

**EASY!Force trigger gun,
rotary knob, spray lance
Service Manual**



Contents

Preface	3
Safety instructions	3
Hazard levels	3
Description in this service manual	4
Service groups	4
Functional group structure	4
Textual description	4
Technical Features	5
Gun (EASY!Force)	5
Rotating regulator	5
Ray tube	5
HP hose	5
Intended use	5
Field of application	5
Safety installations	6
Lock trigger gun	6
Safety lever	6
Overview of the appliance	7
Hand spraygun	7
Ray tube	7
Rotating regulator	8
AB Service group setup	9
010 Safety information	9
020 Overview	9
Hand spraygun	9
Ray tube	9
Rotating regulator	9
030 Function	10
Hand spraygun	10
Pressure and volume regulation	12
040 Service activities	14
ABKS Uninstalling / installing the node piece	14
ABKT Uninstalling / installing the ball bearing spray lance	15
ABKU Uninstalling / installing casing rotary knob	15
050 Maintenance and inspection	16
Overview lubricating points	16
Setting the trigger clearance	17
060 Error diagnosis	17
070 Peculiarities/ others	17
Adapter concept for connecting the new and old accessories	17
Technical Documentation	19

Preface

Good service work requires extensive and practice-oriented training as well as well-structured training materials. Hence we offer regular basic and advanced training programmes covering the entire product range for all service engineers.

In addition to this, we also prepare service manuals for important appliances - these can be initially used as instruction guides and later on as reference guides.

Apart from this, we also regular information about product enhancements and their servicing.

If you should require supplements, have corrections or questions regarding this document, please address these citing the following subject to:

international-service@de.kaercher.com

Subject: **Case 120738**

The responsible product specialist will take care of your issue.

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Safety instructions

Service and maintenance tasks may only be performed by qualified and specially trained specialists.

Observe safety information in the chapters!

⚠ DANGER

Prior to all work on the appliance, switch off the appliance and pull the power plug.

⚠ CAUTION

Risk of damage by electrostatic discharge (ESD)! Take suitable measures for discharging electrostatic charge prior to performing work on the appliance electronics.

⚠ DANGER

Risk of injury! When adjusting the pressure/quantity regulation, make sure that the screw connection of the spray lance does not become loose.

⚠ DANGER

Risk of injury and scalding! Prior to dismantling the accessories (removing the nozzles etc.), depressurise the device and allow it to cool down (cold water mode).

⚠ DANGER

Risk of injury!

- *The lever of the hand spray gun must not be locked during the operation.*
- *The safety lever must not be jammed during the operation.*
- *Hold the hand spray gun and the spray pipe firmly with both hands.*
- ➔ **Check the interfaces to ensure that they are seated firmly and are leak-proof.**
- ➔ **Secure the trigger gun with the locking slide when work is interrupted (long pauses, removing the nozzles, etc.).**

Hazard levels

⚠ DANGER

For an immediate danger which can lead to severe injuries or death.

⚠ WARNING

For a possibly dangerous situation which could lead to severe injuries or death.

⚠ CAUTION

For a possibly dangerous situation which can lead to minor injuries or property damage.

ATTENTION

Pointer to a possibly dangerous situation, which can lead to property damage.

Note

Indicates useful tips and important information.

Description in this service manual

Service groups

Example:

Install/uninstall ANRA wheel axle

AN	RA	Install/uninstall wheel axle
Service group	Component	Activity

Functional group structure

010	Safety instructions
020	Overview
030	Function
040	Service activities
050	Maintenance and inspection
060	Error diagnosis
070	Peculiarities/ others
080 - 100	Not assigned

Textual description

→ Instruction

■ *Preparatory operations*

1

2 Key numerical

A

B Key alphanumerical

– Enumeration / General list

⚠ **Safety note**

Pointer to hazards, sources of errors.

Technical Features

- Trapezoidal thread (EASY!Lock) - fast thread - opening/closing with one turn.
- **Note**
This is a special thread. No tool available for recutting the thread.
- New accessories in a grey colour, old accessories are black.
- TR22 thread replaces the previous M22x1.5.
- TR20 thread replaces the previous M18x1.5.
- Adapter concept for connecting the new and old accessories is available.
- Hot water and cold water guns
- Adjustable pressure and water quantity
- Easier operation of the trigger

Gun (EASY!Force)

- A clearance setting is required after the node piece, handle bowls, locking slide or trigger have been replaced.
- Repair is an option, because the node piece and various spare parts are available.
- TR EH 60 gun - series for high-pressure devices, not available as a spare part.
- Trapezoidal thread
- EASY!Hold
- max. temperature 60 °C
- max. 300 bar
- Sealing material: valve seat and valve ball made of steel.
- Yellow trigger.
- EASY!Force gun - series for high-pressure hose devices.
- Trapezoidal thread
- EASY!Hold
- max. temperature 155 °C
- max. 300 bar
- Sealing material: valve seat and valve ball made of ceramic.
- Yellow trigger with black soft-grip.

Rotating regulator

- Designed for three different flow volumes.
- Sealing for the gun using a yellow, Teflon-coated quad ring.
- Ceramic sealing discs were taken from previous designs.

Ray tube

- Sealing for the gun or rotary knob using a yellow, Teflon-coated quad ring.
- Rotatable design in various lengths.
- New type of nozzle attachment and mounting for accessories.
- Additional handle as an option.

HP hose

- Rotatable connection in some versions. Recognisable by the yellow kink protection.
- Sealing using black O-rings 10x2mm.

Intended use

- Cleaning of: Machines, Vehicles, Structures, Tools, Facades, Terraces, Gardening tools, etc.
- Never leave the appliance unattended as long as it is in operation.

⚠ Danger

Risk of injury! Follow the respective safety regulations when operating at gas stations or other dangerous areas.

Field of application

This service manual describes the appliance family:

- EASY!Force trigger gun
- Spray lance
- Rotating regulator

Safety installations

Safety devices serve to protect the user and must not be rendered in operational or their functions bypassed.

Observe safety information in the chapters!

Lock trigger gun

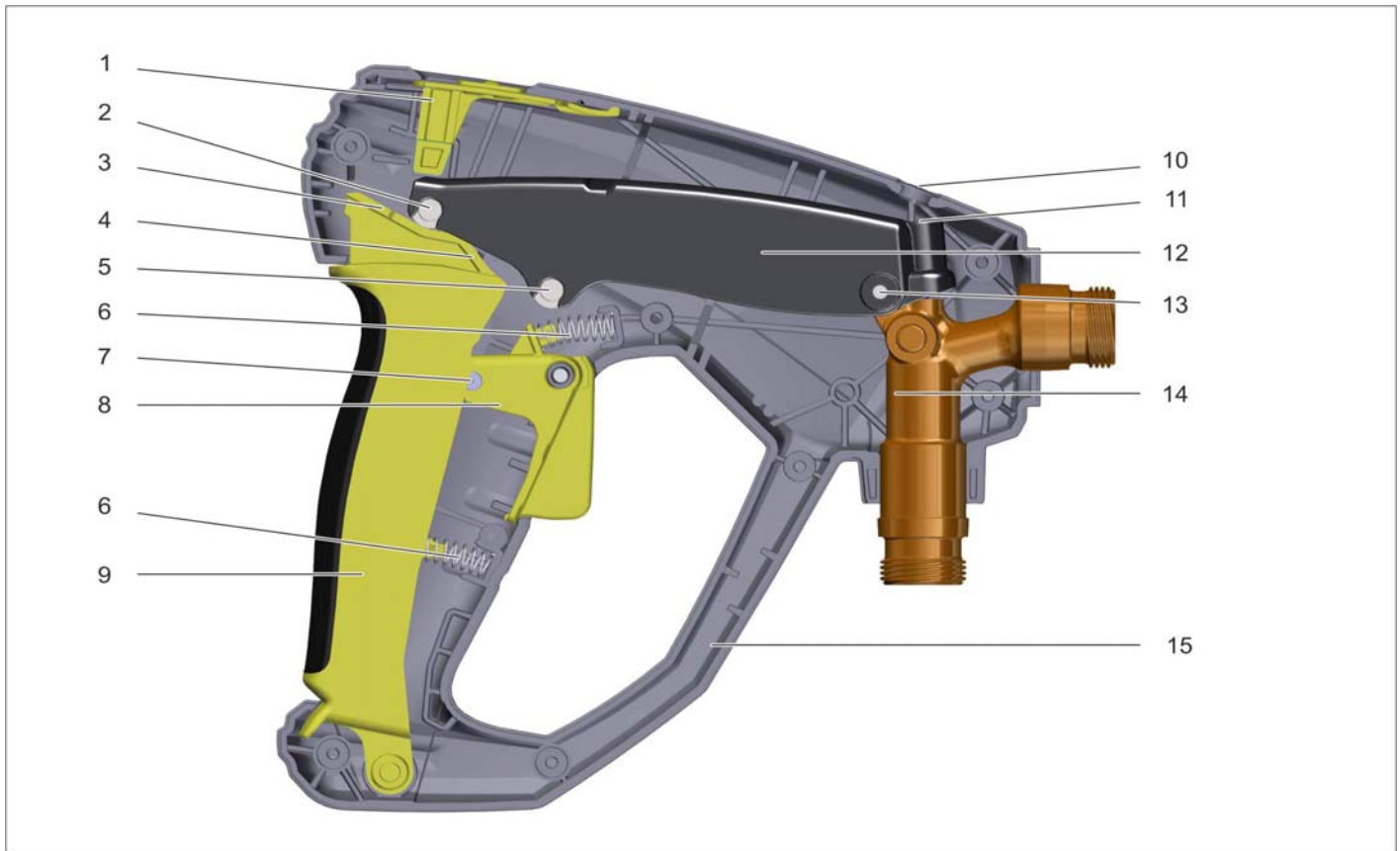
The slide blocks the lever for the trigger gun. This prevents the high-pressure jet from accidentally discharging and the device from starting.

Safety lever

The safety lever locks the trigger gun when it is closed and must be actuated each time it is opened.

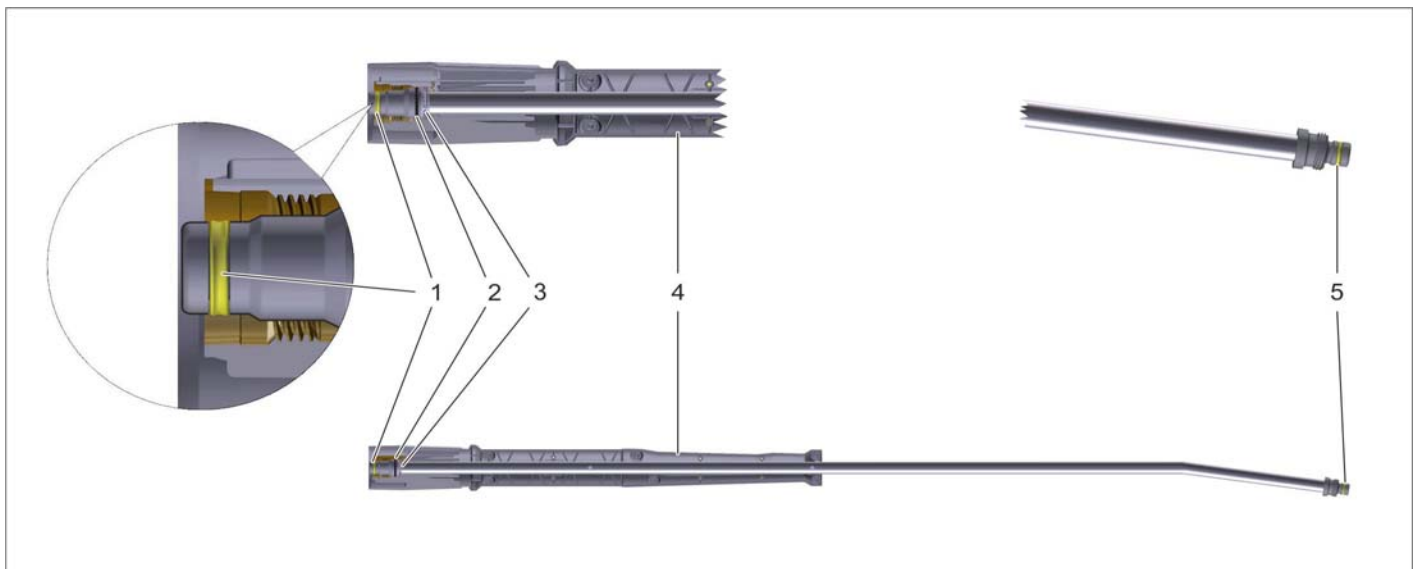
Overview of the appliance

Hand spraygun

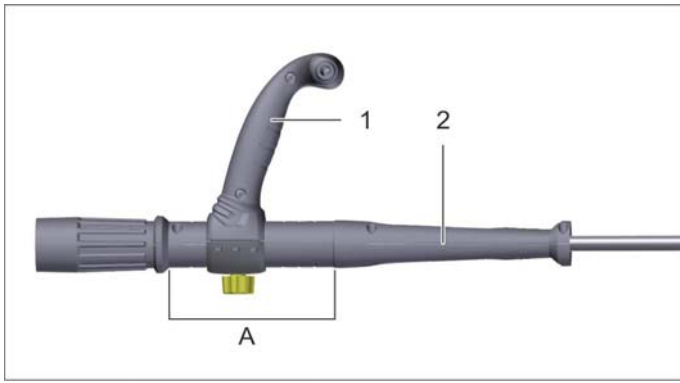


- 1 Locking slide
- 2 Roller 1
- 3 Rolling surface for opening pressure
- 4 Rolling surface for operating pressure
- 5 Roller 2
- 6 Spring
- 7 Roller 3
- 8 Safety lever
- 9 Trigger
- 10 Stopper
- 11 Adjustment screw for trigger clearance
- 12 Lever
- 13 Cylinder pin
- 14 Node piece
- 15 Casing

Ray tube

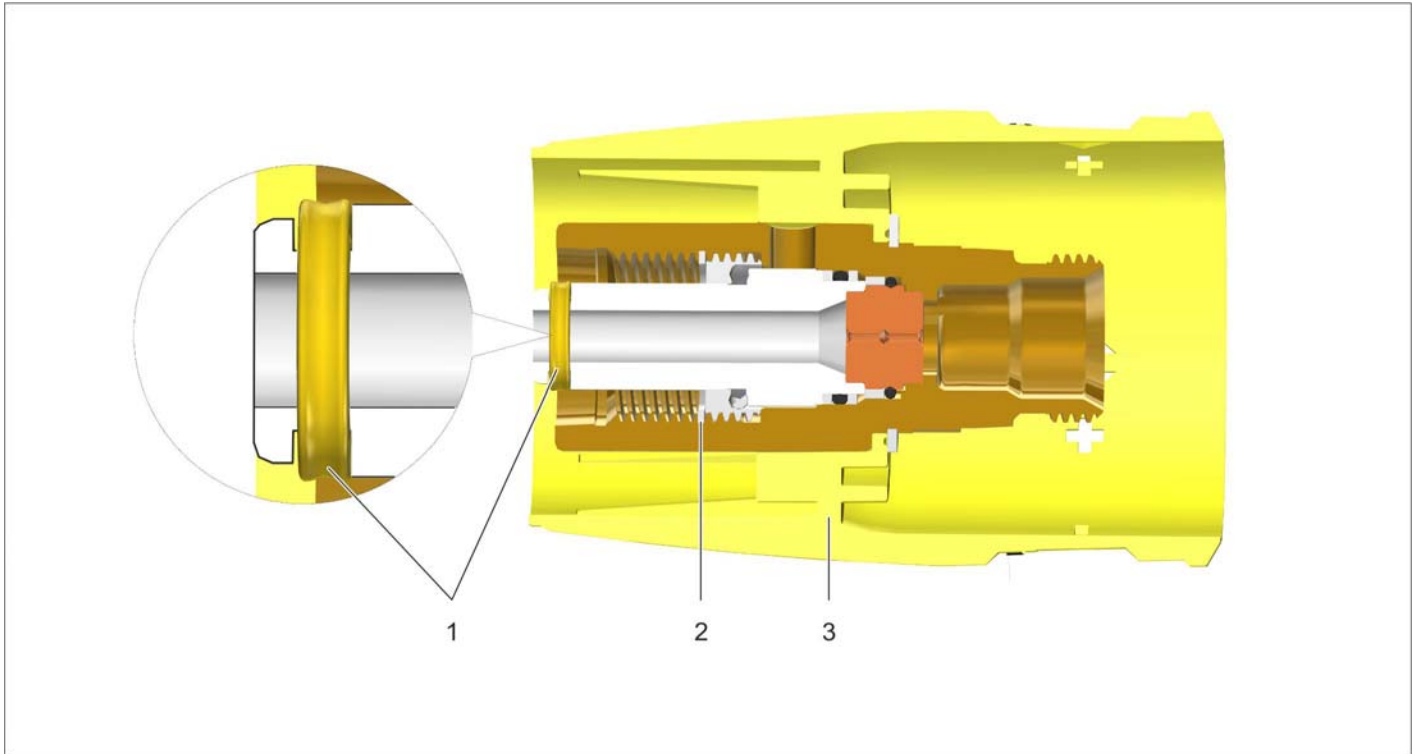


- 1 Quad ring yellow
- 2 O-ring for dust protection
- 3 Ball bearing
- 4 Casing
- 5 O ring yellow



- 1 Optional handle
- 2 Spray lance
- A Mounting area

Rotating regulator



- 1 Quad ring
- 2 Safety ring
- 3 Casing

AB Service group setup

010 Safety information

⚠ WARNING

Disconnect the gun from the connection hose prior to starting work.

Observe general safety information!

020 Overview

Hand spraygun



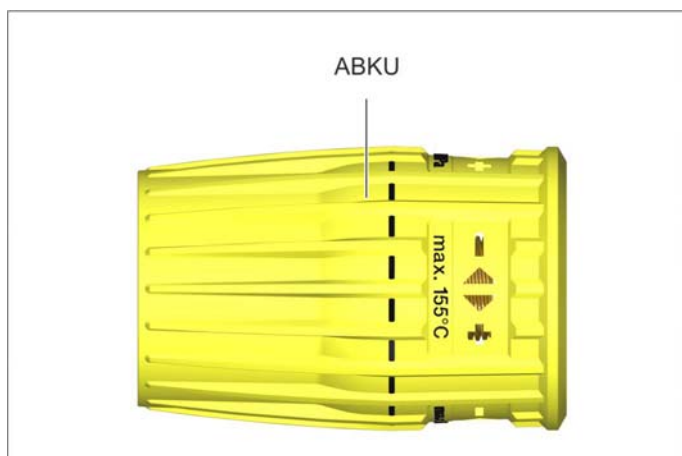
ABKS Uninstalling / installing the node piece

Ray tube



ABKT Uninstalling / installing the ball bearing spray lance

Rotating regulator



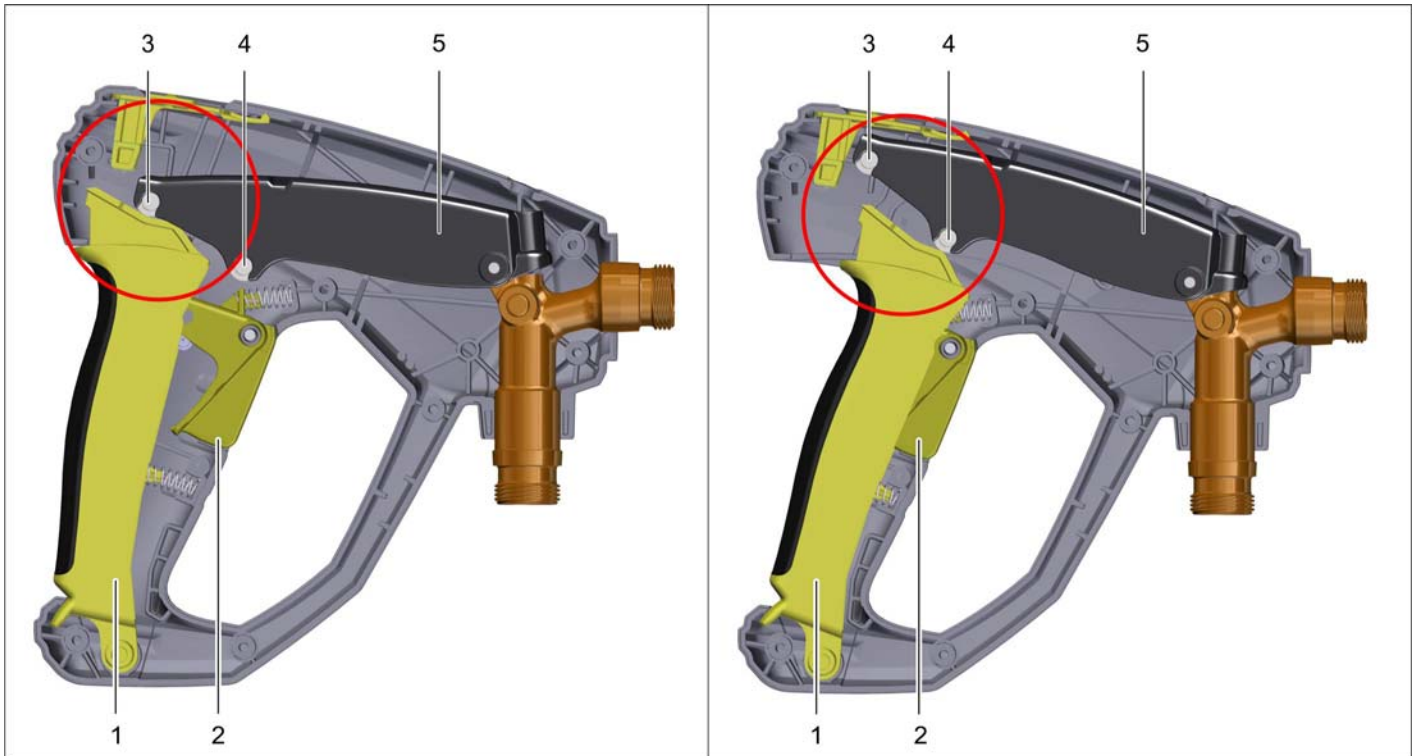
ABKU Uninstalling / installing casing rotary knob

030 Function

Hand spraygun

Initial position, gun closed
Safety lever actuated

End position, gun opened
Safety lever and trigger actuated.



- 1 Trigger
- 2 Safety lever
- 3 Roller 1

- 4 Roller 2
- 5 Lever

When the manual lever is actuated, the valve in the node piece opens and the water can flow from the hose through the gun into the spray lance.

The gun is opened in three steps using the two surfaces on the trigger varying in steepness and the two rollers in the lever.

Level 1

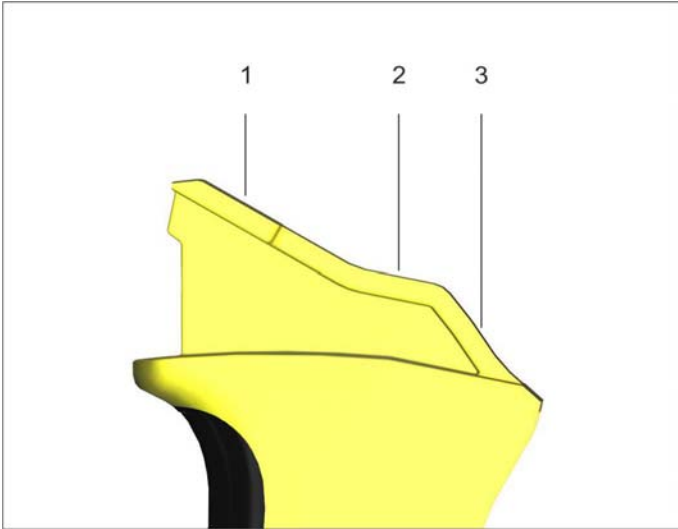
The actuated trigger lifts roller 1 slowly, and the valve opens.

Level 2

The steep surface on the trigger opens the valve completely using roller 2.

Level 3

Roller 2 stops on the flattened surface on the trigger and transfers a reduced holding force together with the thrust of the high-pressure jet.



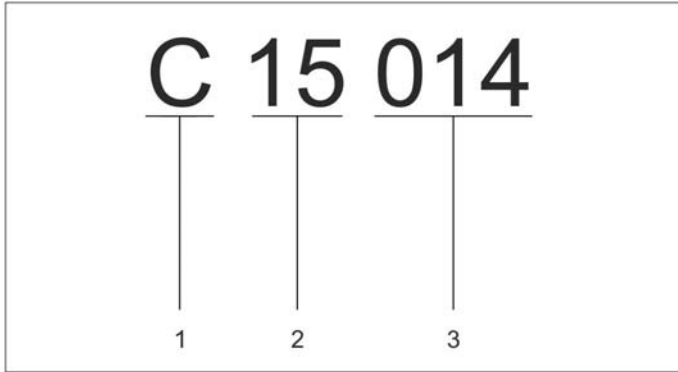
1	Surface 1	Roller 1 opens the flow partially
2	Surface 2	End position of roller 2 and holding position
3	Surface 3	Roller 2 opens the flow completely

Note

The node piece cannot be repaired and must be replaced as a complete unit.

The date of manufacture is imprinted on the node piece. It is composed of the month (letters A to L for January through to December), the year (two-digit number, 15 for 2015) and a three-digit number (material number, 014 = 4.775-014.0).

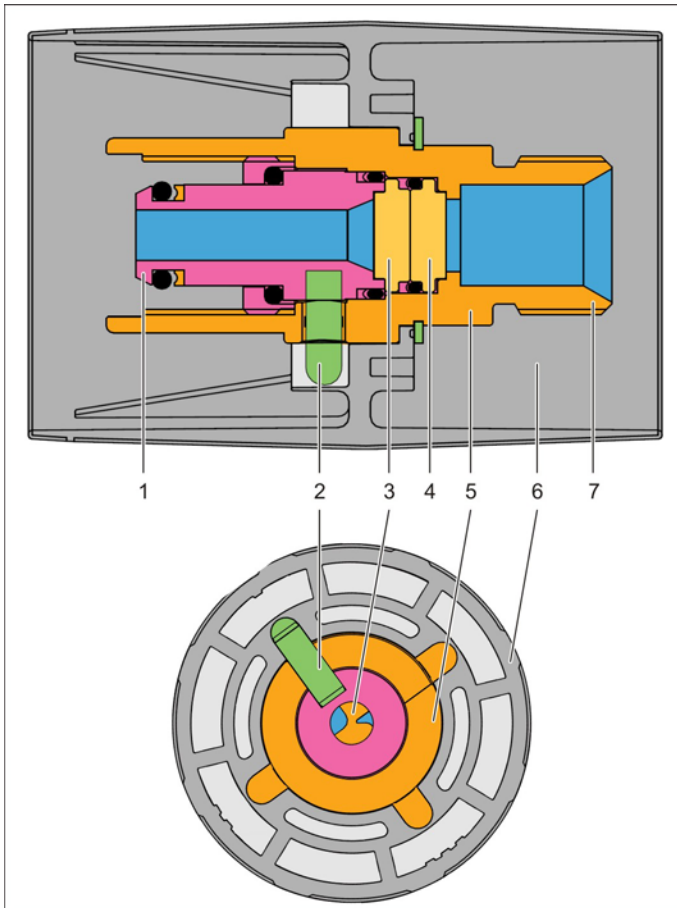
Example:



1	C	Month of manufacture	March
2	15	Year of manufacture	2015
3	014	Material number	4.775-014.0

The imprint can be found above the thread on the high-pressure input.

Pressure and volume regulation



- 1 Connection trigger gun
- 2 Connecting pin
- 3 Ceramic disc on gun side
- 4 Ceramic disc on spray pipe side
- 5 Casing of rotating regulator
- 6 Handle of rotary regulator
- 7 Spray lance connection

The pressure and volume regulation is designed as a rotary regulator between the trigger gun and the spray lance. There are two ceramic discs within the high pressure channel.

A ceramic disc is rigidly connected with the connection of the trigger gun. The other ceramic disc is connected to the rotating regulator and therefore adjustable. Offset holes in the ceramic discs can adjust the flow volume and the pressure when rotating the discs.

This illustration shows the two overlapping ceramic discs and the water flow (blue) with different opening angles (from 0° to 90°).

With the minimal setting, the water flows through a small hose in the middle of the ceramic discs.

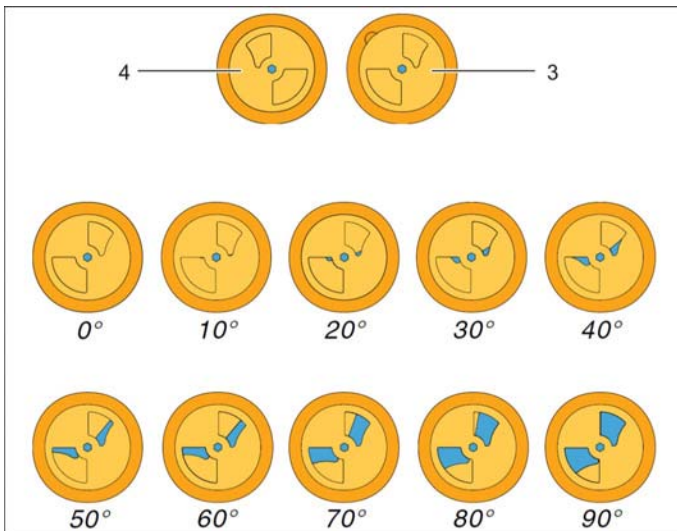
Note

The rotary regulator cannot be repaired and must be replaced as a complete unit.

Note

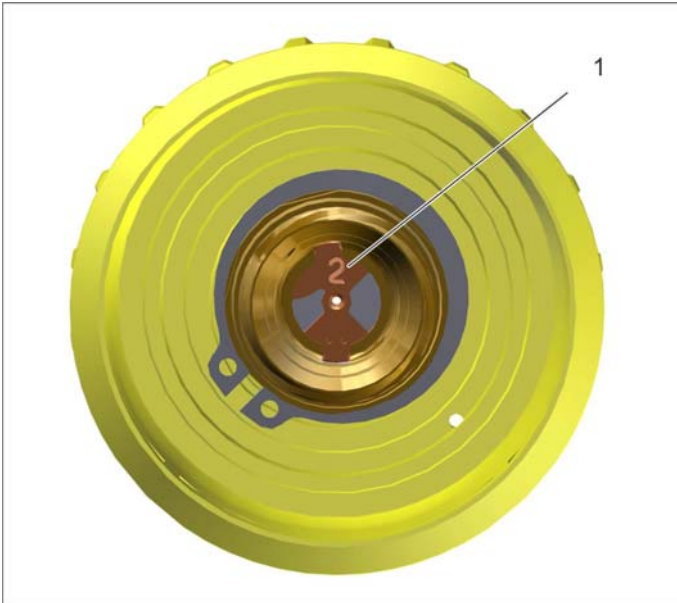
The illustration shows the earlier version of the rotary knob and is used for clarification only

Water flow with opening angle 0° - 90°



1 Code

The various rotary knobs can be distinguished by the code.



Code	Material number	Litre
1	4.118-007.0	< 750 l/h
2	4.118-008.0	750 - 1100 l/h
3	4.118-009.0	> 1100 l/h

Installation of rotary knob on spray lance

Note

The thread must be clean and free of grease.

- ➔ Apply a thin layer of metal glue to the middle of the thread.
- ➔ Screw the rotary regulator in resting position manually onto the gun.
- ➔ Tighten the rotary knob.

Torques	Nm
Rotating regulator	20

Note

The glue connection is handtight after 12 minutes and hardened after 12 hours.

Metal glue	6.869-075.0
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040 Service activities

ABKS Uninstalling / installing the node piece

Note

The node piece cannot be repaired and must be replaced as a complete unit.



- 1 Screws Torx 15
- 2 Casing half bowl
- 3 Stopper

- Unscrew the screws.
- Remove the plug.
- Remove the casing half bowl.



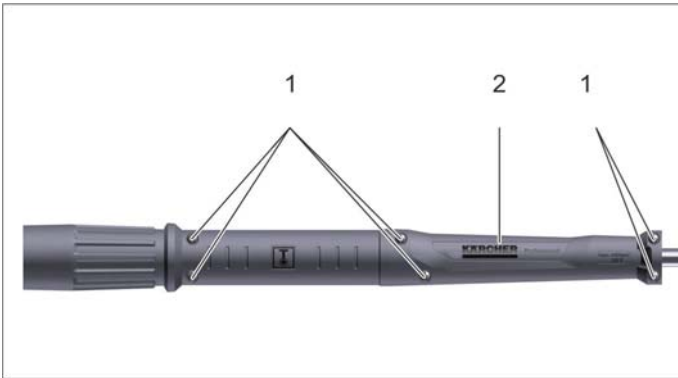
- 1 Node piece with lever

- Remove the node piece with lever.

Note

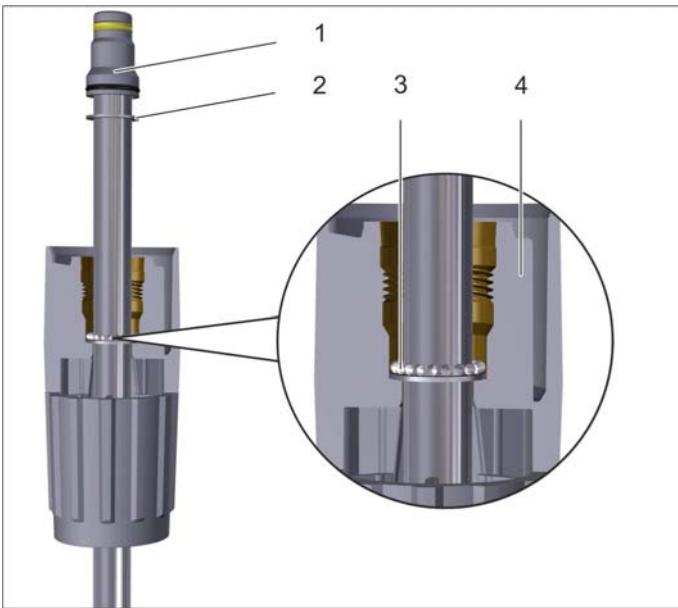
Mind the installation position.

ABKT Uninstalling / installing the ball bearing spray lance



- 1 Screws
- 2 Casing

- ➔ Unscrew the screws.
- ➔ Remove the housing.



- 1 Nozzle
- 2 Disc
- 3 Balls
- 4 Sleeve

Note

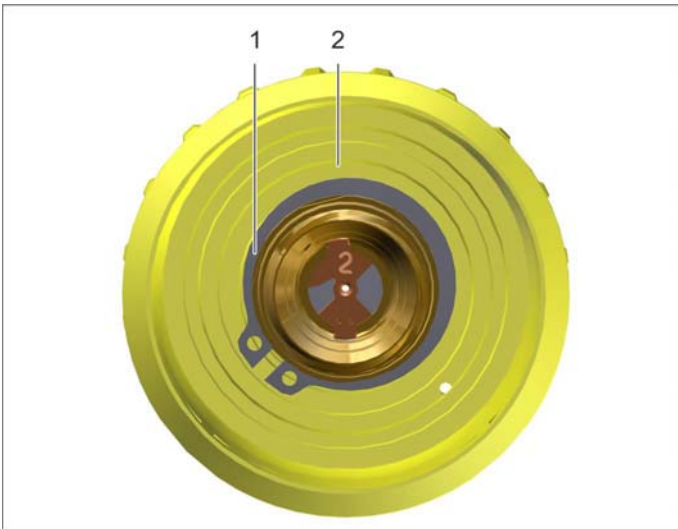
Hold the spray lance in a vertical position so that the balls do not fall out of the sleeve.

- ➔ Slide the sleeve down.
- ➔ Take the disc out of the sleeve.
- ➔ Tip the balls out of the sleeve.

Installation information

Mind the installation position.
Check components for wear / damage.

ABKU Uninstalling / installing casing rotary knob

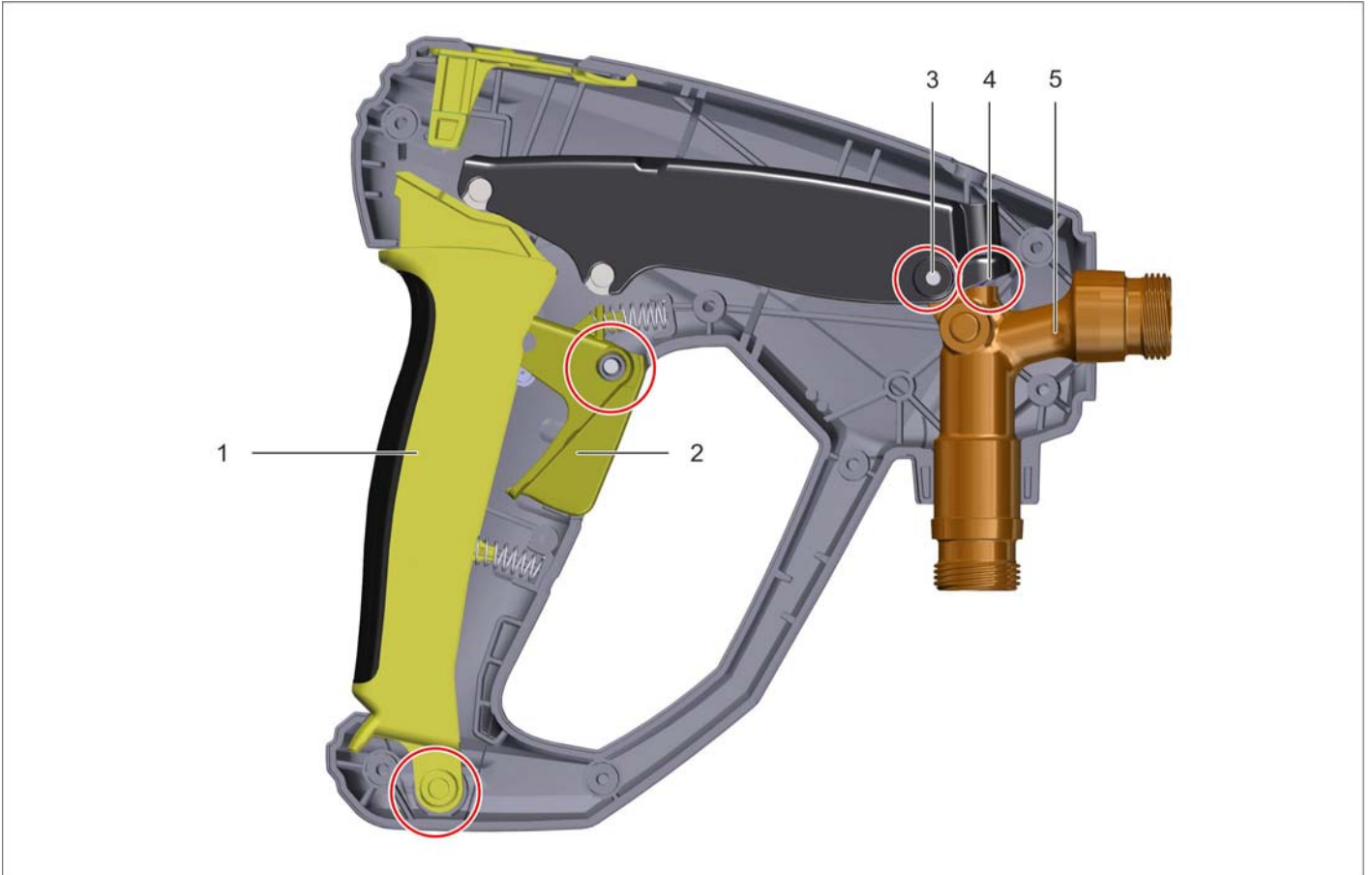


- 1 Safety ring
- 2 Casing

- ➔ Remove the locking ring.
- ➔ Remove casing.

050 Maintenance and inspection

Overview lubricating points



- 1 Trigger
- 2 Safety lever
- 3 Axle
- 4 Pin
- 5 Nozzle piece

Note

Lubricate the marked surfaces.

Only required after replacing parts or if the gun has been opened for checking.

Grease	Material number
Silicon grease	6.288-044.0

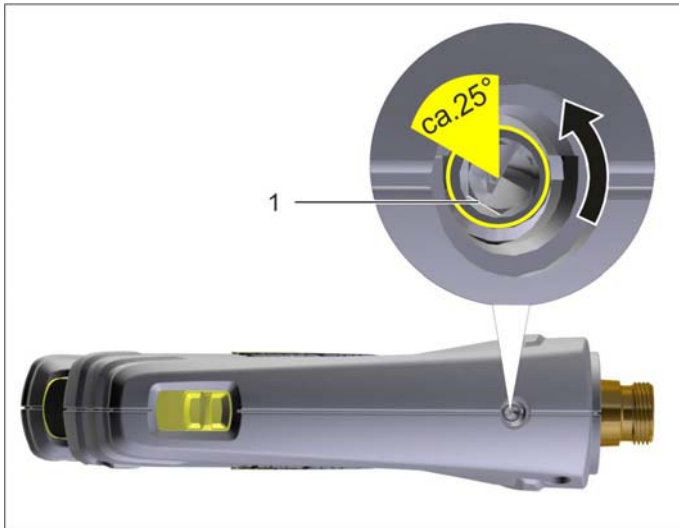
Setting the trigger clearance

Note

After replacing the complete node piece, handle bowls, lever, safety slider or trigger, the clearance for the trigger needs to be reset.

Prior to the adjustment, assemble the complete gun and connect it to the water pressure.

Setting under pressure



- 1 Adjusting screw Hexagon socket 4mm

Note

See "Trigger gun" description.

- ➔ Secure the gun using the locking slide (slide forward).
- ➔ Actuate the safety lever and trigger and use your hand to apply firm pressure.
- ➔ Screw in the adjustment screw until you can see a leak.
- ➔ Unscrew the adjustment screw (approx. 25°) until the gun is sealed.
- ➔ Relieve pressure on all levers.

Crosscheck:

- ➔ Unlock the locking slide (slide back).
- ➔ Actuate the trigger (without the safety lever) with the palm of your hand.

Note

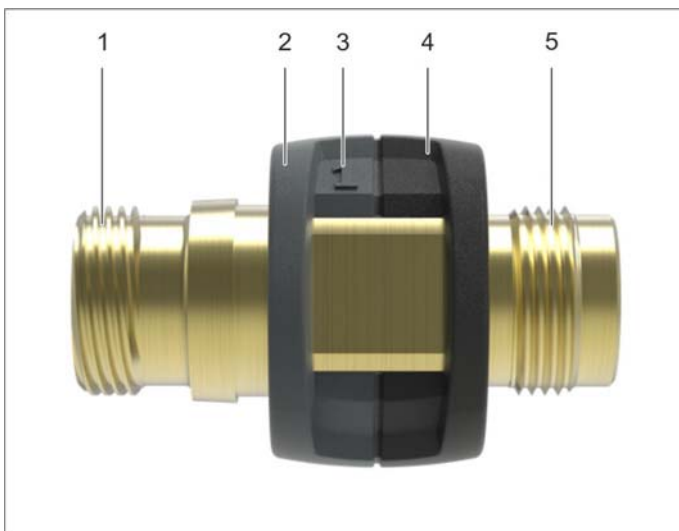
The gun must not leak.

060 Error diagnosis

Findings	Possible cause	Correction
Gun is leaking	Lever clearance not set or incorrectly set	Set the lever clearance
Gun is leaking	Valve ball or valve seat contaminated/worn	Replace the node piece

070 Peculiarities/ others

Adapter concept for connecting the new and old accessories



- 1 EASY!Lock - thread
- 2 Anthracite: New EASY!Lock
- 3 Adapter number
- 4 Black: old M22 x 1.5
- 5 M22 x 1.5

More information on the adapter concept:

www.kaercher.com/adapterfinder-easylock

Adapter number	new	Adapter	old
1			
	EASY!Lock	4.111-029.0	M22 x 1,5
2			
	EASY!Lock	4.111-030.0	M22 x 1,5
3			
	EASY!Lock	4.111-031.0	M22 x 1,5
4			
	EASY!Lock	4.111-032.0	AVS
5			
	EASY!Lock	4.111-033.0	M22 x 1,5
6			
	EASY!Lock	4.111-034.0	M22 x 1,5
7			
	EASY!Lock	4.111-035.0	M18 x 1,5
8			
	EASY!Lock	4.111-036.0	M18 x 1,5

Note
The adapters are designed in two colours: black/anthracite. This makes classification easy: new (anthracite) and old (black).

Technical Documentation

Appliance type	Appliance no.	Circuit diagram	Operating instructions	Spare parts list
EASY!Force gun	4.118-005.0	-	5.967-048.0	-
EASY!Force Food gun	4.118-015.0	-	5.967-048.0	-
EASY!Force Ex gun	4.118-020.0	-	5.967-048.0	-
TR spray lance 1050 mm	4.112-000.0	-	-	-
Rotary knob 1 (270 l)	4.118-007.0	-	-	-
Rotary knob 2 (416 l)	4.118-008.0	-	-	-
Rotary knob 3 (700 l)	4.118-009.0	-	-	-