

PANDUIT® PAN-STEEL® System FOR HARSH ENVIRONMENTS

PAN-STEEL® System for Harsh Environments

**PANDUIT® PAN-STEEL®
Stainless Steel Ties are engineered
to outlast the toughest corrosive
and environmental extremes.**

Now a revolutionary new locking head design makes them the highest rated loop tensile strength, tightest clamping, easiest threading ball locking ties in the world.

The increased performance of the PAN-STEEL® System provides an extra margin of safety and lower installed cost.

- Withstands harsh environments
- Unique locking ramp
- Self-locking with low thread force
- Fully rounded edges
- Type 304 and 316 stainless steel
- State-of-the-art tooling

Nylon 11 Coated Ties

WAVE-TY™ Stainless Steel Ties

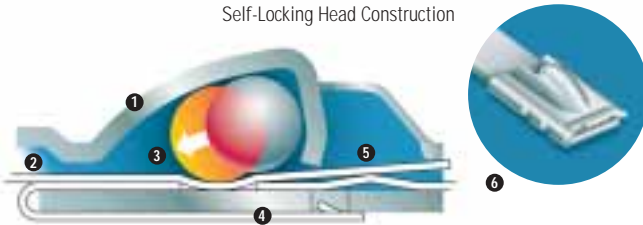
General Purpose Ties

**PANDUIT® is a Global Leader
Providing Innovative Wire
Management Solutions.**

- **Stainless Steel Systems**
- **Cable Ties and Accessories**
- **Raceway Systems**
- **Routing Systems**
- **Identification Systems**
- **Power and Grounding Systems**
- **Terminals**
- **Safety and Facility Solutions**

A Revolutionary New Design in Stainless Steel Ties

Self-Locking Head Construction



- | | |
|--|--|
| <p>1 New aggressive locking head*
Quicker locking, tighter installation</p> <p>2 Exclusive lead in design*
Wider entrance for easier threading</p> <p>3 Innovative displacement lock*
Assures superior locking strength</p> | <p>4 Extended retaining tab
Increases overall tie strength</p> <p>5 Unique locking ramp
Assures locking in any position</p> <p>6 Strengthening ribs**
Stronger head increases lock strength</p> |
|--|--|

* Patented

** Patent Pending



Military Specification
MIL-S-23190E



ABS Programs
Cert. 99CH18282-X



Bureau Veritas



Det Norske Veritas



Lloyd's Register
of Shipping



Markets

MLT Ties

MS
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PAN-STEEL® System

The *PAN-STEEL*® System provides a strong, durable method of bundling, identifying and fastening, which can be used in virtually all indoor, outdoor and underground (including direct burial) applications, where severe environmental conditions exist. The ties are designed for use in critical applications where strength, vibration, radiation, weathering, corrosion and temperature extremes are a factor.



- High strength
- Long life
- Weather resistant
- Chemical resistant
- Temperature extremes
- Radiation resistant
- Permanent identification

PANDUIT® offers unique products to meet customer needs:

Metal Locking Ties — Excellent performance in any environment

Nylon 11 Selectively Coated Ties — Strength of steel, protection of nylon

WAVE-TY™ Stainless Steel Ties — Maintains a high tension grip on non-resilient objects

Fully Coated Ties — Polyester coated for additional bundle protection

Strapping — Reduces installation time and leaves no sharp edges

Mounts and accessories — Used with *PAN-STEEL*® ties and straps to speed and simplify mounting

Permanent identification products — Custom identification for harsh environments

State-of-the-art tooling — Speed installation and lower installed cost

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PANDUIT® PAN-STEEL® Applications



AIRCRAFT

PANDUIT® PAN-STEEL® Stainless Steel Ties (type MLT) are used to fasten thermal insulation blankets to jet engine manifolds and tubes.

PRIMARY BENEFIT

Installation tooling with controlled tension and auto cut-off capability significantly reduces cost of installation. The low weight, high strength of the ties makes them more efficient and reliable than conventional fasteners. The stainless steel ties have been temperature tested to over 1000° F (538°C) to provide excellent continuous service over the entire temperature range and to provide long life.



AIRCRAFT

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to secure insulation envelopes to ducting in aircraft fuselages.

PRIMARY BENEFIT

The ties have been tested to over 1000° F (538°C) which provides excellent continuous service over the entire operating range. The single wrap, self-locking low weight design provides improved efficiency and reliability.



TRUCK ENGINES

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to fasten thermal insulation blankets to truck engine exhaust pipes.

PRIMARY BENEFIT

The ties provide high strength, low profile and low weight design, which are more efficient than conventional fasteners. The ties are temperature tested to over 1000° F (538°C) for performance under continuous high temperature conditions.



AUTOMOTIVE

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to fasten constant velocity (CV) boots on front wheel drive automobiles.

PRIMARY BENEFIT

The ties can be installed without disassembling the constant velocity (CV) joint which saves installation time and lowers installed costs. The stainless steel ties provide excellent weather resistance and corrosion resistance for long life with high strength and low weight.



AUTOMOTIVE

PANDUIT® PAN-STEEL® WAVE-TY™ Stainless Steel Ties and the PPTMT Pneumatic Installation Tool are used to fasten heat shields on automotive exhaust assemblies.

PRIMARY BENEFIT

Pneumatic installation tooling with controlled tension and automatic cut-off capability speeds installation time and lowers installed costs. WAVE-TY™ Stainless Steel Ties retain tension on a solid bundle where other stainless steel ties will not function.

PANDUIT® PAN-STEEL® Applications (continued)



TELECOMMUNICATIONS

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to securely fasten cables to telecommunication towers.

PRIMARY BENEFIT

The ties provide long life, corrosion and chemical resistance in outdoor harsh environments and temperature extremes. The self-locking design provides fast and easy installation. State-of-the-art tooling further reduces installation time.

MLT Ties



MAINTENANCE AND REPAIR (MRO)

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to fasten pipe markers in pulp and paper mills, refineries, power plants and breweries.

PRIMARY BENEFIT

The ties provide extended service life, which reduces the need for periodic rework. The single wrap self-locking design provides fast and easy installation. The ties provide excellent chemical resistance in harsh environments and in high temperature extremes.

MS
Strapping

MAINTENANCE AND REPAIR (MRO)

PANDUIT® Custom Marked Marker Plates attached with PAN-STEEL® Stainless Steel Ties are used to identify conduit and circuits in petrochemical plants, pulp and paper mills, refineries, and breweries.

PRIMARY BENEFIT

The products are marked to meet customer specifications with one of two computer controlled systems (laser or embosser), which provides permanent identification to resist corrosion, abrasion, and radiation in harsh environments.

Marking
and
ID

PETROCHEMICAL PROCESSING

PANDUIT® PAN-STEEL® Stainless Steel Ties, Strapping and Marker Plates are used in chemical plants to bundle cables to cable trays and to identify conduit and cables.

PRIMARY BENEFIT

The ties provide long life, corrosion resistance and high temperature extremes and allow the ties to be used in many different applications.

Accessories



NUCLEAR PLANTS

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to secure heat trace cable and replace wing seal strapping methods. A complete selection of state-of-the-art tooling makes installation quicker and easier and reduces the amount of exposure time for plant maintenance personnel in containment areas.

PRIMARY BENEFIT

The ties have high radiation resistance (2X10⁸ RAD) for excellent use in containment areas.

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PANDUIT® PAN-STEEL® Applications (continued)



TRAFFIC SIGNALS

PANDUIT® PAN-STEEL® Stainless Steel Ties are used for bundling and fastening cables to messenger strand in traffic signal applications.

PRIMARY BENEFIT

The ties provide a 40 year service life, which reduces the need for periodic rework. The smooth fully radiused sides are safe to use and will not injure installer's hands or abrade cable insulation.



AERIAL SUPPORT

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to fasten cable and/or splice closures to the messenger strand in aerial support applications.

PRIMARY BENEFIT

The ties provide a 40 year service life, which reduces the need for periodic rework. The ties are unaffected by sun, acid rain, or most chemicals, which allows them to be used in many different environments.



OFFSHORE OIL

PANDUIT® PAN-STEEL® 316 Grade Stainless Steel Cable Ties, Straps, and Nylon 11 Selectively Coated Ties are used to fasten cables and hoses on offshore platforms.

PRIMARY BENEFIT

The ties provide superior corrosion protection in salt spray environments, which extends service life and reduces need for periodic rework.



SHIPBUILDING

PANDUIT® PAN-STEEL® Stainless Steel Cable Ties are used to fasten cables to cable trays and cable hangers in shipbuilding applications.

PRIMARY BENEFIT

The ties provide extended service life, which reduces the need for periodic rework; are non-flammable so no toxic or harmful gases are released in case of fire; and have fully rounded sides, which are safe to use and will not injure installer's hands or abrade cable insulation.



RAILROAD

PANDUIT® PAN-STEEL® Stainless Steel Ties are used to bundle, fasten, and secure cables and hoses on trains, especially in exposed areas underneath engines and cars that are subjected to harsh environmental conditions. The ties have passed Japanese Industry Standard for salt spray (JIS-C-5028) and vibration (JIS-C-4031).

PRIMARY BENEFIT

The ties provide high strength with low weight and low profile for improved efficiency and reliability. The extended service life reduces the need for periodic rework.

STAINLESS STEEL SYSTEMS

METAL TIES

PAN-STEEL® STAINLESS STEEL TIES (MLT SERIES): Metal locking ties, ball lock version in .17" (4.4mm), .25" (6.4mm), .31" (7.9mm), .50" (12.7mm), and .63" (15.9mm) widths

CUSTOM LENGTH BANDING SYSTEM:

Provided in reels in .17" (4.4mm), .25" (6.4mm), .31" (7.9mm), .50" (12.7mm), and .63" (15.9mm) widths

METAL STRAPS

STAINLESS STEEL STRAPS (MS SERIES):

Fold-over buckle design in .38" (9.5mm), .50" (12.7mm) and .63" (15.9mm) widths

CUSTOM LENGTH STRAPPING SYSTEM:

Provided in reels in .375" (9.5mm), .50" (12.7mm) and .63" (15.9mm) widths

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PAN-STEEL® Self-Locking Stainless Steel Cable Ties (MLT Series)

PANDUIT® is a leading producer of stainless steel ties for harsh environments. New designs are continually introduced to meet the application challenges encountered by our customers, while providing the lowest installed cost.



- Self-locking
- Fully rounded edges
- Low thread force
- 100% Stainless Steel construction
- Patented displacement lock
- Unique locking ramp
- Patented lead-in design
- Extended retaining tab
- Patented aggressive locking head
- Patent pending strengthening ribs
- Complete line of installation tools

PANDUIT® offers unique products to meet customer needs:

General Purpose Ties — Excellent performance in any environment

WAVE-TY™ Stainless Steel Ties — Unique wave form spring maintains a high tension grip on non-resilient objects

Patented Nylon 11 Selectively Coated Ties — Strength of steel, protection of nylon

Fully Coated Ties — Polyester coated for additional bundle protection

Double Loop Ties — Tighter tensioning and higher loop tensile strength

Complete Line of Installation Tools — Manual and pneumatic installation tools for controlled tension, automatic cut-off and lower installed cost

PANDUIT® PAN-STEEL® System FOR HARSH ENVIRONMENTS

Markets

A revolutionary new design in stainless steel ties!

MLT Ties

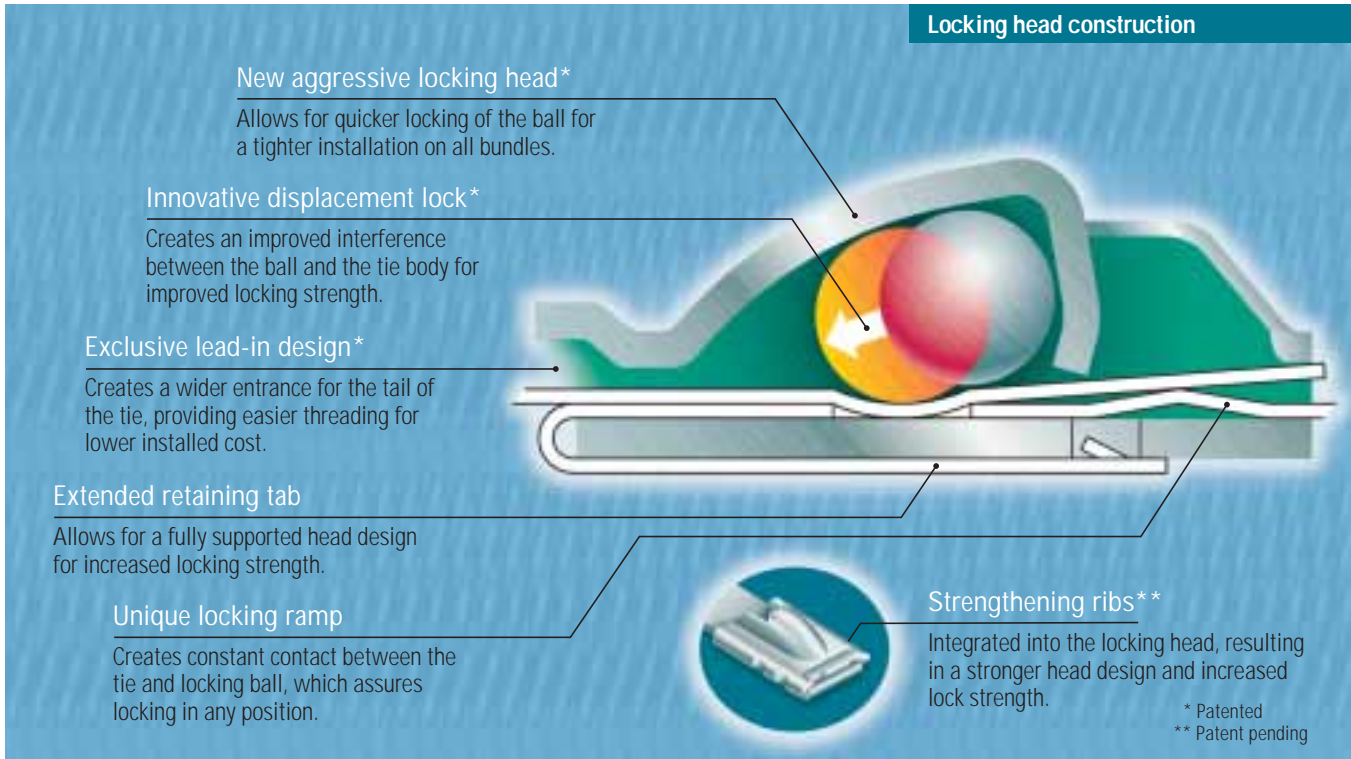
Engineered for the most extreme applications...

- World's highest rated loop tensile strength ball locking tie for an extra margin of safety
- Aggressive head design provides higher retained tension for a more secure bundle
- Exclusive lead-in design for quick, easy threading for fastest installation time

MS Strapping

Marking and ID

Accessories



Advantages of the Rounded Side of *PAN-STEEL*® Stainless Steel Ties

Technical Info



Cross sectional view of other manufacturer's tie body.
(Photo micrograph shown is magnified 150X).



Cross sectional view of *PANDUIT*® tie body.
(Photo micrograph shown is magnified 150X).

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The *PAN-STEEL*® Stainless Steel Cable Tie is designed for superior comfort and safety when handling due to its fully rounded sides and smooth surfaces. Smooth surfaces and rounded sides assure cable protection and operator safety. *PANDUIT*® not only removes the burr, but actually passes the material through a secondary process which removes the top and bottom corners of the material.

Self-Locking Head for Fast Installation



1. Place tie around bundle, put tip through head and pull up tight by hand.



2. Use one of the PANDUIT® PAN-STEEL® installation tools to tension and cut off excess tail quickly.

The stainless steel metal locking tie series can be fastened by hand as shown in **Photo 1**. No tools are required. Just place around bundle, pull the tip of the tail through the locking head and pull up tight by hand. The self-locking head secures the tie in place.

Photo 2 shows the metal locking tie series being installed with the PANDUIT® GS4MT tool, which automatically tensions and cuts off excess tie. The system provides adjustable tension control and automatic cut-off for quick, consistent and secure installation with the lowest installed cost.

Part Number System Example – MLT Series

(Stock Size Tie)

MLT	6	S	–	CP	
Part Description	Bundle Diameter Reference	Cross-Section		Package Qty.	Material
Metal Locking Tie	(Inches)	S = Standard LH = Light Heavy H = Heavy EH = Extra Heavy SH = Super Heavy		Q = 25 L* = 50 LP** = 50 CP = 100 *Standard Cross-Section **Heavy Cross-Section	(blank) = 304 316 = 316