ORIGINAL OPERATING MANUAL

TURBO NOZZLES EVO EN 15182-1 / EN 15182-2

TURBO NOZZLES EVO

Shut-off, flow-adjustable hollow nozzle for the discharge of extinguishing water in the form of a full jet and a spray jet with variable angle.

Can be used in electrical installations up to a nominal voltage of 380 kV.

FOREWORD

Applicable standards and regulations

The design and construction of the AWG turbo nozzles EVO was carried out in accordance with the relevant provisions laid down by these directives and the harmonised standards:

- DIN EN 15182-1:2019-11 | DIN EN 15182-2:2019-11
  Portable equipment for projecting extinguishing agents supplied by fire fighting pumps – Part 2: Combination branchpipes PN 16

Conversions and modifications

Unauthorised conversions or modifications to the turbo nozzles EVO 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.

Other relevant documents

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

The data sheet for these devices can be downloaded for information purposes from the Internet: www.awg-fittings.com

Copyright

This operating manual is valid for all AWG EVO series turbo nozzles.

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

CONTENTS

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 devices are shown in the illustrations with a Storz adapter. Devices without adapters or with other adapters will deviate from the illustrations.

2 SAFETY INFORMATION

The AWG turbo nozzles EVO described here 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, its 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 instructions

- 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 using the device, 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 fire-fighters (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 the turbo nozzle EVO must be technically qualified and trained. They must be aware of all risks involved in handling the device.

The turbo nozzle EVO 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 turbo nozzle EVOs, 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.

3 DESCRIPTION

3.1 Function

With the AWG turbo nozzles EVO, a full jet or a spray jet from 0° to 120° can be generated at a selectable flow rate.

The extinguishing agent discharge is started and stopped with the hand lever.

By turning the nozzle head (jet form sleeve) the spraying angle is changed between full jet and the different settings for the spray jet.

Full jet — If the jet pipe head is in the full jet position, a focused jet with a long throwing distance and corresponding mechanical penetration force of the water flow is achieved.

Spray jet — In the other positions of the nozzle head, an atomised spray jet covering an area is generated. The spectrum ranges from a concentrated spray pattern to a wide filled spray cone.

Rinsing — In this position, dirt particles can be removed from the nozzle in the direction of flow.

For models with a fixed sprocket in the jet form sleeve, the sprocket ensures a filled spray cone by reflecting the water droplets. With models without a fixed sprocket, no water droplets are reflected, a hollow conical spray is created (hollow jet).

The turbo wheel (optional), which rotates quickly in the spray jet, is used for fine atomisation of the spray jet.

Extinguishing foam can be produced with an optional foam attachment.

With the optional FIRE-EX Turbo 1000 wetting agent cartridge, wetting agent is generated directly in the hollow nozzle and applied with the turbo nozzle EVO.

3.2 Intended use

- Fire-fighting with both full jet and spray jet
- When used with foam agent (with foam attachment accessory): fighting fires involving non-polar liquids (petrol, oil)

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

- Conversion or modification
- Operation in technically unsound condition
- Operation outside the approved characteristic values
- Fitting of spare parts or accessories that are not approved or not suitable for the operating conditions
- Placing the nozzle in direct fire, embers or on hot surfaces

3.4 Characteristic values

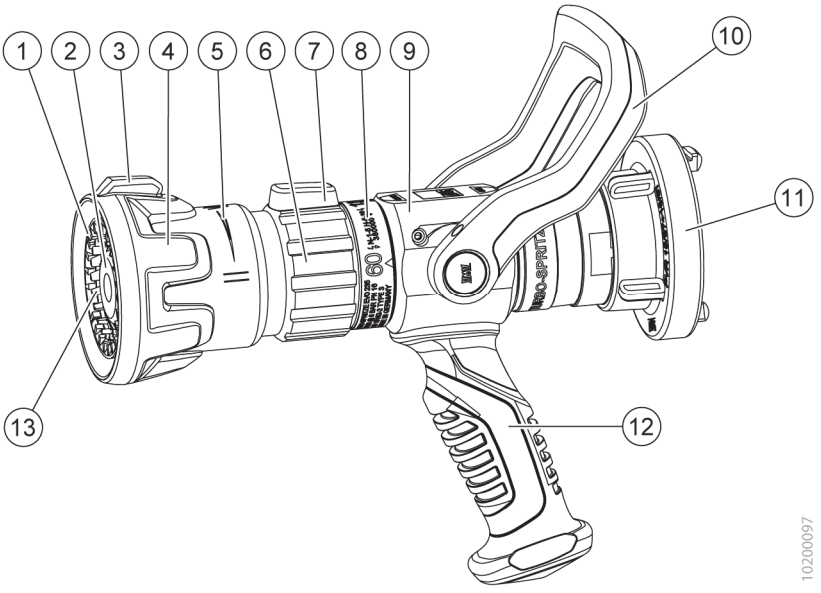
Designation	Reference / nominal pressure	Flow rate grid * at reference pressure	Spray angle
Turbo nozzle EVO 130	6 / 16 bar	40/80/130	0° – 120°
Turbo nozzle EVO 235	6 / 16 bar	60/130/235	0° – 120°
Turbo nozzle EVO 400	6 / 16 bar	130/235/400	0° – 120°
Turbo nozzle EVO 750	6 / 16 bar	360/550/750	0° – 120°
Turbo nozzle EVO 950	6 / 16 bar	550/750/950	0° – 120°

* The flow rate grid designates the flow rate in [l/min] at the reference pressure in the specified grid steps of the turbo nozzle EVO.

Test certificates

Certificates of conformity for the turbo nozzle EVO are available from an independent testing institute.

3.5 Overview



1 Fixed toothed ring (optional)	**8** Flow rate scale
2 Valve plate	**9** Housing
3 Protection ring pointer	**10** Hand lever
4 Protection ring	**11** Fixed coupling
5 Jet form sleeve scale	**12** Hand grip
6 Flow rate of adjusting sleeve	**13** Turbo wheel (optional)
7 Flow rate pointer	

Fig. 1 Overview of turbo nozzle EVO (example)

4 DELIVERY, TRANSPORT, STORAGE

4.1 Delivery

The turbo nozzle EVO 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 packaging material is recyclable, please dispose of it in an environmentally-friendly manner.

Turbo nozzles EVO with a mounted coupling are ready for connection and immediate use. For turbo nozzle EVO with a threaded connection, a suitable coupling must be fitted by the dealer or customer before commissioning.

4.2 Transport in a vehicle, storage

✓ Turbo nozzle has run dry.

The turbo nozzle EVO can be transported and stored in any position.

Especially during transport in a vehicle, the turbo nozzle EVO must not move around. If necessary, secure the turbo nozzle EVO using a belt. During transport, the turbo nozzle EVO must not be damaged by other heavy equipment.

To ensure proper functioning, the turbo nozzle EVO may only be stored in a clean condition. The turbo nozzle EVO must not be stored constantly pressurised with water.

We recommend open storage so that any residual water can drain off and the seal of the shut-off unit is relieved.

5 USE

5.1 Notes

WARNING

Hazards during use

The handling of foam agents can be hazardous to health.
The strength of the water jet can be dangerous.

– Wear personal protective equipment in accordance with country-specific fire service regulations.
– Always wear eye protection.
– Do not point it at people or animals.

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.

CAUTION

Reaction forces

Depending on the inlet pressure, reaction forces may occur during operation.

– Safe handling must be ensured. If necessary, the nozzle must be held by several persons (see country-specific fire service regulations).
– Increased recoil forces can occur especially when switching to the flushing position.

IMPORTANT

Product information for foam concentrates

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 concentrates used.

Use of different foam concentrates

Note the compatibility of different foam concentrates.

Hand grip

The turbo nozzle EVO can be operated without a handle (description of assembly/disassembly in Chapter 7.2). The function of the nozzle is not affected.

With turbo nozzles EVO from Q_{min} = 500 l/min, the continuous M6 threaded hole must be closed with a M6x6 threaded pin and glued in tightly. If the threaded holes are not drilled through, screw in a threaded pin as protection against contamination.

Extinguishing in electrical installations / rated voltage up to 380 kV *

If the control distances according to DIN VDE 0132, Table 3: guideline values H-5-10, are adhered to, a full jet of water from the turbo nozzle EVO in the highest flow position has sufficient resistance according to DIN VDE 0132 to prevent a voltage flash-over at high voltages of up to 380 kV.

For low voltage up to 1 kV, the guide values N-1-5 must be observed.

* Test report of an accredited test laboratory according to DIN EN ISO/IEC 17025 is available

Distances according to DIN VDE 0132, Table 3

Nozzle DIN 14365-CM	Low voltage (N) ≤ AC 1 kV or ≤ DC 1.5 kV	High voltage (H) > AC 1 kV or > DC 1.5 kV
Spray jet	1 m	5 m
Full jet	5 m	10 m
Letter symbol	N-1-5	H-5-10

WARNING

Danger from electric shock

The use on live electrical installations can result in life-threatening electric shock.

– When extinguishing in electrical installations, observe the prescribed control distances and guideline values as well as the flow position.
– Only use foam agents when electrical systems are disconnected.

5.2 Handling

Required inlet pressure

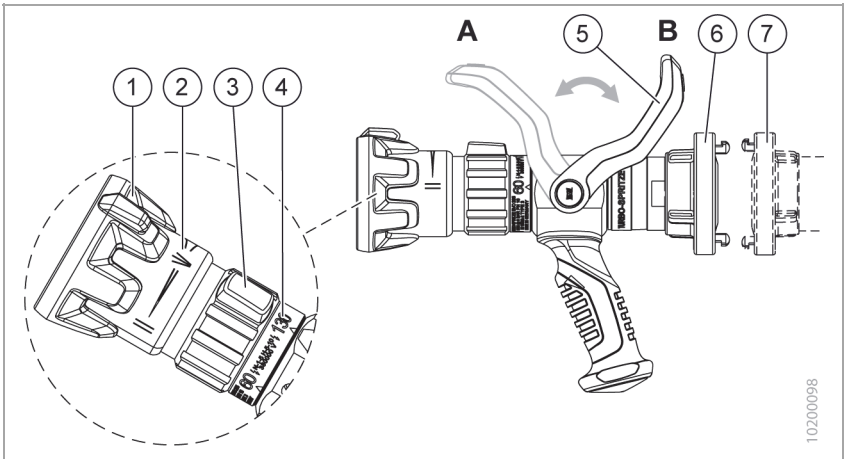
At an inlet pressure below the reference pressure of 6 bar, the flow rates indicated on the nozzle are not achieved

Ensure a sufficient flow rate and inlet pressure for the respective extinguishing situation.

✓ The water hose for connection to the fixed coupling of the turbo nozzle EVO is ready at hand.

✓ The hand lever is closed (Fig. 2/**A**).

✓ When used with foam agent: The inductor and foam attachment are mounted.



1 Protection ring	**5** Hand lever
2 Jet form sleeve scale	**6** Turbo nozzle EVO fixed coupling
3 Flow rate of adjusting sleeve	**7** Water hose adapter
4 Flow rate scale	

Fig. 2 Handling

Coupling the turbo nozzle EVO and adjusting the flow rate

1. By hand or with the use of a suitable coupling spanner, attach the coupling of the water hose (Fig. 2/**7**) to the coupling on the turbo nozzle EVO (Fig. 2/**6**).
2. Set the adjusting sleeve (Fig. 2/**3**) to the desired flow rate (Fig. 2/**4**).

   The pointer is in the middle position at the top, on the right (2 o'clock position) for the small flow rate and on the left (10 o'clock position) for the large flow rate.

   Attention: Turn the adjusting sleeve anti-clockwise beyond the maximum position to set the flushing position. The pointer is at the bottom (7 o'clock position). Do not use the flushing position in the extinguishing insert unintentionally. The flushing position is clearly visible through several detent points.
3. Open the water supply.

   The turbo nozzle EVO is ready for use.

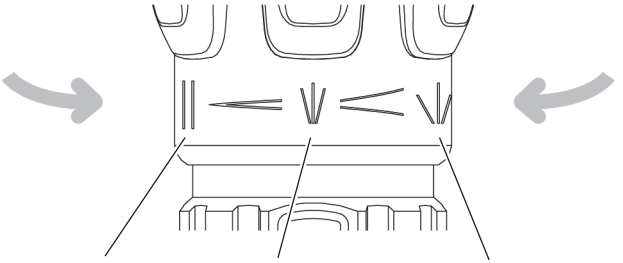
Opening the turbo nozzle EVO and starting the extinguishing agent discharge

1. Point the turbo nozzle EVO at the source of the fire.
2. Pull the hand lever (Fig. 2/**5**) back towards yourself in the OPEN (Fig. 2/**B**) position.

   The extinguishing agent discharge is started. As soon as the hand lever is moved forward again to the CLOSED (Fig. 2/**A**) position, the extinguishing agent discharge stops.

Varying the spray angle

1. By turning the protection ring (Fig. 2/**1**) you can switch between full and spray jet during use:



The three positions are audibly and clearly noticeably fixed by locking in place.

Close the turbo nozzle EVO

1. Push the hand lever (Fig. 2/**5**) forward to the CLOSED (Fig. 2/**A**) position away from the body.

Flushing out the turbo nozzle EVO

1. Close the turbo nozzle EVO (CLOSED position).
2. When using foam concentrates, interrupt their supply.
3. Turn the adjusting sleeve (Fig. 2/**3**) into the flushing position (turn the adjusting sleeve beyond the maximum position to the 7 o'clock position).
4. Open the turbo nozzle EVO (OPEN position).

   The flushing position can be noticed when the turbo nozzle EVO rattles. Dirt particles up to 5 mm diameter are rinsed out.

Perform multiple flushes if necessary.

Flushing process during use

A flushing process may also be necessary during use if dirt particles get into the turbo nozzle EVO. This can be recognised by an uneven, disturbed spray pattern.

In this case you can switch directly to the flushing position:

– Turn the adjusting sleeve into the flushing position and flush it out for as long as necessary.

Attention: Only rinse if the situation in use allows it (observe self-protection).

Uncouple the turbo nozzle EVO

1. When using foam concentrates, interrupt their supply.
2. Close the hand lever and the water supply.
3. Open the turbo nozzle EVO to reduce the pressure.

   Attention When you open the turbo nozzle EVO, water comes out.
4. By hand or with the use of a coupling spanner, release the coupling of the water hose (Fig. 2/**7**) to the fixed coupling on the turbo nozzle EVO (Fig. 2/**6**).

   Attention Water may emerge when the couplings are released.

5.3 Visual inspection after each use

✓ The turbo nozzle EVO is separated from the water supply.

✓ The turbo nozzle EVO must not be contaminated with foam agent. If necessary, flush the turbo nozzle EVO again as described in the previous section.

1. Check the turbo nozzle EVO and, in particular, the toothed ring and the valve plate on the nozzle head for visible damage.

   Attention If you discover any damage, this must be reported to the person or department responsible.
2. Check that the hand lever as well as the adjusting sleeve and the nozzle head of the turbo nozzle EVO can be operated (unpressurised).

6 FUNCTIONAL TEST

6.1 Prerequisites

All testing of the AWG turbo nozzle EVO 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 turbo nozzle EVO:

- 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:

- Fire-fighters who have received training as fire-fighting 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 the turbo nozzle EVO, and you will receive the inspected device back at 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. For Germany you will find a test chart in accordance with the DGUV (German statutory accident insurance) requirements as download 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.
– Put on personal protective equipment.
– Do not put other persons in danger.

6.2.1 BASIC Inspection after each use

1. Check the turbo nozzle EVO for visible damage.
2. Check the toothed ring and valve plate on the nozzle head for contamination and damage.
3. Check that the hand lever can be operated (unpressurised).
4. Check that the nozzle head and the adjusting sleeve can be operated.
5. Check whether the nozzle inlet can be freely rotated through 360°.

6.2.2 STANDARD Inspection every 12 months

1. Functional test of the hand lever under dynamic load at 10 bar inlet pressure.
2. Leak test at 10 bar inlet pressure (hand lever in closed position).
3. Check the toothed ring and valve plate on the nozzle head for damage.

6.2.3 ADVANCED Inspection every 12 months

› Check the coupling torque of the Storz adapter:
Threshold value Storz 25 (D): 1.5 Nm
Storz 52 (C): 1.5 Nm
Storz 75 (B): 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.

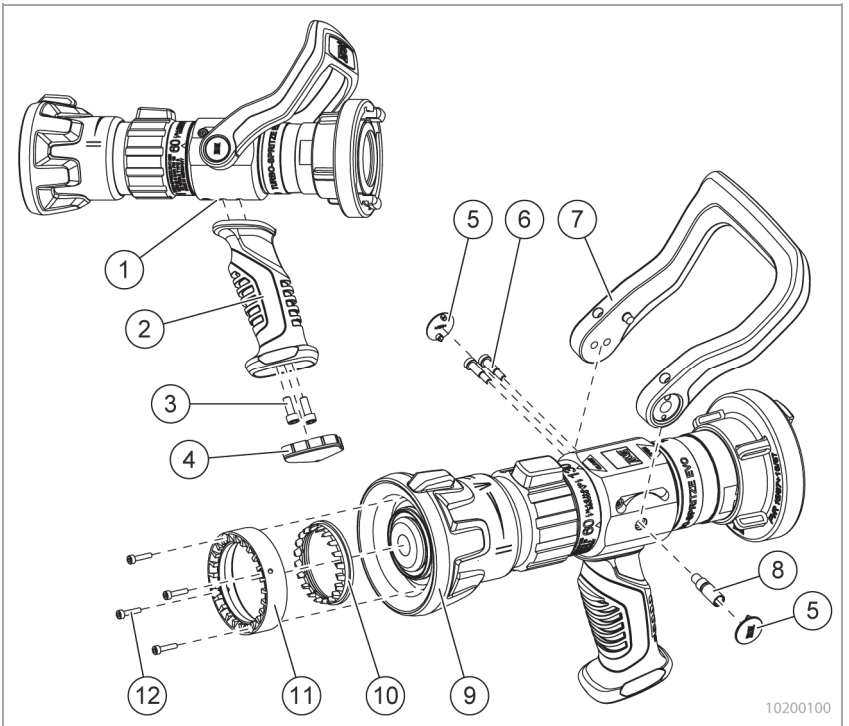
7 MAINTENANCE

7.1 Inspection and maintenance

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

If the shut-off device is hard to operate, lubricate the ball valve with a fully synthetic grease for food technology (e.g. OKS 479).

7.2 Repair



1	Threaded holes	**7**	Hand lever
2	Hand grip	**8**	Threaded pin
3	Cylinder screws	**9**	Protection ring
4	Lid	**10**	Turbo wheel
5	Screw caps	**11**	Toothed ring
6	Cylinder screws	**12**	Cylinder screws

Fig. 3 Replacing the handle and hand lever

Replacing the handle

1. Remove the cover (Fig. 3/**4**) on the handle; this will damage the cover.
2. Unscrew the two cylinder screws (Fig. 3/**3**) and remove the handle (Fig. 3/**2**). Clean the housing if necessary.
3. Insert a cylinder screw into the borehole of the new handle, position the handle on the corresponding threaded hole of the housing (Fig. 3/**1**) and screw it tight.
4. Insert and tighten the second cylinder screw.
5. Insert the cover in the correct position into the new handle.

Replacing the hand lever

1. Remove the screw caps (Fig. 3/**5**), this will damage the caps.
2. Unscrew the threaded pin (Fig. 3/**8**) and the cylinder screws (Fig. 3/**6**).
3. Remove the control lever (Fig. 3/**7**) and clean the valve housing if necessary.
4. Position the control lever in the correct position on the valve housing and screw it tight on one side with the threaded pin (Fig. 3/**8**).
5. Apply a medium-strength screw locking agent to the cylinder screws (Fig. 3/**6**), insert the cylinder screws and tighten them.
6. Insert new screw caps (Fig. 3/**5**).

Replacing the turbo wheel and toothed ring

1. Unscrew the four cylinder screws (Fig. 3/**12**).
2. Remove the toothed ring (Fig. 3/**11**) and the turbo wheel (Fig. 3/**10**) from the protection ring (Fig. 3/**9**).
3. Clean the protection ring if necessary and check for visible damage.
4. First insert the protective ring, then the turbo wheel and the toothed ring. Apply a medium-strength screw locking agent to the cylinder screws (Fig. 3/**12**), insert the cylinder screws and tighten the toothed ring.

All other repair work on the AWG turbo nozzle EVO 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

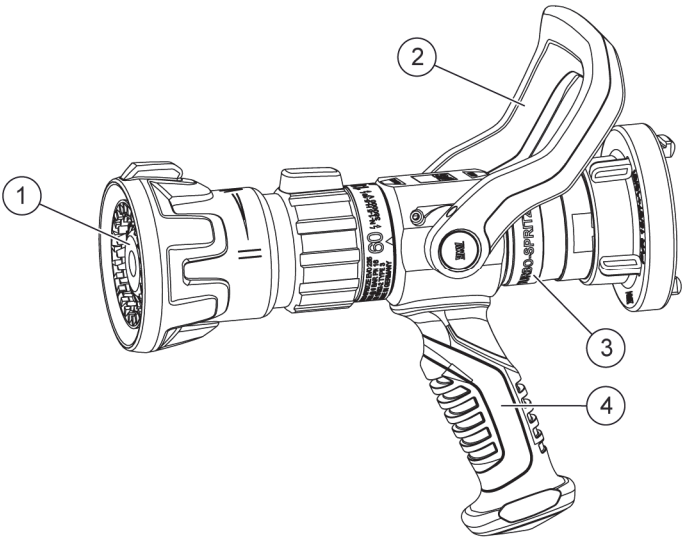
Observe the local regulations regarding proper waste recycling or disposal.

Materials

Nozzle body, stop valve:	Aluminium, anodised
Coupling:	Anodised aluminium, brass or aluminium
Hand lever, handle:	PA
Seals:	NBR
Protection ring:	EPDM

8 ACCESSORIES / SPARE PARTS

The following repair kits and parts are available:



Item	Designation	Article number
1	Turbo wheel and toothed ring repair kit (only turbo nozzles EVO 235 and EVO 400)	62061299
2	Repair kit for turbo nozzle EVO control lever	62089099
3	Turbo nozzle EVO coloured clip kit	62088799
4	Repair kit for turbo nozzle EVO handle	62088499

Fig. 4 Spare parts and 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.

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