STOP the DROPS®
Tool-Height-Safety-Expertise.

TECHNIQUE SOLUTIONS

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GGS 2018-100 - Part 1-4

GRIPPS GLOBAL Standard for Tool Height Safety

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This is the product test standard for GRIPPS and STOP the DROPS branded products.
It outlines the necessary documentation and test requirements for certified load rating and to ensure repetitive test results and correct test item handling.

1. General Information

This standard applies to products that were designed by or designed for GRIPPS and STOP the DROPS (in the following called test requestor).
This procedure applies to GRIPPS and STOP the DROPS internal operations as well to external testing facilities.

If a test cannot be performed as requested the test requestor is to be informed immediately.
Any deviations from the test procedures is to be approved by the test requestor prior to testing.

This standard outlines the minimum design and test requirements for primary dropped object prevention. It does not cover secondary preventive measures (eg drop nets, hard hats, barricades, etc).

Products covered by this standard are:
Tether Anchors that are independently applied directly to a fixed structure or person.

Examples are D-rings on a wrist band or a belt loop.

Tool Connectors that are independently applied directly to a tool.

Examples are Tool Chokes or Tool Catches.

Tethers that are independently applied directly to a tool and are devided into fixed length tether and extendable and retractable tethers.

Examples for fixed length tether are Lanyards, bungee cords and retractor ate examples for extendable and retractable tethers

Tool Storage and Lifting Devices designed to transport tools and equipment.

Examples are tool holsters (fixed) and lifting buckets (portable).

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Product Test Specification		
Revision: 1	Created by: Thomas Wallstab Created on: 2017-Dec-11	Initial version
Revision: 2	Created by: Thomas Wallstab Created on: 2018-Jan-09	Format revised for new letter head
Revision: 3	Created by: Thomas Wallstab Created on: 2018-Mar-14	Changes to dynamic test
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1. Documentation requirements:

Final test documentation must be completed in written form and must contain at least:

1. Client or test requestor details
2. Test facility, test performer and accreditation details
3. Report or reference number (having both is acceptable)
4. Date of test
5. ID and name of the tested item
6. Technical description of the tested item
7. Amount of items tested
8. Detailed description or illustration (preferably both) of how the items were tested
9. Photograph or illustration of the item before and after the tests
10. Photographs or illustrations of test items need to show any damages or changes compared to the untested item
11. Introduction of all test facilities or test apparatus including their ID number, manufacturer name and date of latest Q-checks and calibration
12. Photographs or illustrations must be accompanied by description
13. Test reports need at least consist of following sections/chapters
    i. Introduction
    ii. Static load testing
    iii. Dynamic load testing
    iv. Resume/conclusion
14. A comparison of the (hardware) test results with an analytical check might be necessary or requested
15. Explanation or justification of any item failure must be given

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2. Test requirements

Individual test plans outlining the test scope and conditions must be available prior to test campaign start. Test plans are generated in collaboration of the test facility and the test requestor.
Unless stated differently or if no further information is given in the individual test plans, tests must be performed as specified in this standard.

Each test must be repeated at least five (5) times per item (excludes destructive testing) on five (5) randomly picked items per batch.
Endurance tests might be necessary for some items or item features.
Damaged or defective test items are to be removed from the test, labelled and stored. The time of failure and related test conditions are to be recorded.

Samples used for testing shall be homogeneous and equivalent to commercial products.
One test refers to one series of at least five successional tests under one test condition.
A new sample shall be used for every type of test condition.
A sample may be reused for additional testing under the same test condition.

In case a tested product has multiple identical features (e.g. anchors) only one feature shall be tested.

Unless otherwise stated, tests are to be performed at test item conditions of dry 17˚C ±5˚C and dry 45˚C ±5˚C to simulate different seasons. It is to be ensured the test item is consistently acclimatised.
A test is to be executed within 5 minutes of conditioning the test item. If a test duration exceeds 5 minutes, the item is to be reconditioned.
Waiting periods between conditioning and testing are to be avoided.

Tests are to be performed on every new or incoming product batch. Depending on the batch size, 1% or 5 items (whatever criteria is met first) need to be tested.
Only commercial items (actively marketed and stocked) must undergo re-testing at least once every three years.

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2.1. Part 1 - Static Testing

Static tests shall be completed on a tensile machine. The force over elongation plot must be provided.
Items must be tested in a way as they are stressed during regular use.
After each test the item is to be inspected. The conditions of the item and the result of the test is to be recorded in writing and as a photo or illustration.

2.1.1. Non-destructive Tests.

Non-destructive tests differ between the test item categories.
Dimensional checks of test items may be requested on a case by case basis.

2.1.1.1. *Tether Anchors*

Place Tether Anchor attachment onto the fixed test fixture.
Use a test cable of fabricated steel with swaged looped ends.
Apply a load of twice of the specified maximum tool weight.

2.1.1.2. *Tool Connectors*

Place Tool Connector attachment onto the fixed test fixture.
Use a test cable of fabricated steel with swaged looped ends.
Apply a load of twice of the specified maximum tool weight.

2.1.1.3. *Tethers*

Test procedure for Fixed Length Tethers:
Anchor a Tool Tether sample to a rigid test structure. If the tool tether is part of an integral assembly, then that assembly shall be mounted to a fixed anchor.
Test cable of fabricated steel with swaged looped.
Apply a load of twice of the specified maximum tool weight.

Test procedure for Extendable and Retractable Tethers:
Anchor a Tool Tether sample to a rigid test structure. If the tool tether is part of an integral assembly, then that assembly shall be mounted to a fixed anchor.
Use a test cable of fabricated steel with swaged looped.
Apply a load of twice of the specified maximum tool weight while the tether is extended to its maximum length.

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2.1.1.4. Tool Storage and Lifting Devices

Lifting devices are tested in accordance with AS 4991.
Below requirements complement the requirements of AS 4991.

When tested statically, the tool storage or lifting device shall maintain the load for the required duration and shall not be released from the fixed structure.

For sample tests, one the following methods shall be used:

1. Tensile equipment method:

Apply the load from the bearing point of the lifting element or mounting point of the sample to the load point of the tool storage or centre of the lifting device bottom. Subject the sample to 5 times the published load at a constant rate of 40 mm - 70 mm per minute and hold the load for 5 minutes.

2. Lifting method:

Attach a lifting mechanism to the bearing point of the lifting element or mounting point of the sample. Place a load of 5 times the manufacturer's published capacity into the load point of the tool storage or centre of the lifting device bottom. Suspend the sample so that the load is supported by only the sample and hold the load for 5 minutes.

2.1.2. Destructive Test.

The tested item or item feature is to be loaded identically regarding load point and load direction to the non-destructive testing, but the load is to be applied until the test item fails.

Dimensional checks of test items may be requested on a case by case basis.

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1.1. Part 2 - Dynamic Testing

Dynamic tests are to be done by loading the test item to replicate regular use and dropping the tested item or the test load from different heights or length.

Unless otherwise specified by the test requestor, the common maximum drop height or drop length is 1.3m for normal duty tethers, 0.25m for wrist tethers and 1.8m for heavy duty tethers.

After every test the item must be inspected. The condition of the item and the result of the test is to be recorded in writing and as a photo or illustration.
For dynamic tests, a load cell with an appropriate measurement range (1x-20x of load rating as a guideline) and data logging system with a high sampling rate (50Hz or above) is required.

1.1.1.1. *Tether Anchors*

Use a test cable of fabricated steel with swaged looped ends measuring a minimum of twice the length of the manufacturers specified maximum tether length for the anchor attachment or system. Loops do not count as cable length.
Attach a load of twice of the specified maximum tool weight for the sample.
A minimum of 5 drops (straight free fall) without replacement or adjustment of the sample.

1.1.1.2. *Tool Connectors*

Use a test cable of fabricated steel with swaged looped ends measuring a minimum of twice the length of the manufacturers specified maximum tether length for the anchor attachment or system. Loops do not count as cable length.
Attach a load of twice of the specified maximum tool weight for the sample.
A minimum of 5 drops (straight free fall) without replacement or adjustment of the sample.

1.1.1.3. *Tethers*

Test procedure for Fixed Length Tethers:
Anchor the Tool Tether sample to a rigid test structure. If the tool tether is part of an integral assembly, then that assembly shall be mounted to a fixed anchor.
Drop with an attached test weight of twice the specified maximum tool weight with a free fall distance of twice the specified tether length.

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A minimum of 5 drops (straight free fall) without replacement or adjustment of the sample.

Test procedure for Extendable and Retractable Tethers:
Anchor the Tool Tether sample to a rigid test structure. If the tool tether is part of an integral assembly, then that assembly shall be mounted to a fixed anchor.
Attach a test weight equal to the specified maximum tool weight while the tether is extended to its maximum length. Measure the distance from the anchor point to the test weight connection. This will determine the specified tether length.
A minimum of 5 drops (straight free fall) with a test weight of twice the specified maximum tool weight with a free fall distance of twice the specified tether length without replacement or adjustment of the sample

1.1.1.4. Tool Storage and Lifting Device

Lifting Devices:
Lifting devices are tested in accordance with AS 4991.

Tool Storages:
Tool Storage test samples are to be fixed to a structure so that it is oriented in the correct lifting position.
Connect a rigid weight of twice the specified maximum tool weight onto the anchor point of the tool storage and perform a drop with free fall distance of twice the length of the lifting element or twice the manufacturer's allowable tether length, whichever is greater. Use a test cable of fabricated steel with swaged looped ends.
A minimum of 5 drops (straight free fall) without replacement or adjustment of the sample.

1.2. Part 3 - Containers Closure Systems:

For containers with a closure system, place twice the published capacity of semi-fluid, viscose weight inside the container.
With the containers sitting in the upright position, lift from the bottom of the container so that the container is to flip and send the weight against the closure system.
Raise the container into an inverted position.
Maintain the load for 5 minutes.

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1.3. Part 4 - Endurance Test

Endurance tests are to be done on a case by case basis on items that experience a high number of cycles throughout their expected life time. These items could be expendable and retractable tether or closure mechanisms.
Endurance tests are not part of the standard test scope.

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2. Test item and test report handling

After completed tests, the tested item must be labelled individually and stored for at least 6 months to allow further inspection. Whether the items are stored at the test facility or are returned to the test requestor will be defined on a case by case basis.
Test item labels must contain:

1. Item ID number and name
2. Test date
3. To be stored until - date
4. Test campaign number
5. Client name and Test facility name

After the 6-month storage phase the tested items must be returned to the test requestor if they were stored at the test facility.

Test items are to be shipped packaged. Loose shipping is not acceptable as it could result in (further) damage if the test items.

Test reports are to be stored for a period of at least 10 years.