WISDOM INDUSTRIES, Ltd.

MFG: WISDOM COMPANY
NAME: GRAVITRON
TYPE: NON-KIDDIE

February 25,1998

To Whom It May Concern:

The question arose about the safety of operation of a Gravitron that apparently has the cam followers, or bearings, mounted to the back of the seats froze up and not turning freely.

While this will diminish the effect and thrill of the ride, this alone should not be a safety concern.

The operator should be cautioned to watch passengers and not allow them to walk their way up the seat while spinning at full speed.

James R. Merrell

James R Merrell

Wisdom Industries, Ltd.

P. O. Box 5000 — Sterling, Colorado 80751 — 970-522-7515 — Fax 970-522-2902

GRAVITRON

WMI Industries, Ltd.
P.O. Box 5000
Sterling, CO 80751
303-522-7515

GRAVITRON MANUAL

TABLE OF CONTENTS

THE GRAVITRON

INTRODUCTION

This "Operation Manual" has been written for the benefit of the ride operator and owner. WISDOM MFG. INC. advises all ride operators and owners to read this book before operation.

INTENDED USE

The equipment herein described is intended to be used by a commercial operator to provide a service to the buyer's customers. As a commercial operator, the buyer agrees to operate and maintain the equipment for its intended use in a professional and competent manner as per Wisdom recommendations and instructions, industry and governmental standards, and good commercial practices, using professional and competent mechanics and operators. If at any time, and for any reason the equipment cannot be adequately and safely operated for its intended use, the buyer agrees not to operate the equipment until proper repairs or corrections are made.

SPECIFICATIONS

CAPACITY.....45 adults or children
(900 per hour)

ROTATION.....24 RPM

SET UP AREA.....48' x 40' minimum
(normally 56' x 45')

NUMBER OF LIGHTS.....1360 - 110 volt standard
312 - front lights (option)
154 - top sign (option)
256 - inside lights (option)
acrylic lamps 10W

MOTOR POWER.....30 HP

ELECTRICAL.....50 KW

ASSEMBLY PROCEDURE

1. Select site and mark out the area where the GRAVITRON is to be set up for operation.

2. Lower the levelling jacks and level ride, usually rear pair first and then the front pair.

3. Unfold front and rear panels on trailer.

4. Remove platform support blocks from front and rear between platform and trailer. Use hydraulic jack to raise platform.

5. Connect V-belts to set up motor. (This is the small motor on the passenger side of the trailer.)

6. Remove pins in top travelling braces, and set up top display sign. Place support braces and pin into place.

7. Place trailer center stands under trailer. One on the rear of trailer frame spreader near main bearing. Two go on each side of trailer frame near the spreader ahead of the main bearing.

8. Swing out outriggers and pin on braces. Place braces with turnbuckle on the side of each outrigger with the low ears.

9. Put tires on outrigger spindles and tighten lug nuts.

10. Place one stand under each outrigger near end.

11. 110 volt power is all that is necessary for setting up the GRAVITRON. 110 volts is used to operate the hydraulic pump for the platform sides, and for the small rotation motor used to rotate the platform while setting up the ride panels.

12. The set up motor is controlled by the man that stands on the platform behind the ride while it is set up. The circuit breaker for the motor is in the large main electrical box.

13. The motor is able to go forwards and backwards with its control. Be sure the motor has stopped rotating before reversing the switch or it may keep going the same way it is rotating.

14. Unpin traveling turnbuckles from sides.

15. Switch on hydraulic pump and lower the decking opposite the sign and secure the two platform bolts under the deck. The circuit breaker in the center console on the bottom right turns on the hydraulic pump. The control handle protrudes through the step going into the center console.

16. After lowering the sides of the platforms the optional top sign that says GRAVITRON may be installed. Install the RON first. Then install the VIT. The end section the GRA is placed last.

17. The sign sections are pinned to the bottom of the display sign first then tipped up into place. The sliding locks, lock the top sections into place. Plug in all sections.

18. Tighten the four platform bolts under the deck.

19. Set up steps for easy access onto platform.

20. Remove aluminium beam and set up one end on the center and the other at the rear of the trailer. Screw up center until beam is level.

21. Working from the rear erection platform, move all loose sweep trusses clear of the panels.

22. Disconnect the left hand sweep which is pinned to the panel oposite the door panel and slide it just past the center of the panels. Insert pin and wedge in hole provided.

23. Remove center couch from the first panel in the stack.

24. Using the chain block, raise the first panel clear of floor travelling pins and using the switch adjacent to the erection platform, rotate platform counter-clockwise until the panel moves away from the stack.

25. Turn the ride almost one-half turn. Slide the first panel back so that it meets up with the door panel.

26. Loosely attach floor wedges, position top truss, and pin and wedge. Tighten wedges and put in saftey keys.

27. Turn platform clockwise until the second panel of the stack is under the chain block.

28. Repeat this operation until No. 7 panel is ready to go into position.

29. Turn the ride until the panel is centered in the opening.

30. Fold back platform that is on the rear of the trailer.

31. Raise bottom of the panel and tip sideways. Push out until clear of the other panels. Let the panel back down and place on pins on the floor. Raise the panel so it can be pinned to the sweeps.

32. Raise the panel until it is in position. Swing last truss into position and secure with pins and wedges.

33. As one side of the GRAVITRON is now assembled, revolve the platform so that the second set of stacked panels are under the aluminum beam.

34. Proceed as with step 10 to complete the second half of the ride.

35. Pin and wedge the center of the panels.

36. The center fences can now be set into place and pinned together with 1/4 inch bolts through the connecting tubes.

37. Position vinyl top on the center of the ride and proceed to roll out the top, making sure that the two turnbuckles are over the panel with the slot, which is directly opposite the door.

38. Hook up turnbuckles and tension cable.

39. When the top is secured, wind up the center with the wheel provided in the ceiling of the center console. *CAUTION* DO NOT OVERTIGHTEN TOP. THIS CAN PUSH OUT CANVAS CENTER.

40. Open the door and revolve platform so that the door opening is to the front of the trailer.

41. Start from one end and lift three couches forward on one support frame. The left and right couches have hooks the support frame sets onto. This holds the couches in an upright position.

42. Continue with this procedure until all couches have been secured.

43. Unpin each tumble board and pin to the seat support truss. Two holes have been drilled into each tumble board behind the plywood and also through the seat support truss to pin the board so that it is held out at the same angle as the seats. Push the pins all the way through both tubes and safety key. Both safety keys will be needed to hold the board back when tearing down.

44. Check and tighten all wedges, pins, etc. throughout the ride.

45. Install and pin door side panels.

46. Set up skirting panels under the turn table. Be sure that they are 1 to 2 inches from the edge of the turntable.

47. Set up perimeter fences and quartz light stands.

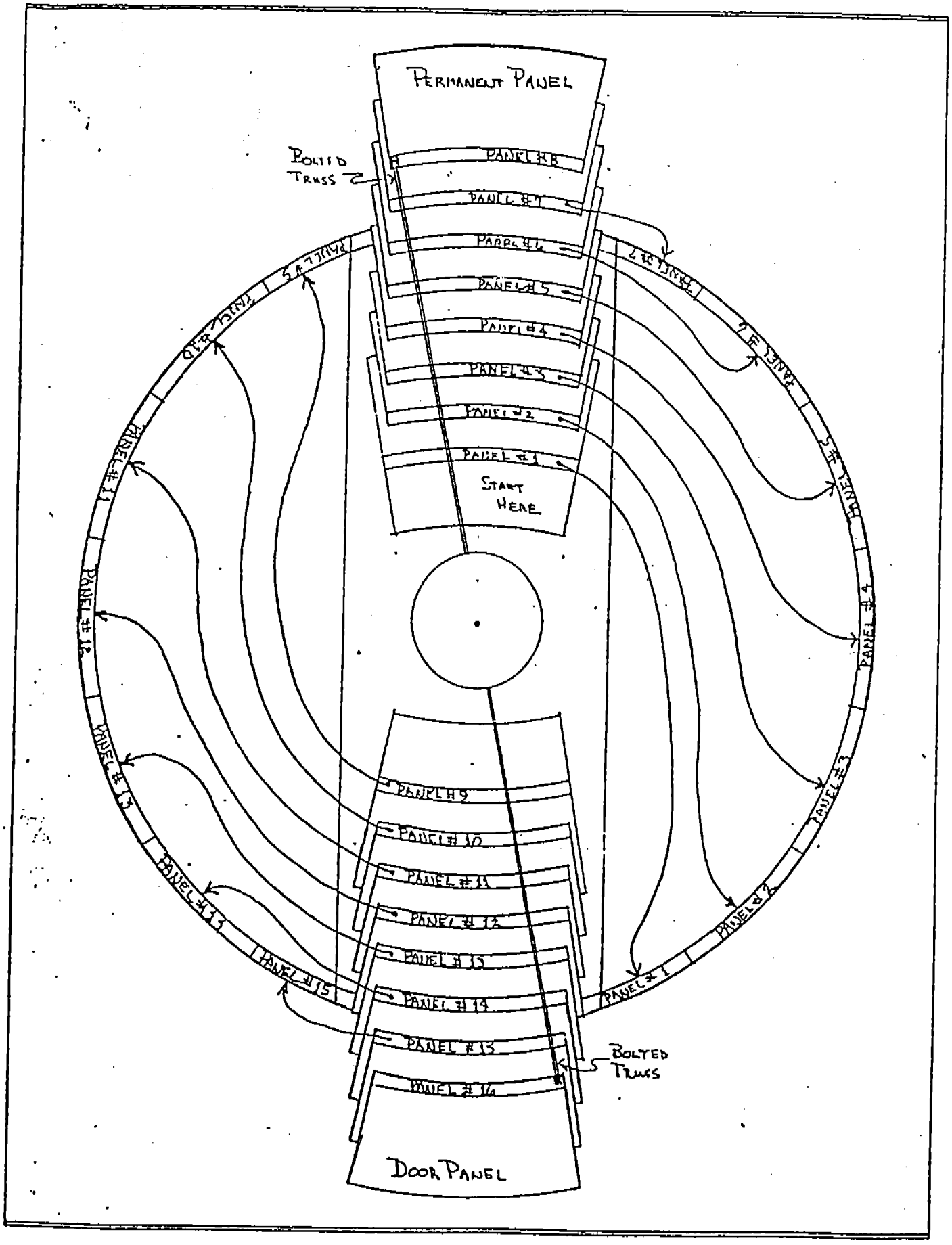
48. After the ride has been completely assembled, a check must be made by the supervisor to ensure all equipment has been correctly secured.

49. A number of test runs without passengers must then be made to ensure the ride is safe and secure for passengers.

DISMANTLING PROCEDURE

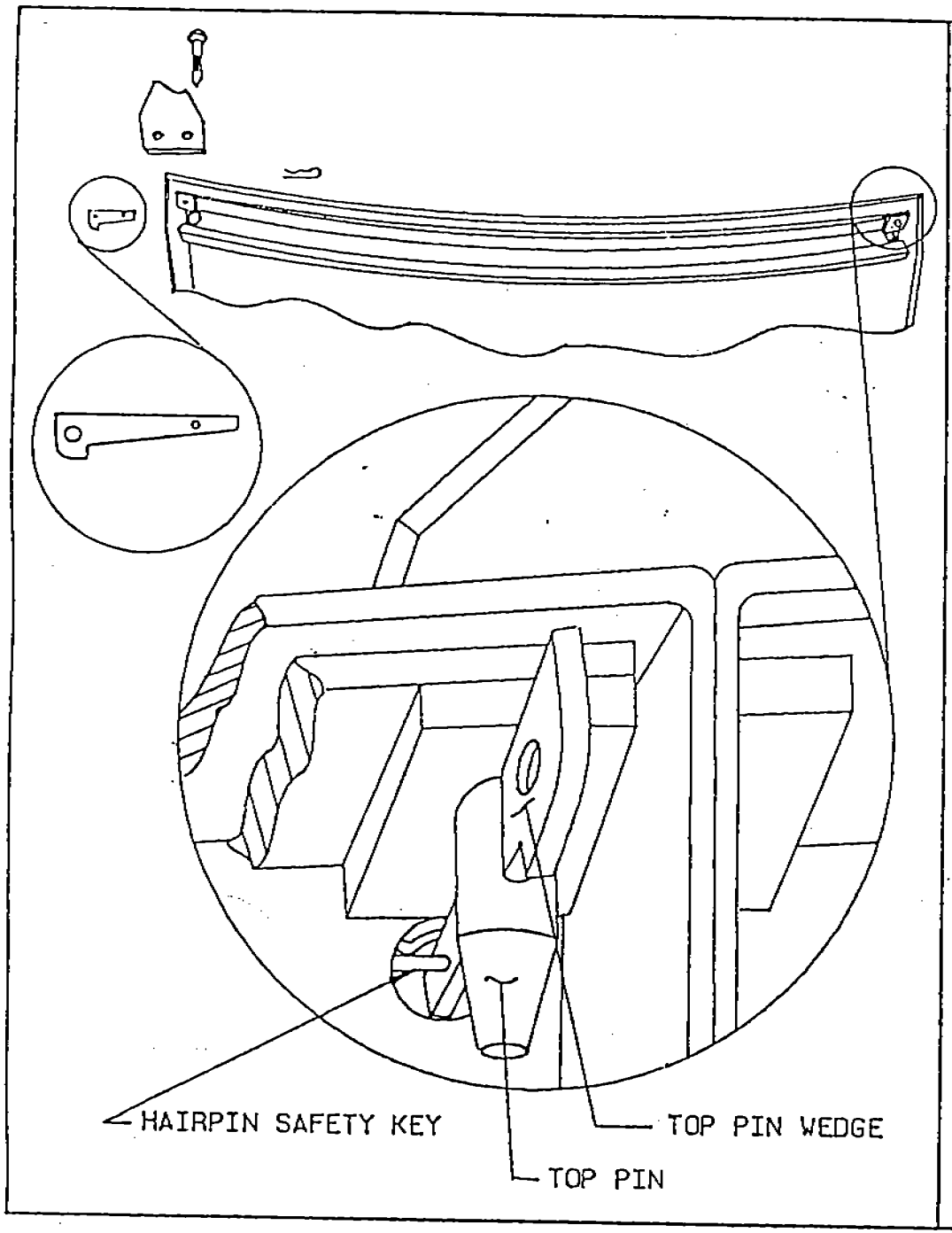
To dismantle and "pack up" the Gravitron, please reverse the above procedures.

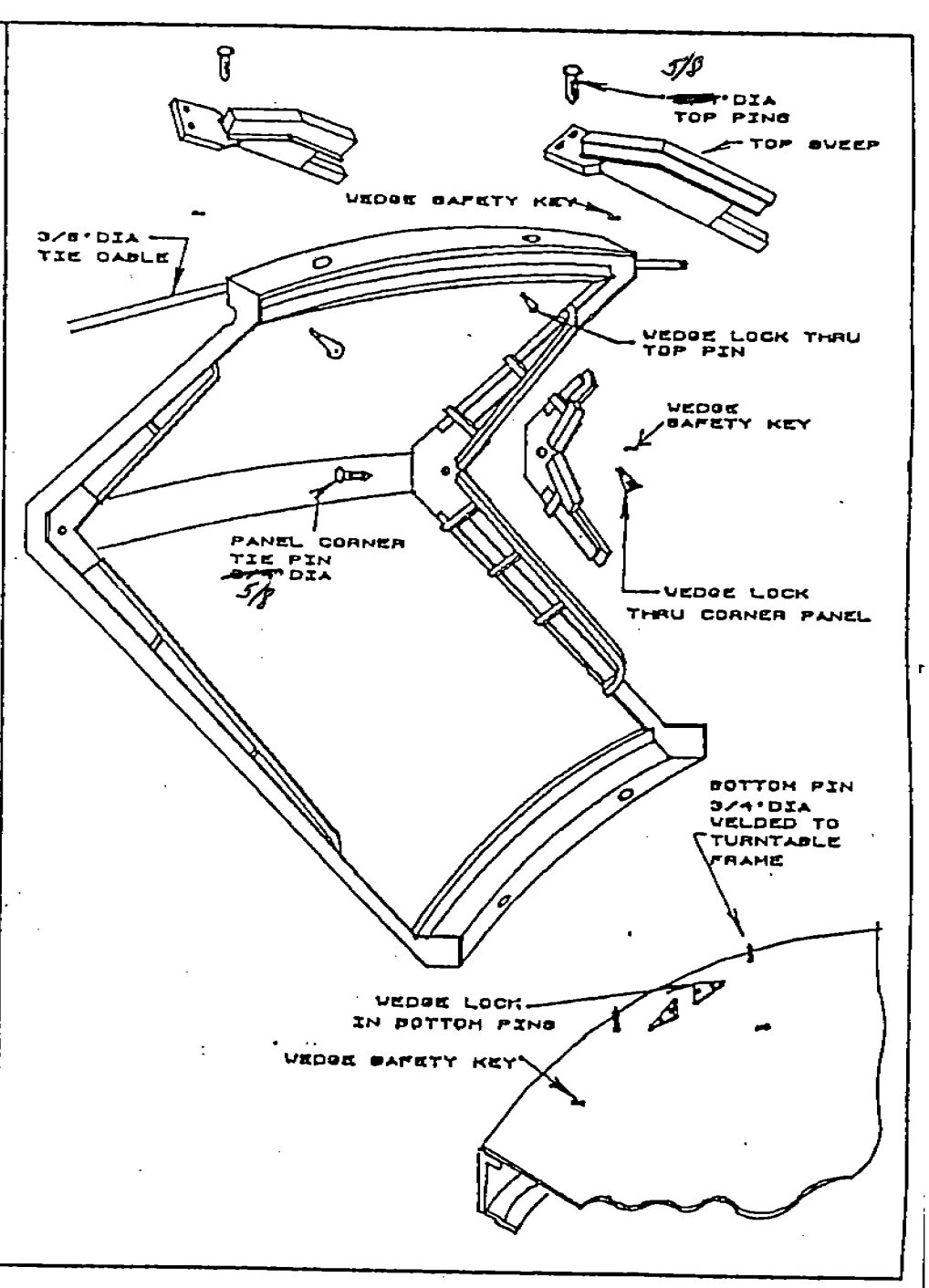
NOTE: ***** Refer to the Maintenance Check List for daily and periodical safety checks.



BY [illegible] DATE 6/12/81 SUBJECT PANEL SET-UP PAGE ___ OF ___

FILE IN GRAVITRON S.O. ___


HAIRPIN SAFETY KEY
TOP PIN WEDGE
TOP PIN


3/8
DIA
TOP PINS
TOP SWEEP
WEDGE SAFETY KEY
3/8" DIA
TIE CABLE
WEDGE LOCK THRU
TOP PIN
WEDGE
SAFETY KEY
PANEL CORNER
TIE PIN
DIA
5/8
WEDGE LOCK
THRU CORNER PANEL
BOTTOM PIN
3/4" DIA
WELDED TO
TURNTABLE
FRAME
WEDGE LOCK
IN BOTTOM PINS
WEDGE SAFETY KEY

OPERATOR'S INSTRUCTIONS

1. Turn main switch "ON" in the electrical box at the back of the trailer.

2. Check that all switches are in the "ON" position.

3. Open door with switch adjacent to door.

4. Turn all switces "ON" in the center console.

5. Press the "OPEN" door button to allow customers to come in. Once the customers are in and positioned, close the door by pressing door "CLOSE" button.

6. SMOKING IS NOT ALLOWED IN THE GRAVITRON.

7. Check that there are no objects on the floor or console that can fly out and hit the passengers.

8. Do not allow passengers to turn upside down, sideways, or slide up so that their heads are above the top of the couches.

9. Once everyone is positioned safely, press the ride "ON" button which starts the main electrical motor and accelerates the ride to the present speed of 24 RPM. When the seats have raised off of the floor to their top position hold the button for about ten more seconds. Then let go of the button. The ride will now coast and after a short time the couches will float back down to the floor.

11. Wait for a couple of revolutions and slowly apply the electric brake to slow the ride down sufficiently so that the door can be partly opened and the outside steps become visible. Six inches from the floor is enough.

12. Press the electric brake handle to smoothly bring the ride to a stop at the steps.

13. Press the door "open" button to allow the happy customers to file out past the next group eagerly waiting to board.

EMERGENCIES;

In the event of an emergency, RELEASE THE MOTOR BUTTON IMMEDIATELY AND PRESS THE BRAKE HANDLE ON HARD, and then follow the standard stopping procedure before opening the door.

GRAVITRON CHECK LIST
AFTER SET UP

OUTSIDE RIDE CHECKLIST

1. Check that trailer stands are tight.
2. Check that wing safety bolts are installed, tight, and safety keyed.
3. Check that the outrigger braces, with the turnbuckle, are pinned on the side with the low ear.
4. Check that the outrigger turnbuckles are snug. Do not over tighten.
5. Check that the outrigger brace pins are all installed and have safety keys.
6. Check that skirting panels do not rub on idler tires and are not under the edge of the turntable.
7. Check that inside curved fence is safety keyed under the floor.
8. Check steps are level, stable, and no more than 8 inches to each step.
9. Check that the fence is more than three feet from the largest diameter of the turning portion of the ride.
10. Check that the cable in the canvas top is in the groove around the top of the ride panels and tight.
11. Check that work platform is folded back.
12. Check grid sign hinges and pins.
13. Check grid sign braces for safety keys.
14. Check that top sign brackets are pinned and safety keyed.
15. Check that top sign hooks are pulled down and fully engaged.
16. Check that top sign is plugged in.
17. Check that there is nothing on top of ride that can be thrown off while the ride is running.
18. Check that there is nothing that can fall onto the ride while the ride is spinning.

DRIVE SYSTEM

19. Check that drive belts are hooked up and adjusted.

20. Check that lock nut on drive belt adjusting turnbuckle is tight.

21. Check that drive wheel adjusting locknuts are tight.

22. Check that all wheel lug nuts are tight.

23. Check that all three wheel brakes work.

24. Check that idler tires have full tread contact.

25. Check air pressure in all drive and idler tires they should be about 45-50 P.S.I.

26. Check that battery is filled with water and battery charger works.

INSIDE RIDE CHECKLIST

27. Check that the special top wedges are the only wedges used to pin the top of the panels to the sweeps.

28. Check that all pins and wedges are installed and tight

29. Check that all wedges and pins have safety keys.

30. Check that safety keys are in sweep hinge pins.

31. Check that couch support trusses are hooked on locks.

32. Check that all couches are evenly spaced and that the mounting bolts are tight. (If any are found loose use locktight but do not over tighten.)

33. Check that seats move up and down smoothly without catching.

34. Check that couplers between inside curved fence sections are all installed and pinned.

35. Check that door cables are in good condition and adjusted with equal tension.

DOOR CHECK LIST

36. Check that the door cable clamps are tight.

37. Check that door microswitches are adjusted properly so that door opener stops at the right place.

38. Check that the door does not slip down when the door is open.

39. Check that trap door is unlocked.

40. Check that there is nothing on the floor or console that is loose or can fly out while the ride is running.

DAILY INSPECTION CHECK LIST

OUTSIDE RIDE

DAY 1	2	3	4	5	6	7	CHECK
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	STAIRS LEVEL AND STABLE.
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	FENCE AT LEAST 3 FEET FROM BARREL OUTSIDE EDGE
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	WORK PLATFORM FOLDED BACK.
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	TOP CABLE IN GROOVE AND TIGHT.
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	TOP IS CLEAR OF ANY OBJECTS OR TOOLS.
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	TRAILER STANDS TIGHT.
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	TURNTABLE SAFETY BOLTS TIGHT AND SAFETY KEYED.

DRIVE

CHECK	
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	DRIVE AND IDLER TIRES ADJUSTED TO TOUCH RIM.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	DRIVE TIRE ADJUSTING LOCK NUTS TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	DRIVE BELT TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	DRIVE BELT TURNBUCKLE LOCK NUT TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	TIRE LUG NUTS ARE TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	TIRE PRESSURE 45-50 P.S.I.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	SKIRTING PANELS DO NOT TOUCH IDLER TIRES.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	SKIRTING IS OUTSIDE THE EDGE OF THE TURNTABLE.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	BRAKES ARE POSITIVE.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	RIDE CLEAR UNDER THE TURNTABLE.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	BATTERY TERMINALS TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	BATTERY FILLED WITH WATER.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	CHARGER TURNED ON AND OPERATING.

INSIDE RIDE

CHECK	
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	PROPER WEDGES IN TOP PINS.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	ALL WEDGES AND PINS TIGHT AND SAFETY KEYED.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	ALL SEAT SUPPORT TRUSSES HOOKED.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	ALL COUCH MOUNTING BOLTS TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	ALL CAM FOLLOWERS TURN EASILY AND NUTS TIGHT.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	ALL COUCHES MOVE UP AND DOWN EASY.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	TRAP DOOR IS UNLOCKED.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	ALL PANEL LIGHTS PLUGED IN.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	TOP OF LIGHT CONTROLERS AND AMPLIFIER CLEAR.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	FLOOR AND CONSOLE CLEAR OF LOOSE OBJECTS.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	CARPET CLEAN.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	CONSOLE AREA NEAT AND TRASH PICKED UP.

DOOR

CHECK	
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	TIGHTNESS OF DOOR CABLE CLAMPS.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	DOOR CABLES ARE IN GOOD CONDITION.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	OPEN AND CLOSE STOPS ARE ADJUSTED.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	OPENER CLUTCH AND BRAKE DO NOT SLIP.
[ ] [ ] [ ] [ ] [ ] [ ] [ ]	DOOR SIDE PANELS INSTALLED AND PINNED.

GRAVITRON MAINTENANCE INSTRUCTIONS

The GRAVITRON is designed for a minimum of maintenance over its operating life. Following are a list of items to check and service regularly.

FIBERGLASS PANELS

The fiberglass panels should be washed after each setup in order to protect the surface from dust abrasion and to make the panels more attractive. Once a month the panels should be waxed with a liquid wax to preserve the shine.

CARPETING

The carpeting should be vacuumed daily to remove sand from the surface. This is a high grade commercial carpet. Shampooing the surface is only necessary if grease or oil is somehow carried onto the surface.

SLEW RING BEARING

This is the main bearing supporting the center of the ride. The bearing is very large and requires greasing once a week for the first month, then once a month after that time. A high grade grease should be used. At least 1/2 liter should be used each time so the grease is moved through the complete bearing. The grease Zerks for the bearing are located between the trailer frame and the rotating table.

ELECTRIC MOTOR

Grease annually as directed on the motor.

SEATS

Check seat attaching bolts weekly. Locktite if necessary.

UPHOLSTERY

The upholstery should be washed each time you set up or each week with a good upholstery cleaner and rejuvinator, such as Armorall.

FLUID COUPLER

Change oil once a year and check level when the ride takes longer than 30 seconds for the couches to start to raise up. Motor starting current should not exceed 300 amps. for more than 5 seconds when properly filled.

V BELTS

Check the main drive belts each week for glazing, looseness, or cracks.

GEAR BOX

Check oil level weekly and change each year with a quality S.A.E. 50 weight oil.

DRIVE SHAFT BEARINGS

Grease each bearing monthly with 2 oz. of grease (about one shot of a grease gun).

DRIVE TIRE AND IDLER

Check the air pressure and lug bolts each week. The air pressure should be about 50 P.S.I..

IDLER WHEELS

Pack the idler wheel bearings each year with a quality bearing grease.

DOOR OPENER

Check the cables on the door opener each day for broken strands and replace if necessary. Grease pulley shafts weekly. Grease opener bearings and oil drive chains monthly. Adjust opener brake and clutch when door fails to open or stay open.

FAN

Check the belts on the fan for tightness and grease the fan bearings monthly.

PONY MOTOR

No periodic maintenance needed.

TURNTABLE

The turntable should be checked for cracks in the frame and drive track each week. Each year the turntable should be checked for flatness. Lower both outrigger tires and measure the up and down travel of the table as the ride is turned by hand (THE RIDE MUST BE SET UP). 3/4 of an inch maximum travel is acceptable.

On the following pages is a table of the recommended times to check individual parts of the Gravitron.

!!!ATTENTION!!!
!!!ATTENTION!!!

THE FLUID COUPLER OIL LEVEL MUST BE CHECKED BY THE FOLLOWING PROCEDURE.

NOTE:

THE GRAVITRON USUALLY TAKES MORE TIME TO START THE FIRST RUN OF THE DAY, UNTIL THE OIL IN THE FLUID COUPLER IS HOT. IF IT HAS BEEN BELOW 50 DEGREES THE RIDE MAY TAKE AS LONG AS ONE MINUTE TO START TURNING.

1. IF RUNNING FOR THE FIRST TIME OF THE DAY, RUN THE GRAVITRON AT LEAST THREE TIMES TO FULL SPEED FROM STOPPED. THE OIL MUST BE HOT TO GET A CORRECT CURRENT READING.

2. CHECK THE CURRENT THAT THE MOTOR PULLS WHILE THE RIDE IS ACCELERATING TO FULL SPEED. THE MAXIMUM CURRENT SHOULD BE 175 TO 180 AMPS.. THE CURRENT WILL STAY THERE FOR APPROXIMATLY 5 SECONDS. WHEN THE RIDE IS UP TO FULL SPEED, THE CURRENT WILL DROP QUICKLY TO 60 AMPS.

3. ADD OR REDUCE OIL LEVEL ONE CUP AT A TIME UNTIL THE CORRECT CURRENT IS REACHED.

4. AFTER ADJUSTING THE OIL LEVEL THE COUCHES SHOULD TAKE APPROXIMATLEY 30 TO 40 SECONDS TO START LIFTING.

CAUTION:

DO NOT RELY ON THE MEASUREMENT OF THE OIL LEVEL UNLESS YOU CHECK THE CURRENT ALSO.

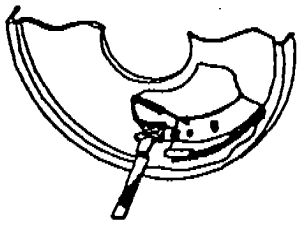
FLUIDS THAT CAN BE USED ARE:

PENNZOIL AW46 (RECOMMENDED) CHANGE EVERY 6 MONTHS
SAE 10 WEIGHT MOTOR OIL (CHANGE 10 WEIGHT OIL ONCE
10 WEIGHT HYDRAULIC OIL A MONTH)

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
1. DRIVE AND IDLER TIRES - 7.00X15 6 PLY					
PRESSURE - 45 TO 50 LBS	X				
TIRE CONTACT - 1/2" COMPRESSION		X			
LUG NUTS - TORQUE TO 90 FT FBS	X				
PACK WHEEL BEARINGS				X	
2. BRAKES (SEE FIGURE 1)					
CHECK 12 VOLT ELECTRICAL SUPPLY	X				
CHECK BATTERY WATER LEVEL		X			
CHECK ELECTRO-MAGNETS (A)			X		
CHECK BRAKE SHOE WEAR (B)			X		
CHECK FOR SCORING IN DRUM (C)			X		
TEST BRAKING BEFORE FIRST LOAD	X				

FIGURE 1



ADJUSTING TOOL

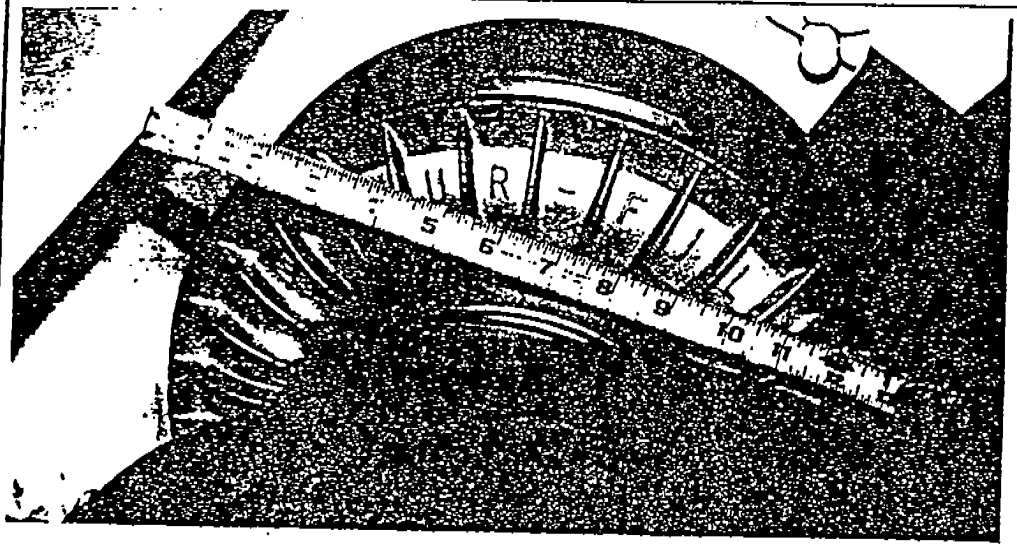
MOVE HANDLE UPWARD TO TIGHTEN BRAKES

MOVE HANDLE DOWNWARD TO LOOSEN BRAKES

3. FLUID COUPLER - DANA 12.4 HSD				X	
CHANGE FLUID - USE 92 FLUID OUNCES OF PENNZOIL AW46 OR EQUIVALENT					

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
CHECK FOR SIGNS OF LEAKS		X			
CHECK FLUID LEVEL & FILL AS REQUIRED BY TRAINED MECHANIC AND ONLY ON INSTRUCTIONS FROM SUPERVISOR (SEE FIGURE 2)		X			
CHECK DRIVE MOTOR CURRENT 200 AMPS MAXIMUM FOR 5 SECONDS OR LESS. IF IT IS GREATER THE FLUID LEVEL IN THE COUPLER SHOULD BE RECHECKED.		X			



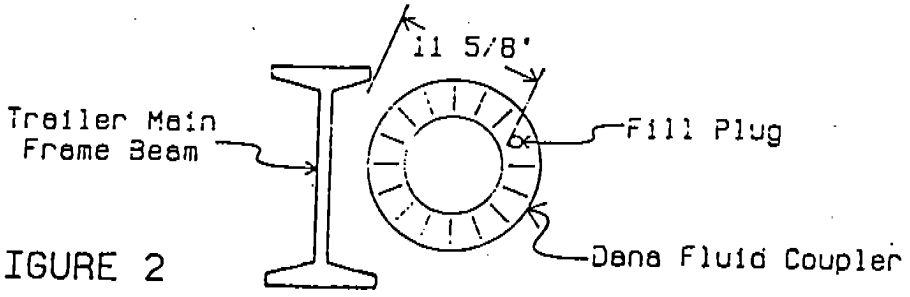


FIGURE 2

4. DRIVE BELTS - C60 CHECK BELT TENSION & ADJUST AS REQUIRED BY TRAINED MECHANIC	X				
CHECK FOR WEAR AND CRACKING		X			

MAINTENANCE CHECK LIST

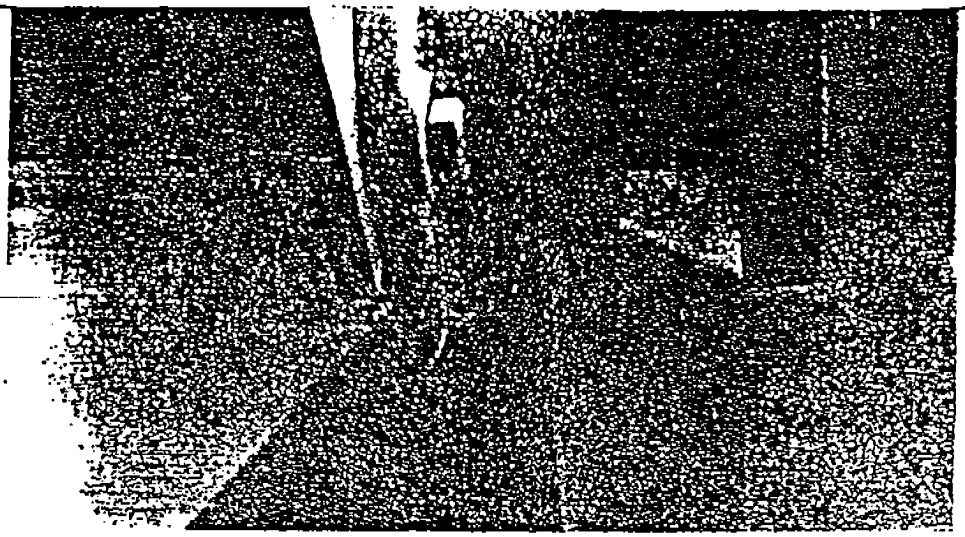


FIGURE 4

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
7. RIDE SET UP MOTOR CHECK PULLY ON SHAFT		X			
CHECK MOUNTING BOLTS		X			
CHECK BELT FOR WEAR AND CRACKING		X			
8. DOOR CONTROL CHECK CABLE FOR WEAR, CABLE CLAMPS AT DOOR AND CABLE ADJUSTMENT	X				
ADJUST DOOR STOPS (Figure 5)	X				

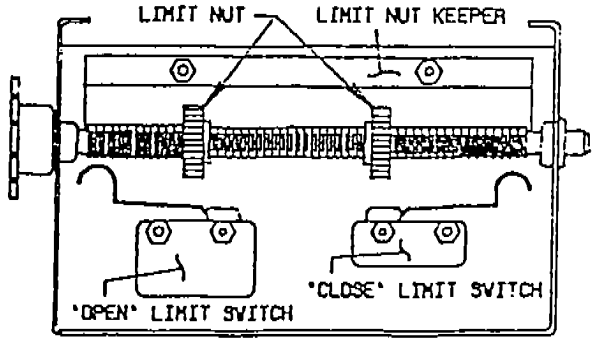


FIGURE 5

TO STOP DOOR EARLIER, MOVE NUT CLOSER TO LIMIT SWITCH.

TO STOP DOOR LATER, BACK NUT AWAY FROM LIMIT SWITCH.

NOTE: AFTER SETTING NUTS IN DESIRED POSITION, MAKE CERTAIN THAT LIMIT NUT KEEPER ENGAGES GROOVES ON LIMIT NUTS.

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
5. GEAR BOX - DODGE T16					
Check Torque Arm and Mounting Bushings		X			
Check for Oil Leaks		X			
Check Oil level and fill as required Pennzoil 50W or equivalent (Figure 3)		X			
Change Oil			X		

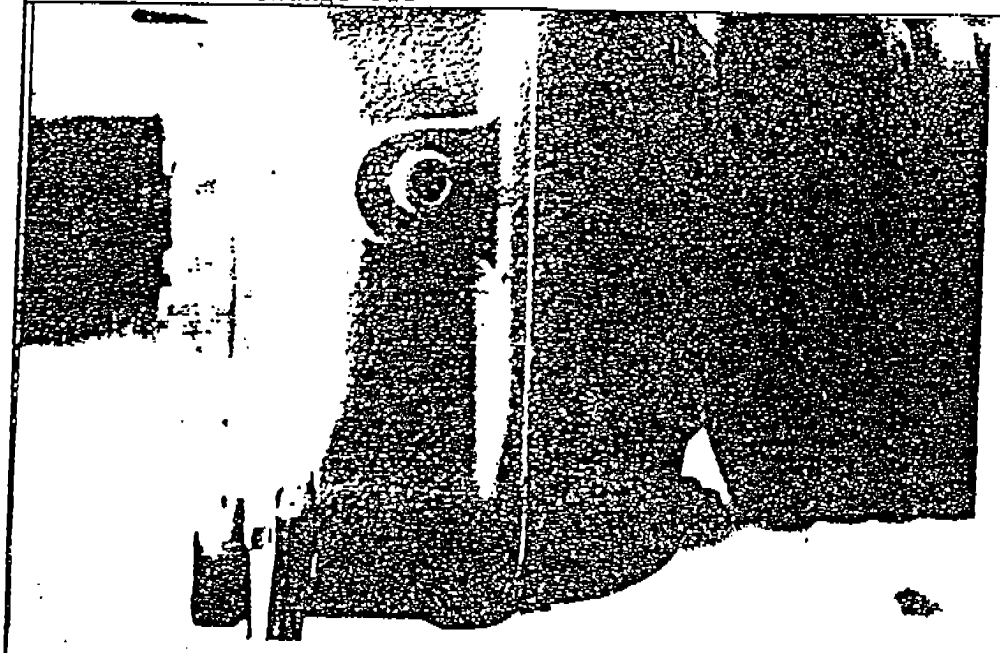
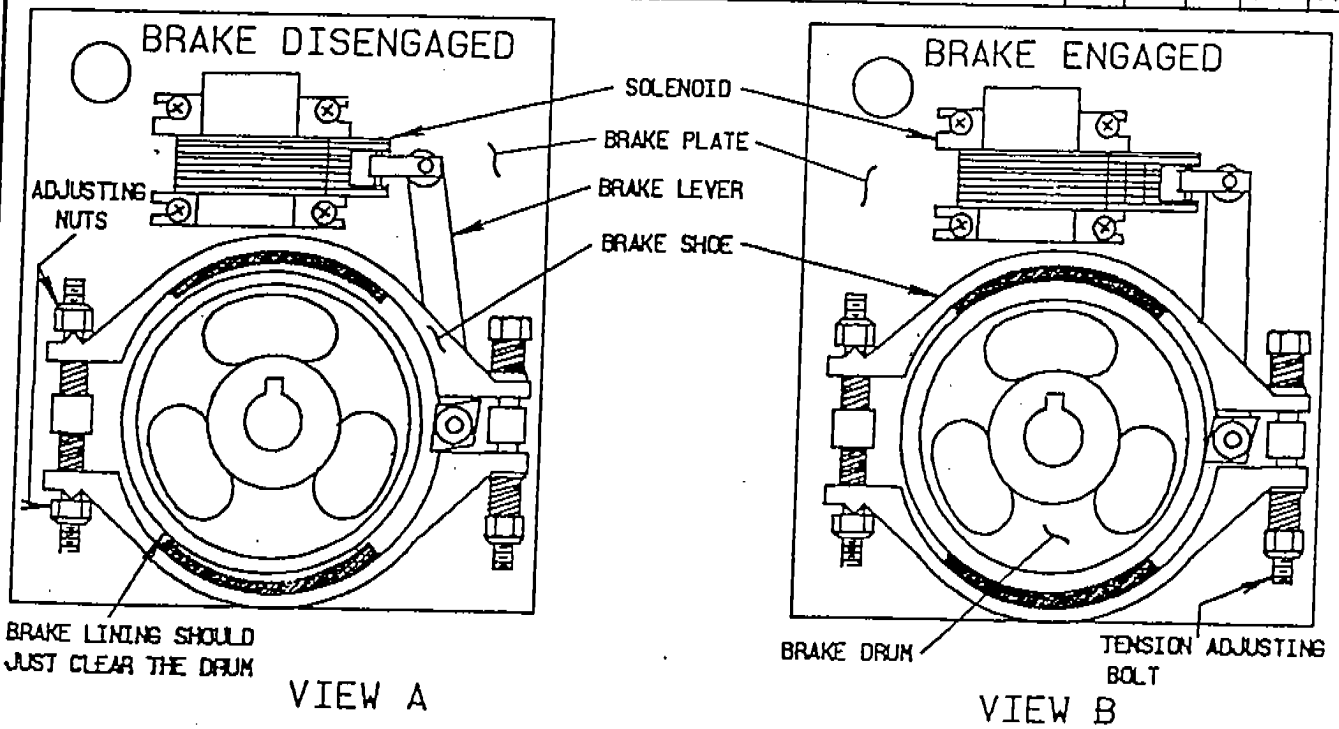


FIGURE 3 OIL FILL LEVEL PLUG

6. DRIVE SHAFT BEARINGS CHECK FOR END PLAY - MUST BE ZERO			X		
CHECK HOUSING BOLTS & SET SCREWS (Fig. 4-A)			X		
GREASE - PENNZOIL 707L or EQUIVALENT 1 to 2 PUMPS PER BEARING (Figure 4-B)				X	

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
CHECK CABLE DRUMS ON DRIVE SHAFT		X			
CHECK CABLE PULLEYS & PINS		X			
LIGHTLY OIL PULLEY PINS OR SPRAY WITH WD40	(3 Months)				X
CHECK MOUNTING BOLTS		X			
GREASE BEARINGS & OIL DRIVE CHAIN			X		
ADJUST BRAKE (Figure 6)	(As Needed)				X



DISCONNECT POWER TO OPERATOR BEFORE ADJUSTING. PULL EYEBOLT TO LEFT AS FACING BRAKE TO DISENGAGE BRAKE (View A). HOLD EYEBOLT IN THIS POSITION. BRAKE LINING SHOULD THEN CLEAR DRUM. IF NOT, LOOSEN ADJUSTING NUTS (View A) UNTIL BACK EDGE OF BRAKE LINING CLEARS DRUM. RELEASE EYEBOLT TO ENGAGE BRAKE (View B). TIGHTEN NUT ON TENSION ADJUSTING BOLT (View B) UNTIL DESIRED TENSION IS REACHED. PULL EYEBOLT TO LEFT AGAIN TO MAKE SURE DRUM IS CLEAR OF BRAKE LINING. RECONNECT POWER TO OPERATOR.

FIGURE 6

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
ADJUST CLUTCH (FIGURE 7)	(AS NEEDED)				X

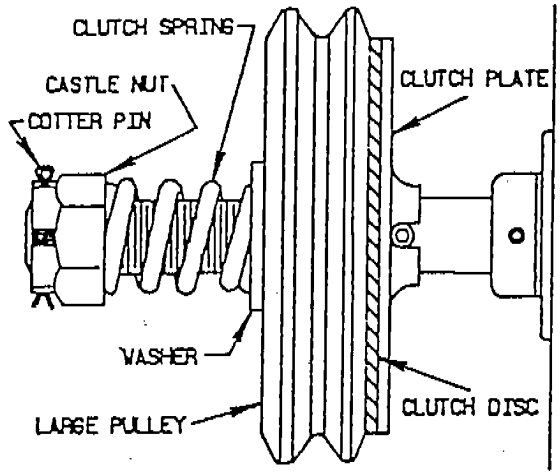


FIGURE 7

IF THE CLUTCH BEGINS TO SLIP, PRESS THE "STOP" BUTTON AND TIGHTEN NUT. DO NOT TURN NUT MORE THAN 1/8 TURN AT A TIME. REPEAT THIS PROCEDURE UNTIL DOOR TRAVELS SMOOTHLY IN BOTH DIRECTIONS.
NOTE: DO NOT OVER TENSION CLUTCH. CLUTCH MUST BE ADJUSTED TO SLIP EASILY IF DOOR IS OBSTRUCTED IN ITS DOWNWARD TRAVEL.
CAUTION: IF CLUTCH DOES NOT SLIP, CABLES WILL UNWIND FROM DRUM AND CAUSE DOOR TO DROP WHEN OBSTRUCTION IS REMOVED. AFTER FINAL ADJUSTMENT, REPLACE AND LOCK COTTER PIN IN PLACE.

9. MAIN CENTER BEARING CHECK GREASE SEALS (FIGURE 8-A)			X		
CHECK AND TORQUE MOUNTING BOLTS 150 FT-LBS (FIGURE 8-B)				X	
GREASE-PENNZOIL 707L OR EQUIVALENT APPROX. ½ LITER WHILE TURNING BEARING (FIGURE 8-C)		X			
CHECK SUPPORT JACK STANDS UNDER CENTER AND TIGHTEN AS REQUIRED	X				

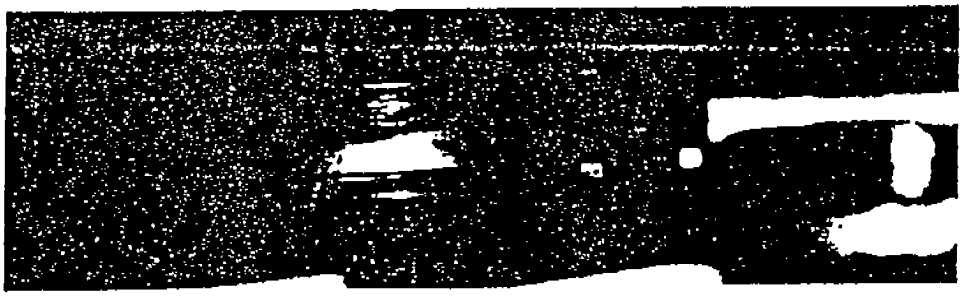
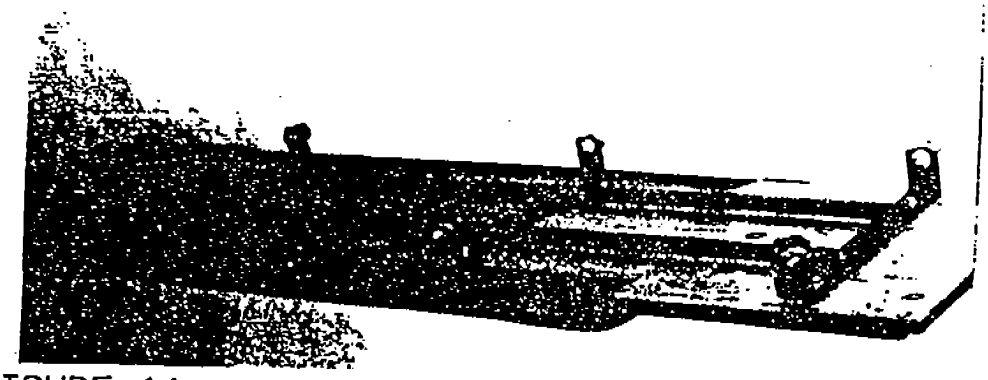


FIGURE 8 C A B

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
FULL LEVEL ADD LEVEL  FIGURE 10					
17. SEATS CHECK NUTS ON ROLLERS (FIGURE 11-A)			X		
CHECK BOLTS ON SEAT FRAME (FIGURE 11-B)	X				
CHECK THAT SEATS ROLL FREE	X				
A B  FIGURE 11					

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
18. TOP CHECK THAT CABLE IS IN GROOVE AND TIGHT & VALLANCE IS PULLED DOWN & TIED	X				
19. PLATFORM HINGE PINS (FIGURE 12) LIGHTLY OIL OR SPRAY WITH WD40					X
20. PLATFORM WING SAFETY BOLTS (FIGURE 12) CHECK AND TIGHTEN WHEN RIDE IS ASSEMBLED AND OPERATING	X				
CHECK SAFETY KEY IN BOLTS (FIGURE 12)	X				

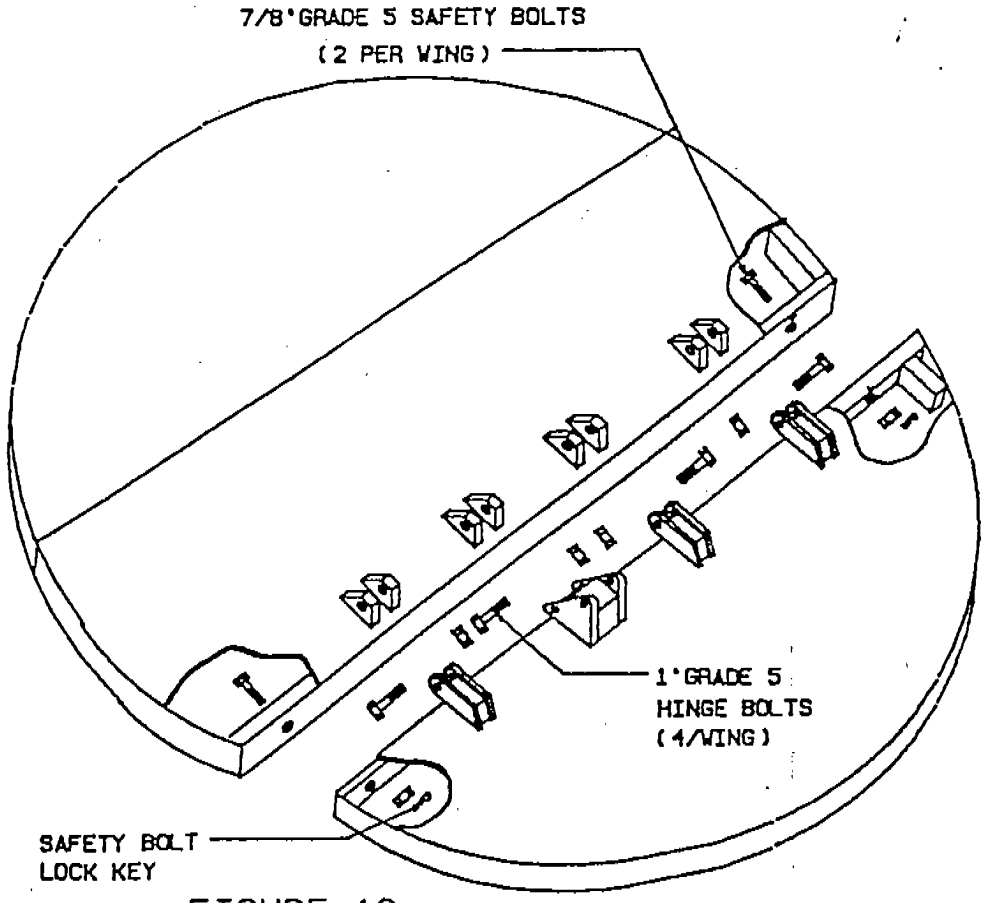


FIGURE 12

MAINTENANCE CHECK LIST

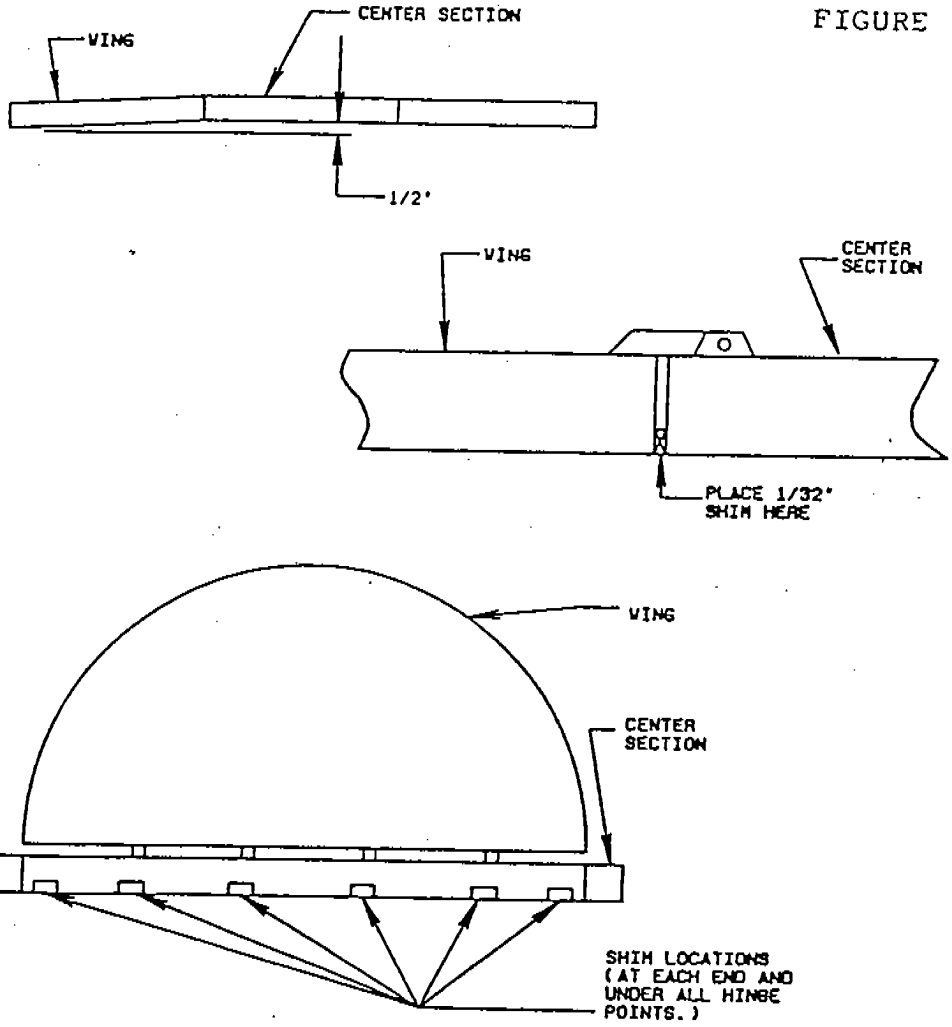
DAILY	WEEKLY	MONTHLY	YEARLY	OTHER

21. PLATFORM WINGS (SEE FIGURE 13)

CHECK FOR LEVELNESS WITH CENTER

EACH SET-UP X

FIGURE 13



MEASURE THE VARIATION FROM THE CENTER SECTION TO THE CENTER OF EACH WING ON THE OUTSIDE EDGE. THIS MEASUREMENT SHOULD NOT EXCEED ½". IF IT DOES THEN THE WING SHOULD BE SHIMMED AS SHOWN ABOVE. SHIM MATERIAL SHOULD BE 1/32" THICK BY 2" WIDE BY 12" LONG. ONE 1/32" SHIM SHOULD RAISE THE WING END BY ½".

SAFETY REQUIREMENTS

The key to safety is well trained and supervised employees. Make certain that all employees know how the ride operates. The employees should have a good attitude towards safety and common sense.

REMEMBER, SAFETY MUST ALWAYS COME BEFORE REVENUE.

Do not neglect the employees' safety. Before starting the ride, be certain there are no personnel inside the fences or on the ride structure. Be certain all electricity is turned off whenever an employee might come into contact with electrical connections or components. Safety helmets should be worn by all personnel when erecting or disassembling a ride.

GENERAL SAFETY GUIDELINES

The following is a list of a few general rules which should be adhered to by everyone. Remember that in the long run, the key to a safe and successful operation is to have well-trained and well supervised employees.

1. All work must be done by competent, qualified mechanics capable of understanding the function of the parts and their proper installation.

2. Inspect the ride each day of operation to determine that no portion of the ride is damaged, omitted, or worn in such a manner that it is unsafe, or that unsafe conditions may develope.

3. Perform manufacturer's recommended maintenance procedures at intervals and in the manner specified by the Operation and Maintenance Manual, in the following general areas:

   a) Lubrication
   b) Air, Hydraulic, and Electical systems
   c) Torquing of bolts
   d) Wear of bolted or pinned joints
   e) Adjustment and care of mechanical components such as; brakes, clutches, and air compressors
   f) Passenger securing devices
   g) All parts are present and installed
   h) Operating and emergency controls
   i) Factory installed safety devices

4. Study each job carefully to determine all hazards so that necessary safeguards can be taken.

5. Examine safety devices, tools, ladders, etc. before they are used to make sure they are in good condition.

6. Use the proper tool or equipment for each job. Ground all hand electric power tools before use unless the manufacturer advises otherwise.

7. Wear close fitting comfortable clothing when working on or close to mechanical appartus or live electrical circuits. Avoid finger rings, jewelery, or other articles which may be caught in moving parts or come in contact with electrical circuits.

8. Protect your eyes by wearing approved safety glasses or goggles.

9. Wear hard hats at all times. When working in elevated areas, use a safety belt.

10. Where work is to be performed is hazardous, such as live electrical circuits, at least two men should work together.

11. If guards must be removed from equipment, make sure they are replaced before leaving the job.

12. Clean up each job and dispose of surplus materials.

13. Keep a record of parts replaced and date of replacement. Inform the manufacturer of any replacement requirements that are frequent or cause unsafe conditions.

14. Make modifications and additions as outlined in the manufacturer's Service and Safety Bulletins.

OPERATING AMUSEMENT DEVICES - OPERATOR INSTRUCTIONS

The following are the correct loading (balance) procedures for amusement devices:

1. Every amusement ride must always be operated with a balanced load of passengers at all times.

2. The balancing rule is to ensure an even load on the ride's structure and mechanical drive, which in turn will cause less wear and tear and ensure a safer, longer life of the structure with less down time for adjustments and repairs.

3. In practical terms, consider the difference in driving a motor vehicle with balanced wheels as against unbalanced wheels, which causes vibrations and eventually wear and tear. The majority of operators have experienced driving a car with unbalanced wheels and the consequent results. Amusement devices are mostly large wheels and react the same as an automotive wheel when out of balance.

4. Although the out of balance load on some devices cannot be felt by the passengers or operator, it is still essential for the ride to be balanced.

5. On an extremely fast moving ride, it is essential that the ride be accurately balanced at all times.

6. Although it may not be strictly essential to balance slower revolving rides, it is still most desirable to achieve a balanced load, in the interests of the passengers and the owner of the ride, for increased safety and less "wear and tear".

OPERATOR RESPONSIBILITIES

1. HANDICAPPED PERSONS - Persons who are physically handicapped must not be allowed to ride violent or fast moving rides. If the management of the amusement area allow handicapped to ride certain slow rides, the operator must ensure that the handicapped person is under the full control of an adult person who will ride with them and provide supervision during the ride.

2. PROHIBITED PASSENGERS - Operators should not allow a passenger on the ride who cannot be properly secured due to his size or if there is a malfunction to the securing device. Similarly, they must refuse service to a pregnant woman, or a passenger who is visibly ill, or under the influence of alcohol or drugs.

3. CLEARANCE PRECAUTION - Before operating the ride, it is important to ensure that there are no personnel around the ride structure or any exposed electrical components or other areas where there could be a risk of injury.

4. ON-DUTY ATTENTION - Insist that each operator remain in full control of the operating controls during operation of the ride with complete attention to the ride and passengers. Under no circumstances should the operator leave his or her position while the ride is in operation.

   If it does become necessary for the operator to leave his post at the controls, he must turn the ride off completely to ensure it does not accidentally start and injure passengers or staff.

5. INSPECTION/CHECK LIST - Operators must inspect the ride and complete a General Check List before each day's operation.

6. DAILY WARM-UP - The operator must always run the ride through several cycles before the first passengers are loaded. This warm-up without passengers is necessary to make sure the ride is safe and there are no problems mechanically not detected previously,

7. PRECAUTIONS BEFORE AND DURING THE RIDE - Never start the ride unless the operator or assistant is facing the ride and is in a position to observe the whole area because:
   - Patrons have been known to jump fences.
   - Patrons have been known to try to change postions while the ride is running.
   - Patrons have been known to "skylark" causing their own

safety and that of others to be put in jeopardy.
- The operator's assistant may wish to make a last minute adjustment and be put in a dangerous position when the operator puts the ride in motion.

8. SMOKING - Smoking is not allowed in the Gravitron. This includes the operator as well as the passengers.

9. LOOSE ITEMS - The area inside the Gravitron must be clear of any items that can fly out to the edge of the ride when it gets up to speed.

10. FOOD AND DRINK - It is recommended that no food or drink be allowed onto the ride.

8. Instruct the operator to let no other person, other than another trained operator, operate the controls of the ride, except those portions of the ride that are specifically designed to be controlled by the passenger.

9. Advise the operator that factory-installed safety devices are not to be tampered with or removed.

10. Advise the operator of owner/supervisor procedures for assisting ill or injured passengers.

11. Instruct operators ansd attendants that patrons are required to secure all articles, such as keys, change, eye glasses, etc., which may become loose while riding.

LIGHT CONTROLLER
TEST AND REPAIR MANUAL

*****WARNING***** YOU ARE TESTING HIGH VOLTAGE OF OVER 110 VOLTS BE SURE YOU HAVE AN ASSISTANT TO HELP AND TO OBSERVE ALL ELECTRICAL SAFETY RULES.****WARNING****

1. The first thing to check is what type of problem you have. Four types of problems have been found to be the most common.

1. Switches in wrong position
2. Shorts
3. Loose wires
4. Electronics

The swiches must be in the correct position to easily test the lights on the ride. We have included a diagram to show the best position for testing. Many times we have found that checking the switches on the controller solves the problem.

Shorts by far cause the most havoc. The best way to reduce the number of shorts on the Gravitron is to make sure that the panels are all unplugged before the ride is torn down. Make sure that the cords are not lying where they can be cut when the seat trusses are laid down. Shorts in the scenery can be reduced by being careful not to lay anything where it can rub or pinch any wires when folding up the ride.

Loose wires are generally found when the ride is moved the first few times. It is best when checking a circuit to pull on the wires lightly to see if they come loose. Generally they are found on terminal blocks, plugs, or multiple crimped wire connections.

Electronics are by far the hardest to check without new parts to replace a potentially bad component. It is unusual for a component to go bad without a reason. Shorts or water can destroy a controller quickly.

Before starting any checks first determine where the problem is. It is best to determine if the entire scenery or barrel is doing the same thing or if it is just one part. Many times a switch has been moved and causes the unit to act strangely. If it is just one part then find out if it is in the controller or booster. Turn off the power to the booster only and that will show which sections are run by the booster and controller. This greatly reduces the areas to check.

ONE HORIZONTAL ROW OUT OR DIM

CHECK

1. Check switches on controller.
2. Determine which line is out by unplugging one line at a time from rear of controller.
3. Check that line for loose wires.
4. Plug that line into an extension cord (USE ONLY A CIRCUIT WITH A 15 AMP. CIRCUIT BREAKER)
5. If circuit breaker trips, check wiring for pinched wires, cut insulation, or a broken light bulb.
6. If line works, check line fuse in back of unit.
7. If fuse is blown replace ONLY WITH 10 AMP fuse. Plug in line and turn on controller.
8. If fuse is ok replace hot line triac.

ONE VERTICAL LINE OUT OR DIM

CHECK

1. Check switches on controller.
2. Determine which line is out by unplugging one line at a time from rear of controller.
3. Check that line for loose wires.
4. Plug that line into an extension cord (USE ONLY A CIRCUIT WITH A 15 AMP. CIRCUIT BREAKER)
5. If circuit breaker trips, check wiring for pinched wires, cut insulation, or a broken light bulb.
6. If line works, replace neutral triac.

ONE HORIZONTAL LINE ON CONSTANTLY

CHECK

1. Check switches on controller.
2. Check that all the switches are set to chase.
3. Determine which line is on by unplugging one line at a time from rear of controller.
4. Plug that line into an extension cord (USE ONLY A CIRCUIT WITH A 15 AMP. CIRCUIT BREAKER)
5. If circuit breaker trips, check wiring for pinched wires, cut insulation, or a broken light bulb.
6. If line works, replace hot triac.

ONE VERTICAL LINE ON CONSTANTLY

CHECK

1. Check switches on controller.
2. Check that all the switches are set to chase.
3. Determine which line is on by unplugging one line at a time from rear of controller.
4. Disconnect neutral wire from plug. Plug the plug into an extension cord. If lights turn on, then the neutral wire is shorted to the frame.
5. If line does not light, replace neutral triac.
6. Reconnect neutral wire and plug into controller.

The scenery lights are usually connected so that the top sign and the lights on the rear box are connected to one controller. The grid and the lights on the front box are connected to the booster unit. When only part of the lights of a section are working then look for a loose wire.

TRIAC REPLACEMENT

The neutral triacs are mounted on the heat sink to the front of the controller or booster. The hot triacs are mounted on the heat sink to the rear of the unit.

To replace a triac, remove the two screws holding it to the heat sink. Remove the three wires from the spade connectors and place on the identical connectors on the new triac. Before fastening down place a little silicon grease on the back of the triac. Screw down new triac and turn on power and test.

IT IS IMPORTANT TO USE SILICON GREASE ON THE NEW TRIAC TO HELP CONDUCT THE HEAT TO THE HEAT SINK.

REPLACEMENT OF BOLTS

During normal maintenance practices, it is necessary to replace some bolts. they work loose because they have not been checked periodically, or they become lost when they are removed to repair some component. The points we wish to stress are the following:

Wisdom Mfg. uses only grade 5 bolts or better.

Bolts are identified by markings on the bolt head. Bolts without markings are generally grade 2 or 3 (common hardware store variety) and are not strong enough to be used on amusement rides in high stress areas.

When replacing any bolt, always use an equivalent or stronger bolt. Higher numbers mean stronger bolts.

NOTE: There are some bolts available above grade 8; however, these bolts are not to be used for general purposes. They are extremely brittle and are designed for special applications.

If trouble is encountered with bolts working loose, check the tightness according to the torque chart.

If certain bolts continue to work loose, remove the bolts and inspect the threaded holes. If threads are in good condition, clean the hole out with a non-oil base solvent and blow dry and apply "loctite" to the threads. After doing this, install new washer and bolt and torque as per the chart.

BOLT TENSIONING TORQUE

1. All tensioning pressures are for grade 5 bolts which have a tensile strength of 50 tons per square inch.

2. Bolts that are used continuously for portable ride erection should not be tensioned to maximum torque unless instructed to do so or they are in a high stress area.

3. Bolts tensioned to maximum torque should not be continuously reused and should be replaced with new bolts of equivalent strength.

4. Caution should be exercised in applying torque because in some cases, it may not be possible to utilize all the torque a bolt will stand because of distorting surrounding parts.

5. Lubricate bolts when using with SAE 30 oil or an approved anti-sieze compound.

CAUTION; Torque values are given for steel bolts and steel nuts screwed into threaded holes in steel. Be certain threaded parts are not aluminium, brass, or other soft alloys.

BOLT TORQUE CHART

Bolt Size Grade 5	Max Torque	Recommended Torque Reusable Bolt	Recommended Torque Permanent Bolt
U.N.C.	ft.lbs.	ft.lbs.	ft.lbs
3/8	27	24	26-28
1/2	66	55	60-66
5/8	130	95	125-130
3/4	230	180	220-230
7/8	370	290	360-370
1	560	480	540-560

Maximum torque listed is 65% proof load of bolt

NOTE: It is important to note the necessity of lightly oiling bolt before use as outlined above.

TORQUE METHODS- No torque wrench

Leverage Method:

The average 200-225 lb. mechanic, while standing on his feet, can apply a steady pull with his good arm (right arm if right handed, etc.) of between 100 and 110 lbs. This pull is obtained without bracing his feet or free hand against any solid object such as a work bench or the machinery being worked on.

If a torque of any given value is desired, it becomes a simple matter of leverage. If the mechanic in question is tightening a 7/8" UNC thread bolt wich recommends 520 ft lbs of torque, this value can be reached by using a heavy duty socket wrench and slipping a 5 ft. length of pipe over the handle of the wrench.

Thus, if the mechanic can exert a 100 lb pull, 5 feet times 100 lbs. would equal 500 ft lbs. Any other torque desired can be reached by simply dividing the desired torque value by approximately 110 to determine the length of the pipe or "cheater" bar that is needed.

TURN OF THE NUT METHOD

This method applies only to bolts with UNC threads. If the bolt is shorther than eight times its diameter, tighten the nut until the pieces being joined are snugged up. Put a reference mark on the nut or socket wrench being used and tighten the nut, while preventing the bolt from turning, until the nut has been turned an additional 1/2 of a turn. If the bolt is longer than eight times its diameter, proceed as above but tighten the nut 3/4 of a turn. This will apply a preload to the bolt that will be very close to the same value that would be achieved if a torque wrench had been used.

PNUEMATIC TIRES ON AMUSEMENT DEVICES AND SUPPORT VEHICLES

* It is strongly recommended to carry a quality spare tire and wheel for every type you have in operation, and inflated to pressure.

* Check pressures regularly on all tires in operation and maintain to manufacturer's recommendations.

* Unless unavoidable, it is strongly recommended that repairs or the fitting of new tires to rims be carried out by experts at recognized tire dealers using correct equipment.

***CAUTION

Respect the potential power and explosive force of air under pressure. Serious accidents have resulted from lack of awareness of the explosive potential of compressed air. Respect it as you would DYNAMITE.

The following pages of guidelines, safety precautions and procedures of tire changing are included to make all operators aware of the dangers that can be encountered by neglecting care and safety in handling tires and compressed air.

TIRE SAFETY - MOUNTING/DEMOUNTING

The following guidelines and safety procedures are intended to be used for reference only. Procedures will vary for different tire mounting equipment and different types of rims. If at any time an uncertainty exists about the method of assembly or component parts or use of equipment, consult specific equipment manuals.

The following precautions apply generally for all types of tires. In addition, each section emphasises specific precautions for each particular type of tire.

WARNING

FAILURE TO OBSERVE THE PRECAUTIONS OUTLINED IN THIS SECTION MAY RESULT IN FAULTY POSITIONING OF THE TIRE AND/OR RIM PARTS, CAUSING THE ASSEMBLY TO BURST WITH EXPLOSIVE FORCE SUFFICIENT TO CAUSE SERIOUS PHYSICAL INJURY OR DEATH.

CORRECT PROCEDURES- Do it this way.

1. Make sure that all Rims are in good condition for use - not damaged, dented, or deformed.

2. Remove valve core and exhaust all air from the tire (or tires in the case of a dual assembly) before demounting. Probe the valve stem with a wire as a final check to make sure the valve is not plugged. Do not stand in front of a valve opening as dirt particles may be blown into your eyes.

3. Block vehicle in a positive manner so it cannot roll forward or backward after it is jacked up.

4. Place large hardwood blocks under the jack, regardless of how hard or firm the ground appears.

5. Place safety jacks, or crib up with blocks at an appropriate place under the vehicle, in case the jack slips.

6. Check rim diameter to be sure it exactly matches the rim diameter moulded on the tire. If rim is multiple piece, check component parts to see if they are made by the same manufacturer.

7. Clean and inspect used rim parts thoroughly.

8. Use new tubes and new flaps in new tires.

9. Inspect inside of tire for loose cords, cuts, penetrating objects, or other carcass damage. Scrap tires that are beyond simple repair. Remove dirt, debris, and liquids from the inside of tire before tube is installed.

10. Lubricate with approved rubber lubricant, such as thin vegetable oil soap solution.

11. Use a clip on chuck and extension hose with remote control valve and pressure guage, long enough to allow you to stand to one side, not in front of the assembly, during inflation.

12. Center tire properly on rim before inflating.

13. Secure lock wheel down, or place assembly in safety cage or portable safety device before attempting to inflate tire to seat beads.

14. Check for proper flange and lock ring seating.

15. Adjust air pressure to manufacturer's recommended cold operating pressure, after beads have been seated.

16. Inspect valve cores or proper air retention. Replace damaged or leaky cores.

FAULTY PROCEDURES - Do not do it this way

1. Don't work on tire and rim assemblies until you have reviewed safety practices and procedures.

2. Don't loosen lug nuts on duals until all air is exhausted from both tires. A broken or cracked rim part under pressure could blow apart and seriously injure or kill if lugs are removed before air is exhausted.

3. Don't ever apply heat or do repair work on an inflated tire, rim, and wheel assembly. Heat can increase air pressure to a level sufficient to burst the tire or rim.

4. Don't reinflate a tire that has been run flat or seriously under-inflated without dismounting the tire and checking the tire and tube for damage.

5. Don't mix rim parts of different manufacturers unless such use is approved by those manufacturers.

6. Don't attempt, under any circumstances, to rework, weld, heat, or braze rim parts. Replace damaged parts with the same size, type, and make.

7. Don't reuse tubes or flaps that have buckled or creased.

8. Don't use a tube in a tire larger or smaller than that for which the tube was designed.

9. Don't inflate beyond recommended bead seating pressure. Don't stand over tire when inflating.

10. Don't transport fully inflated tires mounted on multi-piece rims. Inflate only enough (10-15 PSI) to keep rim parts in place. Inflate tires to correct operating pressure only after tire and rim assembly have been fastened in place, all lug nuts properly torqued, and rim parts rechecked for proper fit.

11. Do not substitute petroleum based lubricants, silicon or anti-freeze for approved rubber lubricants.

WMI INDUSTRIES, LTD.

September 27, 1991

LOWELL PARISH
DEPT. OF AGRICULTURE
BUREAU OF FAIRS
3125 CONNER BLVD
BLDG. 4
Tallahassee, FL 32399-1650

FAX: 1-904-488-9023

Dear Mr. Parish:

The fiberglass that needs to be removed on the GRAVITRON panels is to facilitate visual inspection of the weld on each side of the 3/8" block that the top pins and the floor pins go through. Cutting back the fiberglass 1/2" to 1" from these welds will allow inspection and will not affect the strength of the panel. Enclosed is a drawing indicating the blocks and the area to trim back. The fiberglass does not need to be replaced after inspection.

There will be future inspection notices and possible modifications and as soon as we have more information I will send it to you.

If you have any questions please feel free to call me.

Sincerely,

Victor Wisdom

Certificate of Flame Resistance

REGISTERED APPLICATION NUMBER

F.121.4

REGISTERED STATE OF CALIFORNIA STATE FIRE MARSHAL FLAME RETARDANT

ISSUED BY

ANCHOR INDUSTRIES INC.
EVANSVILLE, INDIANA 47711

MANUFACTURERS OF THE FINISHED TENT PRODUCTS DESCRIBED HEREIN

Date of Manufacture

V5082

2-28-89

This is to certify that the materials described have been flame-retardant treated (or are inherently noninflammable) and were supplied to:

NAME: W M I Industries

CITY Sterling STATE CO

Certification is hereby made that:
The articles described on this Certificate have been treated with a flame-retardant approved chemical and that the application of said chemical was done in conformance with California Fire Marshall Code, equal to or exceeds NFPA 701, CPAI 84 MIL-C-43009

Method of application: Laminated

Type, color and weight of canvas/vinyl: 15 oz. Boyles Big Top White Dacron

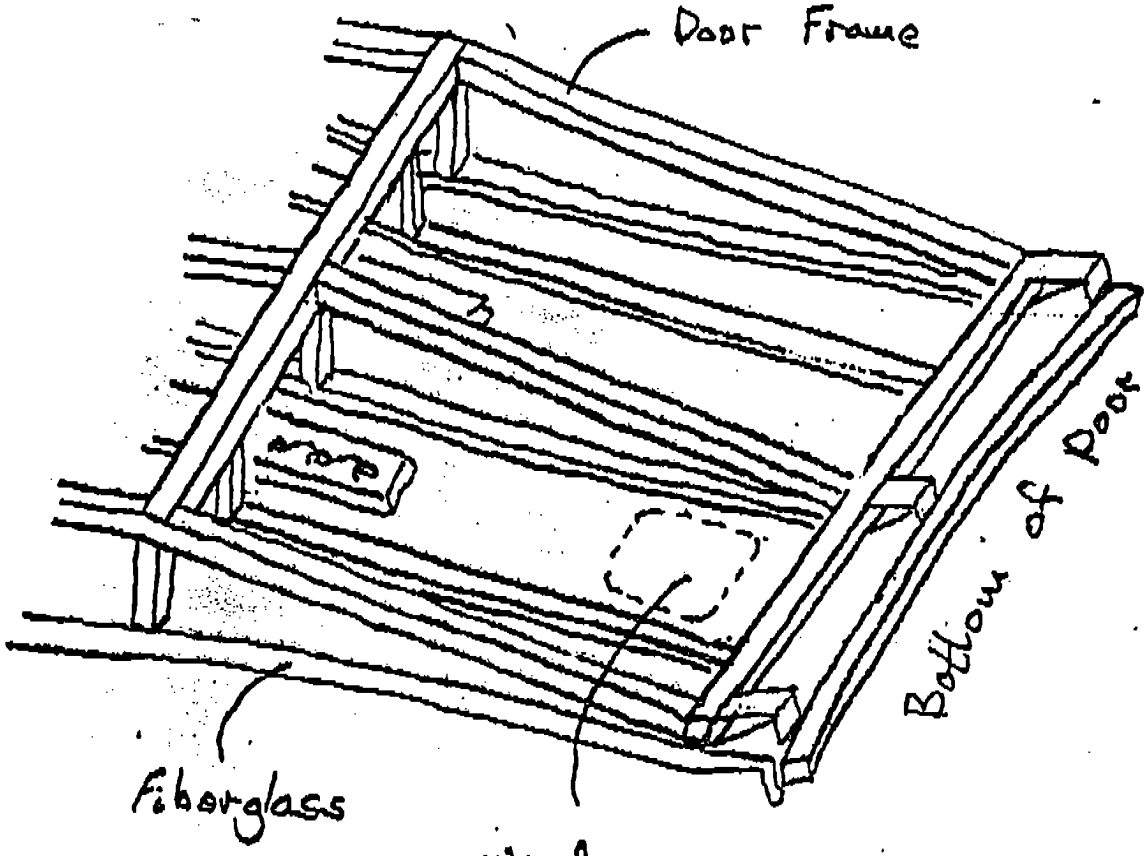
Description of item certified: Gravitron Top

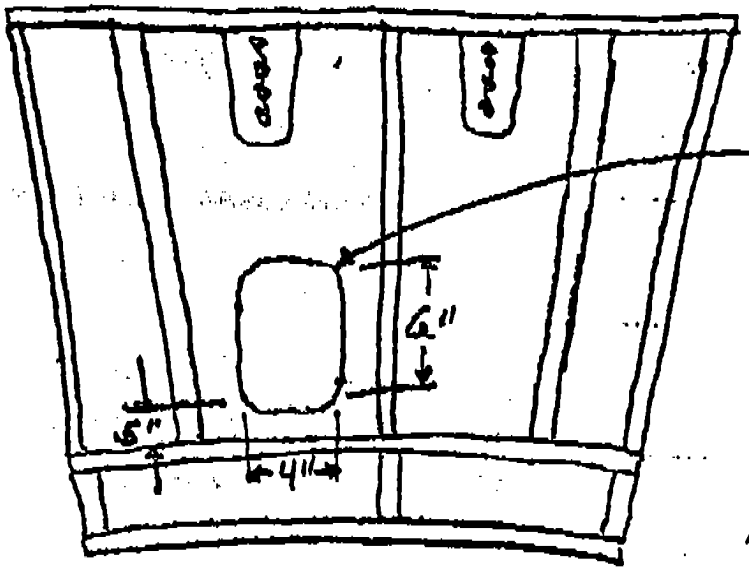
Flame Retardant Process Used Will Not Be Removed By Washing And Is Effective For The Life Of The Fabric

John Boyle & Co.
Name of Applicator of Flame Resistant Finish
Statesville, NC

Signed: Louis R. Brown

TENT DEPARTMENT—ANCHOR INDUSTRIES INC.
Louis R. Brown



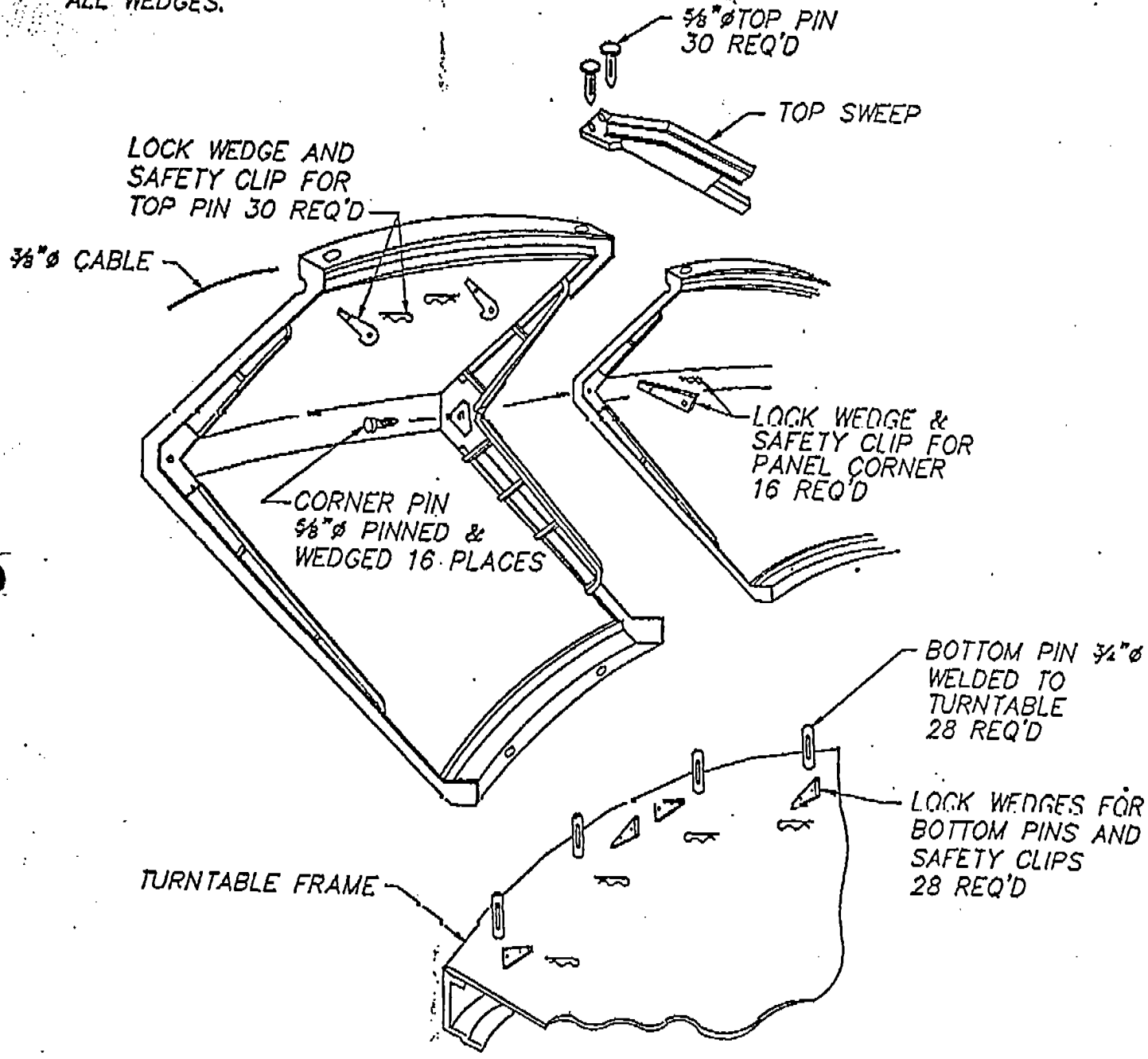


Large Radius (2") to prevent... cracking. centered between Tubes.

Maximus Size

NOTES:

1. CORNER PIN GOES THRU BOTH PANEL SIDE FRAMES.
2. ALL PINS MUST BE WEDGED SNUGLY.
3. R-CLIPS MUST BE INSERTED INTO ALL WEDGES.



IMPORTANT

ALL PINS, WEDGES, AND R-CLIPS MUST BE IN PLACE BEFORE OPERATION OF RIDE.

PIN REPLACEMENT PROCEDURE.

For all pins in the wings.

Cut off the part of the pin that sticks above the floor. Pilot drill the center of the part of the pin that remains in the floor with a 1/4" drill. Then drill the rest of the pin out with a 3/4" drill.

From under the turntable, use a chisel to knock off the rest of the pin head.

An alternate method of removing the pin is to use a torch from underneath to cut off the head of the pin.

For pins in the corners of the main turntable.

Cut off the pin from above the floor as described above.

Drill out pin as described above.

Cut a 1" by 2" slot vertically in the outside face of the turntable next to where the pin goes through the floor.

Cut the head of the pin off from under the turntable using either the torch or chisel.

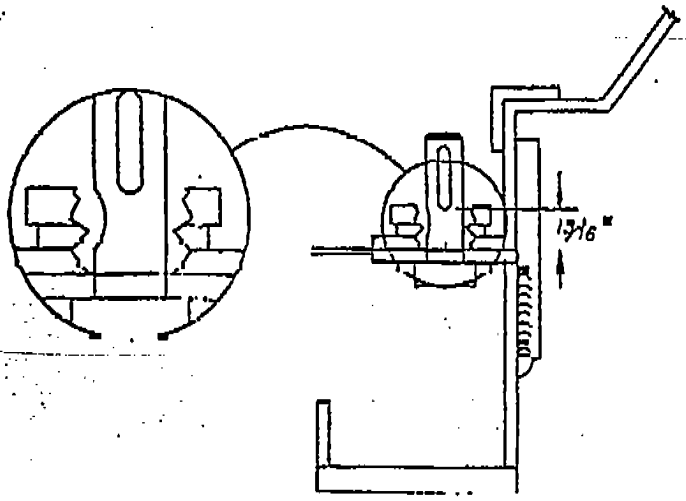
Install the new pin through the hole cut in the face of the turntable.

Weld the head of the new pin to the turntable.

Patch hole cut in face of turntable or make a cover plate.

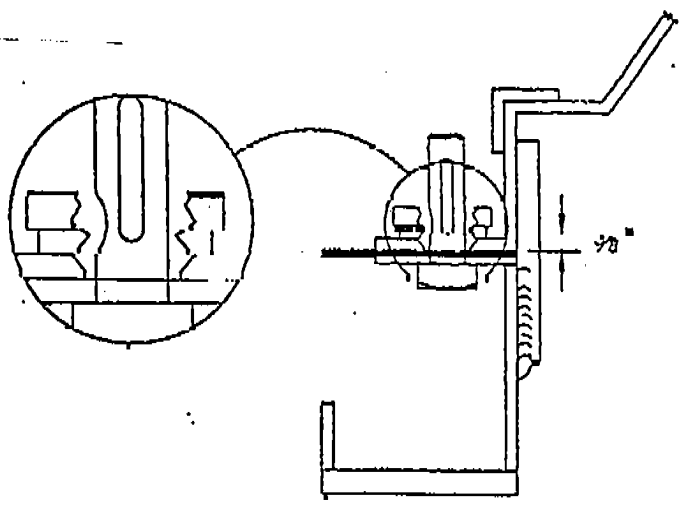
Alternate method of removing the head of the pin is to use a straight head torch and reach from under the turntable and cut it off.

FLOOR PIN REPLACEMENT CRITERIA



SHORT SLOT FLOOR PIN
CUT-AWAY VIEW

1. THE SHORT SLOT FLOOR PIN SHOULD BE REPLACED IF THE AREA OF WEAR IS GREATER THAN 1/8" DEEP.



LONG SLOT FLOOR PIN
CUT-AWAY VIEW

1. THE LONG SLOT FLOOR PIN SHOULD BE REPLACED IF THE AREA OF WEAR IS GREATER THAN 1/16" DEEP.

CRITERIA FOR REPLACEMENT OF GRAVITRON FLOOR PINS
Required on portable rides only
PAGE 1

INSPECTION PROCEDURE.

With the ride torn down, cut out a circle of carpeting about 1/2" to 1" all the way around each pin.

Measure the amount of wear on the side of the floor pin towards the center of the ride. If a groove has been worn in the pin, the groove can not be more than 1/16 of an inch deep. If it is, the pin must be replaced.

Inspect the bottom of the slot on each side of the pin for cracks. If one side of the slot is cracked the pin must be replaced.

Inspect around the base of the pin for excessive rusting. Use a wire brush to clean this area first. If the pin is pitted from rusting. It should be replaced. If the pin is OK, be sure to spray a primer on the pin.

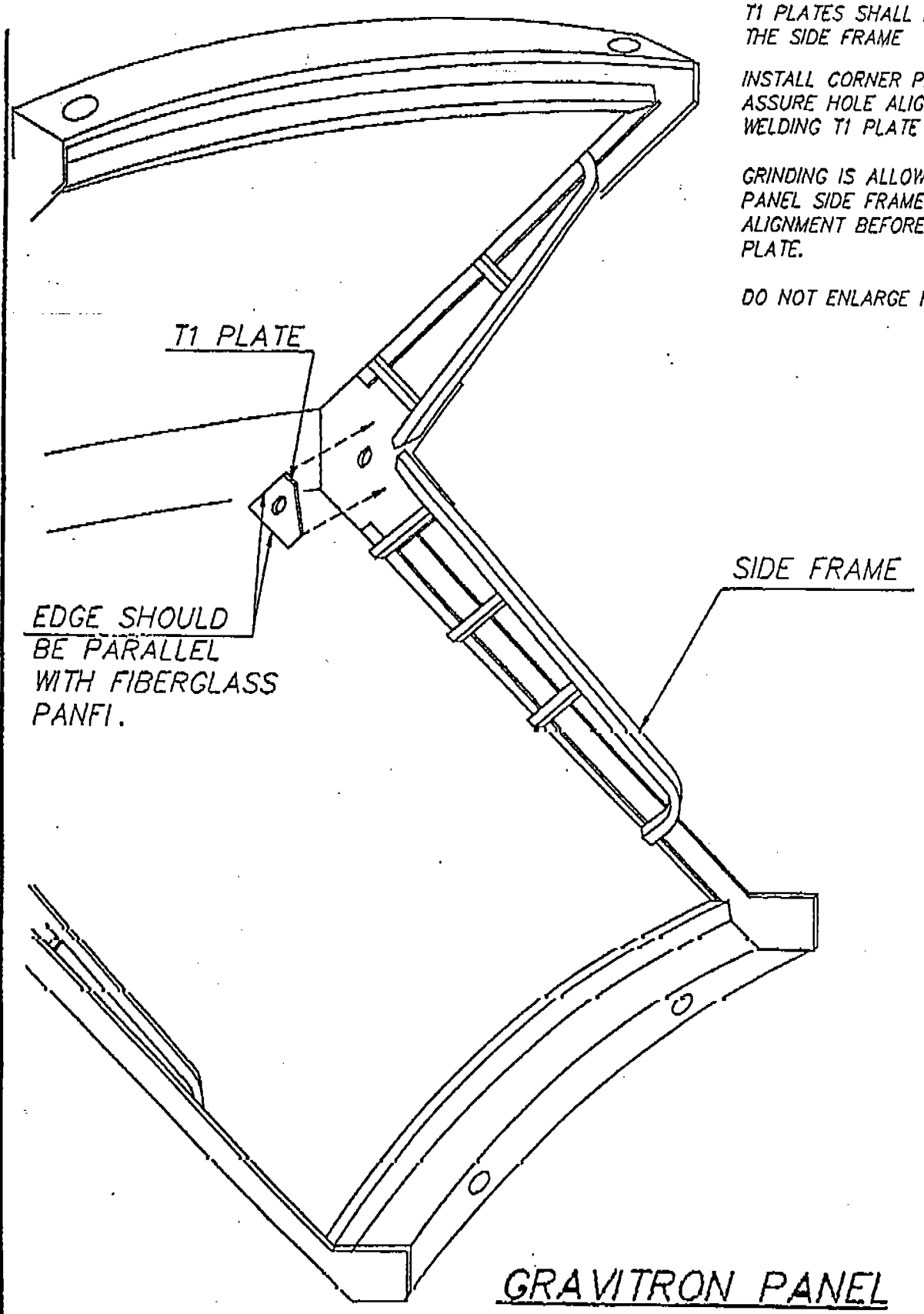
After the inspection or replacement of floor pins prime the area that has been welded.

NOTES:
T1 PLATES SHALL BE INSTALLED ON THE SIDE FRAME WITHOUT CHANNEL.

INSTALL CORNER PIN IN PANELS TO ASSURE HOLE ALIGNMENT BEFORE WELDING T1 PLATE IN PLACE!

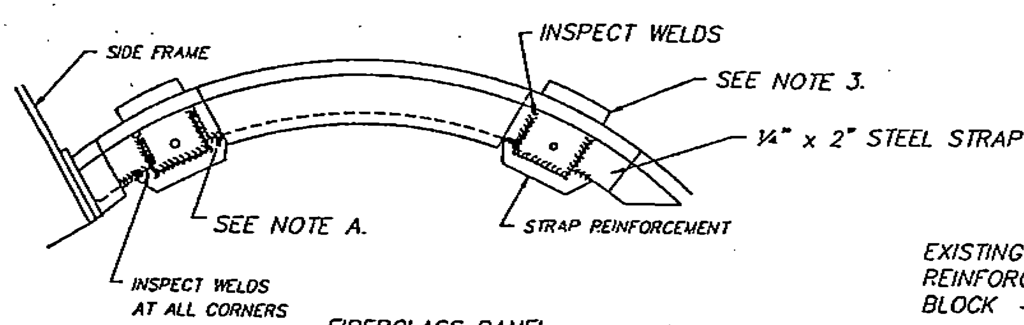
GRINDING IS ALLOWED ON HOLE IN PANEL SIDE FRAME TO IMPROVE PIN ALIGNMENT BEFORE INSTALLING T1 PLATE.

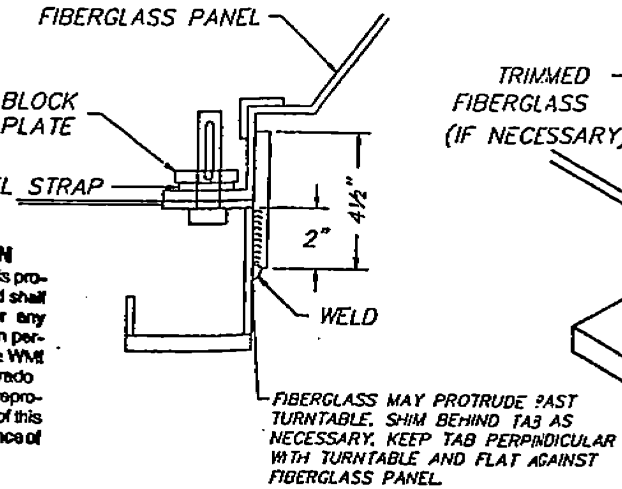
DO NOT ENLARGE HOLE IN T1 PLATE.

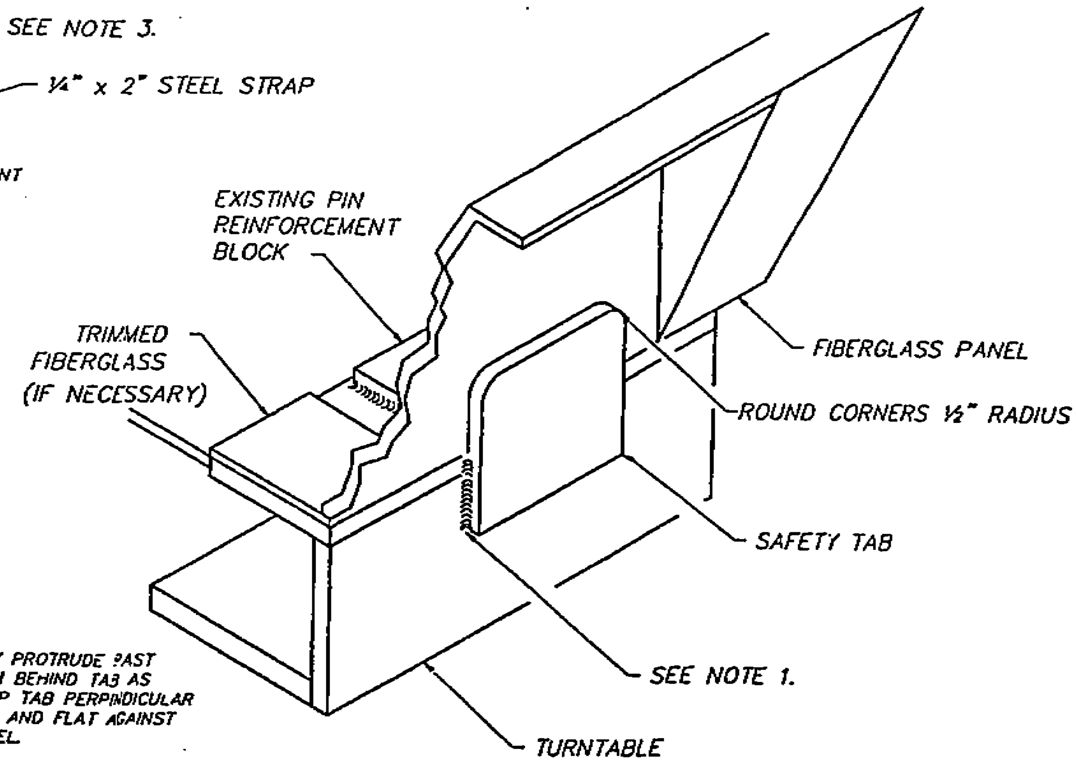


GRAVITRON PANEL

< F:\GRAV-DWG\BULLETIN >







PANEL INSPECTION PROCEDURE

A. TRIM FIBERGLASS BACK 1" FROM WELD ON PIN REINFORCEMENT BLOCK ON INSIDE OF PANEL IF NECESSARY FOR BETTER WELD INSPECTION.

B. INSPECT STRAP, PIN REINFORCEMENT BLOCK & WELDS FOR EXCESSIVE WEAR, DAMAGE OR FRACTURES.

SAFETY TAB RETRO FIT

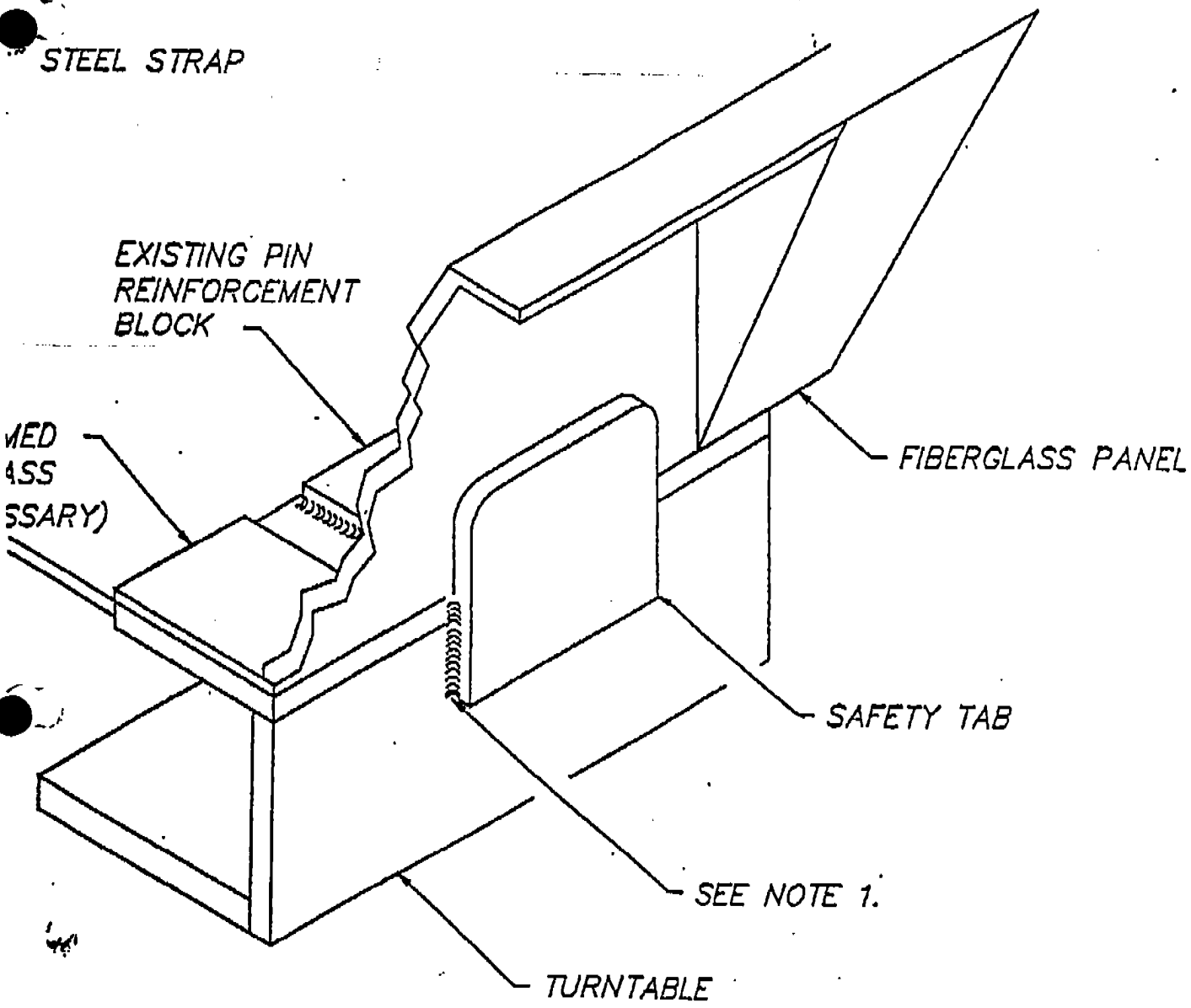
1. WELD SAFETY TAB TO OUTSIDE OF TURNTABLE OPPOSITE PIN AROUND OUTSIDE PERIMITER OF TAB.
2. 30 SAFETY TABS REQUIRED FOR RETRO FIT.
3. SAFETY TABS ARE TO BE PLACED 2 PER PANEL EXCLUDING DOOR.
4. TABS ARE ⅜" x 4" x 4½" STEEL PLATE.

WMI INDUSTRIES Merino, CO 80741			
SCALE: NONE	APPROVED BY: DEC 16 1991		DRAWN BY: K.V.W.
DATE: 8-22-91			REVISED
DESCRIPTION: SAFETY INSPECTION & MODIFICATION			
EQUIPMENT: GRAVITRON			DRAWING NUMBER: W 170

SEPT 13, 1991 – 11:10:36 < D:\GRAV-DWG\W7001 >

3.

STEEL STRAP



SAFETY TAB RETRO FIT

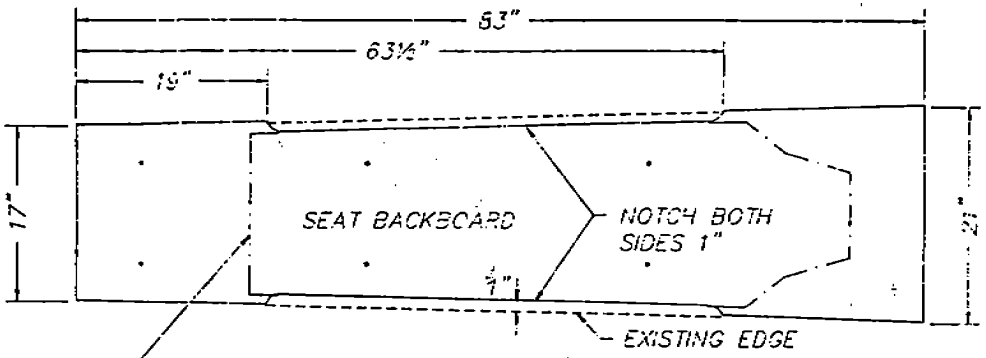
TY TAB TO OUTSIDE OF TURNTABLE
AROUND OUTSIDE PERIMITER

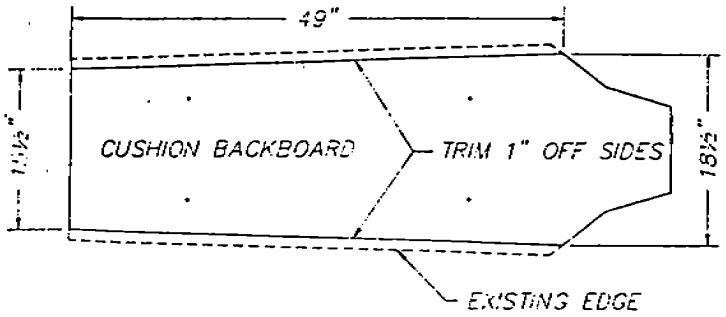
LBS REQUIRED FOR RETRO FIT.

ARE TO BE PLACED 2 PER PANEL

x 4" x 4" STEEL PLATE.

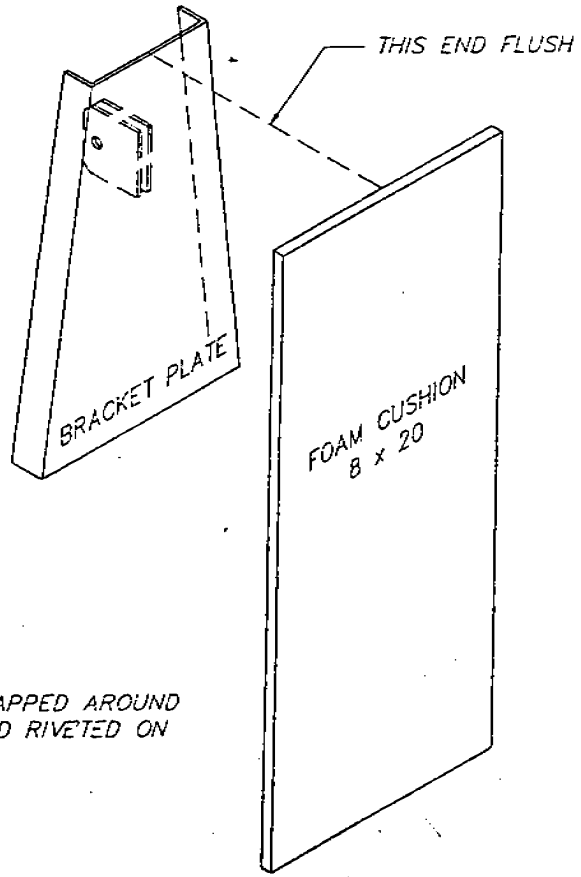
WMI INDUSTRIES Merino, CO 80741			
SCALE: NONE	APPROVED BY:		DRAWN BY: K.V.W.
DATE: 8-22-91			REVISED
DESCRIPTION: SAFETY INSPECTION & MODIFICATION			
EQUIPMENT: GRAVITRON			DRAWING NUMBER: W 170



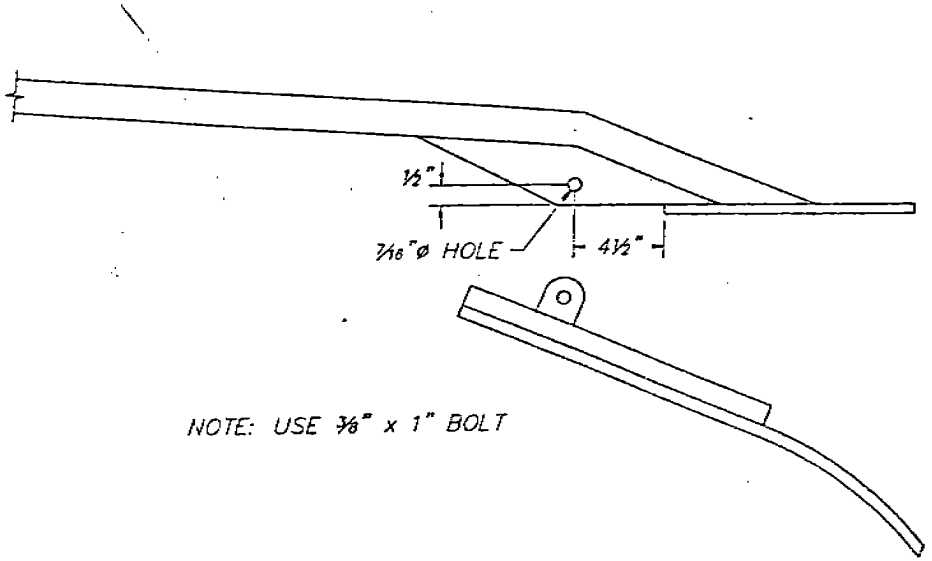


WMI INDUSTRIES Merino, CO 80741

SCALE: 1"=1'-0"	APPROVED BY:	DRAWN BY: L.M.S.	
DATE: 4-02-90		REVISED	
DESCRIPTION: SEAT BOARDS (FIELD CHANGE)			
EQUIPMENT: GRAVITRON		DRAWING NUMBER: WFC1-1	



NOTE: FOAM IS WRAPPED AROUND BRACKET AND RIVETED ON SIDES.



NOTE: USE ⅜" x 1" BOLT

WMI INDUSTRIES Merino, CO 80741			
SCALE: 3"=1'-0"	APPROVED BY:	DRAWN BY: L.M.B.	
DATE: 7-10-90		REVISED	
DESCRIPTION: SWEEP CUSHION BRACKET			
EQUIPMENT: GRAVITRON		DRAWING NUMBER: HDG	

WMI INDUSTRIES, LTD.

January 15, 1993

Ron Safford
STATE OF FLORIDA DEPT. OF AGRICULTURE
Bureau of Fairs
3125 Conner Blvd.
Bldg. 4
Tallahassee, FL 32399-1650

Fax: 904-488-9023

RE: Window cutout or Camera on GRAVITRON door.

Dear Mr. Safford:

I just received a call from one of your inspectors about the cutout window in the GRAVITRON door. The ride specifically mentioned is owned by FARROW AMUSEMENTS. It is mandatory for either the camera to be installed and operating or the window cut in the door.

It is acceptable for FARROW AMUSEMENTS to operate their GRAVITRON as long as ALL operators are instructed to not open the door more that 5" while the ride is moving. This will allow the operator to see the location of the stairs without creating a hazard for the passengers.

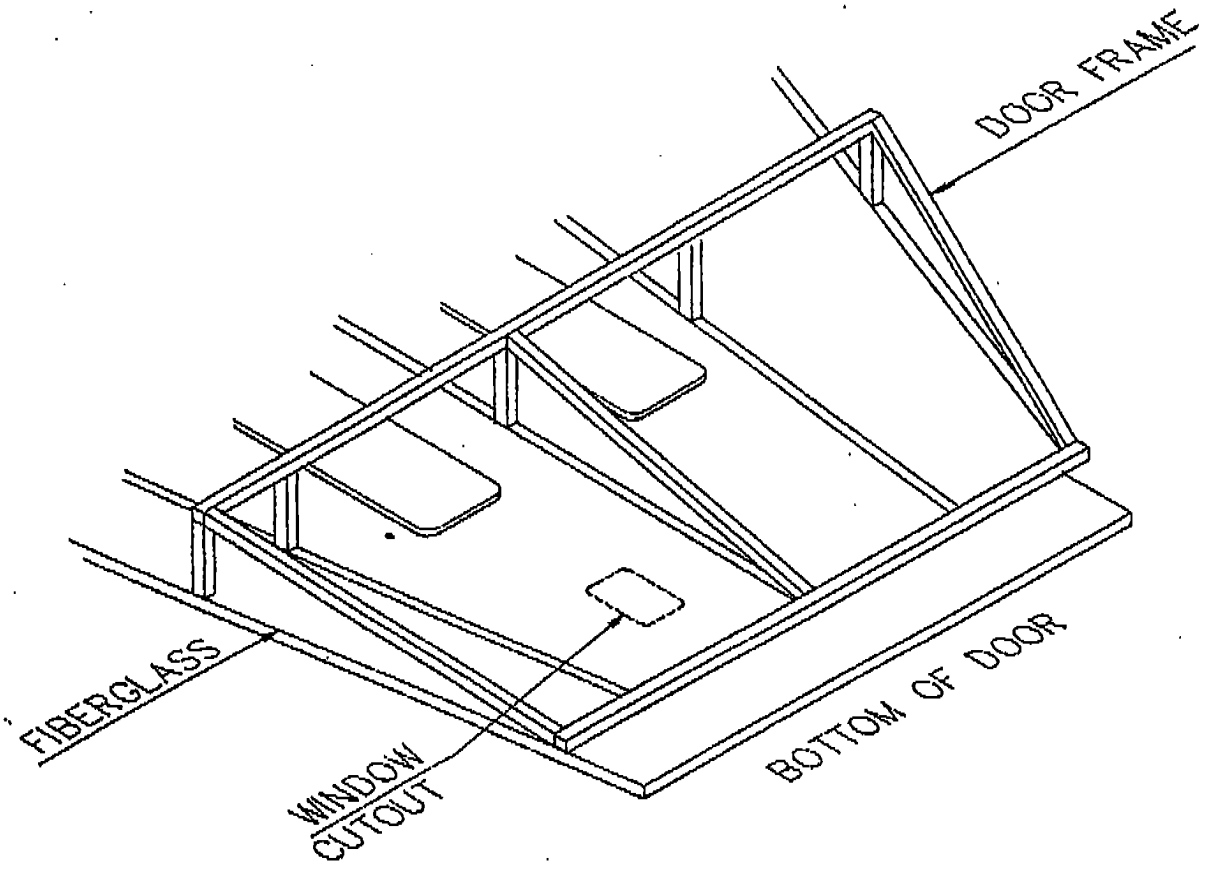
The window or camera system must be installed by January 29, 1993.

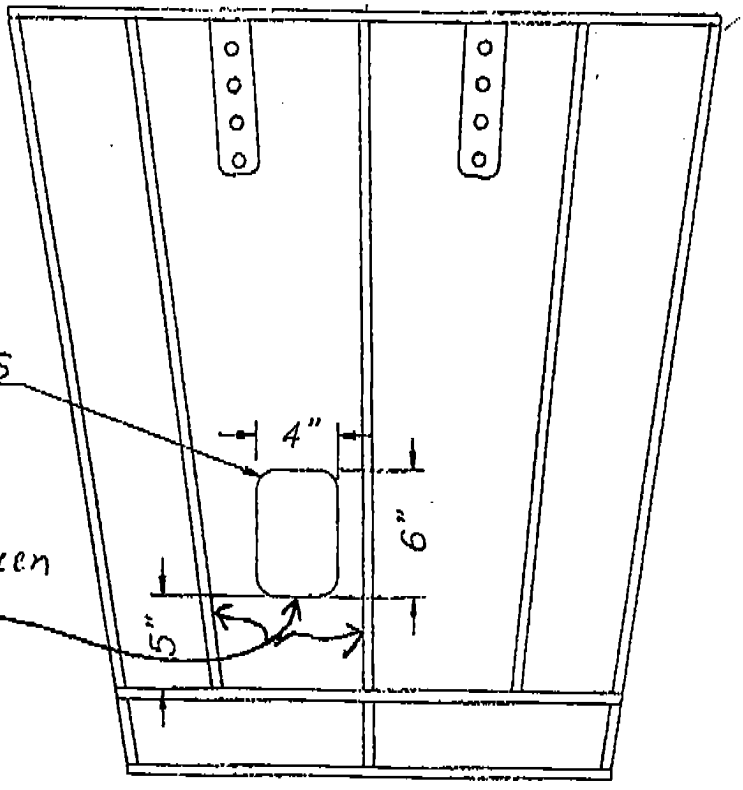
Enclosed is a copy of the cut out and the recommended location for the hole.

If you have any questions please feel free to give Jerry or me a call.

Sincerely,

Victor Wisdom

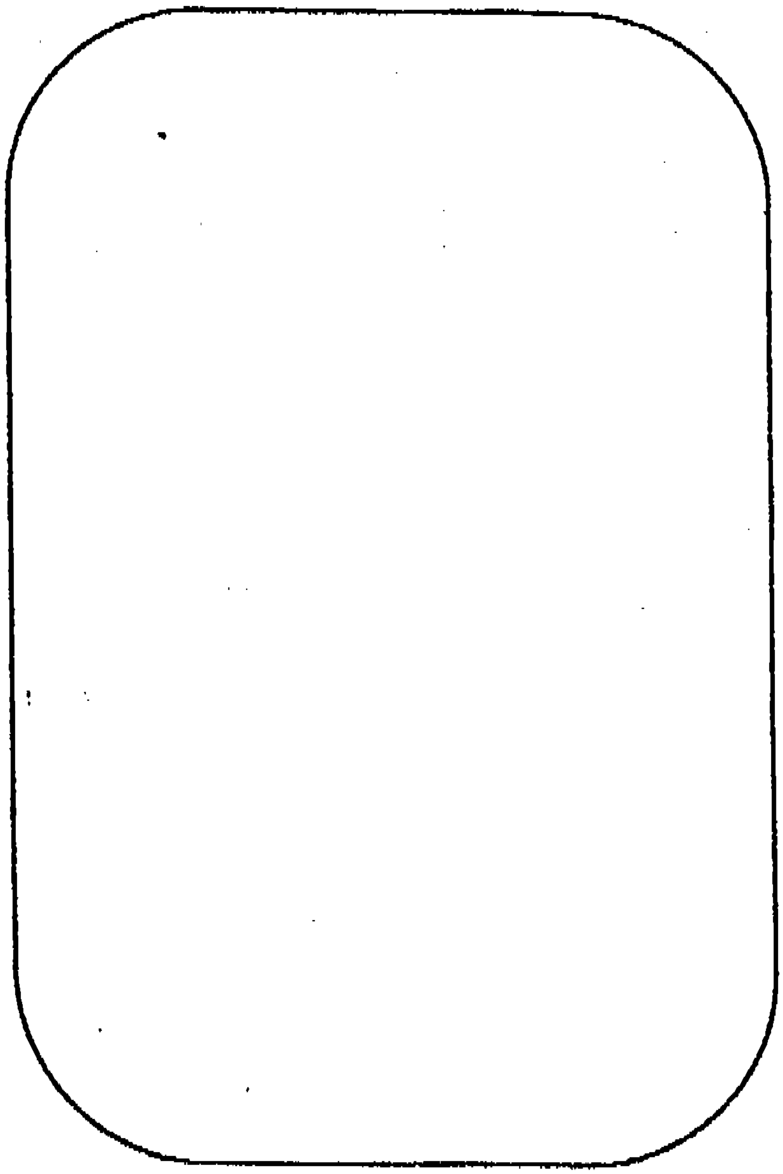




MAR 23, 1992 - 07:47:30 < F:\GRAV-DYN\ DOOR >

WISDOM INDUSTRIES Merino, CO 80741

THIS DRAWING IS A TEMPLATE OF THE CUT-OUT AREA FOR THE PANEL WINDOW. CUT-OUT AROUND THE EDGE, AND TRACE AROUND THE OUTSIDE WITH A HEAVY BLACK MARKER TO MARK THE AREA TO BE REMOVED ON THE PANEL. THE WINDOW CAN BE MADE FROM A PIECE OF CLEAR LEXAN MEASURING 8 x 6 AND SHOULD BE ATTACHED ON THE INSIDE OF THE PANEL BY MEANS OF BOLTS, SCREWS, OR POP-RIVOTS (FROM THE OUTSIDE – IN).



WMI INDUSTRIES, LTD.

January 15, 1993

Ron Safford
STATE OF FLORIDA DEPT. OF AGRICULTURE
Bureau of Fairs
3125 Conner Blvd.
Bldg. 4
Tallahassee, FL 32399-1650

Fax: 904-488-9023

RE: Window cutout or Camera on GRAVITRON door.

Dear Mr. Safford:

I just received a call from Mr. Greenwood about extending the allowance for other operators to operate without the camera or window cutout for the next two weeks. It is acceptable for them to operate their GRAVITRON as long as ALL operators of each ride are instructed to not open the door more that 5" while the ride is moving. This will allow the operator to see the location of the stairs without creating a hazard for the passengers.

The window or camera system must be installed by January 29, 1993.

I would like to talk to the owner of each ride to make sure they understand the operation instructions until the window is cutout or camera repaired.

If you have any questions please feel free to give Jerry or me a call.

Sincerely,

Victor Wisdom

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — TELEX · 45-0012

WMI INDUSTRIES, LTD.

January 15, 1993

Ron Safford
STATE OF FLORIDA DEPT. OF AGRICULTURE
Bureau of Fairs
3125 Conner Blvd.
Bldg. 4
Tallahassee, FL 32399-1650

Fax: 904-488-9023

RE: Cable around top of GRAVITRON panels.

Dear Mr. Safford:

I just received a call from an employee of UNITED SHOWS. They have not been allowed to operate their GRAVITRON because the cable will not go into the groove on all the panels on the ride. Their suggestion is to install a second cable in the groove on the panels and have the existing cable to hold the top on.

This sounds like an excellent idea.

Requirements are:

The second cable is at least 3/8" -19 aircraft cable, that is the specification of the cable that is provided with the ride.
The turnbuckles must be at least 1/2".
Both cables must be tight.
It would be best to attach the new cable to itself rather than the same point as the canvas attachment point.

If you have any questions please feel free to give Jerry or me a call.

Sincerely,

Victor Wisdom

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — TELEX · 45-0012

WMI INDUSTRIES, LTD.

Gravitron Service Bulletin.

ENCLOSED IN THIS LETTER:

OPERATOR MANUAL CHANGES. (Add to operators manual immediately.)
All rides

Add the enclosed pages to your operation manual. The major difference is the emphasis on installing the corner pins and wedges. The number of pins are noted so that an inspector or operator can count the number of pins to be sure that they are all installed each time the ride is set up before operation.

TURNTABLE SAFETY PLATES. (Compliance is required immediately)
All rides

The enclosed drawing and installation instructions are for the addition of the turntable safety plates. You may have already installed these plates if you have not they are mandatory and must be installed before continued operation of the ride. This applies to park and portable Gravitrons.

CORNER PIN REINFORCEMENT PLATES. (Compliance required by 5/15/92)
All rides

The drawing showing the corner pin reinforcement plate. Installation is mandatory for all portable Gravitrons. Several owners have indicated that they have found radial cracking on this plate. There has been no indication of pin pull through but this will help to keep the cracks from occurring. The plates require only a retaining weld to hold in position. The plates will be supplied at no charge but will require new corner pins which are longer to allow for the increased thickness of material. You can elect to use grade 5 bolts instead of the corner pins. The pins are $8.61 each. You can still use your present wedges.

The plates are optional for park model rides. The park model Gravitrons only need to install a structural washer on the head side of the corner bolt.

Only 16 plates or washers are needed. See drawing for location and welding information. The plate or washer goes on the right side of the panel under the head of the corner pin.

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — TELEX - 45-0012

FLOOR PIN INSPECTION AND REPLACEMENT. (Inspection immediate before continued operation. Replacement according to amount of wear.)
Portable rides only.

The enclosed sheet details the inspection procedure and the amount of wear that is allowable on the floor pin before it must be replaced. The pins must be inspected weekly until the higher slot pins are used.

When the higher slot pins are installed the inspection can be performed each time the ride is set up.

CARPET TRIMMING. (Comply at time of pin inspection.)
Portable rides only

Cut the carpeting back one inch around each floor pin. This will allow easier inspection of the floor pin condition. This will also help reduce the amount of water that can stand next to the pin reducing the capillary action of the carpet. Do not replace the carpeting in this area.

INSIDE STRAP INSTALLATION. (Installation required by 4/15/92)
Mandatory on all portable rides. Recommended for park rides

The enclosed drawing shows the installation of straps to the inside of the panel bottom frame. This will assist in inspection of the panel frame by showing if a weld is broken around the pin reinforcement plate.

PANEL BOTTOM FRAME INSPECTION (Inspection required immediately.)
Portable rides only

With the panel lifted from the floor, look inside each hole where the floor pin goes through the steel frame. Look for cracking of the 1/4" strap that is under the 3/8" Pin hole reinforcing plate.

INSIDE PANEL BOTTOM FRAME STRAP ADDITION

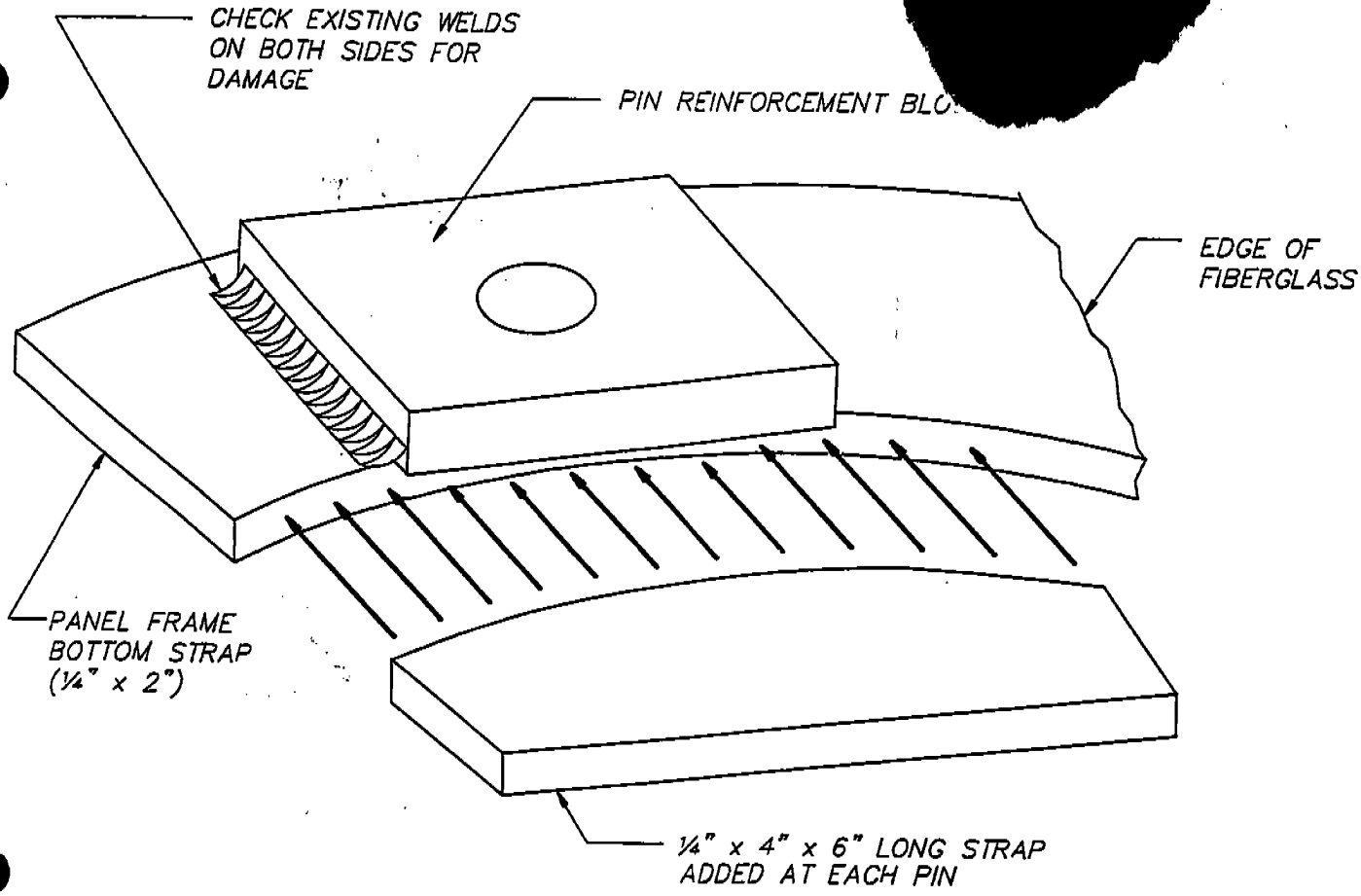
The enclosed drawing for the turntable saftey plates, also shows the addition of two straps to the bottom of the panel frame. These straps are welded to the 1/4" X 2" strap at the locations indicated on the panel drawing. Butt weld these straps to the existing strap and to the 3/8" reinforcement plate. You will need 30 straps and they are added to all panels except the door panel.

The strap and weld will give an indication if the weld on the 3/8" reinforcement block has broken and will show if the strap is working under the 3/8" reinforcement block.

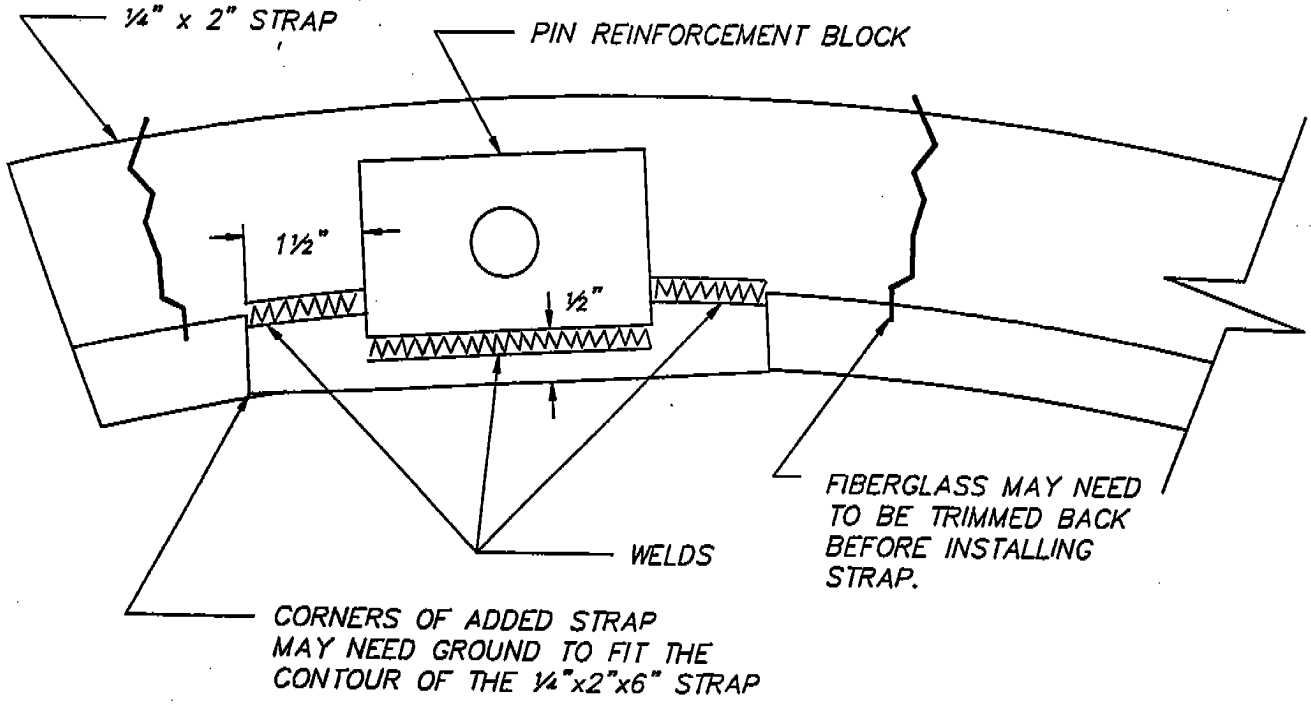
Use caution welding on the panel frame. excessive heat can set the panel on fire. Use water to cool the weld.

WARNING: Never weld on the panel and then immediatly leave. Sparks from welding on the panel or a hot frame could start a fire several minutes after you have finished welding.

It is a good idea to wait until the frame has cooled to the touch before leaving the ride unattended.



TOP VIEW



< F:\GRAV-DWG\RBLOCK >

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

OFFICE OF COMPLIANCE
AND ENFORCEMENT

Division of
Corrective Actions
Tel: 301-504-0608
Fax: 301-504-0359

JUN 2 1993

Victor Wisdom, President
Wisdom Manufacturing Inc. (WMI)
3758 County Road
Sterling, CO 80751

Re: CPSC CA910108
Wisdom Manufacturing Inc. (WMI)
Amusement Ride - "Gravitron"

Dear Mr. Wisdom:

The U.S. Consumer Product Safety Commission staff has reviewed the progress of the above-referenced corrective action plan. The Division of Corrective Actions has determined that no further monitoring on the part of the staff is warranted. Therefore, acting under delegation from the Commission, the staff has closed this investigation. The Commission staff, however, will reopen this file if it finds that the public has not been adequately protected from the risk of injury presented by this product by the corrective actions taken by the firm.

The firm has a continuing obligation to inform the Commission of defects associated with this product which could create a substantial product hazard and of information which reasonably supports the conclusion that a product creates an unreasonable risk of serious injury or death. If the firm receives any information affecting the scope, prevalence, or seriousness of the defect or hazard, it must report to this Division immediately.

The staff requests that the firm continue to implement its corrective action program. If the firm receives information which might indicate that its corrective actions are not satisfactory in eliminating the defect or hazard or that the effectiveness of the corrective action program was

less than what had been reported, it must report that information to the Division of Corrective Actions immediately.

Thank you for your cooperation in this matter.

Sincerely yours,

Marc J. Schoem
Director
Division of Corrective Actions

Certified Mail

cc: Consumer Product Safety Commission
Central Regional Center
Suite 2945
230 S. Dearborn St.
Chicago, IL 60604

WMI INDUSTRIES, LTD.

RE:GRAVITRON CONSOLE CENTER POST INSPECTION

Compliance: Mandatory Frequency: Annual

Due to reports of cracked console upright posts the following inspection is required.

See enclosed drawing for areas to inspect.

Inspection procedure:

1. Remove the operators seat from the console.

2. Lift out the console seat platform that the operators seat was pinned to.

DANGER!

HIGH VOLTAGE IS IN THE AREA UNDER THE FLOOR OF THE CONSOLE. TURN OFF THE MAIN ELECTRICAL POWER AND LOCK OUT THE DISCONNECT SO THAT THE POWER CAN NOT BE TURNED ON WHILE INSPECTING THE CONSOLE. SERIOUS INJURY OR DEATH CAN RESULT.

3. Inspect the area where the console posts are welded to the floor of the turntable.

4. Inspect the area where the console posts are welded to the console. Where the 1" framework is welded to the posts about 18" above the floor of the turntable.

5. Remove the white plastic cups and lights that are next to where the upright posts go through the fiberglass console. This requires removing four of the cups on both the upper and lower fiberglass consoles.

6. Inspect the posts looking into the hole where the light cup was screwed in. Carefully inspect the areas where holes are cut in the upright posts.

7. If no cracks are found reinstall the plastic cups and lights.

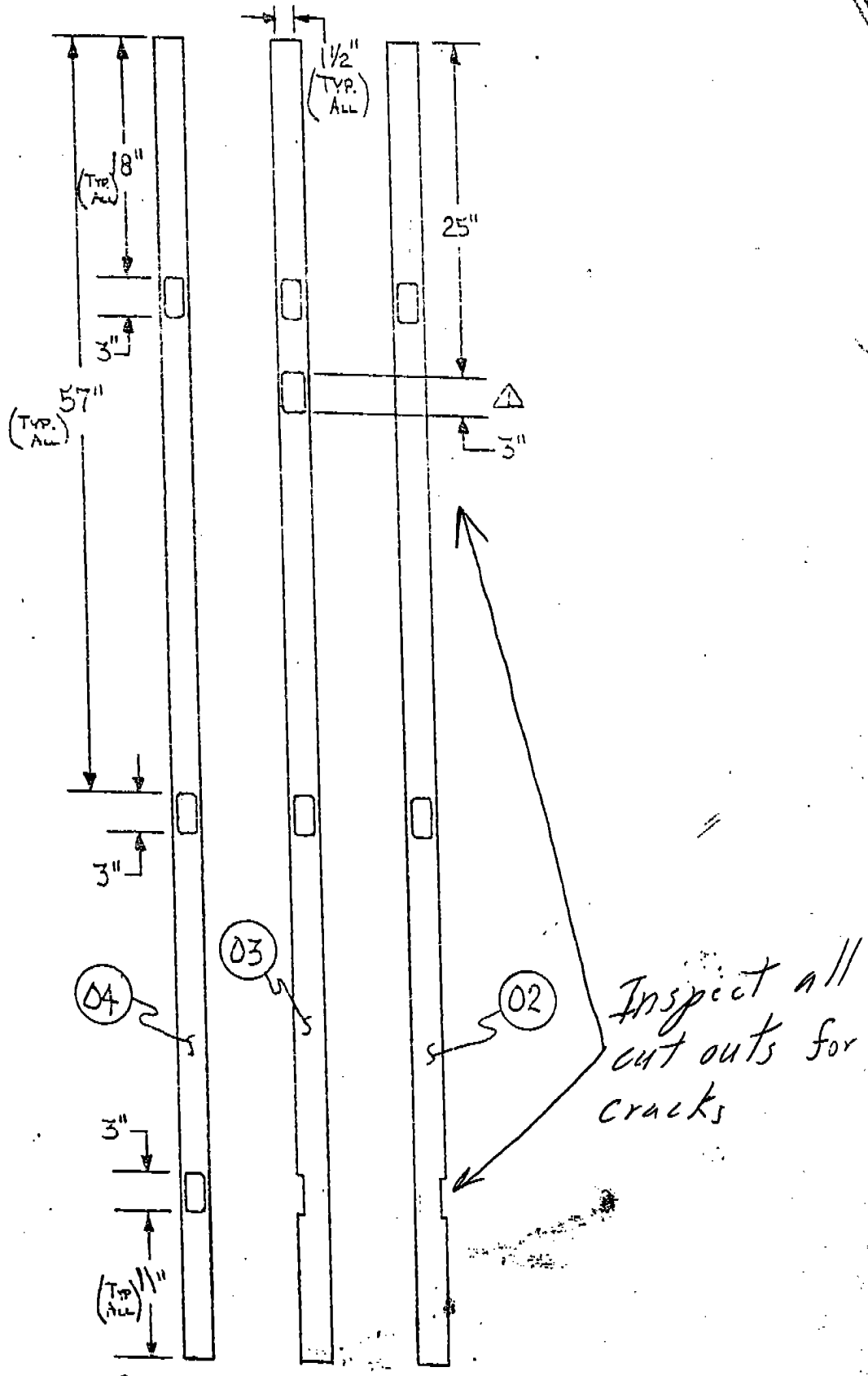
8. Inspect the posts where they extend through the upper console fiberglass in the area above the shelf. Carefully inspect the areas where holes are cut in the upright posts.

9. If cracks are found contact us for proper repair procedure.

10. Reinstall console seat platform and seat.

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902

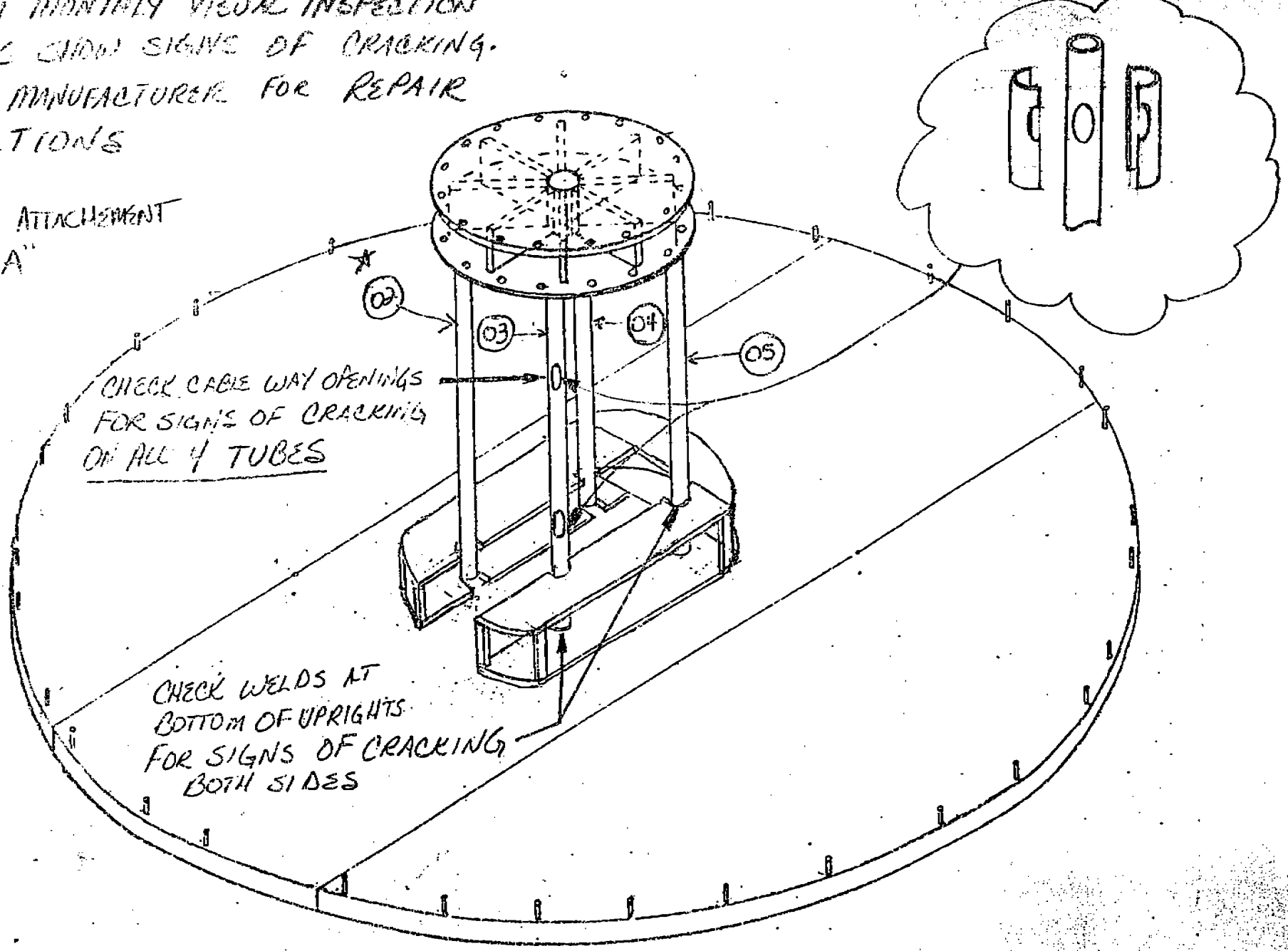
ATTACHMENT "A"



CUT OUT DETAILS - SUPPORT PIPES

PERFORM MONTHLY VISUAL INSPECTION
IF TUBES SHOW SIGNS OF CRACKING.
CONTACT MANUFACTURER FOR REPAIR
INSTRUCTIONS

* FOUND ON ATTACHMENT
SHEET "A"



ISOMETRIC VIEW OF TURNTABLE
& CONTROL BOOTH

WMI INDUSTRIES, LTD.

RE: OPERATION OF THE GRAVITRON WITH THE CANVAS TOP.

DANGER!

It has come to our attention that some operators have operated the Gravitron without the top on the ride. NEVER operate the Gravitron without the top on.

The top is a major safety factor on the ride. Operation of the ride with passengers could result in passengers coming out of the ride. This has never happened. Serious injury or death could result from this operating practice.

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902

WMI INDUSTRIES, LTD.

Date:August 6, 1993

RE:Gravitron Top Sweeps.

Compliance: Mandatory

Recent inspections of used Gravitrons have shown wear on the holes on the end of the sweeps where the panel top pins and wedges go through. Wear on these holes comes from not keeping the cable tight on the top of the ride.

WARNING!
DO NOT OVER TIGHTEN THE TOP SAFETY CABLE. THE EARS THAT THE TURN BUCKLES ARE ATTACHED TO CAN TEAR OUT OF THE TUBING.

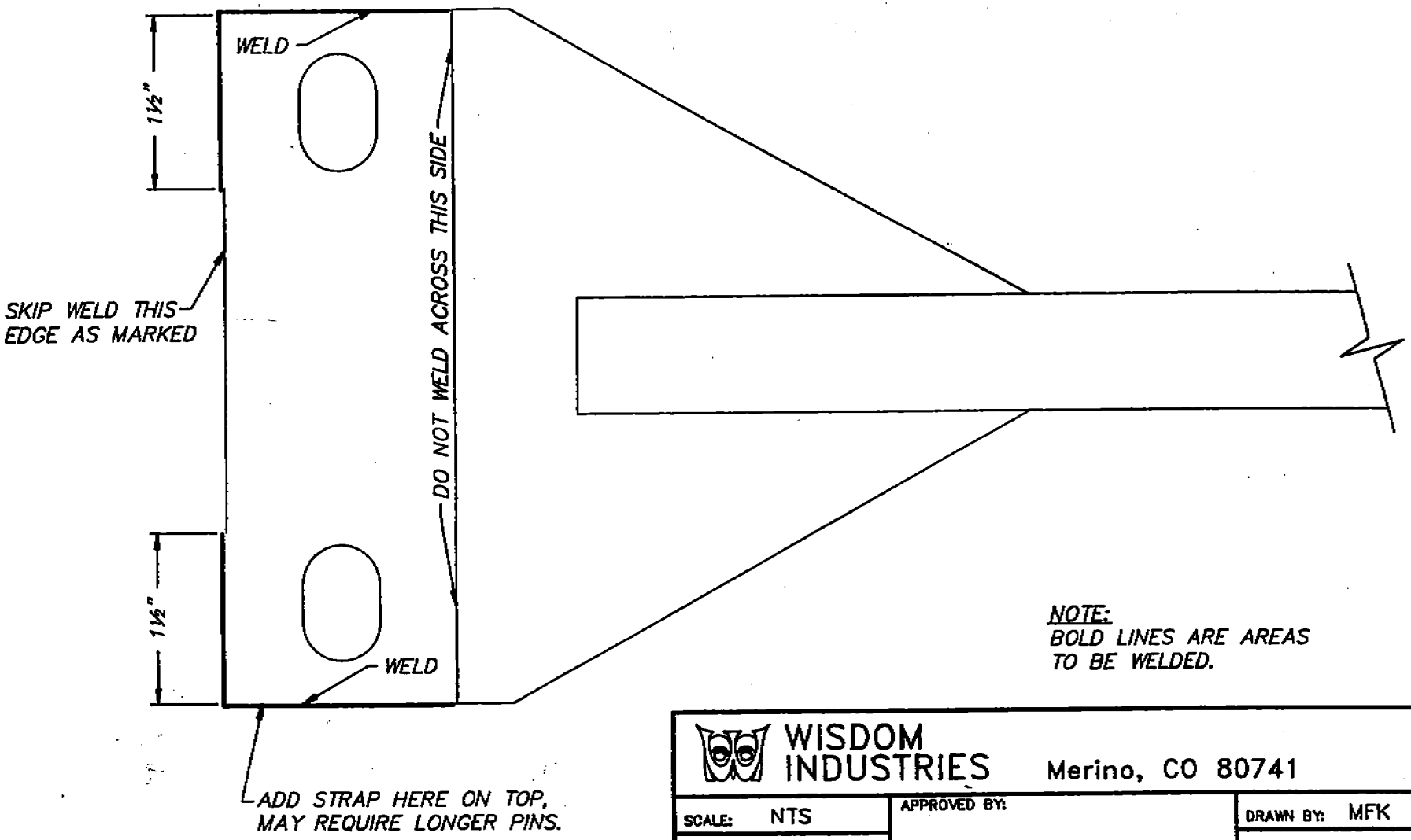
Original measurement of the holes:
.675 inch (11/16") by 1.00 inch (1").

Maximum wear allowance for each hole:
.750 inch (3.4") by 1.125 inch (1-1/8").

If a hole is larger than this a doubler plate must be added to the end of the sweep. The enclosed drawing shows the procedure for installing this plate.

Weld only in the areas marked on the drawing.

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902



NOTE:
BOLD LINES ARE AREAS TO BE WELDED.

WISDOM INDUSTRIES Merino, CO 80741

SCALE: NTS	APPROVED BY:	DRAWN BY: MFK
DATE: 7-29-93		REVISED

DESCRIPTION
PANEL TRUSS - PIN PLATE REINFORCEMENT

EQUIPMENT:	DRAWING NUMBER
GRAVITRON	SAFETY

JUL 29, 1993 - 12:17:20 < H:\GRAV-DWG\SAFETY >

WMI INDUSTRIES, LTD.

RE:GRAVITRON DOOR OPENER.

Compliance: Mandatory

Due to reports of door openers on the Gravitron not being maintained it is mandatory that a door catch be installed on all Gravitrons. There are two types of catches that have been fabricated and installed on most Gravitrons.

The original type is a flip up finger that hangs from the sweep. As the door is raised past this finger it drops down under the door. An electric solenoid pulls the finger up when the door is lowered. This type of door catch is acceptable as long as the operator raises the door past this catch each time the door is opened. The operator must be sure that there is no one standing under the door when he lowers it.

The second type of door catch is a telescoping rod and pipe arrangement. This is welded on the side of the door frame and operates with a solenoid in the same manor as the first door catch does except that it will catch the door at any position on the way up. This is the preferred type of catch.

WARNING!

INSTALLATION OF THE DOOR CATCH DOES NOT RELIEVE THE REQUIREMENT OF MAINTAINING THE DOOR OPENER AND CABLES.

Installation:

1. Check the operation of the door opener. The door must stop immediately when the close button is released. Pull down on the door to see if it slips down. If it does slip down, adjust the clutch and brake until it will stay in position when the button is released.

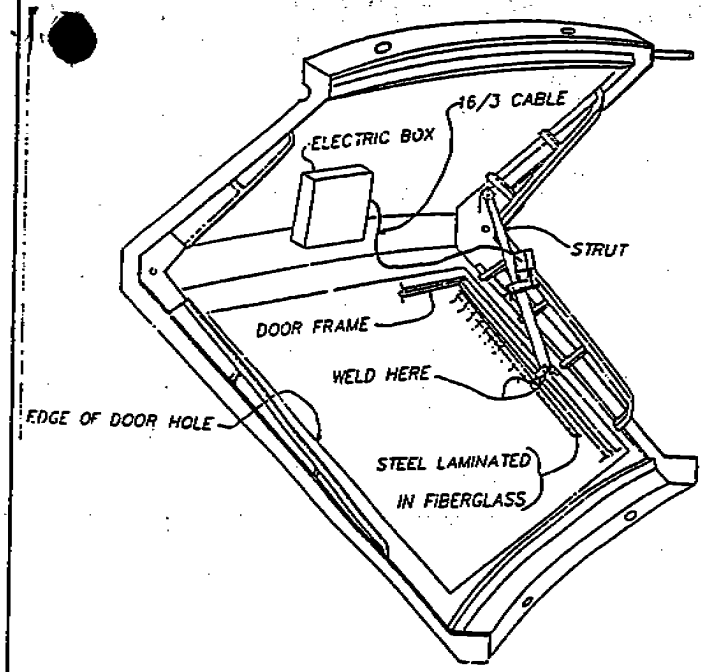
2. Weld the brackets to the side of the door frame as shown on the enclosed drawing.

3. Connect the wires to the door opener as shown on the same drawing.

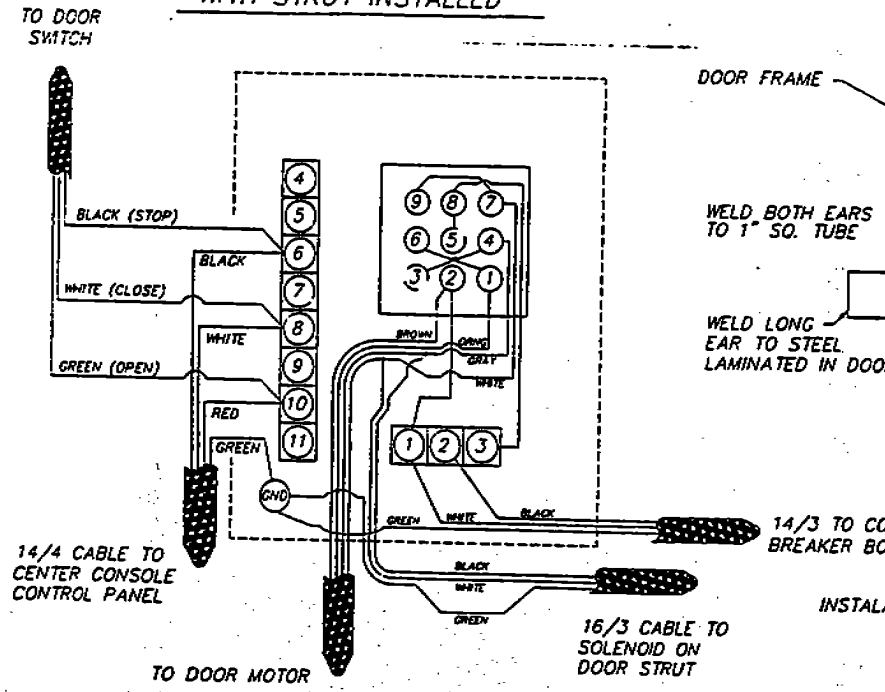
4. Test the operation.
   The solenoid will operate only while the door is being lowered.

5. If the door catch will not release, check the adjustment on the clutch and brake on the door opener. If the door slips down or coasts down, the door catch will not release. Adjust the clutch and brake to keep this from happening.

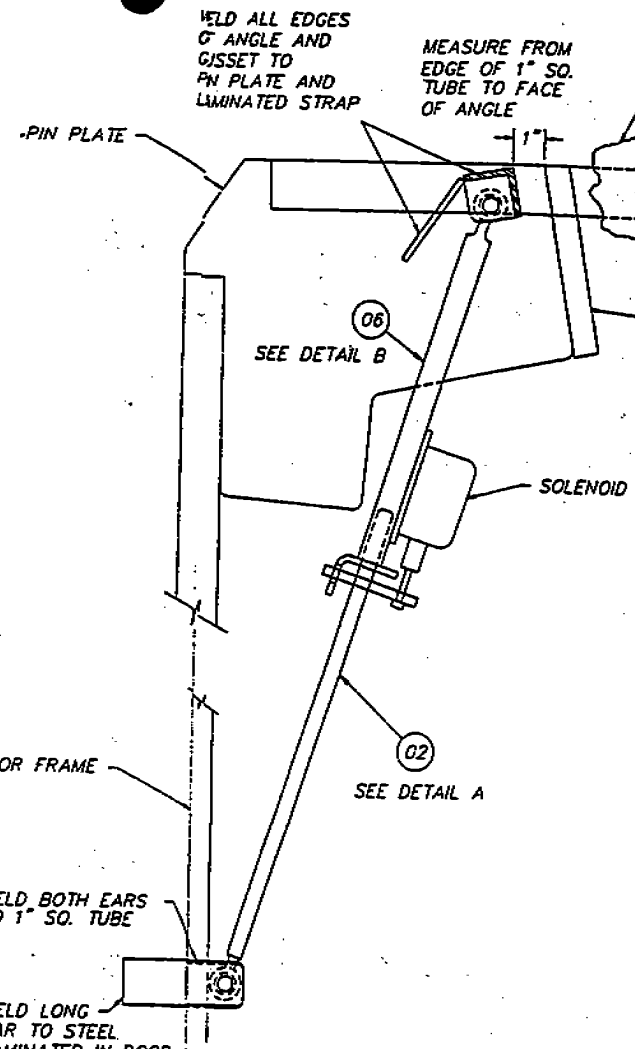
P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902

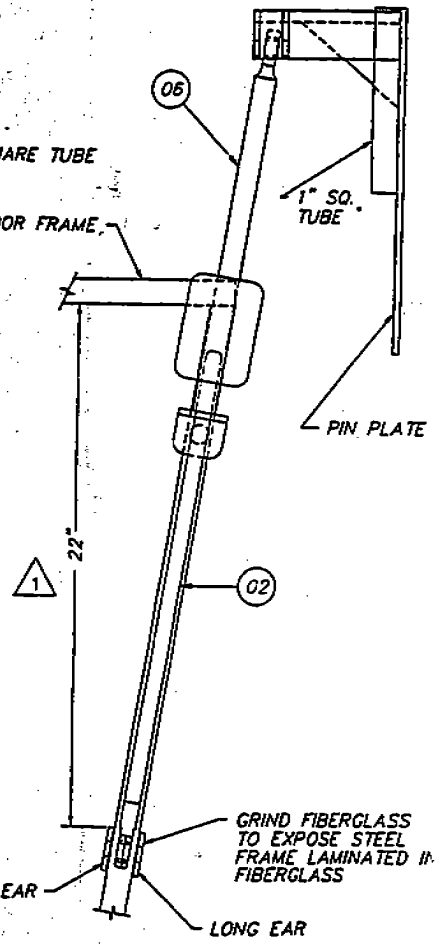


ISOMETRIC OF DOOR PANEL
WITH STRUT INSTALLED



ELECTRICAL BOX DETAIL
NOT TO SCALE





JUN 24 1993

INSTALATION NOTES:

1) REMOVE FIBERGLASS FROM INDICATED AREA.
2) WELD LOWER EARS TO SIDE MEMBER OF DOOR FRAME AS SHOWN.
3) WELD 2" x 2" ANGLE AND GUSSET TO PIN PLATE AS SHOWN.
4) SPLICE 16/3 CABLE TO WIRES IN ELECTRICAL BOX AS SHOWN.

02 Jun 93	CHANGE DIMENSION AND ADDED WIRING	1

WISDOM INDUSTRIES Merino, CO 80741

SCALE: 3"=1'-0"	APPROVED BY: Randy McCrack	DRAWN BY: BUSH
DATE: 4-1-91		REVISED
DESCRIPTION: DOOR SAFTY STRUT		
EQUIPMENT: GRAVITRON		DRAWING NUMBER: W 530

WMI INDUSTRIES, LTD.

Date:August 6, 1993

RE:Inspection of Gravitron turntable frame and trailer main bearing box.

Compliance: Mandatory

INSPECTION AREA ONE: MAIN TURNTABLE.

Recently one used Gravitron has shown cracks on the main turntable frame. The enclosed drawing shows the areas to inspect for cracks. If cracks are found contact us for the proper procedure of repair and so that we can use this information to evaluate how common this problem is.

Access to the area to be inspected is under the operators seat.

1. Turn off the main power to ride at the fuse box and pull the fuses or padlock the main disconnect handle so the power can not be turned on.

2. Remove the operators seat.

3. Lift out the center section of the console.

DANGER!
THE MAIN POWER TO THE INSIDE OF THE RIDE IS UNDER THE OPERATORS SEAT. FAILURE TO TURN OFF THE POWER WHILE IN THIS AREA WILL CAUSE SERIOUS INJURY OR DEATH.

INSPECTION AREA TWO: TRAILER MAIN BEARING BOX.

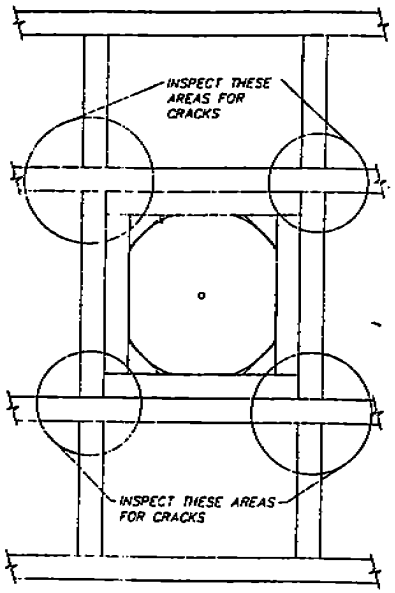
Field reports have indicated that cracks have been found in the area where the main bearing box welds to the trailer frame. Inspect these welds and the bearing box for cracks. If cracks are found contact us for the proper repair procedure.

Access to the area to be inspected is under the ride at the center of the trailer.

See drawing for areas to inspect.

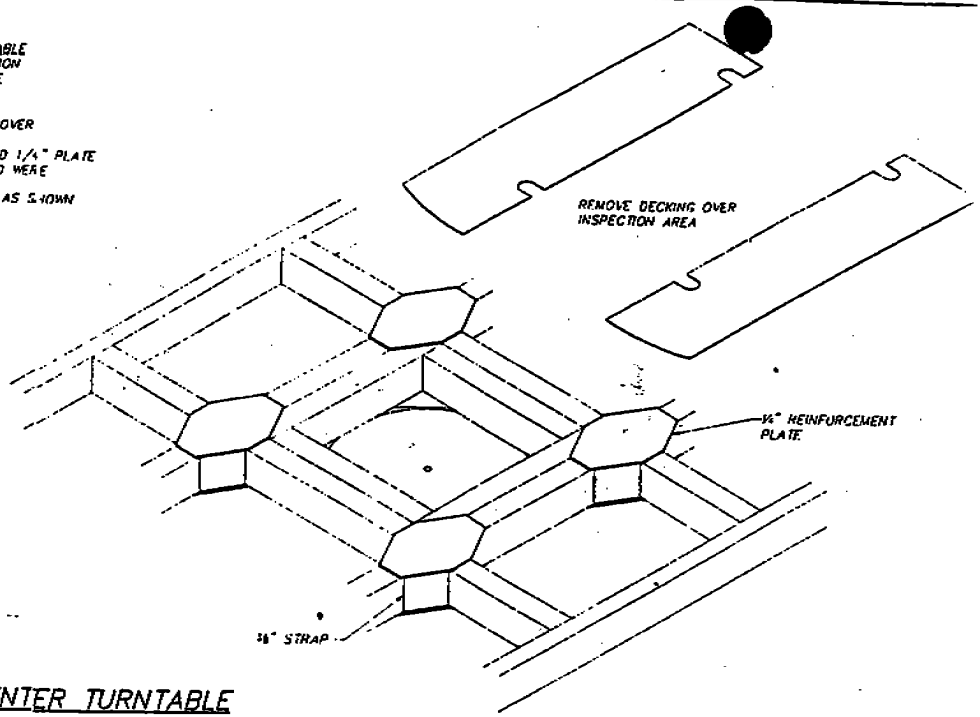
DANGER!
TURN OFF THE MAIN POWER TO THE RIDE AND PADLOCK THE MAIN DISCONNECT HANDLE SO THAT THE POWER CAN NOT BE TURNED ON WHILE UNDER THE RIDE.
OPERATION OF THE RIDE OR TURNING ON OF THE FAN WHILE UNDER THE RIDE WILL CAUSE SERIOUS INJURY OR DEATH.

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902

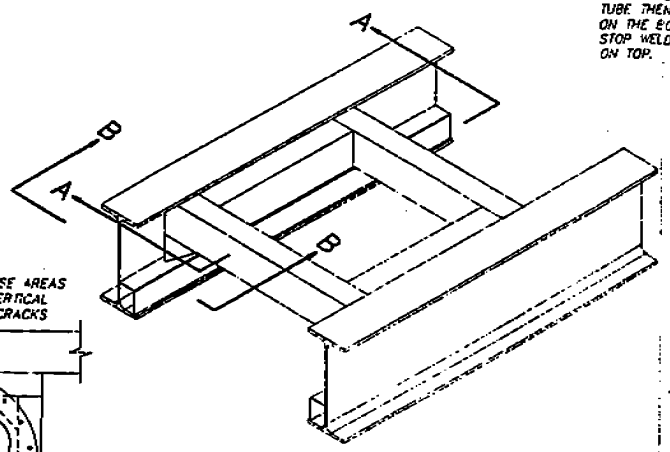


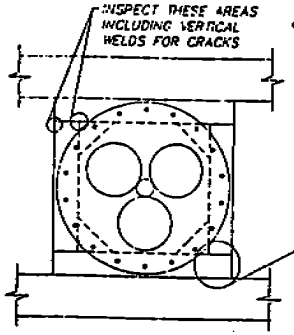
INSPECTION DIRECTIONS FOR TURNTABLE

1. INSECT BOTTOM OF CENTER SECTION OF TURNTABLE FOR CRACKS WERE NOTED.
2. IF ANY INDICATION OF CRACKS GO INSIDE AND REMOVE DECKING OVER INSPECTION AREA.
3. WELD ALL CRACKS AND THEN ADD 1/4" PLATE ON ALL FOUR CORNERS AND WELD WERE NOTED.
4. WELD ¾" STRAP ⅛" FROM EDGE AS SHOWN

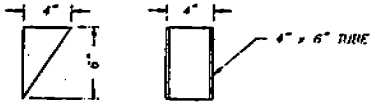


BEARING BOX ON CENTER TURNTABLE





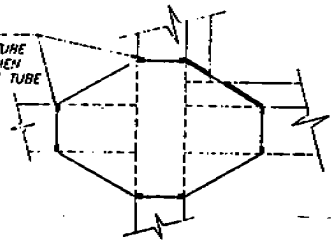
BEARING BOX ON TRAILER



TUBULAR GUSSETT

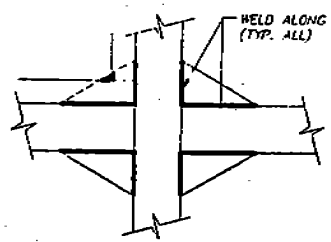
SCALE 1½" = 1'-0"

START WELD 1" ON TOP OF TUBE THEN WELD PLATE TO TUBE ON THE BOTTOM OF PLATE THEN STOP WELD 1" FROM EDGE OF TUBE ON TOP.



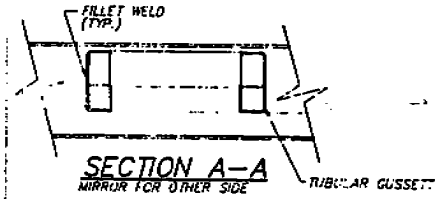
TOP VIEW REINF. PLATE

TOP PLATE SHOWN (BOTTOM VIEW FOR BOTTOM PLATE)
SCALE 1½"=1'-0"



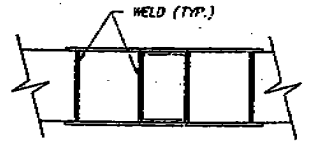
BOTTOM VIEW REINF. PLATE

TOP PLATE SHOWN (TOP VIEW FOR BOTTOM PLATE)
SCALE 1½"=1'-0"



SECTION A-A

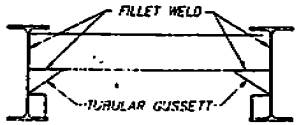
MIRROR FOR OTHER SIDE



SIDE VIEW REINF. PLATE

SCALE 1½"=1'-0"

NOTE:
YOU CAN ONLY BOX IN 3 SIDES.



SECTION B-B

WISDOM INDUSTRIES	Merino, CO 80741		
SCALE: 3/4"=1'-0"	APPROVED BY: JUN 0 0 1997	DRAWN BY: MFK	
DATE: 6-7-93		REVISED	
DESCRIPTION: BEARING BOX INSPECTION			
EQUIPMENT: GRAVITRON		DRAWING NUMBER: INSPECTION	

JAN 06, 1998 - 11:03:27 < B:\GRAV-DWG\INSPECT >

Gravitron
WMI

WMI INDUSTRIES, LTD.

October 26, 1993

Lowell Parish
FLORIDA DEPT. OF AGRICULTURE
BUREAU OF FAIRS
3125 Conner Blvd.
Bldg. 4
Tallahassee, FL 32399-1650

FAX 904-488-9023

RE:GRAVITRON FLOOR PIN REPLACEMENT.

Dear Sir:

We received a call this morning about substituting a bolt for a floor pin on a GRAVITRON. There is no problem with replacing the pin with a bolt as long as the bolt is a grade 5 3/4" diameter bolt and nut. The nut should be a lock nut or the bolt must be double nutted to prevent loosening.

If you have any questions please contact me.

Sincerely,

Victor L Wisdom

Victor Wisdom

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902

WMI INDUSTRIES, LTD.

November 18, 1993

Lowell Parish
FLORIDA DEPT. OF AGRICULTURE
BUREAU OF FAIRS
3125 Conner Blvd. Bldg. 4
Tallahassee, Fl 32399-1650

Fax: 904-488-9023

RE: Replacing the pins with a bolt on Gravitron & Starship 2000 models.

Dear Sir,

There is no problem with replacing the pin with a bolt as long as the bolt is a grade 5 3/4" diameter bolt and nut.

The corner pin can be replaced with a bolt with a double nut locking system and can also be used in the corner of the panel.

If you have any questions, please contact me.

Sincerely,

Dale Colerick

Dale Colerick

P. O. BOX 5000 — STERLING, COLORADO 80751 — 303-522-7515 — FAX 303-522-2902

WISDOM INDUSTRIES, Ltd.

February 25,1998

To Whom It May Concern:

The question arose about the safety of operation of a Gravitron that apparently has the cam followers, or bearings, mounted to the back of the seats froze up and not turning freely.

While this will diminish the effect and thrill of the ride, this alone should not be a safety concern.

The operator should be cautioned to watch passengers and not allow them to walk their way up the seat while spinning at full speed.

James R. Merrell

James R Merrell

Wisdom Industries, Ltd.

P. O. Box 5000 — Sterling, Colorado 80751 — 970-522-7515 — Fax 970-522-2902