

Farrow

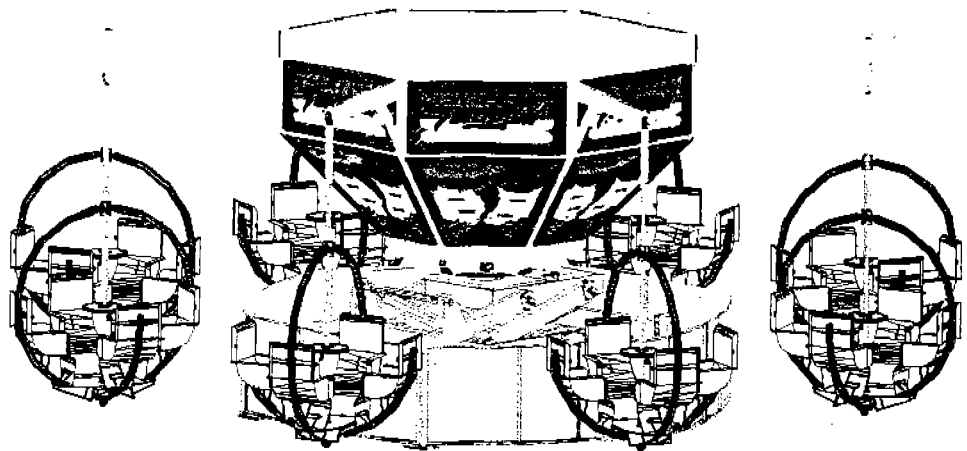
MFG: WISDOM COMPANY
NAME: TORNADO
TYPE: NON-KIDDIE

OPERATOR'S MANUAL

05379

for

TORNADO



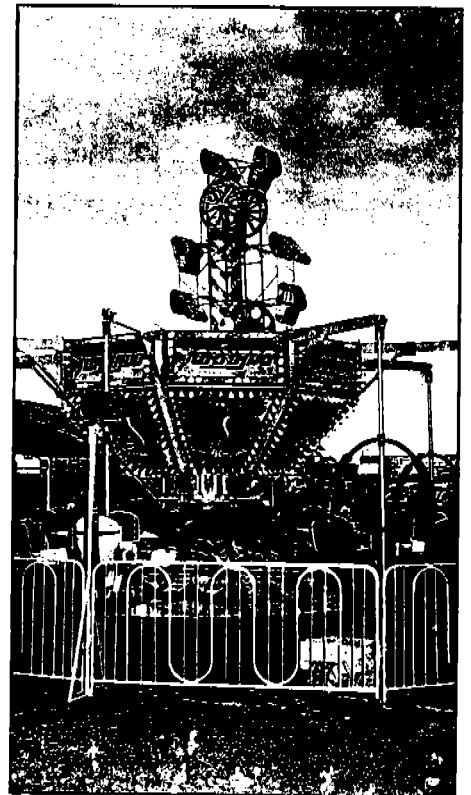
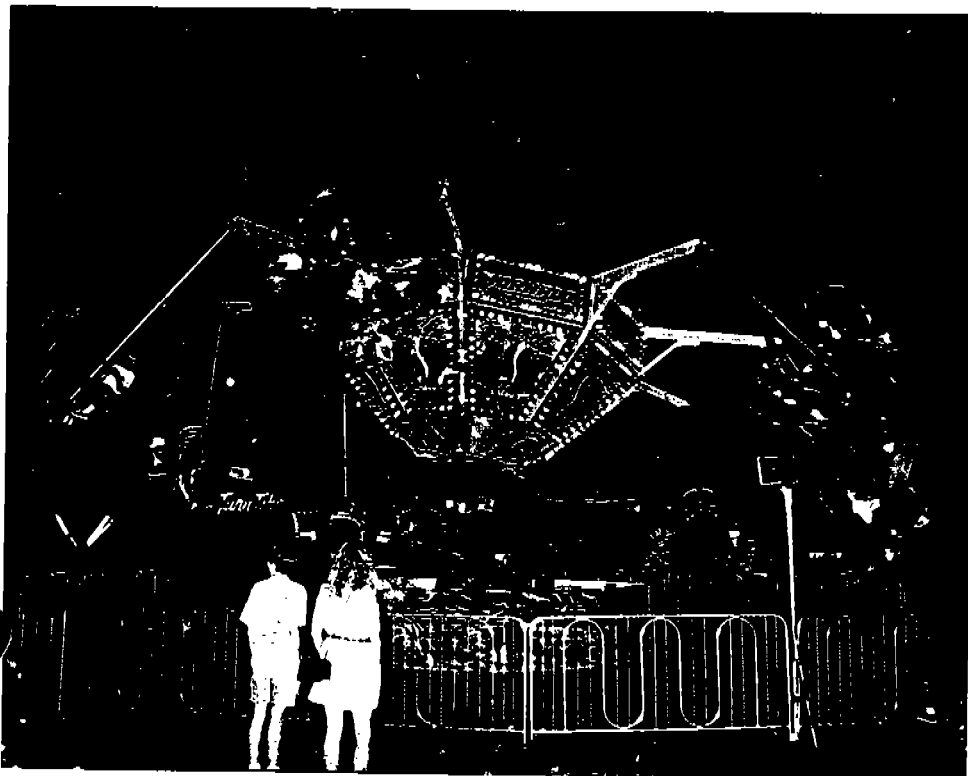
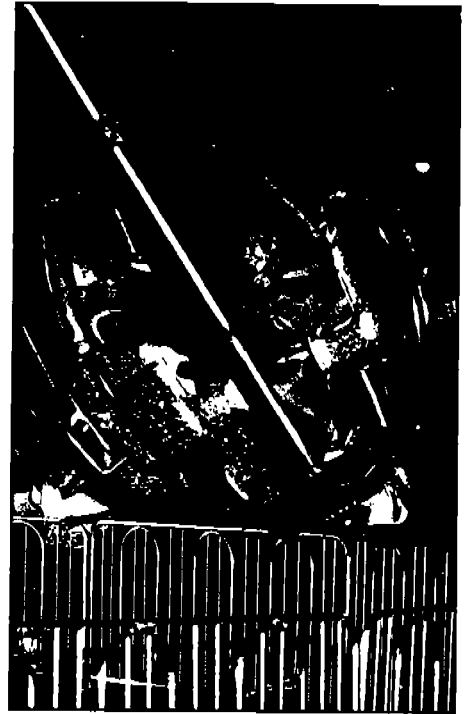
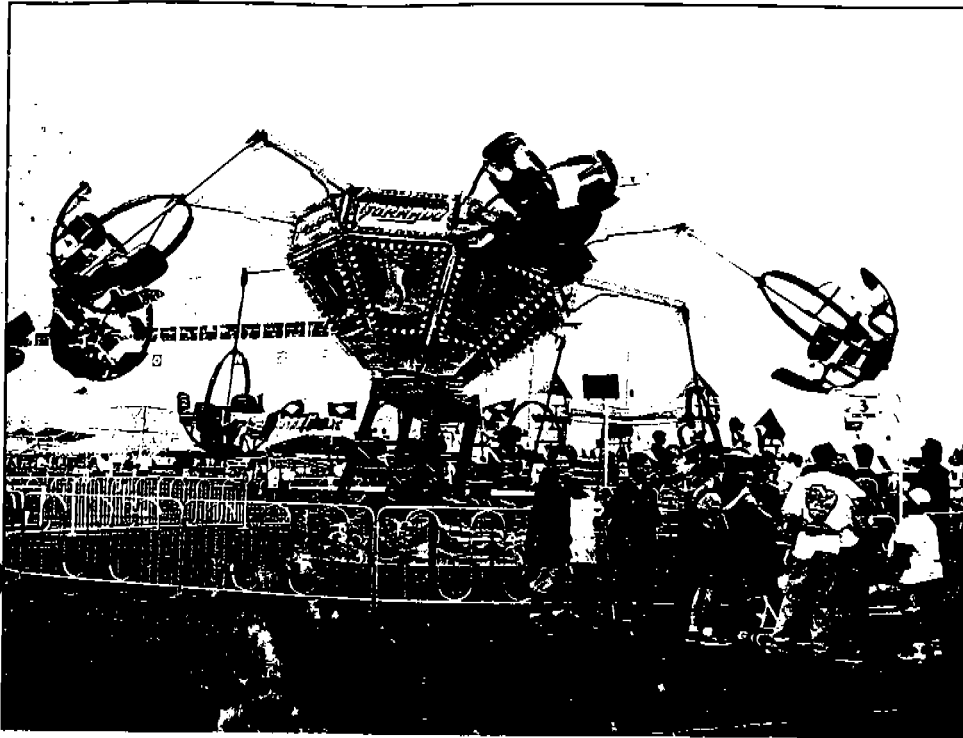
*Shocks For Pover
NAPA 94008*



WISDOM
INDUSTRIES, Ltd. MERINO, COLORADO

Wisdom

TORNADO



TORNADO

WISDOM INDUSTRIES, LTD.
P.O. BOX 5000
STERLING, CO. 80751
970-522-7515
800-634-6097

Air Valve in CTR-Coil Only

ISAACS Fluid Power
Indy

(317) 898-3486

Coil # 6770272 860

TABLE OF CONTENTS

Page 1.....	Specifications
Page 2.....	Set up Instructions
Page 6.....	Post Assembly Checklist
Page 8.....	Lap Bar Inspection
Page 9.....	Lap Bar Inspection Diagram
Page 10.....	Daily Check List
Page 12.....	Operation Controls Check
Page 13.....	Control Panel Description
Page 14.....	Operating Instructions
Page 17.....	Warning before Starting Ride
Page 18.....	Emergency Procedures
Page 19.....	Checklist Diagram
Page 20.....	Safety Requirements
Page 22.....	Operator Responsibilities
Page 24.....	Operator Selection & Instruction
Page 26.....	Operator Instructions
Page 27.....	Replacement of Bolts
Page 29.....	Pneumatic Tires
Page 30.....	Tire Safety
Page 33.....	Layout Diagram
Page 34.....	Lubrication Schedule
Page 36.....	Lubrication Diagram

TORNADO

This "Operation Manual" has been written for the benefit of the ride operator and owner. **WISDOM INDUSTRIES LTD. advise all ride operators and owner to read this manual 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 Industries, Ltd. 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.

TORNADO

SPECIFICATIONS

CAPACITY.....750/hour
 LOADING..... 4 passengers per car
32 passengers, adults or children in any combination
 MAX WEIGHT PER CAR..... 204 lbs./seat 816 lbs./car
 6528 lbs. total max. passenger weight

ROTATION..... 9.25 RPM
 DIRECTION OF TRAVEL..... CENTER-counter clockwise
 SEAT-passenger operated-clockwise & counter clockwise
 RIDE DURATION..... 45 seconds raised
 3 minute cycle time
 SET UP AREA..... 45' diameter circle X 25' high
 WEIGHT EMPTY..... 17,000 lbs.
 MAX. WEIGHT LOADED..... 23,528 lbs.
 MAX. STATIC WT. PER LANDING GEAR, 4 TOTAL LOADED..... 5,600 lbs.
 MAX DYNAMIC WT. PER LANDING GEAR,
 4 TOTAL, RIDE RAISED..... 8,000 lbs.

MOTOR POWER-HYDRAULICS..... 1-5HP 3 phase motor
-ROTATION..... 1-10HP 3 phase motor
-CAR BRAKES..... 1-1/2 HP air compressor motor 110V
 ELECTRICAL-MOTOR..... 12 KW/208 volt 3 phase
 -LIGHTS..... 11.5 KW//208 volt 3 phase
 -TOTAL..... 23.5 KW/100 amp/208V/3 phase
 MAX. VOLTS..... 240
 MIN. VOLTS..... 200

LIGHTING..... 700-10 watt incandescent bulbs
3-1500 watt quartz lights

BALANCING OF LOAD RECOMMENDED

MAX. OUT OF BALANCE..... 820 lbs.
 MAX. WIND SPEED FOR OPERATION..... 45 m.p.h.
 PASSENGER HEIGHT TO RIDE WITH ADULT..... 44"-48"
 MIN. PASSENGER HEIGHT TO RIDE ALONE..... 48"
 MIN. PASSENGER HEIGHT..... 44"

TRAILER SIZE..... 13' high, 8'6" wide, 28' long, loaded
 TRAILER WEIGHT..... 17,000 lbs.

TORNADO

SET UP INSTRUCTIONS

- STEP 1: Pull the ride onto location.
- STEP 2: Allow 22 1/2 feet from the center of the ride in any direction for clearance to the fence line.
- STEP 3: Screw down the trailer hitch adjusting jack.
- STEP 4: Disconnect the pulling vehicle.
- STEP 5: Screw down the four corner leveling landing gears.
- STEP 6: Level the trailer along the side, front, and opposite side.
- STEP 7: Remove the operator's stand that is pinned to the front of the trailer.
- STEP 8: Locate the stand at the perimeter of the ride where the operator is to stand.
- STEP 9: Take weight off the trailer nose screw jack that is attached to the front hitch of the trailer.
- STEP 10: Remove the two trailer tongue diagonal brace rods.
- STEP 11: Remove the two pins from the tongue of the trailer.
- STEP 12: Slide the tongue underneath the trailer.
- STEP 13: At the rear of the ride, remove the tail light assembly that is pinned to the two outside cars. Place under trailer.
- STEP 14: Install upper light bows.
- STEP 15: Snug the bolts on each end to reduce rattle & flopping of the lights.

STEP 16: Plug in each light bar.

CAUTION:

Be sure that when the sweeps are opened, the light bar cords will not pull loose or get cut.

STEP 17: Unload the fence and gates.

STEP 18: Remove the center traveling braces.

STEP 19: Set up fence, quartz light stands, and gates around the ride with the included fence feet.

NOTE:

The fence must be 22 1/2 feet from the center of the ride.

STEP 20: Place the three quartz lights on the stands and plug into the center.

NOTE:

Do not put a quartz light where it will shine directly in the operator's eyes.

STEP 21: Unload the curved skirting fence and place around the trailer before lowering cars.

NOTE:

Run rope or strap around the bundle so the wind will not blow the curved scenery stack over.

STEP 22: Using the hand winch provided, pin the winch to the side ear on the center.

STEP 23: Hook the winch to one outside car.

STEP 24: Take up the slack on the winch.

STEP 25: Remove the pin connecting the car to the trailer.

STEP 26: Unhook the safety chain.

STEP 27: Lower the car to a vertical position using the hand winch.

STEP 28: Remove sweep travel brace for that sweep.

NOTE:

Located approximately half way up the sweep.

STEP 29: Swing sweep around and pin and R-clip into position to the side of the center.

STEP 30: Repeat steps 19-24 for the 3 other outside cars.

STEP 31: Connect winch to the bottom of one of the inside sweeps.

STEP 32: Connect the winch to the car on that sweep. These sweeps do not pin at the center.

STEP 33: Repeat steps 20-24 for the remaining cars and sweeps.

STEP 34: Swing out the upper rectangular scenery panels.

STEP 35: Swing down the triangular shaped scenery panels into position between the sweeps.

STEP 36: Pin the panels into place and R-clip.

STEP 37: Swing the rectangular upper scenery panels into position and pin and R-key to the sweep next to it using the long pins.

STEP 38: Lift the upper half car assembly with the provided hand winch.

STEP 39: Hook the end of the winch assembly to the tab on the side of the sweep hinge.

STEP 40: Hook the winch cable to the top of the upper car half.

STEP 41: Remove hold down turnbuckle from car.

STEP 42: Lift upper car half.

STEP 43: Remove car traveling block.

STEP 43: Turn car 1/4 turn and lower.

NOTE:

Be sure car is completely seated on lower half.

STEP 44: Remove winch.

STEP 45: Pin upper and lower car halves together with 2 pins and R-clips.

STEP 46: Connect air line between car halves.

STEP 47: Set air swivel lock pin into hole on main pipe above upper car hoop.

STEP 48: Repeat steps 36-46 for the remaining cars.

STEP 49: Assemble curved scenery panels around center.

STEP 50: Connect power to the ride.

STEP 51: Test run.

STEP 52: Perform the post assembly checklist.

STEP 53: Perform the daily inspection check list.

STEP 54: Test run the ride prior to opening for operation with passengers.

TORNADO POST ASSEMBLY CHECKLIST

1. Check that the turnbuckle jam nut from the center spider to each sweep is locked.
2. Check that 4 sweeps are pinned at the center to the side ears.
3. Check that the air compressor is building up adequate pressure. 100 PSI minimum. 120 PSI maximum.
4. Check that the upper scenery pins go through top & bottom ears and are R-keyed. 8 pins.
5. Check that the triangular shaped lower scenery panels are pinned and R-clipped. 8 sections.
6. Check that all four landing legs are secure.
7. Check that each car turns freely.
8. Check that each seat is down and seated.
9. Check that each seat is pinned to the base.
10. Check there is nothing in the area that can cause a passenger to trip.
11. Check that each seat air line is connected.
12. Check that there is nothing that could be hit by one of the cars while the ride is running.
13. Check that operator's stand and gates have sufficient clearance so that they will not be too close to the ride when the ride is operating.
14. Check that the fence is set out 22 1/2 feet from the center of the ride.
15. Check that both gates open out.

16. Check the area over the ride for power lines. When the ride raises, the highest point is approximately 25 feet.
17. Perform operational tests.
18. Perform LAP BAR INSPECTION LIST.
18. Perform DAILY INSPECTION LIST.

LAP BAR INSPECTION PROCEDURE

1. Raise lap bar.
2. Check lap bar hinge bolts and lock mechanism hinge bolts for looseness or broken bolts.
3. Check lap bar air cylinder attachment pins for security and cotter pins.
4. Check lap bar arm for cracks.
5. Check that the lap bar foam is centered and in good shape.
6. Push open lap bar.
7. Push down lap bar. Lap bar must ratchet down and lock at each detent.
8. Activate air unlocking system.

NOTE: All bars should open.

9. Turn off air unlocking system.
10. Watch as the air is released that the seat manual release lever does not stick or operate in a jerky manner.
11. Check that air cylinder mechanism releases so that bar will lock.
12. Push down lap bar. Lap bar must ratchet down and lock at each detent.
13. Repeat for each seat.

LAP BAR LUBRICATION

Weekly

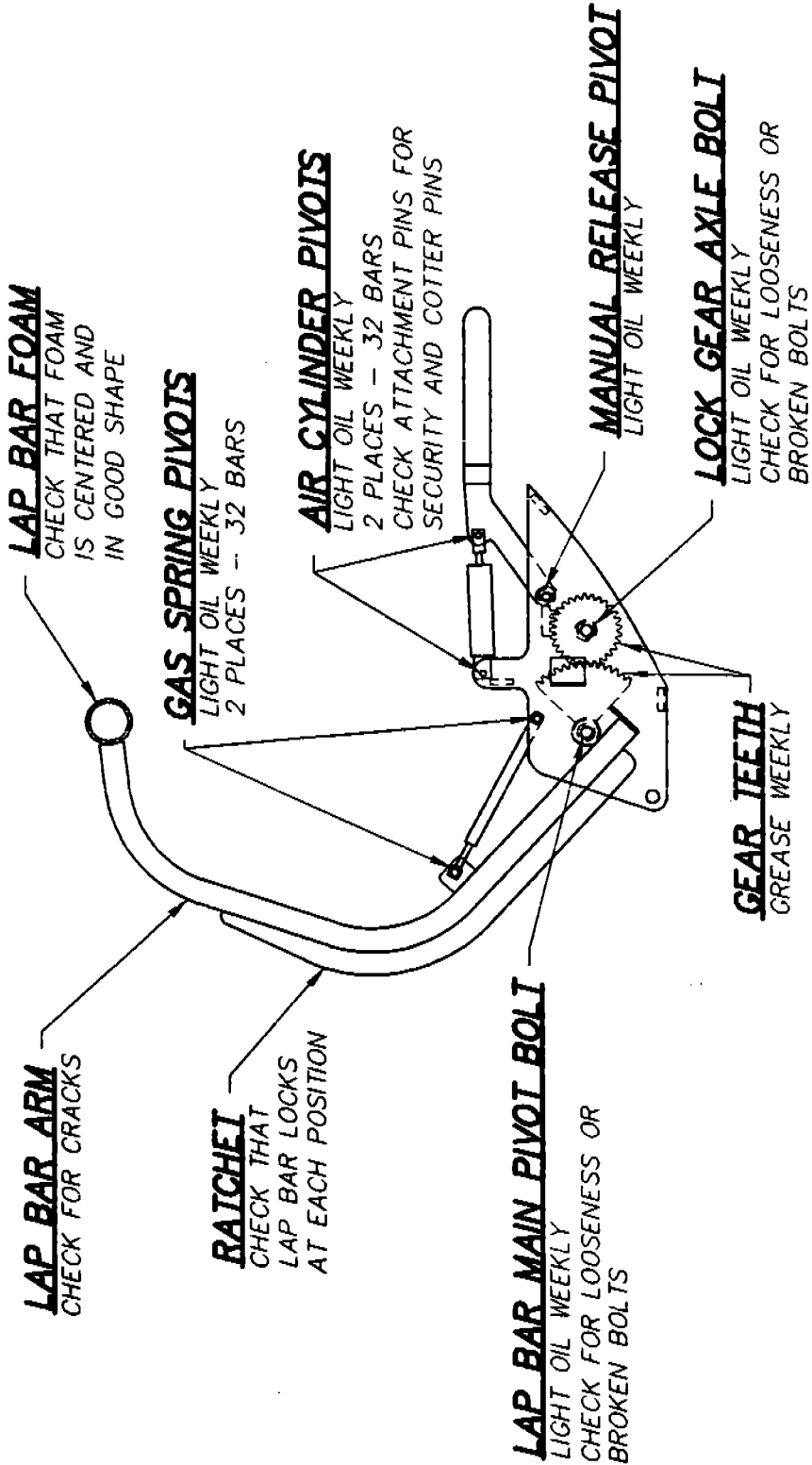
Oil all hinge bolts.


Oil lock gear pivot bolts.

Oil air unlocking cylinder pivot pins.

Grease gear teeth.

LUBRICATION AND INSPECTION OF LAP BAR



 WISDOM INDUSTRIES Merino, CO 80741		DRAWN BY: MDF
		REVISID
SCALE: 1 1/2" = 1'-0"	APPROVED BY:	
DATE: 03-06-97		
DESCRIPTION:		
HANDLEBAR LUBRICATION CHECKLIST		
EQUIPMENT:		DRAWING NUMBER:
TORNADO		8T 103

TORNADO DAILY CHECK LIST

CENTER

1. Check upper scenery panels are pinned & R-clipped.
2. Check that sweep pivot pins are installed.
3. Check that sweep lock pins are installed and R-clipped.
4. Check that air compressor turns on at 100 PSI and off at 120 PSI.
5. Check main bearing bolts are tight.
6. Check the main lifting arms for cracks.
7. Check main lift arm pin retaining collars are locked in place.
8. Check main lift arm lower attachment for cracks.
9. Check hydraulic cylinder pivots for cracks.
10. Check main drive gear for looseness.
11. Check drive chain for tightness.
12. Check motor mount for cracks.
13. Check triangular scenery panels are pinned & R-clipped.

SWEEPS

1. Check sweeps for cracks.
2. Check upper scenery pins are R-clipped.
3. Check upper & lower scenery pivot pins are installed & cotter keyed.

CAR PIVOTS

1. Check each pivot for cracks.
2. Check pivot bolts for lock nuts.
3. Check car shock mounts for cracks.
4. Check car shocks for proper operation. Swing the car and it should slow quickly and come to a rest.

CARS

1. Check seat pipe for cracks.
2. Check that seat halves are down and seated.
3. Check that spin wheel is tight.
4. Check seat lap bar for proper operation.
5. Check seat frame for cracks.
6. Check fiberglass seats for security.
7. Check lap bar pivot attachments.
(See Lap Bar Check & Inspection List)
8. Check material for fraying.
9. Check that car turns freely with brake off.
10. Check that car brakes stop each car.

AREA

1. Check that gates open out.
2. Check that fence clears the ride during operation.
3. Check that control stand cable and main power cable will not trip anyone.
4. Check that curved scenery is pinned together.
5. Check for tools, cords, and trash which may cause a trip hazard.

OPERATION

1. Perform operational checks before operating ride.

TORNADO OPERATION CONTROLS CHECK

1. Check that no one is in the ride area.
2. Turn on main power.
3. Activate foot switch.
The ride should turn up to speed.
4. Check for 9.25 RPM
5. Release the foot switch.
The ride will come to a smooth stop.
6. Activate the foot switch.
7. Push ride raise button.
Ride will turn and raise.
8. After 30 seconds, the ride will lower automatically.
9. Stop the ride.
10. Restart the ride.
11. Push ride raise button.
12. When the ride is part way up, take your foot off of the foot pedal. Ride should lower and stop.
13. Restart the ride.
14. Push raise button.
15. After the ride raises, push the emergency stop.
The ride will smoothly stop and lower.
16. Reset palm button.
17. Reset the shunt trip breaker.
18. Move ride operation toggle switch to the middle seat brake position.
19. Activate the foot switch.
20. Ride must not turn or lift.
21. Repeat for seat brake.
22. Prepare for operation.

CONTROL PANEL DESCRIPTION

KEY SWITCH	Off position locks out ride rotation & lift. On position activates ride run circuit.
PUMP START	Starts hydraulic pump & ride raises.
RIGHT EMERGENCY STOP PALM BUTTON	Activates shunt trip breaker. Turns off all power to ride. Holding brake turns on immediately. Ride lowers. Must lift and turn to reset.
LEFT PALM BUTTON	Deactivates ride rotation circuit. Ride will stop. Ride lowers. Brake comes on after ride stops. Lift & turn to reset.
FOOT OPERATION SWITCH	Spring loaded normally open foot switch which provides power to ride rotation circuit and is the deadman for the ride.
RIDE OPERATION SWITCH UP/RIDE OPERATE	Three position switch: Enables ride rotation circuit, holding brake off when foot peddle is stepped on.
MIDDLE POSITION DOWN/SEAT UNLOCK	Ride does not run, holding brake on. Ride does not run, car brakes.
QUARTZ LIGHTS	Turns on quartz lights.
REMOTE CENTER SWITCHES	
VALVE SWITCH UP	Energizes ride lift solenoid.
VALVE SWITCH DOWN	De-energizes ride lift solenoid.
PUMP SWITCH	Turns on hydraulic pump. Will cause ride to raise if valve switch is up.

****DANGER****

Never get under the ride center unless the prop brace is installed. Serious injury or death will result when the power is turned off, the center will come down.

OPERATING THE TORNADO

1. Check that the ride operate switch is in the brake position.
2. Open gate and allow 32 passengers into the ride.

Note: During slow times when operating with partial loads, tell the passengers to load in a color of car. There are 2 cars for each color that are located opposite each other. This will help in balancing the ride.

3. One passenger is allowed per seat.

Note: If a child, due to size, must be accompanied by an adult to ride, make sure the adult sits in the seat next to the child and not across.

4. Check that each passenger's lap bar is pushed down into their lap and snug.

WARNING! IF A LAP BAR WILL NOT FIT THE PASSENGER SNUG, THEY MUST NOT BE ALLOWED TO RIDE.

5. Check that each lap bar is **locked** into their lap.
6. Instruct each passenger to remain seated with their lap bar down until the ride comes to a complete stop.
7. Check that all passengers are seated and there are no passengers inside the ride fence.

WARNING: IF YOU SEE A PASSENGER CHANGE SEATS, CHECK THEIR LAP BAR BEFORE STARTING THE RIDE.

WARNING: DO NOT USE A SEAT IF THE LAP BAR LATCH, PADDING, OR TUBE IS DAMAGED.

8. Check that the entrance gates are closed and that there is no one inside the fence.
9. Move the car brake switch to the ride operate position.

10. Step on the foot pedal to start the ride turning.

Note: It is easier to see each passenger by looking at the far side of the ride while it is turning.

WARNING: If a passenger tries to stand up, turn around, get out of their seat, throw objects, etc. **stop the ride and remove them.** Pressing the Emergency Stop will activate the motor brake and stop the rotation quickly.

11. After the ride is at full speed, push the ride lift button. The center will lift.
12. After the ride raises, the center will stay up for 30 to 40 seconds before lowering automatically.
13. After the ride is down, release the foot switch. The ride will stop.

Note: The ride can be lowered at any time by removing your foot for a moment from the ride turn foot pedal.

14. After the ride stops, move the ride operate switch from operate to car brake.
15. Hold down the spring loaded lap bar release switch to unlock all of the cars.
16. Allow the passengers to exit.
17. Assist any passengers that are having difficulty getting out of the car.
18. Open the gate for the next load of passengers.

OPERATIONAL TIPS

TO SHORTEN THE CYCLE TIME:

Release the foot peddle when the center is part way down.

Push the ride raise button when the ride is about halfway to full speed.

FOR LONGER RIDES:

Let ride run flat for several seconds at full speed before pushing the raise button.

Note: Most passengers find that 1 to 1.5 minute ride is long enough. A good indication of rides that are too long is if many of the cars stop spinning before the ride is done. Usually they have had enough or are feeling sick.

WARNING: LET PASSENGERS SPIN THEMSELVES. THE CARS TURN EASILY AND THE OPERATOR COULD BE HIT BY THE SPINNING CAR WHILE CHECKING THE LAP BARS. SOME SMALLER PASSENGERS DO NOT WANT THE CAR TO SPIN. LET THEM DO IT THEMSELVES.

TORNADO WARNING BEFORE STARTING RIDE

1. Do not allow passengers to throw items while loading, during operation of the ride, or unloading ride.
2. Do not allow anyone to stand up in seats at any time.
3. Balance the ride as much as possible.
4. Instruct all passengers to keep arms and hands inside the seat while ride is in motion.
5. Never use a seat with a broken lap bar or ratchet mechanism restraint.
6. Never play tag or attempt to touch passengers while ride is in motion.
7. Never release the car brake during loading, only when ready to start ride cycle.
8. Never open fence gates while ride is turning.
9. Never leave ride unattended.
10. Always look at the ride while running.
11. Do not walk to the center of the ride while it is running. You could be hit by a car and injured or killed.
12. Check all lap bars for security.
13. Do not allow passengers to push, spin or stop cars.
14. Always keep car brakes on when the ride is not in operation.
15. Never allow anyone inside the fence while ride is operating.
16. Never allow anyone in the center area while the ride is operating.
17. Check each lap bar before starting ride.

TORNADO EMERGENCY PROCEDURES

PROBLEM:

ACTION:

Unusual noises.

Release foot switch.

Ride will not stop.

Release foot switch.
Push left red palm button.

If ride will not stop
Push right red palm button.

Smoke or electrical short.

Push right palm button.

Emergency Stop(Quickest stop) Push a right palm button.

Procedure explained.

Release foot switch.

Dynamic braking will activate and ride will lower. After ride stops, mechanical ride center brake will activate.

Push left palm button.

Dynamic braking will activate and ride will lower. Controls will not operate until button is reset. Disables control system.

Push right palm button.

Shunt trip breaker will trip, motor brake will engage, ride will lower, all power is shut off. Reset palm button before resetting shunt trip breaker.