



Factory acceptance test according to KRONES spe- cification

FAT (Factory Acceptance Test)
KRONES inspectors



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1 Definition of factory acceptance test

A factory acceptance test is the acceptance of a product at the manufacturer's location. The factory acceptance test is conducted jointly by the purchaser and contractor, or their authorised representatives.

The acceptance test includes the following procedures:

- The machine or line is checked to ensure all its components are complete. For machines with X-ray guard, the guards are not installed during the FAT. The test is based on the machine order document and, where appropriate, other changes agreed after the signing of the contract, if incorporated into the contract.
- A functional test is also conducted. The functional test determines if all of the agreed functions are provided and the final label decoration result conforms to the specified requirements. This is particularly important in order to detect damage occurred during transit and final assembly for example.
- The aim is to verify that the machine has been assembled correctly in accordance with the specifications and works properly.
- If the tests reveal no or only minor defects, the machine can be accepted. If, however, significant defects are detected, the supplier can repeat the factory acceptance test after subsequent fulfilment (removal of defects).

Alternatively, the purchaser may, at his own discretion, accept the machine in spite of the defects identified.

2 Requirements and basic conditions

Purchaser and contractor

The purchaser defines the equipment to be tested in the test run at set-up speed when awarding the contract.

As a rule, the set-up speed does not correspond to the rated speed as no recirculation is intended.

The contractor specifies the quantity and quality of the test material required for the test run and requests the material from the purchaser in good time prior to testing. The purchaser is responsible for assuring the timely delivery of the material to the contractor. If the test material is not delivered on schedule, there is a chance that the FAT will not be performed.

Basic conditions

- Elements of the factory acceptance test
 - The elements of the overall contract to be included in the factory acceptance test must be defined.
For example, only the Checkmat or further components connected to the machine, e.g. coding systems, etc. are installed.
 - The Linadry K890 container dryer is not installed
- Standard scope of supply
 - The standard scope of supply to be accepted includes the complete equipment that can be defined by the customer. If the customer has not made an appropriate selection, reference equipment is used for acceptance.
 - The standard acceptance procedure includes one day of work. If this is possible during this time, a change-over to another type can also be performed.
- Time schedule
 - The factory acceptance test normally starts at 08:00 a.m. and ends at 04:00 p.m. Deviations from this time schedule are possible based on an individual arrangement and in compliance with working time legislation.
 - The standard acceptance procedure includes one day of work. Additional days are possible but subject to a charge.
- Photography inside the assembly hall is only allowed if the contractor agrees to it.
- Insight into the risk analysis
 - The purchaser is generally entitled to access the machine's risk assessment. On request, the risk assessment can be provided in German. To enable this, notification of any such request must be made in writing two weeks before the scheduled FAT date at the latest.
- Signing the acceptance report
 - The purchaser must delegate a person who is authorised to sign off the acceptance test report in a legally binding manner to attend the FAT.

3 Sequence of the factory acceptance test

- Inspection of the machine with a brief induction into its method of operation.
- Review of the machine layout drawing.
- Joint inspection and assessment of the test material (containers and labels) with regard to processability and possible manufacturing faults which might influence the test result.
- Check that the scope of supply agreed in the contract is complete.
- Checking of all components against the contractual specifications.
- Checking of the protective devices.
- Checking of the required certificates in accordance with national laws.
- Test run of the machine without production.
- Test run of the machine with production at set-up speed.
- Equipment change-over for machines with several equipment variants, provided this is possible in one day.
- Functional verification by performing short test runs with the agreed equipment.
- If the factory acceptance tests last several days, each day must end with a final daily review meeting on the machine during which the test points covered are summarised.
- After testing all of the agreed equipment variants, a final review meeting is held. The factory acceptance test (FAT) ends with a mutual agreement (customer/supplier) that the machine can be delivered to the operating company. This means that no critical defects/faults were identified during machine testing and that any defects have been documented in the acceptance test report.

3.1 General procedure

3.2 Special features

3.2.1 K735/K774 Linatronic

- Checking of the protective devices.
- Joint inspection and assessment of the test bottles with regard to processability, possible detection in accordance with the inspection guidelines and possible manufacturing faults which might influence the test result.
- Test run of the machine without production.
- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Test run of the machine with test bottles at set-up speed, demonstration of the test bottle results, joint analysis.
- Reconfiguration of machines with multiple configuration variants.

3.2.2 K731/K761/K778 Checkmat

- Check the safety devices (if existing), a stand-alone X-ray guard is not installed.
- Joint inspection and assessment of the test material (containers and labels if necessary) with regard to processability, possible detection in accordance with the inspection guidelines and possible manufacturing faults which might influence the test result.
- Functional verification by performing short test runs (approx. 10 containers/3 packs each) with the agreed equipment.

- Reconfiguration of machines with multiple configuration variants.

3.2.3 K752 Integrated Checkmat

- Joint inspection and assessment of the test material (containers and labels) with regard to processability, possible detection in accordance with the inspection guidelines and possible manufacturing faults which might influence the test result.
- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Equipment change-over for machines with several equipment variants, provided this is possible in one day.

3.2.4 K704 Sekamat

- Joint inspection and assessment of the test material (containers) with regard to processability and possible manufacturing faults which might influence the test result.
- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Reconfiguration of machines with multiple configuration variants.

3.2.5 K709 Cantronic

- Joint inspection and assessment of the test material (containers) with regard to processability, possible detection in accordance with the inspection guidelines and possible manufacturing faults which might influence the test result.
- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Reconfiguration of machines with multiple configuration variants.

3.2.6 K719/K759 Toptronic, K775 Rotocheck

- Checking of the protective devices.
- Joint inspection and assessment of the test containers with regard to processability, possible detection in accordance with the inspection guidelines and possible manufacturing faults which might influence the test result.
- Test run without production at nominal speed
- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Test run of the machine with test bottles at set-up speed, demonstration of the test bottle results, joint analysis.
- Equipment change-over for machines with several equipment variants, provided this is possible in one day.



4 Test content

4.1 Static test

- Checking of the machine's interfaces with secondary machinery or with existing line components.
- Check that the machine design complies with the order document, e.g. machine running direction, layout configuration.
- Check that the scope of supply agreed in the contract is complete.
- Checking of the components against the contractual specifications such as manufacturers of purchased parts or special requirements (special customer requests) regarding the design of mechanical or electrical components.
- Checking of the machine's safety devices. Machine guards, EMERGENCY STOP switches and marking of hazardous spots. For further tests, see the "Dynamic test" test item.
- Check that all the required certificates are provided in compliance with current legal guidelines, e.g. CE marking of machines installed in Europe.

4.2 Dynamic test

4.2.1 K735/K774 Linatronic

- Machine test run without production at set-up speed, simulation of machine malfunctions, alarms and resetting/acknowledging the alarm.
- Machine test run with production at set-up speed (duration depending on the test set-up options) and simulation of an EMERGENCY STOP followed by a restart.
- Reconfiguration of machines with multiple configuration variants.

4.2.2 K731/K761/K778 Checkmat

- Machine test run without production at set-up/nominal speed of lead machine, simulation of machine malfunctions, alarms and resetting/acknowledging the alarm.
- Functional verification by performing short test runs (approx. 10 containers/3 packs each) with the agreed equipment.
- Reconfiguration of machines with multiple configuration variants.

4.2.3 K752 Integrated Checkmat

- Lead machine test run without production at nominal speed, simulation of machine malfunctions, alarms and resetting/acknowledging the alarm.
- Functional verification by performing short test runs (approx. 10 customer objects each) with the agreed equipment.
- Equipment change-over for machines with several equipment variants, provided this is possible in one day.

4.2.4 K704 Sekamat

- Machine test run without production at set-up speed, simulation of machine malfunctions, alarms and resetting/acknowledging the alarm.

- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Reconfiguration of machines with multiple configuration variants.

4.2.5 K709 Cantronic

- Machine test run without production at set-up speed, simulation of machine malfunctions, alarms and resetting/acknowledging the alarm.
- Functional verification by performing short test runs (approx. 10 containers each) with the agreed equipment.
- Reconfiguration of machines with multiple configuration variants.

4.2.6 K719/K759 Toptronic, K775 Rotocheck

- Machine test run without production at nominal speed, simulation of machine malfunctions, alarms and resetting/acknowledging the alarm.
- Machine test run with production at set-up speed (duration depending on the test set-up options) and simulation of an EMERGENCY STOP followed by a restart.
- Equipment change-over for machines with several equipment variants, provided this is possible in one day.

5 How to handle deviations from the factory acceptance test specification

- Deviations from the scheduled test sequence or the scope of testing are only permitted with the consent of both parties.
- Malfunctions during bottle conveyance, e.g. containers falling over, shall not result in the failure of the FAT.
- The FAT does not include functional testing of the secondary machinery provided by the customer.
- Label decoration faults due to the test material not conforming to the specifications are not subject to assessment. It is generally permissible for the machine manufacturer to furnish proof of such faults by performing test runs with proper test material.
- Requested changes to the contractually specified scope of supply shall not result in the failure of the FAT.
- In such a case, the supplier reserves the right to check what additional costs would be incurred for the purchaser and to stipulate the time of the change would be made according to the effort and expense involved.
- All of the deviations must be documented with a description of the remedy for eliminating the deviation.
- All of the deviations must be released both by the operating company and by the supplier.