

GRAINGER® FOR THE ONES WHO GET IT DONE GRAINGER INTERNATIONAL, INC. GLOBAL SOURCING DIVISION	-- GGS TECHNICAL SPECIFICATION --	
	TECHNICAL SPECIFICATION NUMBER: 4NXP5_TSREV0	GGS SKU(s): 4NXP5, 4NXT2, 4NXU8
	PRODUCT DESCRIPTION: Single Socket Tee	PROGRAM NAME: Modular Pipe & Rail Fittings - 2010

1.0 PRODUCT DESCRIPTION:	Single Socket Tee
2.0: BRAND:	No brand

3.0 PRODUCT IMAGE(S):	
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NOTE: Product photos are shown for display purposes only and may not be representative of the actual product. The product is to be manufactured according to the specific requirements listed below Sections 4.0 through 11.0 below and the included technical drawings.

4.0 PRODUCT REQUIREMENTS:

4.1 Key Product Attributes
Cast iron pipe fitting for railing assembly
Assembled with hex key – no threading or welding required
Meets ASTM A47 and A153 standards
Single Socket Tee – One pipe segment is joined perpendicularly to another pipe segment

4.2 Properties / Performance / Reliability	Requirement
Performance test	Fitting must be able to support an axial load of ≥ 2000 lbs per grub screw when grub screw is tightened to 29 lbf-ft of torque Tension Test Specimens formed from the same iron used for the fittings must meet the Mechanical Properties and Tension Test requirements described in Section 7 of the ASTM A47 standard. Test results must be made available to GGS Engineering upon request.
Dimension requirements	Per ASTM A47, Section 10: The castings shall conform to the dimensions given in the tables and drawings in this technical specification.
Tolerances	Dimensions $< 1"$: $\pm 0.03"$ Dimensions $\geq 1"$, $< 6"$: $\pm 0.06"$ Dimensions $\geq 6"$, $< 12"$: $\pm 0.12"$
Part shape	Single Socket Tee – One pipe segment is joined perpendicularly to another pipe segment

	4NXP5	4NXT2	4NXU8
Pipe size (nominal)	1"	1 1/4"	1 1/2"
Inner diameter (minimum)	1.38" (minimum 1.331")	1.72" (minimum 1.676")	1.94" (minimum 1.916")
Number of grub screws	2	2	2

Grub screw size	ISO 228 1/4" 19 threads/in (1/4" hex across flats)	ISO 228 3/8" 19 threads/in (5/16" hex across flats)	ISO 228 3/8" 19 threads/in (5/16" hex across flats)
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4.3 Materials / Construction	Requirement
All fittings	Cast Iron
Grub screw	Case-hardened steel
Materials requirements	<p>Must meet current standard ASTM A47, English Grade 32510 Minimum tensile strength: 50000psi Minimum yield strength: 32500psi Elongation in a 2" test sample: 10% Typical hardness (maximum): 156 HB</p> <p>Per ASTM A47, Section 6: "The chemical composition of the iron shall be such as to produce the structural and mechanical properties required by this specification."</p> <p>Per ASTM A153, Section 5.4: "Malleable castings shall be of such composition as will preclude the possibility that they become embrittled by the galvanizing process, or they shall be either cooled from the anneal, or subsequently heat-treated so as to immunize them against embrittlement."</p> <p>Refer to standard ASTM A153, Section 4.2 for Zinc and Zinc alloy material requirements.</p>
Tension Test	<p>Tensions Test Specimens formed from the same lot of iron used for the fittings should be formed and tested according to ASTM A47, Section 7 for each production run.</p> <p>The results of the tension test should be submitted to GGS Engineering and be made available upon request.</p>

4.4 Finish / Color	Requirement
All Surface Finishes	<p>a) Surface finishes must be uniform and continuous. The surface finish must not exhibit any visual defects such as blisters, rust, corrosion, scratches, peeling, bubbles, and/or cracking.</p> <p>b) All exposed surfaces must be free of burrs and sharp edges.</p> <p>c) All applied finishes must adhere to the surface and show no signs of delamination or peeling.</p> <p>d) All painted or coated surface finishes must be lead-free.</p>
Finish	<p>Per ASTM A47, Section 11: "The surface of the casting shall be inspected visually, particularly in critical areas, for such surface defects as cracks, hot tears, adhering sand and scale, cold shuts, and gas holes."</p> <p>"No repairing, plugging, or welding of any kind shall be permitted unless written permission is granted [by GGS]."</p>
Zinc Coating	<p>Must meet ASTM A153</p> <ul style="list-style-type: none"> Per Section 3: the minimum coating thickness shall conform to the requirements for a Class A material. Per Section 5.5: "The zinc coating shall adhere tenaciously to the surface of the base metal." Per Section 7, the coating shall be tested to meet this standard. <p>Threads tapped in the fitting for the grub screws must also be coated and allow the grub screw to maintain a proper fit.</p>
Grub screws	Coated to protect against corrosion

4.5 Labels or Printing Applied to Product	Requirement
Appearance of all Labels and/or Printing	All labels must be applied straight and even without any air-bubbles or creases. The labels must adhere uniformly to the surface. Any surface printing must be permanent and legible without pinholes, smearing, or other such defects that would render the print unreadable.
Markings to appear on products	<p>Nominal size</p> <p>Part number</p> <p>Manufacturer's mark or symbol (NOT manufacturer's name or brand)</p>

4.6 Product Packaging	Requirement
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<p>Product Packaging (including Master Pack, Inner Pack, and Sell Pack): Ship Test Integrity & Durability</p> <p>See Section 2.2 of the GGS Supplier Handbook for General Shipping & Packaging Requirements</p>	<p>a) All products must be securely packaged in such a manner as to pass the ISTA 1A or 1B (refer to www.ista.org) shock/drop test or other GGS Engineering defined tests as outlined in this specification. These tests simulate repeated product handling and shipping by sea, air, rail and truck.</p> <p>b) The product must be packaged and protected as necessary to prevent any shipping damage that may be incurred by abrasion, corrosion, humidity, vibration and/or shock.</p> <p>c) Upon receipt at GGS, all packaging must be intact and all product components must remain functional and firmly attached to the product as when the unit was originally built. There shall be no evidence of breakage, scratches, burnishing, rust, corrosion and/or dents.</p>
Special Packaging Requirements	None.

5.0 ACCESSORIES TO BE INCLUDED WITH THE PRODUCT:

Description	Quantity / Notes
OIPM, Instruction Sheet, Separate Parts, Assembly Drawings, etc.	An OIPM instruction sheet must be generated by the manufacturer and kept on file with GGS Engineering to be supplied to the customer as requested.
	It DOES NOT need to be included with each unit.

6.0 AGENCY CERTIFICATION & REGULATORY COMPLIANCE:

6.1 Agency Certification (UL, CSA, NSF, ANSI, etc.)	Requirement
ASTM standards	Items must meet the standards ASTM A 47, "Standard Specification for Ferritic Malleable Iron Castings" and ASTM A 153, "Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware", particularly (but not limited to) those sections described in this specification.
Certification	<p>Per ASTM A47, Section 14, the manufacturer must issue a certification or compliance statement that each lot of castings was made, sampled, tested, and inspected in accordance with the ASTM A47 standard and this specification, and a report of test results signed by an authorized agent of the manufacturer shall be furnished to GGS Engineering prior to shipment.</p> <p>Per ASTM A153, Section 11, the manufacturer shall furnish certification to GGS Engineering that the samples representing each lot have been tested and/or inspected to meet the requirements of the ASTM A153 standard.</p>

6.2 Regulatory Compliance	Requirement
Product must meet all applicable US Federal and State rules, bans, standards and regulations such as, CPSC (see below), California Prop 65, RoHS, etc.	<ul style="list-style-type: none"> Proof of agency certification must be submitted to the GGS Compliance Department prior to each shipment. Email certifications to www.ggscompliance@graininger.com.
Consumer Product Safety Commission, CPSC	<ul style="list-style-type: none"> List all CPSC required standards (Remove if not applicable) Proof of agency certification must be submitted to the GGS Compliance Department prior to each shipment. Email certifications to www.ggscompliance@graininger.com.
In addition to meeting all applicable US Federal and State regulations, supplier must notify the GGS Compliance Department if the product contains lead or lead compounds, nickel, mercury, cadmium, hexavalent chromium, phthalates, asbestos, brass, bronze, or any other controlled substance.	<ul style="list-style-type: none"> Contact GGS Compliance Department prior to shipment. Email notification to ggscompliance@graininger.com.