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AMENDMENT 1
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Road vehicles — Fuel injection pump testing —

Part 3: Application and test procedures

AMENDMENT 1

Véhicules routiers — Essais des pompes d'injection à gazole —

Partie 3: Application et modes opératoires d'essai

AMENDEMENT 1



Reference number
ISO 4008-3:1987/Amd.1:2002(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this Amendment may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to International Standard ISO 4008-3:1987 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 7, *Injection equipment and filters for use on road vehicles*.

Road vehicles — Fuel injection pump testing —

Part 3: Application and test procedures

AMENDMENT 1

Page 1, clause 3

Replace the titles of the respective references by the following:

ISO 8984-1, *Diesel engines — Testing of fuel injectors — Part 1: Hand-lever-operated testing and setting apparatus*

ISO 8984-2, *Diesel engines — Testing of fuel injectors — Part 2: Test methods*

Add the following references:

ISO 7876-2, *Fuel injection equipment — Vocabulary — Part 2: Fuel injectors*

ISO 7876-4, *Fuel injection equipment — Vocabulary — Part 4: High-pressure pipes and end-connections*

ISO 14681, *Diesel engines — Fuel injection pump testing — Calibrating fuel injectors*

Delete reference to ISO 4020-2.

Delete footnote 1).

Page 2, Table 1, "(8)"; Page 10, Annex B, B.3.2.5; replace "holder" by "nozzle holder"

Page 3, 6.3.2.3; replace "bore size" by "inside diameter of the pipe"

Page 3, 6.3.2.3; replace "nipple" by "connection end"

Page 9, Table 4, column "Action", row "2", "c); Page 10, B.3.1.5; B.3.1.6; replace "seat leakage" by "nozzle seat leakage"

Page 9, Table 4, column "Action", row "3", "a)"; replace "nozzle and holder assembly" by "injector"

Page 9, Table 4, column "Action", row "3", "b)"; Page 10, B.3.1.6, B.3.3.1, B.3.3.4; replace "nozzle assembly" by "nozzle"

Page 9, Annex B

In Table 4, delete the references to ISO 7440-1 in column "Refer to", row "3". Replace the Note with the following:

"NOTE This item is the subject of further study. Until this is completed, operators shall follow manufacturer's instructions. In the absence of specific instructions, refer to 3.2.3 of ISO 7440-1 or 3.2.4 of ISO 14681."

Replace the text in column "Refer to", row "4", in the table by the following:

“Manufacturer’s instructions or 3.2.3 of ISO 7440-1 or 3.2.4 of ISO 14681”.

Page 10, Footnote 1); “nozzle holder assembly” by “nozzle holder”

Page 10, B.3.2.3, B.3.2.4 and B.3.2.8; “holder assembly” by “nozzle holder”

Page 10, B.3.2.5; B.3.2.6; “cap nut” by “nozzle cap nut”

Page 12, Annex C

Replace Table 5 by the following:

Table 5 — Test injector setting and testing values

No.	Injector or nozzle type	Nozzle opening pressure (preferred) bar ¹⁾	Nozzle seat leakage pressure (preferred) bar ¹⁾	Nozzle cap nut torque N·m	Edge filter assembly torque N·m	Back leakage test pressures		
						A bar ¹⁾	B bar ¹⁾	C bar ¹⁾
1	Test injector ²⁾ with:		For all types					
	Delay pintle type nozzle ³⁾							
	a) calibrating nozzle to ISO 4010	125 ⁺³ ₀	20 bar ¹⁾ below actual nozzle opening pressure	60 ⁺³⁰ ₀	45 ⁺²⁰ ₀	120	100	70
	b) calibrating nozzle to ISO 4010	147 ⁺³ ₀						
	c) calibrating nozzle to ISO 4010	172 ⁺³ ₀						
	d) calibrating nozzle to ISO 14681	147 ⁺³ ₀						
	e) calibrating nozzle to ISO 14681	172 ⁺³ ₀						
2	Single hole orifice plate ⁴⁾							
	a) No. .4 (Ø 0,4 mm orifice)	207 ⁺³ ₀						
	b) No. .5 (Ø 0,5 mm orifice)	207 ⁺³ ₀						
	c) No. .6 (Ø 0,6 mm orifice)	207 ⁺³ ₀						
	d) No. .7 (Ø 0,7 mm orifice)	207 ⁺³ ₀						
	e) No. .8 (Ø 0,8 mm orifice)	207 ⁺³ ₀						

1) 1 bar = 10⁵ N/m² = 10⁵ Pa.

2) Including calibrating fuel injectors according to ISO 7440-1 and ISO 14681.

3) According to ISO 4010 or ISO 14681.

4) According to ISO 7440-1 or ISO 14681 or both.

Replace Table 6 by the following:

Table 6 — Nominal sizes of high-pressure injection pipe assemblies

Dimensions in millimetres

ISO designation	Internal diameter	External diameter nom.	Length	Recommended bend radius min.
ISO 4008-1	$2 \pm 0,025$	6	600 ± 5	16
ISO 4008-2	$2 \pm 0,025$	6	845 ± 5	16
ISO 4008-3	$3 \pm 0,025$	6	600 ± 5	25
ISO 4008-4	$3 \pm 0,025$	6	$1\,000 \pm 5$	25
ISO 4008-5	$3 \pm 0,025$	8	750 ± 5	50
ISO 4008-6	$3 \pm 0,025$	8	$1\,000 \pm 5$	50
ISO 4008-7	$4 \pm 0,025$	8	$1\,000 \pm 5$	50
ISO 4008-8	$4 \pm 0,025$	8	$1\,500 \pm 5$	50
ISO 4008-9	$2 \pm 0,025$	6	450 ± 5	16
ISO 4008-10	$3 \pm 0,025$	8	600 ± 5	50
ISO 4008-11	$1,5 \pm 0,025$	6	710 ± 5	16
ISO 4008-12	$1,6 \pm 0,025$	6	350 ± 5	16
ISO 4008-13	$1,8 \pm 0,025$	6	450 ± 5	16

Replace the respective definitions (according to alphanumeric reference) by the following:

F.10 high-pressure (fuel) injection pipe assembly: High-pressure fuel injection pipe fitted with a connector nut at both ends and with each pipe end fabricated to couple with a female cone.

[ISO 7876-4, definition 3.2]

NOTE 1 The pipe may or may not have preformed bends for its intended use and may include additional applications-specific components.

NOTE 2 In accordance with ISO 7876-4, the word “fuel” used in the term may be omitted, providing there can be no misunderstanding.

F.11 ISO high-pressure injection pipe assemblies for testing: in accordance with F 10; the requirements for these pipe assemblies shall be in conformity with the specified requirements in ISO 4093.

F.12 (fuel) injector (nozzle) opening pressure (nop): lowest hydraulic pressure (applied at a slowly increasing rate) at which flow through the injector commences.

[ISO 7876-2, definition 9.5]

NOTE In accordance with ISO 7876-2, the word “fuel” may be omitted the term, providing there can be no misunderstanding.

F.13 nozzle: valve comprising two principal components, namely the nozzle body and the needle (valve needle), through which the fuel is atomized when open.

[ISO 7876-2, definition 2.2]

Page 15, definitions F.14 and F.15; “valve of a closed type nozzle” by “needle of the nozzle”

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