

KIDDIE FERRIS WHEEL

SN# 95101-W855122960

~~Model: Moonwalk~~

MFB: MOONWALK

RIDE: KIDDIE FERRIS Wheel.

SERVICE MANUAL
FOR
KIDDIE FERRIS WHEEL

MODEL NO. KFW-100

BY:

MOON-WALK ENTERPRISES, INC.

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KIDDIE FERRIS WHEEL

INTRODUCTION

To the owner

This manual is your guide to safe, productive operation. Read it carefully. It will help reduce trial and error learning and minimize downtime caused by improper maintenance.

For additional information, contact the MOON-WALK CUSTOMER SERVICE DEPARTMENT.

NOTE: Because we try to improve every MOON-WALK product, specifications and product design are subject to change without notice.

Intended uses

The equipment described herein 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 MOON-WALK recommendation and instructions, ASTM standards on amusement rides and devices, applicable 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, buyer agrees not to operate the equipment until proper repairs or corrections are made.

Ride information plaque

The ride information plaque is mounted to the main structure in the center of the ride. The plaque lists ride specifications, operating dimensions, ground loads, as well as model and serial number and date of manufacture. When ordering parts or requesting information from the MOON-WALK CUSTOMER SERVICE DEPARTMENT, always specify the model and serial number of your ride.

KIDDIE FERRIS WHEEL

SPECIFICATIONS:

KIDDIE FERRIS WHEEL
MODEL NO. KFW-100
RIDE SPEED - 6 RPM
DIRECTION OF TRAVEL - CLOCKWISE
PASSENGER CAPACITY - (4) CHILDREN OR 300 LBS. PER CAR
TOTAL PASSENGER CAPACITY - (20) CHILDREN OR 1500 LBS.
RECOMMENDED RIDE DURATION - 3 MIN.
MAXIMUM PASSENGER HEIGHT - 42 IN.
ELECTRICAL SERVICE - 120 VAC / 20 AMP / 60 HZ

TRAILERING INFORMATION:

LENGTH - 144 IN.
WIDTH - 78 1/2 IN.
HEIGHT - 148 IN.
WEIGHT - 2140 LBS.
TONGUE WEIGHT - 215 LBS.

ASSEMBLED DIMENSIONS WITH FENCING

LENGTH - 192 IN.
WIDTH - 144 IN.
HEIGHT - 156 IN.
WEIGHT W/ PASSENGERS - 3640 LBS.
TIRE LOAD DISTRIBUTION - 850 LBS. MAX
JACK STAND LOAD DISTRIBUTION - 750 LBS. MAX

SETUP AND TEARDOWN

General information

This manual provides detailed instructions for setting up and tearing down the portable ride. The general sequence is given for carrying out each procedure, and should be followed. If the size of the set-up crew permits, some steps can be performed simultaneously. Extra caution must be used, however, to keep all workers clear of any potential hazard.



WARNING: When setting up or tearing down the ride, never allow bystanders and/or other workers in the area. Always know the whereabouts of all workers during the entire set-up or tear-down procedure.



CAUTION: Precautions for personal safety must be observed at all times when setting up or tearing down the ride. Be aware of elevated areas, pinch points, suspended loads, moving equipment, etc. Keep a safe distance from these hazards to avoid serious personal injury.

CONTENTS

- 1.0) ROUGH LEVELING AND UNHOOKING FROM TOW VEHICLE
- 2.0) FINISH LEVELING AND STABILIZER LEGS
- 3.0) FENCING INSTALLATION
- 4.0) TEARDOWN, HOOKUP, AND TRAVEL POSITION

ELECTRICAL CONNECTION

Before starting to set up the ride, electrical power must be connected as follows:

1. Check the main circuit breaker located in the main control box. Make sure it is in the "OFF" position.
2. Ground per local code.

IMPORTANT: Make sure the small ground wire of the power cable is connected to an adequate ground per local code.

3. Connect the main electrical power supply to the ride. Check the electrical schematics for the power requirements of the ride, noting the color coding of the power cable.

GROUND - Green wire

NEUTRAL - White wire

PHASE - Black, red and blue wires

4. Make sure all switches on the control console are in the "OFF" position.

- I.0) ROUGH LEVELING AND UNHOOKING FROM TOW VEHICLE.
- I.1) TRY TO PARK ON THE FLATEST SURFACE AVAILABLE. IF AN INCLINED SURFACE IS USED, ORIENT THE RIDE SO THE CONTROLS AND RIDE ENTRANCE ARE ON THE UPHILL SIDE.
- I.2) APPLY BLOCKING AS REQUIRED UNDER THE DOWNHILL SIDE TIRES BY PULLING THE RIDE UP ONTO THE BLOCKING WITH THE TOW VEHICLE. USE A BUBBLE LEVEL ACROSS THE REAR OF THE RIDE TRAILER TO VERIFY LEVEL.
- I.3) DISCONNECT THE TOW VEHICLE ONCE ROUGH LEVELING IS COMPLETE. MAKE SURE TO USE BLOCKING UNDER THE TONGUE JACK. MAKE SURE TO USE CHOCKING IN FRONT OF AND BEHIND THE WHEELS TO PREVENT ROLLING.
- I.4) UNLATCH COUPLER BY REMOVING SAFETY PIN. PULL UP AND FORWARD TO UNLATCH COUPLER. LOWER FRONT TONGUE JACK SO COUPLER IS CLEAR OF BALL. PULL TOW VEHICLE CLEAR AND LOWER TONGUE JACK TO LEVEL TRAILER FRONT TO REAR.

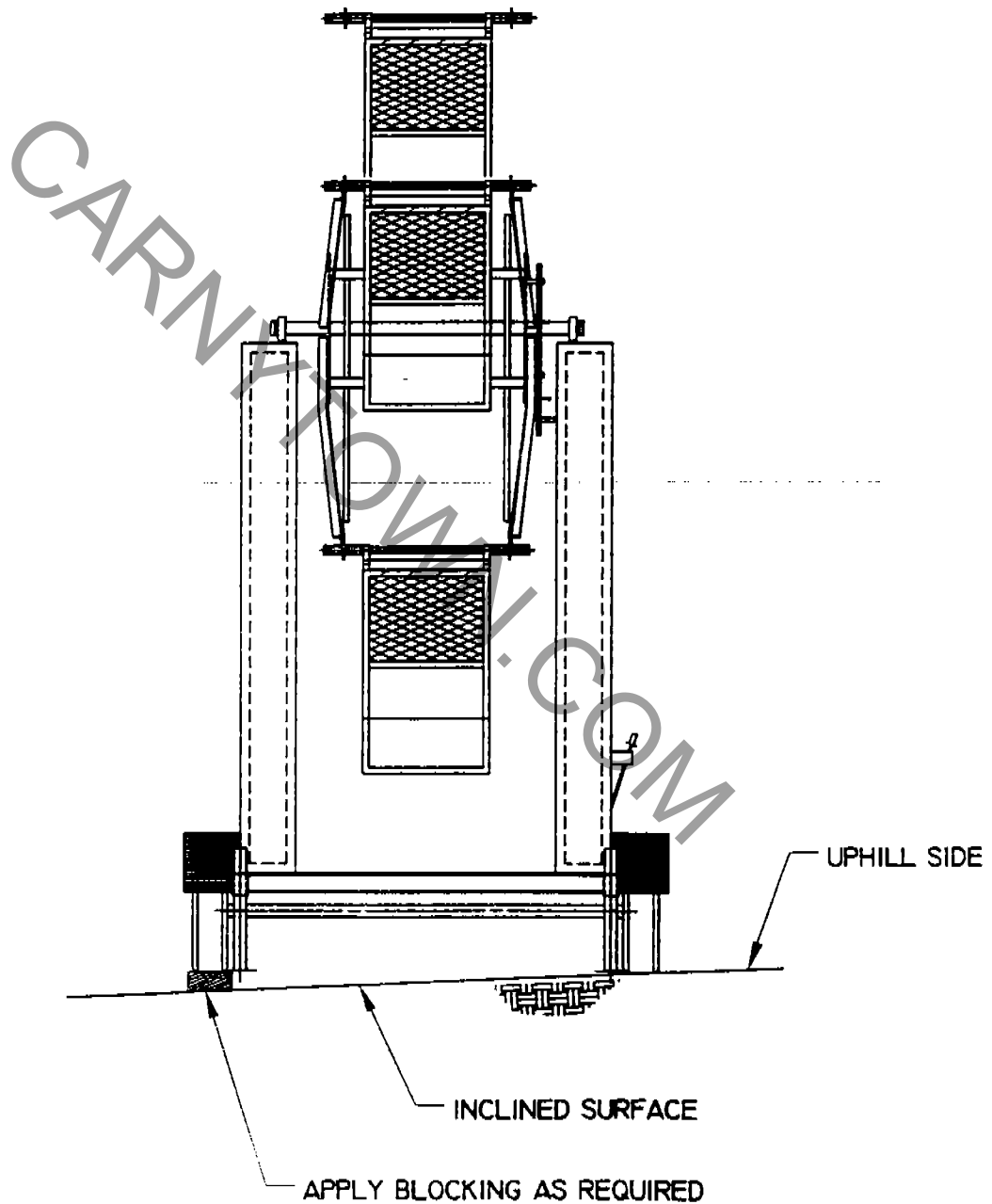


FIGURE 1 - ROUGH LEVELING

- 2.0) FINISH LEVELING AND STABILIZER LEGS.
- 2.1) TRY TO PARK ON THE FLATEST SURFACE AVAILABLE. IF AN INCLINED SURFACE IS USED, ORIENT THE RIDE SO THE HITCH END AND RIDE ENTRANCE ARE ON THE UPHILL SIDE.
- 2.2) RAISE OR LOWER THE HITCH JACK SO THAT THE TRAILER IS APPROXIMATELY LEVEL FROM FRONT TO REAR. USE A BUBBLE LEVEL ALONG THE SIDE OF THE RIDE TRAILER TO VERIFY LEVEL.
- 2.3) LOWER THE REAR JACK STANDS AND PIN IN PLACE SO THEY ARE JUST ABOVE THE GROUND. SELECT BLOCKS TO PLACE UNDER PADS. LOWER HITCH JACK AND INSTALL REAR BLOCKS. RAISE HITCH JACK TO LEVEL POSITION AND MAKE SURE REAR JACK STANDS ARE TIGHT. ADD ADDITIONAL BLOCKS IF NECESSARY TO MAKE SURE REAR JACKS ARE TIGHT WITH TRAILER LEVEL.
- 2.4) LOWER FRONT JACK STANDS AND PIN IN PLACE SO THEY ARE JUST ABOVE THE GROUND. SELECT BLOCKS TO PLACE UNDER PADS. RAISE HITCH JACK AND INSTALL FRONT BLOCKS. LOWER HITCH JACK AND MAKE SURE BOTH FRONT AND REAR JACK STANDS ARE TIGHT. ADD ADDITIONAL BLOCKS IF NECESSARY TO MAKE SURE FRONT AND REAR JACKS ARE TIGHT WITH TRAILER LEVEL.

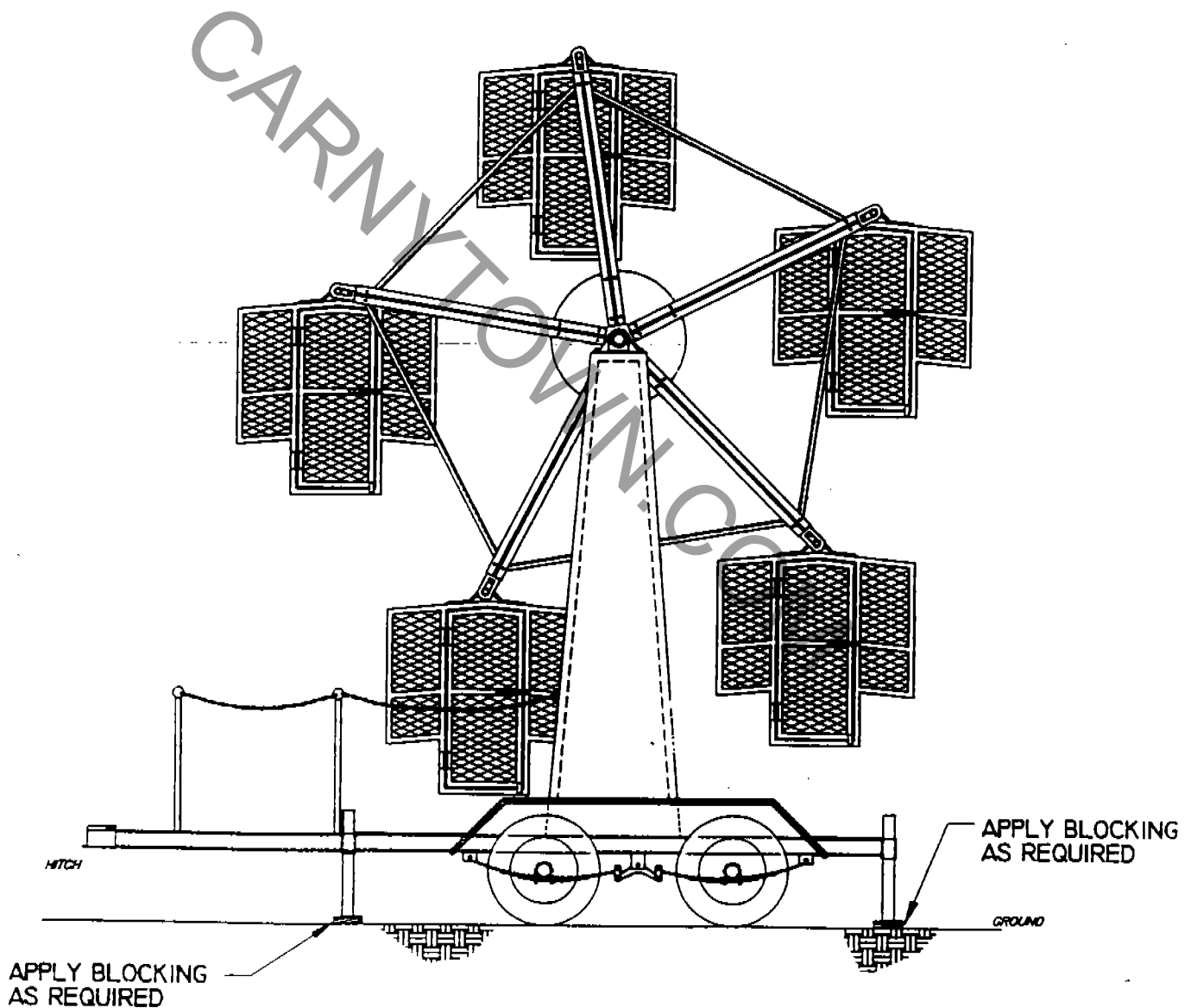


FIGURE 2 - FINISH LEVELING

- 3.0) FENCING INSTALLATION.
- 3.1) FENCING IS REQUIRED IN ACCORDANCE WITH ASTM STANDARD F1159-92. THE FENCING SHOULD BE LOCATED AS SHOWN BELOW TO PREVENT SPECTATOR CONTACT WITH THE RIDE.
- 3.2) FENCING REQUIREMENTS ARE AS FOLLOWS:
 - 1 EACH-8 FT. SECTION WITH ENTRANCE GATE
 - 3 EACH-STANDARD 8 FT. SECTION
 - 4 EACH-STANDARD 6 FT. SECTION

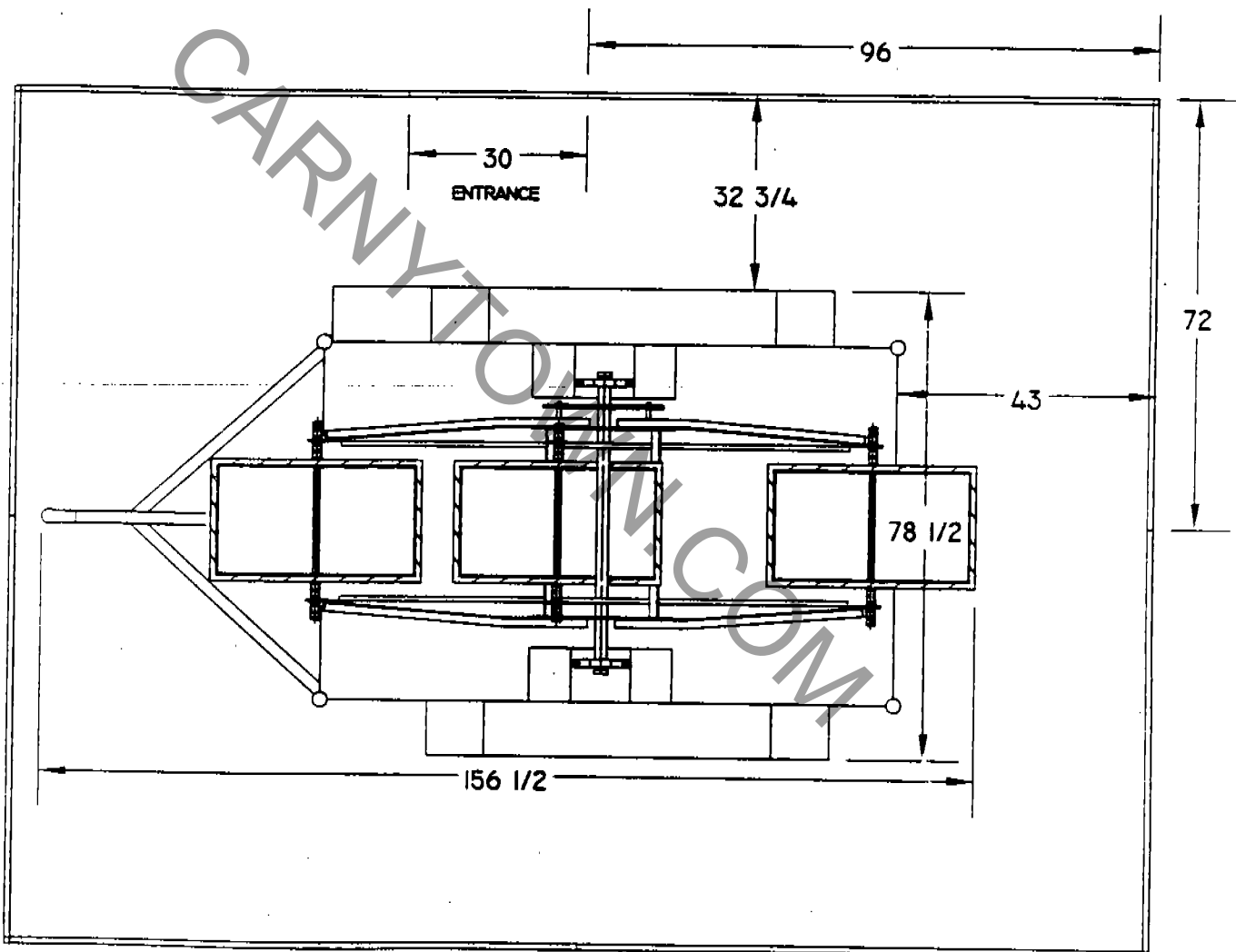


FIGURE 3 - FENCING INSTALLATION

- 4.0) TEARDOWN AND TRAVEL POSITION
- 4.1) REMOVE FENCING AND STOW AS REQUIRED.
- 4.2) ROTATE FERRIS WHEEL FOR MINIMUM OVERALL HEIGHT. TWO SEATS EVENLY AT TOP.
- 4.3) USE FRONT HITCH JACK TO REMOVE BLOCKING UNDER JACK STANDS.
- 4.4) PLACE ALL JACK STANDS IN FULL UP TRAVEL POSITION AND SAFETY PIN.
- 4.5) MAKE SURE OPERATION LEVER IS IN STOP POSITION.
- 4.6) SHUT OFF POWER AT CONTROL PANEL.
- 4.7) UNPLUG AND STOW POWER CABLE AS REQUIRED FOR TRAVEL.
- 4.8) RAISE HITCH JACK AND BACK TOW VEHICLE BALL UNDER COUPLER.
- 4.9) LOWER HITCH JACK AND LATCH COUPLER. INSTALL SAFETY PIN.
- 4.10) CONNECT LIGHTING CABLE AND CHECK ALL RUNNING LIGHTS.

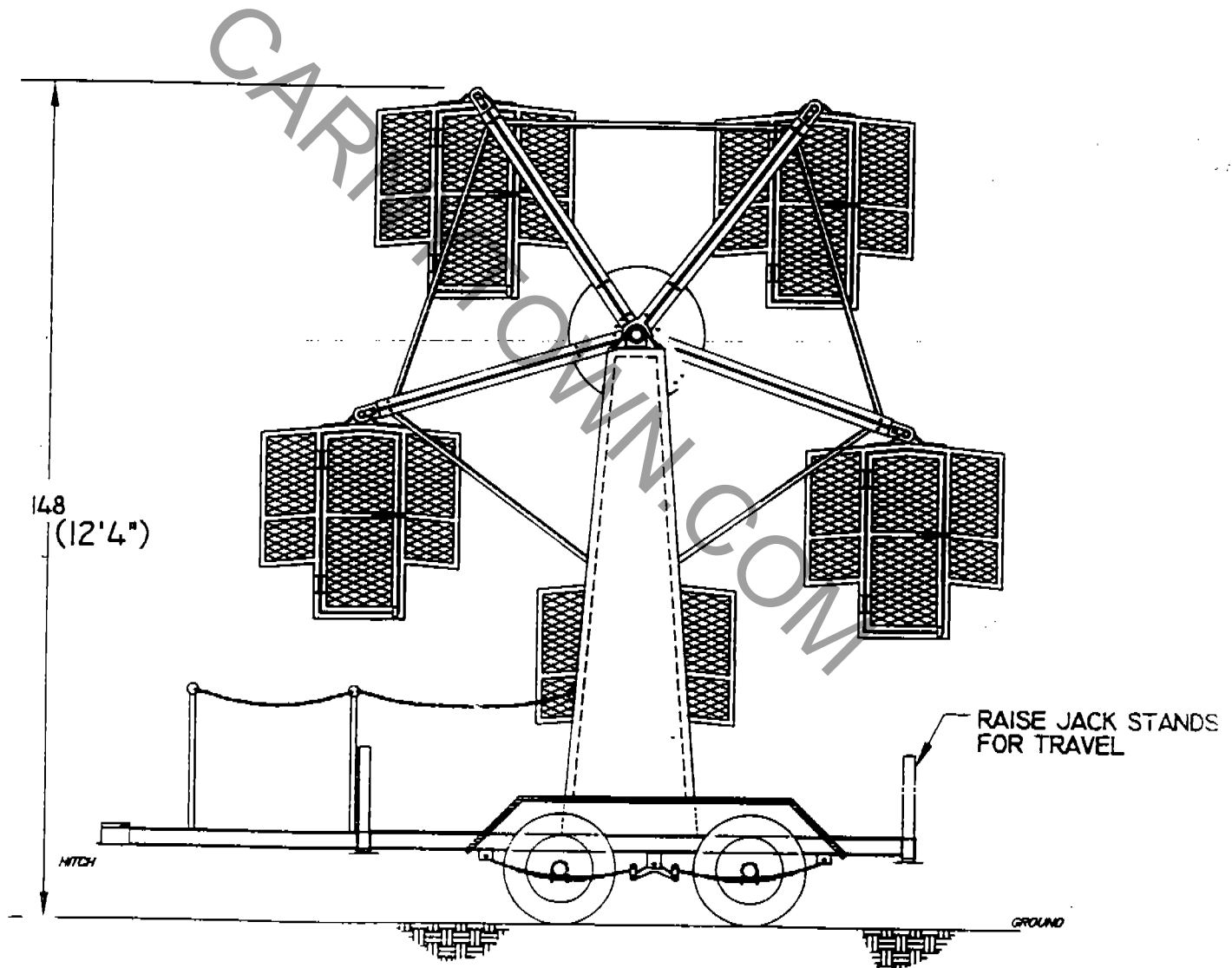


FIGURE 4 - TRAVEL POSITION

OPERATION

General Information

Safe operation is a combined responsibility and effort of the ride manufacturer and the owner/operator. This manual provides detailed information on the operation of the ride and provides the operator with important safety information.

All operators must be thoroughly familiar with the contents of this section before attempting to operate the ride. This information must be immediately available to all operators of the ride.

CONTENTS

- 1.0) OPERATOR SELECTION AND INSTRUCTION
- 2.0) OPERATORS CONSOLE
- 3.0) LOADING
- 4.0) OPERATOR'S POSITION
- 5.0) OPERATING THE RIDE
- 6.0) EMERGENCY PROCEDURES

I.0) OPERATOR SELECTION AND INSTRUCTION

1. Select competent, mature operators, capable of understanding the function, use and control of amusement rides.
2. Instruct each operator fully in the proper use and function of the ride he/she 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 the manufacturer's operation manual for the ride he supervises.
3. Require the operator to inspect the ride he supervises before each day of operation.
 - a. Determine that no portion of the ride is damaged, missing or worn in such a manner that it is unsafe, or that can develop into an unsafe condition.
 - b. Report any irregularities to superintendent or owner.
 - c. If any irregularities are found, do not operate the ride until such condition is corrected.
4. Instruct operators to allow no passenger to ride who is 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 in the ride that cannot be properly secured due to passenger size or malfunction of the securing device. Stop the ride immediately if any passenger is observed tampering with any restraining device or behaving dangerously, such as changing positions or walking around the ride.

1.0) OPERATOR SELECTION AND INSTRUCTION (CONT.)

6. Advise the operator against starting the ride while any person (passenger, spectator or employee) is in a dangerous 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. The operator's full attention must be given to the ride and its passengers.
8. Instruct the operator to allow no other person, except for another trained operator, to operate the controls of the ride (excepting portions of the ride that are designed to be controlled by the passenger).
9. Instruct the operator and attendants fully as to the proper method of assembly and disassembly of portable rides. Always supply adequate personnel and equipment to do it safely.
10. Instruct the operator to inspect and correct damaged, lost or worn parts that are unsafe or that can develop into unsafe parts, during assembly or disassembly.
11. Advise the operator that factory-installed safety devices must not be tampered with or removed.
12. Instruct operator of owner's or supervisor's procedure for assisting ill or injured passengers.
13. 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.

2.0) OPERATORS CONSOLE

- 2.1) MOTOR START SWITCH - THIS SWITCH ENERGIZES THE CONTACTOR WHICH RUNS THE MOTOR.
- 2.2) MOTOR STOP SWITCH - THIS SWITCH DE-ENERGIZES THE CONTACTOR WHICH STOPS THE MOTOR.
- 2.3) MOTOR RESET SWITCH - THIS SWITCH RESETS THE CONTACTOR IN THE EVENT THAT THE MOTOR HAS BEEN OVERLOADED.
- 2.4) RUN/STOP LEVER - THIS LEVER ENGAGES THE MOTOR TO THE DRIVE SYSTEM OR DISENGAGES THE MOTOR AND APPLIES THE BRAKE.
- 2.5) HAND CRANK - THE HAND CRANK IS USED TO TURN THE RIDE IN THE EVENT OF POWER LOSS.

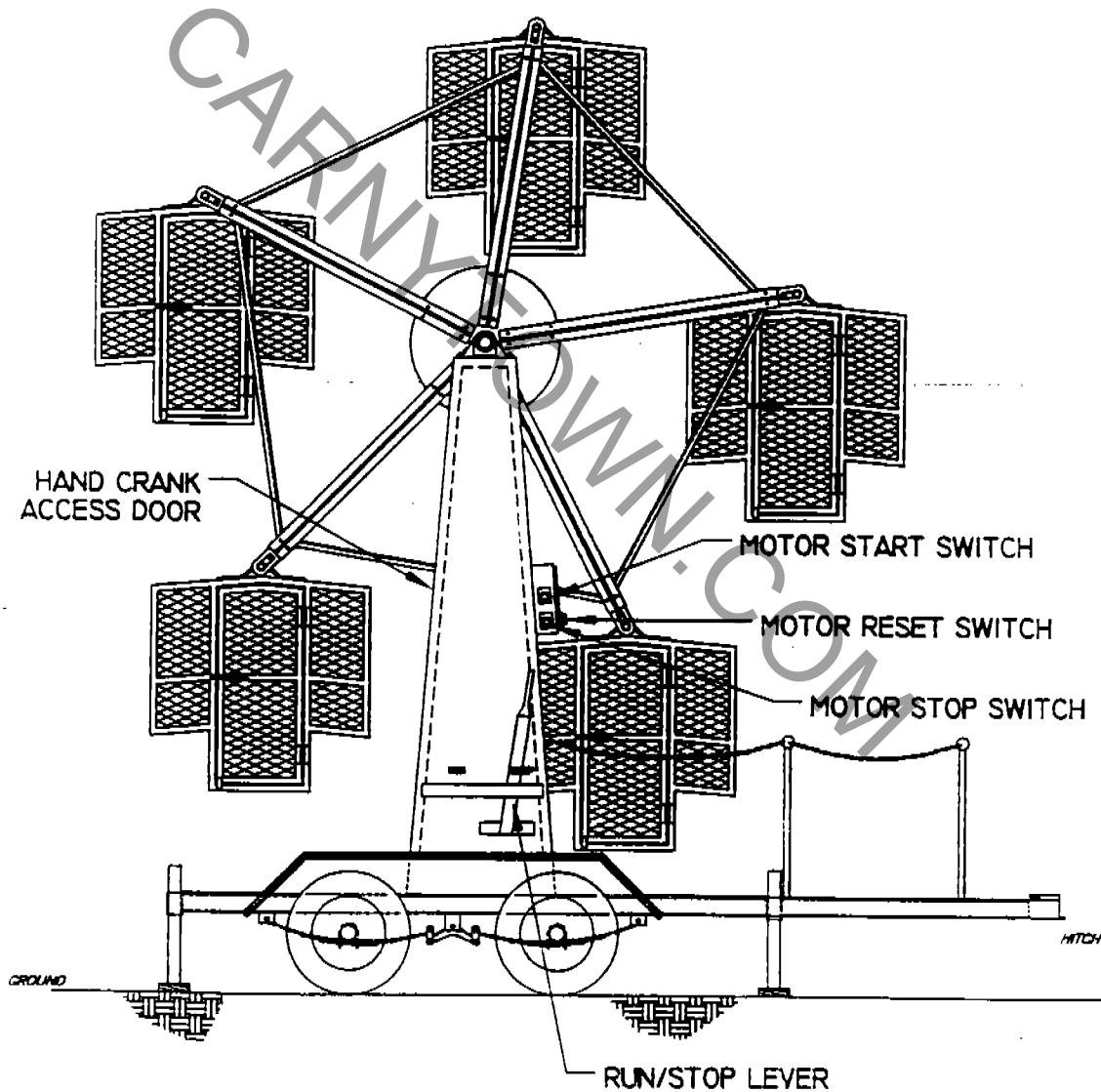


FIGURE 2 - OPERATORS CONSOLE

3.0) LOADING



CAUTION: Do not operate the ride unless all parts of the vehicles are in good condition, including the passenger restraints. All safety signs and placards must be legible.

Any broken or missing parts must be repaired or replaced immediately.



CAUTION: Do not allow any passenger on the ride who cannot be properly secured because of passenger size or condition.

Never allow a passenger who is visibly ill or under the influence of drugs or alcohol on the ride.

Persons who have physical impairments must be advised of potential risks before riding.



CAUTION: Never allow the ride to become overloaded. Maximum capacity of each vehicle is (4) children with a maximum total weight of 300 pounds. The maximum passenger height is 42 inches.

If the ride is being operated at less than its full capacity, direct passengers to vehicles on each side of the ride to balance the load.



WARNING: When loading make sure that the passengers are properly seated. The entrance door lock must be fully latched and engaged in the locking cleat.

Never operate the ride while anyone is standing inside the fence area.

3.0) LOADING (CONT.)

- 3.1) THE RIDE MUST BE LOADED ONE VEHICLE AT A TIME.
- 3.2) THE RIDE SHOULD BE STOPPED IN THE POSITION SHOWN BELOW FOR LOADING AND UNLOADING.
- 3.3) WHEN LOADING AN EMPTY RIDE IT IS NECESSARY TO MAINTAIN A BALANCED LOAD.

IMPORTANT:

NEVER OPERATE THE RIDE WITH AN IMBALANCE OF MORE THAN FOUR CHILDREN ON ANY ONE SIDE (300 POUNDS).

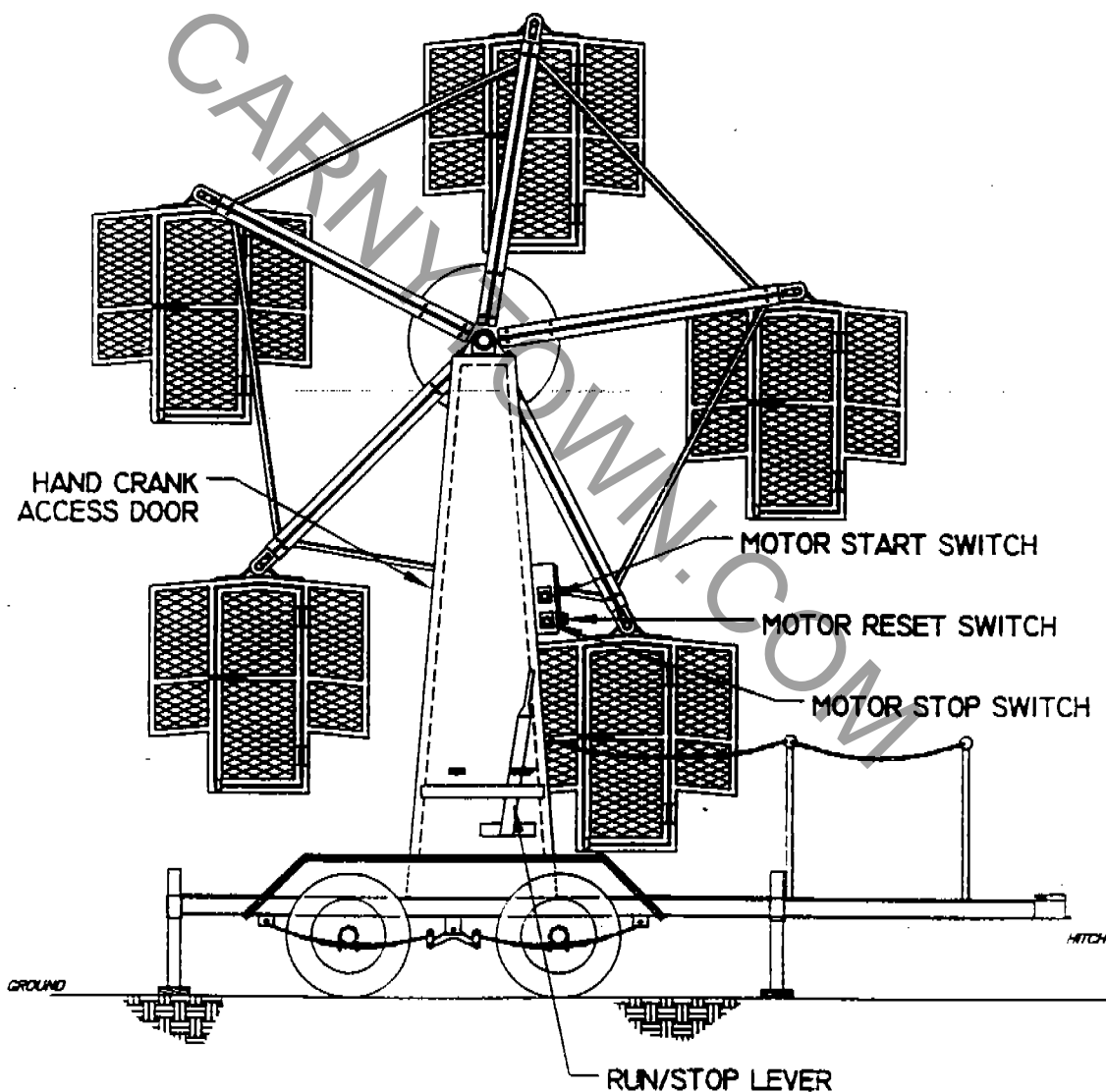


FIGURE 3 - STANDARD LOADING

4.0) OPERATOR'S POSITION

The operator at the control console is responsible for the safety of the passengers as they enter, exit and ride. He must know and fully understand all operation and emergency procedures for this ride, and must be at the control console at all times when the ride is in motion. The ride must have the operator's complete attention at all times.



WARNING: Before starting the ride, make sure there is no one around the ride structure, close to any exposed electrical components, or any other areas where there is a possibility of personal injury.



CAUTION: The operator must remain in full control of the operating controls at all times during the operation of the ride. The ride and its passengers must be given the full attention of the operator at all times.

Never leave the operating controls while the ride is in operation.

5.0) OPERATING THE RIDE

- 5.1) TURN ON THE MAIN POWER TO THE RIDE AT THE ELECTRICAL CONNECTION.
- 5.2) MAKE SURE THE RUN/STOP LEVER IS IN THE STOP POSITION.
- 5.3) TAKE YOUR PLACE BEHIND THE OPERATORS CONSOLE.
- 5.4) PRESS THE "START" SWITCH TO START THE ELECTRIC MOTOR.
- 5.5) LOAD THE PASSENGERS AS DESCRIBED IN THE "LOADING" PROCEDURE IN THIS MANUAL.
- 5.6) MOVE THE RUN/STOP LEVER TO RUN TO ENGAGE THE DRIVE SYSTEM AND TURN THE RIDE.
- 5.7) MAKE SURE TO BALANCE THE PASSENGER LOADING AS DESCRIBED IN THE "LOADING" PROCEDURE IN THIS MANUAL.
- 5.8) MAKE SURE THAT ALL PASSENGERS ARE PROPERLY SEATED.
- 5.9) MAKE SURE THAT ALL ENTRANCE DOOR LATCHES ARE LOCKED AND ENGAGED.
- 5.10) MOVE THE RUN/STOP LEVER TO RUN POSITION FOR THE DURATION OF THE RIDE.
- 5.11) UNLOAD AND LOAD NEW PASSENGERS USING THE PROCEDURES DESCRIBED ABOVE.

6.0) EMERGENCY PROCEDURES

- 6.1) IN CASE OF EMERGENCY, MOVE THE RUN/STOP LEVER TO STOP, OR DEPRESS THE MOTOR STOP SWITCH.
- 6.2) IF THE RIDE IS OVERLOADED, THE MOTOR CONTACTOR MAY TRIP OUT. TO RESET, REMOVE THE OVERLOAD AND PUSH THE RESET SWITCH.
- 6.3) IN THE EVENT OF LOSS OF ELECTRICAL POWER TO THE RIDE DURING OPERATION, THE RIDE WILL COAST TO A STOP. TO UNLOAD PASSENGERS MANUALLY, OPEN THE HAND CRANK ACCESS DOOR AND INSERT THE HAND CRANK. THE RUN/STOP LEVER MUST BE IN THE RUN POSITION TO MANUALLY TURN THE RIDE.

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MAINTENANCE

General Information

Proper maintenance of the ride is vital to safe operation, reduced operating costs and longer equipment life.

This manual provides detailed information on scheduled maintenance and lubrication of the ride. It also includes troubleshooting information.

CONTENTS

- 1.0) PREVENTATIVE MAINTENANCE
 - FIRST WEEK OF OPERATION
- 2.0) FLUIDS AND LUBRICATION
 - FLUIDS AND LUBRICANTS CHART
- 3.0) MAINTENANCE SCHEDULE
- 4.0) SAFETY
 - GENERAL SAFETY GUIDELINES
- 5.0) TROUBLESHOOTING PROCEDURES
 - TROUBLESHOOTING CHART
- 6.0) FASTENERS
 - CAPSCREWS
 - PINS
- 7.0) DRIVE SYSTEM
 - DRIVE GEARBOX
 - BRAKE ASSEMBLY
 - V-BELT ADJUSTMENT
 - DRIVE CHAIN ADJUSTMENT

1.0) PREVENTATIVE MAINTENANCE

Preventive maintenance is the easiest and most economical means of assuring many satisfactory, productive hours of operation. Properly scheduled maintenance is the key to lower operating costs and longer service life.

Hourly intervals have been established for servicing the ride. Intervals are based on the number of hours the ride has run.

The items listed in this section are separated into maximum hourly intervals. These intervals are based on "average" operating conditions. Actual conditions under which your ride is operated are the determining factors when setting up a maintenance schedule. When operating under "severe" conditions, such as excessive heat, cold, dust, mud or water, more frequent servicing is necessary.

First week of operation

The ride has been completely serviced and tested before leaving the factory. However, during the first week of operation and after each set-up, the ride operator must be especially observant and watch for loose parts, leaks, etc.

In addition to scheduled maintenance, check the following:

1. Check the torque of all functional load-carrying capscrews after the first week of operation and after each set-up. This allows for initial seating of components. Check the torque at monthly intervals thereafter.
2. Check for leaks in the hydraulic system and air system, if equipped. During transport, vibrations can cause leaks at hoses and fittings.
3. Check for lubricant leaks from gearboxes and chain drive enclosures.

2.0) FLUIDS AND LUBRICANTS

TIMELY LUBRICATION AND THE USE OF HIGH QUALITY LUBRICANTS IS NECESSARY TO OBTAIN THE MAXIMUM LIFE OF THE RIDE AND ITS COMPONENTS. USE ONLY THE FLUIDS AND LUBRICANTS SPECIFIED IN THE FOLLOWING CHART.

FLUIDS AND LUBRICANTS CHART		
COMPONENT	CAPACITY	SPECIFICATION
DRIVE GEARBOX	2.0 PINTS	SAE 90 EP MULTI-PURPOSE GEAR LUBE MEETING A.P.I. SPECIFICATION GL-5.
AXLE BEARING ZERKS (2 PLACES)	AS REQUIRED	NLGI NO. 2 LITHIUM BASE GUN GREASE
RUN/STOP LEVER ZERK	AS REQUIRED	NLGI NO. 2 LITHIUM BASE GUN GREASE
DRIVE CHAIN	AS REQUIRED	NLGI NO. 2 LITHIUM BASE SPRAY GREASE
DRIVE SPROCKETS (3 PLACES)	AS REQUIRED	NLGI NO. 2 LITHIUM BASE SPRAY GREASE
IDLER SPROCKET SLIDES	AS REQUIRED	NLGI NO. 2 LITHIUM BASE SPRAY GREASE
LINKAGE PIVOTS (9 PLACES)	AS REQUIRED	NLGI NO. 2 LITHIUM BASE SPRAY GREASE
ENTRANCE DOOR HINGES (10 PLACES)	AS REQUIRED	NLGI NO. 2 LITHIUM BASE SPRAY GREASE
CAR AXLES BEARING SLEEVES (10 PLACES)	AS REQUIRED	NLGI NO. 2 LITHIUM BASE SPRAY GREASE

3.0) MAINTENANCE SCHEDULE

WEEKLY			
REF. NO.	SERVICE POINT	SERVICE REQUIRED	SEE PG.
1	AXLE BEARING ZERKS	GREASE (2 PLACES)	5
2	RUN/STOP LEVER ZERK	GREASE	5
3	DRIVE CHAIN	SPRAY	5
4	DRIVE SPROCKETS	SPRAY (3 PLACES)	5

MONTHLY			
REF. NO.	SERVICE POINT	SERVICE REQUIRED	SEE PG.
5	* V-BELTS	CHECK TENSION	18
6	DRIVE GEARBOX	CHECK OIL LEVEL	16
7	BRAKE SHOE	CHECK CONDITION	17
8	BRAKE OPERATION	CHECK ADJUSTMENT	17
9	DRIVE CHAIN IDLER	CHECK ADJUSTMENT	19
10	LINKAGE PIVOTS	SPRAY (9 PLACES)	5
11	ENTRANCE DOOR HINGES	SPRAY (10 PLACES)	5
12	AXLE BEARING SLEEVES	SPRAY (10 PLACES)	5
13	IDLER SPROCKET SLIDES	SPRAY (2 PLACES)	5

* INITIALLY CHECK V-BELT TENSION AFTER THE FIRST 50 HOURS OF OPERATION AND MONTHLY THEREAFTER.

ANNUALLY			
REF. NO.	SERVICE POINT	SERVICE REQUIRED	SEE PG.
14	**DRIVE GEARBOX	DRAIN AND REFILL	16

** INITIALLY CHECK GEAR BOX FLUID LEVEL AFTER THE FIRST 150 HOURS OF OPERATION AND MONTHLY THEREAFTER. DRAIN AND REFILL ANNUALLY.

3.0) MAINTENANCE SCHEDULE (CONT.)

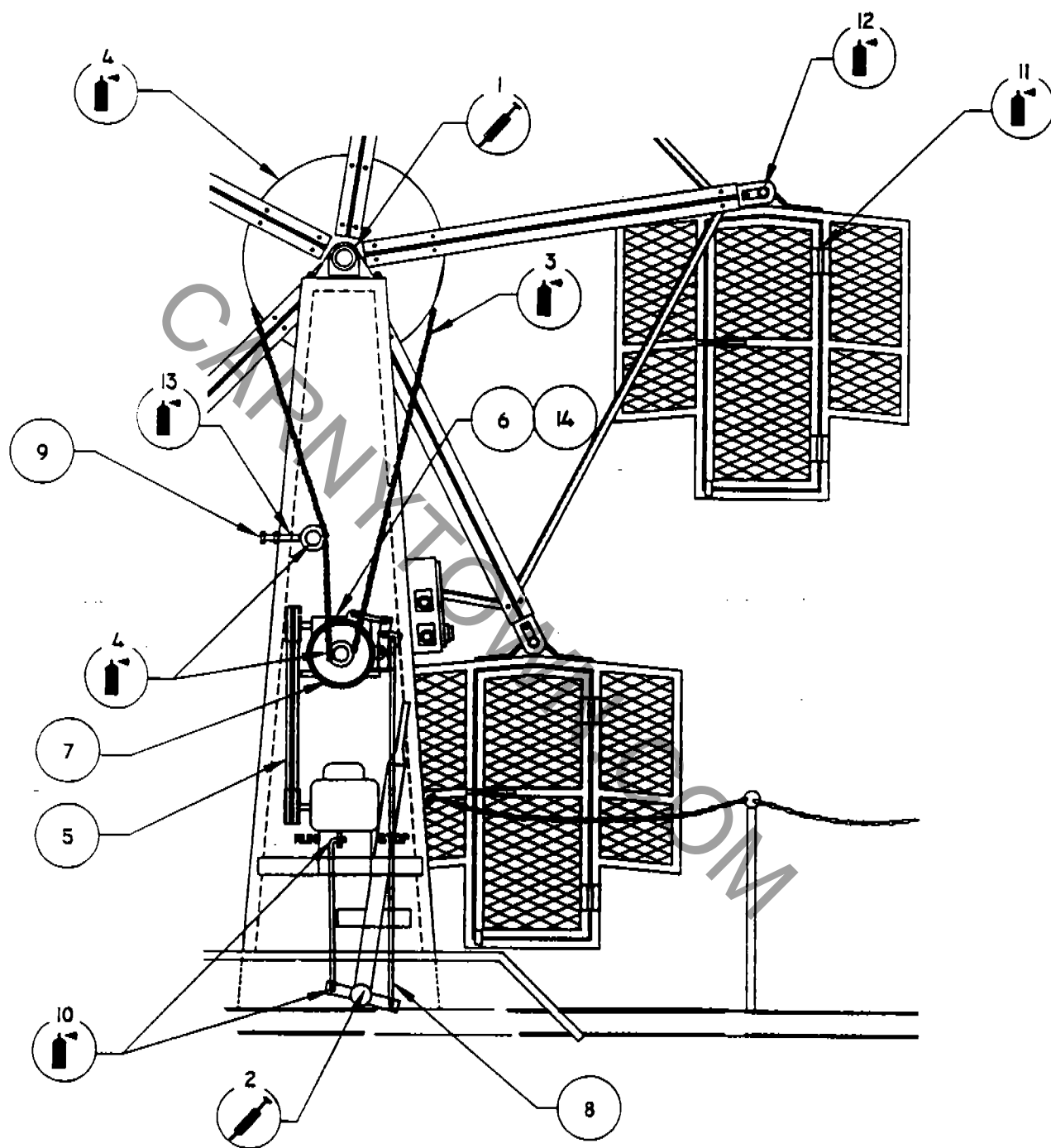


FIGURE 3 - MAINTENANCE ITEMS

4.0) SAFETY

The following is a list of general rules which should be observed by everyone.

Remember that the key to safe and successful operation is to have well trained and well supervised employees.

General safety guidelines

1. All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation.
2. Inspect the ride before each day of operation to determine that no portion of the ride is damaged, missing, or worn in such a manner that unsafe conditions can develop.
3. Perform the manufacturer's recommended maintenance procedures at the intervals specified and in the manner described in this manual.
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. Use only OSHA approved safety items. Ladders must be clean and unpainted.
6. Use the proper tool or equipment for each job. Ground all hand electric power tools before use.
7. Wear close-fitting, comfortable clothing when working on or close to moving parts or live electrical circuits. Avoid finger rings, jewelry or other articles which can be caught in moving parts or come in contact with electrical circuits.

4.0) SAFETY (CONT.)

8. Protect your eyes by wearing approved safety glasses or goggles.
9. Wear a hard hat at all times. When working in elevated areas, use a safety belt.
10. Where work to be performed is hazardous, at least two persons shall work together.
11. If guards must be removed from equipment, make sure they are replaced before leaving the job. Check that all safety decals, signs and placards are properly installed and legible.
12. Clean up after each job, and properly dispose of surplus materials.
13. Keep a record of parts replaced and the 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 manufacturer's service and safety bulletins.

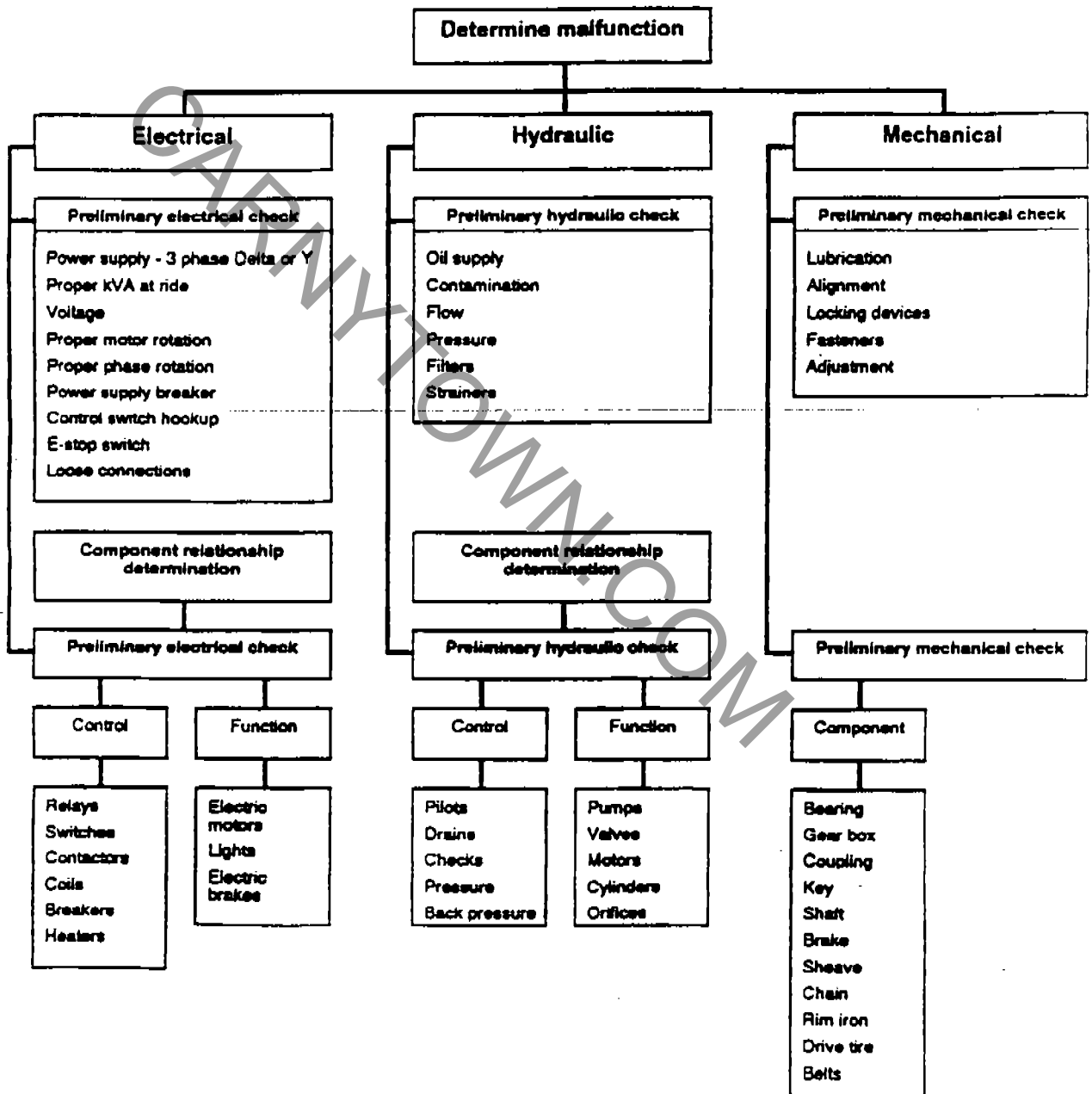
5.0) TROUBLESHOOTING PROCEDURES

Before calling the MOON-WALK CUSTOMER SERVICE DEPARTMENT for help, be prepared with the following information:

1. Have the ride serial number and name available.
2. Have the service manual ready to use as a reference.
3. If ride was previously owned, by whom? (MOON-WALK often show changes made to a ride by its previous owner).
4. Have the same person make all calls. Be sure to get the name of the person to whom he is speaking at the factory. All calls should then be made to that person.
5. Have a phone number ready at which you can be reached.
6. Have shipping instructions ready (how, when, and where to ship parts).
7. Have a list of any alterations, modifications or kits that have been added to the ride.
8. The person calling the factory must be familiar with the problem and be able to describe symptoms of the ride problem (such as: was the problem gradual, did it suddenly quit; are any sounds occurring that are not normal; does the problem occur continuously or is it intermittent; does the ride run in one direction only; does the ride run but have no braking, etc.).
9. Many times the problem that completely stops a ride from working is one of many simple things that are forgotten or overlooked. Listed on the following chart are many of the items that can cause this, as well as all items that must be checked before any calls are made to the factory. Use this chart to try to determine the cause. It can save several expensive phone calls or a more expensive visit by a factory representative, as well a valuable time.

5.0) TROUBLESHOOTING PROCEDURES (CONT.)

Troubleshooting chart



6.0) FASTENERS

Capscrews

Capscrews used by MOON-WALK, INC. are classified as functional load-carrying capscrews if:

- They are used as tension members in the erection or operation of the ride

and/or

- They are required to resist shear through friction-type connections in the erection or operation of a ride.

Capscrews are selected with consideration to grade, size and quantity, using joint capacities based on tightness torques of 60% rated yield and group joint efficiencies of 62.5%

Torque requirements

Capscrews must be tightened to the torque values listed in the torque chart, unless otherwise specified. These values were selected to produce a tightening torque range of 60% to 70% of proof load, when tightened with a hardened washer under the nut or capscrew head (whichever is accessible for tightening). When the capscrew is tightened from the head end, apply anti-seize lubricant to the shank end of the capscrew. When the threads are lubricated, use 10% less torque to tighten the capscrew.

DO NOT TIGHTEN CAPSCREWS OVER THE RECOMMENDED TORQUE. This can damage the capscrew, due to variances in coefficients of friction and torque wrench accuracy. Always use a torque wrench. It is impossible to accurately measure the tightness of a capscrew by other methods. Torque wrenches must be checked for accuracy twice each operating season.

Capscrew grades

MOON-WALK, INC. uses only grade 5 or better capscrews

6.0) FASTENERS (CONT.)

Size Diameter - Threads/inch	Foot pound torque range (see notes 1 and 2) with locknut and hardened washer	
	SAE J429 Grade 5 ASTM A325	SAE J429 Grade 8 ASTM A490
1/4 - 20	5-6	7-8
1/4 - 28	6-7	8-10
5/16 - 18	11-13	15-18
5/16 - 24	12-15	17-21
3/8 - 16	19-24	27-33
3/8 - 24	22-27	31-38
7/16 - 14	30-35	45-55
7/16 - 20	35-40	50-60
1/2 - 13	50-60	65-80
1/2 - 20	55-65	75-90
5/8 - 11	95-115	130-160
5/8 - 18	105-130	150-180
3/4 - 10	165-200	235-285
3/4 - 16	185-225	280-320
7/8 - 9	270-325	380-460
7/8 - 14	295-360	415-505
1 - 8	400-490	565-690
1 - 12	440-535	620-755
1 1/8 - 7	495-600	800-975
1 1/8 - 12	555-675	900-1095
1 1/4 - 7	700-850	1135-1380
1 1/4 - 12	775-940	1255-1525
1 1/2 - 6	1215-1480	1975-2395
1 1/2 - 12	1370-1660	2220-2700

Torque chart

Torques for functional load carrying cold finished hex head capscrews with dry rolled threads, used with locknuts (see note 3), and tightened with an ASTM A325 hardened washer under the capscrew head or locknut (whichever is accessible for tightening).

This torque range will develop 60% to 70% of proof load.

Refer to Replacement of capscrews and locknuts for conditions requiring replacement

NOTES

1. Use anti-seize lubricant on capscrew shank when tightened from head end.
2. Use 10% less torque when anti-seize or other lubricant is used on threads.
3. Use same torque range for holes tapped in steel.

and grade 8 locknuts, with A325 hardened washers for functional loads. The Grade markings chart shows the capscrew markings to be found on MOON-WALK. The manufacturer's identification symbols must be present on all functional load carrying capscrews.













MOON-WALK, INC. requires the use of cold-formed hex head capscrews with rolled threads. Hex bolts and hot formed hex head capscrews are not recommended because they may

6.0) FASTENERS (CONT.)

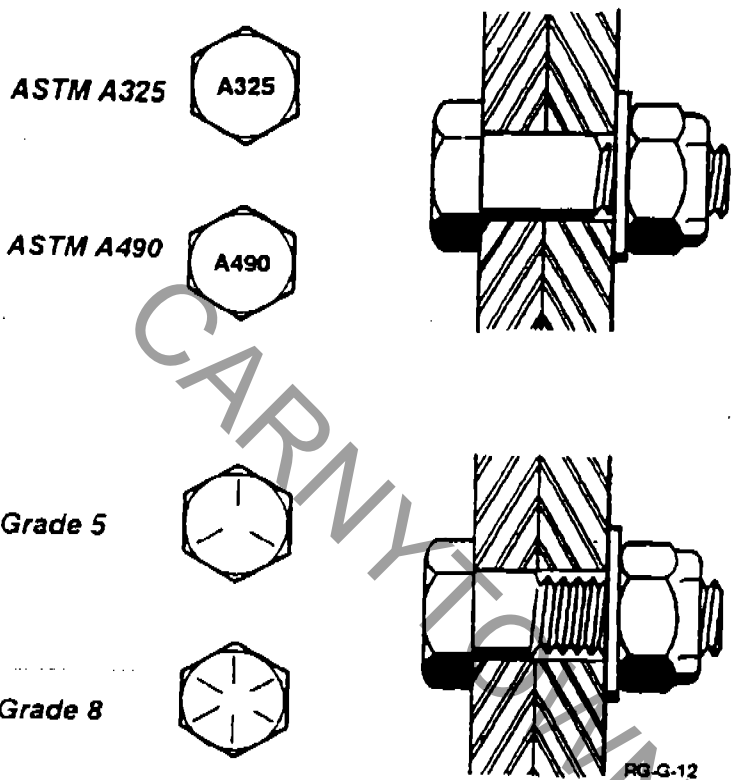
have machined threads and can have die seams along the shank.

NEVER REPLACE CAPSCREWS OR NUTS WITH PARTS OF A LESSER GRADE, OR DIFFERENT LENGTHS THAN THOSE SHOWN IN THE MOON-WALK CATALOG.

Grade markings for functional load carrying cap screws
 Manufacturer's identification symbols must be present on all cap screws

Correct markings	Examples of unacceptable markings	
SAE J429 Grade 5 Medium carbon 81,000 yield 	 Grade 5.1 Low carbon	 Grade 5.2 Low carbon martensitic
ASTM A325 Type 1 Medium carbon Longer shank and shorter thread length than Grade 5 81,000 yield 	 ASTM A325 Type 2 Low carbon martensitic	
ASTM A325 Type 3 Corrosion resisting Longer shank and shorter thread length than Grade 5 81,00 yield 	RG-G-11	
SAE J429 Grade 8 Medium carbon 130,00 yield 	 ISO R898 Class 8.8 Medium carbon 92,000 yield	
ASTM A490 Alloy steel Longer shank and shorter thread length than Grade 8 130,00 yield 	 ISO R898 Class 10.9 Alloy steel 130,000 yield	

6.0) FASTENERS (CONT.)



Capscrew comparison

*ASTM A325 or ASTM A490
Capscrew - Longer shank shorter
threads*

*Grade 5 or Grade 8 capscrew -
Shorter shank longer threads*

Replacement of capscrews and locknuts
When permanently installed capscrews and locknuts are disassembled for repair or adjustment, they must be replaced if they have been in service over five (5) years, or corrosion, or other damage requires over-torquing for removal. If a torque wrench is not used to measure excessive removal torques, the capscrews and locknuts must be replaced.

Capscrews and locknuts which are frequently disassembled for portability must be replaced each operating season. If the capscrews and locknuts become damaged, corroded or require excessive torque for removal, they must be replaced. If a torque wrench is not used to measure excessive removal torques, the capscrews and locknuts must be replaced.

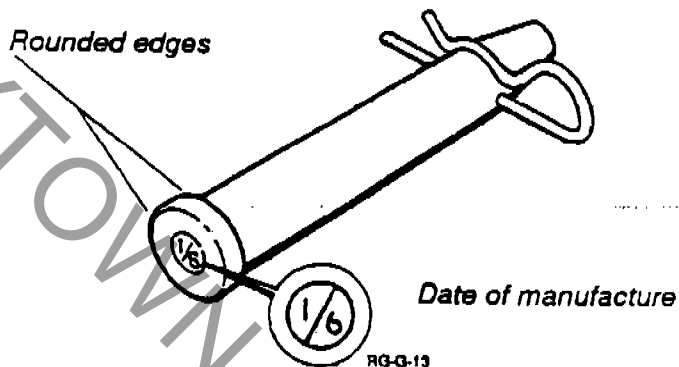
6.0) FASTENERS (CONT.)

Pins

Tapered pins used on amusement rides are subject to deterioration due to improper use and wear. MOON-WALK, Inc. specifies certain pins for certain applications on amusement rides. These pins have been developed over a period of years, taking into account size, design, material and hardness characteristics.

Use only the pins specified by MOON-WALK, INC. These pins are identified as shown in the following illustration. Always use the correct hairpin.

Pin identification



Use care when installing and removing tapered pins. Since these pins are hardened (as are hammers and punches) care must be taken to strike the pin straight on. Striking a pin at an angle can cause the pin to chip, resulting in personal injury. For this reason **APPROVED SAFETY GLASSES OR GOGGLES MUST BE WORN AT ALL TIMES** when tapered pins are being installed or removed. If a tapered pin is chipped, bent, or "mushroomed" on either end, discard it and replace it with a new pin.

Pin keepers

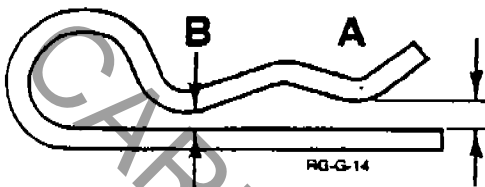
All keepers (R-keys, hair pins, lynch pins, etc.) must be inspected for wear. If a keeper is bent out of shape or "sprung", it must be replaced.

Hairpins are expendable parts. After repeated use, they become worn and "sprung" as shown.

6.0) FASTENERS (CONT.)



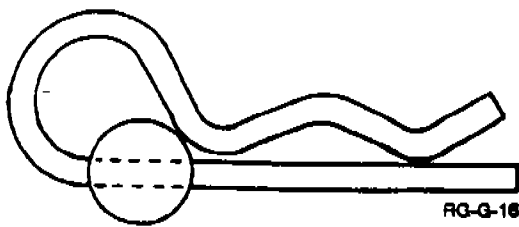
Acceptable hair pins
Dimension "A" equals dimension "B" in a relaxed position



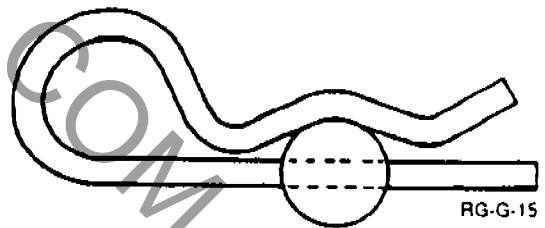
Unacceptable hair pins
Dimension "A" is greater than dimension "B" in a relaxed position

NEVER ATTEMPT TO BEND A HAIR PIN BACK INTO SHAPE.
REPLACE IT WITH A NEW PART.

The correct installation of a hairpin is shown. Incorrectly installed hairpins are more likely to fail, and will distort after only a few uses.



Incorrect



Correct

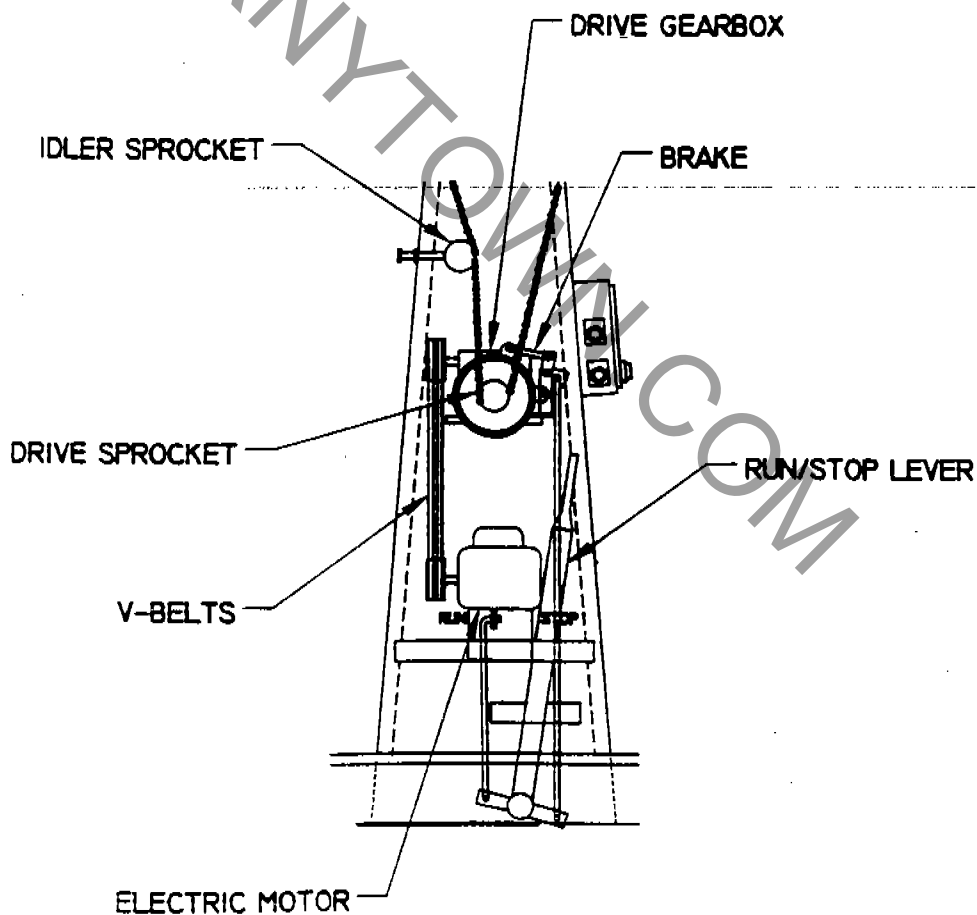
MOON-WALK, INC. recognizes and recommends the safety procedures specified in *ASTM Standards F770 Operation Procedures for Amusement Rides and Devices* and *F853 Maintenance Procedures for Amusement Rides and Devices*.

7.0) DRIVE SYSTEM

Drive gearbox

Check the oil level in the drive gearbox monthly. Remove the oil level plug on the side of the gearbox. The oil must be level with the plug opening. Add oil as required in accordance with the "Fluids and Lubricants Chart" in this section.

Change the oil in the drive gearbox initially after 150 hours of operation and once a year thereafter. Remove the drain plug on the bottom of the gearbox and drain the oil completely. Refill with new oil in accordance with the "Fluids and Lubricants Chart" in this section.

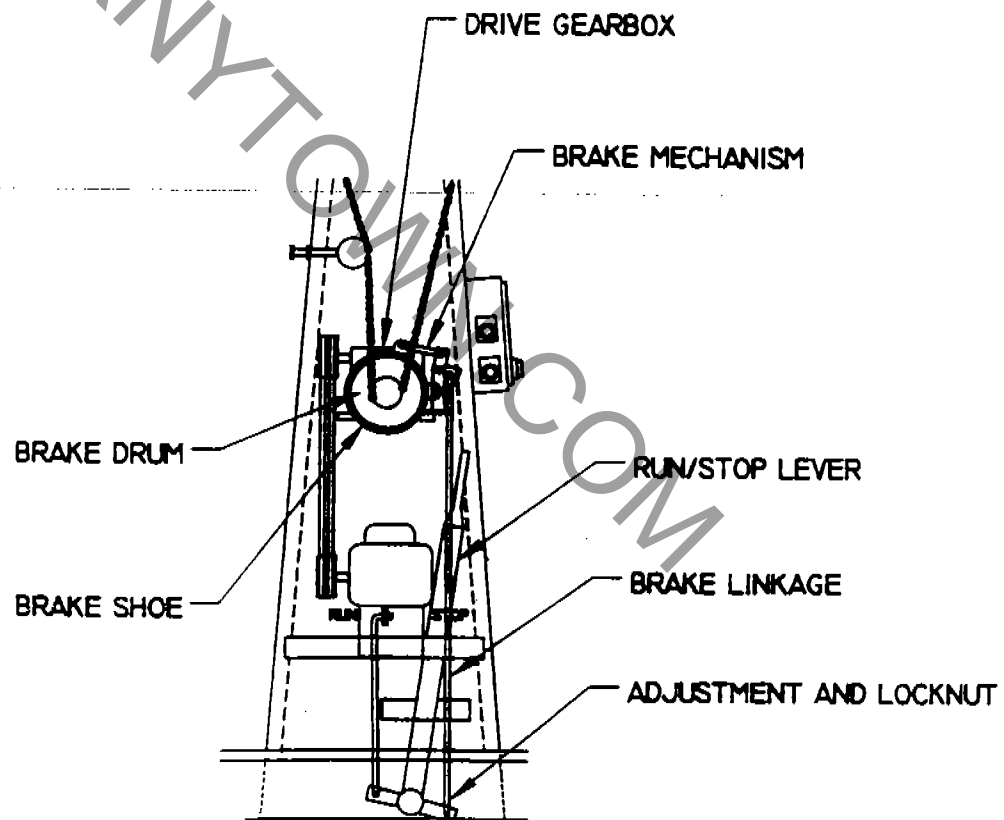


7.0) DRIVE SYSTEM (CONT.)

BRAKE ASSEMBLY

THE BRAKE ASSEMBLY IS A DRUM TYPE BAND WHICH IS ACTUATED BY MOVING THE RUN/STOP LEVER TO THE STOP POSITION. A LINKAGE CONNECTED TO THE LEVER APPLIES PRESSURE TO THE BRAKE BAND, APPLYING THE BRAKE. THE BRAKE SHOE AND DRUM SHOULD BE CHECKED MONTHLY FOR WEAR. SHOULD THE BRAKE LINING THICKNESS BECOME LESS THAN $3/32$ " THICK AT ANY PLACE ON THE CIRCUMFERENCE, THE BRAKE LINING SHOULD BE REPLACED. THE BRAKE DRUM SHOULD BE RESURFACED WHENEVER THE BRAKE LINING IS REPLACED.

THE BRAKE APPLICATION FORCE CAN BE ADJUSTED BY CHANGING THE LENGTH OF THE LINKAGE ROD AT THE ADJUSTMENT THREADS AND LOCKNUT. SHORTENING THE LINKAGE INCREASES BRAKE FORCE AND LENGTHENING THE LINKAGE DECREASES BRAKE FORCE. BRAKE FORCE SHOULD BE ADJUSTED TO HOLD THE RIDE STATIONARY WHEN FULLY LOADED WITH PASSENGERS.



7.0) DRIVE SYSTEM (CONT.)

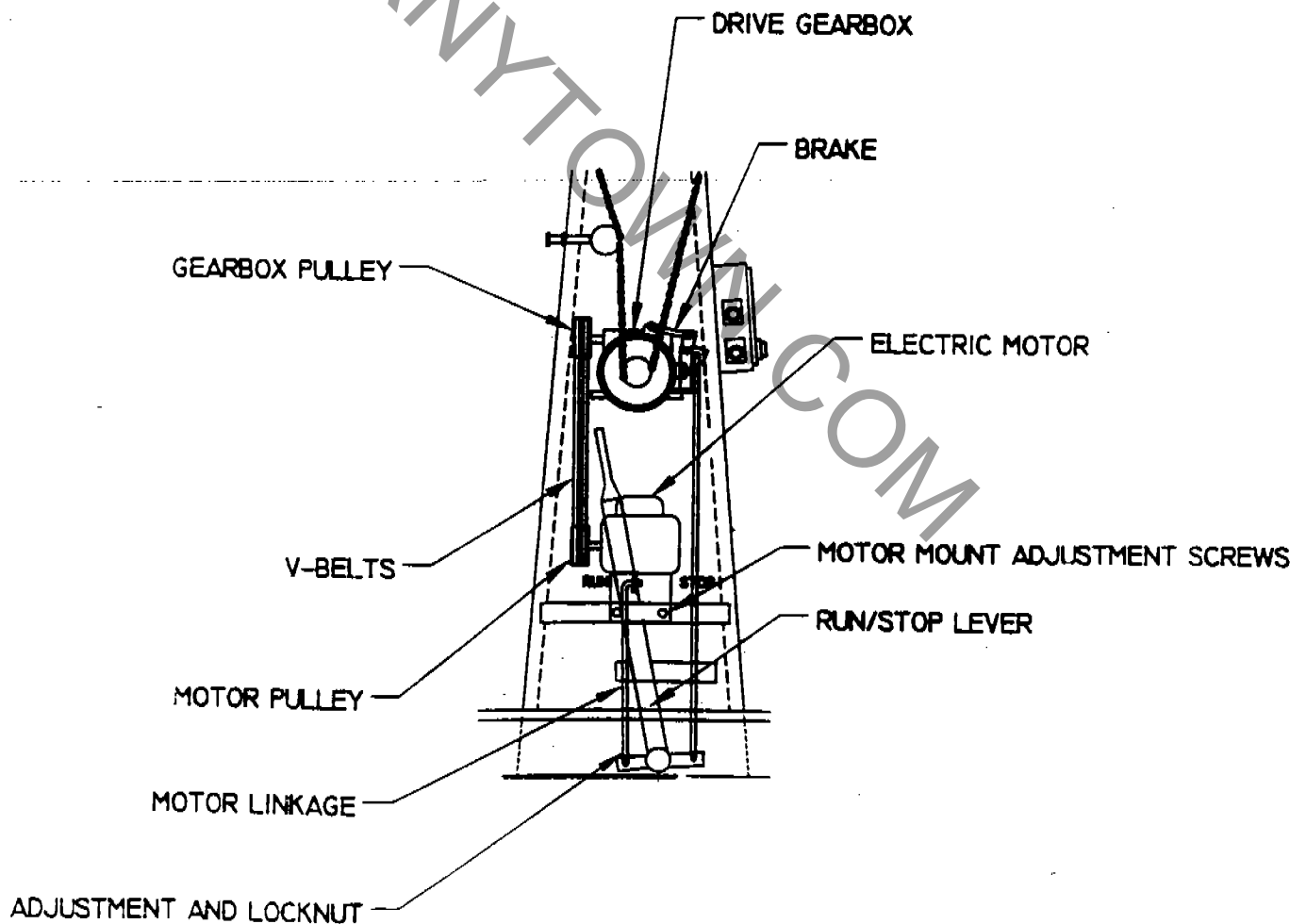
V-BELT ADJUSTMENT

THE DRIVE SYSTEM IS ENGAGED BY V-BELTS BETWEEN THE ELECTRIC MOTOR AND THE DRIVE GEARBOX. THE RUN/STOP LEVER IS CONNECTED BY THE MOTOR LINKAGE TO THE MOTOR MOUNT. IN THE STOP POSITION THE V-BELTS ARE ALLOWED TO SLIP. IN THE RUN POSITION, THE V-BELTS ARE TENSIONED AND DRIVE THE GEARBOX.

WITH THE ELECTRIC MOTOR TURNED OFF, AND THE RUN/STOP LEVER IN THE RUN POSITION, CHECK THE TENSION OF THE V-BELTS INITIALLY AFTER 50 HOURS OF OPERATION AND MONTHLY THEREAFTER. MAINTAIN BELT TENSION WHICH ALLOWS 5/8 INCH DEFLECTION WITH 10 POUNDS OF FORCE, MEASURED AT THE CENTER OF EACH SPAN.

THE TENSION CAN BE FINELY ADJUSTED THROUGH THE ADJUSTMENT AND LOCKNUT ON THE MOTOR LINKAGE. SHOULD COARSE ADJUSTMENT BE REQUIRED, THE MOTOR MOUNT ADJUSTING SCREWS MUST BE LOOSENED AND THE MOTOR MOUNT MOVED. A FINE ADJUSTMENT MUST ALSO BE MADE IF THE MOTOR MOUNT IS MOVED.

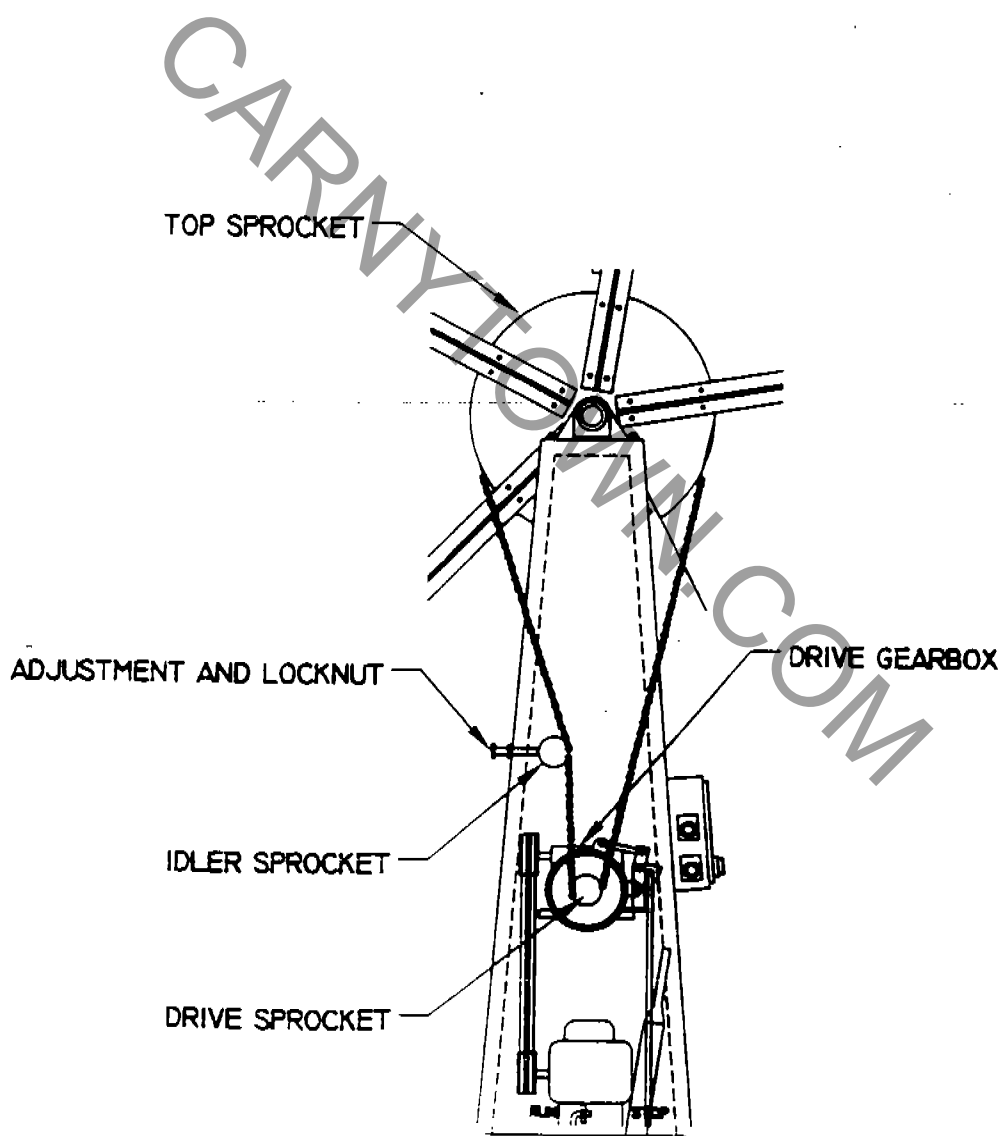
NOTE: MAKE SURE TO ADJUST BOTH SIDES OF THE MOTOR MOUNT EQUALLY TO MAINTAIN PROPER MOTOR ALIGNMENT.



7.0) DRIVE SYSTEM (CONT.)

DRIVE CHAIN ADJUSTMENT

THE RIDE IS DRIVEN BY MEANS OF A DRIVE GEARBOX WITH SPROCKET WHICH IS CONNECTED BY CHAIN TO THE TOP SPROCKET WHICH IS ATTACHED TO THE SPOKES OF THE FERRIS WHEEL. AN IDLER SPROCKET IS PROVIDED TO ALLOW TENSIONING OF THE DRIVE CHAIN AS IT STRETCHES. AN ADJUSTMENT SCREW AND LOCK NUT ALLOW THE IDLER TO BE MOVED IN AND OUT TO ADJUST CHAIN TENSION. CHECK THE TENSION OF THE DRIVE CHAIN MONTHLY. MAINTAIN CHAIN TENSION WHICH ALLOWS 1 INCH DEFLECTION WITH 10 POUNDS OF FORCE, MEASURED AT THE CENTER OF THE LONG SPAN. THE TENSION IS INCREASED BY TURNING THE IDLER SCREW IN TOWARD THE CHAIN. THE LOCKNUT LOCKS THE ADJUSTMENT.



KIDDIE FERRIS WHEEL

REQUIREMENTS FOR RIDE INFORMATION PLAQUE (DATA PLATE)

- ✓ KIDDIE FERRIS WHEEL
- MODEL NO. - KFW-100
- ✓ SERIAL NO. -
- DATE OF MFG. -
- ✓ RIDE SPEED - 6 RPM
- DIRECTION OF TRAVEL - CW
- ✓ PASSENGER CAPACITY - (20 CHILDREN) OR 1500 LBS.
- MAXIMUM PASSENGER HEIGHT - 42 IN.
- ELECTRICAL SERVICE - 120 VAC / 20 AMP / 60 HZ

MFG. BY:

- ✓ MOON-WALK ENTERPRISES, INC.
- 10150 JOY ROAD
- PLYMOUTH, MI 48170
- 800-835-0016