




MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D

- 1.1 Name: **Protective Packaging**
- 1.2 Workmanship Standards Category: **General Cleaning and Packaging**
- 1.3 Purpose/Description (why/when/how): **To illustrate acceptable and unacceptable techniques for protection of materials. Stability, separation and environmental effects must be considered to assure protection is maintained.** Packaging workmanship is important for overall perception of quality. The standard provides representative examples across a wide range of product and applies during handling, packaging, transportation and storage operations. Assets, commonly referred to as Business Support Materials (BSM), Marketing Materials (MKT), and Service Tool Assets (STA's) are out of scope.
- 1.4 Illustration: The following illustrations depict "Acceptable" and "Unacceptable" workmanship results.

Acceptable Workmanship	Notes
 <p>Sturdy pallet used for heavy materials</p>	<p>Pallets must be sturdy and provide enough stability to the parts they are being used to hold. Pallet must be correctly sized so parts are not hanging off the edges of the pallet.</p>

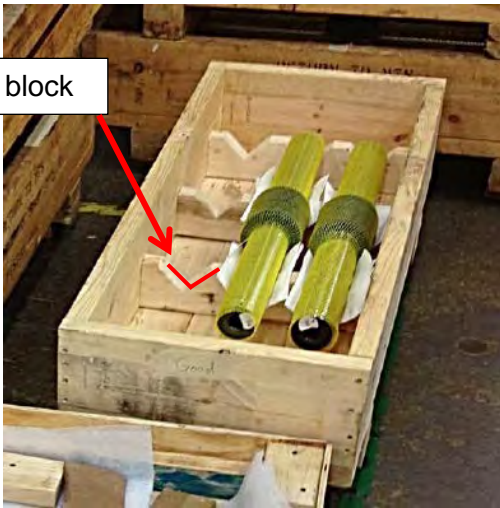


MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D

V block

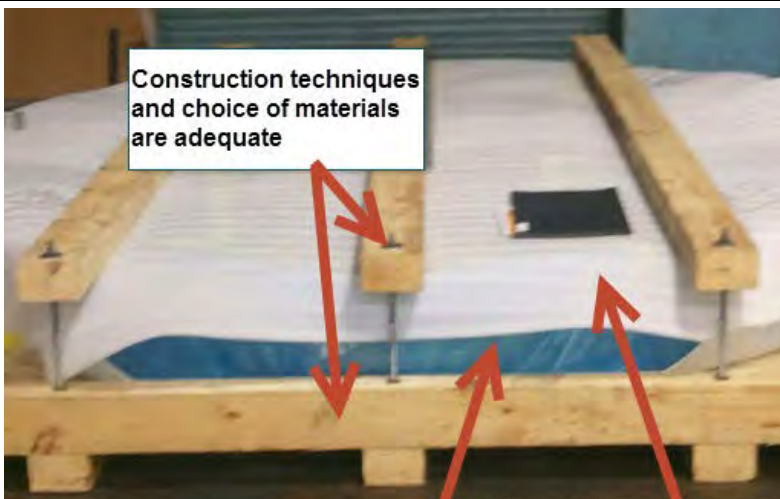


Pistons and other cylindrical materials prone to rolling must be packaged in a crate which utilizes 'V' blocks to keep them stable and separated. MTS document number for piston box building instructions: 700-006-941.



Painted Parts with protective finishes are individually wrapped and sealed, with either foam or painters paper, which provides protection from dirt and debris and separation when it is being stored in a manner where it may contact other parts

Construction techniques and choice of materials are adequate



Corrosion protection

Abrasion protection

Pallets must be sturdy and provide stability as well as separation from the handling equipment while the products are being transported.

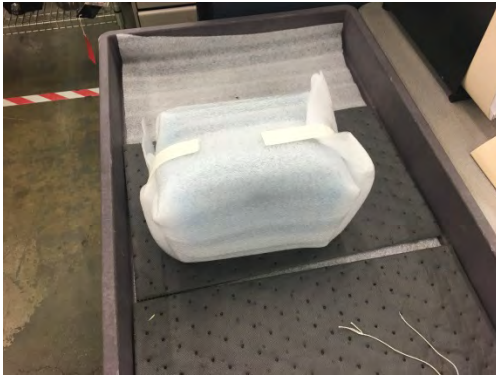
Extensive environmental protection is needed in this example because the materials have high tolerance finished surfaces.



MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D



Bare steel is protected with rust inhibitor and then placed in sealable bag to protect it against environmental effects such as rust.

Note If parts are unable to fit in a sealable bag due to shape or size, they must be wrapped in corrosion inhibiting plastic and taped so that they are air tight.

Additionally, individually package the part with a layer of foam or bubble wrap over the air tight seal to protect against handling damage.



Parts with protective finishes including black oxide, anodized or zinc plated must be placed into sealable bags or wrapped in plastic, creating an environmental seal to protect against dirt, debris and moisture.

The air tight seal must remain intact until the part is unpackaged for assembly. If the seal is broken at any point for inspection or during storage or transportation, the part must either be repackaged or packaging must be repaired immediately.

Additionally, individually package the part with a layer of foam or bubble wrap over the air tight seal to protect against handling damage.



MTS-Test Workmanship Standards

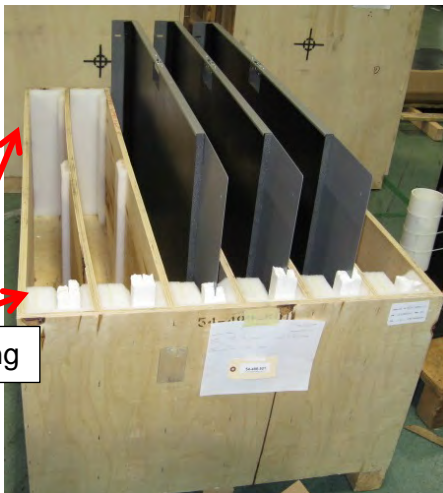
Workmanship Standards Number: MTS-WS-01-02

Rev: D



Metal plates with gaskets and shrink wrap used to protect hydraulic pipes

Parts with openings or ports such as pipes, hoses and manifolds need to be sealed well enough to protect against environmental effects and debris which could contaminate systems.



Foam lining

Sheet metal parts are stored upright in foam or carpet lined crates to provide stability and separation which helps to protect the surfaces from becoming damaged.



Electrical components which are sensitive to electrostatic are placed in static shielding bags to keep them from being damaged by static discharge.



MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D



Other electrical components are packaged in anti-static bubble wrap to prevent the buildup of static electricity on them so they don't damage static sensitive parts. It also serves to protect the parts by providing separation. Anti-static bubble wrap is denoted with its pink color.



Parts which have been placed in their respective protective wrappings are packed in the manufacturer's box which uses dividers and foam to provide separation and stability.

Unacceptable Workmanship

Notes



Pallets which are not stable enough to safely handle material have the risk of causing damage to material or people.

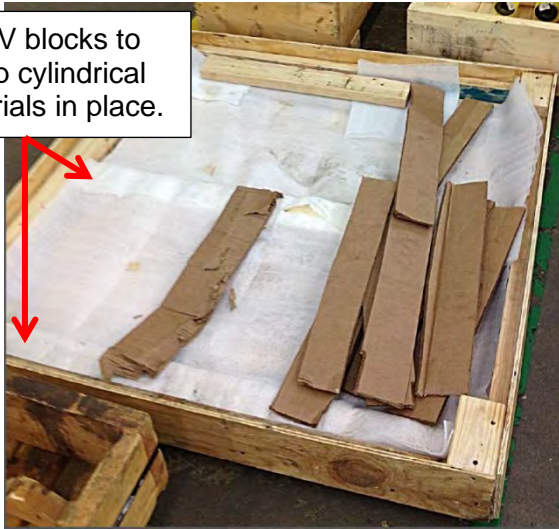


MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

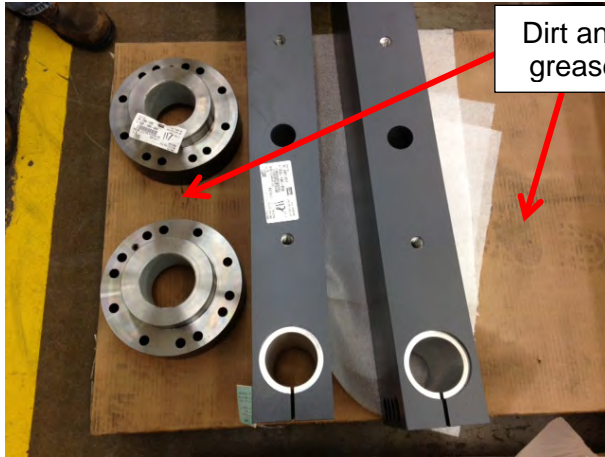
Rev: D

No V blocks to keep cylindrical materials in place.



Pistons and other cylindrical materials prone to rolling which are not stored in a crate using 'V' blocks do not have enough stability and separation. Risk of rolling or shifting during transportation is clear and the items could become damaged.

Dirt and grease



Not enough foam is on the pallet to separate all materials from dirt, grease, and metal shavings present on cardboard.



Materials placed in a box with a lack of separation could contact and potentially damage each other.



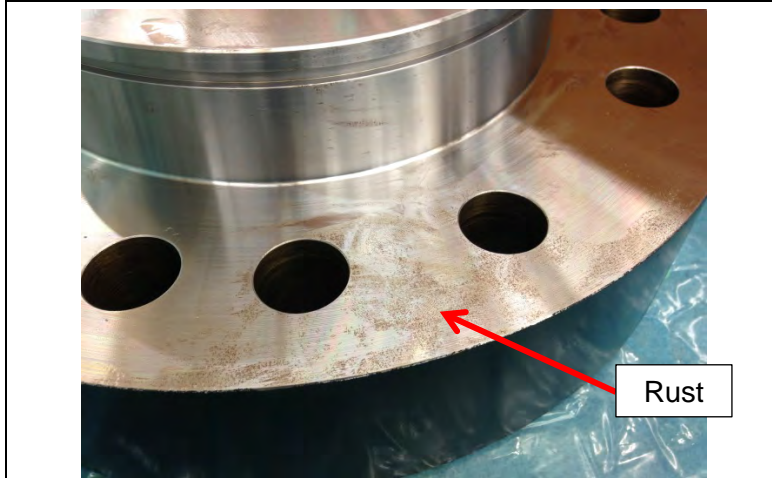
MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D



Part was not wrapped and did not have enough protection and separation which allowed the finish to become damaged.



Part was not placed in a sealed bag and coated with rust inhibitor to protect it from the environment, allowing rust to form on part.



Part was sealed and coated with rust inhibitor to protect it from the environment, but protection was not adequate for longer term storage conditions which allowed rust to form on part.

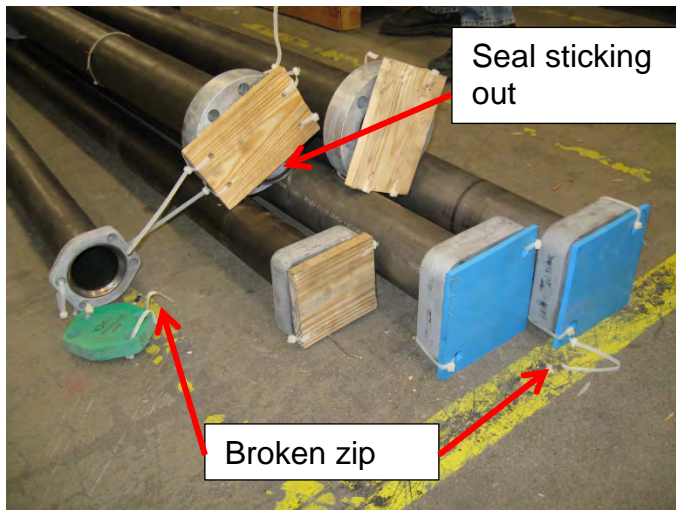
Use a different coating and/or re-apply protection based on storage conditions such as age, temperature and humidity variation.



MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D



Wood and plastic with zip ties used to cover ends of hydraulic pipes broke off, allowing inside of pipes to possibly be introduced to environmental effects and debris.



The part was not strapped tightly enough to the metal transfer pallet which can cause the part to fall off and get damaged.



The pallet supporting this part is not correctly sized. The part is hanging off the edges of the pallet and the part is not fully supported or protected.



MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D



The pallet has been packed with an excessive amount of weight

The pallet has not been built adequately to hold large amounts of weights



Parts that do not have adequate strapping/bolting could fall over and get damaged or cause injury



MTS-Test Workmanship Standards

Workmanship Standards Number: MTS-WS-01-02

Rev: D

2 REVISION HISTORY & APPROVAL

REVISION HISTORY			
Rev	Description of Change	Author	Effective Date
A	Initial release	Blake Dammann	11/24/2013
B	Addition of more detailed steel packaging standards	Caitlin O'Leary and Nic Trcka	9/16/2016
C	Updated with current photos based on violations	Caitlin O'Leary	12/12/2016
D	Clarified some areas of confusion to meet the needs of the shipping department	Caitlin O'Leary and Chance Caffee	3/3/2017

APPROVAL OF CURRENT REVISION		
Name / Function	Signature	Date
Stephen Jordheim / Workmanship Standards Process Owner	(Approval on File)	3/3/2017
Caitlin O'Leary / Workmanship Standard Co- pilot	(Approval on File)	3/3/2017