The

DIXIE KART-WHEEL

OPERATIONS AND MAINTENANCE MANUAL

PLEASE READ THIS PAGE FIRST

MODEL DKW-4

This operations and maintenance manual was designed to assist the owner/operator in every aspect of the Dixie Kart-Wheel. The first 19 pages follow ASTM Standards on Amusement Rides and Devices. Following those are pages for the Operations, Maintenance, Inspection sheet, and drawings. Please read and follow all instructions for a safe, long lasting ride.

SERIAL NUMBER_____

OWNER_____

INDEX

Dixie Kart-Wheel Specifications

Capacity

Maximum patrons per cart 4
Maximum patrons per load 4
Maximum weight per seat ..... 250 lb.
Maximum weight per load ..... 1000 lb.
Maximum height limit ..... 80"
Maximum speed ..... 30 R.P.M.

Drive

Rider driven using body motion (I.E. Swingset)

Power Requirements

None..

Dimensions

Height ..... DKW-4 -106”’
Width ..... 104”'
Weight ..... 1000 LB.

ASTM REQUIREMENTS

This manual conforms to the writing standards set by the ASTM (American Standards for Testing and Materials) for manuals written for the Amusement Ride Industry. We, must therefore, present a few pages of information showing the ASTM

standards and refer to the appropriate sections in the manual that cover the related subjects.

ASTM Designation F 698-88

Standard specifications for Physical information to be provided for Amusement Rides and Devices

1.Scope

1.1 This specification covers the minimum requirements for information regarding amusement rides and devices that shall be provided to the end user by the manufacturer or seller of amusement rides or devices.

2.Significance and Use

2.1 The purpose of this specification is to provide the minimum information necessary for the proper identification, placement, and erection and operation of each amusement ride or device.

3.Information requirements

3.1 The information given in 3.2 and 3.3 through 3.15.3 shall be included where applicable on the information plate as specified in 3.2 and in this manual, furnished with youth equipment at the time of sale of the Dixie Kart Wheel.

3.2 *Information Plate*-A manufacturer issued information plate shall be affixed in a permanent fashion to the device in a visible location and shall be designed to remain legible for the expected life of the Dixie Kart Wheel. The plate shall include all applicable items listed in 3.1 through 3.2.8.

3.2.1 *Ride serial Number*- A manufacturer issued unique identifying number.

3.2.2 *Ride Name and Manufacturer*-A manufacturer-issued unique identifying ride name including the name of the manufacturer and his location

3.2.3 *Ride Model Number*-A manufacturer issued identifying model number assigned to each manufactured type of ride having the same structural design or components.

3.2.4 *Date of Manufacture*-The date (month and year) determined by the manufacturer that the given device met his required construction specifications.

3.2.5 *Ride speed*-Maximum 30 R.P.M.

3.2.6 *Direction of travel*-direction of travel depends on installation.

3.2.7 *Passenger Capacity by weight*-
minimum weight, N.A.
maximum weight per seat-250 lb.:
1000 lb. maximum weight per ride

3.2.8 *Passenger Capacity by Number*-
Maximum total number of adult or child passengers per passenger position is 1. Maximum total number of adult or child passengers per cart is 2, per ride is 2.

An example of a typical Name-Plate

DIXIE KART-WHEEL
S.N. 001234
MODEL: DKW-4
MFG. BY: DFM
1658 HWY 85 N.
FAYETTEVILLE, GA.30214
DOM:06/96
RIDE SPEED: 30 RPM MAX.

MAX. PSNGRS PER CART: 4
MAX. WGT PER CART: 1000 lb.
MAX WIND SPEED: 20 mph.

3.3 *Ride duration*- Three to five minutes.
3.4 *Recommended Balance of Passenger Loading or Unloading*- N.A.
3.5 *Environmental Restrictions*- It is recommended that the ride be closed down during high winds (over 20 mph) or stormy conditions.
3.6 *Recommended Passenger Restrictions*- Passengers must not exceed 250 lb.
3.7 Electrical Power Requirements- None
3.8 *Mechanical Power Requirements*- None
3.9 *Water Flow*- (Not Applicable).
3.10 *Static Information*- Height= 106" - Width= 104" - Weight= 1000 lbs.
3.11 *Dynamic Information*- Height= 106" - Width= 104" - Weight= 1000 lb.
3.12 *Trailering information*- (Do not exceed 55 m.p.h.)
3.13 *Fastener Schedule*- All bolts are grade five. Torque all bolts that use lock washers until the lock washer is flattened. Maximum torque on all bolts as follows:
3/8"bolts, not over 40 lb.
7/16"bolts, not over 60 lb.
1/2"bolts, not over 85 lb.

ASTM Designation: F770-88

Standard Practice for Operation Procedures for Amusements Rides and Devices

1. Scope

1.1 This national standards practice established information for operating procedures of amusement rides and devices.
1.2 This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Significance and Use.

2.1 The purpose of this practice is to delineate information and to establish procedures for the operation of amusement rides and devices.

3. Manufacturers Responsibility

3.1 The manufacturer of the Dixie Kart-Wheel shall provide, with delivery of each unit, documented, recommended operating instructions (This Book) pertaining to its operation.

These instructions must include the following:

3.1.1 *Description of the Ride*:The Kart-Wheel is a rider driven wheel which rotates on a center axis. The riders use a back and forth motion in unison to turn the kart-wheel up side down.

3.1.1.1 *Description of the motion of the device*: The motion of the kart-wheel is clockwise, then counter clockwise, then clockwise, until a full circle of motion can be obtained.

3.1.1.2 *Description of the recommended passenger loading procedures during the operation:* See instructions in this manual under **Operations**, for this description. (see 3.1.3.2)

3.1.2.1 *Recommended safety procedures and instructions*: See sections **Operations and Maintenance**, for the appropriate safety notes as the operating procedures and maintenance procedures are explained. Each safety item is explained as that portion is described.

3.1.2.1 *Maximum total passenger weight*: See 3.2.7 and 3.2.8.9 on page 4 for this information.

3.1.2.2 *Description of the passenger restraint system*: The passenger restraint system is a dual automotive lap belt with two seperate locking buckles.

3.1.2.3 *Ride or device operator and attendant safety checks:* Pre-opening daily inspections of all bearings, axles, and door latches is required by the operators. The wheel should be run a complete unoccupied ride before opening. Any item needing repair or maintenance resulting from any inspection shall be completed before the Dixie Kart-Wheel can be opened for business.

3.1.2.4 *Instructions to the patron*: Recommended information should be made available to each patron of the ride or device. Each patron should be informed to keep seatbelt tight at all times and to lean forward and backward to get the wheel in motion..

3.1.2.5 *Recommendations for operational restriction environmental conditions*. Operation in high winds above 20 mph and storms is unsafe and should be avoided.

3.1.3 *Manufacturers recommended device operating procedures, including the location of operators and attendants*. The wheel operator shall stand in front of control panel facing the wheel during the ride. See Operation Section for complete operating instructions.

3.1.3.1 *Description of the recommended daily pre-opening inspection to be performed by ride operators and attendants that is in addition to previously performed maintenance or other inspections*. No inspections are required other than those described in 3.1.2.3 on page 6 of this section and regular maintenance section. See inspection check-off list.

3.1.3.2 *Description of the recommended operators and attendants positions and functions*. One employee position exists: ride operator. The operator will collect tickets, load carts one by one, engage the ride for 3-5 minutes, unload the ride.

3.1.3.3 *Description of the recommended series of steps, to be followed in a definitive order, to complete the ride*. See the Operation Section and section,3.1.3.2 for this description.

3.1.4 *Manufacturers recommended emergency procedures.* ALL DIXIE KART-WHEEL OPERATORS WILL BE TRAINED TO HANDLE ANY EMERGENCY THAT COULD EXIST ON THIS DEVICE.

3.1.4.1 *Recommended evacuation procedures for the ride*: See section 3.1.4.4.

3.1.4.2 *Use of emergency power equipment*: None Provided

3.1.4.4 *Description of any emergency procedure because of loss of power*. N/A

4 Owner/operator's responsibility.

4.1 Each Owner/Operator of an amusement ride or device shall read and become familiar with the contents of the manufacturer's recommended operating instructions (This Book) and specifications upon receiving the equipment as provided in 3.1 Each Owner/Operator shall prepare an operating fact sheet. This fact sheet shall be made available to each Dixie Kart-Wheel operator and attendant. The Owner/Operator fact sheet (on a ride by ride basis) shall include the following:

4.1.1 Dixie Kart-Wheel operation policies and procedures with pertinent information from the manufacturers instructions.

4.1.1.1 Description of the ride or device operation. (#3.1.1)
4.1.1.2 Duties of the specific assigned position of the operator or attendant. (#3.1.3.2)
4.1.1.3 General safety procedures. Page 19.
4.1.1.4 Additional recommendations of the Owner/Operator.

4.1.2 Duties of the specific assigned position of the operator or attendant. (#3.1.3.2)
4.1.3 The Owner/Operator shall provide training for each Dixie Kart-Wheel operator or attendant. This training shall include the following:

4.1.3.1 Instruction on Dixie Kart-Wheel operating procedures.
4.1.3.2 Instructions on specific duties of the assigned positions.
4.1.3.3 Instruction on general safety procedures.
4.1.3.4 Instruction on emergency procedures.
4.1.3.5 Demonstration of the physical ride itself.
4.1.3.6 Supervised observation of the Dixie Kart-Wheel operator's physical operations and movements.
4.1.3.7 Additional instructions deemed necessary by the owner/operator.

4.1.4 The Dixie Kart-Wheel Operator shall conduct a daily pre-opening inspection of each device under his/her control prior to opening. This inspection shall include the following: (also see check-off list on page 22)

4.1.4.1 Visual check of all bearings and carts and a general inspection for anything amiss or out of place; loose bolts, chains, etc.
4.1.4.2 Visual inspection of entrances, exits, stairways and ramps.
4.1.4.3 Test of any communication equipment used in conjunction with Dixie Kart-Wheel.

ASTM Designation F846-86

Standard Guide for Testing Performance of Amusement Rides and Devices.

1. Scope

1.1 This guide covers the basic tests which shall be conducted on amusement rides and devices during prototype development, installation and erection, following major modifications and during normal operation to determine that the performance of the device meets the manufacturers specified design criteria.

1.2 This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

F698 Specification for Physical Information to be Provided for Amusement Rides and Devices.

F747 Definitions of Terms Relating to Amusement Rides and Devices.

F770 Practice for Operation Procedures for Amusement Rides and Devices.

3. Significance and Use

3.1 The purpose of this standard is to establish pertinent test data on a given ride or device which shall be used as the basis for the evaluation of the ride or device's performance, including development testing, installation testing and operational testing.

3.2 This standard is intended for the use of manufacturers, Owner/Operators and those persons or agencies involved in the installation and operational testing of amusement rides and devices.

4. Descriptions of Terms Specific to This Standard

4.1 *critical component(s)*-a component or system of components that, due to their importance in the continued proper operation of the device, have been designated by the manufacturer as requiring special fabrication, maintenance, inspections or operation.

4.2 *installation or erection*-the actual act of on-site construction or physical setting up and making ready for use the ride or device.

4.3 *major modification*-any change in either the structural or operational characteristics of the ride or device which will alter its performance from that specified in the manufacturers design criteria.

4.4 *prototype*-final operational assembly of a newly developed ride or device.

5. Developmental Testing by the Manufacturer.

5.1 Where applicable as determined by the manufacturer /designer, the following test procedures shall be developed and performed on a prototype amusement ride in order that the manufacturer/designer may determine the appropriateness for use, of not only the parts, but the entire system of a newly designed ride or device.

6. Installation Testing

6.1 This section of the national standard covers those tests relevant not only to installation, but also includes post-modification and major modifications. The original manufacturer or supplier of

an amusement ride or device shall also provide, where applicable, the following standard testing guides:

6.1.1 *Materials Testing*: Certification of all materials used in the major components of the Dixie Kart-Wheel has been done by the factories that supplied the parts; pipe, tubing, bolts etc.

6.1.2 *Performance Testing*: All Dixie Kart-Wheel units are factory tested for proper performance before being shipped.

7. Operational Testing

7.1 The manufacturer of a ride or device shall develop specific operational tests along with minimum intervals for these tests to be performed that will allow the owner/operator of the ride to determine whether the ride is operating within prescribed operational limits.

7.2 All operational tests, except those necessarily recommended subsequent to the sale because of information not reasonably available to the manufacturer at the time of sale, should be recommended at the time of sale. All tests, whether recommended at the time of sale or subsequent tests shall meet the following criteria:

7.2.1 All tests shall have been satisfactorily performed by the manufacturer prior to sale.

7.2.2 The tests must be such that the ride can be reasonably expected to pass during the expected design life, assuming recommended maintenance and operative procedures have been followed.

7.2.3 All tests must be reasonable and such that the owner/operator can reasonably be expected to be competent to perform or cause to be performed.

7.2.4 Any operational test including load testing performed on an amusement ride shall be completely non-destructive in nature. Overload testing exceeding the above limits shall be deemed inappropriate.

7.2.5 Any installation or operational testing conducted on an amusement ride shall be accomplished within the rated limits of the information provided by the manufacturer.

ASTM Designation: F853-86

National Standards Practices for Maintenance Procedures for Amusement Rides and Devices.

1. Scope

1.1 This practice establishes information for maintenance procedures of amusement rides and devices.

1.2 This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2.Significance and Use

2.1 The purpose of this practice is to delineate information for the

maintenance of amusement rides and devices.

3. Manufacturers Responsibility

3.1 The manufacturer of an amusement device shall provide, with delivery of each such device, documented maintenance instructions (This Book). These instructions shall include the following:

3.1.1 Description: See 3.1.1 on page 6 of this book.

3.1.1.1 Description of motion. See 3.1.1.1 on page 6 of this book.

3.1.3 Recommended lubrication. See Maintenance Section

3.1.3.1 Recommended types of oil. See maintenance section.

3.1.3.2 Recommended frequency of lubrication. See Maintenance Section

3.1.3.4 Description of the recommended pre-opening inspection.

3.1.5 Description of maintenance inspections.

3.1.5.2 Recommended operational tests: Employees should test the Dixie Kart-Wheel for proper operation each day to see if the ride performs in a normal fashion. If it does not, follow the recommended maintenance procedures in the Maintenance section.

3.1.5.4 Test recommended pursuant to 3.1.5 shall meet the following criteria:

(a) The tests shall have been performed satisfactorily by the manufacturer prior to the sale of the Dixie Kart-Wheel.

(b) The test shall be a test which the Dixie Kart-Wheel can reasonably be expected to pass during its expected life, assuming that recommended maintenance and operating procedures have been followed.

(c) The test shall be a test that is reasonable, and which the owner/operator can reasonable be expected to be competent to perform.

3.1.6 Recommended specifications for torque requirements on bolts. See 3.13.

3.1.7 Schematics, Drawings

3.1.8.1 Description of hydraulic system maintenance. See Maintenance section.

3.1.9 List of parts: See figures 1-3.

3.1.14 Maintenance Bulletins: If time and experience shows that other information, not included in the original operations manual, pertaining to the safe operation and maintenance of the Dixie Kart-Wheel, that information needs to be disseminated to all known owners/operators.

4. Owner/Operator's Responsibility

4.1 Each Owner/Operator of the Dixie Kart-Wheel shall read and become familiar with the contents of this manual, as soon as the Dixie Kart-Wheel is received including maintenance instructions and specifications. Based on the manufacturers recommendations, each Owner/Operator shall implement a program of testing, inspecting and maintaining this piece of equipment, keeping it in safe operating condition. This program shall include a checklist to

be made available to each person performing maintenance on the machine. The Owner/Operators checklist (on a ride by ride basis) shall include the following:

4.1.1 Descriptive of preventative maintenance assignments to be performed. (See Manual)
4.1.2 Description of the inspections to be performed. (See Manual)
4.1.3 Special Safety Instructions where applicable. (See Manual)
4.1.4 Any additional recommendations of the Owner/Operator.

4.2 The Owner/Operator of the Dixie Kart-Wheel shall provide training for each person performing the regularly scheduled maintenance on the machine pertaining to their assigned duties. This training shall include the following:

4.2.1 Instruction on inspection and preventive maintenance procedures (See manual)

4.2.2 Instruction on specific duties of the assigned position. (See manual)
4.2.3 Instruction on general safety procedures.
4.2.4 Demonstration of the physical performance of the regularly assigned duties and inspections. (See manual)
4.2.5 Supervised observation of the maintenance person's physical performance of their assigned regularly scheduled duties and inspections.
4.2.6 Additional instructions deemed necessary by the Owner/Operator.

4.3 Prior to carrying passengers, the Owner/Operator shall conduct or cause to be conducted a daily documented and signed pre-opening inspection, based on provided instructions from the manufacturer to ensure the proper operation of the ride or device. The inspection program shall include the following:

4.3.1 Inspection of all Axles, bearings, latches, and welds.
4.3.2 Visual inspection of entrances, exits, stairways and ramps.
4.3.3 Functional test of any communication equipment used on the premises.

4.3.6 Visual inspection of all fencing, guarding and barricades.
4.3.7 Visual inspection of the Dixie Kart-Wheel as a whole for any obvious problems.

4.3.8 The Dixie Kart-Wheel shall be tested by an employee for one full operating cycle.

ASTM Designation F893-87

Standard Guide for Inspection of Amusement Rides and Devices.

1.Scope

1.1 This section covers the inspections of amusement rides and devices during prototype development, production manufacturing, installation or erection, following major modification or over-haul and during operation and maintenance periods.
1.2 This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with this use. It is the responsibility of the user of this standard to establish

appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents.

2.1 ASTM Standards:

F698 Specification for Physical Information to be Provided for Amusement Rides and Devices.

F747 Definition of terms Relating to Amusement Rides and Devices.

F846 Guide for Testing Performance of Amusement Rides and Devices.

F853 Practice for Maintenance Procedures for Amusement Rides and Devices.

3. Definition

3.1 inspector-a person who, through education, experience and training, is able to properly evaluate an amusement ride or device to determine its conformance with ASTM Committee Standards.

4. Significance and use

4.1 The purpose of this guide is to delineate information and recommended inspections for amusement rides and devices.

5. Quality Assurance Program

5.1 Manufacturers Responsibility

5.1.1 The manufacturer of an amusement ride or device shall have a written quality assurance program for use in conjunction with the design, manufacture, construction, modification or reconditioning of the amusement ride or device.

5.1.2 Quality assurance documents, that is, material certifications, test reports and inspection reports, shall be retained for a period of time as deemed appropriate by the manufacturers.

5.1.3 The manufacturer of an amusement device shall provide the Owner/Operator with a written inspection procedure to be delivered with the ride or device. The document shall outline the inspections as contained in Practice F 853 and Practice F770.

5.1.3.1 Any changes in the procedure described in 5.1.3 above deemed essential by the manufacturer due to information not available to the manufacturer at the time of delivery shall be communicated to all known Owner/Operators.

5.1.4 All inspections, whether recommended at the time of sale or subsequently, shall meet the following criteria:

5.1.4.1 Inspections are such that shall have been performed satisfactorily by the manufacturer.

5.1.4.2 Inspections are ones in which the ride or device or element can reasonable be expected to pass during the expected design life of the ride, device or element, assuming that procedures have been followed; and,

5.1.4.3 Inspections are reasonable and are such that the Owner/Operator can reasonably be expected to be competent to perform or cause to be performed.

5.1.5 Upon notification from an Owner/Operator of an incident involving a critical component, the manufacturer of an amusement ride or device shall promptly evaluate this information and disseminate his feelings to the original Owner/Operator along with any pertinent recommendations to all known Owner/Operators.

5.2 Owner/Operator Responsibilities:

5.2.1 Owner/Operators of amusement rides or devices shall have an inspection program consistent with the inspections outlined in Practice F583 and Practice F770.

5.2.2 Inspection documents deemed appropriate by the Owner/Operator to be maintained in the ride file shall be filed in accordance with the procedures outlined in Practice F770 and Practice F583.

5.2.3 The Owner/Operator of an amusement ride or device shall promptly notify the manufacturer of an incident, failure, or malfunction which, in his judgment, seriously affects the continued proper operation of the ride or device and is information of which the manufacturer should be aware.

ASTM Designation F1159-88

National Standards Practice for the Design and Manufacture of Amusement Rides and Devices.

1. Scope

1.1 This practice establishes information and procedures for the design and manufacture of amusement rides and devices.

1.2 This standard may involve hazardous materials, operations, and equipment. This standard does not recommended maintenance purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations.

2. Reference Documents

2.1 ASTM Standard:
F846 Guide for Testing Performance of Amusement Rides and Devices.

2.2 Federal Documents:
Dept. of Health, Education and Welfare Pediatric Growth Development Chart, 1983.

USDA Agricultural Handbook 72, Rev O-The Wood Handbook, by the U.S. Dept. of Agricultural Forest Products Laboratory.

2.3 Society of Automotive Engineers Standards:
SAE J833 Recommended Practice for USA Human Physical Dimensions

SAE Hydraulic Fluid Standards
SAE J-10 Pneumatic Storage Tanks
SAE Pneumatic Tubing Standards

2.4 American Society of Mechanical Engineers Documents:

ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

ASME Welding Standards

2.5 American Institute of Steel Construction Document:
AISC Manual on Steel Construction.

2.6 U.S. Aluminum Association Document:
Aluminum Construction.

2.7 American Welding Society Standard:
ANSI/AWS D1.1 Structural Welding Code.

2.8 National Fire Protection Association Standard:
National Electrical Code.

3. Significance and Use

3.1 This practice provides designers and manufacturers of amusement rides and devices with design references and criteria to use in designing and manufacturing amusement rides and devices.

4. Procedures for Developing Documentation and Records.

4.1 *Design and Calculations*- Manufacturers and basic documentation and engineering analysis shall include the following:

4.1.1 Performance characteristics of structural, mechanical and electrical components, and

4.1.2 Forces on passengers due to the action of the ride based on design loading.

4.2 *Drawings and Records*-Records shall be kept on the characteristics and forces explained in 4.1.1 and 4.1.2 for all versions and revisions of a ride or device so long as deemed appropriate by the designer/manufacturer.

4.3 *Testing*-Document and record the testing performance of amusement rides and devices in accordance with the test given in Guide F846.

Design Procedures

5. Designing in Accordance with Passenger Weights.

5.1 The weight assigned to an adult passenger, for design purposes, shall be 170 lb. or 12 lb. per inch of hip width at the seat, whichever is greater. Reference SAE J883 on USA Human Physical Dimensions, using the “medium man” for passenger weight..

5.2 The weight assigned to a 12 year-old child passenger, for design purposes, shall be 90 lb. or 9 lb. per inch of hip width at the seat, whichever is greater. Reference U.S. Dept. of Health, Education and Welfare Pediatric Growth Development Chart, 1983.

6. Passenger Carrying Devices

6.1 *Design of Seats* -See Figures 1-3.

6.2 *Methods of Restraint*- Where appropriate, base the passenger restraint on the design intent of the ride or device with consideration given to the Height, speed and forces on passengers.

6.3 *Passenger Clearance* -N.A.

7. Amusement Ride and Device Structures

7.1 *Metal Structures*- Where applicable, design metal structures in accordance with AISC manual of Steel Construction, as applicable.

7.1.1 Allowable loads or stresses as indicated by the above data given shall be reduced as deemed adequate by the manufacturer /designer, to allow for special combinations of conditions which may include stress concentrations, shock, dynamics, load cycles, degree of risk and environment.

7.2 *Timber Structures* -N.A.

7.2.1 N.A.

7.3 *Welding*-The welding of critical components as defined in Guide F846 shall be in accordance with specifications of the American Welding Society of the Society for Mechanical Engineers or both. The welding shall be performed by appropriately certified welders.

7.4 *Bolting Specifications*-All fasteners used on a ride in connecting critical components shall meet accepted engineering standards for each application in the system and shall be graded or otherwise identifiable.

7.5 *Chain and Wire Rope*-Chain and wire rope used in ride systems shall meet existing industrial ratings considering the loads, conditions, dynamics and potential fatigue involved.

8. Electrical Components.

8.1 Design, manufacture, and install electrical components in accordance with the National Electric Code or the equivalent.

8.2 Emergency stop circuits shall be energized systems which are fail-safe in case of power failure.

8.3 The emergency stop switches shall be manually reset. The resetting of the stop switch shall not start the ride.

9. Hydraulic Components

9.1 Maximum pressure shall not exceed component ratings.

9.2 Hydraulic components and fluids shall conform to SAE standards or the equivalent.

10. Pneumatics

10.1 Maximum pressure shall not exceed the component rating.

10.2 Pneumatic storage tanks shall conform to ASME pressure Vessel code, Section VIII, Division 1 or SAE J-10.

10.3 Pneumatic accumulators shall conform to ASME pressure Vessel Standards.

10.4 Pneumatic tubing hose and fittings shall conform to SAE standards or the equivalent.

10.5 Loss of air pressure below design minimums in critical applications shall cause the system to revert to the appropriate emergency mode.

10.6 The pneumatic system shall include components to provide lubrication and moisture extraction where deemed appropriate by the designer.

10.7 N.A.

11. Operator Controls

11.1 Design operator controls to be located within easy reach of the operator when the operator is in a position to observe the ride while the ride is in operation.

11.2 Operator control systems shall be designed to avoid unintentional activation.

11.3 Operator controls shall be identified in the English Language as to their function.

11.4 Operator control system design shall incorporate a control access system.

12. Brakes -- Not Applicable to this ride

13. Machine Guards

13.1 Design Machine guards to protect employees and guests from hazards associated with, but not limited to belts, chains, and pulleys.

ASTM Designation F1993-88

National Standards Practice for an Amusement Ride and Device Manufacturer Quality Assurance Program.

1. Scope

1.1 This practice covers minimum requirements for a quality assurance program.

1.2 This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Document

2.1 ASTM Standard:
F846 Guide for testing Performance of amusement Rides and Devices.

3. Significance and Use

2.1 The purpose of this practice is to provide the minimum requirements necessary for the establishment of a written quality assurance program for an amusement ride and device manufacturer.

4. Drawing Control Procedure

4.1 A procedure shall be in effect so that appropriate manufacturing drawings, their engineering revisions and related documents are utilized for each project.

5. Material Control Procedure

5.1 A procedure shall be in effect to ensure that all materials, processes and components, including raw materials, are in accordance with the engineering specifications.

5.1.1 This procedure shall provide the purchasing agent with all the

information required to order appropriate material.

5.1.2 A receiving procedure shall be in effect so that incoming material is checked against the purchasing specifications.

5.1.3 A procedure shall be in effect so that material in stock can be properly identified for future use.

5.1.4 Documentation on any material, process or components certified shall be filed for reference.

6. Inspection

6.1 A procedure shall be in effect so that appropriate inspections are made on manufactured parts and subassemblies to ensure conformance with engineering specifications.

6.2 A procedure shall be in effect so that appropriate inspections are made on purchased components.

6.3 A procedure shall be in effect so that completed units are inspected prior to delivery.

6.4 Nonconforming components shall be identified and evaluated for disposition as follows:

6.4.1 Reworked components shall be reinspected in accordance with 6.1, 6.2 or 6.3 of this practice prior to use.

6.4.2 A component not suitable for use shall be altered or disposed of to avoid accidental use.

6.4.3 In some cases a component may be determined to be “acceptable as is” or as “modified” after further evaluation. In such cases appropriate review, acceptance and documentation shall be a requirement.

7. Welding

7.1 Welding of critical components as defined in Guide F846 shall be in accordance with AWS, ASME or other equivalent standards and be performed by appropriately certified welders.

7.1.1 A procedure shall be in effect to identify critical components in accordance with Guide F846 for the manufacturing shop.

7.1.2 A procedure shall be in effect to maintain documentation on certification of welders.

AREA REQUIREMENTS

Wheel owner is responsible for barricading a dimension around the base of the wheel to have no less than 36 inches clearance around the entire ride.

RULES

The following sign should be posted in plain view of the operator and customer:

RULES

1. **MAXIMUM PERSONS PER CART--4**
2. **MAXIMUM WEIGHT PER CART--1000 LB.**
3. **MAXIMUM HEIGHT OF PERSON--80”**
4. **MUST REMAIN SEATED AT ALL TIMES**
5. **MUST REMOVE ALL LOOSE ARTICLES INCLUDING KEYS AND CHANGE**

SAFETY RULES

1. The operator must be alert at all times, being sure not to come into contact with the moving wheel or serious injuries could occur.
2. Adhere to capacity, weight, and height limits at all times.
3. Any conduct by patrons that is deemed destructive or harmful, such as hanging out arms or legs should be stopped immediately.
4. Operators must be drug and alcohol free at all times.
5. DO NOT OPERATE IN RAIN OR WIND ABOVE 20 MPH.

DAILY INSPECTION
MODEL DKW-4

Check Off-List

1. Inspect seatbelts for excessive wear.
2. Inspect wheel area for any obstructions.
3. Operate unoccupied ride for full ride duration. Visually inspect all bearings for smooth, jerk free rotation.
4. Visually inspect for any loose bolts, broken welds, or any obviously hazardous problems.
5. Check site for obstructions in walkways, stairs, ramps, gates, and entrances.

If any of these problems are detected, stop the ride immediately and have problem corrected by your ride certified maintenance person immediately.

MAINTENANCE
DKW-4

Pillow Block Bearings

There are 2, four bolt flanged pillow block bearings, one located at the end of each cart axle. Lubricate all bearings 4 times per year using Texaco Marfak® Multipurpose grease or equivalent. These should be lubricated until grease can be seen easing out around the seals. Excess grease should be wiped off immediately.

OPERATIONS

TO START:

1. ALWAYS OPERATE ONE UNOCCUPIED RIDE AT THE BEGINNING OF THE DAY BEFORE PASSENGERS ARE ALLOWED TO RIDE.

2. VISUALLY CHECK TO CONFIRM THAT LOADING STEPS AND WHEEL STABILIZER ARE IN THE UPRIGHT POSITION.

3. HAVE PATRONS REMOVE ANY LOOSE ARTICLES, SUCH AS NECKLACES, AND EMPTY THEIR POCKETS (INCLUDING CHANGE).

4. ASSIST PATRONS ONE AT A TIME UP THE STAIRS AND INTO THE SEATS. MAKE SURE BOTH SEATBELTS ARE ARE SECURED OVER THE WAIST AND ARE PULLED TIGHT.

5. INSTRUCT PATRONS THAT THEY MUST STAY SEATED, KEEP SEATBELTS BUCKLED AND KEEP ARMS AND LEGS INSIDE KART AT ALL TIMES.

6. CONFIRM WITH ALL RIDERS THAT THEY ARE READY TO BEGIN THEIR RIDE AND CHECK THAT THEIR SEATBELTS ARE TIGHT. OPERATOR SHOULD AT THIS TIME VIEW THE WHEEL TO MAKE SURE EVERYTHING IS CLEAR. ROTATE STEPS AND WHEEL STABILIZER AWAY FROM WHEEL AND ONTO THE TRAILER BASE. THIS WILL FREE THE WHEEL AND IT WILL SLOWLY BEGIN TO ROCK.

7. INSTRUCT THE PATRONS THAT THOSE ON ONE SIDE SHOULD LEAN FORWARD WHILE THOSE ON THE OPPOSITE SIDE LEAN BACKWARDS. THEY SHOULD ALTERNATE THIS MOVEMENT EVERYTIME THE WHEEL REACHES ITS HIGHEST POINT. EVENTUALLY THE WHEEL WILL TURN COMPLETELY OVER AND THE PATRONS SHOULD BE ABLE TO USE THIS MOMENTUM TO KEEP THE WHEEL TURNING IN THE SAME DIRECTION.

8. WHEN PREDETERMINED RIDE TIME IS OVER, SIMPLY ALLOW THE WHEEL TO COME TO A COMPLETE STOP. RAISE STEPS AND WHEEL STABILIZER UP TOWARD WHEEL AND LOCK INTO POSITION. DO NOT ALLOW PARTRONS TO RELEASE SEATBELTS UNTIL STEPS ARE SET IN PLACE. ASSIST PATRONS EXITING WHEEL.

WARNING: NEVER START THE WHEEL IN MOTION UNTIL EVERYONE AND EVERYTHING IS CLEAR OF ENTIRE WHEEL.

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CLOSING OPERATIONS

PLACE A PLASTIC COATED CHAIN THROUGH THE STEPS AND BASE OF THE WHEEL. SECURE WITH A LOCK.