# Modular Play Structure
# Specifications

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## General System Specifications:

Features 3 1/2" O.D. uprights with a high-strength aluminum alloy clamp fastening system finished with a polyester powder-coat and utilizing stainless steel tabs on component connections. All uprights shall receive factory installed aluminum post caps and will ship with labels for manufacturer identification.

All decks and components shall connect using the aluminum alloy clamping system. All climbing attachments shall include a 15" wide deck entry archway to control deck access to one child at a time and help prevent inadvertent falls.

Manufacturer shall offer the following warranties on the materials and components of its system:

- Lifetime limited warranty on support posts (uprights)
- 15-Year limited warranty on punched steel decks, pipes, rails, loops and rungs
- 15-Year limited warranty on rotationally molded polyethylene components
- Lifetime limited warranty on all hardware

Manufacturer shall be ISO 9001/2000 certified

Manufacturer shall show IPEMA certification of compliance for each component that the product conforms with the requirements of ASTM F1487-01.

## General Specifications of Materials

Clamps
All clamps are cast of high-strength 356 aluminum. All clamps are 1-3/4" wide with a minimum wall thickness of 3/8", and are powder-coated to match the post color. Each casting is precision-drilled to receive a 1/4" x 1-3/4" zinc-plated steel hinge pin. The hinging design facilitates installa-tion and ensures a snug fit between clamp and post. Each clamp is secured in place using a 1/4" x 3/4" aluminum drive rivet to prevent slippage or rotation on the post. Fasteners for clamps are stainless steel 3/8" x 1-1/2" special tamper-resistant pinned bolt with locking patch, and a heavy hex nut, which fits in a recess, cast into the clamp. The pinned head requires a special tool for fastening (provided with each structure), thus ensuring vandal-resistance.

All clamps receiving rungs are drilled and tapped to receive a 3/8" x 3/8" stainless steel cone-point set screw with locking patch, which prevents the rungs from turning or being pulled out. The 1-5/16" O.D. rungs terminate inside the clamp, thereby eliminating the need for end caps. The aluminum alloy used in the casting of clamps shall meet the following mechanical properties:

Ultimate Tensile Strength - 45,000 psi
Yield Strength - 26,000 psi
Shear Strength - 40,000 psi
Elongation - 8 %

Rotationally Molded Plastics

All Rotationally Molded Products are manufactured from linear low-density polyethylene UV-stabilized color and an anti-static compound additive. The tensile strength of this material is to be 2500 PSI as defined by ASTM D638. The typical wall thickness will be .250" (¼"). All rotationally molded products shall meet or exceed the following specifications: ASTM D-1248, type 2, class A and Federal specification LP-390C, type 1, class M, grade 2, category 3; Density (ASTM D- 1505); Brittleness Temperature (ASTM D-746); Tensile Values (ASTM D-638); Flexural Modulus (ASTM D-790); Heat Distortion (ASTM-648); Low Temperature Impact (ARM-STD). All solid plastic panels are manufactured from high-density polyethylene. All solid plastic panels shall meet or exceed the following specifications: Density (ASTM D- 1505); Brittleness Temperature (ASTM D-746); Tensile Values (ASTM D-638); Flexural Modulus (ASTM D-790).

Polyester Powder-Coating Process

Powder-coat shall be an electrostatically applied custom formula of TGIC polyester powder. All components will be free of sharp edges and excess weld spatter and shall be cleaned in a six stage bath system with an iron phosphate wash, as a rust inhibitor, and a sealer to prevent flash rusting before coating. The coating shall have a super tough finish with maximum exterior durability and will have superior adhesion characteristics. Typical characteristics are: 3.0 - 5.0 mil thickness and oven cured between 375 to 425 degrees Fahrenheit. Pencil Hardness H (ASTM D-3363), Impact (ASTM D-2794-69), Wedge Bend (ASTM D-522-68), Adhesion (Cross Hatch ASTM D-3359 & Knife Scratch ASTM D-2197), Environmental (Stain Resistance ASTM D-1308, Humidity ASTM D 2247 - 87, Salt Spray ASTM B-117 & Fadometer 300 hrs with no loss of gloss), Oven-bake Stability 100% at 400 degrees Fahrenheit.

Hardware

All nuts, bolts, and washers, with exceptions noted, shall be 3/8" diameter 18-8 stainless steel in varying lengths, with a vandal-resistant hex-pinned head configuration and factory-applied locking patch. When allowed a 72-hour cure time, the locking patch will prevent the bolt from loosening without at least 4 times the installation torque. Park Structures will supply the special tool required to turn vandal-resistant hardware with each shipment. 1/2" diameter Ramp and Arch Bridge connecting hardware shall be Grade 5 zinc-plated, and 3/8" Clatter Bridge security bolts shall be Grade 8 hardened and zinc-plated.

Plastisol Coating

All metal deck platforms, steps, bridge planks, ramps, kickplates, and chains are plastisol-coated. Each part is chemically washed and completely submerged in a special heat-activated primer and allowed to dry. Parts are then pre-heated and immersed in liquid poly-vinyl-chloride (plastisol). The PVC coating shall have a typical thickness of .080" to .120", and a hardness of Shore A 83 +/-5 normal durometer range. This material is classed as "Self Extinguishing", meets or exceeds automotive specifications NVSS302, and contains ultraviolet inhibitors to help prolong the life of the coating. Standard color is brown, with optional colors available. The following characteristics apply:

Tensile Strength - 2,800 psi
Elongation - 290 %
Tear Strength - 420 lbs/in

Uprights - Aluminum

The posts shall be 3 1/2" O.D. with a 0.125" wall thickness 6061-T6 extruded seamless Aluminum tubing conforming to ASTM B-221 and QQ-A 200/8. Tensile strength is 44,962 psi, and yield strength is 39,885 psi. Entire post is polyester powder-coated after fabrication. A cast aluminum cap of matching color is factory riveted into the top end using two aluminum rivets.