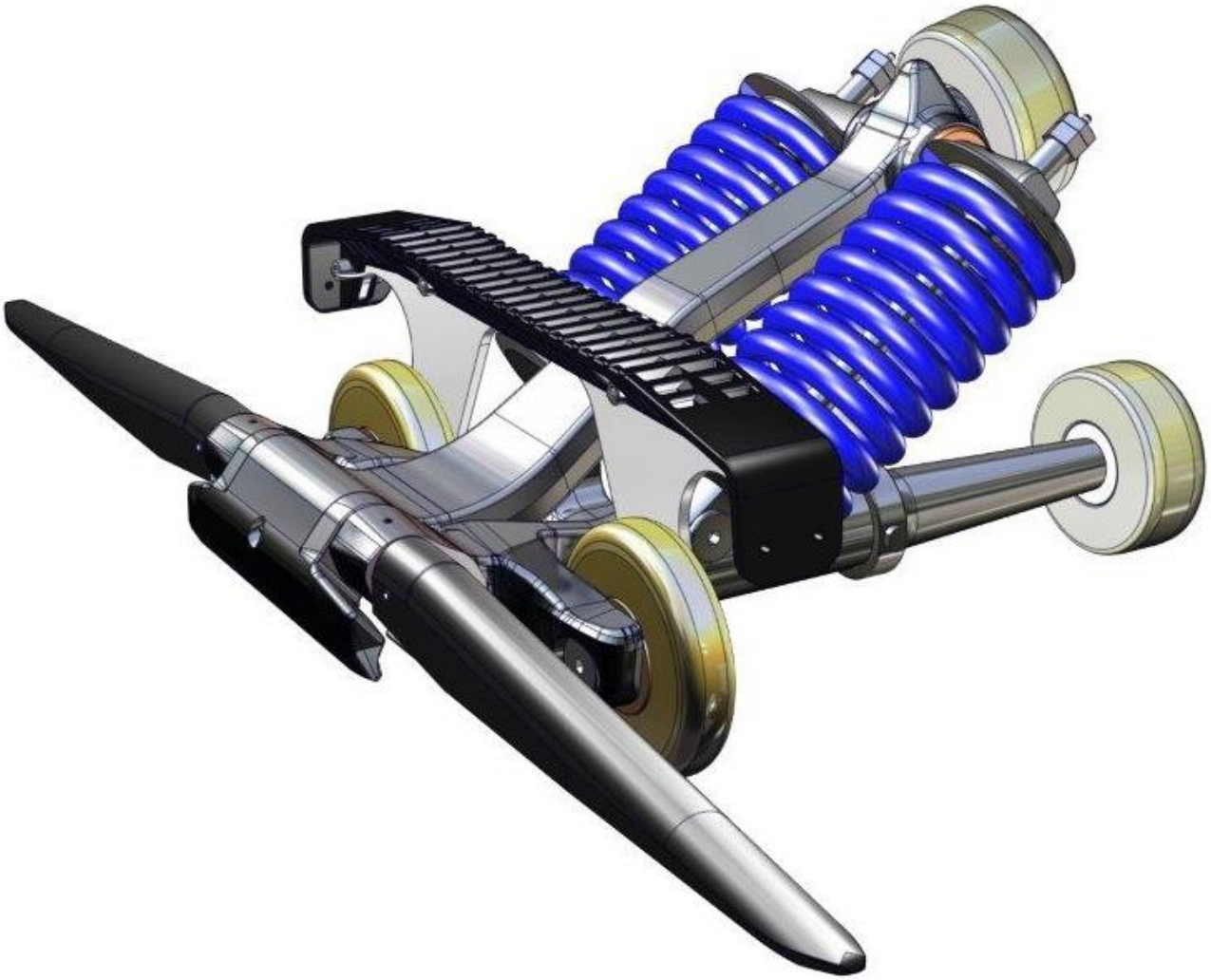
Test Specification

Detachable Grips Type A
Periodic Testing and Inspection

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1. Scope

This test specification contains complementary information for the operation and service manual regarding the non-destructive testing of detachable grips type **A** that must be performed following regular intervals (e.g. according to the operation and service manual, regulations, etc.).

2. Applicable Standards and Documents

PSVT0100 Visual Inspection – Periodic Testing and Inspection

PSMT0100 Magnetic Particle Testing – Periodic Testing and Inspection

PSPT0100 Penetrant Testing – Periodic Testing and Inspection

KD15003 Doppelmayr Bulletin – Detachable Grips Type A - Spring Guide Slide Rods

Installation-specific operation and maintenance manual

Bulletins specific to the individual installation

3. Testing and Inspection: Fixed Grip Jaw and Movable Grip Jaw

3.1 Visual Inspection

Areas to be submitted to visual inspection

All components must be submitted entirely to a **detailed inspection** prior to and following cleaning.

Acceptance criteria for visual inspection

	Acceptance level	Further measures
Crack-like, rusty indications	impermissible	Impermissible indications: – MT testing according to item 3.2
Machined surface area: (bore holes, etc.) – Notches and score marks – Rusty, two-dimensional indications	depth < 0.2 mm	Impermissible indications: – Replace Indication depth < 0.2 mm: – Repair according to item 3.3
Forged unmachined surface area: – Notches and score marks (except unevenness due to forging) – Rusty, two-dimensional indications	depth <1 mm	Impermissible indications: – MT testing according to item 3.2



Notches and score marks as well as rusty, two-dimensional indications (on forged unmachined surfaces) found during a sampling inspection do **not** require an expansion of the test scope to **100%**.

The test scope only needs to be expanded to 100% if an indication of the same type is found on several components.

3.2 Magnetic Particle Testing (MT)

Areas to be submitted to magnetic particle testing

The **(critical) areas which must be tested** are **crosshatched** in Fig. 1 and Fig**.** 2.

In addition, all indications which must be checked by magnetic particle testing according to **item 3.1** must also be tested.

Acceptance criteria for magnetic particle testing

	Acceptance level	Further measures
Crack-like indications in the critical test area (crosshatched)	2 mm	Impermissible indications: – Repair according to item 3.3
Crack-like indications in the critical test area (crosshatched) on edges, radii, transitions	1 mm	Impermissible indications: – Repair according to item 3.3
Crack-like indications in the non-critical test area	4 mm	Impermissible indications: – Repair according to item 3.3

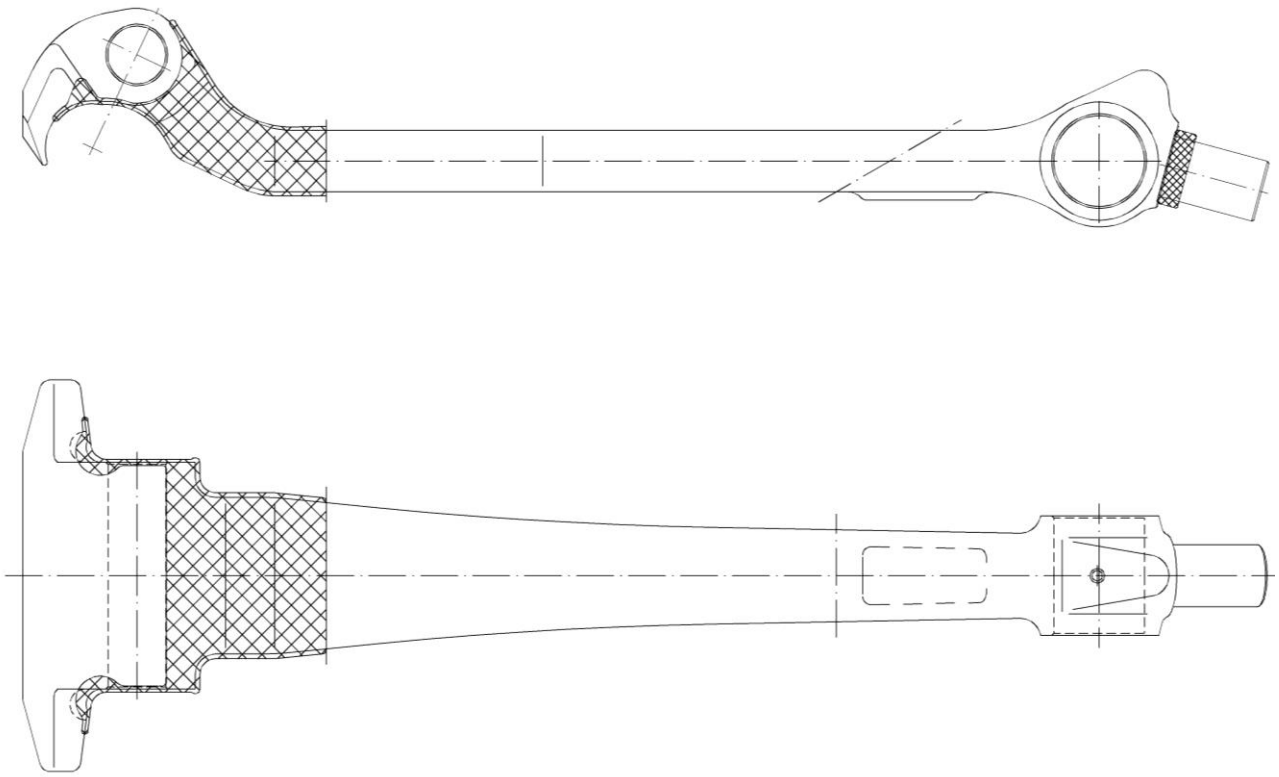


Fig. 1: Areas to be inspected – movable grip jaw

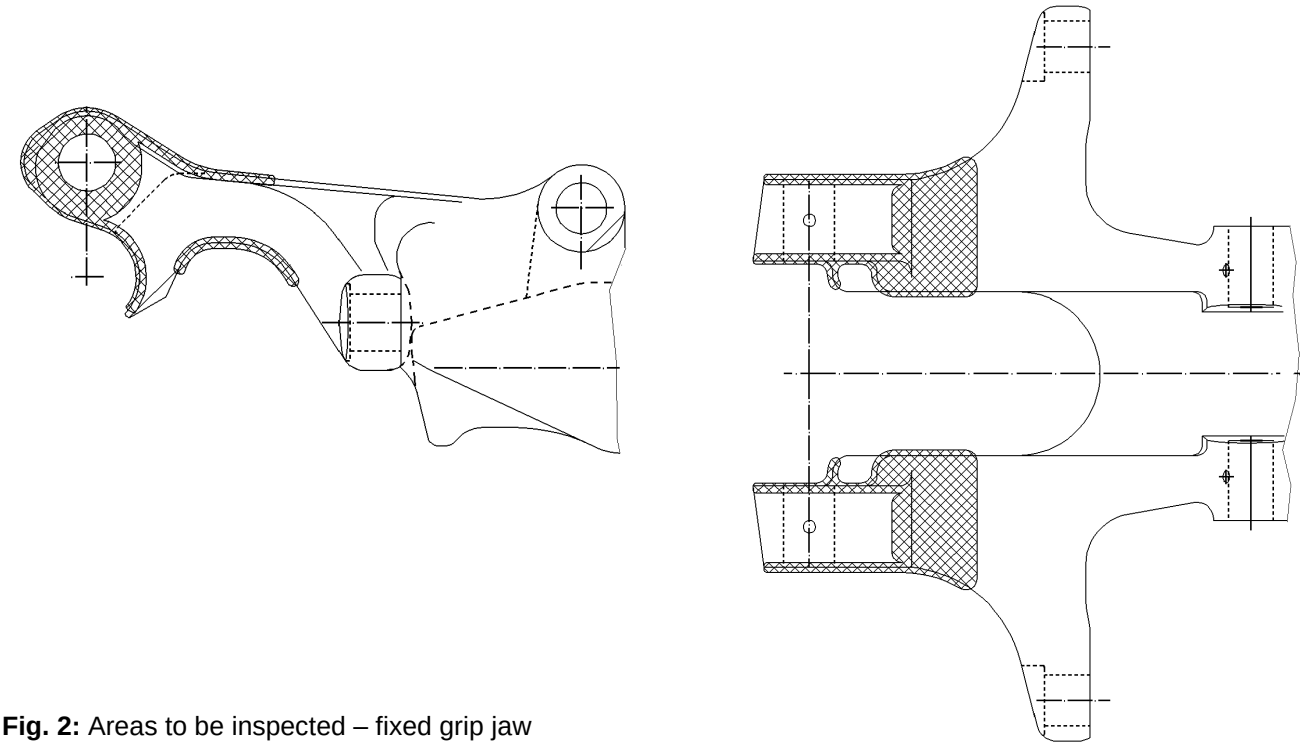


Fig. 2: Areas to be inspected – fixed grip jaw

3.3 Repair (Grinding)

	Max. grinding depth	Execution
Forged unmachined surface	1 mm	- Grindings must not be at right angles to the main direction of stress. - Smooth down (surface quality N6 to DIN ISO 1302) - The diameter of the repaired area is at least 25 times its depth. - Hardenings and hardening cracks caused by overheating are not permissible!
Machined surface	0.2 mm (only locally permitted)	- Smooth down (surface quality N6 to DIN ISO 1302) - The length of the repaired area is at least 25 times its depth. - The width of the repaired area must not exceed 15% of its length. - Hardenings and hardening cracks caused by overheating are not permissible!

Upon repair, flawlessness must be verified by magnetic particle testing (MT)!

Any component which **cannot be repaired** according to the above listed conditions **must be replaced**. Replaced components shall be sent to Doppelmayr for examination upon request.

⚠ Any point on the component surface may be **ground over only once**.
If this cannot be established with certainty, the grip components must be sent to Doppelmayr for verification.

4. Testing and Inspection: Hanger Axle (Connected to the Fixed Grip Jaw)

4.1 Visual Inspection

Areas to be submitted to visual inspection

The **hanger axle** must be submitted entirely to a **detailed inspection** prior to and following cleaning.

Acceptance criteria for visual inspection

	Acceptance level	Further measures
Crack-like, rusty indications	impermissible	Impermissible indications: – MT testing according to item 4.2
Notches and score marks as well as rusty, two-dimensional indications	depth < 0.3 mm	Impermissible indications: – Replace Indication depth < 0.3 mm: – Repair according to item 4.3

4.2 Magnetic Particle Testing

Areas to be submitted to magnetic particle testing

The **areas to be tested** are **crosshatched** in Fig. 3.

In addition, all indications which must be checked by magnetic particle testing according to item 4.1 must also be tested.

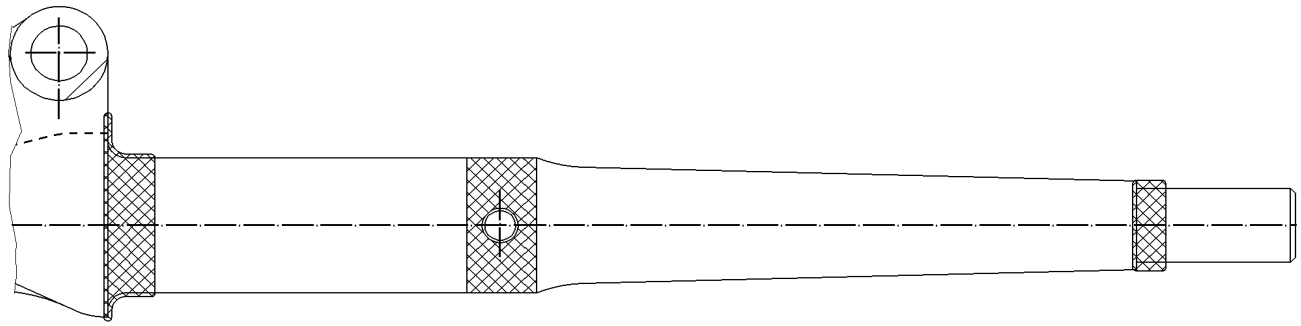


Fig. 3:: Areas to be inspected – hanger axle

Acceptance criteria for magnetic particle testing

	Acceptance level	Further measures
Crack-like, rusty indications	1 mm	Impermissible indications: – Repair according to item 4.3

Exception:

Crack-like indications found during MT testing are permissible on condition that:

- they are not rusty indications, run exactly parallel to the hanger axle, and
- dye penetrant testing (according to PSPT0100) does not show any indications (i.e. the indications found during MT testing are slag lines).

4.3 Repair (Grinding)

	Max. grinding depth	Execution
Machined surface	0.3 mm (only locally permitted)	- Smooth down (surface quality N6 to DIN ISO 1302) - The length of the repaired area is at least 25 times its depth. - The width of the repaired area must not exceed 15% of its length. - Hardenings and hardening cracks caused by overheating are not permissible!

Upon repair, flawlessness must be verified by magnetic particle testing (MT)!

Any component which **cannot be repaired** according to the above listed conditions **must be replaced**. Replaced components shall be sent to Doppelmayr for examination upon request.

5. Testing and Inspection: Bolts, Axles and Spring Guide Slide Rod

5.1 Visual Inspection

Areas to be submitted to visual inspection

The **components** must be submitted entirely to a **detailed inspection** prior to and following cleaning.

Acceptance criteria for visual inspection

	Acceptance level	Further measures
Crack-like, rusty indications	impermissible	Impermissible indications: – MT testing according to item 5.2
Notches and score marks	depth < 0.2 mm	Impermissible indications: – Replace Indication depth < 0.2 mm: – Repair according to item 5.3
Rusty, two-dimensional indications	depth < 0.2 mm	Impermissible indications: – Replace Indication depth < 0.2 mm: – Repair according to item 5.3

In addition, the components must also be checked for signs of wear according to the operation and service manual.

5.2 Magnetic Particle Testing (MT)

Areas to be submitted to magnetic particle testing

The **areas to be tested** are **crosshatched** in Fig. 4, Fig. 5, Fig. 6, Fig. 7 and Fig. 8.

In addition, all indications which must be checked by magnetic particle testing according to item 5.1 must also be tested.

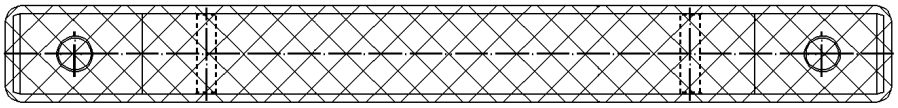


Fig. 4: Areas to be tested – head axle

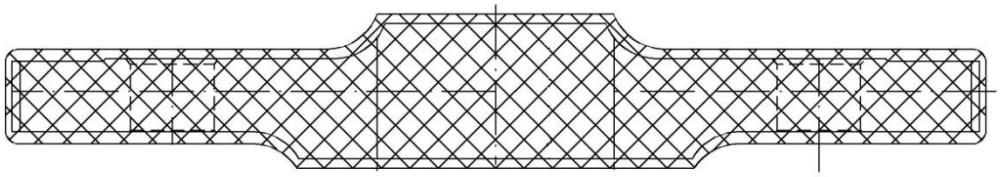


Fig. 5: Areas to be tested – spring crosshead

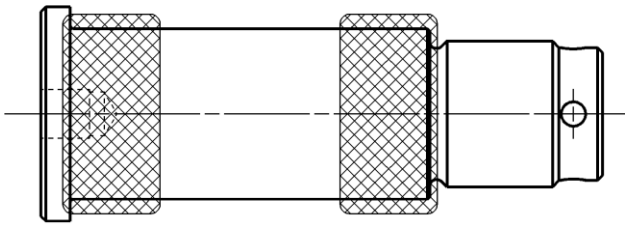


Fig. 6: Areas to be tested – axle for running wheel

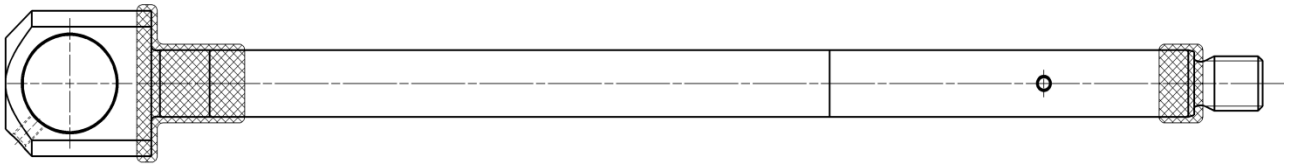


Fig. 7: Areas to be tested – spring guide slide rod

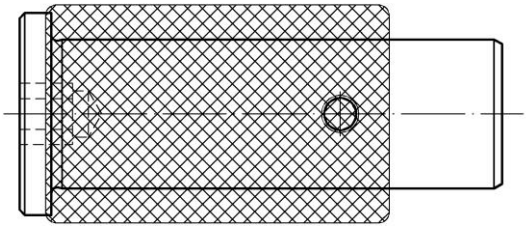


Fig. 8: Areas to be tested – spring axle

Acceptance criteria for magnetic particle testing

	Acceptance level	Further measures
Crack-like, rusty indications	1 mm	Impermissible indications: – Repair according to item 5.3

Exception:

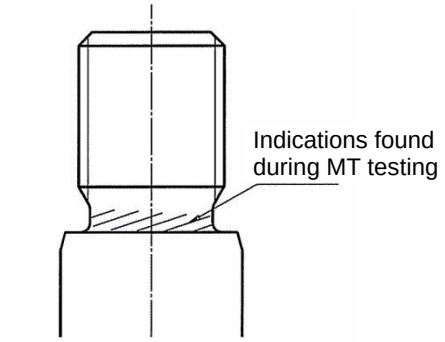
Crack-like indications found during MT testing are permissible on condition that:

- they are not rusty indications, run exactly parallel to the axis of the component, and
- dye penetrant testing (according to PSPT0100) does not show any indications (i.e. the indications found during MT testing are slag lines).

Exception for spring guide slide rod:

Indications found during MT testing in the area of the undercut (see sketch):

- Doppelmayr Bulletin **KD15003** must be observed!



5.3 Repair

	Max. grinding depth	Execution
Machined surface	0.2 mm (only locally permitted)	- Smooth down (surface quality N6 to DIN ISO 1302) - The length of the repaired area is at least 25 times its depth. - The width of the repaired area must not exceed 15% of its length. - Hardenings and hardening cracks caused by overheating are not permissible!

Upon repair, flawlessness must be verified by magnetic particle testing (MT)!

Any component which **cannot be repaired** according to the above listed conditions **must be replaced**. Replaced components shall be sent to Doppelmayr for examination upon request.

6. Inspection: All Other Grip Components

6.1 Visual Inspection

Areas to be submitted to visual inspection

The **grip components** must be submitted entirely to a **detailed inspection** prior to and following cleaning.

Acceptance criteria for visual inspection

	Acceptance level	Further measures
Crack-like, rusty indications	impermissible	Impermissible indications: – Repair according to item 6.2
Machined surface area (bore holes, etc.): – Notches and score marks – Rusty, two-dimensional indications	depth < 0.2 mm	Impermissible indications: – Replace Indication depth < 0.2 mm: – Repair according to item 6.2
Forged unmachined surface area: – Notches and score marks (except unevenness due to forging) – Rusty, two-dimensional indications	Depth <1 mm	Impermissible indications: – Replace

6.2 Repair

	Max. grinding depth	Execution
Forged unmachined surface	1 mm	- Grindings must not be at right angles to the main direction of stress. - Smooth down (surface quality N6 to DIN ISO 1302) - The diameter of the repaired area is at least 25 times its depth. - Hardenings and hardening cracks caused by overheating are not permissible!
Machined surface	0.2 mm (only locally permitted)	- Smooth down (surface quality N6 to DIN ISO 1302) - The length of the repaired area is at least 25 times its depth. - The width of the repaired area must not exceed 15% of its length. - Hardenings and hardening cracks caused by overheating are not permissible!

Any component which **cannot be repaired** according to the above listed conditions **must be replaced**. Replaced components shall be sent to Doppelmayr for examination upon request.

7. Documentation

7.1 Personnel for Non-Destructive Testing of Doppelmayr Seilbahnen GmbH

Testers of Doppelmayr Seilbahnen GmbH document the tests and inspections using the template PDKL0144.

7.2 Personnel for Non-Destructive Testing of an Accredited Inspection Authority

As a minimum requirement, the inspection and test records must state the following information:

1. Name, order number and date of start-up of the installation
2. Name and address of the current ropeway operator
3. Name and address of the testing laboratory
4. Name and qualifications of inspection personnel involved in testing (tester and supervisor)
5. Date of testing / inspection
6. Number of operating hours at the time of testing
7. Test data for visual inspection as per PSVT0100
8. Test data for magnetic particle testing as per PSMT0100
9. Test data for dye penetrant testing as per PSPT0100
10. Quantity of tested grips
11. Serial number of the tested grip (number of the carrier, if applicable)
12. Name and quantity of the tested individual components
13. The number of good parts and reject parts per individual component
14. For each faulty individual component:
    - Serial number of the grip
    - Description of the fault
    - Decision on how the faulty part is to be dealt with
15. Signature of a tester with the authority to approve reports