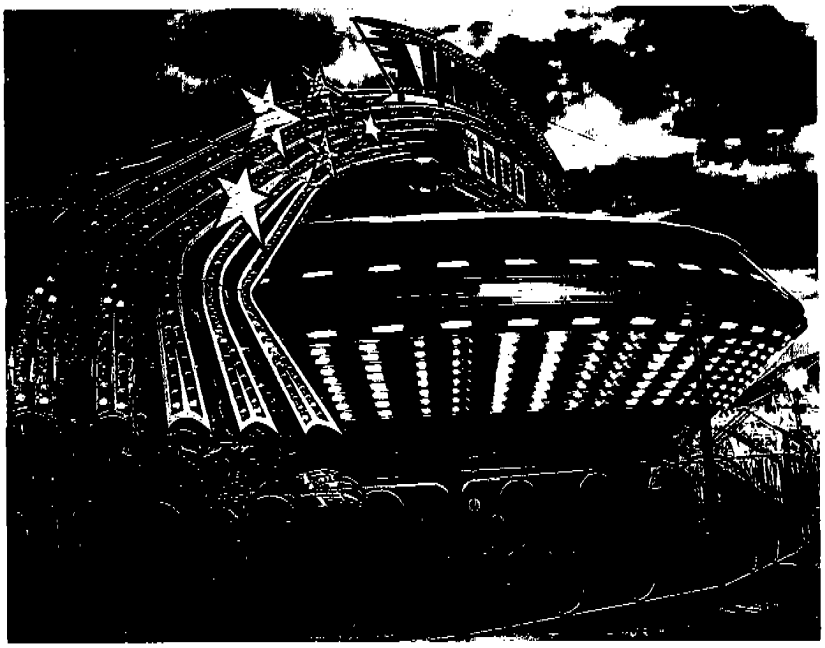
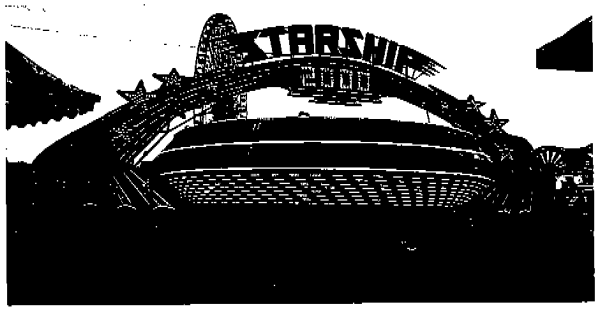
Wisdom

MFG: WISDOM COMPANY
NAME: STARSHIP 2000
TYPE: NON-KIDDIE

STARSHIP 2000





STARSHIP 2000

DESCRIPTION:

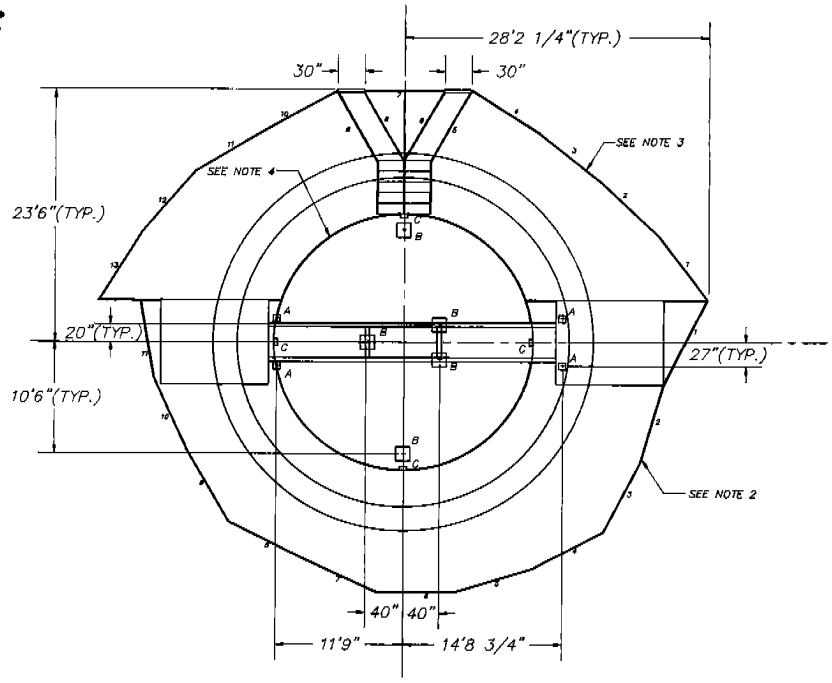
The STARSHIP 2000 - ***The Next Generation Starship*** sm - will energize thrill seekers into the 21st Century! Its spectacular scenery and exhilarating lighting really draw huge crowds. This fantastic action experience guarantees satisfied customers. Spinning at 24 RPM, STARSHIP 2000 uses centrifugal force to float the passengers off the floor giving them the feeling of weightlessness.

Dollar for dollar, the best thrill ride value in the amusement business: STARSHIP 2000 features capacity for 45 people. Its fast loading and unloading is capable of handling 1000 riders per hour! Thrill ride connoisseurs of all ages will ride the STARSHIP 2000 over and over again.

SPECIFICATIONS:

DIMENSIONS		POWER REQUIREMENTS		CAPACITY	
Ride	56' long x 47' wide	Drive Unit	30 HP 3 Phase 220V	Seating	45 Adults or Children
Trailer Mounted	48' long x 8'6" wide x 13'6" high 37,000 pounds gross weight	Electrical	33 kW 3 Phase 5 wire 220V	Hourly	1000 Passengers

SETUP CONFIGURATION:



WISDOM INDUSTRIES, LTD.

PO Box 5000 Sterling, Colorado 80751
(303) 522-7515 Fax (303) 522-2902 Customer Service Hot Line 1-800-634-6097

Family Entertainment Centers • Parks • Carnivals • Malls

GRAVITRON & STARSHIP 2000

WMI Industries, Ltd.
P.O. Box 5000
Sterling, CO 80751
970-522-7515
800-634-6097

ADDENDUM TO THE GRAVITRON MANUAL FOR THE STARSHIP 2000 SERIES GRAVITRON

The major changes in the assembly procedure of the Starship 2000 are as follows:

Install the cross bar over the top of the console and then install the I-beam for lifting the panels to place the panels in position.

The rest of the assembly of the panels is the same as listed for the Gravitron.

Install the canvas top.

Spread out the top as described in Step #37.

Hook up the turnbuckles and tighten the turnbuckles as listed in step #38.

After the cable is tightened and in the groove of the fiberglass panels, install the rain cover over the top of the ventilation fan that is mounted in the console above the operator's head.

In addition tot he check list: Check the operation of the door safety catch by raising the door part way, using the door opener. Then lift on the door to see if the catch mounted on the side of the door will hold the door with the cables loose.

After verifying the operation of the door catch, manually release the door catch plate. Allow the door to come down against the tension on the cables and then raise and lower the door to check for normal operation.

In addition to the daily operator checklist: The Starship 2000 is equipped with a air breaking system. Make sure before operating the ride that the air compressor is turned on and that a sufficient amount of air has built up to where the compressor turns off. Operate the ride and actuate the brakes manually to be sure that they are effective in stopping the ride.

Be sure that ALL PINS AND WEDGES ARE INSTALLED in the Gravitron panels. They should be inserted to where they are snug and can just be safety clipped.

Additional inspection items for the Starship 2000 are that on a monthly basis, the floor pins should be inspected from underneath to make sure that they are not wearing through the turntable strap that they are inserted into

Inspect the main wings, turntable, and drive rim for cracks.

The ride should be set up and all items listed in the setup instructions and checklists complied with as listed for the Gravitron.

GRAVITRON MANUAL

TABLE OF CONTENTS

ASSEMBLY PROCEDURE

1. Select site and mark out the area where the GRAVITRON is to be set up for operation.
2. Lower the leveling 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 the 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 traveling 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 it's 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 of 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 aluminum 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 opposite the door panel and slide it just past the center of t he 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 traveling pins sand 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 safety 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 lit 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. **There are 16 pins and wedges that connect the center of the panels behind the couches.**

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 OVER-TIGHTEN 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.

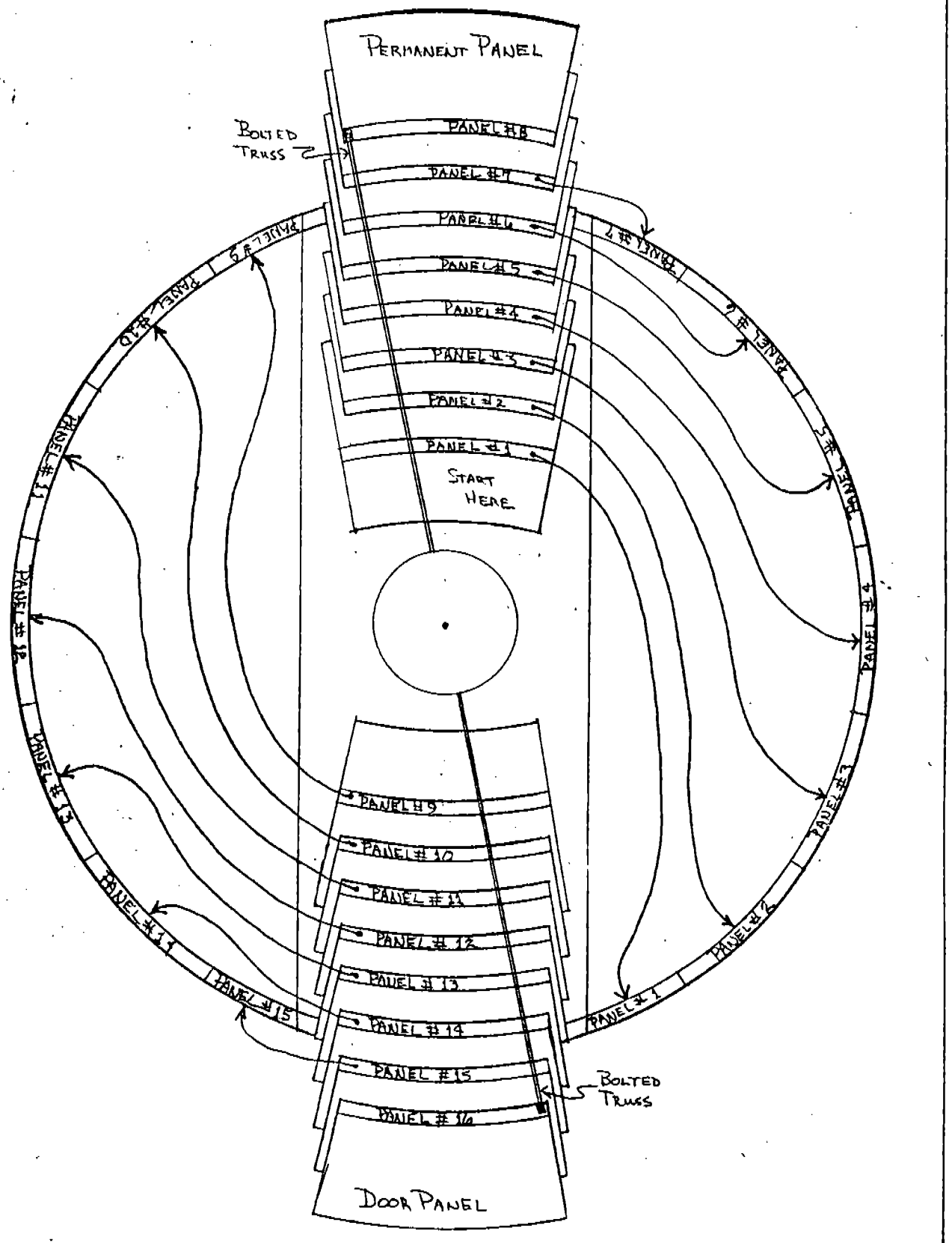
48. After the ride has been completely assembled, a check must be made by the supervisor to ensure all equipment has been correctly secured.

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 ~~LH~~ DATE 6/13/84 SUBJECT PANEL SET-UP PAGE ___ OF ___

FILE IN GRAVITRON S.O. ___

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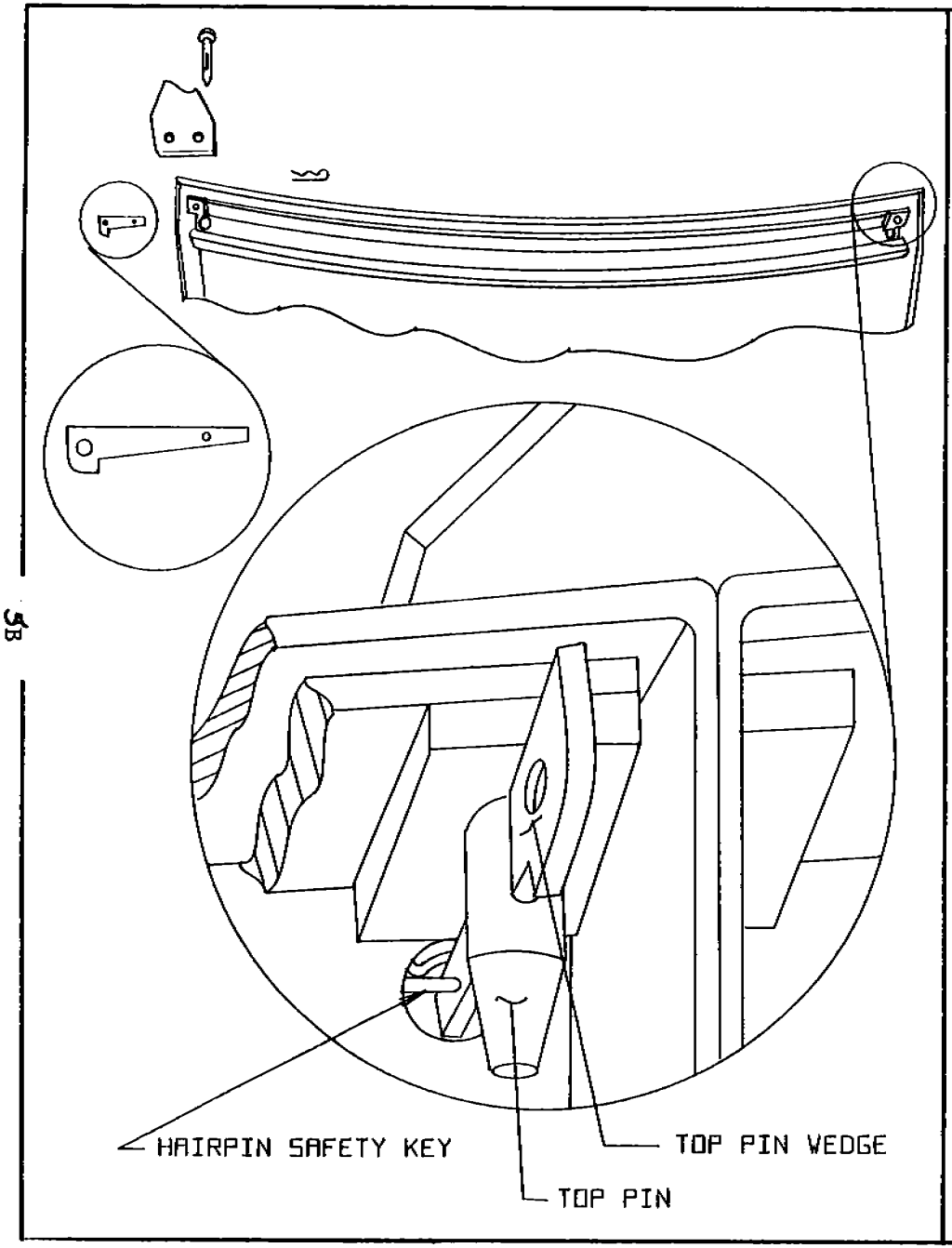
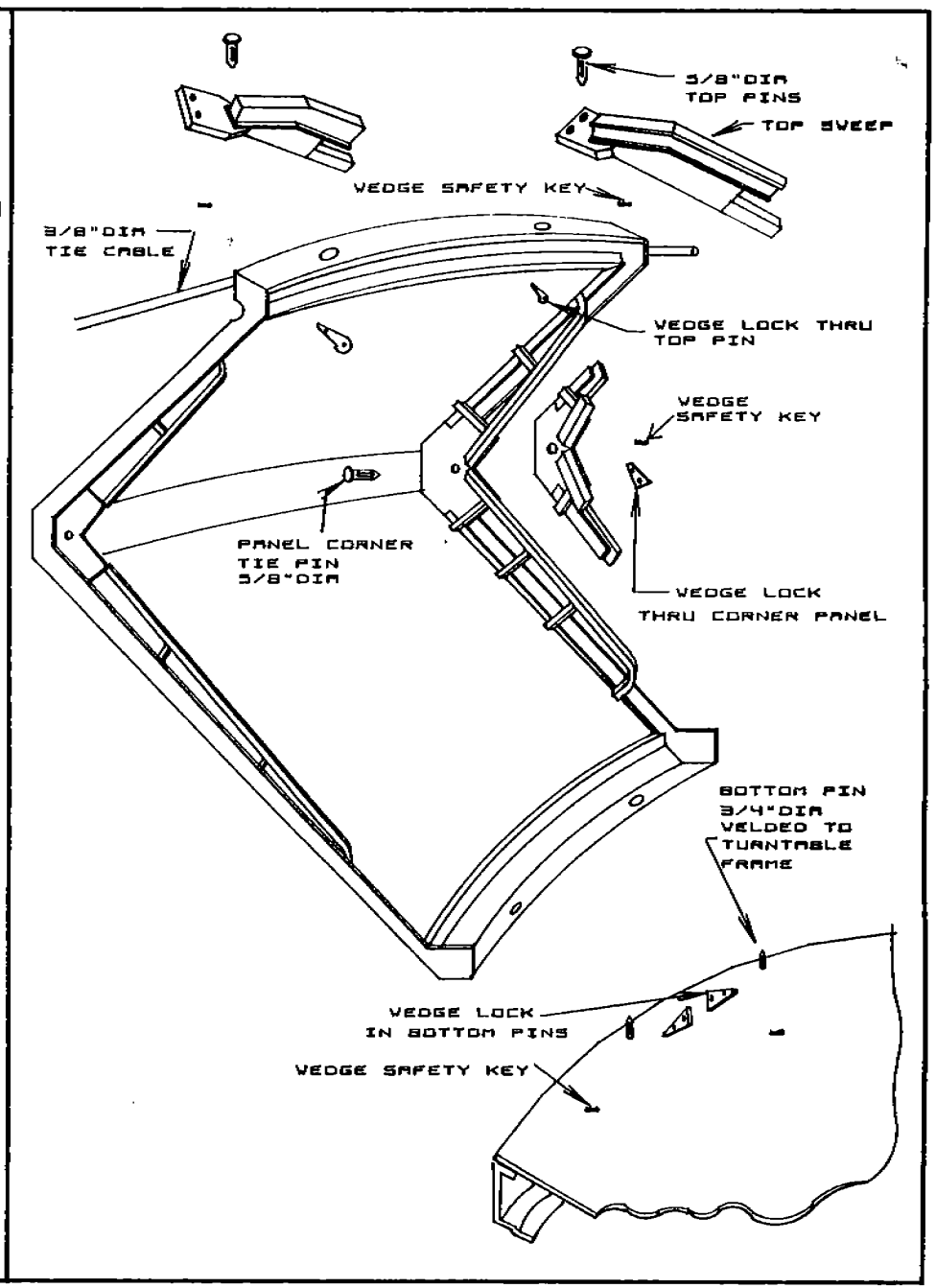

HAIRPIN SAFETY KEY
TOP PIN WEDGE
TOP PIN


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
3/8"DIA
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 the 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 switches "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 bottom 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.

10. 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.

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

12. 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 **4 wing safety bolts** are installed, tight, and safety keyed under the main turn table at the joint.

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 PSI.

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

INSIDE RIDE CHECKLIST

27. Check that 30 special top wedges are the only wedges used to pin the top of the panels to the sweeps.

28. **Check that 16 corner pins and wedges are installed between panels behind couches. (See drawing showing pin installation).**

29. **Check that 28 wedges are installed in the floor pins and are snug.**

30. Check that safety keys are in all wedges.

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 micro-switches 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.
( )( )( )( )( )( ) 4 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 PSI
( )( )( )( )( )( ) 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

( )( )( )( )( )( ) 16 wedges and pins in corners of panels behind couches
( )( )( )( )( )( ) 30 top pins and hooked wedges installed in tops of panels.
( )( )( )( )( )( ) 28 Floor wedges installed on bottom of panels.
( )( )( )( )( )( ) 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 plugged in.
( )( )( )( )( )( ) Top of light controllers 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 it's 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 rejuvenator, 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 PSI.

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.

ATTENTION!!!

The following is a description of the proper procedure for filling and checking the level of oil in the fluid coupler of the Gravitron.

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 5 minutes to start turning.

1. If running for the first time of the day, run the GRAVITRON **A MINIMUM** of 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 approximately 5 seconds or less. 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 approximately 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 a month).
10 weight hydraulic oil (change 10 weight oil once a month).

DANGER!!!

THE OIL WILL BE SCALDING HOT.

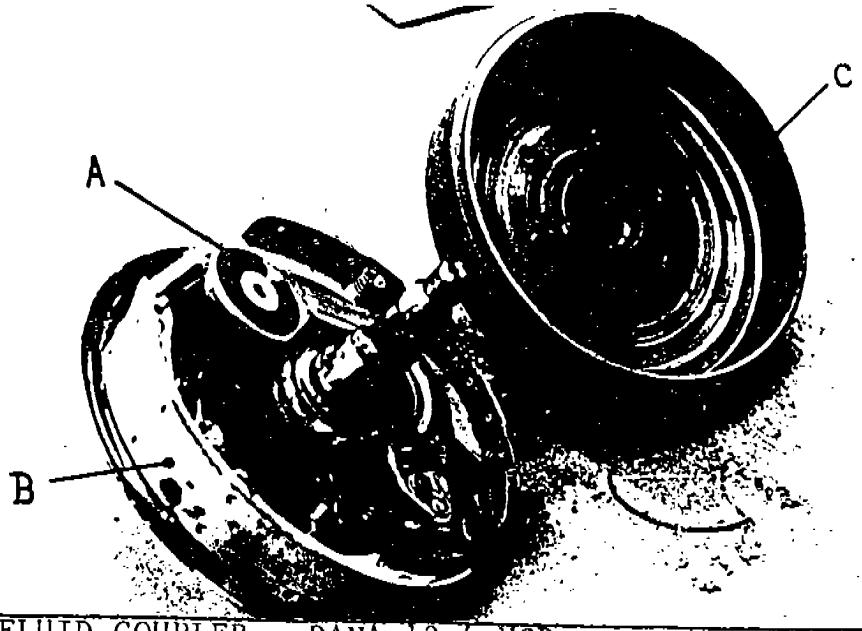
MAKE SURE PLUG IS STRAIGHT UP BEFORE REMOVING PLUG TO ADD OR DRAIN OIL.

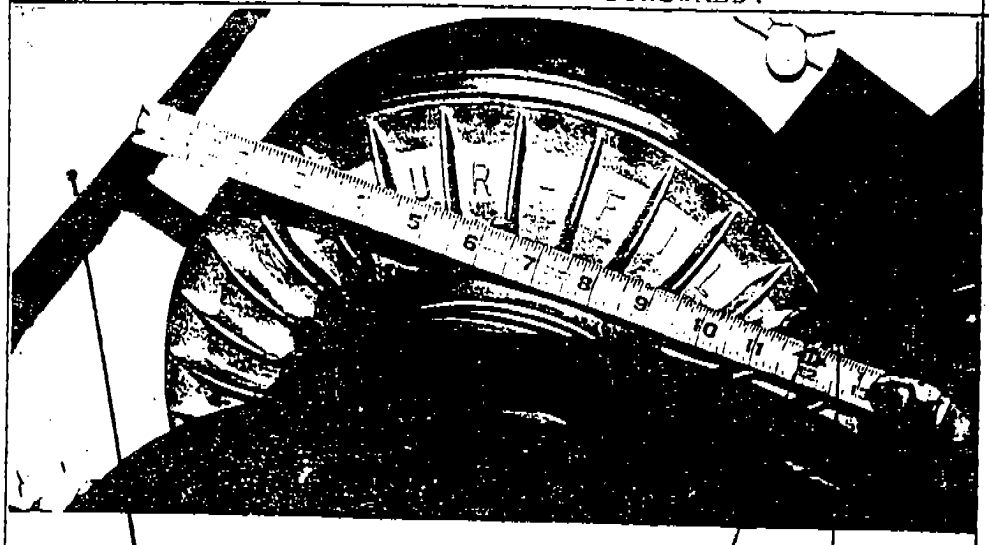
BE SURE POWER TO THE RIDE IS TURNED OFF BEFORE GETTING UNDER THE RIDE.

SEVERE INJURY OR DEATH MAY RESULT.

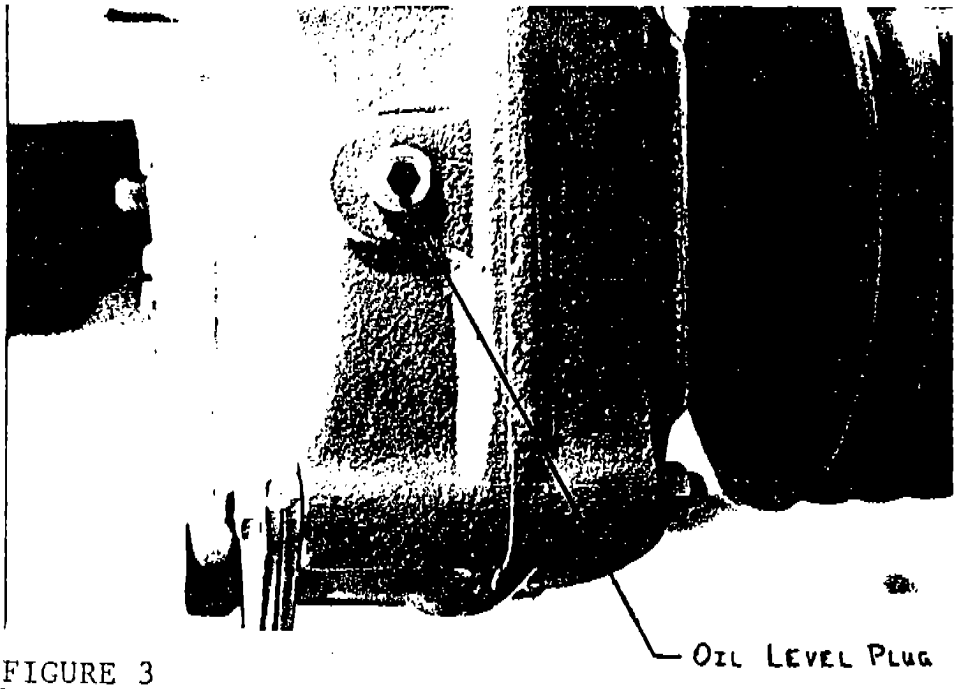
NEVER CRAWL THROUGH THE TRAP DOOR WITH THE POWER ON TO THE RIDE.

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 LBS	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 					
3. FLUID COUPLER - DANA 12.4 HSD CHANGE FLUID - USE 100 FLUID OUNCES PENNZOIL AW46 OR EQUIVALENT				X (OR 4000 HR	

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			
 IMPORTANT SEE PAGE 12 FOR PROPER OIL LEVEL TESTING PROCEDURE. 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

	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 (SEE FIGURE 3)			X		
 FIGURE 3					
6. DRIVE SHAFT BEARINGS					
CHECK FOR END PLAY - MUST BE ZERO		X			
CHECK HOUSING BOLTS AND SET SCREWS (A)		X			
GREASE - PENNZOIL 707L OR EQUIVALENT 1 TO 2 PUMPS PER BEARING (B) (SEE FIGURE 4)			X		

MAINTENANCE CHECK LIST

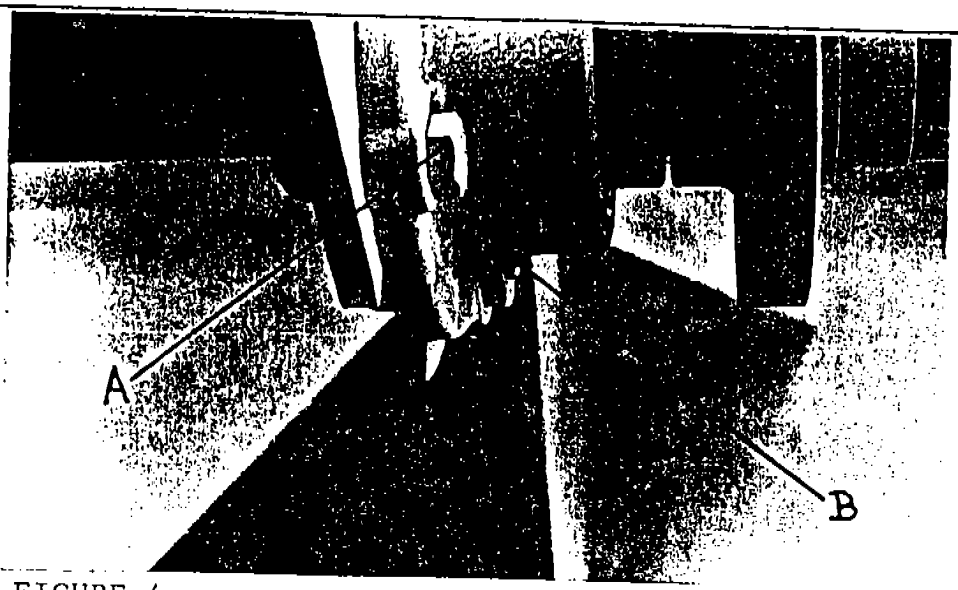


FIGURE 4

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
7. RIDE SET UP MOTOR					
CHECK PULLEY 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				
CHECK CABLE DRUMS ON DRIVE SHAFT		X			
CHECK CABLE PULLEYS & PINS		X			
LIGHTLY OIL PULLEY PINS OR SPRAY WITH WD40			3 MONTHS		
ADJUST DOOR STOPS	X				
CHECK MOUNTING BOLTS		X			
9. MAIN CENTER BEARING - SIFCO BALL					
CHECK GREASE SEALS			X		
CHECK AND TORQUE MOUNTING BOLTS 150 FT LBS				X	

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
GREASE - PENNZOIL 707L OR EQUIVALENT		X			
CHECK SUPPORT JACK STANDS UNDER CENTER AND TIGHTEN AS REQUIRED	X				
10. HYDRAULIC SYSTEM					
CHECK HOSES FOR CRACKING AND LEAKS		X			
CHECK CYLINDERS FOR LEAKS		X			
CHECK MOUNTING BOLTS AND CYLINDER ROD END			X		
LIGHTLY OIL BOLTS OR SPRAY WITH WD40			3 MONTHS		
MEASURE OIL LEVEL AND FILL AS REQUIRED DEXRON II OR EQUIVALENT			X		
11. PLATFORM HINGE PINS					
LIGHTLY OIL OR SPRAY WITH WD40			3 MONTHS		
12. FIBERGLASS PANEL CONNECTIONS					
CHECK WEDGES AND HAIRPINS WHEN RIDE IS ASSEMBLED AND OPERATING.	X				
13. PLATFORM WING SAFETY BOLTS					
CHECK AND TIGHTEN WHEN RIDE IS ASSEMBLED AND OPERATING	X				
CHECK SAFETY KEY IN BOLTS	X				
14. TRAILER AXLES					
CHECK TIRE PRESSURE - 90 TO 100 LBS		BEFORE MOVING			
CHECK LUG BOLTS - TORQUE TO 150 FT LBS		BEFORE MOVING			
CHECK OIL LEVEL IN HUBS AND FILL AS REQUIRED- PENNZOIL 80 TO 90 W GEAR LUBE OR EQUIVALENT		BEFORE MOVING			

MAINTENANCE CHECK LIST

	DAILY	WEEKLY	MONTHLY	YEARLY	OTHER
15. SEATS					
CHECK NUTS ON ROLLERS			X		
CHECK BOLTS ON SEAT FRAME	X				
CHECK THAT SEATS ROLL FREE	X				
16. TOP					
CHECK THAT THE CABLE IS IN THE GROOVE AND IS TIGHT	X				

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 employee's 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 understandingthe 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 develop.

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 electrical 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 apparatus or live electrical circuits. Avoid finger rings, jewelry, 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 sur 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 replaceme it. Inform the manufacturer of any replacement requirements that are frequent or cause u safe conditions.

14. Make modifications and additions as outlined in the r anufacturer'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 positions 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.

OPERATOR SELECTION AND INSTRUCTION

1. Select competent, mature operators, capable of understanding the function and use of amusement rides and their control.

2. Instruct each operator fully in the proper use and function of the ride he is to supervise, including:

   a) Controls and procedures for normal and emergency operation.
   b) Manufacturer's recommended maximum speed and load.
   c) Manufacturer's recommended length of ride time and frequency of repeat rides.
   d) Any foreseeable misuse of the ride as determined by the manufacturer or owner, or by special conditions such as weather, location or crowds.
   e) Each operator must have immediate availability of a Manufacturer's Operation Manual for the ride he supervises.

3. Require each operator to inspect the ride he supervises, each day of the operation.

   a) Determine that no portion of the ride is damaged, omitted or worn in such a manner that it is unsafe or that it may develop into an unsafe condition.
   b) Report any irregularities to the superintendent or owner.
   c) Do not operate the ride if any irregularities are found until such condition has been corrected.

4. Instruct the operator to allow no passengers to ride who are visibly ill, or under the influence of drugs or alcohol.

5. Instruct operators and attendants on the proper methods of securing passengers in the ride. Do not allow a passenger to board a ride if he cannot be properly secured because of his size or because there is a malfunction of the securing device.

   STOP the ride immediately if any passenger is observed moving from their seat, turning upside down, or behaving dangerously.

6. Advise the operator against starting or operating the ride while any person (passenger, spectator, or employee) is in an endangered or unsafe position on the ride, or within the ride area.

7. Insist that each operator remain in full control of the operating controls during operation of the ride, and gives his full attention to the ride and its passengers.

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 and 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.**

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 switches 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 on : line at a time from fear of controller.
3. Check that line for loose wires.
4. Plug that line into an extension cord (USE ON LY 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 if blown replace ONLY WITH 10 AMP fuse.
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 o : line at a time from rear of controller.
3. Check that line for loose wires.
4. Plug tha6t line into an extension cord (USE CNLY A CIRCUIT WITH A 15 AMP CIRCUIT BREAKER).
5. If circuit breaker trips, check wiring for pinc ed 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 a circuit breaker trips, check wiring for pin hed 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 on line at a time from rear of controller.
4. Disconnect neutral wire from plug. Plug the lug 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. Re-connect neutral wire and plug into control er.

The scenery lights are usually connected so that the top s gn 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.

CAUTION; Torque valves are given for steel bolts and steel nuts screwed into threaded holes in steel. Be certain threaded parts are not aluminum, 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.

TURN OF THE NUT METHOD

This method applies only to bolts with UNC threads. If the bolt is shorter 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.

PNEUMATIC 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 n 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 the 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 emphasizes 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 molded 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 gauge, 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 pat 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 re-inflate a tire that has been run flat or seriously under-inflated without demounting 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 re-checked for proper fit.

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

WISDOM INDUSTRIES, INC

GRAVITRON BULLETIN

DATE: OCTOBER 1996
RIDE: GRAVITRON
SUBJECT: GRAVITRON TOP PIN AND WEDGE

In the event the top pin cannot be tightened with the standard hooked wedge:

1. Install one or more 5/8" or 3/4" flat washers under the head of the pin prior to installation.
2. Add or remove washers until hook wedge is snug.
3. Install R-clip on the outside of the panel.

In the event the pins cannot be removed to install the washers:

1. Remove the wedge.
2. Install the washers between the wedge and the panel internal frame until the wedge can be snugged
3. Install R-clip on the outside of the panel.

Thank you for your cooperation in this matter. If you have any questions about this bulletin, please feel free to contact us at 1-800-634-6097 or 1-970-522-7515.

If you no longer own this ride, please contact us so we can update our records.

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-4300)

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

UNITED STATES TESTING COMPANY, INC.
California Division
5555 Telegraph Road, Los Angeles, California 90040
Telephone: (213) 723-7181 • Telex: 35-0025 • Fax: (213) 722-8251

SGS

REPORT OF TEST

CLIENT: THE PAWLEY COMPANY
Post Office Box 4805-85TA
Denver, CO 80248

184557
4/16/91

SUBJECT: FLAMMABILITY OF UPHOLSTERY FABRIC

REFERENCE:

Our confirmation dated April 9, 1991 to Max Weisdley.

SAMPLE IDENTIFICATION:

One sample of naugahyde upholstery fabric submitted and identified by the Client as:

Neochrome

TEST REQUEST AND METHOD:

1. Flammability per Federal Specification CCC-A-680a and referenced Federal Test Method Standard 191, Method 5903.1, December 28, 1989, "Flame Resistance of Cloth, Vertical".

2. Flammability in accordance with the Boston Fire Department, Classification Fire Test: BFD 1X-1, May 16, 1986.

SIGNED FOR THE COMPANY

Norma C. Trinidad

N. C. Trinidad
Assistant Manager
Mat./Tex. Dept.

Alice Nishimoto
Associate Technologist