ORIGINAL OPERATING MANUAL

INDUCTORS DIN 14384

INDUCTORS Z2, Z4 AND Z8
TYPE S AND TYPE L

Used to feed liquid foam concentrates into a hose line at an adjustable mixing rate.

The inductor is coupled into the hose line between the pump and the foam nozzle. Admixing rate ranging from 0.1 to 6% for all foam agents.

FOREWORD

Applicable standards and regulations

The design and construction of the AWG Inductors Z2, Z4 and Z8, Types L "Leicht" and S "Schwer" [Light and Heavy, respectivly] was carried out in accordance with the relevant provisions laid down by these directives and the harmonised standards:

- DIN 14384:2011-01 Schaummittel-Zumischer PN 16, selbstansaugend [Inductor proportioner PN 16 for foam compound]

Conversions and modifications

Unauthorised conversions or modifications to the inductors are prohibited without written consent from the manufacturer.

AWG Fittings GmbH accepts no liability for damage caused by conversions or modifications, improper handling by the customer or by third parties commissioned by the customer, or caused by non-compliance with these instructions.

Applicable Documents

Apart from this manual, no other applicable documents are required for the safe handling of the AWG Inductors.

The data sheet for this device can be downloaded from our website: www.awg-fittings.com

Copyright

This operating manual is valid for the devices
AWG Inductors Z2, Z4 and Z8, Types L "Leicht" and S "Schwer" [Light and Heavy, respectively]

These instructions and the applicable documents are not subject to any automatic change service. The latest version can be obtained from the manufacturer.

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1 INTRODUCTION

This manual contains important information regarding your personal safety. This manual must be read and understood by all persons who handle or use the device during any phase of its life cycle.

The manual must be close at hand at the place of use throughout the device's life cycle. All persons handling the device must be able to consult the manual at any time. The manual must be handed over along with the device when the device is sold.

1.1 Key to the symbols

✓ This check mark indicates a prerequisite that must be fulfilled before a task can be carried out.

1. These numbered items list all the steps making up a task.

1.1.1 Safety information

DANGER

Red signal bar and the signal word DANGER

Hazard with a high degree of risk, resulting in death or serious injury if not avoided.

WARNING

Orange signal bar and the signal word WARNING

Hazard with a high degree of risk that may result in death or serious injury if not avoided.

CAUTION

Yellow signal bar and the signal word CAUTION

Hazard with a low degree of risk that may result in minor injuries if not avoided.

1.1.2 General information

IMPORTANT

Blue signal bar and the signal word IMPORTANT

Instructions on how to avoid damage to property. These instructions are not related to potential physical injuries.

INFORMATION

This info box contains general information and tips for using the device.

1.2 Figures

The illustrations in this manual are given by way of example. Differences between a technical illustration and the actual state of affairs are therefore possible.

The text contains a reference to an illustration with the item number in brackets: (Fig. 2/**4**) refers to Item **4** in Figure 2.

Representation

The illustrations of these instructions show the devices without an adapter. Devices with adapters deviate accordingly from the illustrations.

2 SAFETY INFORMATION

The AWG Inductors Z2, Z4 and Z8 are in line with the state of the art as well as the recognised safety regulations. The safety and health protection requirements have been met. Nevertheless, their use may give rise to hazards for the user or third parties or cause damage to the device itself or other material assets.

2.1 General safety notes

- The device may only be operated in accordance with these instructions and in perfect condition.
- The operators must have received the necessary training to be able to handle the device properly.
- Unauthorized modifications or the installation of additional components not approved by the manufacturer endanger the proper functioning of the device.
  - Modifications to the device are prohibited
  - Only use accessories approved by the manufacturer
- The operator is responsible for safety in the vicinity of the device, in particular for compliance with the general safety regulations. This includes ensuring, before switching on the entire extinguishing system, that all protective devices are fully in place and functional.

2.2 Safety during operation

- Observe all safety rules and protective measures applicable for use at the place of use.
- Make sure the device does not get damaged during transport, installation, commissioning, operation or maintenance.
- The safety regulations laid down in the country-specific service regulations for firefighters (for example in Germany the Feuerwehrdienstvorschrift FwDV) or the corresponding internal company regulations must be observed.

2.3 Qualifications of the operators

Persons handling or using an AWG Inductor Z2, Z4 or Z8 must be technically qualified and trained. They must be aware of all risks involved in handling the device.

The inductors may only be used by persons who have been trained and instructed in the operation of the device in accordance with the country-specific fire service regulation (in Germany: FwDV) or corresponding internal company regulations.

Different qualifications are required for personnel performing the different types of activity.

Instructed personnel:
Transport / use / cleaning as well as "Basic" functional testing

Technical personnel:
Maintenance as well as "Standard" and "Advanced" functional testing

2.4 Personal protective equipment

When using the AWG Inductors, personal protective equipment must be worn, in accordance with the country-specific fire service regulation (e. g. in Germany: FwDV) or with internal company regulations, in action.

3 DESCRIPTION

3.1 Function

The AWG Inductors are used to feed liquid foam concentrates into a hose line. The inductors are intended for connection to foam branch pipes in accordance with DIN EN 16712-3, used to produce low or medium expansion foam.

The main amount of the water entering at high speed through the suction chamber generates through the Venturi principle a negative pressure, which causes the foam concentrate to be aspirated via a Storz D-coupling.

The required admixing rate is chosen by rotating the setting scale of the admixing rate control.

A non-return valve in the suction inlet prevents ingress of water into the foam line when the foam nozzle is closed.

3.2 Intended use

- Use in an extinguishing system for fighting fires of fire class A
- Fire class B: Use in an extinguishing system for fighting fires involving non-polar liquids, e.g. petrol and oil, as well as fighting fires involving polar liquids
- Aspiration of synthetic multi-grade foam agents
- Aspiration of additives

Only use the device in technically sound condition and in accordance with the intended purpose and with safety and potential dangers in mind.

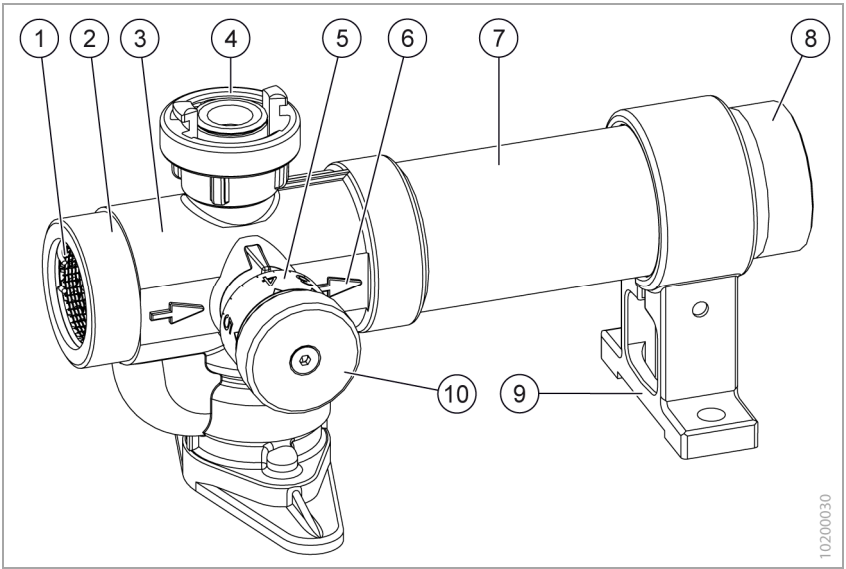
3.3 Foreseeable misuse

- Use of unsuitable foam agents or additives
- Conversion or modification
- Operation in technically unsound condition
- Operation outside the approved characteristic values
- Fitting of accessories that are not approved or not suitable for the operating conditions

3.4 Characteristic values

	Z2	Z4	Z8
Flow rate at 5 bar	200 l/min	400 l/min	800 l/min
Max. operating pressure	16 bar (PN16)		
Admixing rate	Z2, Z4: 0.5 / 1 / 2 / 3 / 4 / 5 / 6 % Z8: 1 / 2 / 3 / 4 / 5 / 6 %		
Operating temperature	-20 °C to +60 °C		

3.5 Overview



1	Screen (depending on the model)	**6**	Arrow indicating flow direction
2	Inlet side thread	**7**	Tube
3	Nozzle body	**8**	Outlet side thread
4	Suction device	**9**	Tube base stand
5	Setting scale	**10**	Setting sleeve

Fig. 1 Overview AWG Inductors Z2, Z4 and Z8

Versions

ID No.	Type 'L'	Connection	Dimensions [mm]			Weight [kg]
			L	W	H	
202 014 33	Z2	BSP G2" (male)	288	135	152	1.7
605 260 33	Z2	Storz 52 (C)	356	140	152	2.2
202 015 33	Z4	BSP G2" (male)	288	135	152	1.7
605 261 33	Z4	Storz 75 (B)	355	140	152	2.6
605 536 33	Z4	Storz 52 (C)	356	140	152	2.2
202 016 33	Z8	BSP G2" (male)	288	135	152	1.7
605 262 33	Z8	Storz 75 (B)	355	140	152	2.6

ID No.	Type 'S'	Connection	Dimensions [mm]			Han-dle	Weight [kg]
			L	W	H		
200 193 95	Z2	Storz 52 (C)	370	165	175	■	4.6
201 684 95	Z2	Storz 52 (C)	370	165	170		4.3
602 275 95	Z2	BSP G2" (male)	305	165	175	■	3.7
603 211 95	Z2	BSP G2" (male)	305	165	170		3.4
200 194 95	Z4	Storz 52 (C)	370	165	175	■	4.2
201 685 95	Z4	Storz 52 (C)	370	165	170		4.3
201 773 95	Z4	BSP G2" (male)	305	165	170		3.8
602 276 95	Z4	BSP G2" (male)	305	165	175	■	4.1
603 055 95	Z4	Storz 75 (B)	370	165	175	■	4.9
603 373 95	Z4	Storz 75 (B)	370	165	170		4.6
201 974 95	Z8	BSP G2" (male)	305	165	170		3.8
602 507 95	Z8	Storz 75 (B)	370	165	170		4.8

This table lists the common Storz adapters.

Versions without adapters are marked "Anschluss BSP" (British Standard Pipe thread). These devices are equipped with a pipe thread in accordance with ISO 228 that can be used to mount further adapter systems.

For versions not listed in the table, the values for the BSP connection apply; the respective adapter system is not taken into account

Suction hose (accessory):
DN19 with D-coupling

4 DELIVERY, TRANSPORT, STORAGE

4.1 Delivery

The Inductor has been carefully packaged at AWG Fittings GmbH.

- After unpacking, check the delivery for damage and verify completeness.
- Any damage must be immediately reported to the carrier.
- If parts are missing, immediately inform the responsible specialist dealer or AWG Fittings GmbH.

The inductor is delivered ready to be connected and is immediately ready for use in an extinguishing system after connecting with a suitable adapter. No special commissioning is required before first use.

4.2 Transport in a vehicle, storage

✓ The inductor has run dry.

The inductor can be transported and stored in any position.

Especially during transport inside a vehicle, the inductor must not fall over. If necessary, secure the inductor using a belt. During transport, the inductor must not be damaged by other heavy equipment.

To ensure proper functioning, the inductor may only be stored in a clean condition.

5 USE

5.1 Notes

CAUTION

Attach adapters correctly

Danger of injury due to loosening of adapter connections.

– Always insert the adapters up to the stop and couple them fully.

WARNING

Hazards during use

The handling of foam agents or other additives can be hazardous to health.

– Wear personal protective equipment in accordance with fire service regulations.
– Always wear eye protection.

IMPORTANT

Foaming agent product information

Observe the information on health hazards and potential environmental hazards (e.g. water hazard class) provided in the safety data sheet and other product information for the foam agent used.

Use of different foam agents

Foam agents from different manufacturers and different products or types must not be mixed. Applied extinguishing foams are compatible without any problems.

Orientation of the inductor

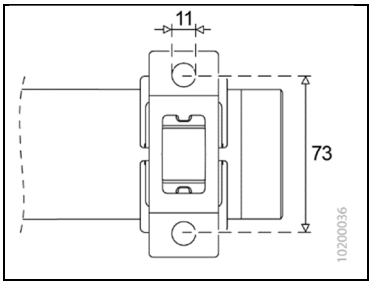
The suction function of the inductor is assured in any installation or operating position, including vertical or overhead.

When used overhead or in lying position, it must be made sure that pressure is applied to the inductor inlet all the time to enable the check ball to close, preventing water from being pressed into the foam agent container when the container is lower than the inductor.

Permanent installation

We recommend installing a DN20 stop valve between the adapter of the suction device and the foam agent container.

Support foot mounting holes:
2 x Ø 11 mm, clearance 73 mm.



Pressure loss in the inductor

The suction capability of the inductors is fundamentally based on a considerable pressure loss.

This pressure loss in the inductor depends on the counter pressure at the inductor outlet and is calculated as the hose friction plus the difference in height between the inductor and the foam nozzle.

Inductor inlet pressure

Optimum pressure ranges	Inductor inlet	Inductor outlet
Low expansion foam nozzle	8 bar – 9.5 bar	5 bar – 6 bar
Medium expansion foam nozzle	6 bar – 7 bar	3 bar – 4 bar

The pressure ratio between inductor inlet and outlet varies depending on the chosen suction rate.

Suction height of the foam agent

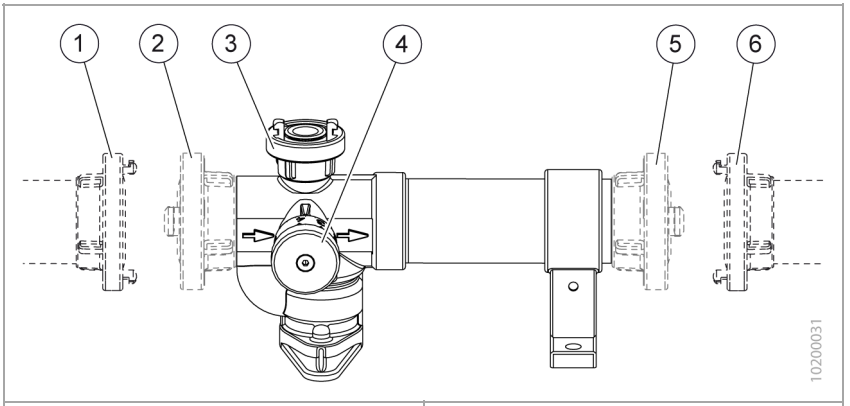
If the suction height of the foam agent is greater than approx. 1.5 m, the rates set at the metering valve are sometimes significantly undercut. This applies in particular to rates above 3 %.

Notes on metering rates

The specified metering rates are applicable for water-based foam agents or foam concentrates. The scale on the setting sleeve is calibrated for synthetic multi-grade foam agents.

Especially in the range of 0.1 to 0.5 %, the aspirated volume depends strongly on the viscosity of the foam agent. In view of this, the DIN 14384 standard allows, for up to 1 %, a large rate tolerance of 50 %. The scale on the setting sleeve thus only indicates a guide value.

5.2 Handling



1	Hose/pump adapter	**4**	Setting sleeve
2	Fixed coupling inlet side	**5**	Fixed coupling outlet side
3	Pick tube adapter	**6**	Hose/throw pipe adapter

Fig. 2 Handling

Foam nozzle flow rate

The connected consumer (foam nozzle or nozzle) must achieve a water flow rate of at least 200 (Z2), 400 (Z4) or 800 (Z8) litres per minute at 5 bar.

In the case of foam nozzles with significantly higher throughput, the throw distance or the admixing accuracy may be affected, the inductor aspirating generally.

In the case of foam nozzles or nozzles with lower throughput, no foam agent or additive is aspirated.

- ✓ An adapter from the pump or from the hose on the inlet side is present.
- ✓ The water hose for connection to the fixed coupling of the outlet side is ready at hand.
- ✓ The container with the required extinguishing foam or additive is ready at hand, and the pick tube is connected to the container.

Using the inductor

1. By hand or with the use of a coupling spanner, connect the adapter of the pump-side hose (Fig. 2/**1**) to the fixed coupling on the inlet side (Fig. 2/**2**).
2. By hand or with the use of a coupling spanner, connect the adapter of the tube-side hose (Fig. 2/**6**) to the fixed coupling on the outlet side (Fig. 2/**5**).
3. Adjust the setting sleeve (Fig. 2/**4**) to the required admixing rate.
4. Connect the pick tube to the inductor (Fig. 2/**3**) and insert it into the foam mixing container.
5. Connect and close the required foam nozzle.
6. Carefully fill the hoses with water and pressurise.
7. Open the foam nozzle and regulate the pressure at the pump until the required pressure (medium expansion foam 3 – 4 bar, low expansion foam 5 – 6 bar) is present at the foam nozzle.

Rinsing and uncoupling the inductor

1. Shut off the water supply.
2. Interrupt the supply of foam agent.
3. Open the water supply and the hand lever at the foam nozzle.
4. During rinsing, switch the setting sleeve through all settings in order to ensure that all internal suction bores are cleaned.

   Important Do not aspirate dirty water or foam concentrate to ensure that the suction holes do not get clogged.

5. As soon as only clear water and no more extinguishing foam emerges from the foam nozzle, close the hand lever. If necessary, perform multiple rinsing passes.

6. Shut off the water supply and, by hand or with the use of a coupling spanner, detach the input and output side couplings from the fixed couplings.

   Important Water may emerge when the coupling is released.

5.3 Visual inspection after each use

✓ The inductor is separated from the water supply.

✓ The inductor must not be contaminated with foam agent. If necessary, rinse the inductor again as described in the previous section.

1. Check the inductor and the pick tube (accessory) for visible damage.

   Important Do not continue to use damaged components! If you discover any damage, this must be reported to the person or department responsible.

6 FUNCTIONAL TEST

6.1 Prerequisites

All testing of the AWG Inductors Z2, Z4 and Z8 must be carried out in accordance with the manufacturer's technical documentation and must be documented if necessary.

The following inspections are defined for the inductors:

- Mandatory BASIC Inspection after each use
- Mandatory STANDARD Inspection every 12 months
- Optional ADVANCED Inspection every 12 months

The STANDARD and ADVANCED inspections may only be carried out by qualified personnel who have been trained for these inspections:

- Firefighters who have received training as firefighting equipment maintenance technicians or persons with equivalent qualifications
- Or, if desired, directly by the manufacturer

Inspection by the manufacturer

AWG Fittings GmbH offers an inspection as part of its service offering. Send us your inductor and you will receive the inspected device back by the agreed date. You will find a return delivery form on our website www.awg-fittings.com. If required, a rental device can also be provided.

Documenting the inspection result

To meet the requirements for occupational safety and accident prevention, the test results for each test must be documented. Please observe the country-specific regulations.

In Germany, the guidelines of the DGUV (Deutsche Gesetzliche Unfallversicherung e.V. [German Statutory Accident Insurance]) apply. A product specific test chart in accordance with the DGUV can be downloaded from www.awg-fittings.com

– Keep the documented test result as proof.

6.2 Performing the inspection

CAUTION

Performing the inspection safely

Some inspection steps are performed with pressurised systems.

– Observe the safety regulations.
– Wear personal protective equipment.
– Do not put other persons in danger.

6.2.1 BASIC Inspection after each use

1. Inspect the inductor for visible damage.
2. Check the pick tube (accessory) for contamination and damage.

6.2.2 STANDARD Inspection every 12 months

1. Leak test at 10 bar inlet pressure.

6.2.3 ADVANCED Inspection every 12 months

- Check the coupling torque of the Storz adapter:
  Threshold value Storz 52 (C): 1.5 Nm
  Storz 75 (C): 2.5 Nm

  If the coupling torque is below the applicable threshold value, the adapter must be replaced.
- Threaded version: Check the thread for heavy wear and tear. Replace device if worn.

7 MAINTENANCE

7.1 Inspection and maintenance

Apart from the visual inspection and cleaning of the AWG Inductors, no regular maintenance work is required.

7.2 Repair

Any repair work on the AWG Inductors may only be performed by the AWG Fittings GmbH customer service or by an authorised specialist workshop.

If you need technical support, please contact our Service Centre:

AWG Fittings GmbH
Service Centre
D-89177 Ballendorf
Telephone: +49 (0) 73 40 / 91 88 98 880
Email: awg-service@idexcorp.com

We will accept devices in need of repair or maintenance, discuss with you the quickest and cheapest solution, create cost estimates, take care of the execution of the repair work and are at your disposal for any questions.

7.3 Disposal

Observe the local regulations regarding proper waste recycling or disposal.

Materials	Type 'L'	Type 'S'
Body:	Polyoxymethylen (POM) plastic	Cast copper alloy
Tube, flange:	Cast aluminium, powder-coated in red	Aluminium, anodised
Nozzle body, setting sleeve:	Aluminium, black anodised	
Seals:	NBR	
Storz adapters:	Aluminium, anodised	

8 ACCESSORIES

Item	Designation	Article number
1	Pick tube D – DN 19, length 1.5 m	602 206 00

Fig. 3 Accessories

Anyone who saves lives and protects material assets every day must be able to rely on their tools. Many of you choose products from AWG and Alco.

Two brands that together offer one of the widest ranges of premium equipment for rescue services. An overview can be found on our website.

www.awg-fittings.com

AWG Fittings GmbH
Bergstr. 25 . D-89177 Ballendorf
Phone: +49 (0) 73 40 / 91 88 98 0
awg-info@idexcorp.com . www.awg-fittings.com

AWG Fittings GmbH, a unit of IDEX Corporation

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