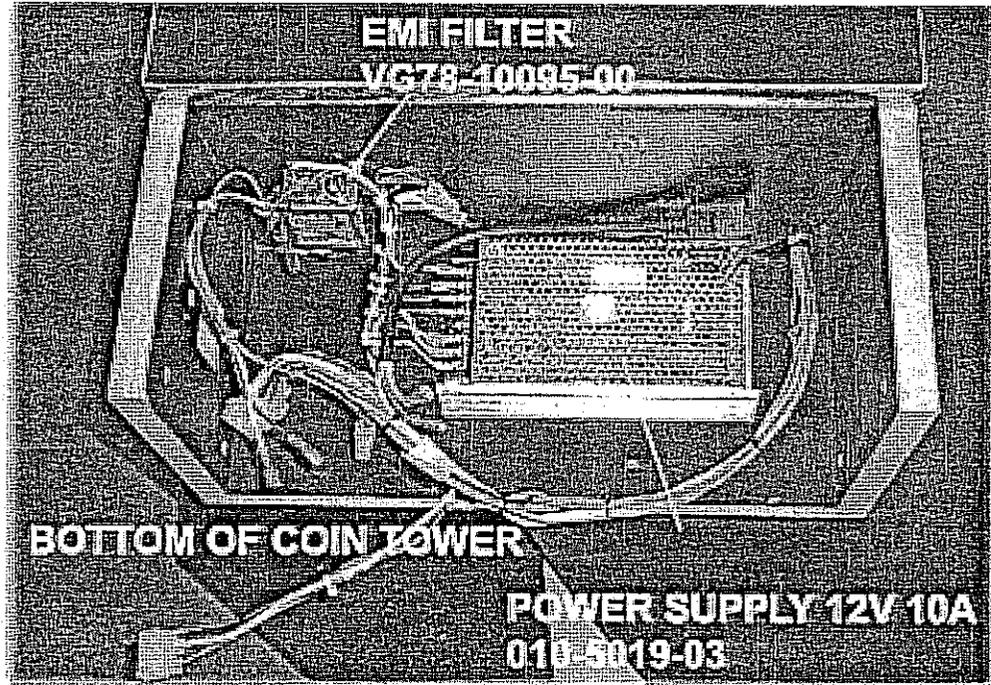


Figure 29



Figure 30

Plug the main AC cord into a separate, 20A circuit, and proceed with initial power-on and safety checks.

**AFTER SUCCESSFUL COMPLETION OF THE INITIAL POWER-ON AND SAFETY CHECKS,
POWER DOWN THE GAME AND UNPLUG THE POWER CORD.**

5. Reinstall flashing, kick plates, neon lights and floor plates previously removed. (See figure 31).

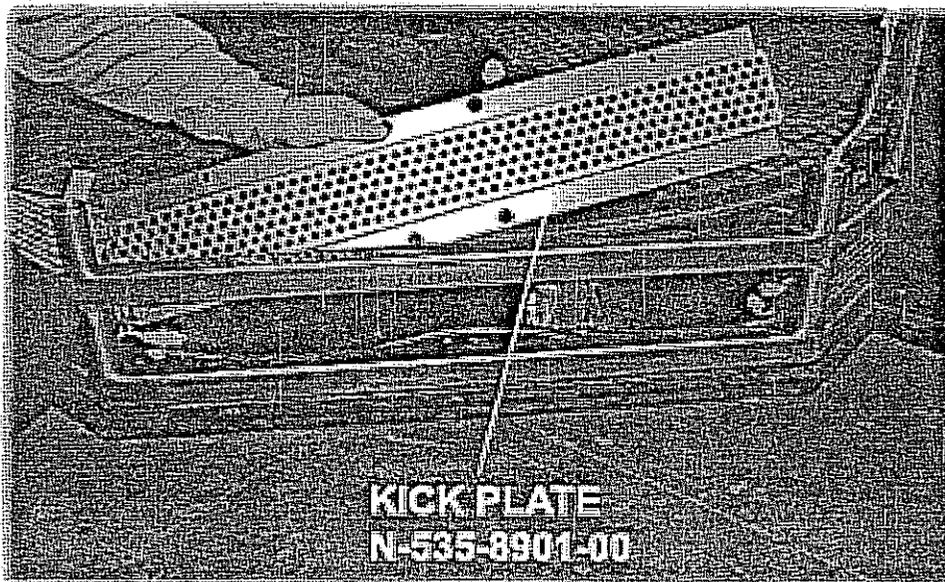


Figure 31

6. Identify the eight perforated metal roof panels. Working from inside the enclosure assembly, install each roof panel using the hardware provided (10-32x1/2). (Refer to 32).

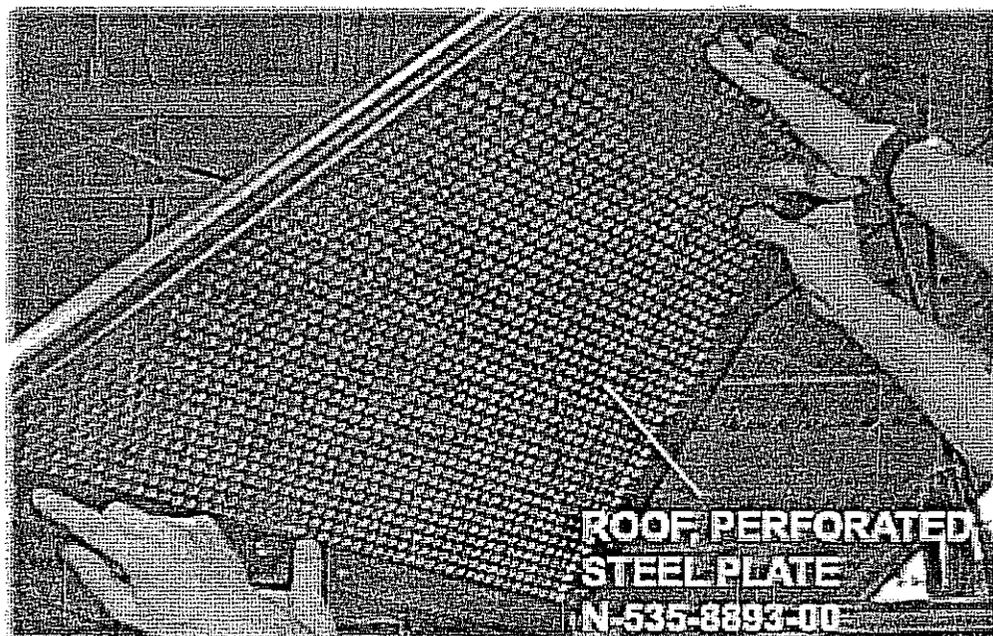


Figure 32

Install the roof panel retainers provided between each roof panel. (See figure 33).

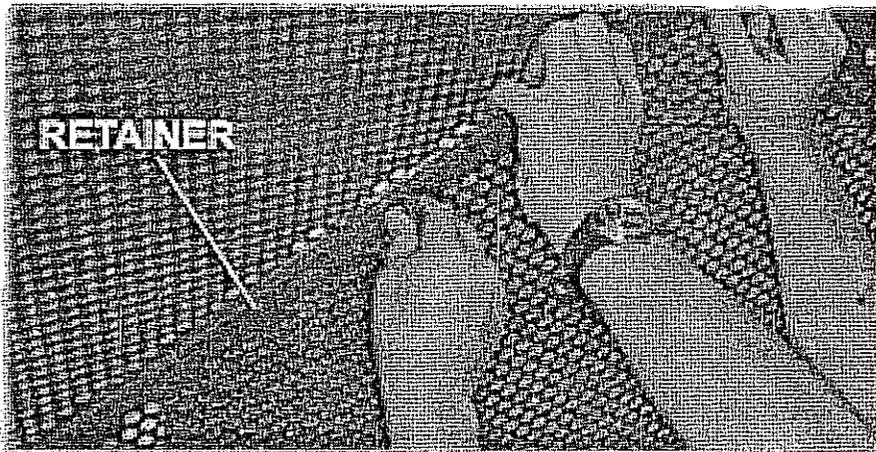


Figure 33

7. Install the acrylic panels around the game enclosure. The door and the coin tower sections are different shapes than the rest of the panels. Once the panels are installed, peel off the white protective film from the panels.

8. Install the doorframe. Add nylon washers to the lower pin, (See figure 34), to ensure proper alignment between the deadbolt and the deadbolt hole and sensor.

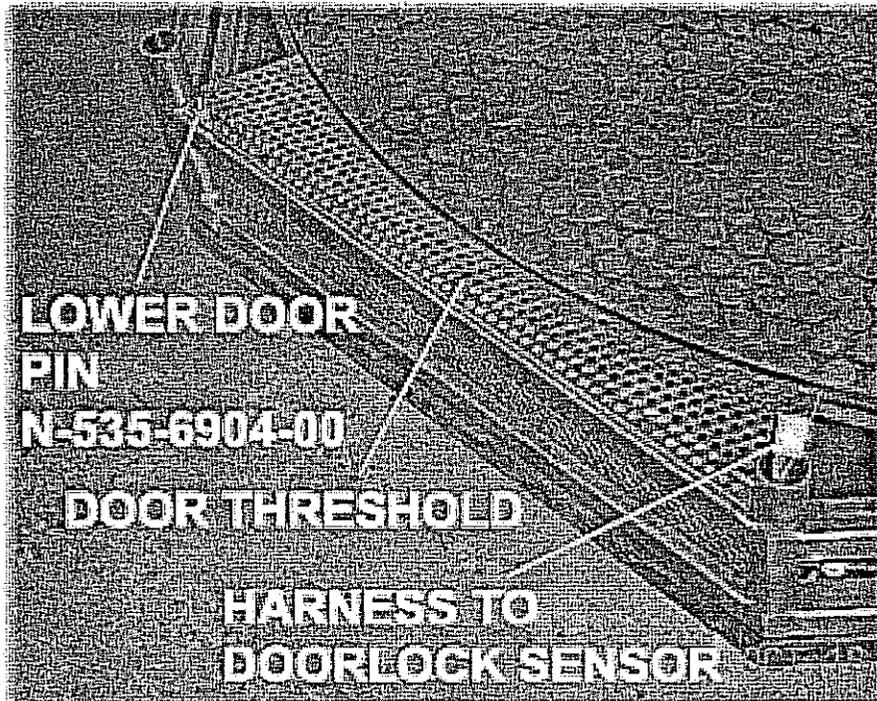


Figure 34

The door is aligned properly when there is no mechanical interference between the deadbolt and the edges of the deadbolt hole, and the deadbolt sensor is functioning correctly. See the TEST section of the manual for the door sensor test procedure.

9. Install the door closer.
10. Plug the main AC cord into a separate, 20A circuit, and proceed with final power-on and safety checks.

8.0 POWER UP

Upon applying power, the video monitor will display a loading screen along with the version of the Software. It takes approximately 30 seconds for the game to load and become operational.

8.1 Test Credit Button

The TEST CREDIT button is located on a small pcb inside of the coin box behind the coin mechanisms. It allows an operator to place credits on the game just like dropping coins into the game except the mechanical coin counter (located in the coin box) will not advance. If the COST PER CREDIT option is set to "4", then the operator must press the TEST CREDIT button four times to be able to play one test game.

8.2 Menu Operation

The menu button is located on a small pcb inside of the coin box, behind the coin mechanisms. Pressing the menu button during the Inspection screen confirms that the game is safe to operate and enables normal game operation. Pressing the menu button during attract or game modes will enter the menu mode. Once in the menu mode, the menu button will roll through the three different menus: GAME OPTIONS, DIAGNOSTICS and SCREEN TEST. To exit the menu mode, the operator must press either of the flashing start buttons on the top of the control console.

8.3 Game Options

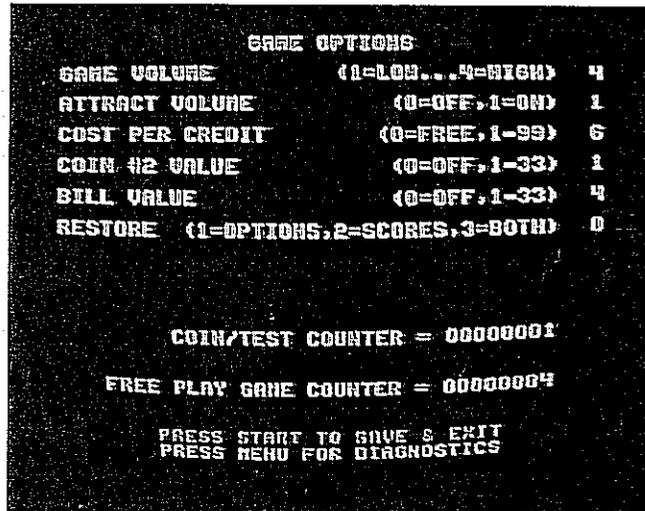
There are six programmable options to configure the game for use:

1. The GAME VOLUME option adjusts how loud the game is during play. Default value is 3.
2. The ATTRACT VOLUME option will allow attract sounds when the game is not being played (default = 1) or limit the attract sounds to 1 loop after a game is played (setting = 0).
3. The COST PER CREDIT option determines how many coins must be inserted into the left coin slot #1 to play one game.
4. The COIN #2 VALUE sets the value of each coin inserted into the right coin slot #2. This value is how many times more than the cost per credit value slot #2 is worth. For example, in the US if both slots are used for the same coin value the "COIN #2 VALUE" will be set to (1=default). If the slot #2 is used for the new gold dollar the "COIN #2 VALUE" will be set to (4).
5. The BILL VALUE option works just like the COIN #2 VALUE above except the input comes from the optional bill acceptor. The default value is 0 = off.
6. The RESTORE option allows the operator to 1 = restore all factory default values to their original values. Option 2 will restore top gunner scores and speed gunner scores to their original values.

For any of these options to take effect, the operator must first select (1, 2, 3) and then confirm this choice by exiting the menu mode (by pressing the START button), leaving the game option screen by pressing the MENU button or leaving this value set to 0 = default will leave all settings and scores unchanged.

To confirm and save any changes made to the game options, the operator must exit the menu mode by pressing the START button while still in the GAME OPTIONS screen. Pressing the MENU button in the game options screen will abort any changes made.

The GAME OPTIONS screen also displays two non-resettable counters. The COIN/TEST COUNTER shows how many coin #1's coin #2's bill and test presses since creation. The FREE PLAY GAME COUNTER show how many games were played in the free play mode since creation.

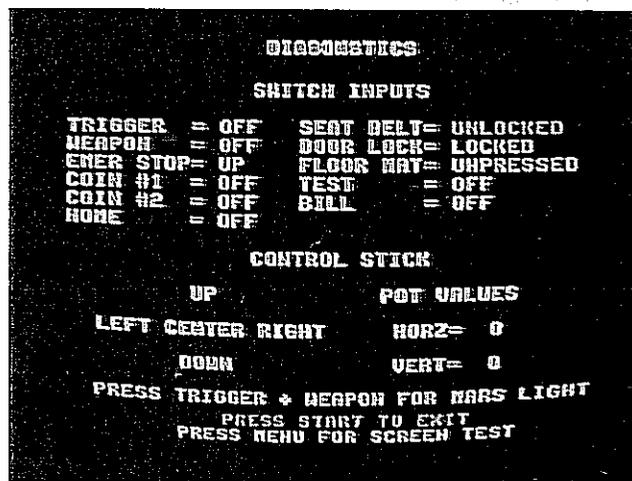


Game Options Screen

9.0 Diagnostics

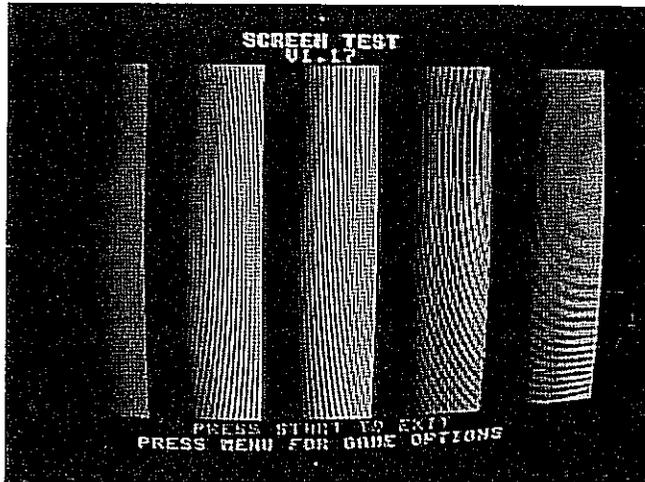
The diagnostics menu allows you to test and calibrate the analog joystick, confirm all game inputs and test the mars light. Each of the inputs will display the current status and allow the operator to confirm operation.

To test the mars light, press and hold both trigger and weapon change buttons. Pressing the menu button will change to the screen test menu. Pressing the start button will exit the menu mode.



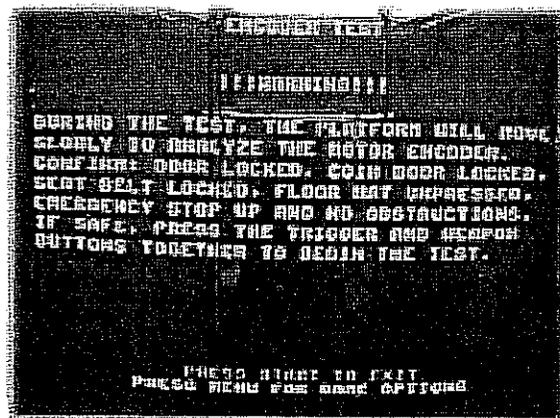
9.1 Screen Test

The SCREEN TEST menu allows an operator to evaluate and adjust the video monitor for optimum operation. Pressing the MENU button will return to the GAME OPTIONS menu. Pressing the START button will exit the MENU mode.

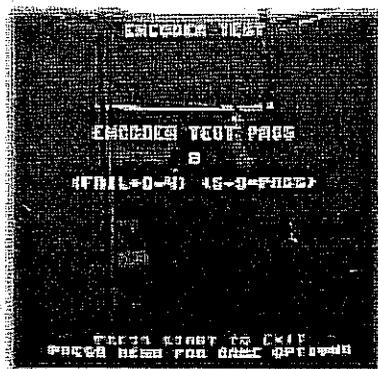


9.2 Encoder Test

The ENCODER TEST allows the operator to test the encoder PCB. Follow the on-screen instructions to perform the ENCODER TEST.



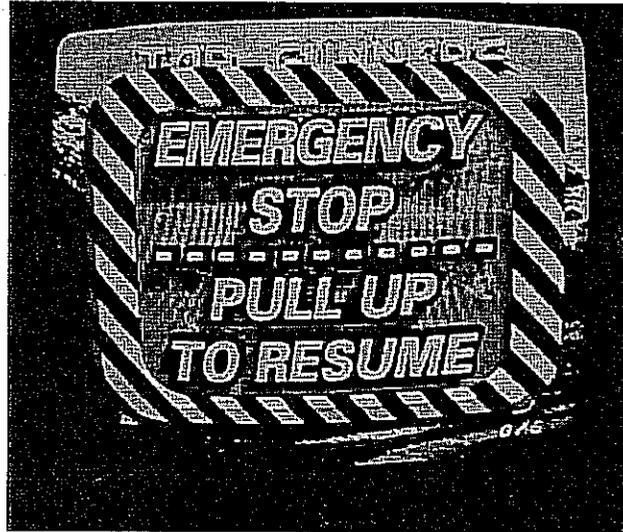
The on-screen test results will immediately follow the completion of the ENCODER TEST.



10.0 SAFETY SCREENS

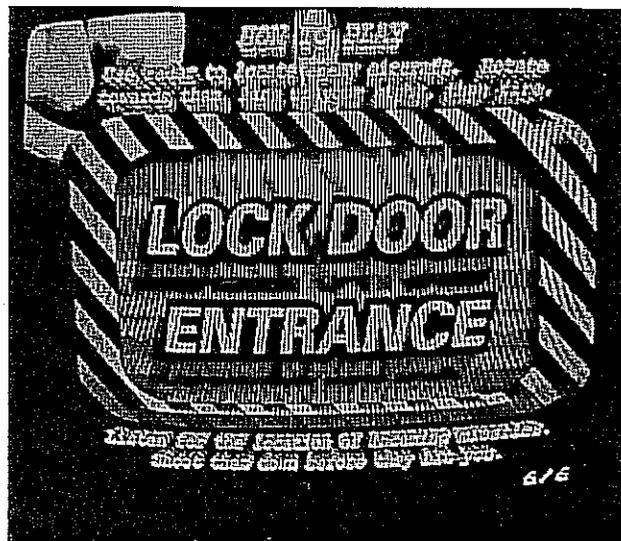
The game has four safety screens to ensure safe operation.

1. The EMERGENCY STOP button, when depressed, will display the EMERGENCY STOP SCREEN and sound a siren.



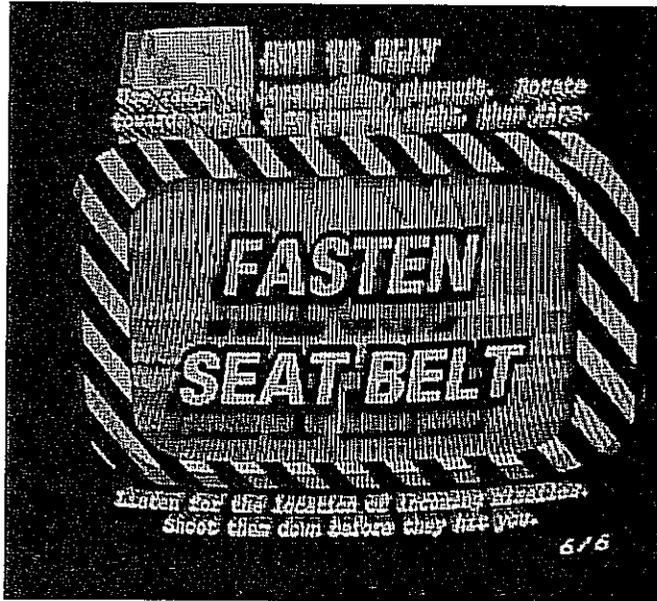
EMERGENCY STOP SCREEN

2. The "LOCK DOOR" screen will prompt a player to lock the entrance door before the game will begin.



LOCK DOOR SCREEN

3. The "FASTEN SEAT BELT" screen will prompt the player to buckle up before starting.



FASTEN SEAT BELT SCREEN

4. The "ONLY ONE RIDER/KEEP FEET IN CENTER" screen requires all people and heavy objects to be removed from the floor before starting a game.



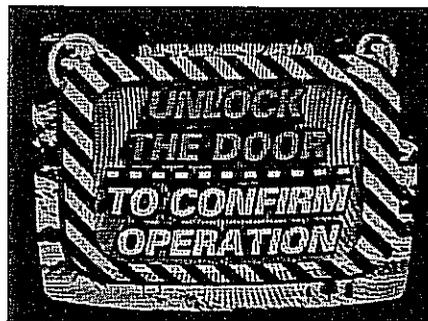
ONLY ONE RIDER/KEEP FEET IN CENTER SCREEN

10.1 SAFETY CONFIRMATION SCREENS

The game has 3 safety confirmation screens to verify all safety features are working. Under normal operation, these screens will never be seen. If a door lock or seat belt sensor were ever to get stuck in an "on" (safe) condition, or the floor mat was unable to detect people, the software in the game will automatically detect this and request the player to confirm it's operation with an on screen instruction. The game will not start until this confirmation is performed.



Floor mat sensor confirmation screen



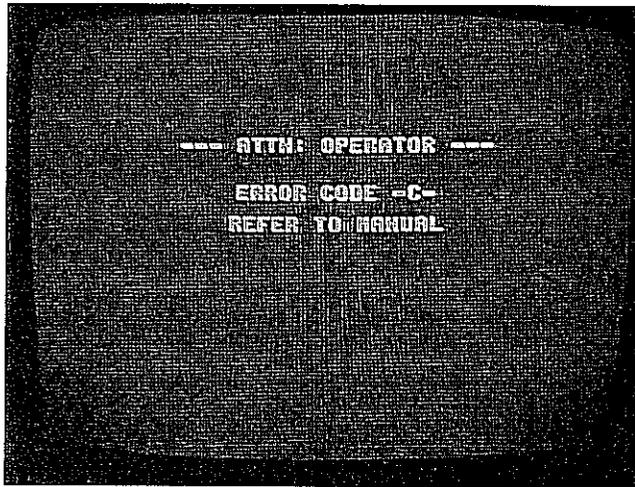
Door sensor confirmation screen



Seat belt sensor confirmation screen

11.0 ERROR SCREENS / TROUBLESHOOTING

Error screens show fatal errors that require the machine to be inspected, corrected and power cycled (turn main power off, then back on) to resume operation. All error screens show yellow text on a red background. The text includes an error code, which corresponds to the cause of the error.



ATTN: OPERATOR
ERROR CODE -C-
REFER TO MANUAL

CAUSE: This screen will be displayed if the main logic pcb is unable to communicate with the coin box

CHECK: -Green LED on main logic pcb (off=no power; flashing=ok)

-Flashing green LED on coin logic pcb (off=no power;
steady=no communication;
flashing=ok)

-Harness connections between main logic pcb and coin logic pcb.

ATTN: OPERATOR
ERROR CODE -D-
REFER TO MANUAL

CAUSE: This screen will be displayed if the main logic pcb is unable to communicate with the hard disk.

CHECK: Power connector from main logic pcb to hard disk.

Ribbon cable from main logic pcb to hard disk.

ATTN: OPERATOR
ERROR CODE -F-
REFER TO MANUAL

CAUSE: This screen will be displayed if the main logic pcb is unable to detect the presence of both left and right floor mats.

CHECK: All connections between main logic pcb and floor mat.

ATTN: OPERATOR
ERROR CODE -H-
REFER TO MANUAL

CAUSE: This screen will be displayed if the main logic pcb is unable to detect the home sensor.

CHECK: Sensor operation and recalibrate if necessary
Wire harness from main logic pcb to sensor

ATTN: OPERATOR
ERROR CODE -M-
REFER TO MANUAL

CAUSE: This screen will be displayed if the motor is stalled or is unable to read the motor encoder.

CHECK: Base movement for obstructions.
Motor drive pcb green indicator (on=ok: off=no power)
Motor drive pcb connectors.
Wire harness from motor drive to motor.
Wire harness from main logic pcb to motor drive pcb.

ATTN: OPERATOR
ERROR CODE -X-
REFER TO MANUAL

CAUSE: This error screen indicates an invalid error code was received by the main logic pcb.

CHECK: Main logic pcb for loose or intermittent connections.

ATTN: OPERATOR
ERROR CODE -Z-
REFER TO MANUAL

Mtr drv bd or coin bd check cables

CAUSE: This error screen will be displayed if the main logic pcb is unable to
Communicate with the motor drive pcb.

CHECK: Wire harness from the main logic pcb to the motor drive pcb.

12.0 GAME PLAY

12.1 INTRODUCTION

TURRET TOWER is an exciting new game brought to you by Namco America Inc.

While playing TURRET TOWER you use radar to locate enemy aircraft, rotate toward them, line up your sight, then fire.

Rotation speed is determined by the amount of movement on the control stick.

Press the top button on the control stick to change between your three weapons.

Press the START button to detonate grenades early.

Do not destroy your cargo plane. It will drop parachutes carrying power-ups for you. Shoot the parachutes dropped by the cargo plane to release power-up icons. Shoot the icons to receive the power-ups.

12.2 MISSION STATEMENT

Your mission will be to defend each of the four vital control centers. They are the ground to outer space link with a network of satellites equipped with radar for the early detection of incoming missiles. Failure to defend these control centers will result in a severe loss of the early warning defense system.

You will be manning the most recently designed state-of-the-art defense towers. These towers are built into each control center to combat incoming enemy attacks.

Your objective will be to completely dominate the enemy as quickly as possible by intelligently using the various firepower in your arsenal.

GOOD LUCK!

There are six power-up icons:

- SW SUPER WEAPON (ammo increase)
- GL GRENADE LAUNCHER (ammo increase)
- UA UNLIMITED AMMO (limited time)
- AI ARMOR INCREASE
- AL ARMOR LOCK (limited time)
- TT TURRET TIME LOCK

Listen for the location of incoming missiles. Shoot them down before they hit you.

13.0 MAINTENANCE

Every time the game is turned on, an inspection screen will appear to remind an operator to do a quick inspection of the game. After a satisfactory inspection, an operator will press the menu button inside of the coin box to enable game play and play a test game to verify game safety.

Refer to the maintenance section (this section) of this manual for a complete list of the inspection and maintenance requirements. It is necessary to perform this inspection of the game every power up or 24 hours of continuous use, whichever comes first, and to perform the maintenance procedures on a weekly basis.



13.1 REQUIRED MAINTENANCE

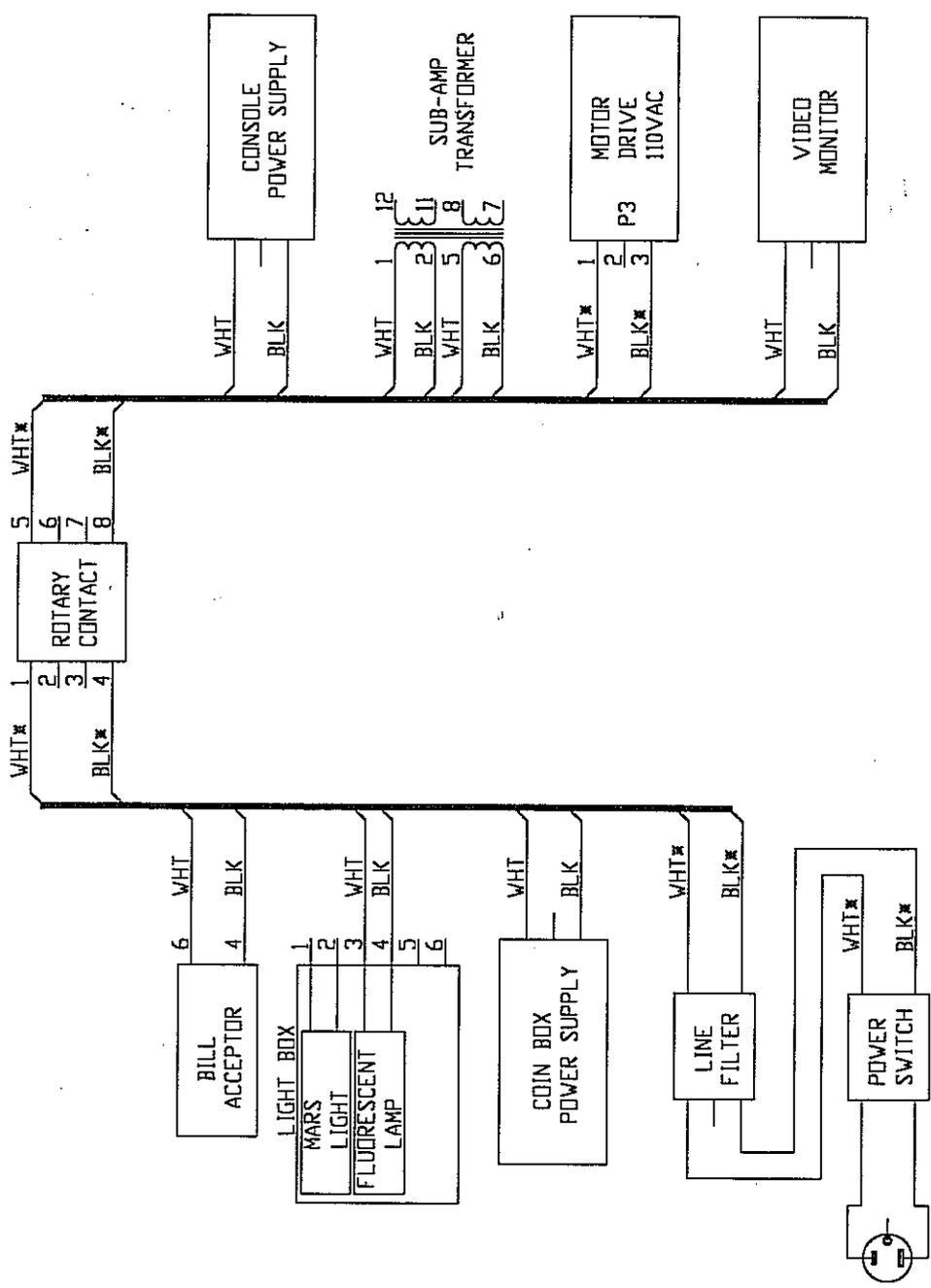
It is critical to check the following hardware on a daily basis to ensure it is tight:

- Seat mounting hardware.
 - o Including seat to pedestal
 - o Pedestal to base
 - o Seat belt hardware
- Monitor and control panel hardware.
 - o Monitor to monitor stand.
 - o Control panel to control panel stand.
 - o Basket mounting hardware.
 - o Monitor/Control panel stand to base.
- Base Assembly hardware.
 - o Chain tensioner bolt must be checked to ensure proper torque setting is maintained.
 - o Center gear mounting bolts (8) must be kept tight.
Apply no more than 32 ft-lbs of torque.
Do not over tighten.
 - o Motor mount bolts must all be kept tight.
- Enclosure Integrity.
 - Check all acrylic panel attaching hardware to ensure that it remains secure.

TURRET TOWER MUST BE MAINTAINED IN SUCH A WAY THAT ALL OF THE ASSEMBLIES ARE HELD SECURELY IN PLACE. THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY INCIDENTS THAT MAY OCCUR DUE TO INSUFFICIENT MAINTENANCE.

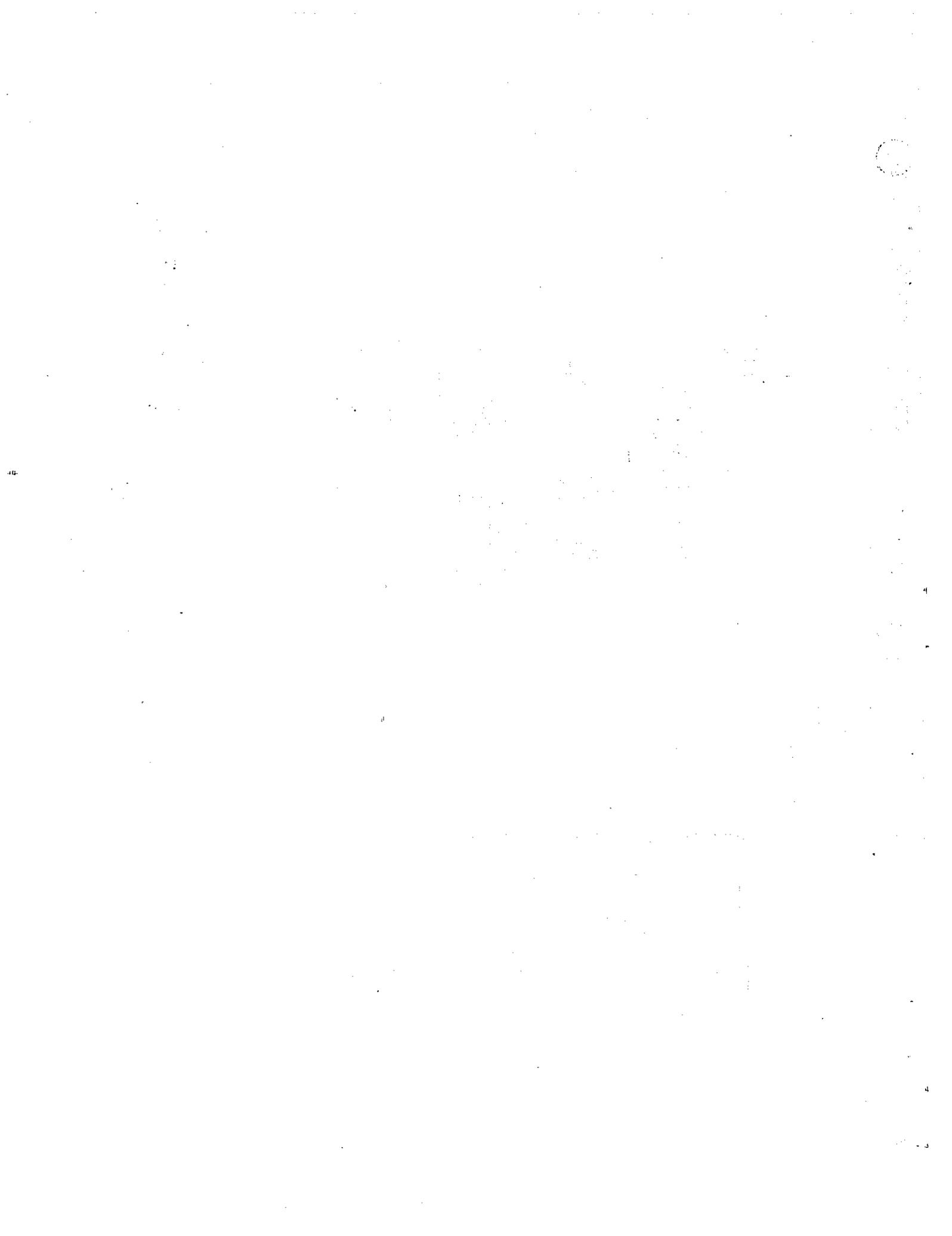
APPENDIX A: WIRING DIAGRAM

zone	ltr	description	date	approved

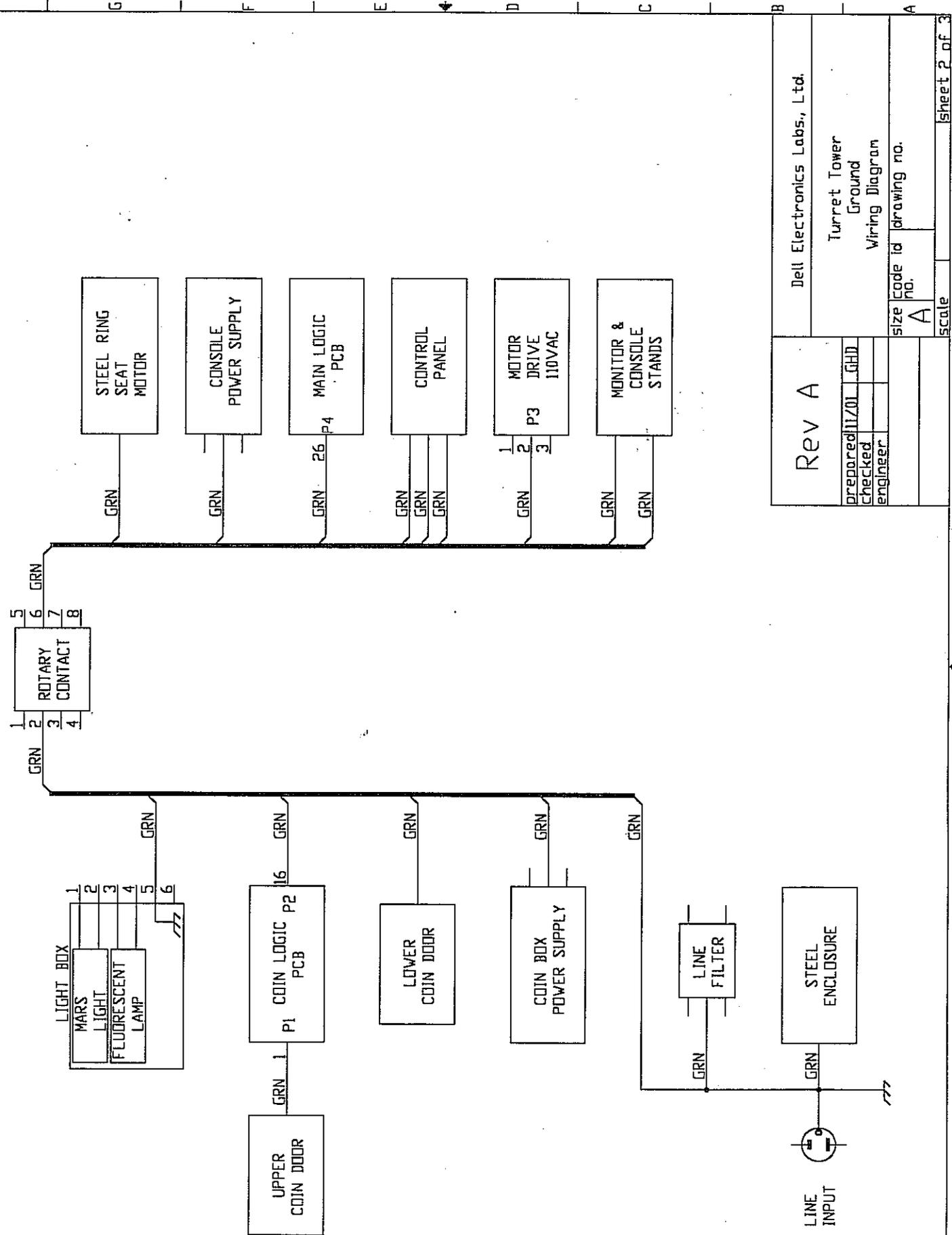


Note: Wire colors marked with * are 14ga.
 All unmarked wire colors are 18ga.
 All wires with same color connect.

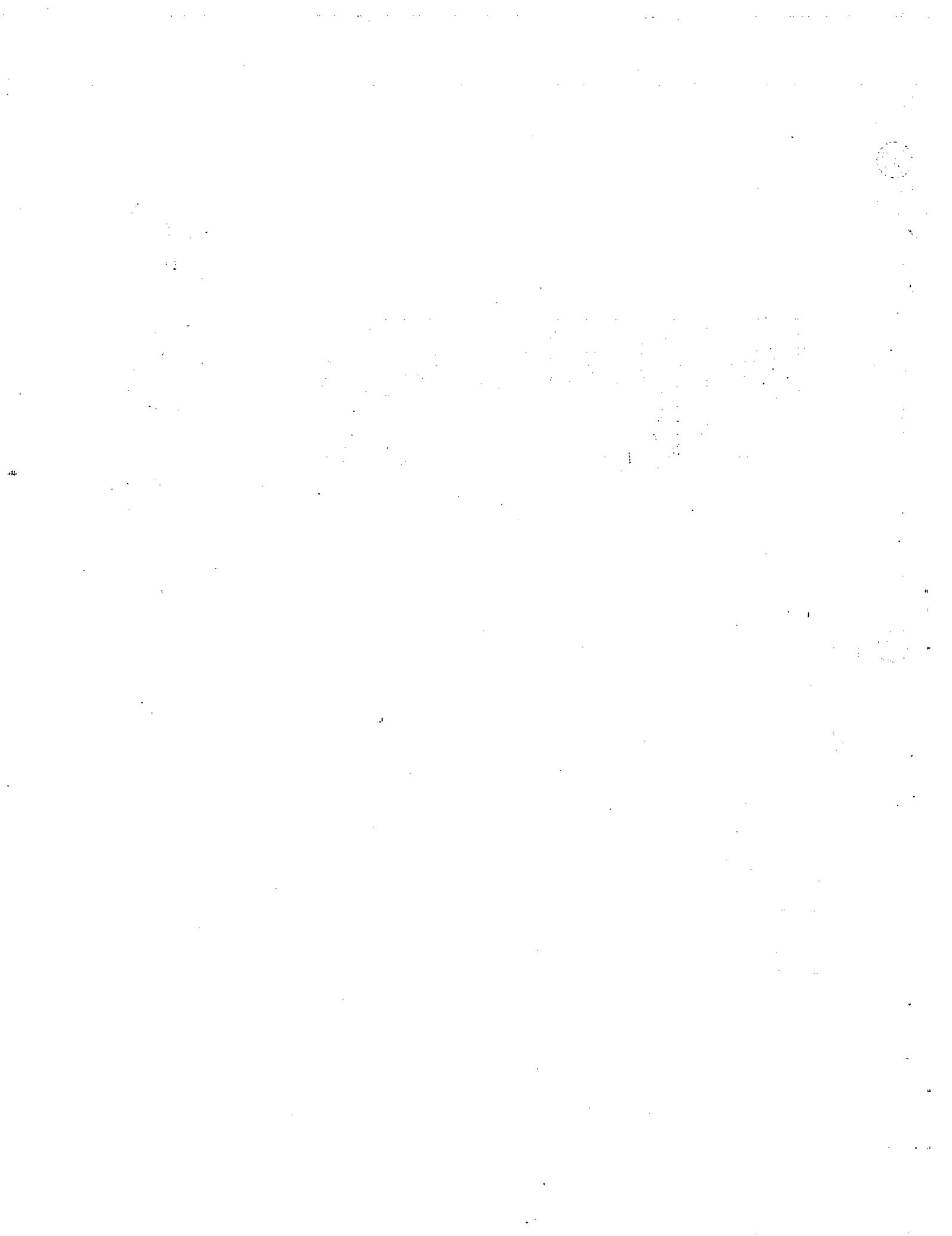
Dell Electronics Labs., Ltd.	
Rev A	
Prepared	11/70 GHJ
Checked	engineer
Size	A
Code id	drawing no.
Scale	Sheet 1 of 3

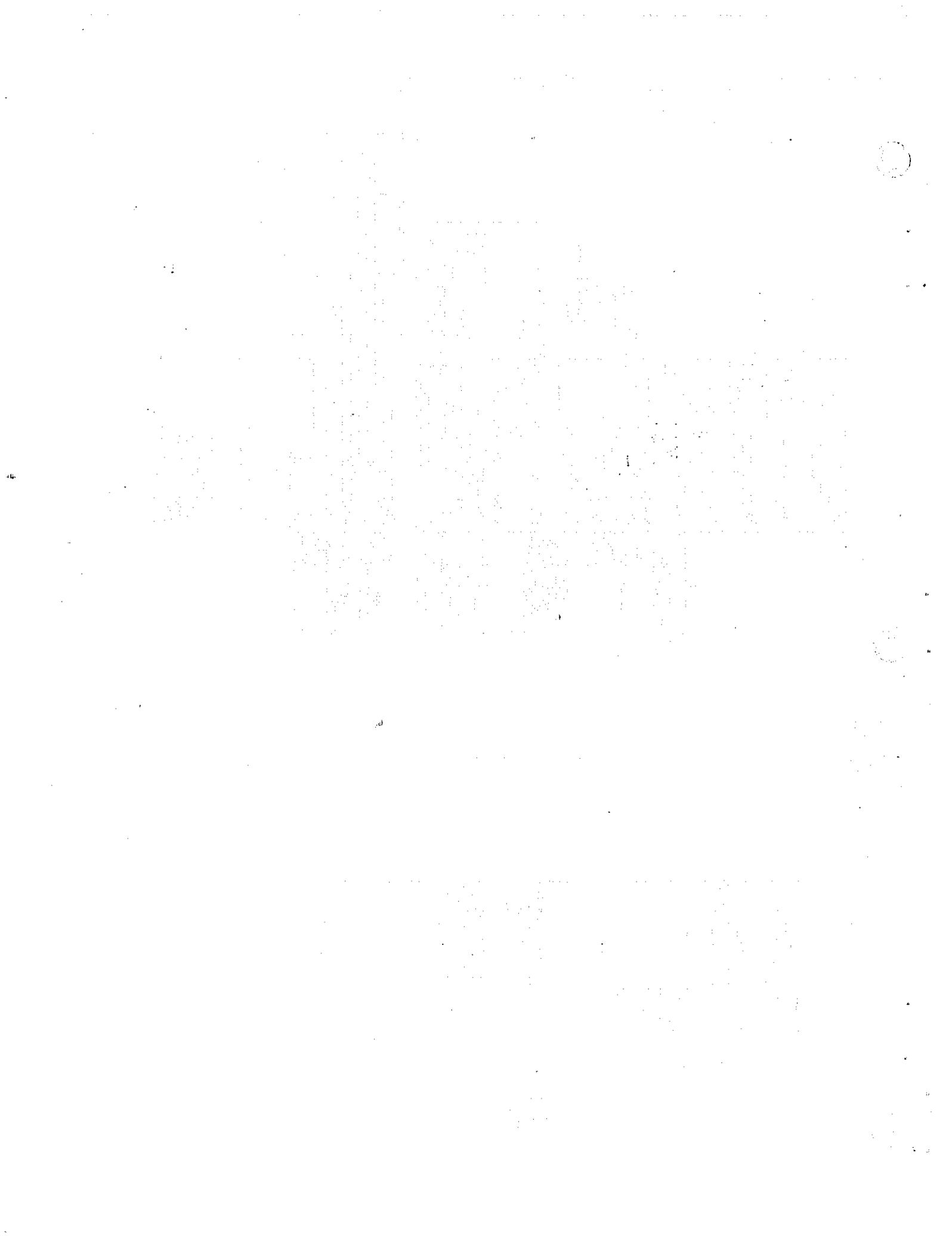


zone	ltr	description	date	approved



<h1>Rev A</h1>		Dell Electronics Labs., Ltd.	
		Turret Tower Ground Wiring Diagram	
prepared 11/701 GHD	checked _____	size code id no. A	drawing no.
scale		sheet 2 of 3	



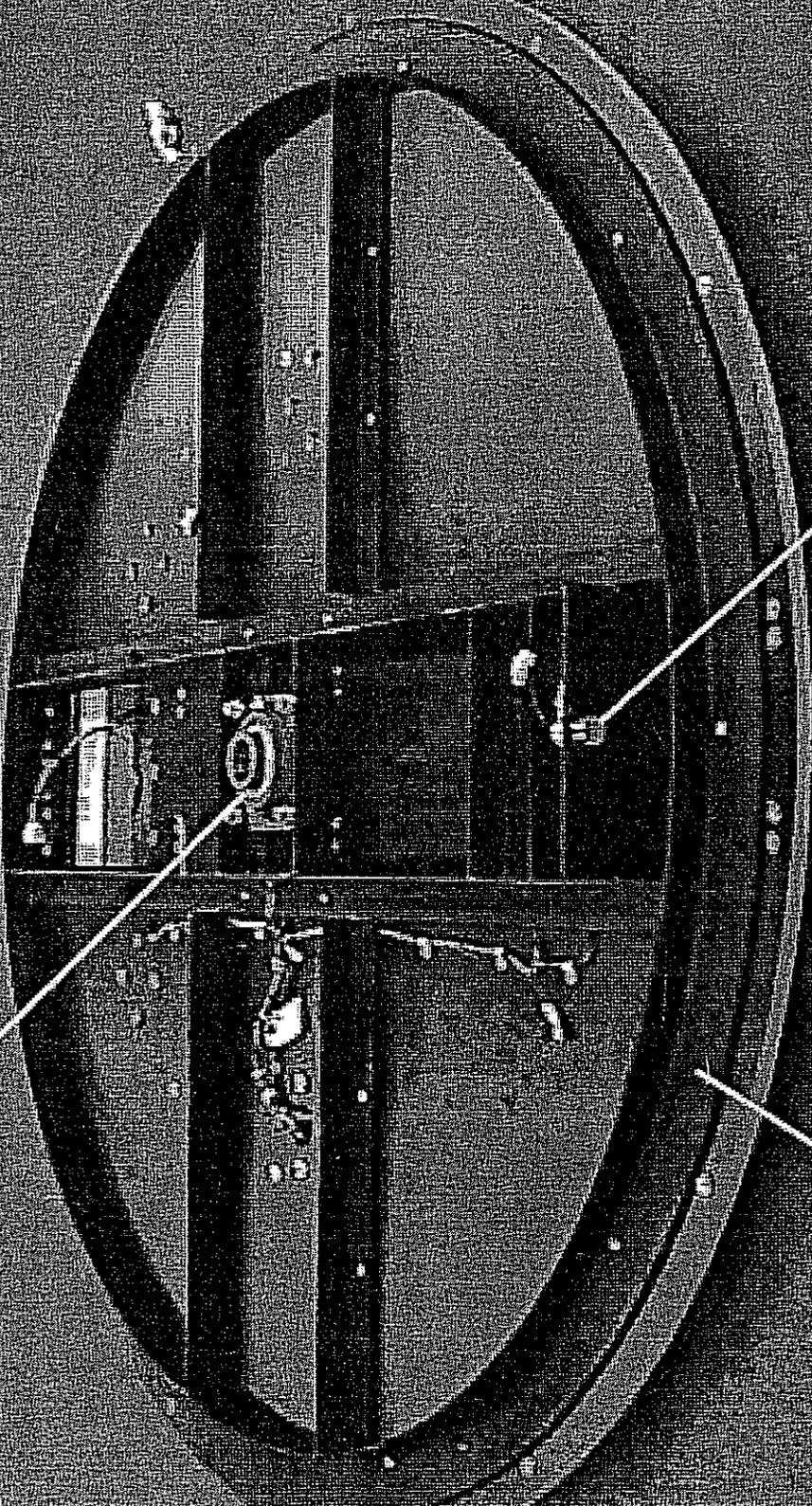


APPENDIX B: PARTS LIST, ILLUSTRATIONS

NAI P#	DESCRIPTION
TO10-09888-00	Basket (personal storage items)
TO05-09916-00	Weldment, Light box
N-535-8881-00	Upper roof ring (light box)
N-535-8882-00	Lower roof ring (light box)
N-535-8883-00	Tee spacer (light box)
N-535-8884-00	Bottom cover (light box bottom)
N-535-8885-00	Top cover (light box top)
N-535-8886-00	Roof arc
TO95-09954-00	Acrylic, clear (title panel)
TO40-09919-00	Decal (title)
TO95-09953-00	Light diffuser
N-535-9027-00	Weldment, front roof half
N-535-9028-00	Weldment, back roof half
N-535-9029-00	Pin, upper door hinge (removeable)
N-535-9030-00	Bar, Junction
N-535-8893-00	Roof, perforated steel ceiling plate
N-535-8893-00	Roof, perforated steel ceiling plate (door)
N-535-9031-00	Weldment, enclosure base
N-535-9030-00	Bar, Junction
N-535-9032-00	Cover plate (door)
N-535-8901-00	Kick plate
N-535-8902-00	Cover plate
N-535-8903-00	Post, roof support
N-535-8904-00	Post, door hinge
N-535-8824-00	Post, door latch
TO95-09951-00	Polycarbonate .118" (door panel)
TO95-09949-00	Polycarbonate .118" (wall panel)
TO95-09950-00	Polycarbonate .118" (coin box panel)
TO45-10151-00	Manual, Turret Tower
N-545-6023-00	Door lock sensor tube (mount)
TO40-10011-00	Decal, seat TT
TO40-10008-00	Decal, monitor Danger
VG44-07943-00	Decal, monitor epilepsy
TO40-10007-00	Decal, console loose items
TO40-10009-00	Decal, door warning
VG51-07697-00	Power cord, US 6' NEMA 5-15-P to IEC-320-C13 1
VG78-10095-00	Line filter 20A 250V 50-60Hz
TO11-10083-00	Heat sink, motor

NAI P#	DESCRIPTION
TO63-10125-00	Cabinet
N-525-5580-00	Top panel
N-525-5581-00	Bottom panel
N-535-8838-00	Side frame
N-390-5046-00	Hinge, top
N-545-5969-00	Tee molding, 3/4" chrome
N-355-5032-00	Top latch
N-355-5033-00	Key lock
TO40-09838-00	Decal (console)
TO15-09729-00	Assy, pcb Main logic (US)
TO15-09730-00	Assy, pcb Motor drive
TO15-09732-00	Assy, pcb Sub amp
TO80-09869-00	Analog joystick w/trigger & top switch buttons
	I/O Processor (main logic U29)
	Coin Logic I.C. (TTCOIN U1)
	Motor Supervisor I.C. (TTMOT U8)
TO63-10124-00	Cabinet
N-525-5584-00	Wood
N-535-8792-00	Steel
N-545-5969-01	Tee molding, 3/4" chrome
N-031-5008-00	Speaker 6" X 9"
VG85-09867-00	Monitor, Neotec NT-3300
N-545-5970-00	Acrylic, clear cover
N-535-8793-00	Grill, speaker
N-036-5467-04	Wire Harness, Monitor
R590-09707-01	Seat
R510-09720-00	Grill, Perforated Steel speaker cover
TO15-09731-00	Assy, pcb-Coin logic
VG65-10096-00	Switch/breaker, DPST
N-535-8876-00	Tab, coin box (polycarbonate mount)
TO57-10123-00	Neon light, 27" neo-blue
TO92-09871-00	Rotary electrical contact 4-circuit
TO96-09870-00	Floor contact (left half)
TO96-09870-01	Floor contact (right half)
TO10-10087-00	Mat spacer
TO10-09889-00	Steel ring frame
TO58-09873-00	1hp 90VDC permanent magnet motor (US)
TO59-09874-00	56:1 inline gear box
TO75-09875-00	Rotary shaft encoder
TO10-10088-00	Retainer, Flange
TO22-10084-00	Spring, compression (rotary contact)

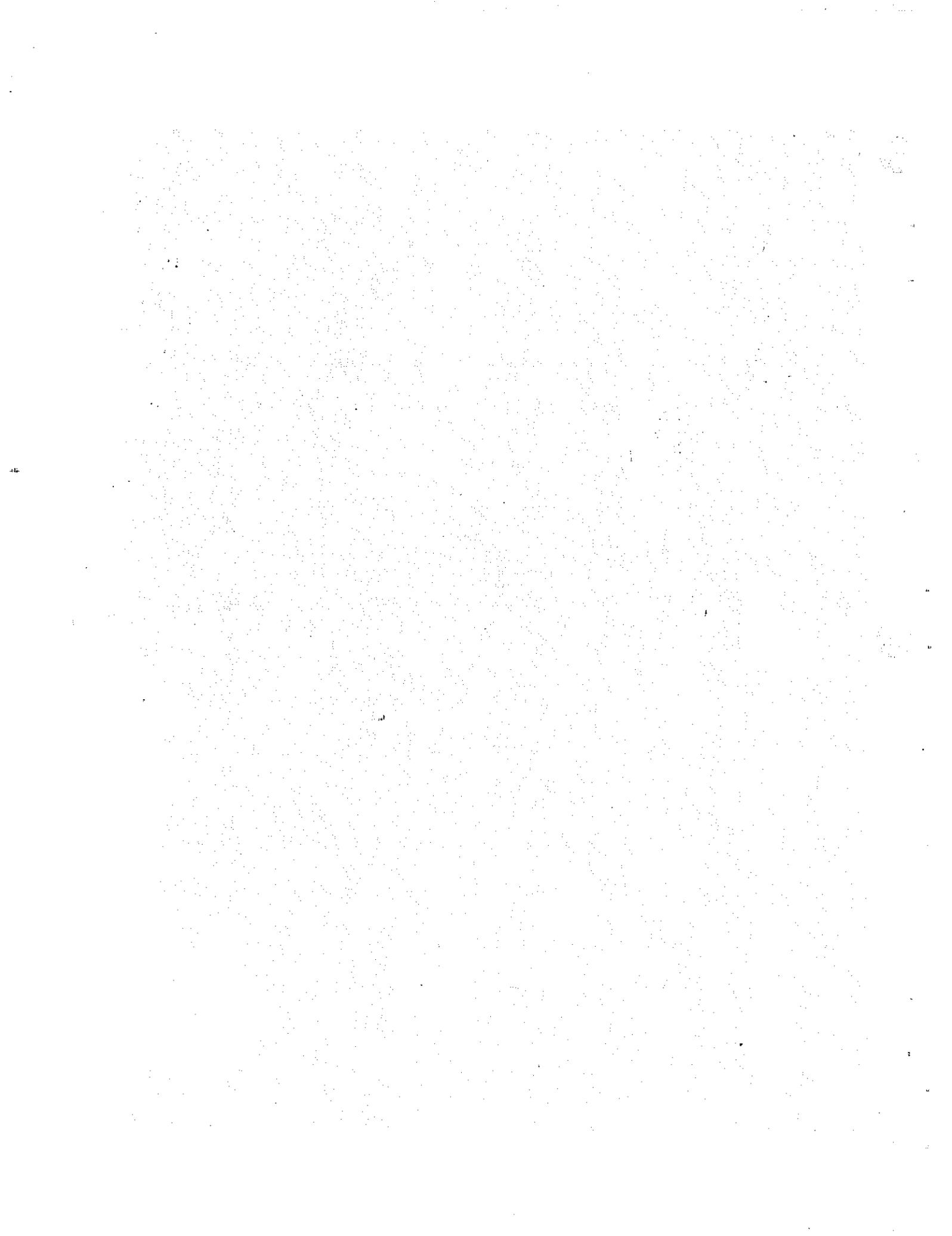
FLANGE BEARING



STEEL RING FRAME
T010-09889-00

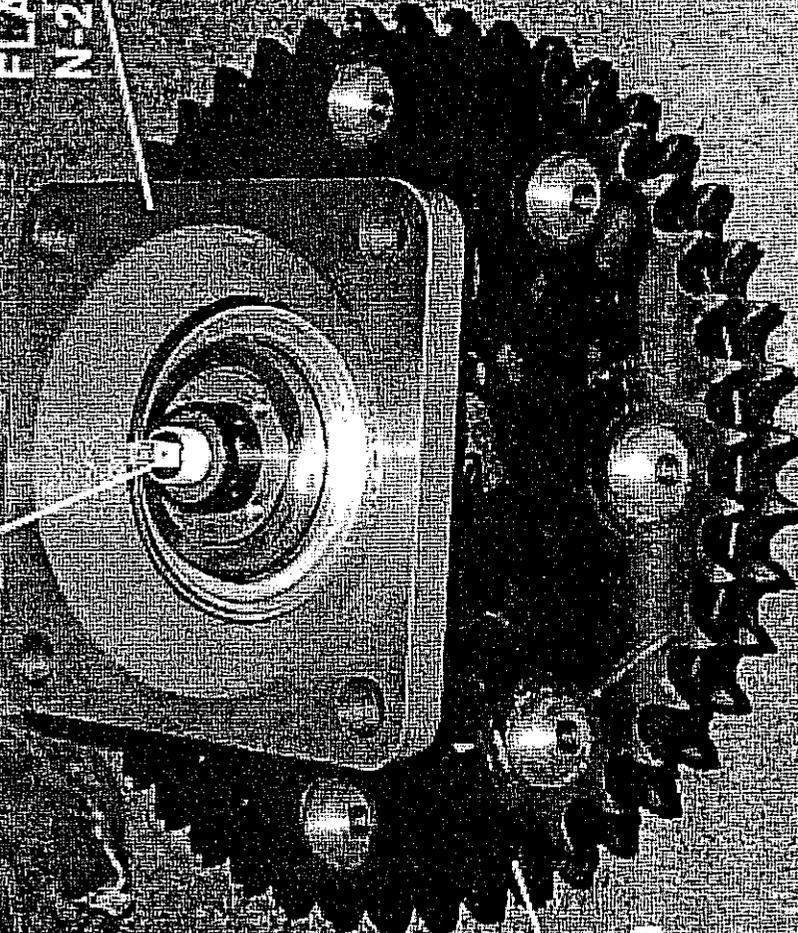
HOME SENSOR

UNDERSIDE VIEW OF ROTATING FLOOR ASSEMBLY



ROTARY CONTACT
T092-09871-00

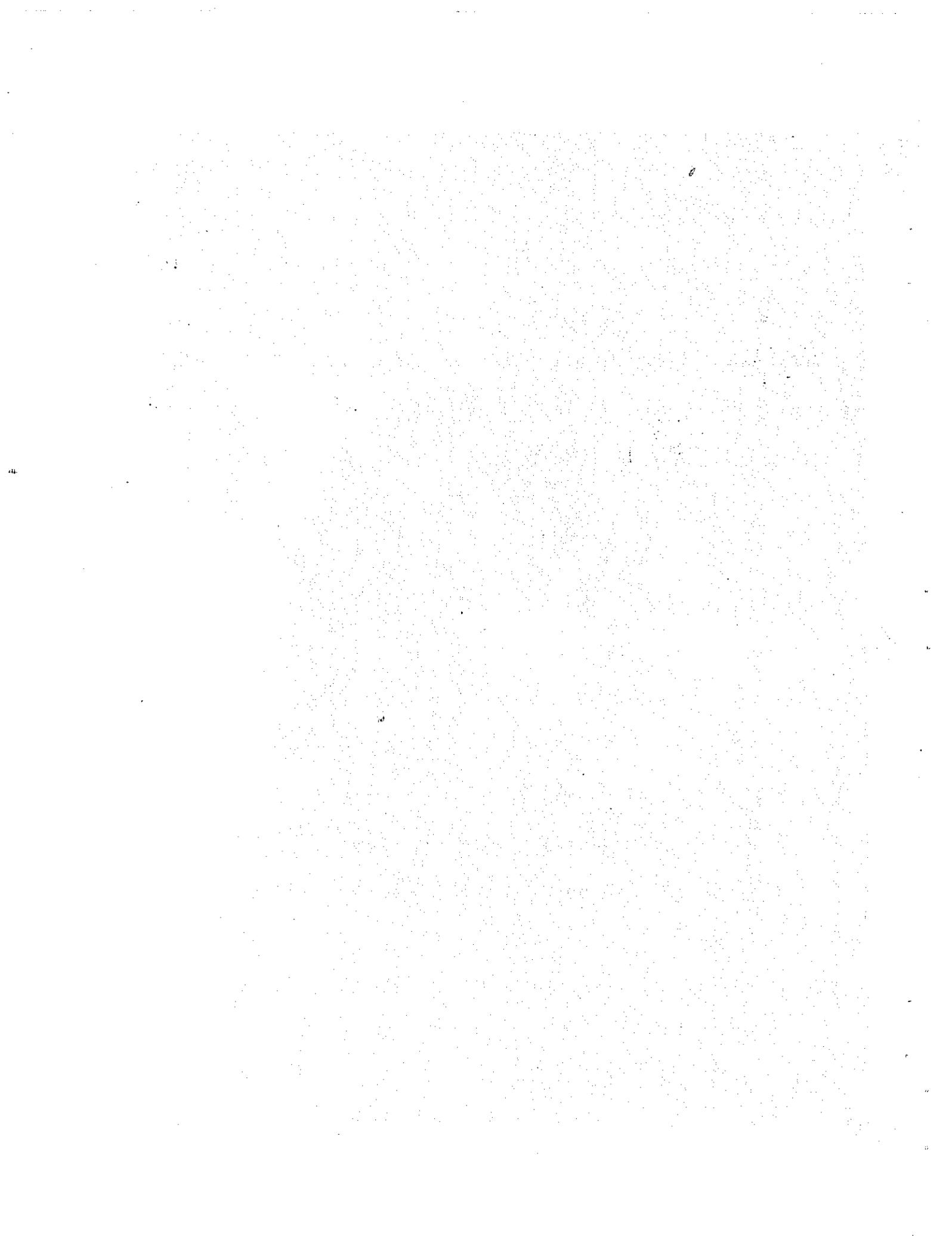
FLANGE BEARING
N-237-6060-00

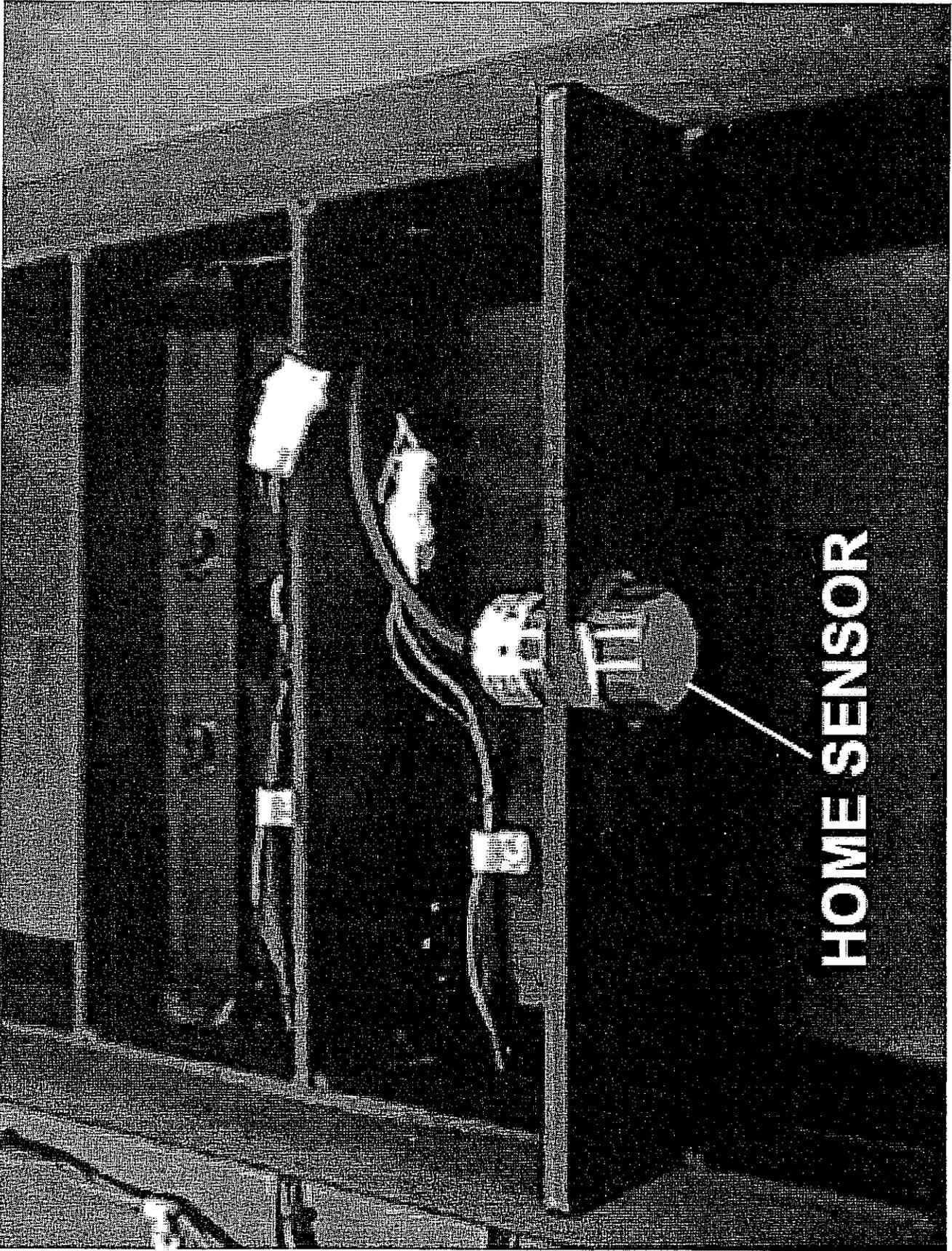


GEAR
N-530-5582-00

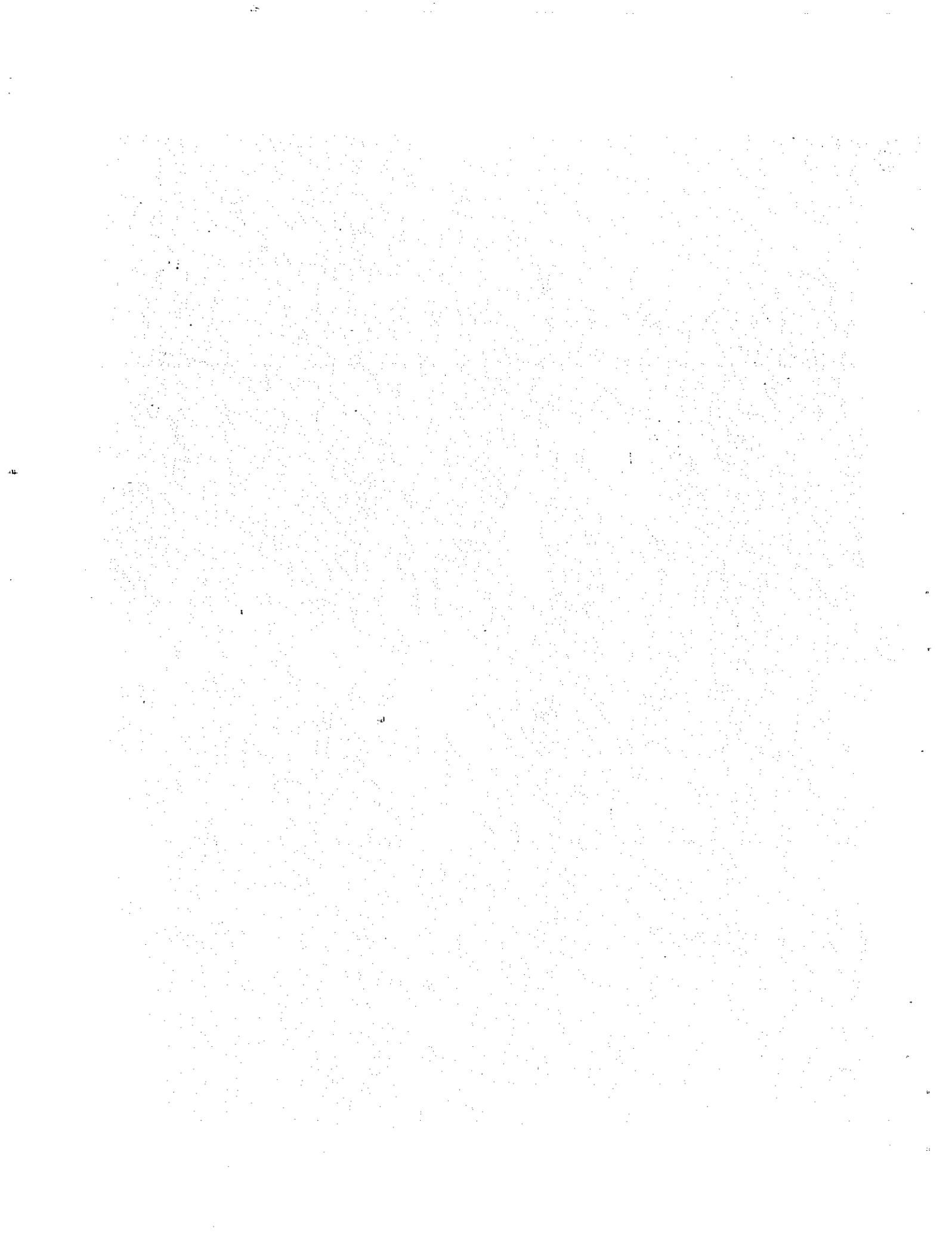
CENTER SPROCKET ASSEMBLY
N-500-6490-00

OCT 16 2001

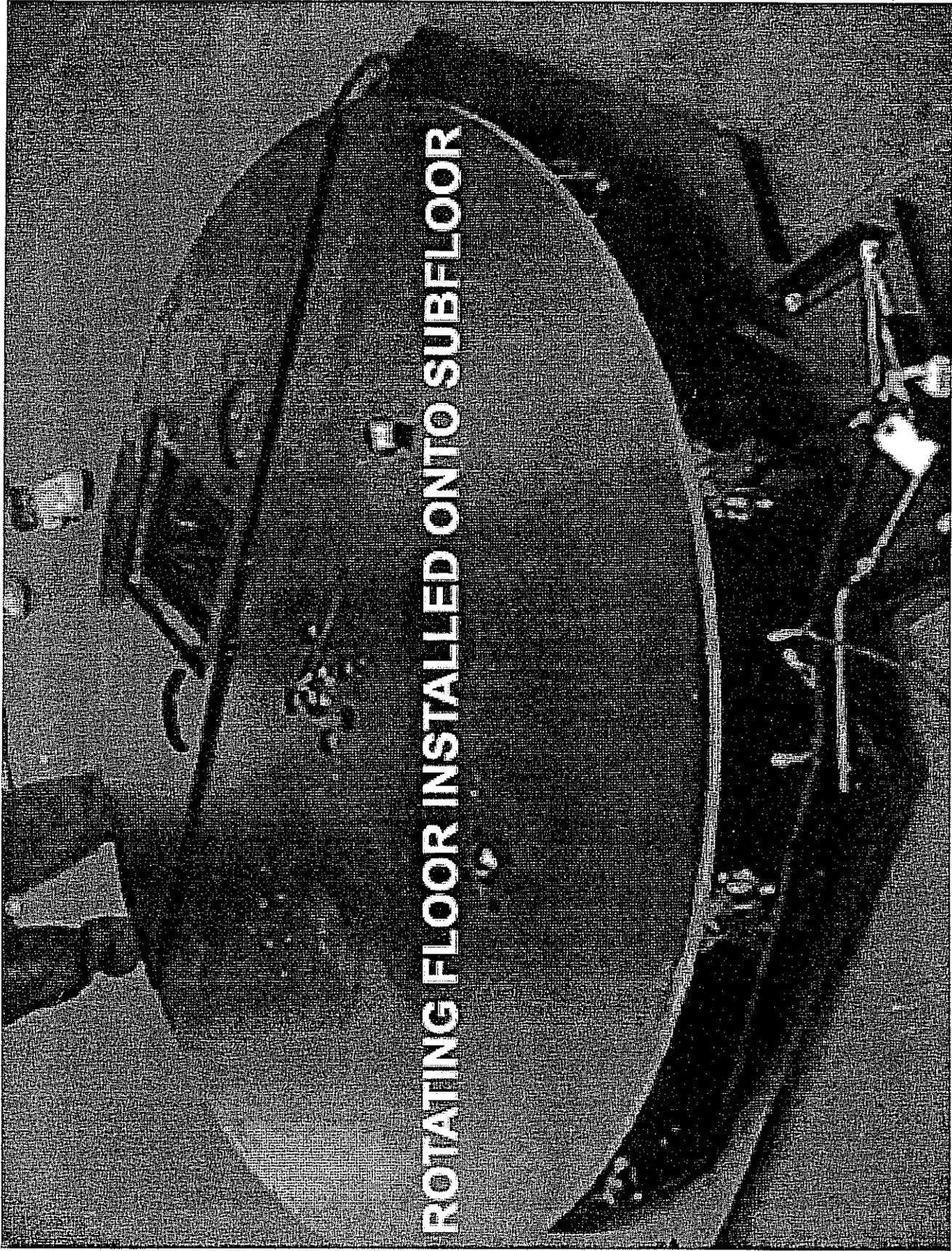




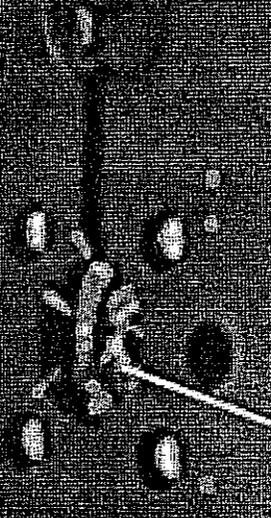
HOME SENSOR



ROTATING FLOOR INSTALLED ONTO SUBFLOOR



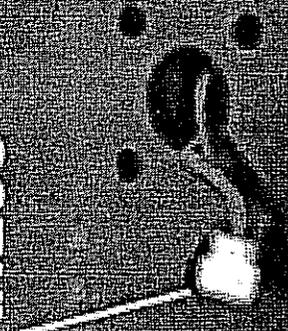




**ROTARY CONTACT
HARNESS**

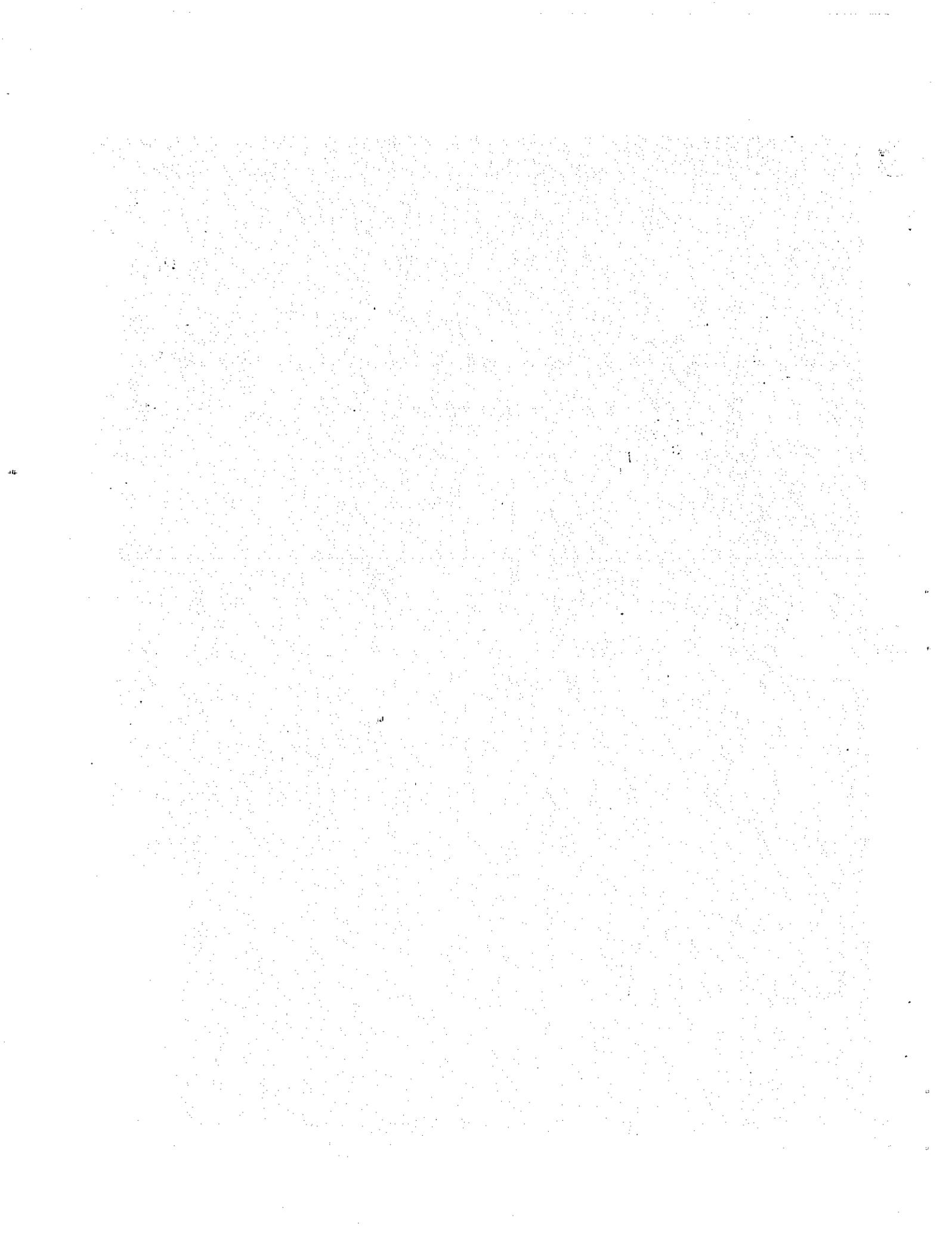


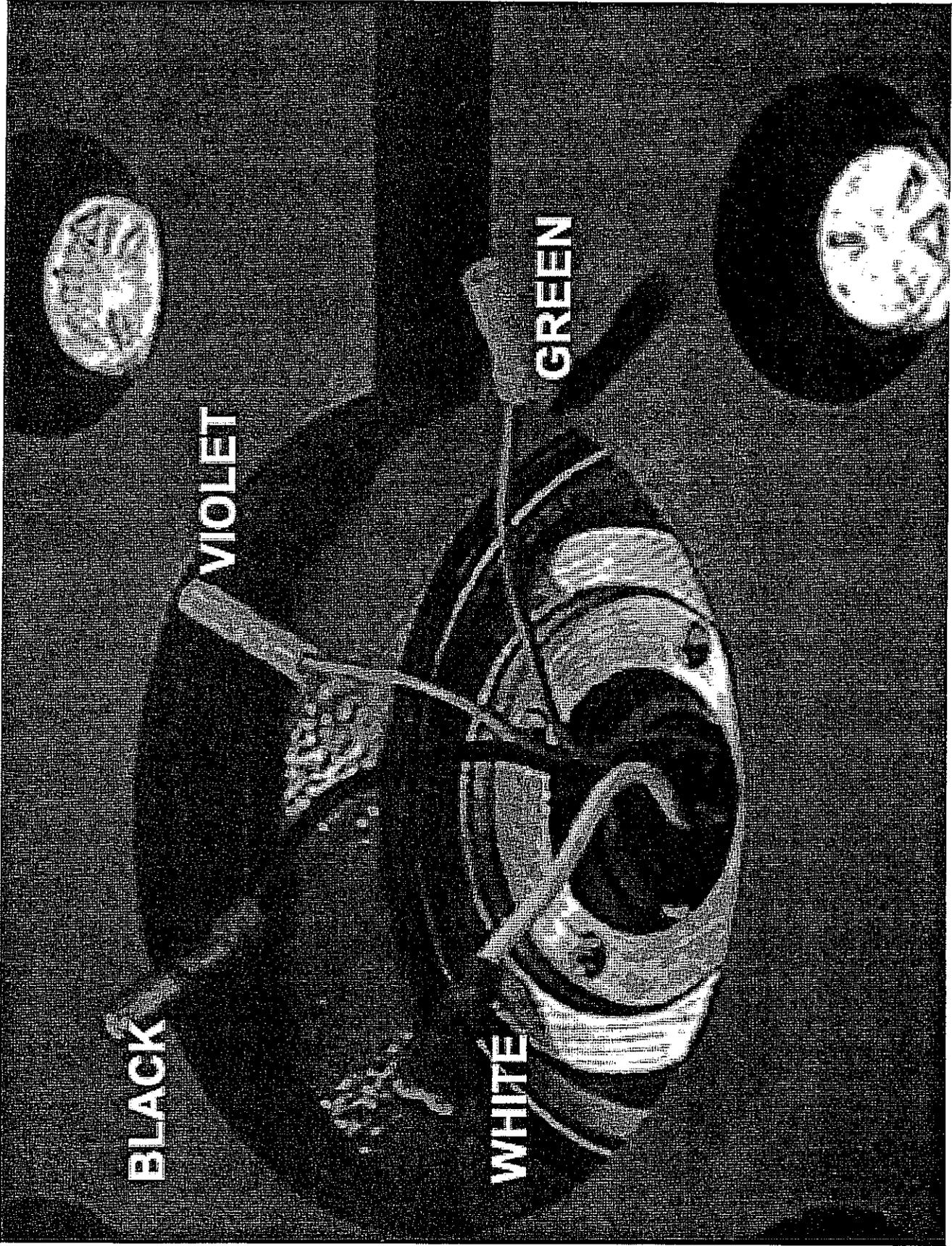
**CONTROL CONSOLE
HARNESS**



SEAT HARNESS

HARNESS LAYOUT ON ROTATING FLOOR ASSEMBLY



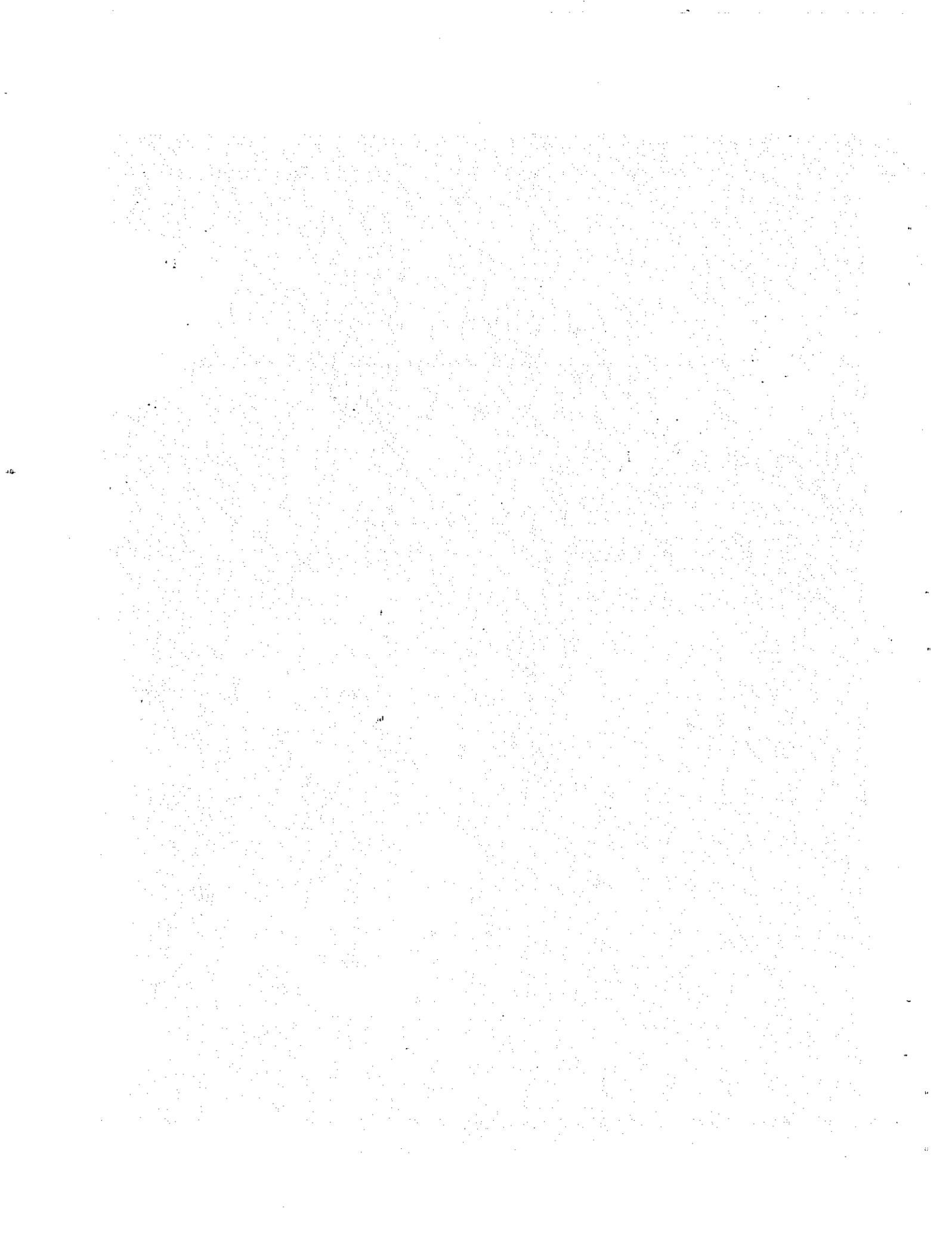


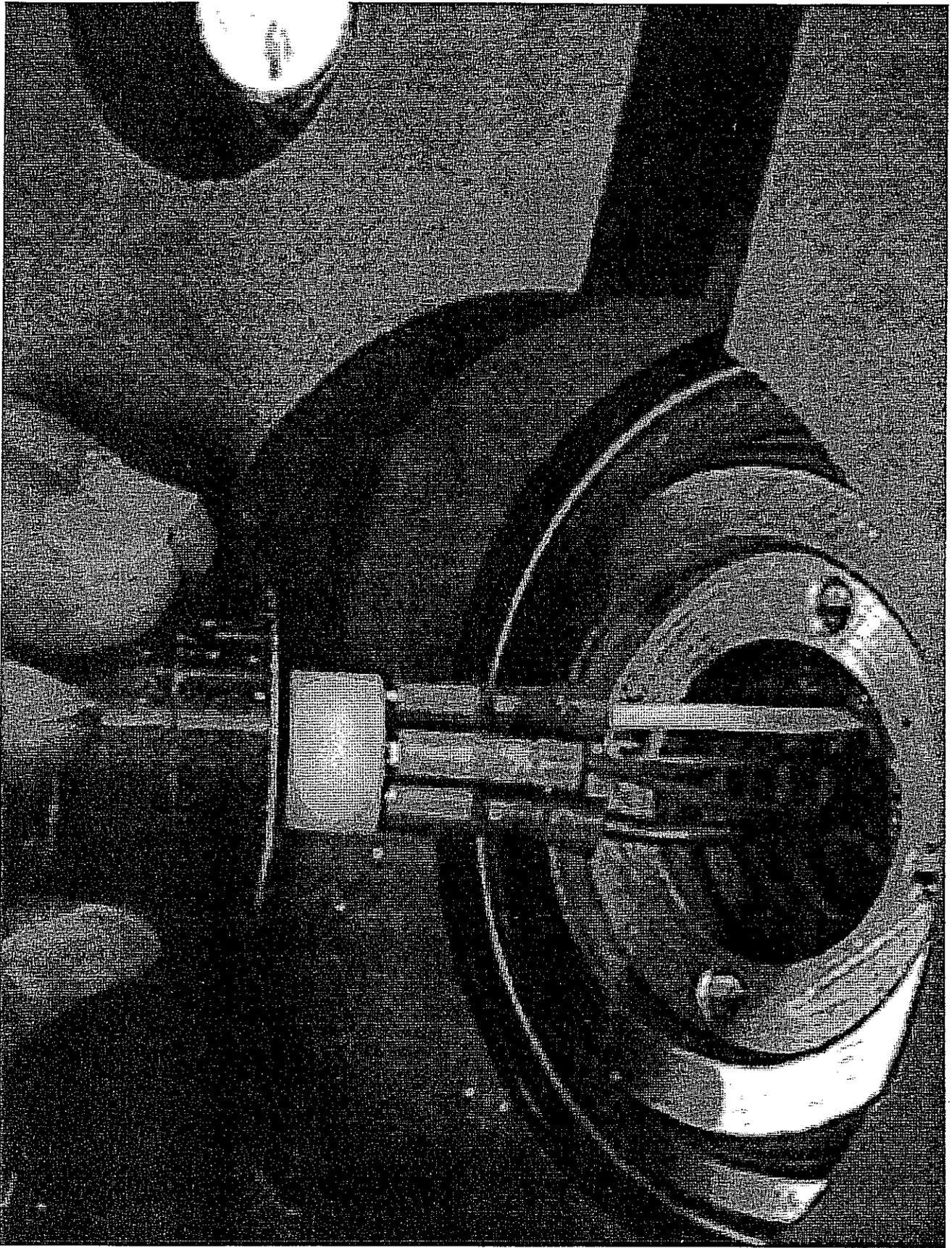
BLACK

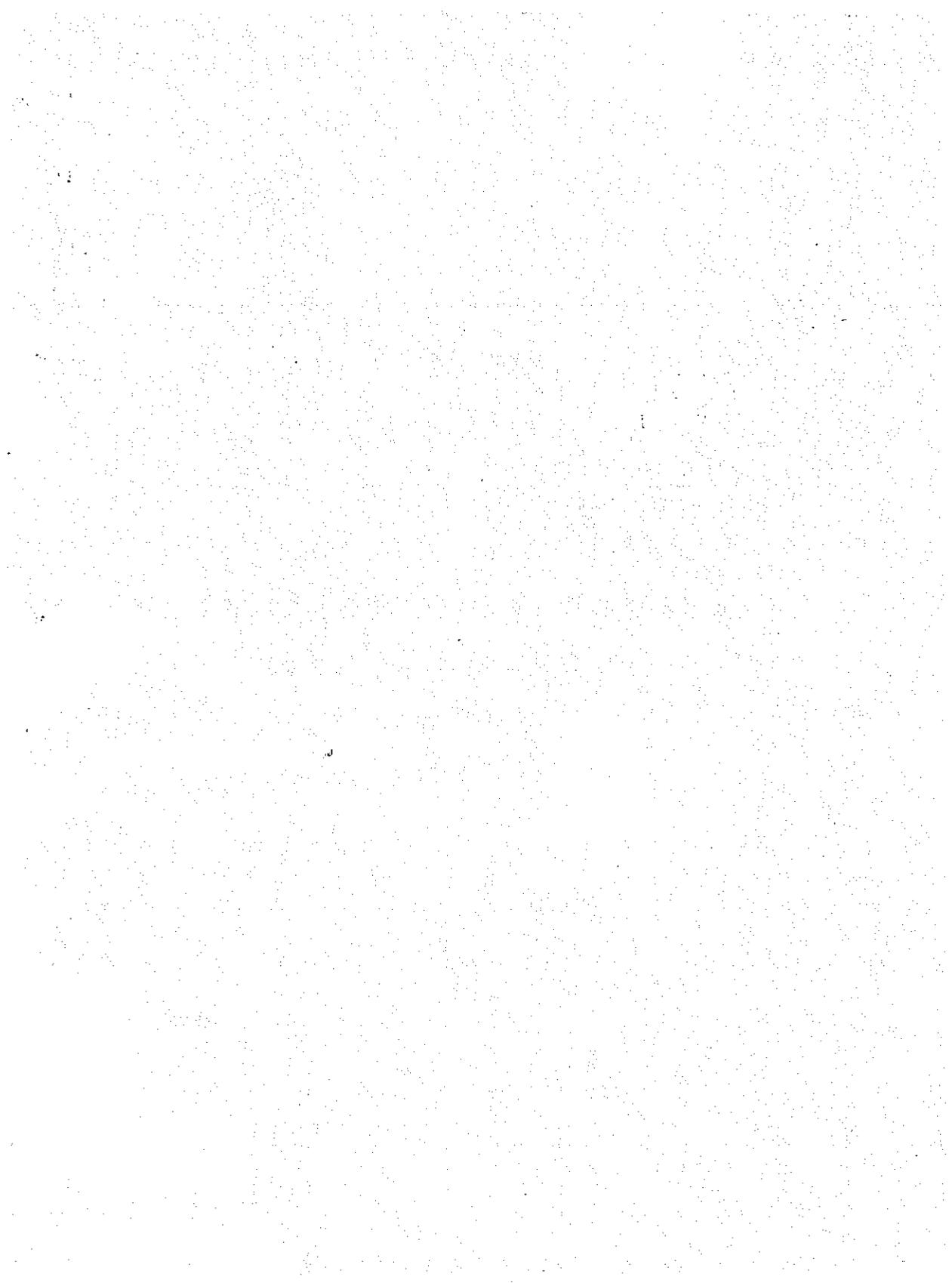
VIOLET

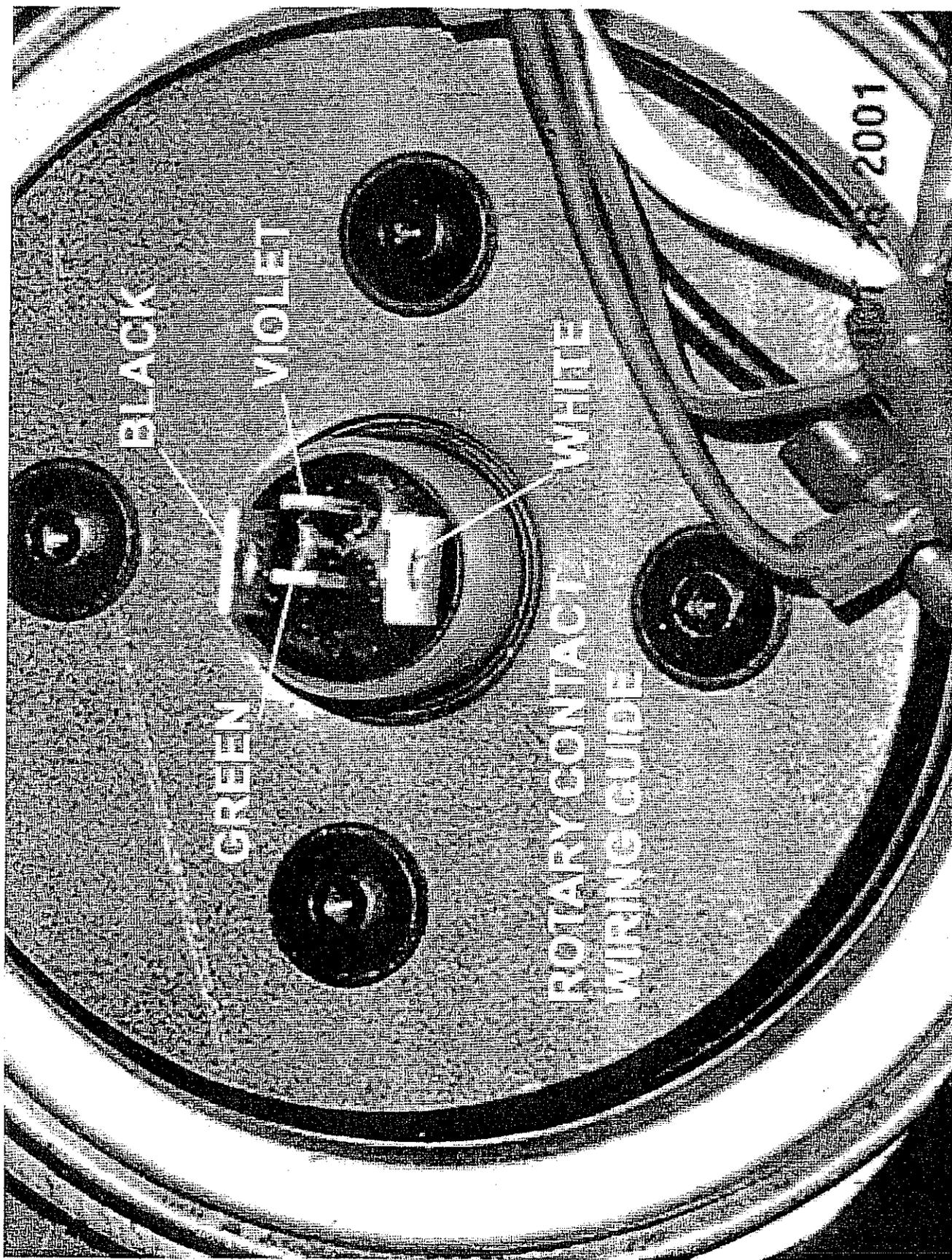
WHITE

GREEN









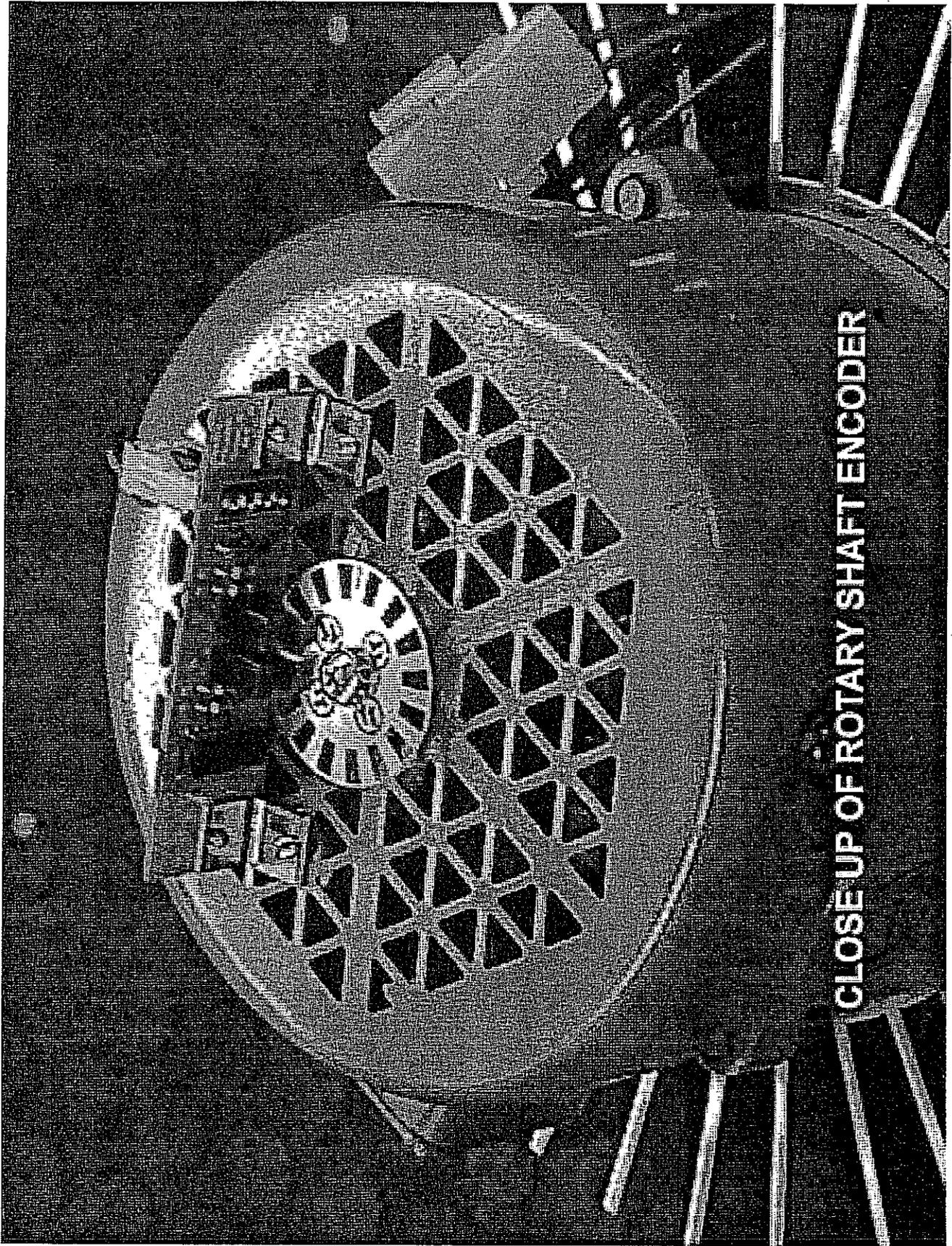
BLACK

GREEN

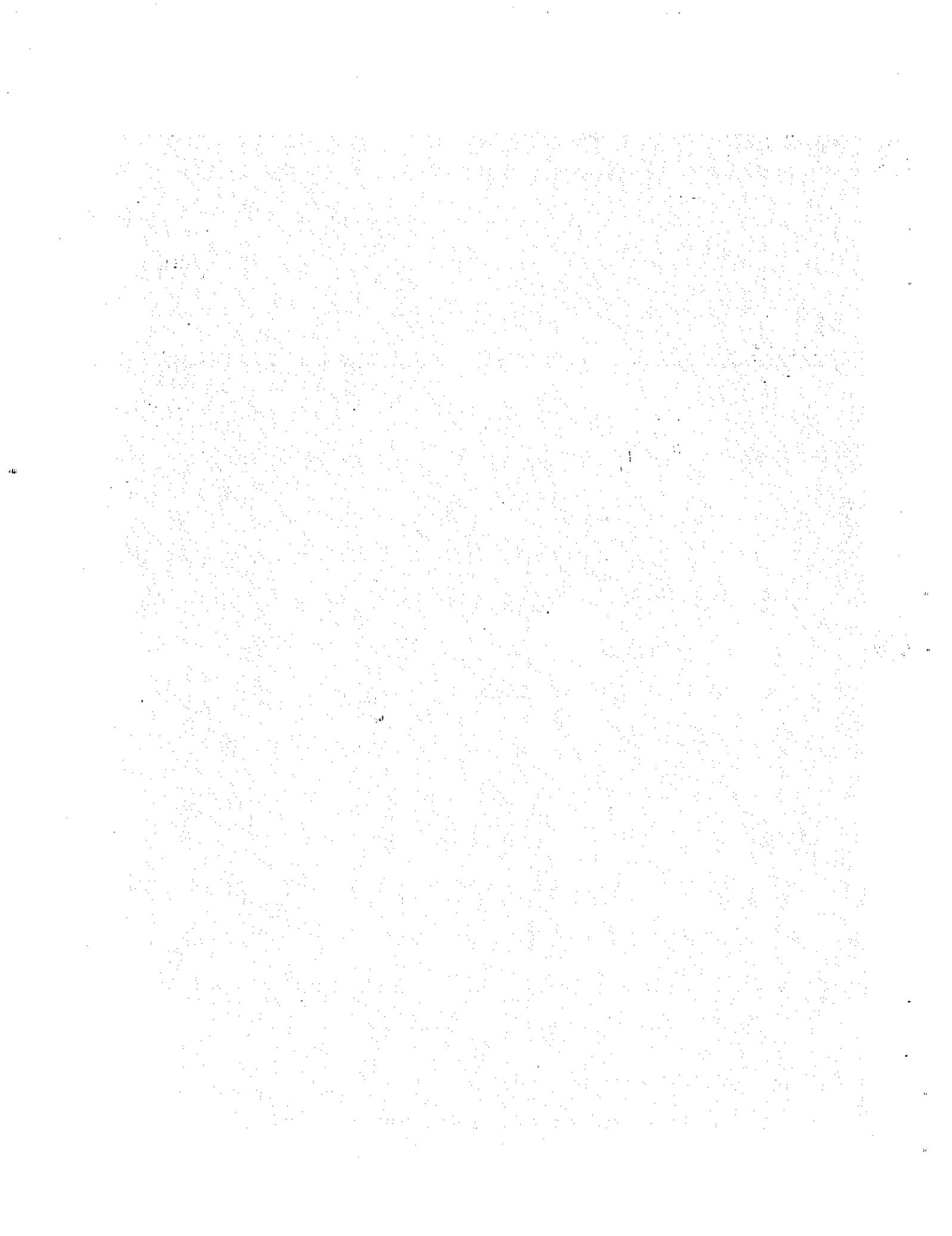
VIOLET

ROTARY CONTACT
WIRING GUIDE

AUG 2001



CLOSE UP OF ROTARY SHAFT ENCODER



EMI FILTER

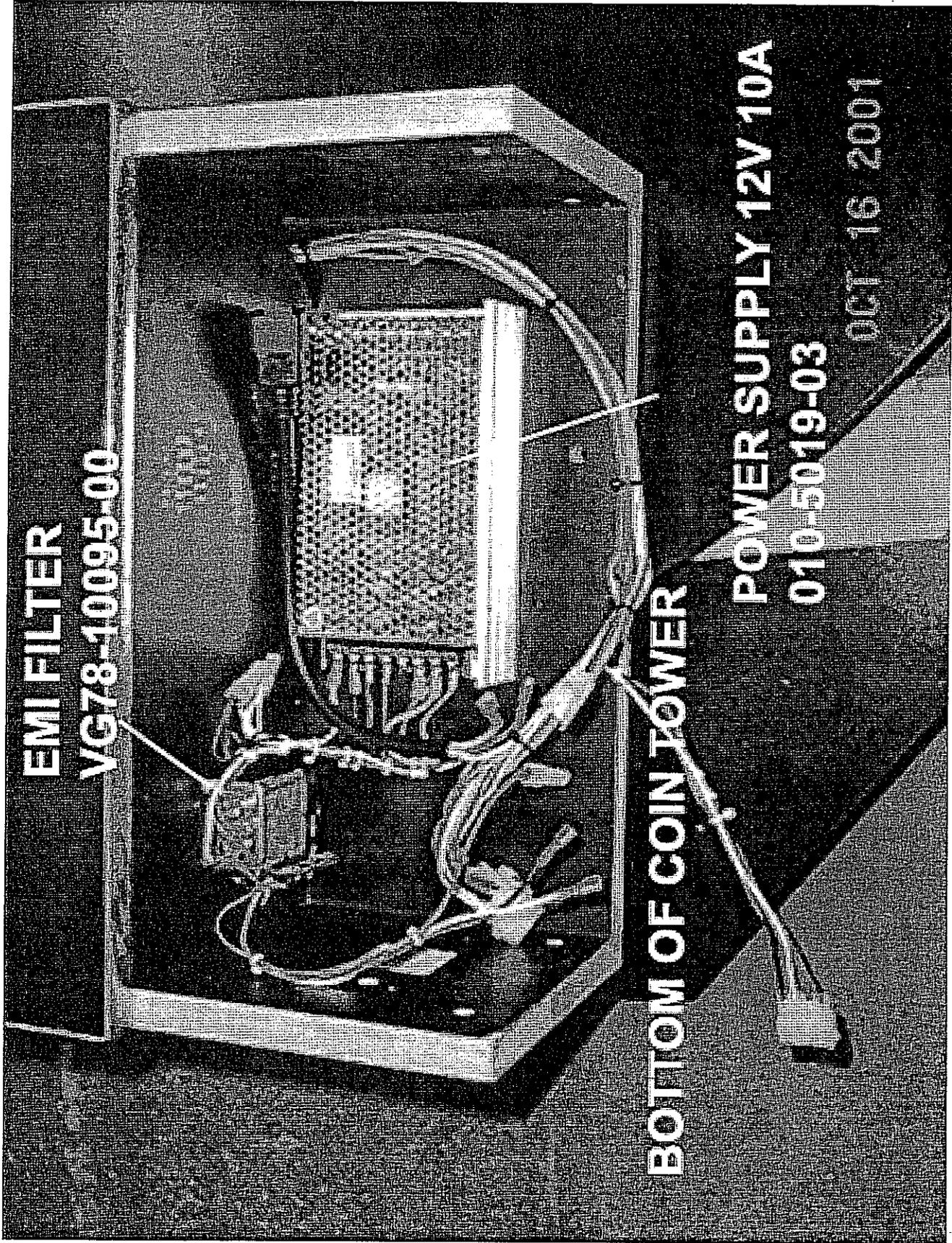
VG78-10095-00

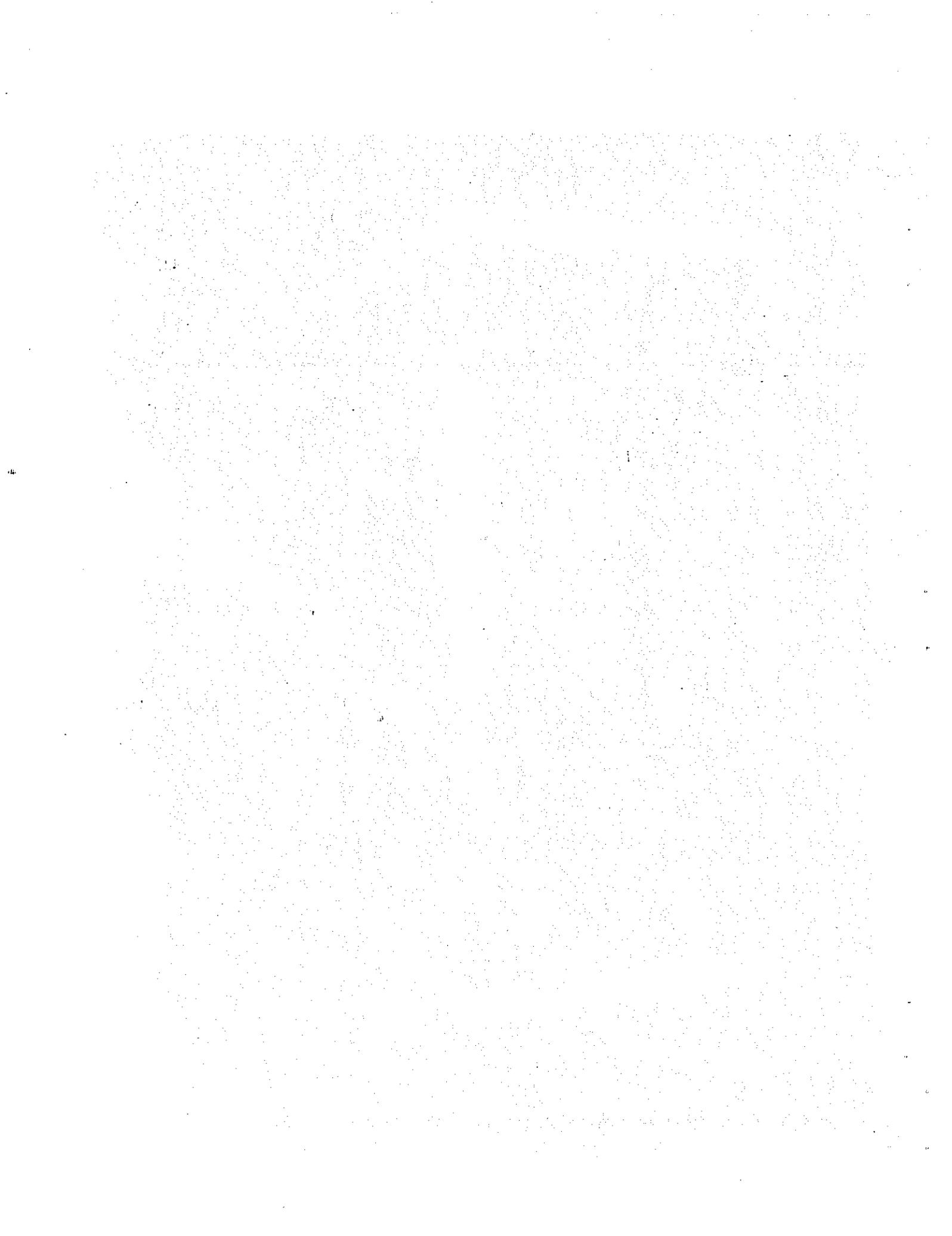
BOTTOM OF COIN TOWER

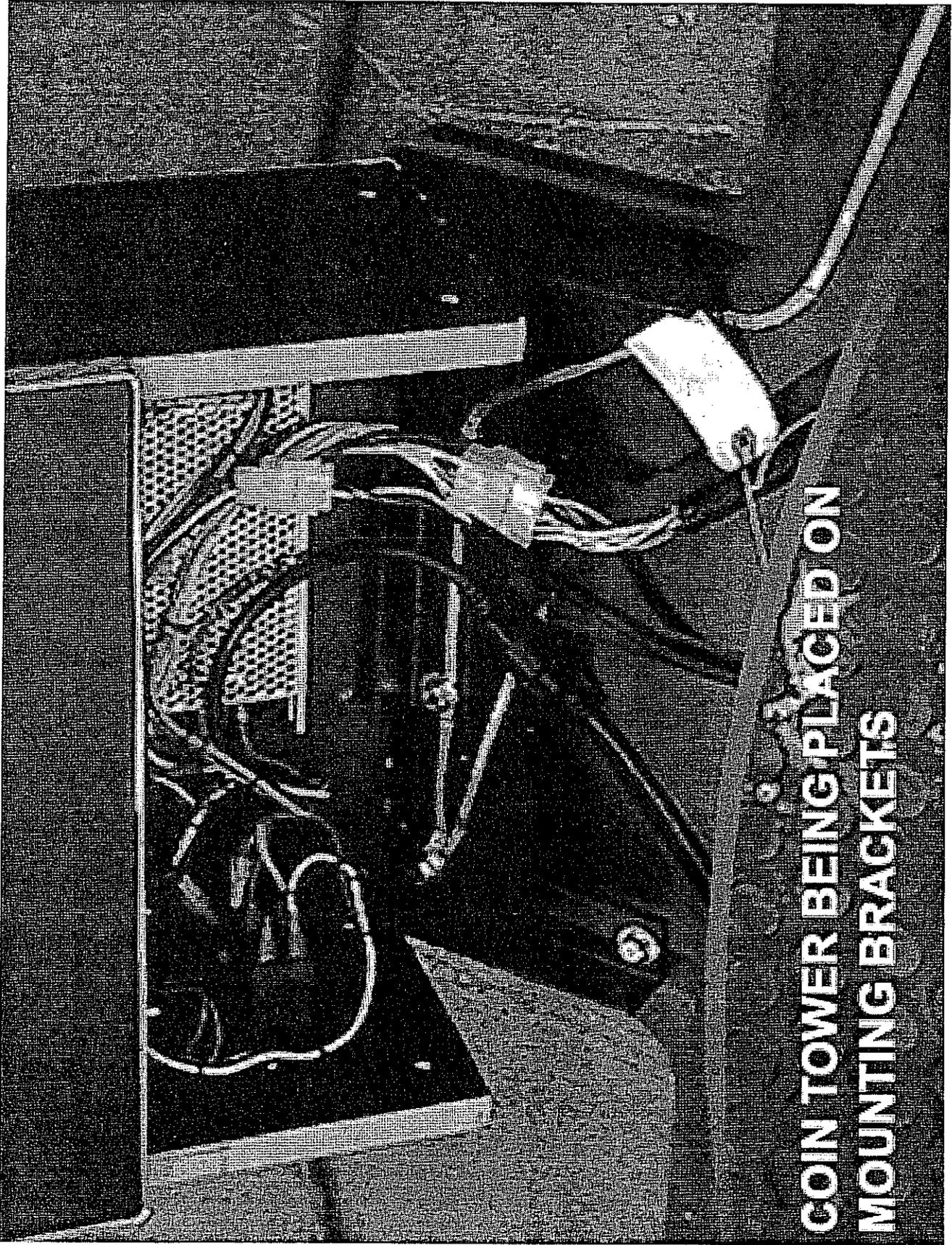
POWER SUPPLY 12V 10A

010-5019-03

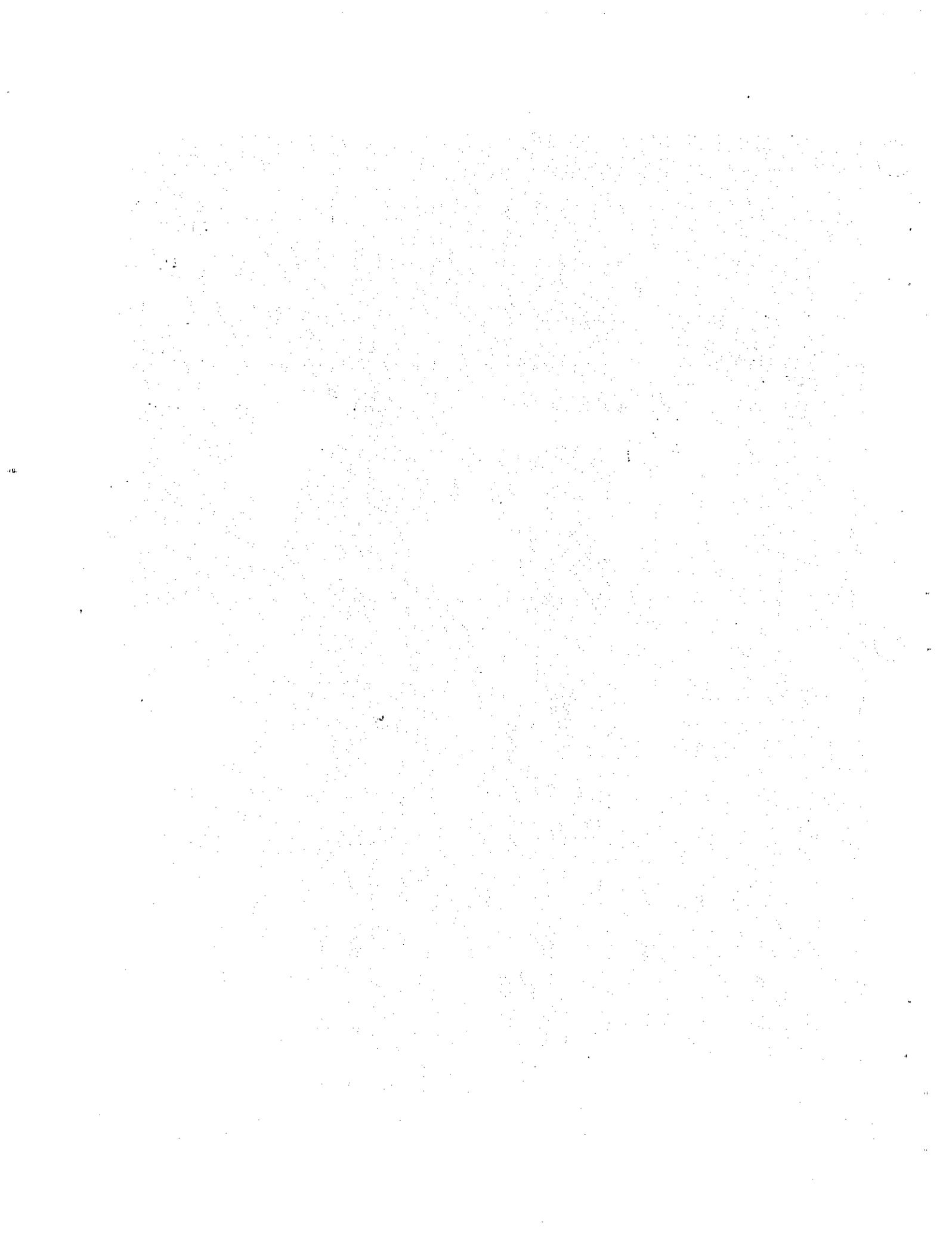
OCT 16 2001







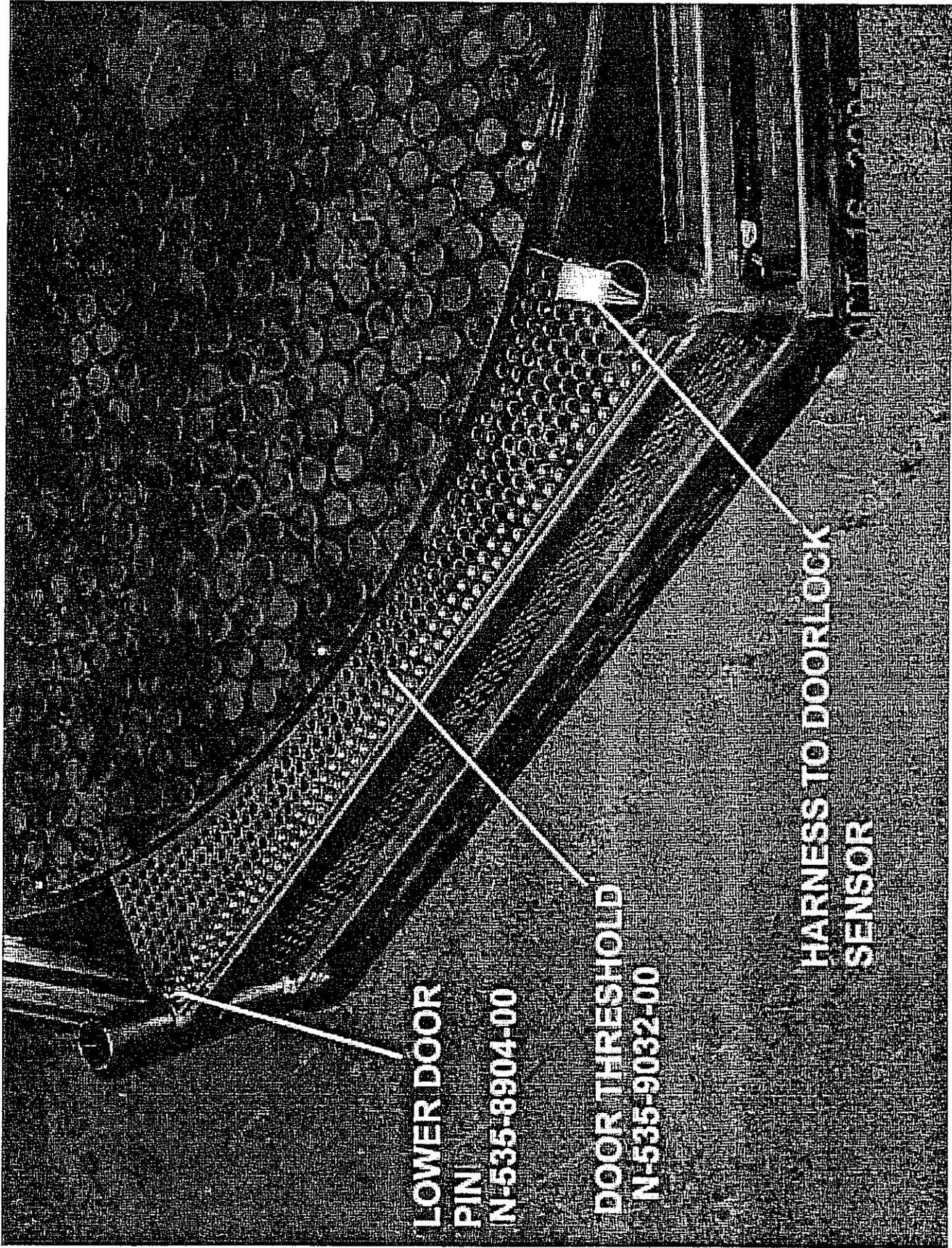
**COIN TOWER BEING PLACED ON
MOUNTING BRACKETS**

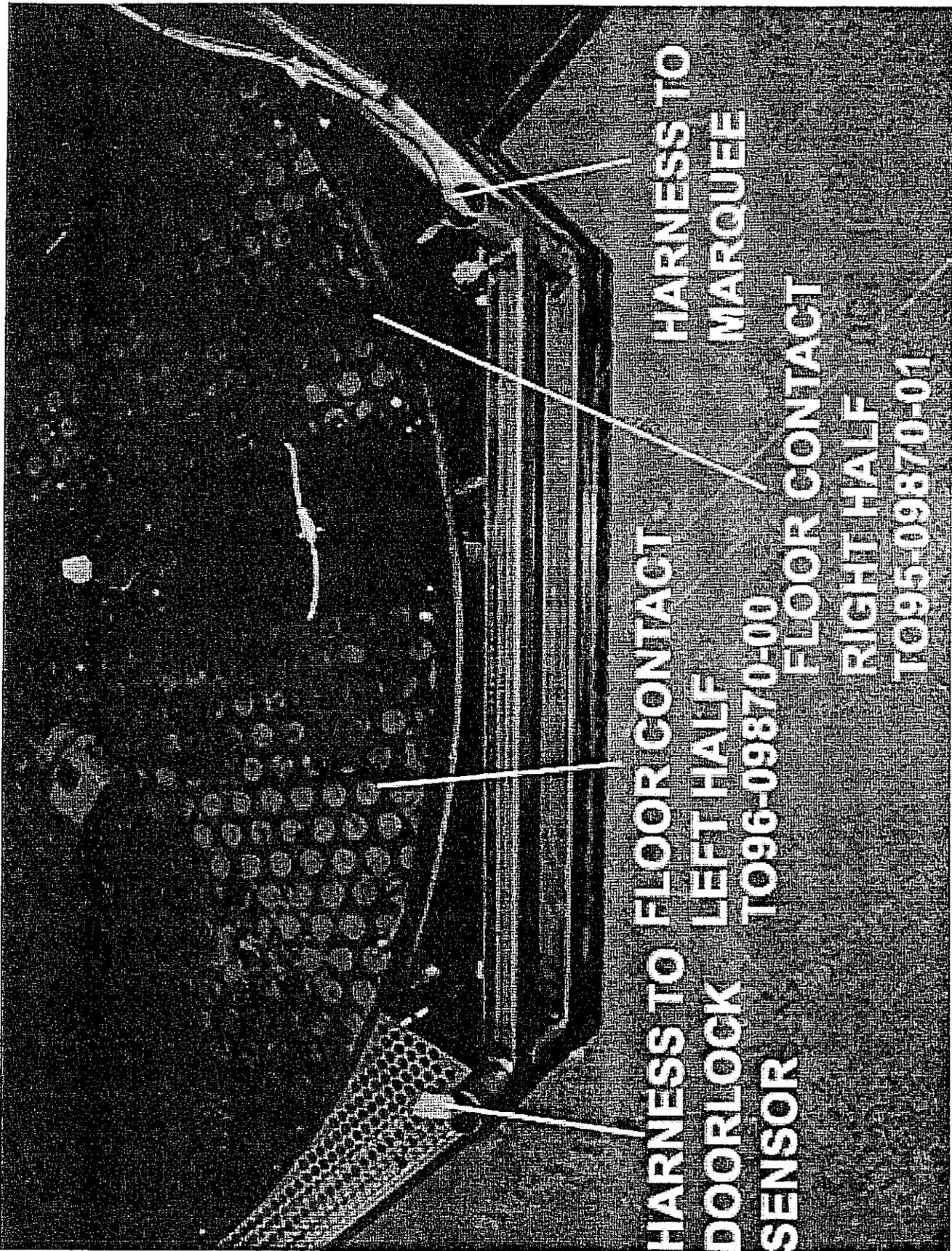


**LOWER DOOR
PIN
N-535-8904-00**

**DOOR THRESHOLD
N-535-9032-00**

**HARNES TO DOORLOCK
SENSOR**





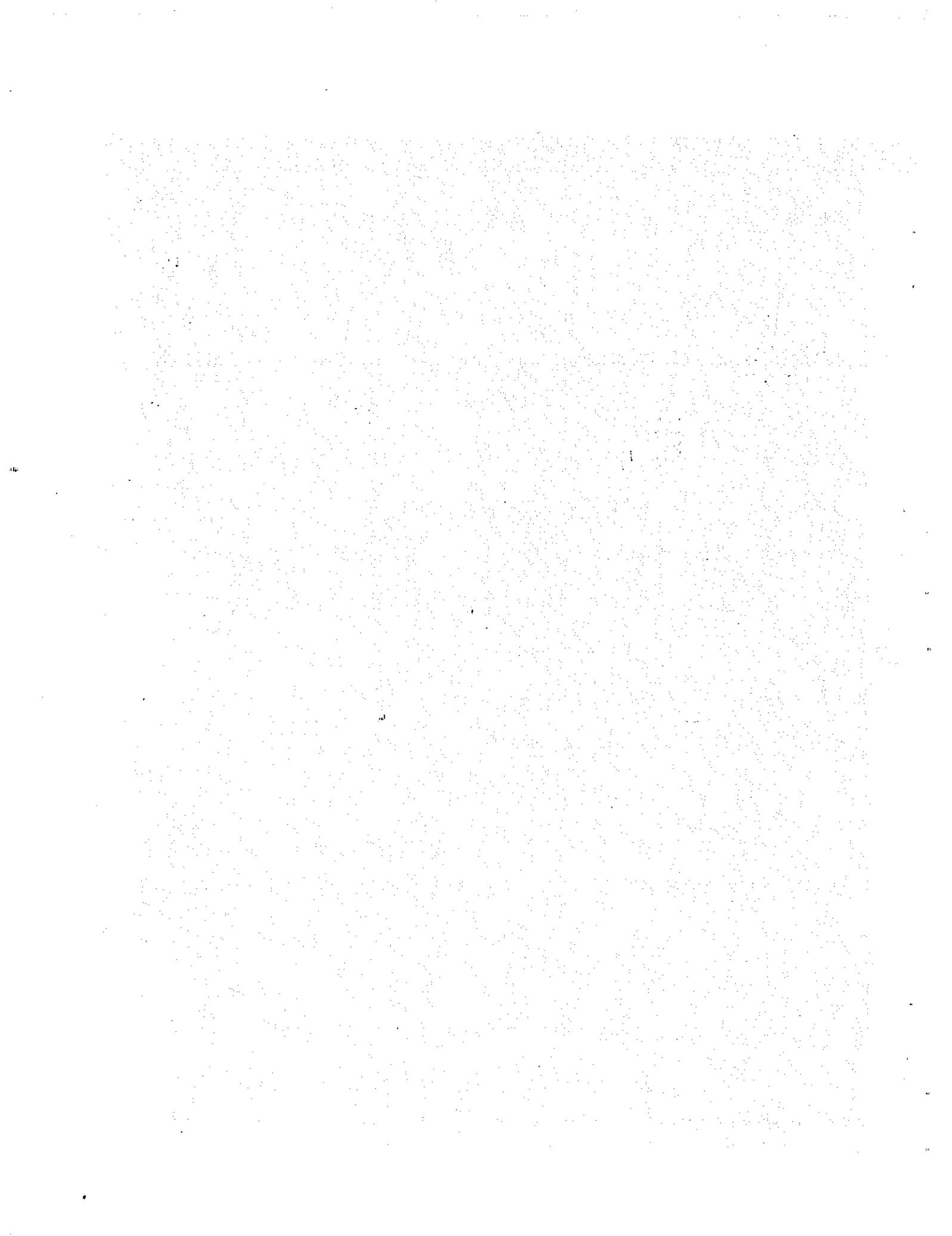
HARNES TO FLOOR CONTACT
DOORLOCK LEFT HALF
SENSOR

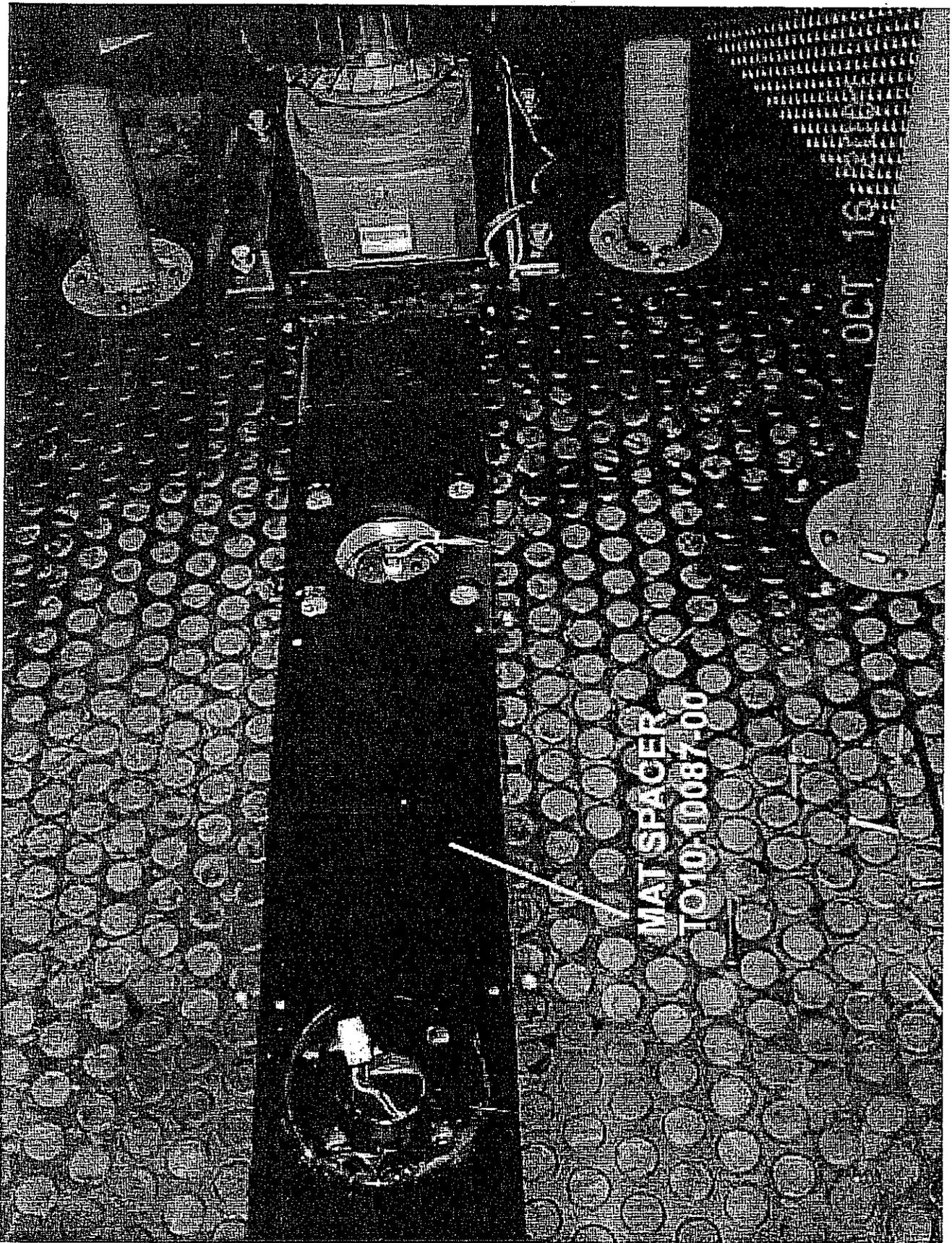
T096-09870-00

FLOOR CONTACT
RIGHT HALF

T095-09870-01

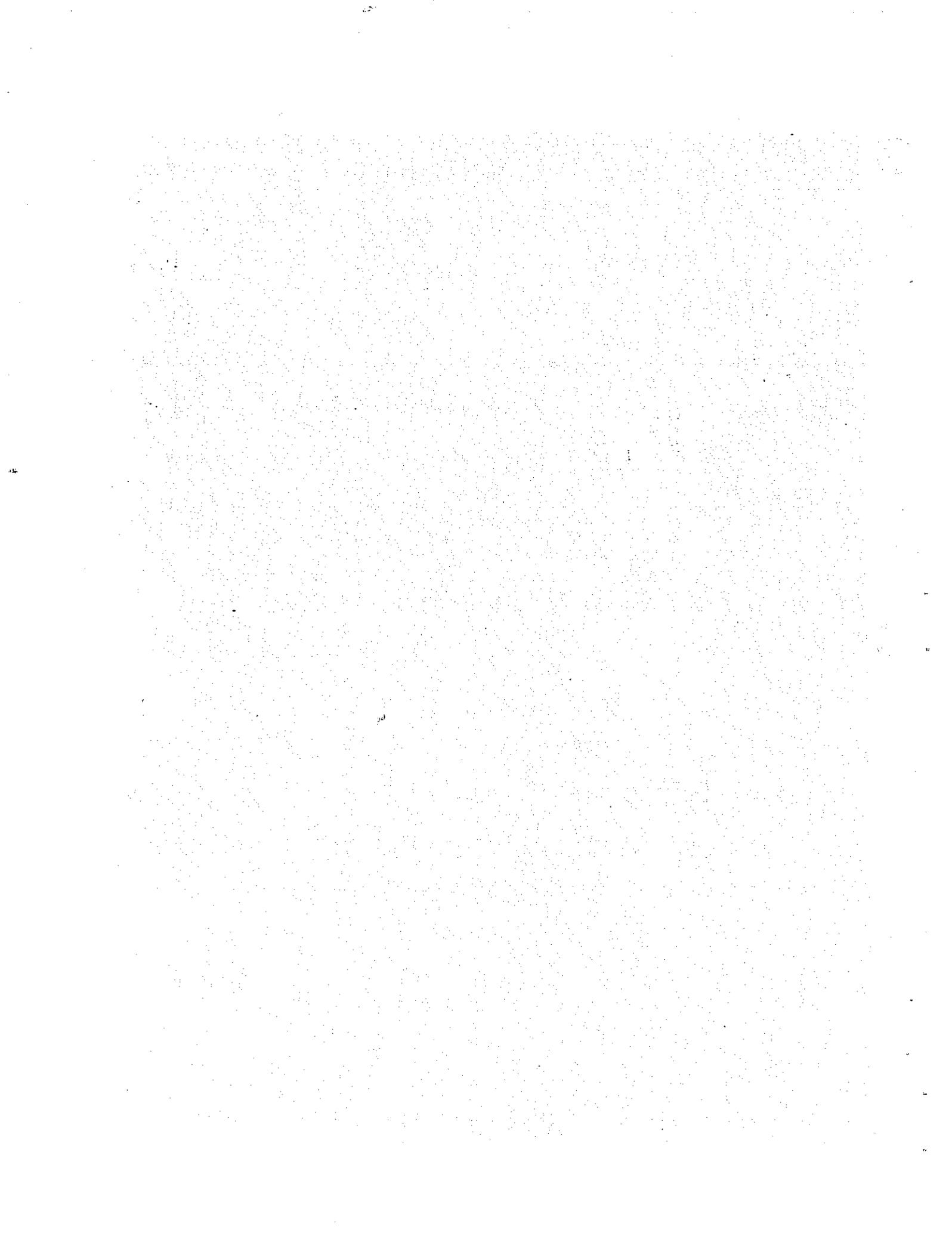
HARNES TO
MARQUEE

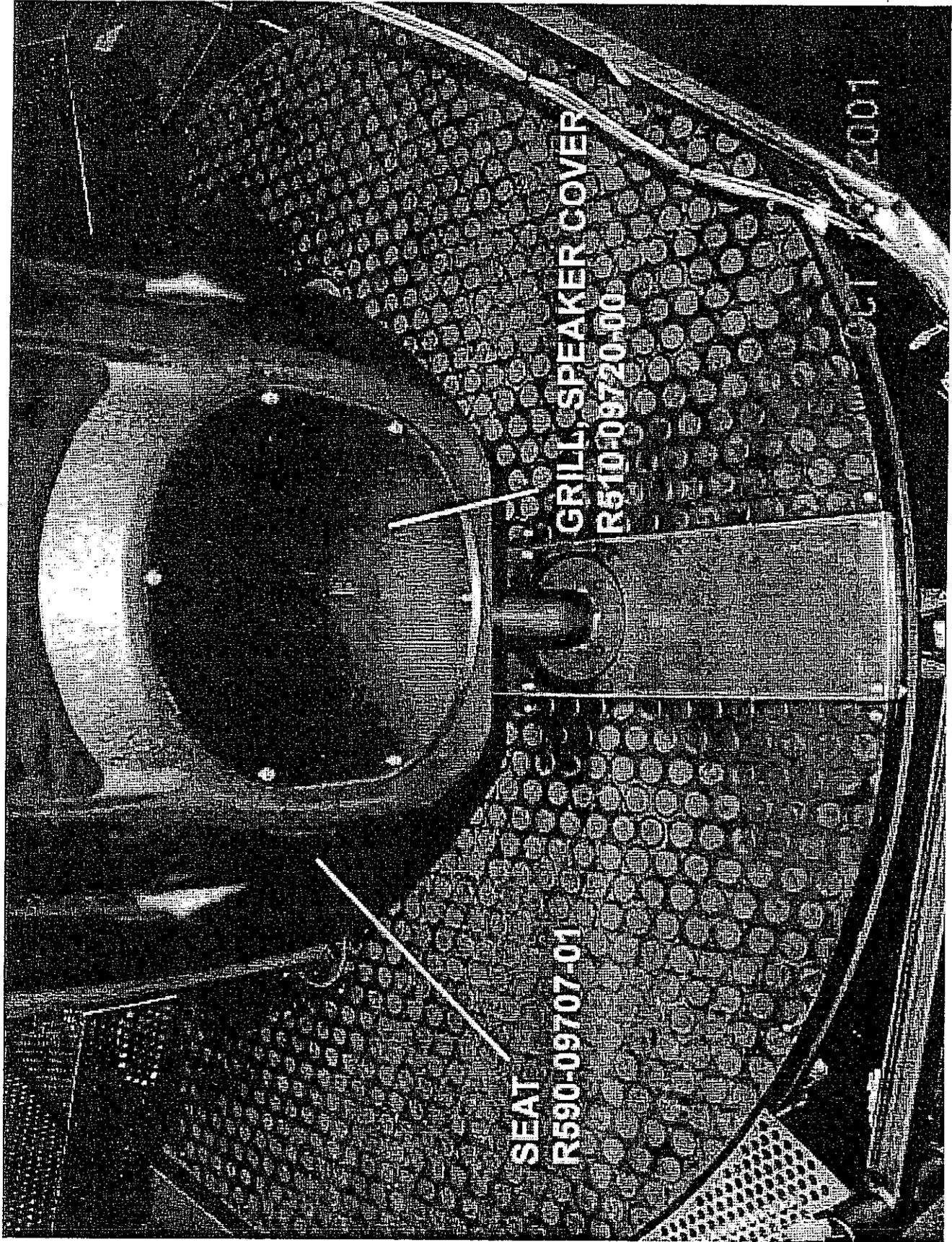




MAT SPACER
TO 10-10087-00

OCT 19 1950

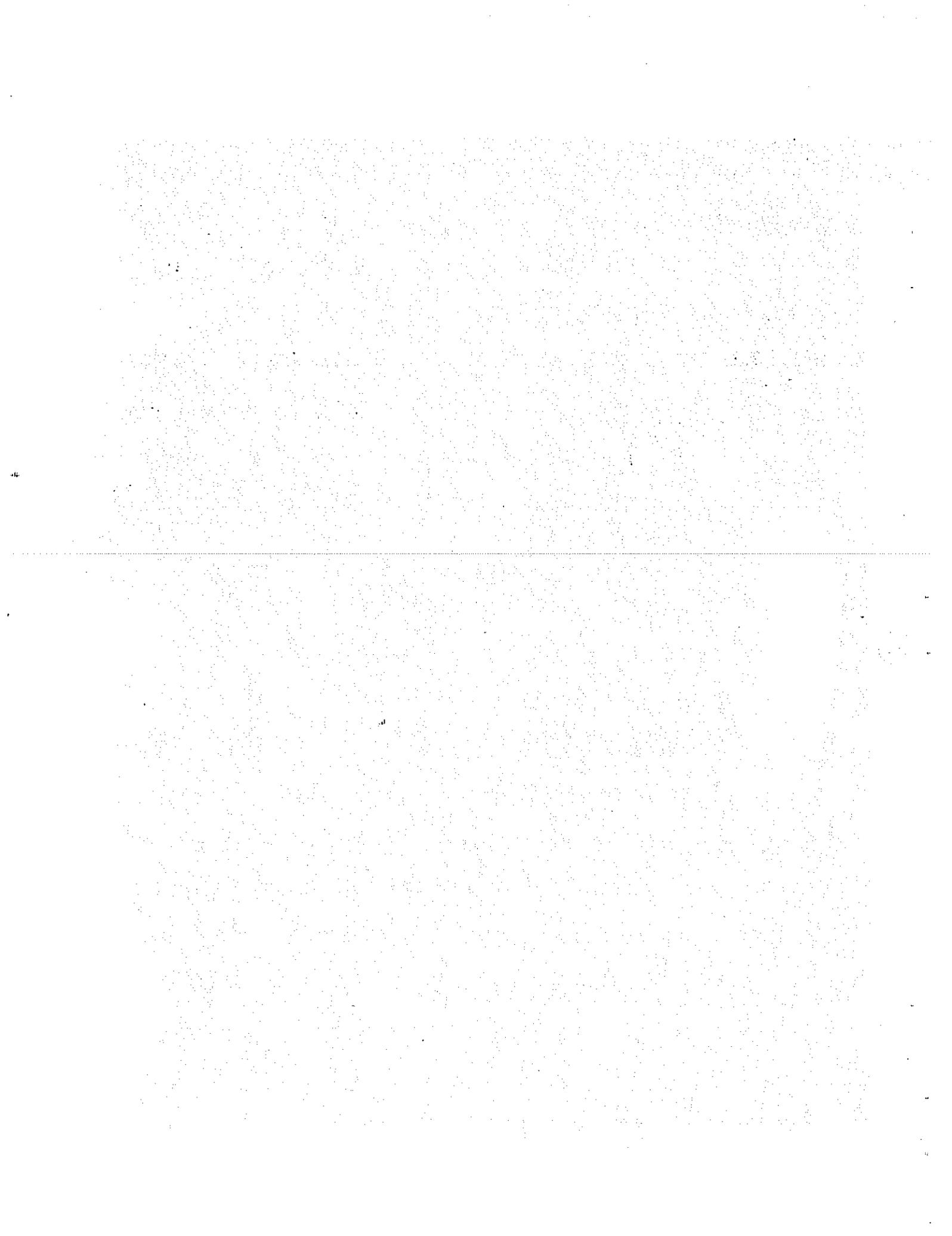


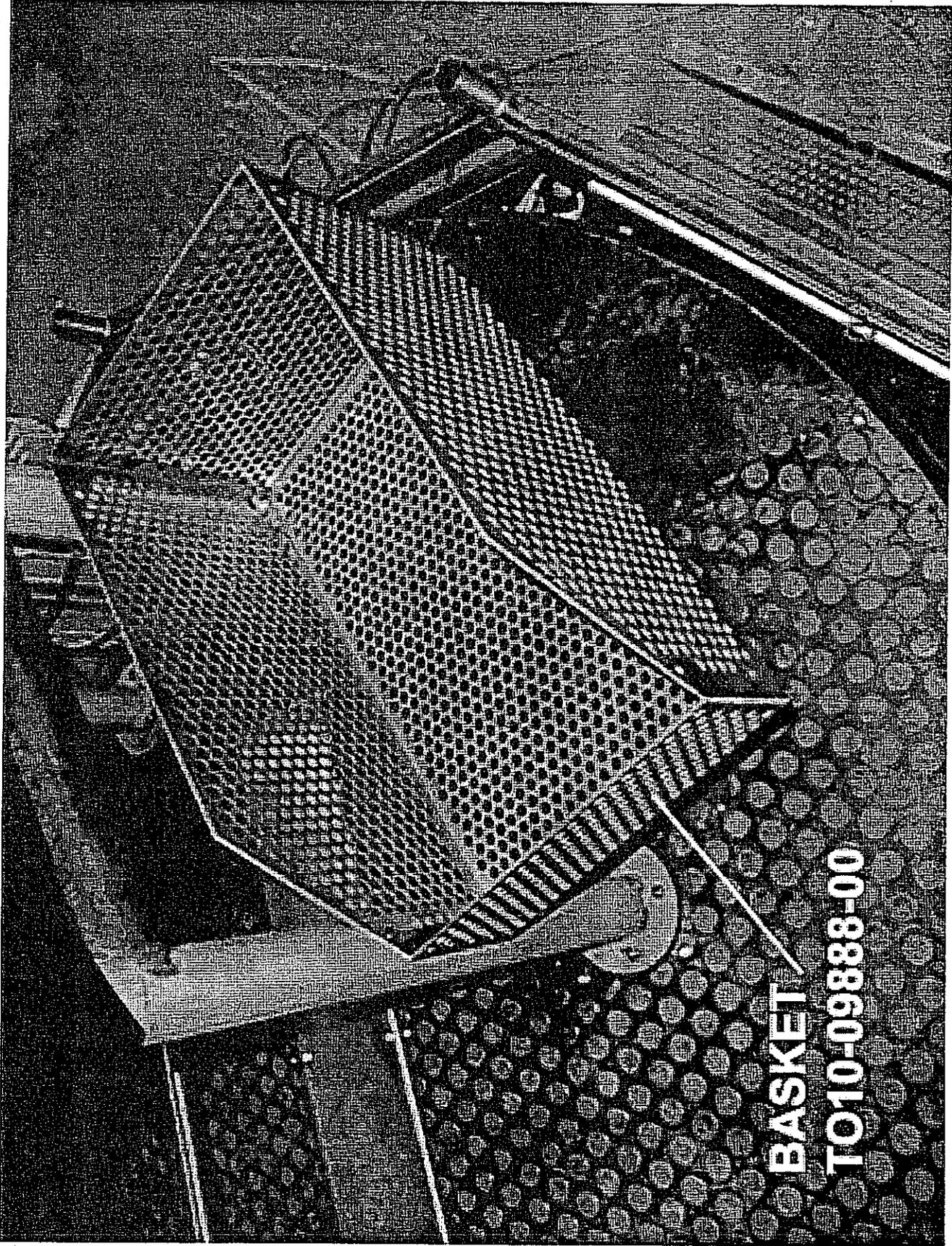


SEAT
R590-09707-01

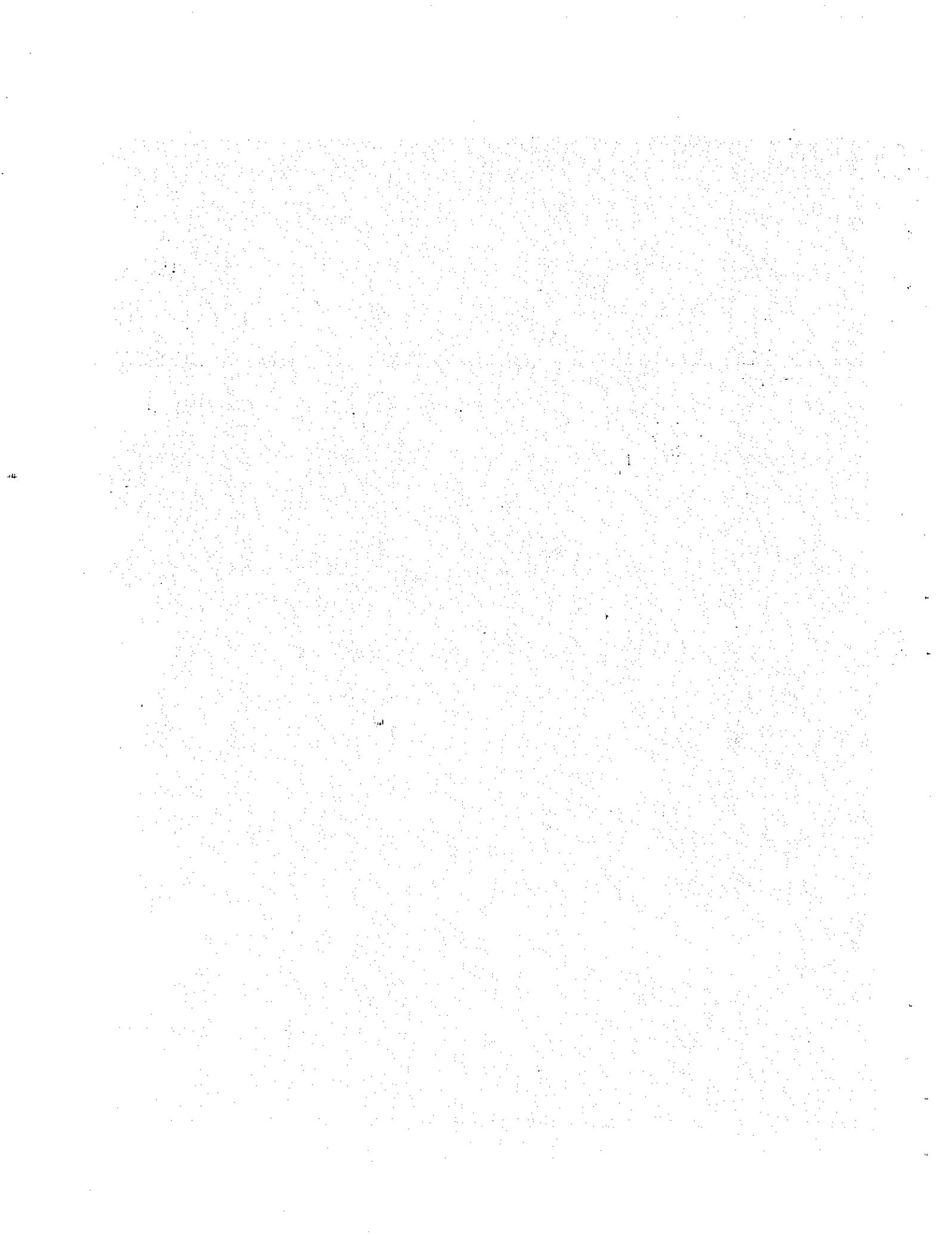
GRILL, SPEAKER COVER
R510-09720-00

001



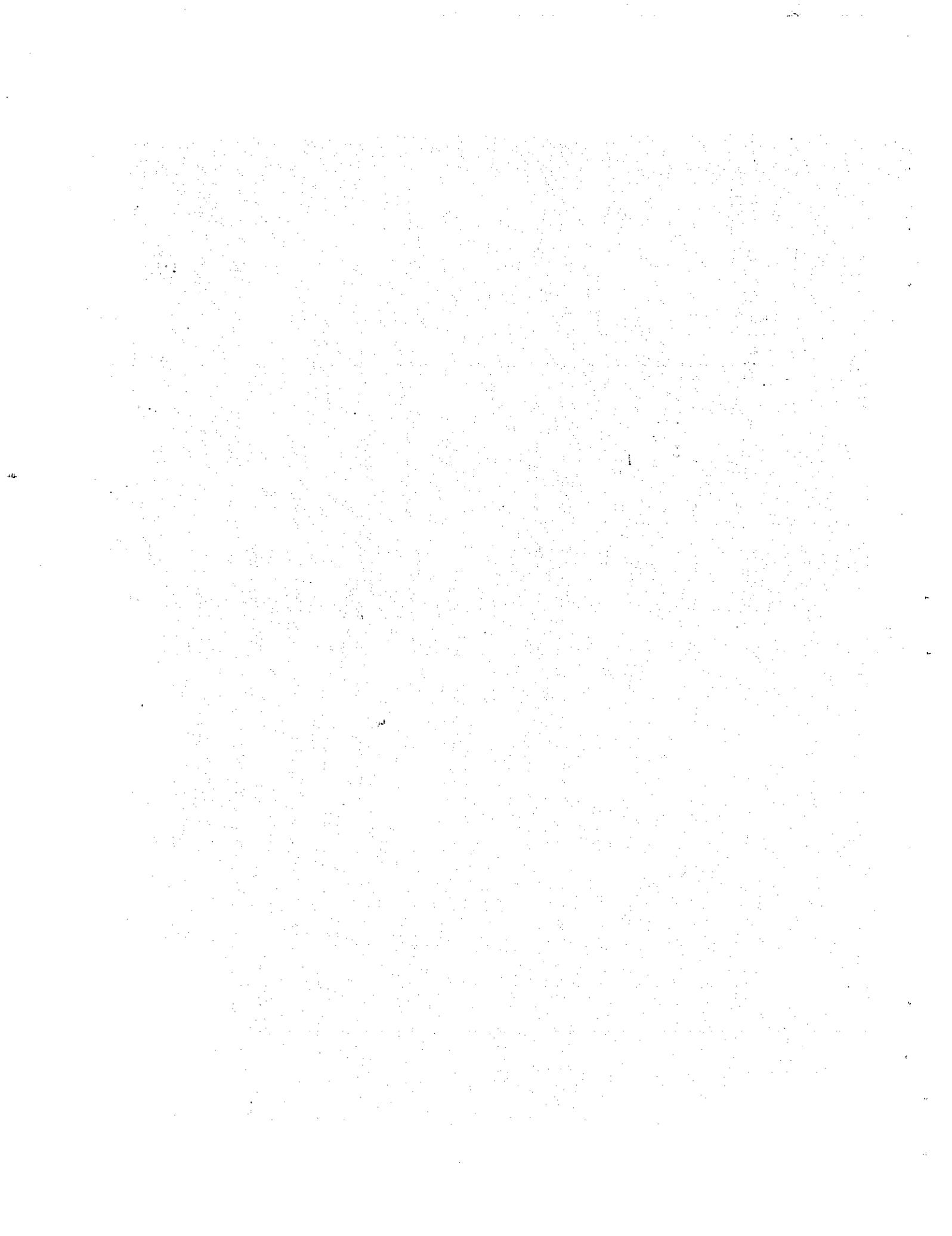


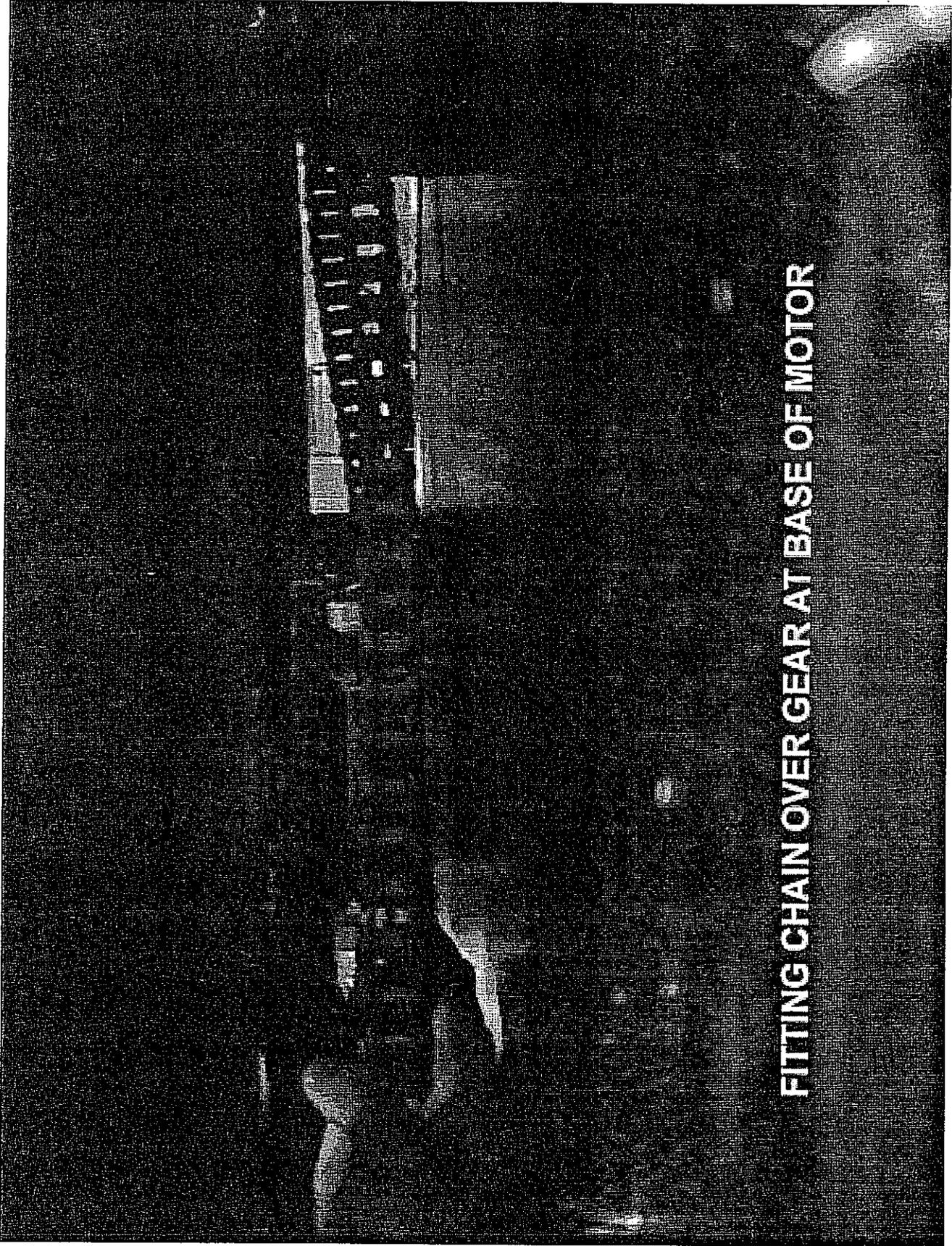
BASKET
TO10-09888-00



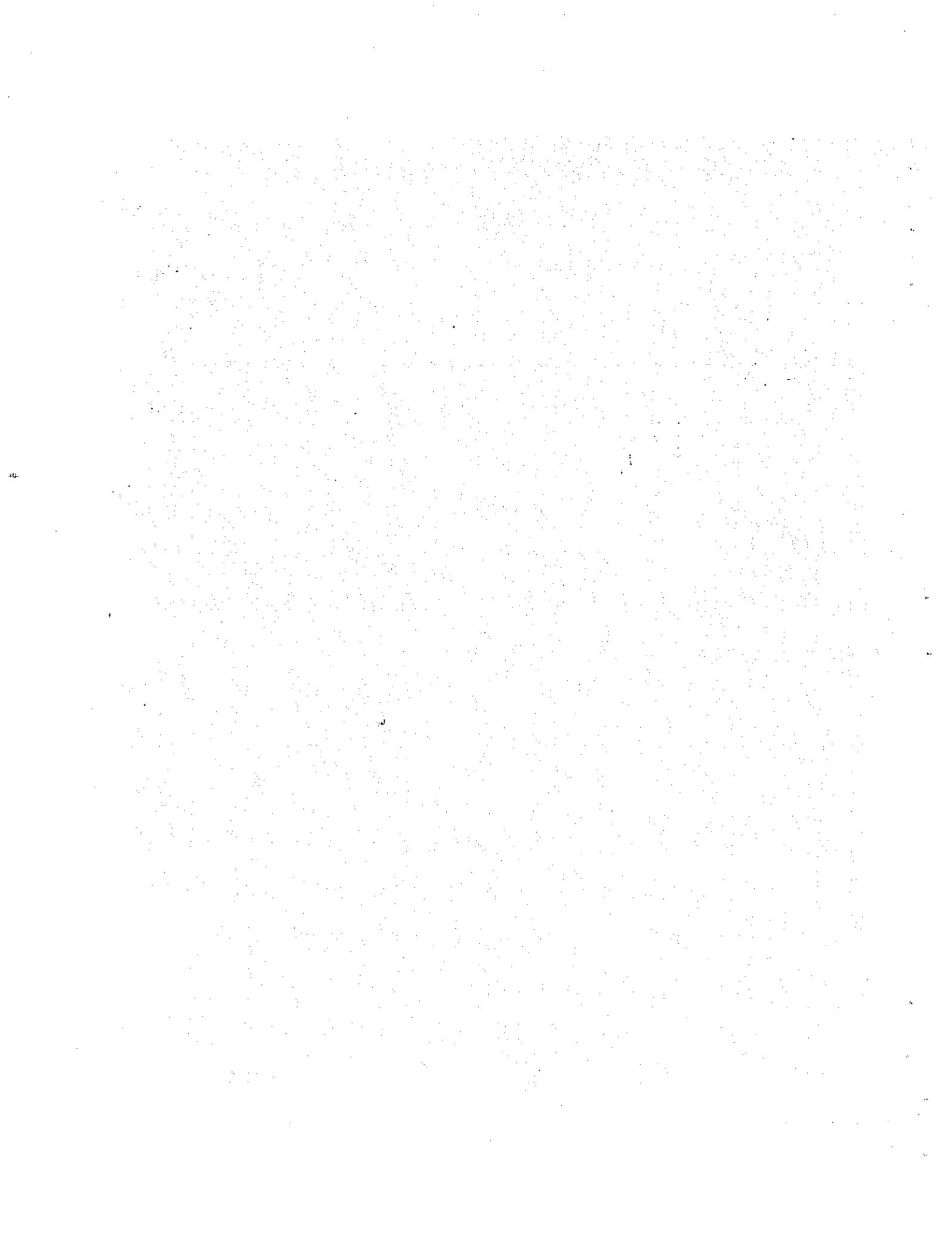


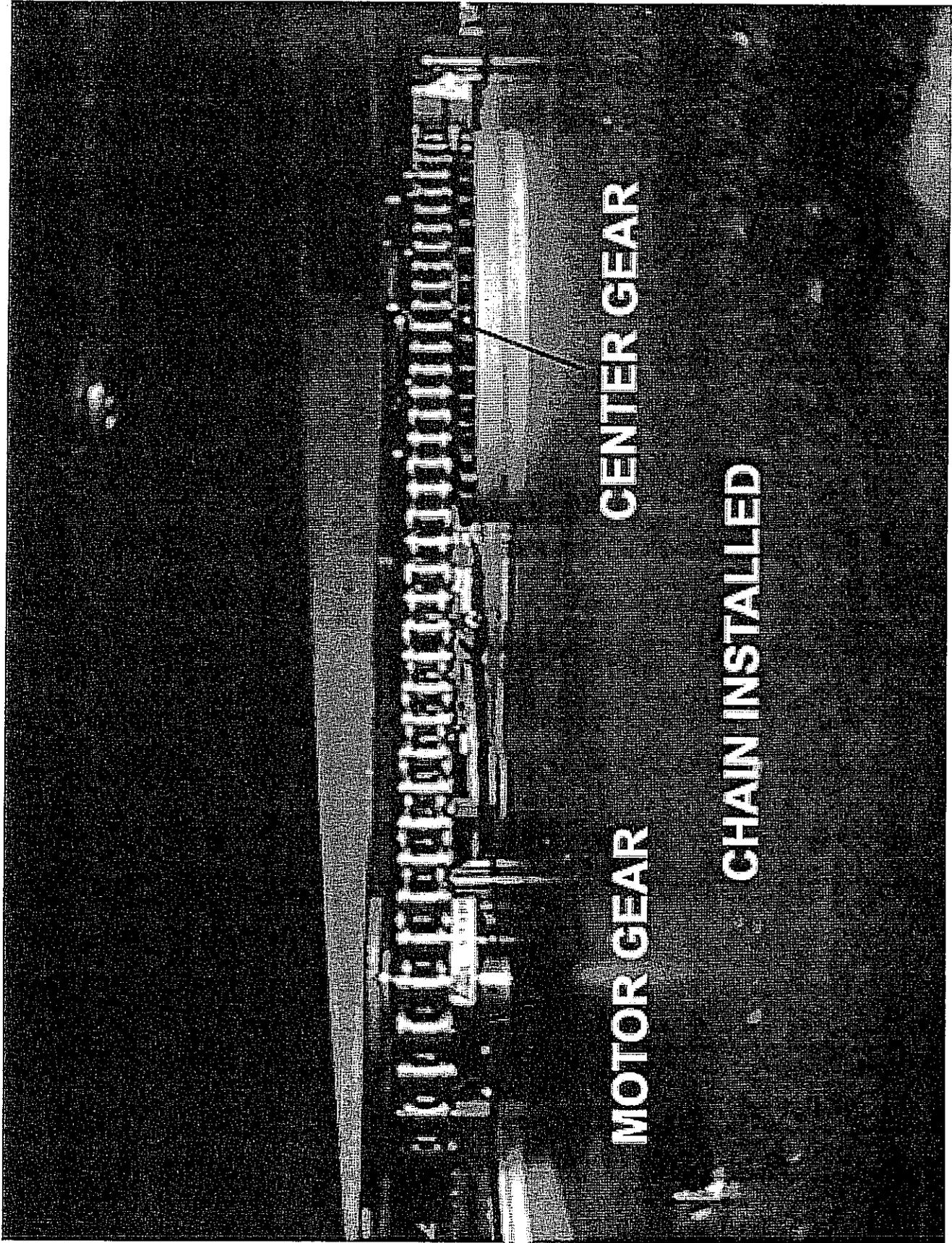
LIFTING THE MOTOR INTO PLACE





FITTING CHAIN OVER GEAR AT BASE OF MOTOR

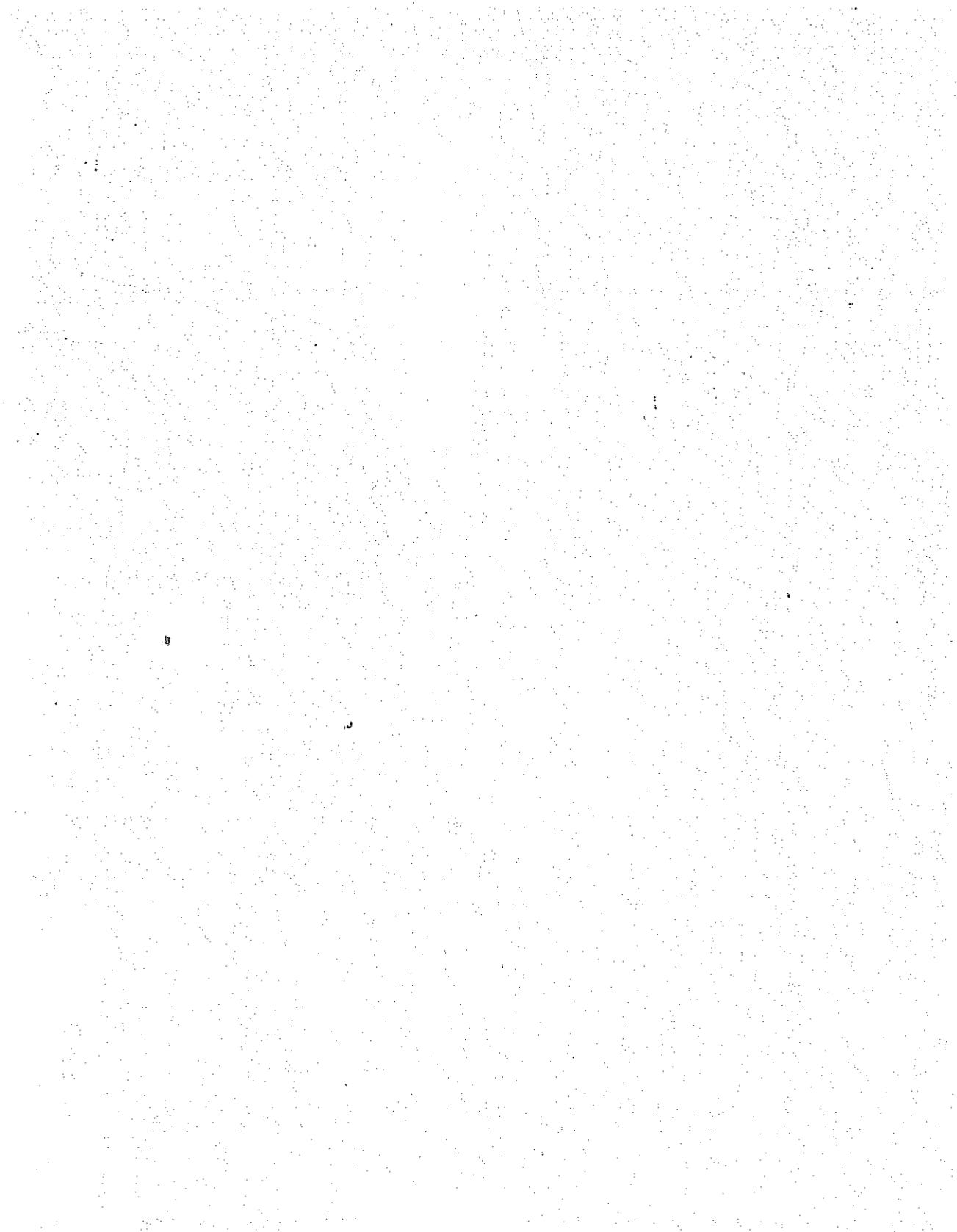




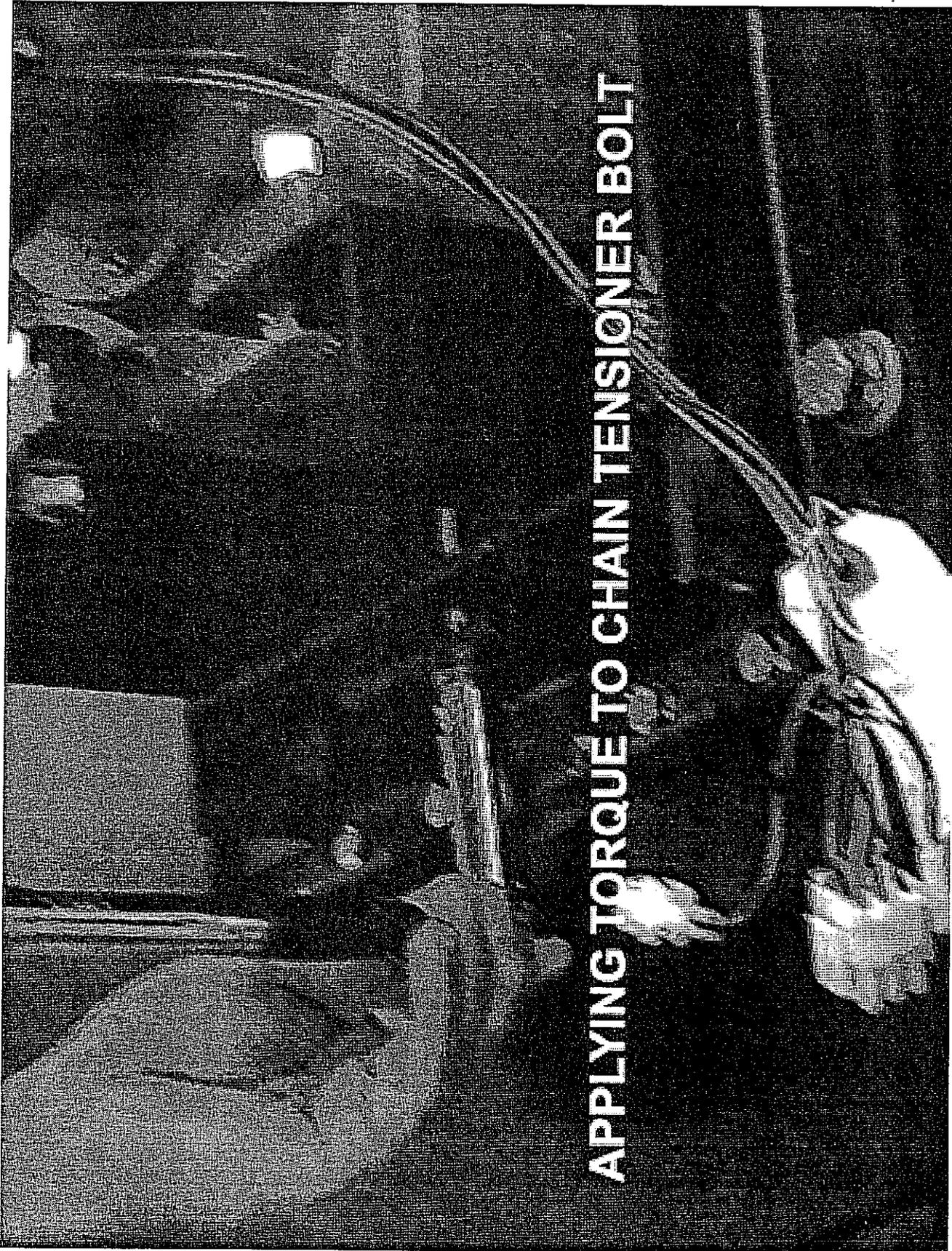
MOTOR GEAR

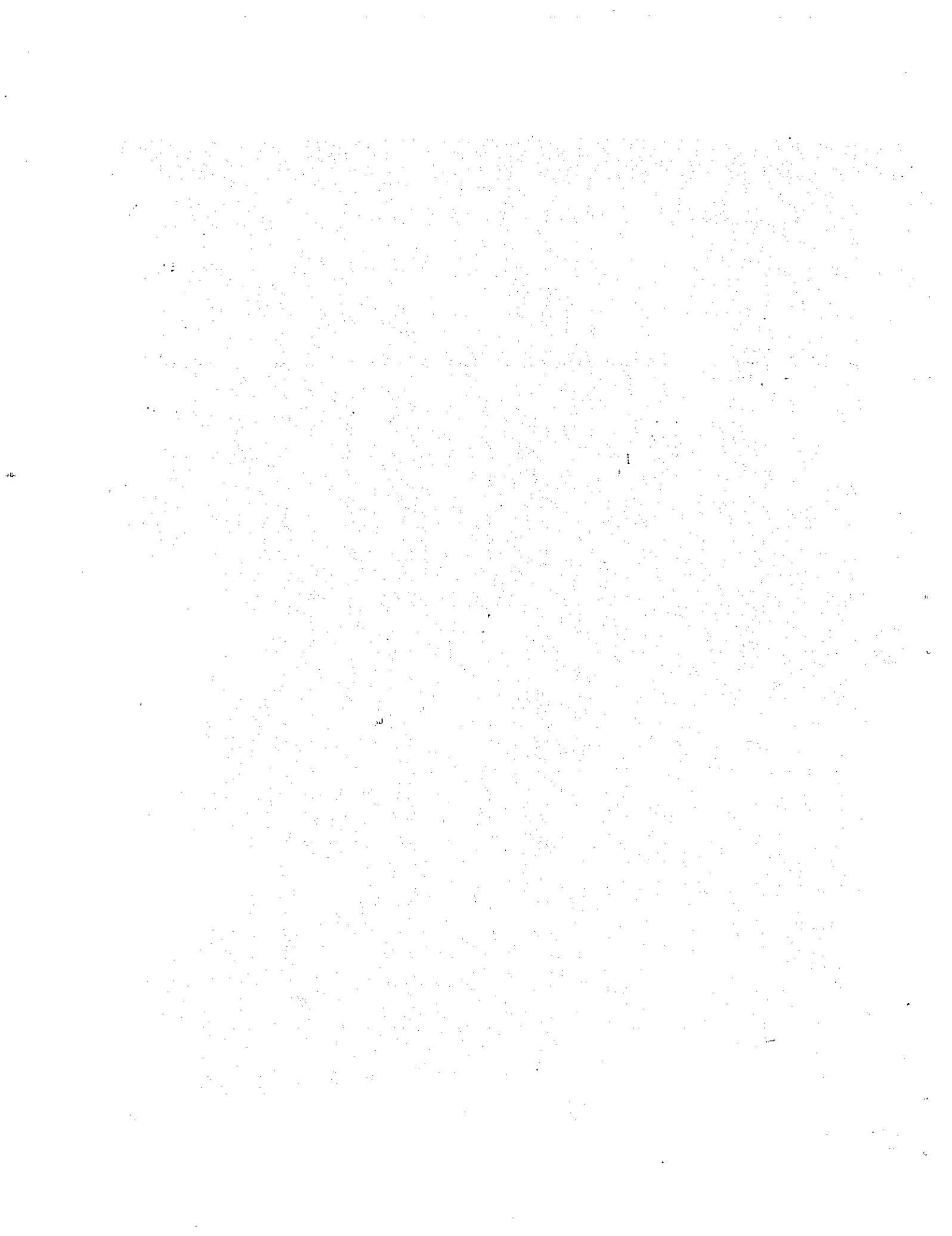
CENTER GEAR

CHAIN INSTALLED



APPLYING TORQUE TO CHAIN TENSIONER BOLT





**ROTARY SHAFT
ENCODER**

T075-09875-00

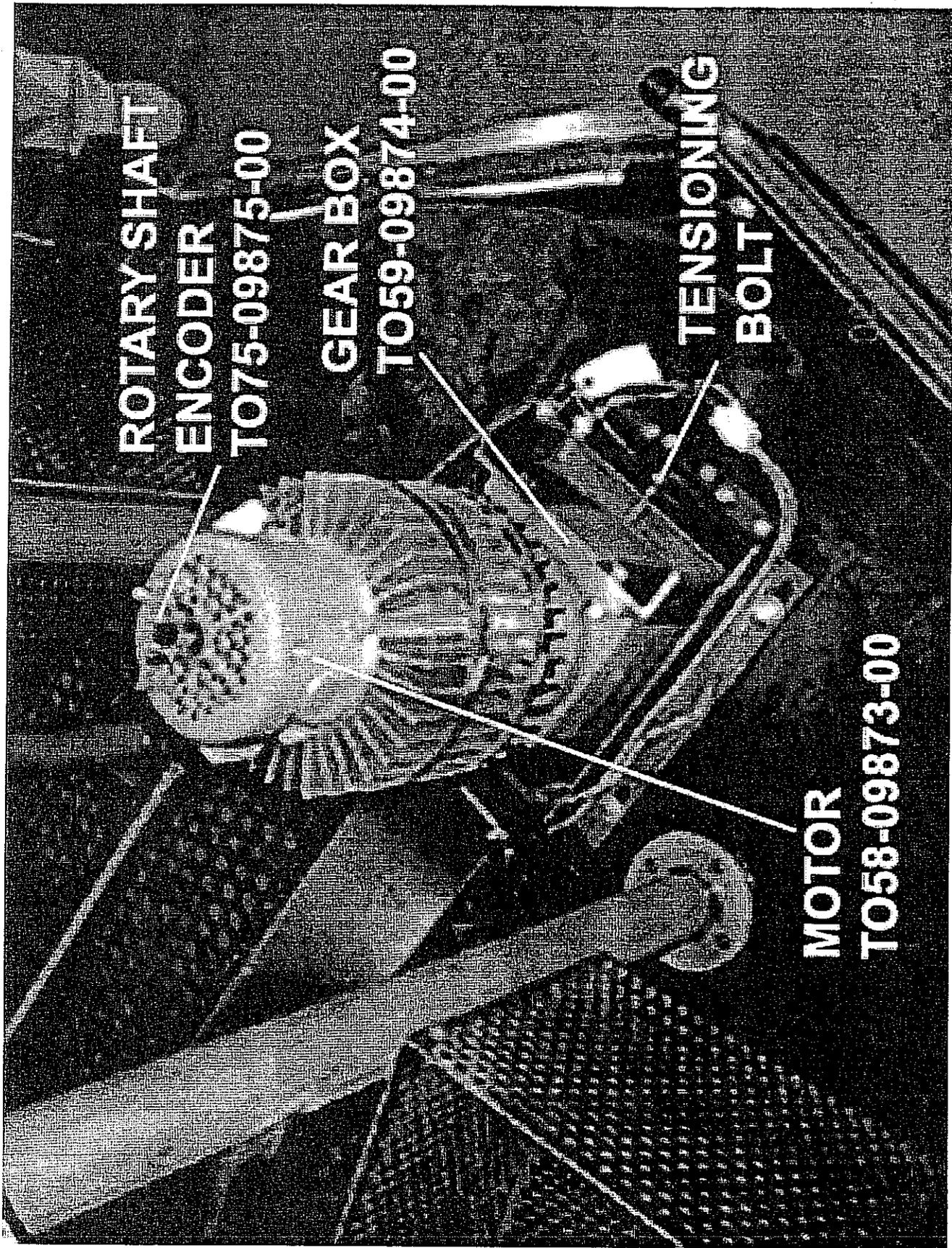
GEAR BOX

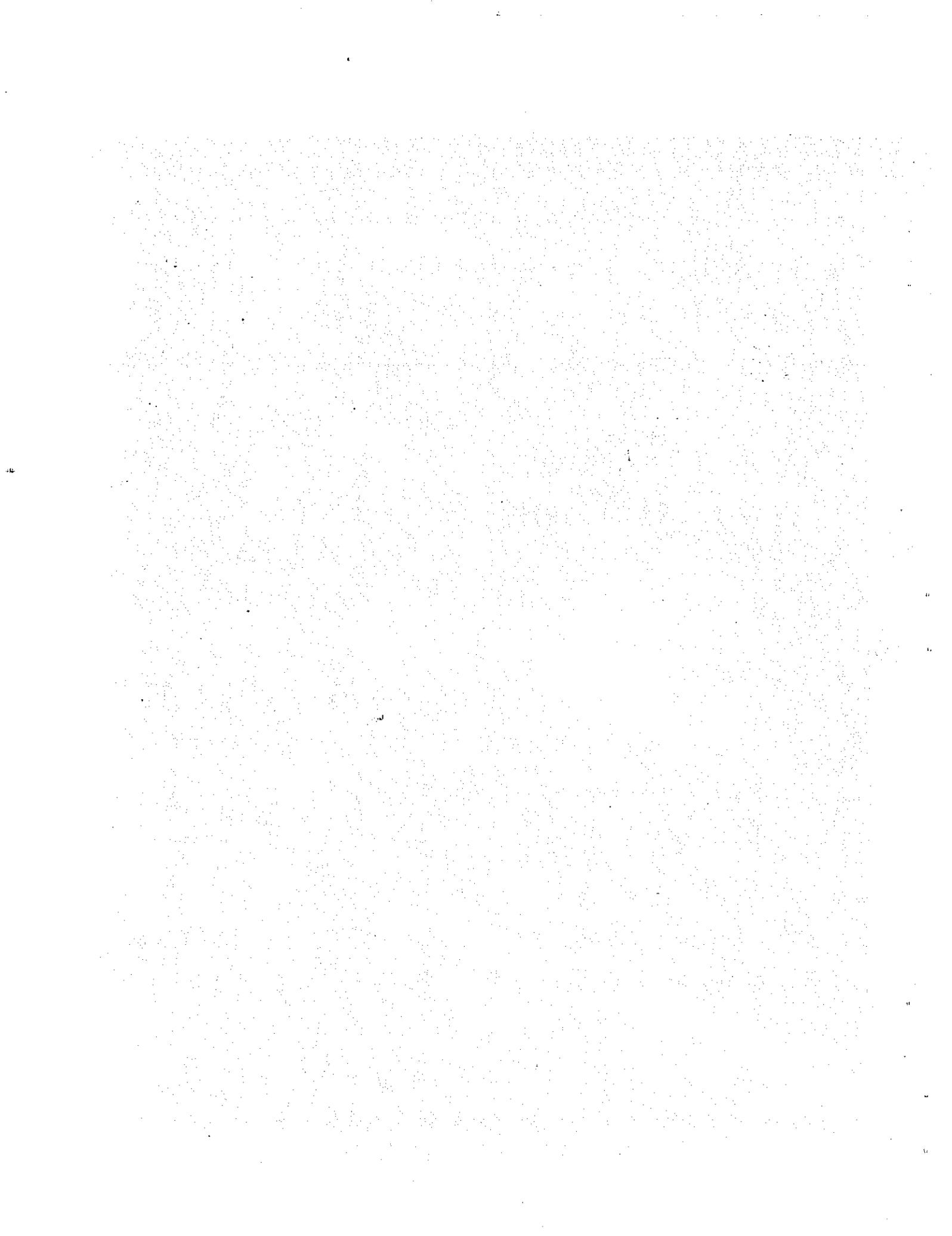
T059-09874-00

**TENSIONING
BOLT**

MOTOR

T058-09873-00





COIN LOGIC PCB

TC015-097311-00

TEST MENU BUTTON

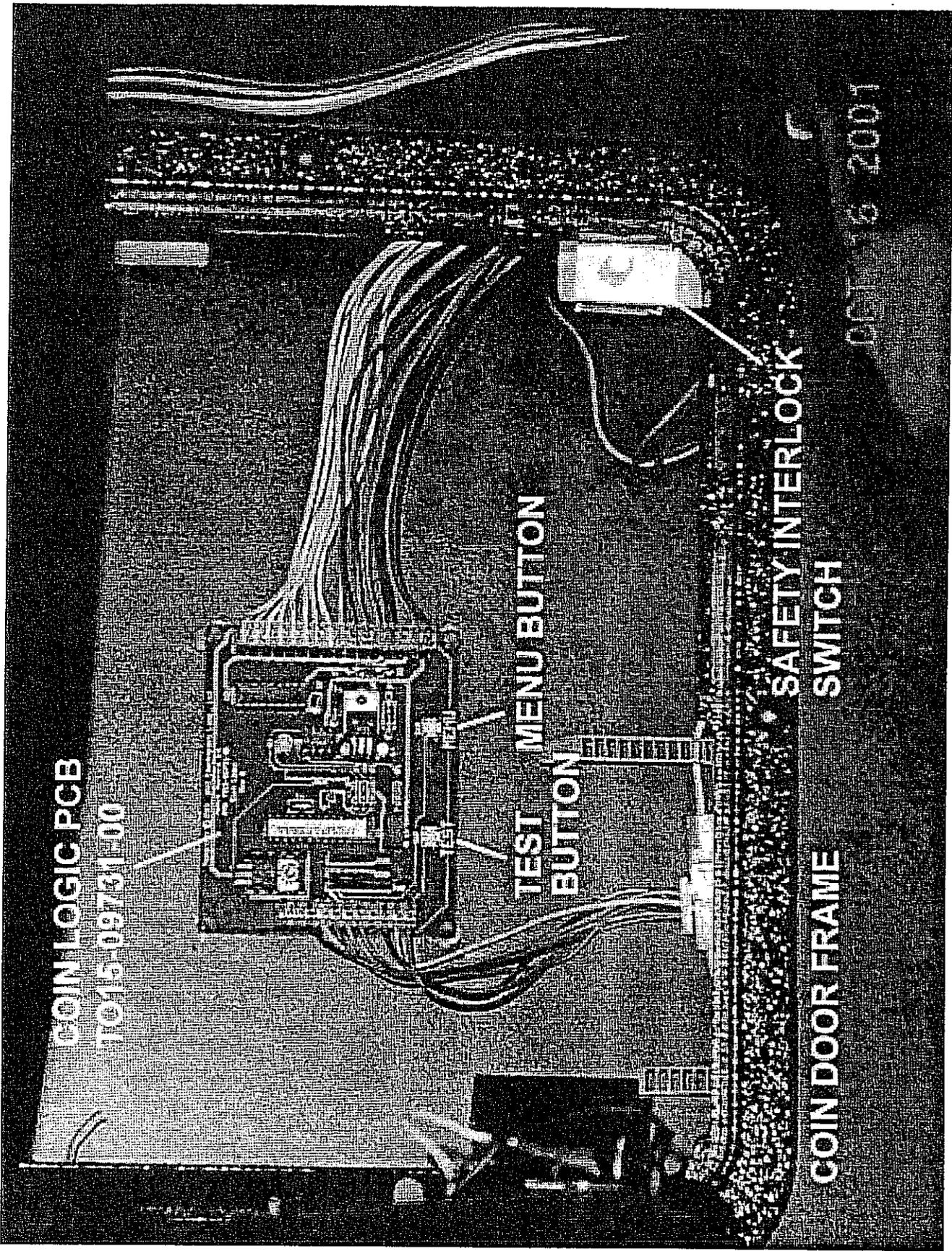
TEST MENU BUTTON

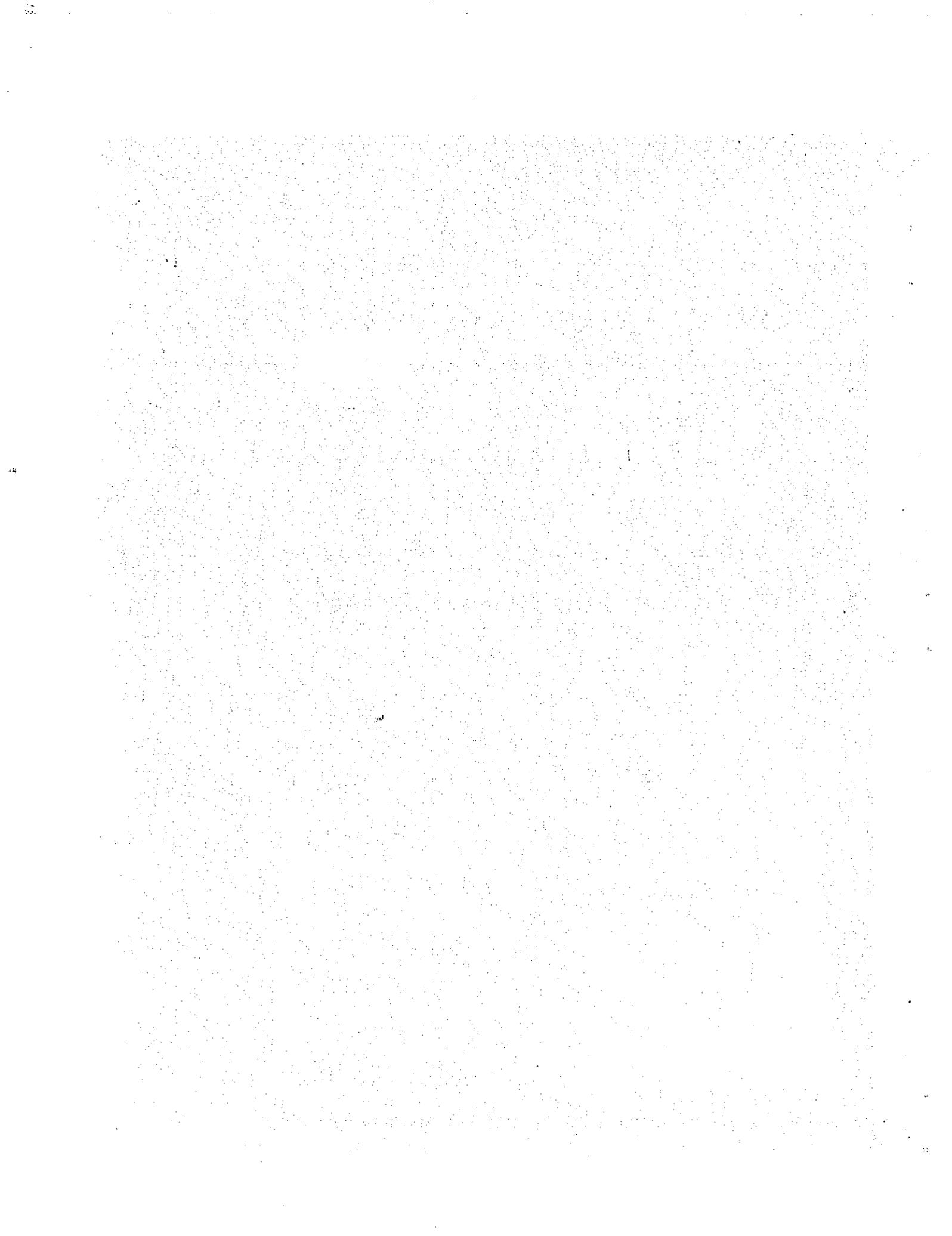
SAFETY INTERLOCK

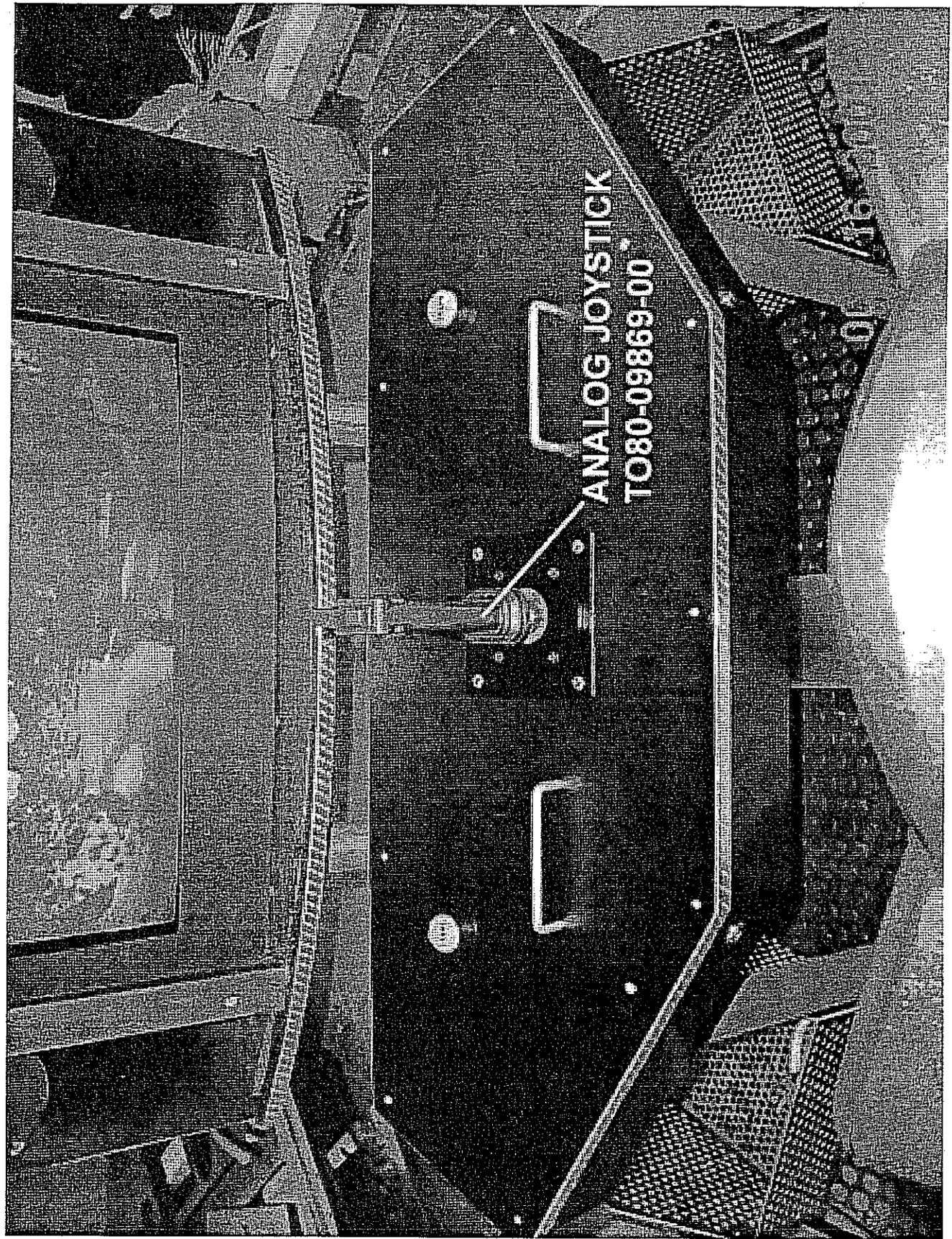
SWITCH

COIN DOOR FRAME

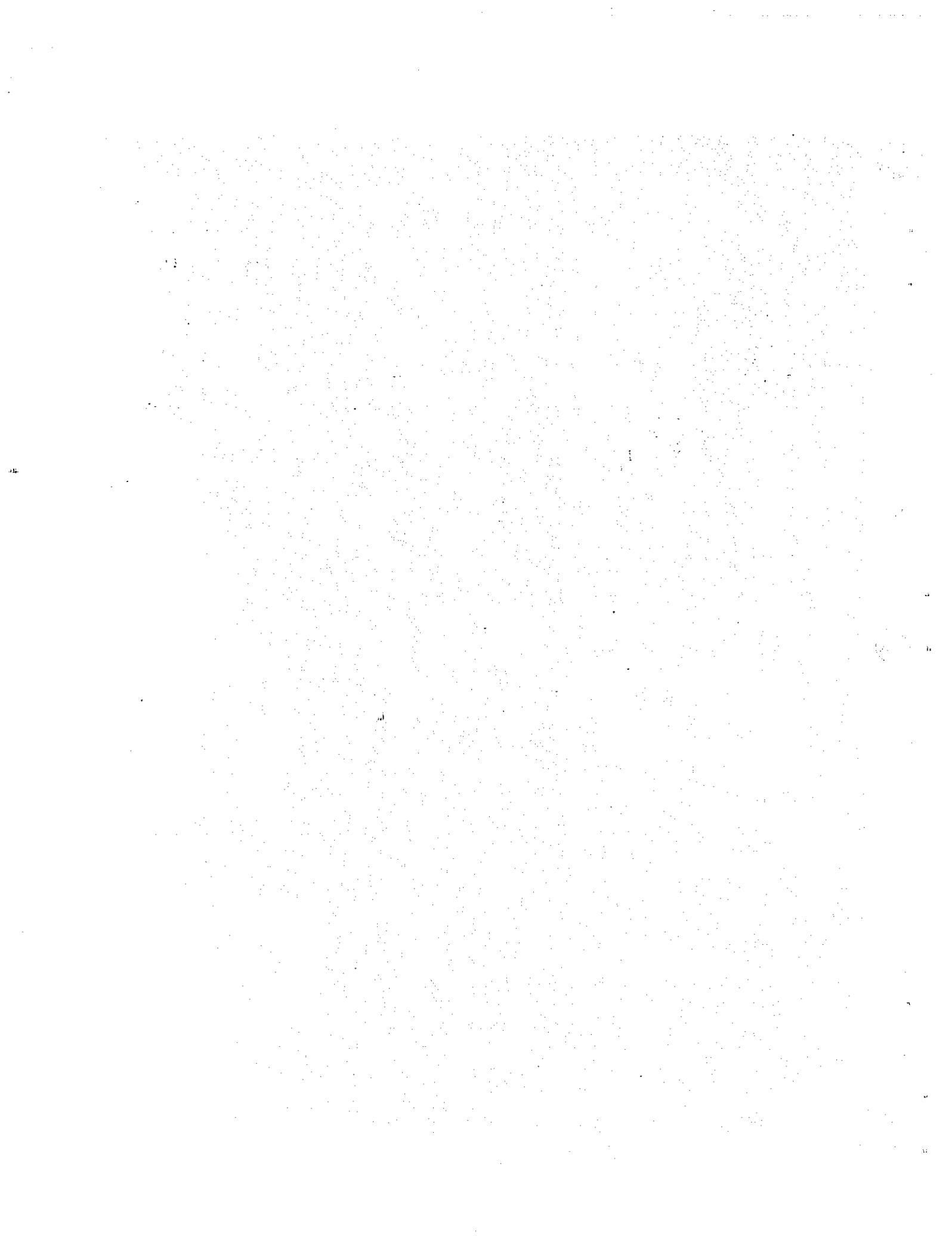
DET 16 2001

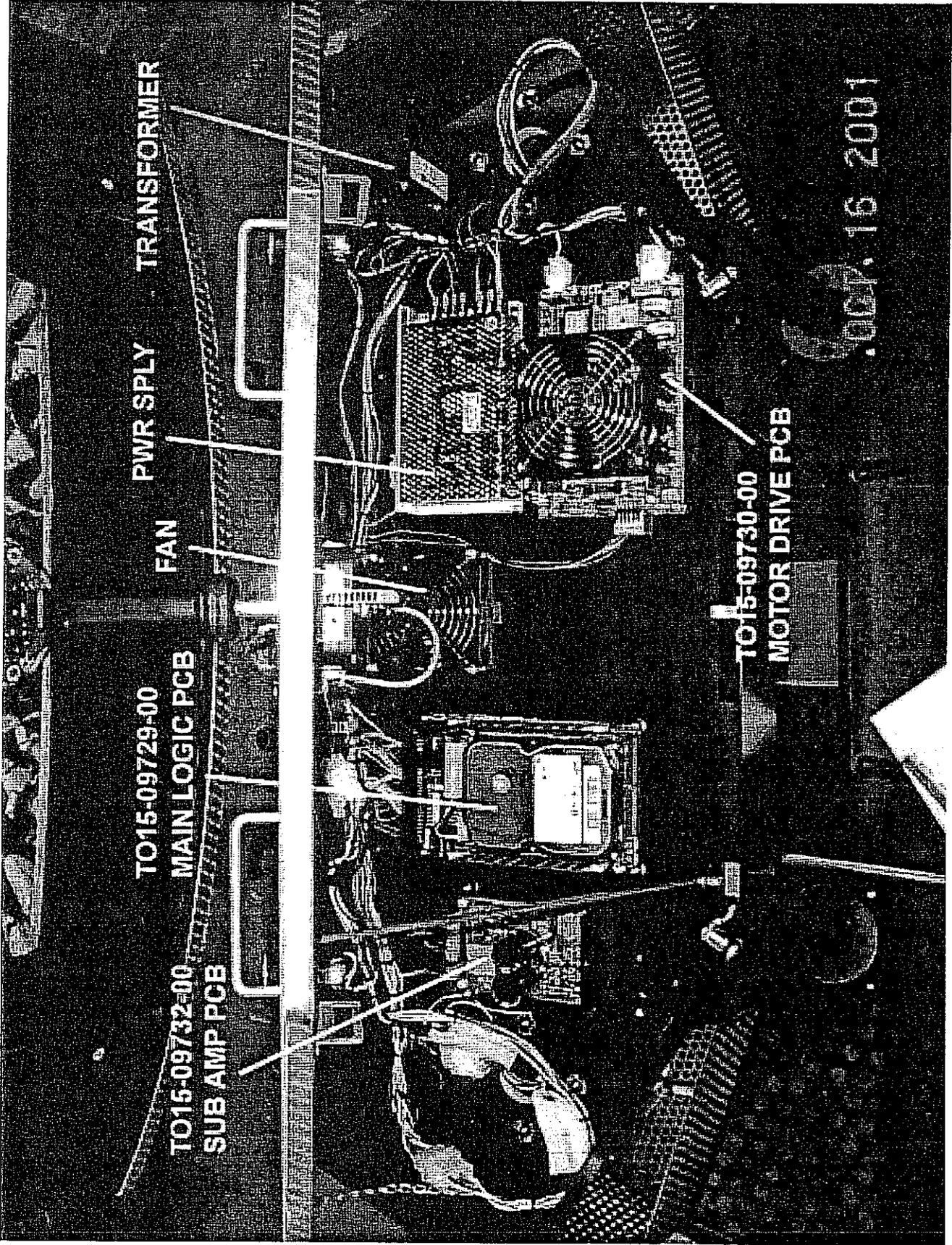






ANALOG JOYSTICK
TO80-09869-00





TO15-09729-00
MAIN LOGIC PCB

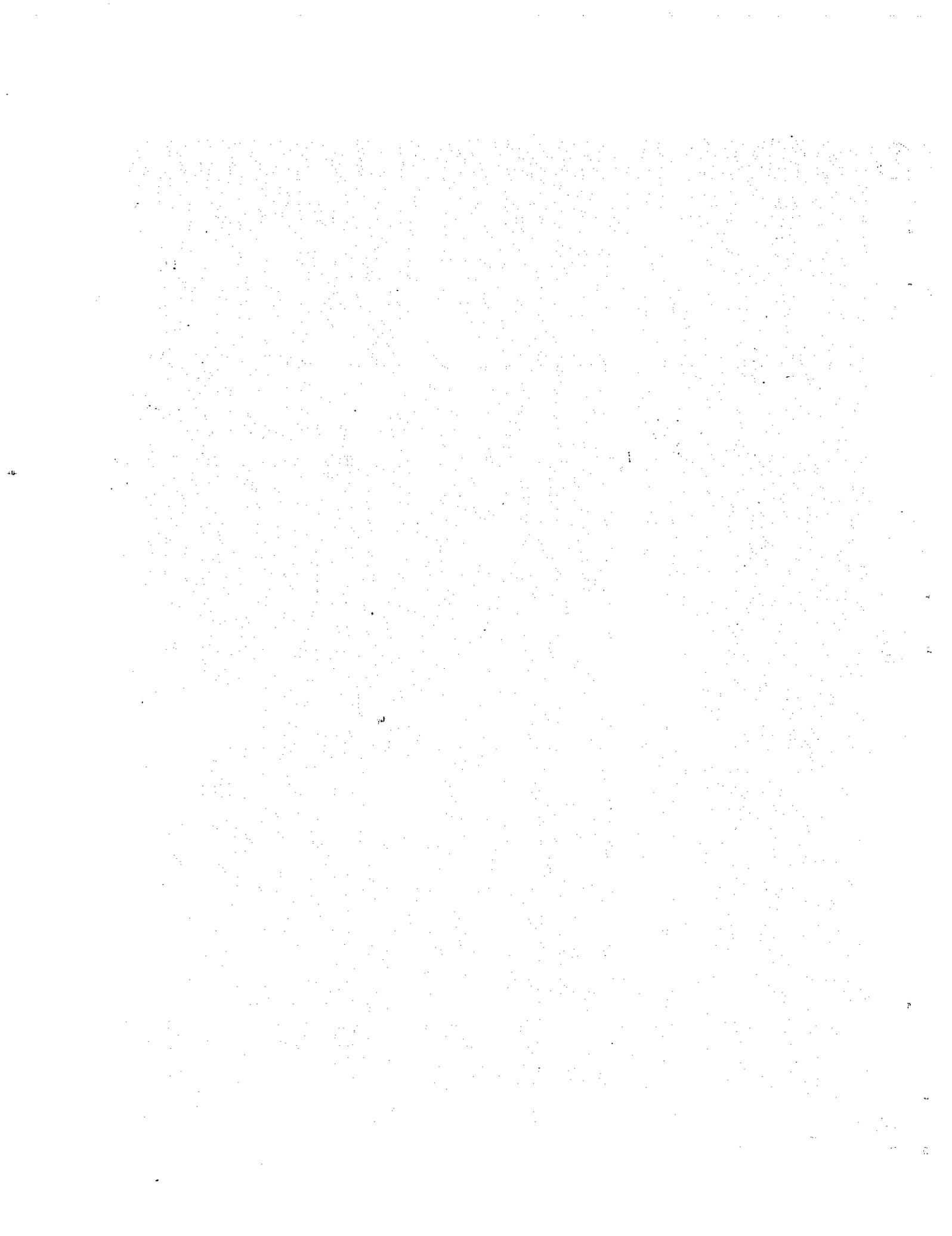
TO15-09732-00
SUB AMP PCB

PWR SPLY
TRANSFORMER

FAN

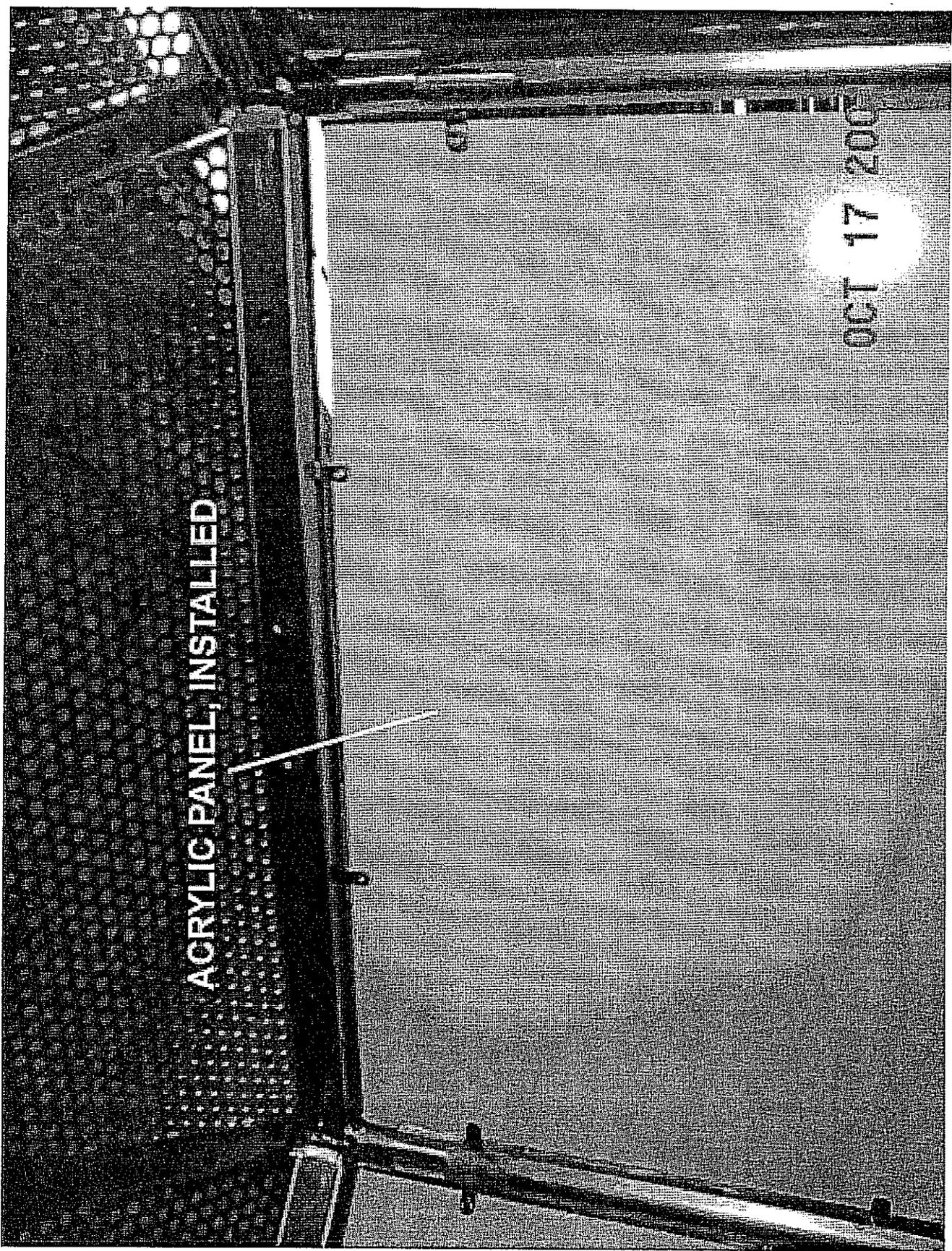
TO15-09730-00
MOTOR DRIVE PCB

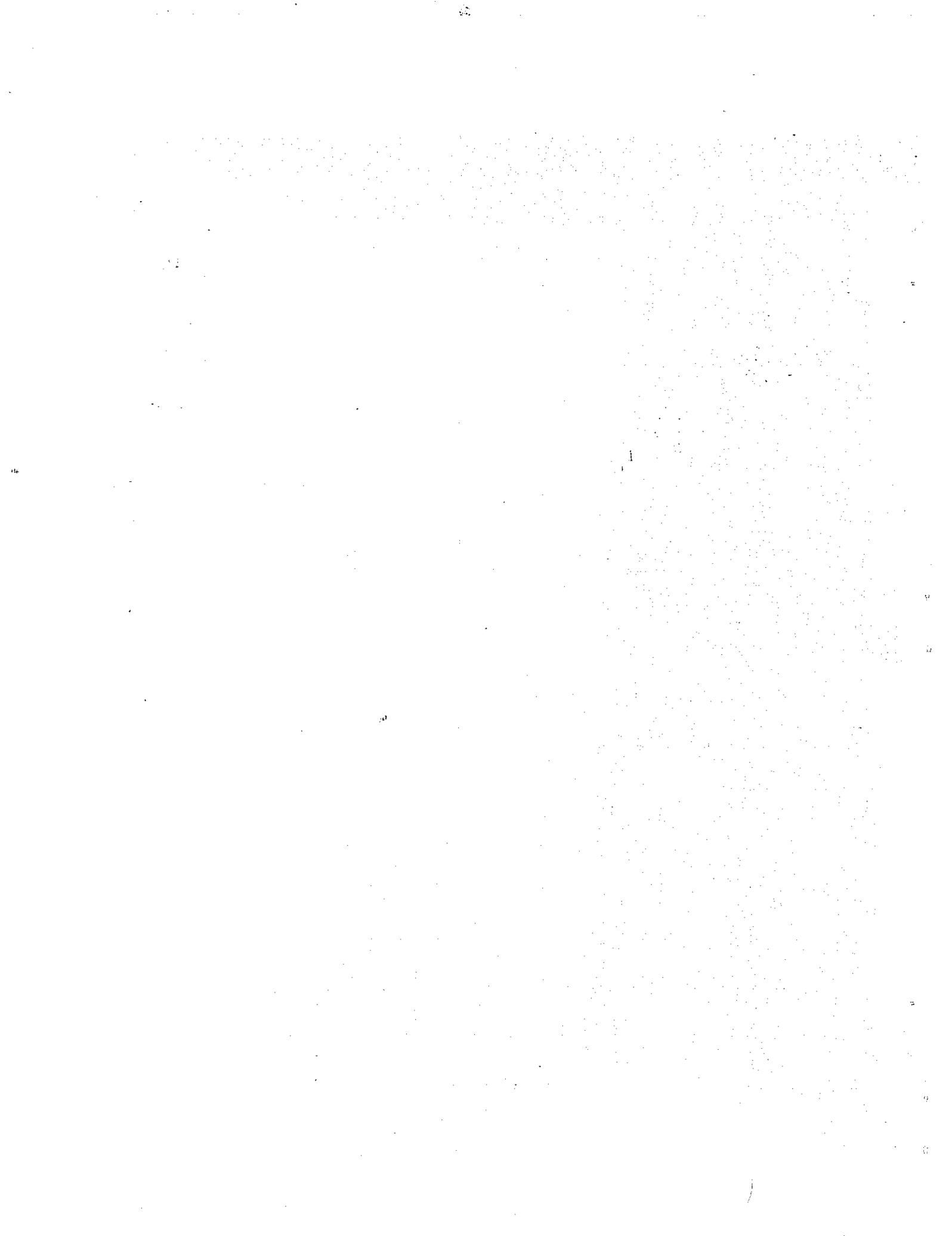
OCT. 16 2001



ACRYLIC PANEL, INSTALLED

OCT 17 2005





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Seller warrants that its printed circuit boards and parts thereon are free from defects in materials and workmanship under normal use and service for a period of ninety (90) days from the date of shipment. Seller warrants that its video displays (in games supplied with video displays) are free from defects in material and workmanship under normal use and service for a period of thirty (30) days from the date of shipment. None of the Seller's other products or parts thereof are warranted. Seller's sole liability shall be, at its option, to repair, replace, or credit Buyer's account for such products which are returned to Seller during said warranty period, provided:

- a) Seller is promptly notified in writing upon discovery by Buyer that said products are defective.
- b) Such products are returned prepaid to Seller's plant; and
- c) Seller's examination of said products discloses to Seller's satisfaction that such alleged defects existed and were not caused by accident, misuse, neglect, alteration, improper repair, improper installation, or improper testing.

In no event shall Seller be liable for loss of profits, loss of use, incidental or consequential damages.

Except for any express warranty set forth in a written contract between Seller and Buyer which contract supersedes the terms herein, this warranty is in lieu of all other warranties expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose, and all other obligations or liabilities on the Seller's part, and it neither assumes nor authorizes any other person to assume for the Seller any other liabilities in connection with the sale of products by Seller.

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