

INTERNATIONAL STANDARD

**ISO
8206**

First edition
1991-07-01

Acceptance tests for oxygen cutting machines — Reproducible accuracy — Operational characteristics

*Contrôle de réception des machines d'oxycoupage — Précision de
reproduction — Caractéristiques de fonctionnement*



Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8206 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*.

Annex A of this International Standard is for information only.

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International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Acceptance tests for oxygen cutting machines — Reproducible accuracy — Operational characteristics

1 Scope

This International Standard applies to stationary cross-carriage oxygen cutting machines for shape cutting and/or parallel trimming.

It also applies to machines for cutting by other thermal processes.

2 Purpose of acceptance tests

The purpose of acceptance tests is the final inspection of the completed oxygen cutting machine on the premises of the user. Acceptance tests are used solely to demonstrate the reproducible accuracy and operational characteristics of the oxygen cutting machine, eliminating influences caused by the process. This International Standard is intended to be a basis for technical provisions of delivery.

3 Preconditions for acceptance tests

3.1 Setting up the oxygen cutting machine

Oxygen cutting machines are machine tools. At the place of installation, therefore, the same requirements as regards sensitivity to external influences shall be established as in the case of other machine tools.

Installation of the oxygen cutting machine outdoors, laying out the machine foundations in the vicinity of vibrating plant, and effects from electric or electromagnetic fields are to be avoided. Displacement or subsidence of the machine foundations shall be excluded. Exceptions shall be stipulated in agreement with the manufacturer.

3.2 Time of acceptance tests

The machine parts shall be properly stored on the user's premises. The oxygen cutting machine shall be properly installed immediately on delivery and tested in accordance with clause 5.

4 Principles of acceptance tests

4.1 Operating instructions

The operating instructions for the oxygen cutting machine shall be complied with.

Before commencing the acceptance tests the controls, electronics, motors and gear mechanisms shall be operated at no-load to bring them to a temperature corresponding to working conditions and the manufacturer's instructions.

4.2 Measuring instruments

The tests are to be carried out with calibrated measuring instruments in accordance with the measuring instructions given in this International Standard.

The limit of error of the measuring instruments shall not be more than 20 % of the permissible variation. The errors in the measuring instruments and the tolerances for the measuring devices, e.g. set pins, steel wire and prism blocks are to be taken into account.

4.3 Measurements

The measuring instruments, measuring devices and oxygen cutting machine, with the exception of the parts referred to in 4.1, are to be brought to the same temperature — generally room temperature. They shall therefore, be protected against sunlight and external thermal influences.

Should there be any discrepancy, a control measurement is to be carried out after testing the measuring instruments and the measuring devices.

4.4 Test report

The test results are to be recorded in a report (see annex A).

Additional tests of the manufacturing or working accuracy can be agreed at the time of ordering.

5 Extent of acceptance tests

5.1 Testing of the running track

The accuracy of manufacture and installation of the running track is tested with the cross-carriage positioned on it in accordance with table 1.

5.2 Testing of the manufacturing accuracy of the oxygen cutting machine

The criteria for this are given in table 2.

5.3 Testing of the working accuracy of automatically controlled oxygen cutting machines

The working accuracy of automatically controlled oxygen cutting machines is tested in accordance with table 3.

5.4 Testing of the working accuracy of planing machines

The working accuracy of planing machines is tested in accordance with table 4.

5.5 Electrical equipment

The electrical operations are tested in accordance with the operating instructions. The relevant IEC publications shall be complied with.

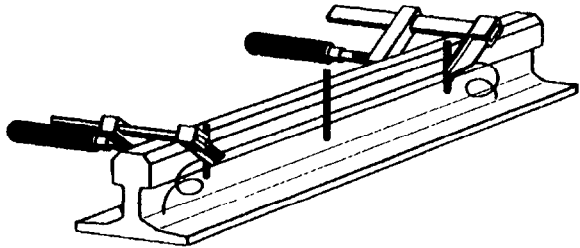
5.6 Gas engineering equipment

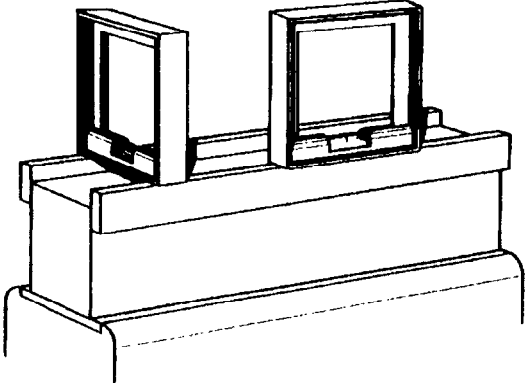
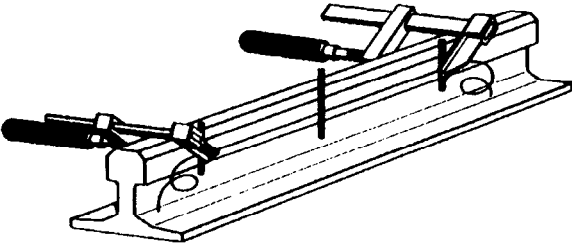
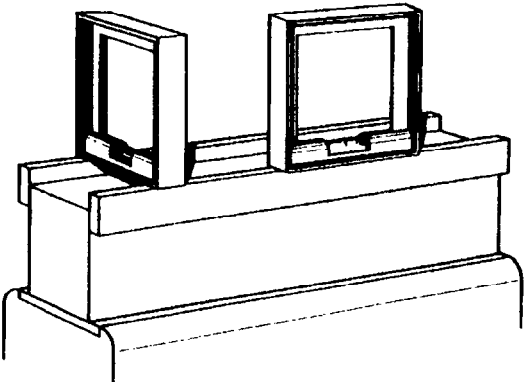
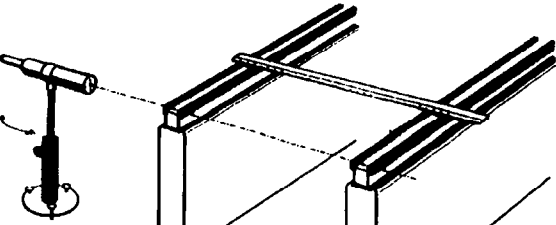
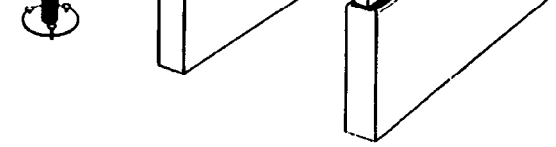
Pressure measurements are taken to test whether the pipes have a large enough cross-section to ensure that the gas supply equipment can operate efficiently.

The pressures of combustible gas and oxygen for heating and cutting required in accordance with the operating chart for the greatest thicknesses of workpieces shall be available at the torch inlet while all the torches are in operation which have been provided in accordance with the order for simultaneous oxygen cutting of such thicknesses of workpieces.

Testing is to be carried out for compliance with the safety requirements, observing the accident prevention regulations and other relevant regulations.

Table 1 — Testing of the running track

No.	Object of measurement	Figure	Measuring instrument	Measuring instructions	Permissible variation
5.1.1	Straightness of guide rail		Steel wire max. 0,5 mm Ø, end gauges (set pins), feeler gauge, levelling telescope	Move cross-carriage to rear end of running track. Carry the steel wire along the free part of the guide rail over the set pins and tension. Measure with set pins and feeler gauge at intervals of 1 m. Then move cross-carriage to the front end of the running track. Repeat measurement as before. Gauge length is at least twice the dead length of the machine.	± 0,2 mm to 10 m length

No.	Object of measurement	Figure	Measuring instrument	Measuring instructions	Permissible variation
5.1.2	Horizontal position of guide rail longitudinally and transversely		Spirit level with 0,1 mm/m scale interval, levelling instrument with coincidence bubble	Apply spirit level at intervals of 1 m along and across the rail surfaces. Attach prism block if necessary for prismatic rails	$\pm 0,2$ mm/m longitudinally but not more than ± 2 mm on running track lengths of up to 50 m, $\pm 0,1$ mm/m transversely
5.1.3	Straightness of running rail		Steel wire max. 0,5 mm $\varnothing$, end gauges (set pins), feeler gauge, levelling telescope	Move cross-carriage to rear end of running track. Carry the steel wire along the free part of the running rail over the set pins and tension. Measure with set pins and feeler gauge at intervals of 1 m. Then move cross-carriage to the front end of the running track. Repeat measurement as before. Gauge length is at least twice the dead length of the machine	For rails machined laterally $\pm 0,5$ mm up to a length of 20 m, for rails not machined laterally ± 3 mm up to a length of 20 m
5.1.4	Horizontal position of running rail longitudinally and transversely		Spirit level with 0,1 mm/m scale interval, levelling instrument with coincidence bubble	Apply spirit level at intervals of 1 m along and across the rail surfaces. Attach prism block if necessary for prismatic rails	$\pm 0,2$ mm/m longitudinally and transversely but not more than ± 2 mm over total length of running track
5.1.5	Horizontal position of guide rail and running rail in relation to each other		Hose level with 0,1 mm/m scale interval, levelling instrument, levelling telescope	Measure at the start, middle and end of the running track	$\pm 0,5$ mm to 10 m track width, ± 1 mm for track widths > 10 m
5.1.6	Parallelism of guide rail and running rail in relation to each other		Steel measuring tape	Measure at the start, middle and end of the running track. The distance between the guide rail and running rail — the track gauge shall be maintained according to the manufacturer's assembly plan	No limitation, but running wheel shall be fully supported over the total length