



# Operating Instructions

## Safety switch

- > 8537/2
- > 8537/5



# 1 Contents

1	Contents .....	2
2	General Information .....	2
3	General Safety Information .....	3
4	Designated Use .....	4
5	Technical Data .....	5
6	Transport, Storage and Disposal .....	8
7	Assembly .....	8
8	Installation .....	8
9	Commissioning .....	9
10	Maintenance .....	9
11	Accessories and spare parts .....	10
12	Type Examination Certificate (Page 1) .....	11
13	Declaration of Conformity .....	12

# 2 General Information

## 2.1 Manufacturer







R. STAHL Schaltgeräte GmbH  
 Am Bahnhof 30  
 74638 Waldenburg, Germany

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## 2.2 Information regarding the Operating Instructions

ID NO.: 147924 / 8537608300  
 Publication Code: S-BA-8537/2/5-03-en-24/02/2009  
 We reserve the right to make technical changes without notice.

## 2.3 Symbols Used

	Action request: Describes actions to be carried out by the user.
	Reaction sign: Describes the results or the reactions to the actions taken.
	Bullet
	Commentary sign: describes the notes and recommendations.
	Warning sign: Danger from energised parts!
	Warning sign: Danger due to an explosive atmosphere!

### 3 General Safety Information

#### 3.1 Safety Instructions for Assembly and Operating Personnel

The operating instructions contain basic safety instructions which are to be observed during installation, operation and maintenance. Non-observance can lead to endangerment of persons, plant and the environment.

#### WARNING

##### **Risk due to unauthorised work being performed on the device!**

- ▷ Risk of injury and damage to equipment.
- ▶ Assembly, installation, commissioning, operation and maintenance must only be performed by personnel who are both authorised and suitably trained for this purpose.

##### **Before assembly/commissioning:**

- ▶ Read through the operating instructions.
- ▶ Give adequate training to the assembly and operating personnel.
- ▶ Ensure that the contents of the operating instructions are fully understood by the personnel in charge.
- ▶ The national installation and assembly regulations (e.g. IEC/EN 60079-14) apply.

##### **If you have questions:**

- ▶ Contact the manufacturer.

##### **When operating the device:**

- ▶ Ensure the operating instructions are made available on location at all times.
- ▶ Observe safety instructions.
- ▶ Observe national safety and accident prevention regulations.
- ▶ Only run the device according to its performance data.
- ▶ Servicing/maintenance work or repairs which are not described in the operating instructions must not be performed without prior agreement with the manufacturer.
- ▶ Any damage may render explosion protection null and void.
- ▶ No changes to the device impairing their explosion protection are permitted.
- ▶ Install and use the device only if it is undamaged, dry and clean.

#### 3.2 Warnings

Warnings are sub-divided in these operating instructions according to the following scheme:

#### WARNING

##### **Type and source of the danger!**

- ▷ Possible consequences.
- ▶ Measures to avoid danger.

They are always identified by the signalling word "WARNING" and sometimes also have a symbol which is specific to the danger involved.

### 3.3 Conformity to Standards

The safety switches comply with the following standards and directives:

- X Directive 94/9/EC
- X IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4, IEC/EN 60947-5-1
- X IEC/EN 60079-0, IEC/EN 60079-1, IEC/EN 60079-7, IEC/EN 60079-11
- X IEC/EN 61241-0, IEC/EN 61241-1

## 4 Designated Use

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Safety switches of series 8537 ensure that machines in areas subject to explosion hazard are disconnected from electrical power during cleaning and repair work.

The safety switches 8537/2 and 8537/5 are approved for use in hazardous areas zones 1, 2, 21 and 22.

 **WARNING**

**Only use the device for its intended purpose!**

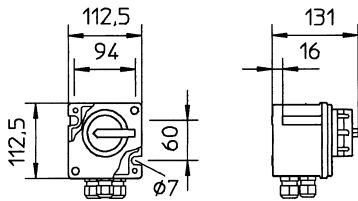
- ▷ Otherwise, the manufacturer's liability and warranty expire.
- ▶ The device may only be used under the operating conditions described in these operating instructions.
- ▶ The device may only be used in hazardous areas according to these operating instructions.

## 5 Technical Data

Explosion protection									
Gas explosion protection									
ATEX	Ⓢ II 2 G Ex de IIC T6, T5 Ⓢ II 2 G Ex de ia IIC T6, T5								
IECEX	Ex de IIC T6, T5 Ex de ia IIC T6, T5								
Dust explosion protection									
ATEX	Ⓢ II 2 D Ex tD A21 IP65 T80 °C, T95 °C								
IECEX	Ex tD A21 IP65 T80 °C, T95 °C								
Certificates									
ATEX	PTB 02 ATEX 1033								
IECEX	IECEX PTB 06.0073								
Main contacts									
Rated operational voltage	690 V AC (250 A, 125 A, 63 A, 40 A, 25 A, 16 A, 12 A) / 500 V AC (80 A, 160 A)								
Rated operational current	12 A / 16 A; 16 A; 25 A; 40 A; 63 A / 80 A; 125 A / 160 A								
Switching capacity	according to IEC / EN 60947-3; DIN VDE 0660, part 107								
	AC 23	12 A	16 A	25 A	40 A	63 A	80 A	125 A	160 A
	U <sub>e</sub>	P	P	P	P	P	P	P	P
	230 V ~	2.2 kW	4.0 kW	5.5 kW	11.0 kW	18.5 kW	22.0 kW	37.0 kW	45.0 kW
	400 V ~	4.0 kW	7.5 kW	11.0 kW	18.5 kW	30.0 kW	37.0 kW	55.0 kW	85.0 kW
	500 V ~	5.5 kW	7.5 kW	15.0 kW	22.0 kW	37.5 kW	55.0 kW	75.0 kW	110.0 kW
	690 V ~	7.5 kW	11.0 kW	22.0 kW	37.0 kW	55.0 kW	-	110.0 kW	-
	AC 3	12 A	16 A	25 A	40 A	63 A	80 A	125 A	
	U <sub>e</sub>	P	P	P	P	P	P	P	
	230 V ~	2.2 kW	4.0 kW	5.5 kW	11.0 kW	18.5 kW	22.0 kW	37.0 kW	
	400 V ~	4.0 kW	7.5 kW	11.0 kW	18.5 kW	30.0 kW	37.0 kW	55.0 kW	
	500 V ~	5.5 kW	7.5 kW	15.0 kW	22.0 kW	37.5 kW	55.0 kW	75.0 kW	
	690 V ~	7.5 kW	11.0 kW	22.0 kW	37.0 kW	55.0 kW	55.0 kW	-	
Rated insulation voltage	750 V								
Rated impulse withstand voltage	6 kV								
Service life of electrical / mechanical parts	> 10 <sup>5</sup> operations								
Max. short circuit protection	12 / 16 A		16 A	25 A	40 A	63 / 80 A	125 / 160 A	250 A	
	16 A at I <sub>e</sub> = 12 A, 690 V AC		50 A	50 A	80 A	100 / 125 A	200 A	315 A	
	Triggering characteristics: gL / gG acc. to DIN VDE 0636, part 10								
Terminals	12 / 16 A	16 A	25 A	40 A		63 / 80 A	125 / 160 A		250 A
	2.5 / 4 mm <sup>2</sup>	4 / 6 mm <sup>2</sup>	6 / 10 mm <sup>2</sup>	16 mm <sup>2</sup>	25 mm <sup>2</sup>	35 mm <sup>2</sup>	95 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>
	finely stranded / solid wire	finely stranded / solid wire	finely stranded / solid wire	finely stranded / solid wire	stranded	finely stranded / solid wire	finely stranded / solid wire	stranded	multi-wire

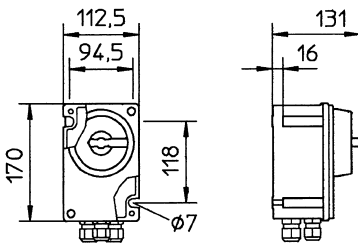
Auxiliary contacts							
Switch	3 pole: 1 NO (ON delayed - OFF advanced) 6 pole: 2 NO (1 x ON delayed - OFF advanced / 1 x switching normally)						
Rated operating voltage	12 A / 16 A - version:			400 V AC			
	16 A-, 25 A-, 40 A, 63 A / 80 A-, 125 A / 160 A, 250 A -version:			500 V AC			
Rated operational current	12 / 16 A, 250 A - versions			6 A			
	16 A, 25 A, 40 A, 63 / 80 A, 125 / 160 A - versions			10 A			
Terminals	12 / 16 A	16 A	25 A	40 A	63 / 80 A	125 / 160 A	250 A
	2,5 / 4 mm <sup>2</sup>	4 / 6 mm <sup>2</sup>	4 / 6 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
	finely stranded / solid wire	finely stranded / solid wire	finely stranded / solid wire	finely stranded / solid wire	finely stranded / solid wire	finely stranded / solid wire	finely stranded wire
Enclosure material	8537/2: Polyester resin, glass fibre reinforced 8537/5: painted sheet steel or stainless steel (1.4404)						
Enclosure cover	In "ON" position removable, in "OFF" position interlocked						
Handle	In 0-position 3-times padlockable, Colour: Handle black, protective collar black Special version: Protective handle red, collar yellow						
Ingress Protection	IP66 (12 A / 16 A, 16 A, 25 A, 40 A, 63 / 80 A) IP54 (125 / 160 A, 250 A)						
Operating temperature range	-20 °C ... + 40 °C -40 °C ≤ Ta ≤ 55 °C						

**Dimensional drawings** (all dimensions in mm) - subject to alterations



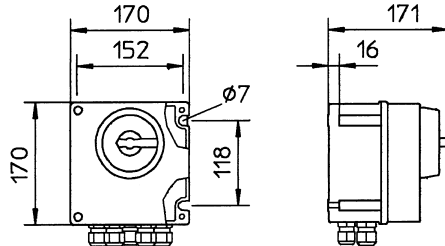
04436E00

**8537/2-701, 12 A / 16 A, 3-pole**



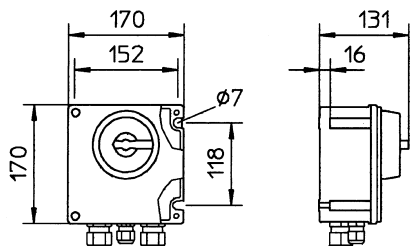
04444E00

**8537/2-702, 16 A, 3-pole**



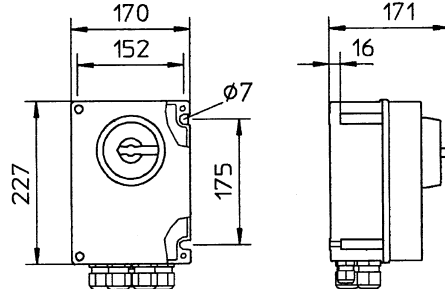
04443E00

**8537/2-802, 16 A, 6-pole**



04442E00

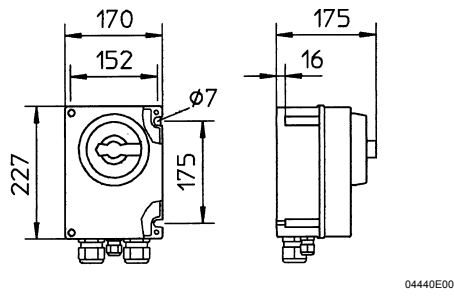
**8537/2-703, 25 A, 3-pole**



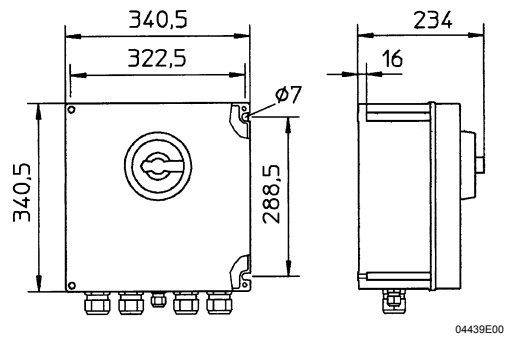
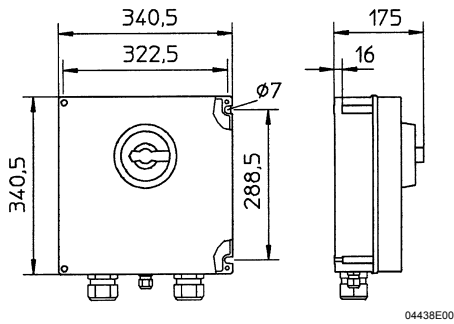
04441E00

**8537/2-803, 25 A, 6-pole**

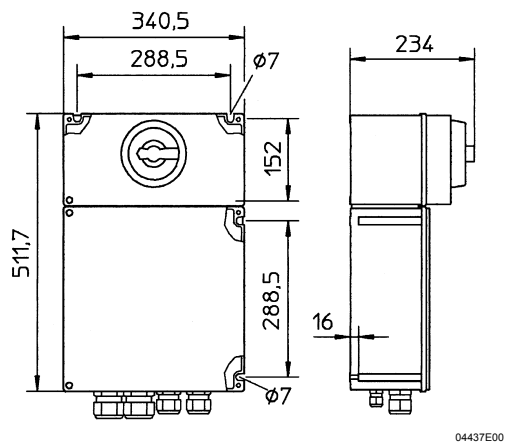
Dimensional drawings (all dimensions in mm) - subject to alterations



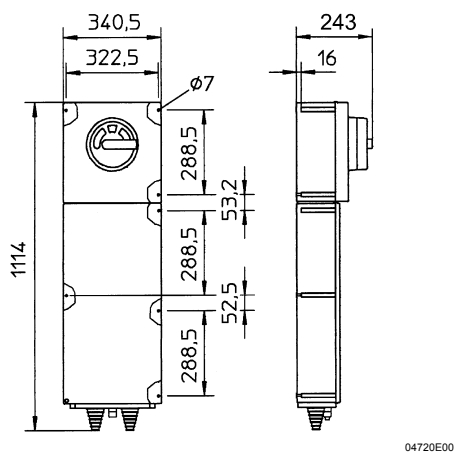
8537/2-705, 40 A, 3-pole



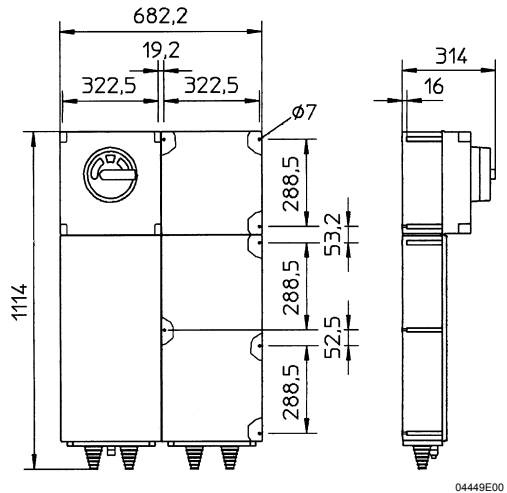
8537/2-805, 40 A, 6-pole



8537/2-706, 63 A / 80 A, 3-pole



8537/2-806, 63 A / 80 A, 6-pole



8537/2-709, 125 A / 160 A, 3-pole

8537/2-809, 125 A / 160 A, 6-pole

## 6 Transport, Storage and Disposal

### Transport

- ▶ Shock-free in its original carton, do not drop, handle carefully.



### Storage

- ▶ Store in a dry place in its original packaging

### Disposal



- ▶ Ensure environmentally friendly disposal of all components according to legal regulations.

## 7 Assembly

	Install a protective roof or wall if the explosion-protected electrical device is mounted outdoors.
	Drilling template see dimensional drawing.

## 8 Installation

### 8.1 Mains connection

 <b>WARNING</b>	
	<p><b>Incorrectly installed components!</b></p> <ul style="list-style-type: none"> <li>▶ Explosion protection cannot be guaranteed any more if the components are incorrectly installed.</li> <li>▶ Carry out the installation in strict accordance with the instructions and national safety and accident prevention regulations (e.g. IEC/EN 60079-14).</li> </ul>

- ▶ Fit the end covering sleeves gas-tight and using a suitable tool.
- ▶ Be especially careful when connecting the cable.
- ▶ The conductor insulation must reach to the terminal.
- ▶ The conductor itself must not be damaged when removing the insulation.
- ▶ Select the cables and the mode of running them in a way that the maximum permitted cable temperature is not exceeded.
- ▶ Always connect the earth lead.
- ▶ Observe the tightening torque of the terminals:

Version	Tightening torques of the terminals
12 A, 16 A, 25 A	1.8 Nm
40 A, 63 A, 80 A	3.8 Nm
125 A, 160 A	10 - 20 Nm

### 8.2 Back-up fuse

- ▶ Provide suitable back-up fuses, see chapter 5 "Technical Data".



### 8.3 Back-up fuses for auxiliary circuits

- ▶ As a general rule, auxiliary circuits must be protected by a 10 A gL fuse.

### 8.4 Intrinsically safe circuits

- ▶ Use only isolated cables and conductors whose testing voltage is AC 500V and whose minimum quality is HO5 in intrinsically safe circuits.
- ▶ The diameter of one conductor must not be smaller than 0.1 mm; this applies also to the individual wires of finely stranded conductors.
- ▶ Ex i electric circuits are connected to blue terminal blocks.

## 9 Commissioning

### Before commissioning

- ▶ Check the cables and lines are clamped properly.
- ▶ Inspect cable glands for damage.
- ▶ Control torques.
- ▶ Ensure that the connection is correctly made.
- ▶ Ensure that unused cable entries are sealed with plugs certified to Directive 94/9/EC.
- ▶ Ensure that unused holes are sealed by stopping plugs certified to Directive 94/9/EC.
- ▶ Ensure that all screws and nuts are fully tightened.
- ▶ Ensure that it contains no foreign bodies.

## 10 Maintenance

### WARNING

#### Risk due to unauthorised work being performed on the device!

- ▷ Risk of injury and damage to equipment.
- ▶ Mounting, installation, commissioning and servicing work must only be performed by personnel who are both authorised and suitably trained for this purpose.

### WARNING



#### Danger from energised parts!

- ▷ Risk of severe injuries.
- ▶ All connections and wiring must be disconnected from the power supply.
- ▶ Secure the connections against unauthorised activation.

### 10.1 Regular Maintenance Work

- ▶ Consult the relevant regulations (e.g. IEC/EN 60079-17) to determine the type and extent of inspections.
- ▶ Plan the intervals so that any defects in the equipment which may be anticipated are promptly detected.

### To check as part of the servicing/maintenance schedule:

- X Check that cables and lines are clamped properly.
- X Check that cable entries are tight
- X Check the state of the cable entries
- X Check seals for damage
- X Inspect device for visible damage.
- X Compliance with the permitted temperatures in accordance with IEC/EN 60079-0
- X Make sure the device is used according to its designated use
- X Check the interior for humidity and dirt.

### 10.2 Cleaning

- X Clean with a cloth, brush, vacuum cleaner or similar items.
- X When cleaning with a damp cloth, use water or mild, non-abrasive, non-scratching cleaning agents.
- X Never use aggressive cleaning agents or solvents.

## 11 Accessories and spare parts

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 <b>WARNING</b>
Use only original spare parts as well as original accessories made by R. STAHL Schaltgeräte GmbH.

## 12 Type Examination Certificate (Page 1)

## Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



(1) **EC-TYPE-EXAMINATION CERTIFICATE**  
(Translation)

(2) Equipment and Protective Systems Intended for Use in  
Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

**PTB 02 ATEX 1033**



- (4) Equipment: Safety switch, type 8537/-...-.....
- (5) Manufacturer: R. STAHL Schaltgeräte GmbH
- (6) Address: Am Bahnhof 30, D-74638 Waldenburg (Württ.), Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
- The examination and test results are recorded in the confidential report PTB Ex 02-12104.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 50014:1997 + A1 + A2      EN 50018:2000      EN 50019:2000**  
**EN 50020:1994**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

**II 2 G EEx ed ia IIC T6 or T5**

Zertifizierungsstelle Explosionsschutz

Braunschweig, May 29, 2002

By order:

Dr.-Ing. U. Klausmeyer  
Regierungsdirektor



sheet 1/3

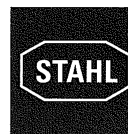
EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig



### 13 Declaration of Conformity

**EG-Konformitätserklärung**  
*EC-Declaration of Conformity*  
*Déclaration de Conformité CE*



<b>Wir (we; nous)</b>	
R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, 74638 Waldenburg, Germany	<b>8537/.</b>
<b>erklären in alleiniger Verantwortung, dass das Produkt</b> <i>hereby declare in our sole responsibility, that the product</i> <i>déclarons, sous notre seule responsabilité, que le produit</i>	<b>Sicherheitsschalter</b> <i>Safety switch</i> <i>Interrupteur de sécurité</i>
<b>mit der EG-Baumusterprüfbescheinigung:</b> <i>(under; EC-Type Examination Certificate:</i> <i>avec) Attestation d'examen CE de type:</i>	<b>PTB 02 ATEX 1033</b>
<b>auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt</b> <i>which is the subject of this declaration, is in conformity with the following standards or normative documents</i> <i>auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants</i>	
<b>Bestimmungen der Richtlinie</b> <i>terms of the directive</i> <i>prescriptions de la directive</i>	<b>Nummer sowie Ausgabedatum der Norm</b> <i>Number and date of issue of the standard</i> <i>Numéro ainsi que date d'émission de la norme</i>
<b>94/9/EG: ATEX-Richtlinie</b> <i>94/9/EC: ATEX Directive</i> <i>94/9/CE: Directive ATEX</i>	EN 60079-0:2006 EN 60079-1:2004 EN 60079-7:2007 EN 60079-11:2007 EN 61241-0:2006 EN 61241-1:2004
<b>2004/108/EG: EMV-Richtlinie</b> <i>2004/108/EC: EMC Directive</i> <i>2004/108/CE: Directive CEM</i>	EN 60947-1:2007
<b>Qualitätssicherung Produktion:</b> <i>Production Quality Assessment:</i> <i>Assurance Qualité Production:</i>	
PTB 96 ATEX Q006-4	
<b>Kenn-Nr. der benannten Stelle / Notified Body number / N° de l'organisme de certification:</b> 0102	
Waldenburg, 18. Juli 2008	i.V.
<b>Ort und Datum</b> <i>Place and date</i> <i>Lieu et date</i>	<b>B. Limbacher</b> <b>Leiter Entwicklung</b> <i>Head of Development</i> <i>Directeur Développement</i>
	i.V.
	<b>Dr. S. Jung</b> <b>Leiter Qualitätsmanagement</b> <i>Director Quality Management Dept.</i> <i>Directeur Dept. Assurance de Qualité</i>

