Fronius TTB 80 G Multilock Torch Body Instructions

Fronius TTB 80 G Multilock Torch Body

Contents

Safety

⚠ WARNING! Danger from incorrect operation and work that is not carried out properly.
This can result in severe personal injury and damage to property.

- All the work and functions described in this document must only be carried out by trained and qualified personnel.
- Read and understand this document.
- Read and understand all the Operating Instructions for the system components, especially the safety rules.

⚠ WARNING! Danger from electrical current and from emerging wire electrode.
This can result in severe personal injury and damage to property.

- Before starting work, switch off all the system components involved and disconnect them from the grid.
- Secure all system components involved so they cannot be switched back on.

⚠ WARNING! Danger from electric current due to defective system components and incorrect operation.
This can result in severe personal injury and damage to property.

- All cables, leads, and hose packs must always be securely connected, undamaged, correctly insulated, and adequately sized.

⚠ WARNING! Danger from coolant leakage due to unsealed coolant hoses.
There may be a risk of slipping and damage to property.

- When disconnecting a welding torch from the cooling unit or wire feeder, always seal the coolant hoses using

the plastic seal attached to the torch.

⚠ CAUTION! Danger due to hot welding torch components and coolant.
Serious burns may result.

- Allow all welding torch components and the coolant to cool down to room temperature (+25 °C or +77 °F) before starting any of the work described in this document.

⚠ CAUTION! Danger due to the operation of water-cooled welding torches without coolant.
This can result in damage to property.

- Never use water-cooled welding torches without coolant.
- During welding, ensure that the coolant is circulating correctly – this will be the case if a regular return flow of coolant can be seen in the coolant container of the cooling unit.
- The manufacturer will not be liable for any damages due to non-observance of the above mentioned points. All claims against the warranty are void.

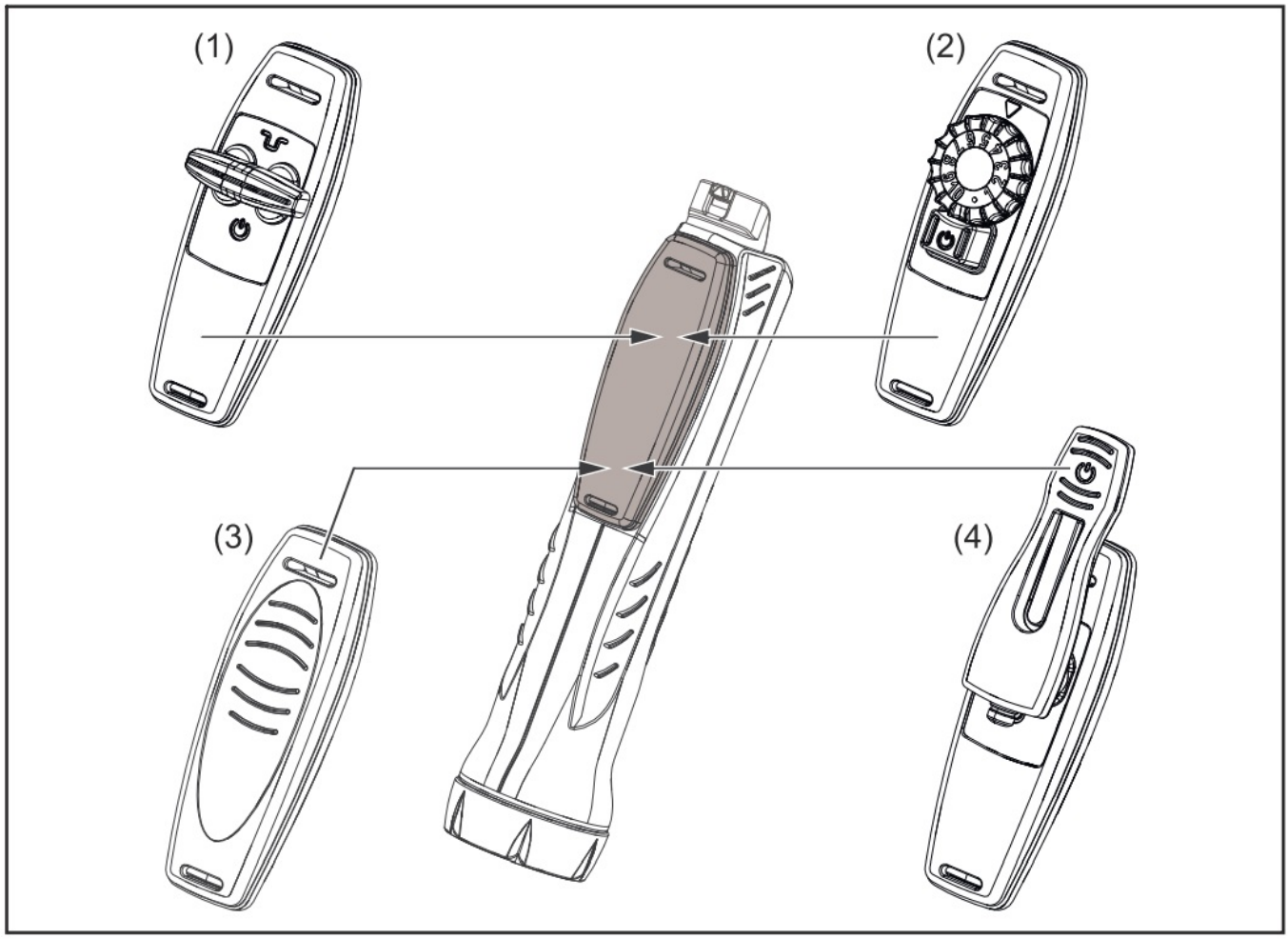
Intended use

The TIG manual welding torch is intended solely for TIG welding and TIG brazing in manual applications.
Any other use is deemed to be “not in accordance with the intended purpose.” The manufacturer shall not be liable for any damage resulting from such improper use.
Intended use also means:

- Following all the instructions in the Operating Instructions
- Carrying out all the specified inspection and maintenance work.

Welding Torch Variants

Available welding torch variants



1. Standard interface

   Pushing the button backward:

   a) If high frequency ignition (HF ignition) is activated at the power source, the ignition process is activated

   b) When contact ignition is activated on the power source, the welding voltage is applied to the tungsten electrode. The welding process starts when the torch contacts the workpiece Pushing the button forward during welding:

   a) When welding in 4-step mode, intermediate lowering is activated by pushing the button forward and holding it in place. This function is only available if the lowering current I2 has been set on the power source
2. Potentiometer interface

   Pressing the Start button:

   a) If high frequency ignition (HF ignition) is activated at the power source, the ignition process is activated

   b) When contact ignition is activated on the power source, the welding voltage is applied to the tungsten electrode. The welding process starts when the torch contacts the workpiece Potentiometer:

   a) For adjusting the welding current
3. Without torch trigger
4. Standard interface with torch trigger extension

   Pushing the button backward:

   a) If high frequency ignition (HF ignition) is activated at the power source, the ignition process is activated

   b) When contact ignition is activated on the power source, the welding voltage is applied to the tungsten electrode. The welding process starts when the torch contacts the workpiece

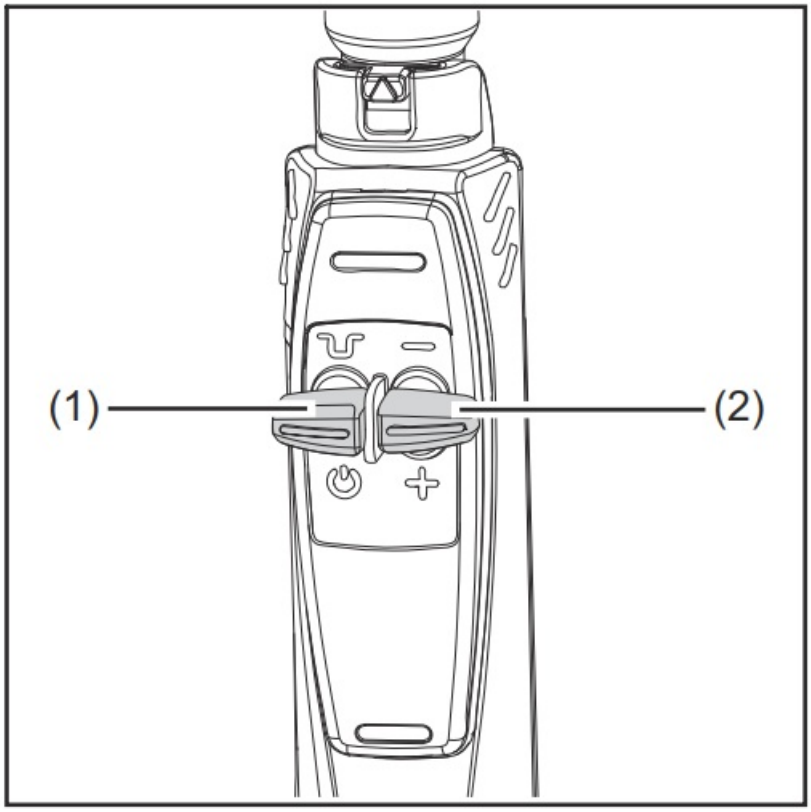
   Pushing the button forward during welding:

a) When welding in 4-step mode, intermediate lowering is activated by pushing the button forward and holding it in place. This function is only available if the lowering current I2 has been set on the power source

5. Up-Down interface (not shown)
   The welding torch is supplied from the factory with an Up/Down interface. For more information, see the following section Functions of the Up/Down torch.

Functions Of The Up/down Torch

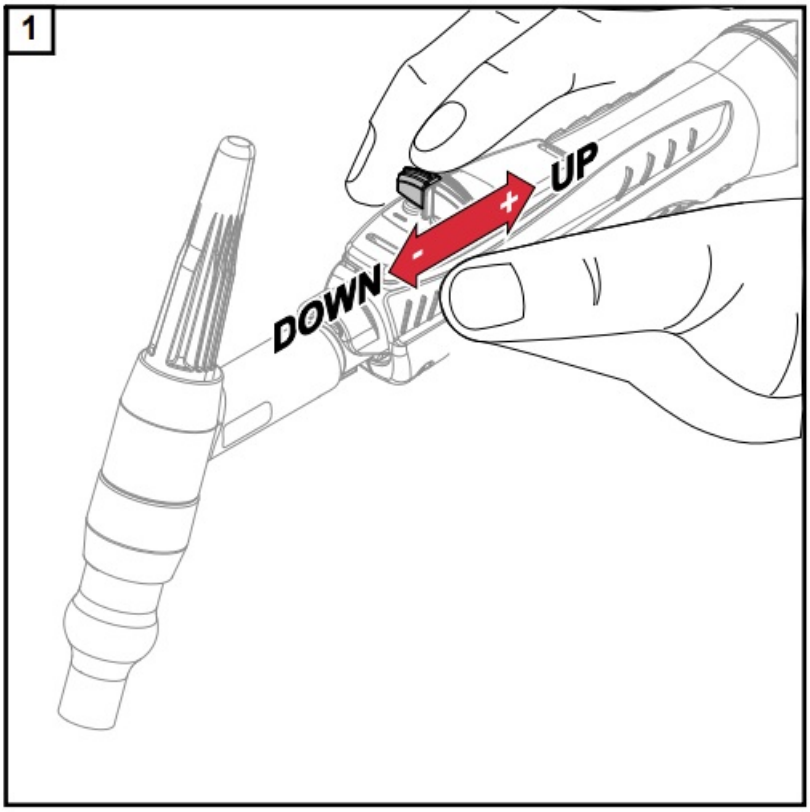
Operating elements of the Up/ Down-torch



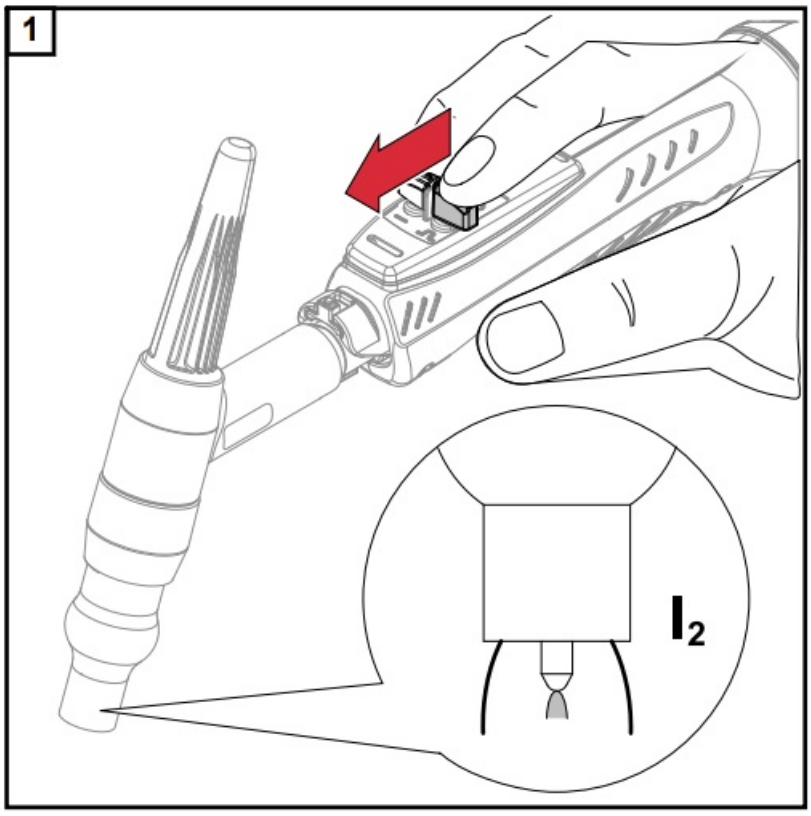
1. Start button
   The button initiates the following functions:
   a) If high frequency ignition (HF ignition) is activated on the power source, the ignition process is activated by pushing the button backward
   b) If touch ignition is activated on the power source, the welding voltage is applied to the tungsten electrode by pushing the button backward. The welding process starts when the torch contacts the workpiece
   c) When welding in 4-step mode, intermediate lowering is activated by pushing the button forward and holding it in place. This function is only available if the lowering current I2 has been set on the power source
2. Up/Down button
   For changing the welding power

Functional description of the Up/Down-torch

Changing the welding power:



Intermediate lowering:



Push the button forward and hold until intermediate lowering is complete

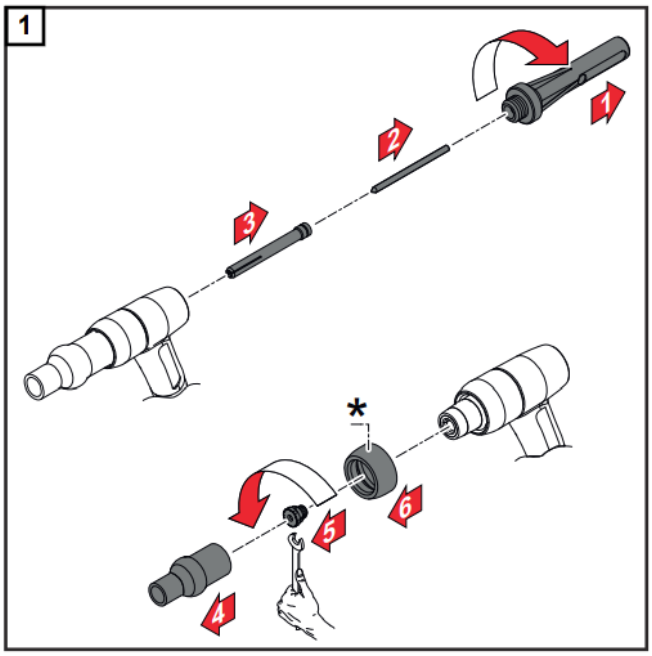
Mounting The Wearing Parts

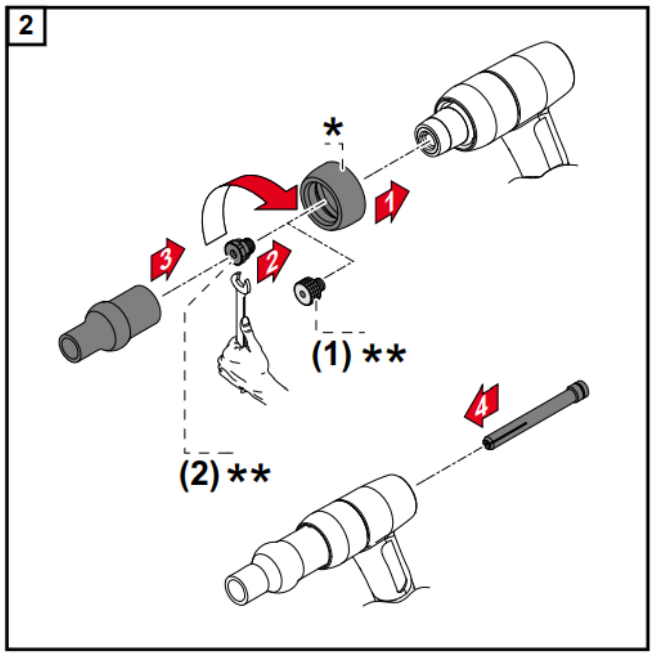
Fitting an A-type wearing part with gas nozzle (push on type)

⚠ CAUTION! Risk of damage due to excessive tightening torque on the fixing sleeve (1) or gas lens (2).
Damage to the thread may result.

- Only tighten the fixing sleeve (1) or gas lens (2) a little.

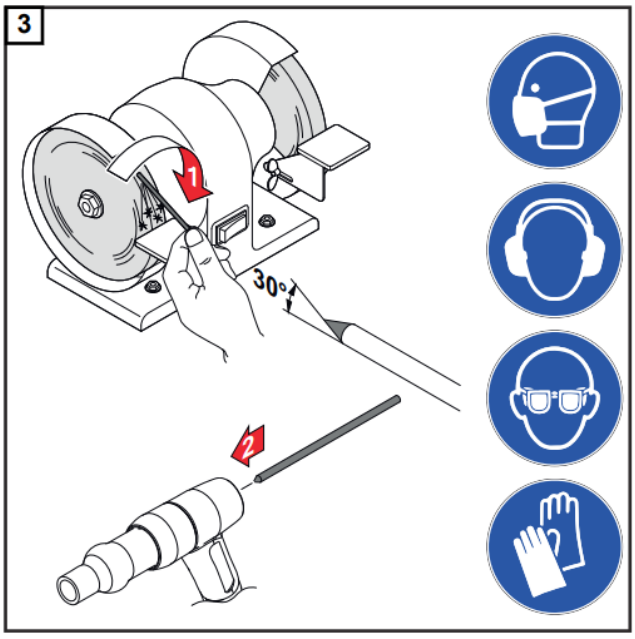
* Replaceable rubber sealing sleeve only for TTB 220 G/A
** A gas lens (2) may be used instead of the fixing sleeve (1) depending on the type of welding torch.

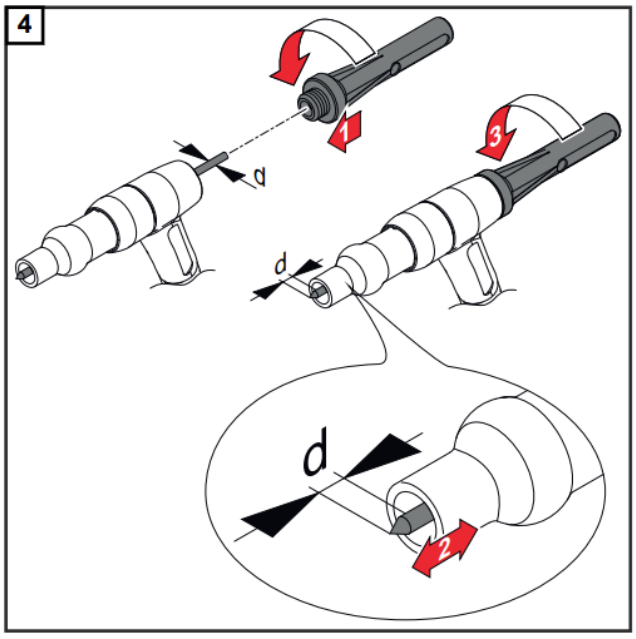




⚠ CAUTION! Risk of damage due to excessive tightening torque on the torch cap.
Damage to the thread may result.

- Only tighten the torch cap enough so that the tungsten electrode can no longer be moved by hand.





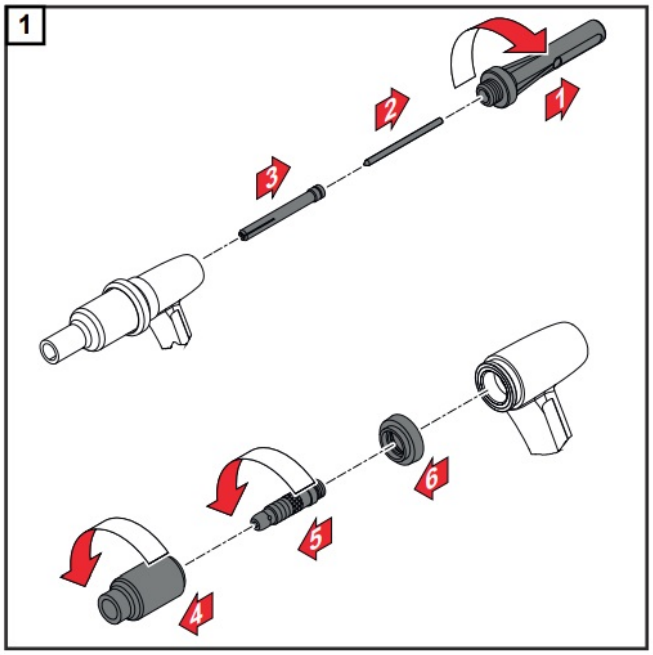
Screw down the torch cap

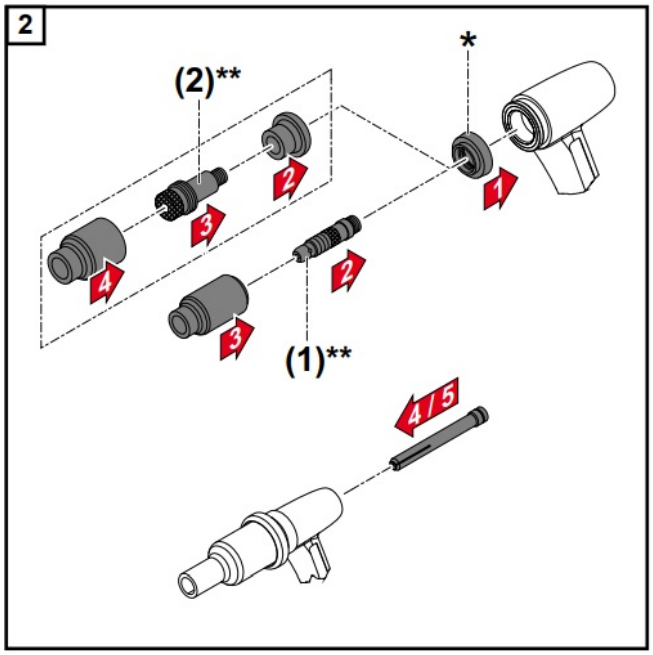
⚠ CAUTION! **Fitting a P-type wearing part with gas nozzle (screw type)**

Risk of damage due to excessive tightening torque on the fixing sleeve (1) or gas lens (2).
Damage to the thread may result.

- Only tighten the fixing sleeve (1) or gas lens (2) a little.

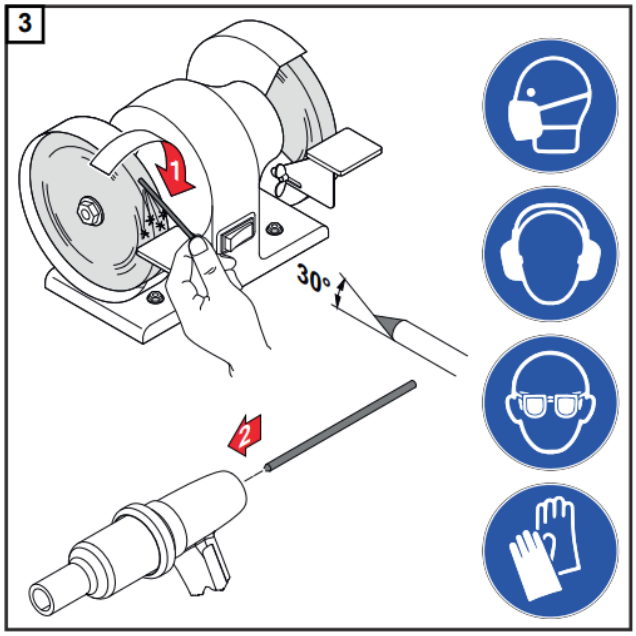
* Replaceable rubber sealing sleeve only for TTB 220 G/P
** A gas lens (2) may be used instead of the fixing sleeve (1) depending on the type of welding torch.

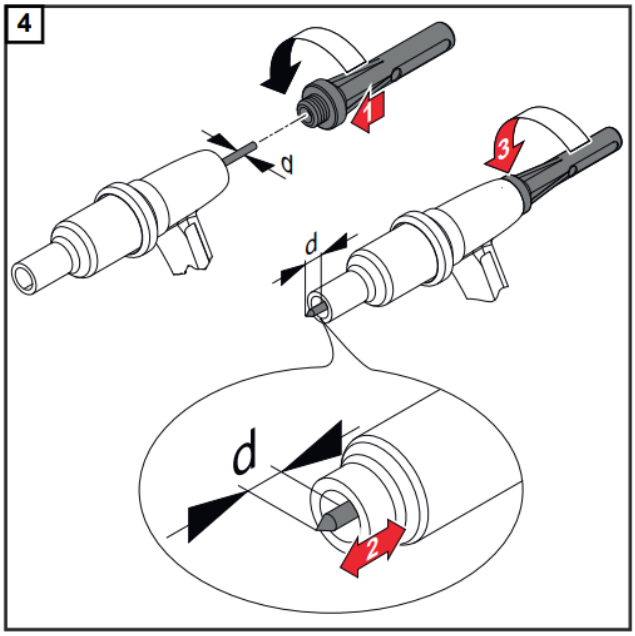




⚠ CAUTION! Risk of damage due to excessive tightening torque on the torch cap.
Damage to the thread may result.

- Only tighten the torch cap enough so that the tungsten electrode can no longer be moved by hand.





Screw down the torch cap

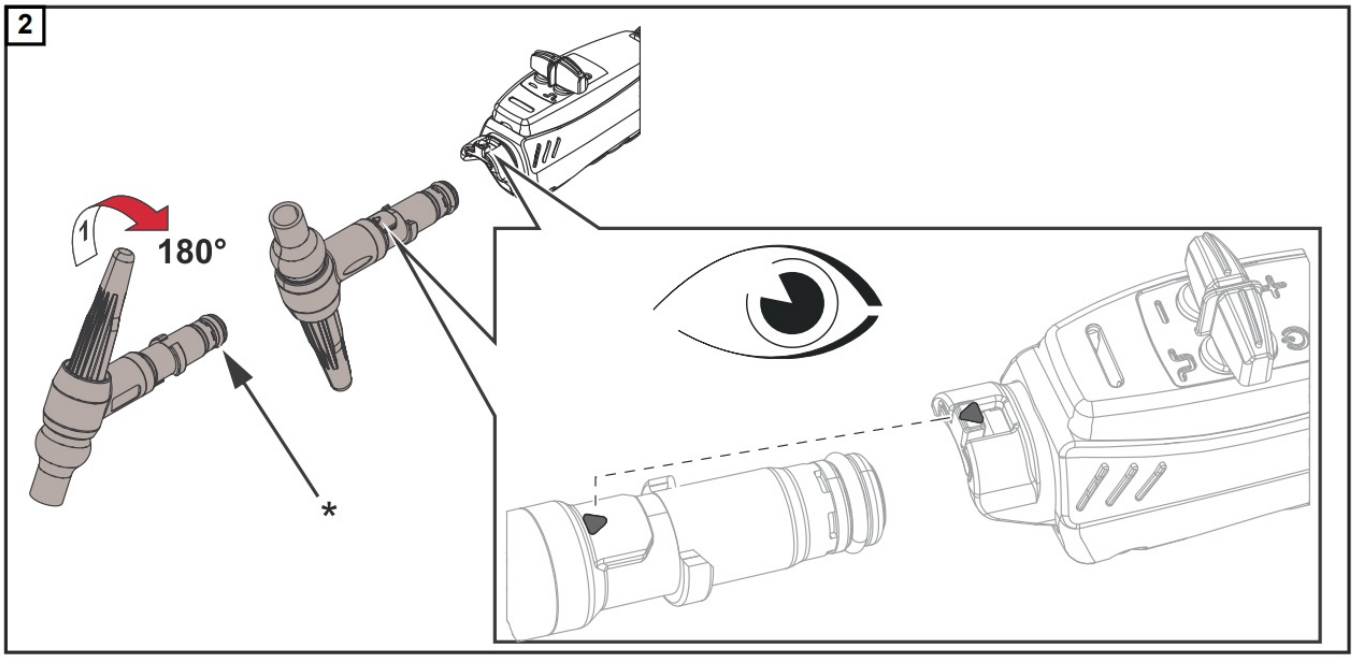
Fitting The Torch Body And Connecting The Welding Torch

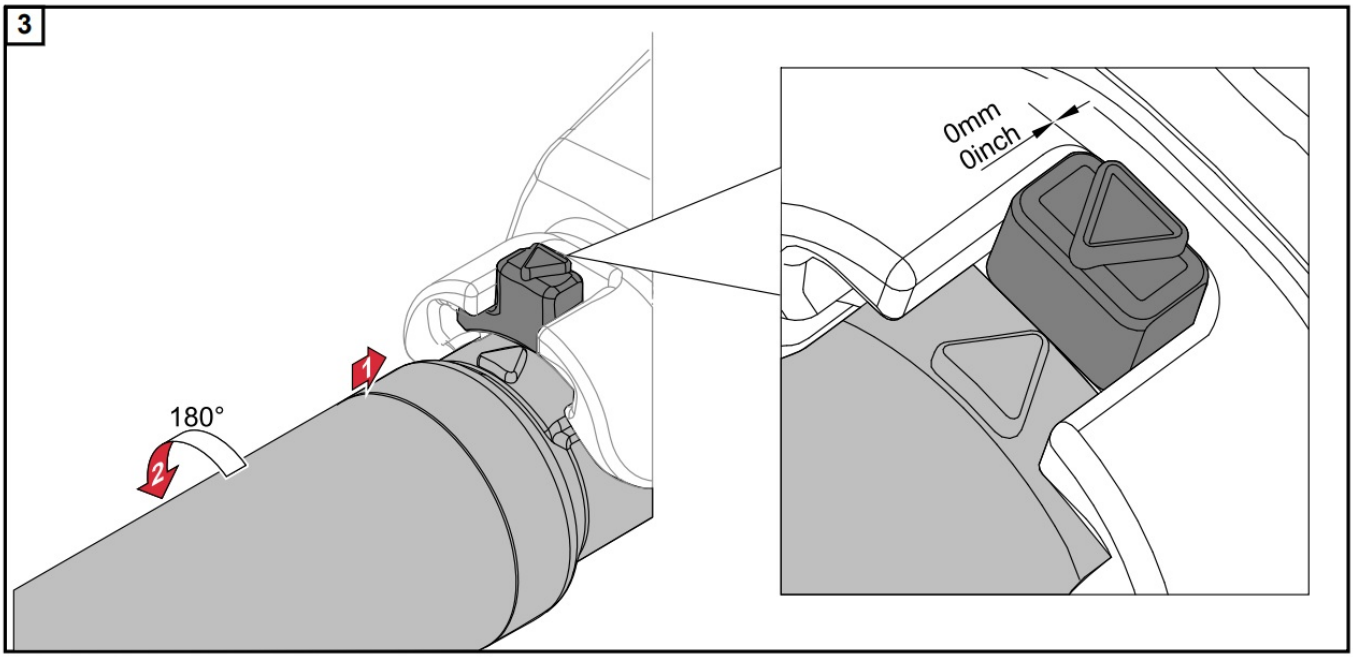
Fitting the torch body

NOTE! Risk due to damaged O-ring on the torch body.
A damaged O-ring on the torch body can lead to contamination of the shielding gas, resulting in a defective weld.

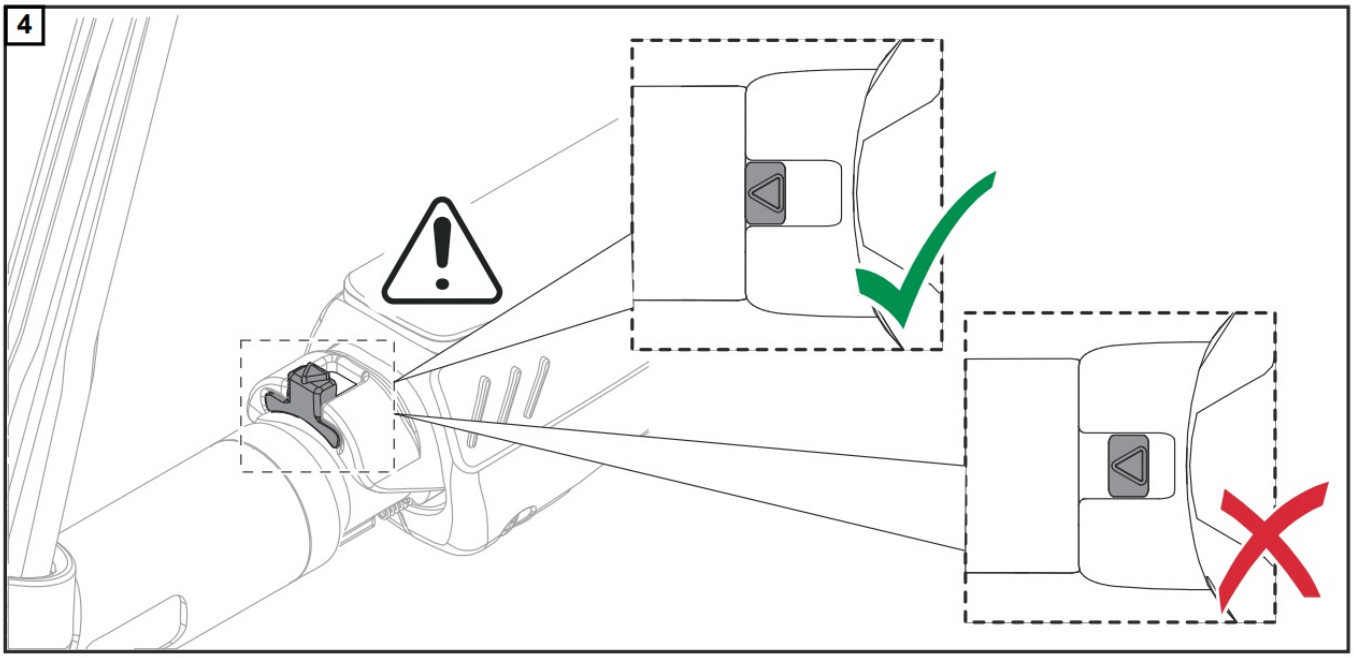
- Before each start-up, ensure that the O-ring on the torch body is undamaged.

Grease the O-ring on the torch body





Push the torch body locking device fully back and at the same time turn the torch body 180°.



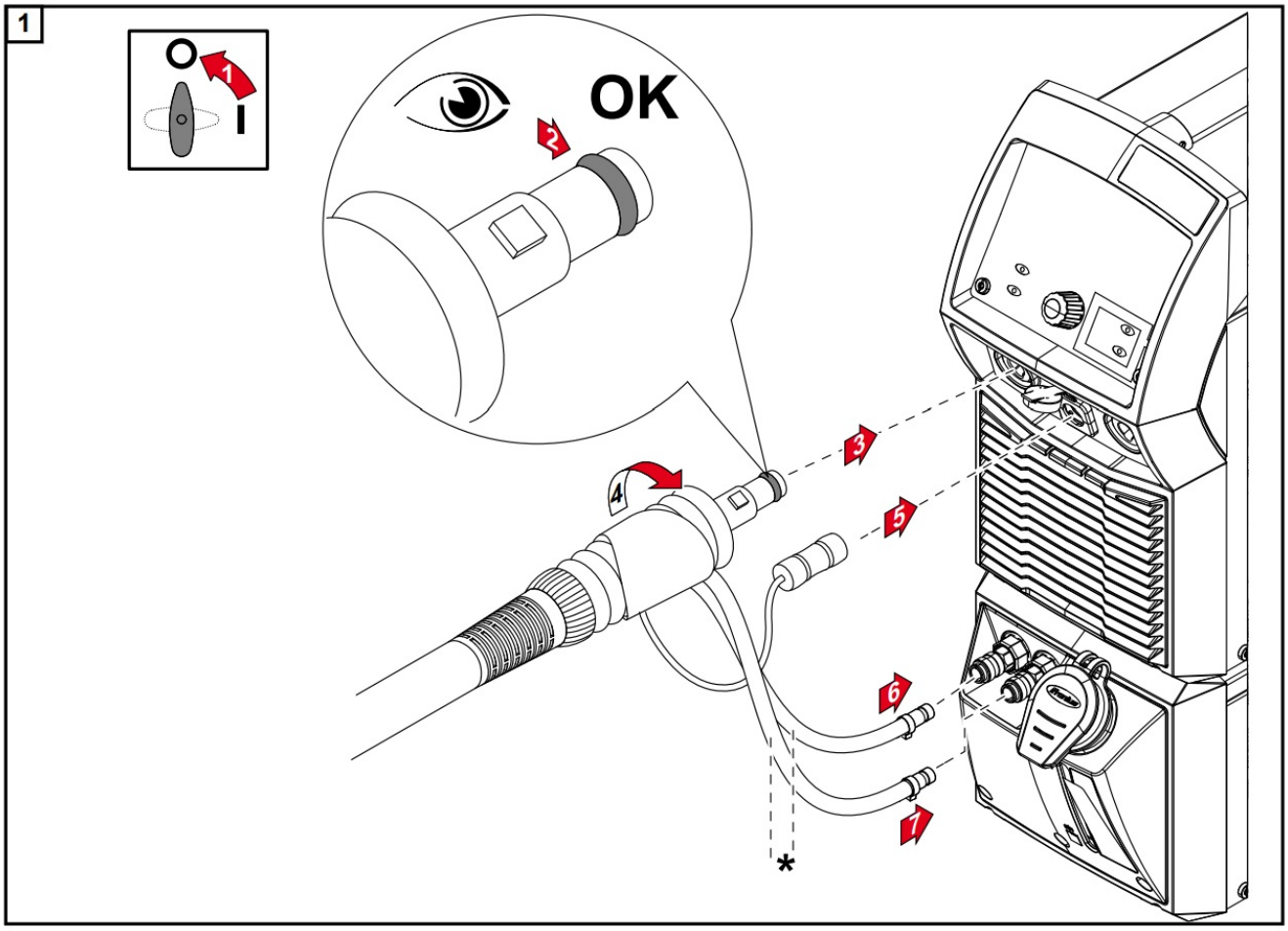
⚠ CAUTION! Danger due to incorrectly fitted torch body.
This can result in damage to property.

- Ensure that the locking device is fully forward after fitting the torch body – only then is the torch body properly fitted and locked.

Connecting the welding torch

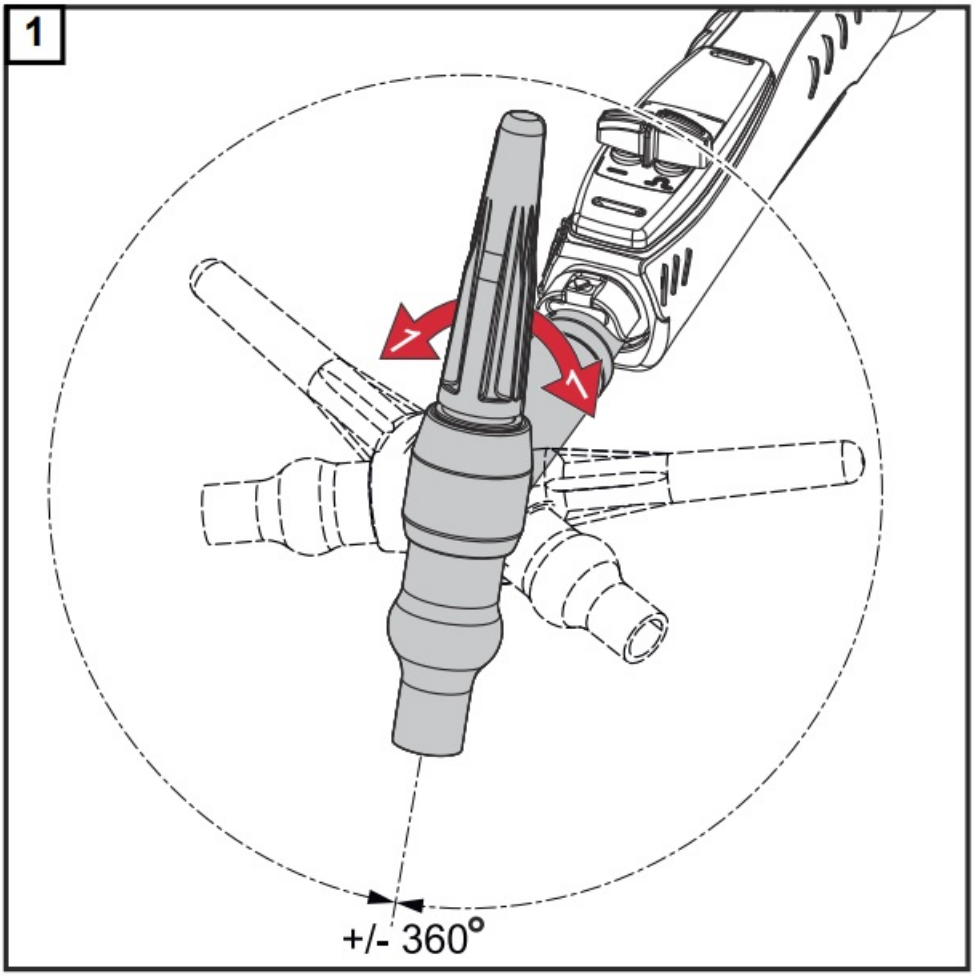
NOTE! Risk due to damaged O-ring on the welding torch connection.
A damaged O-ring on the welding torch connection can lead to contamination of the shielding gas, resulting in a defective weld.

- Before each start-up, ensure that the O-ring on the welding torch connection is undamaged.



* only with water-cooled welding system

Rotating the torch body.

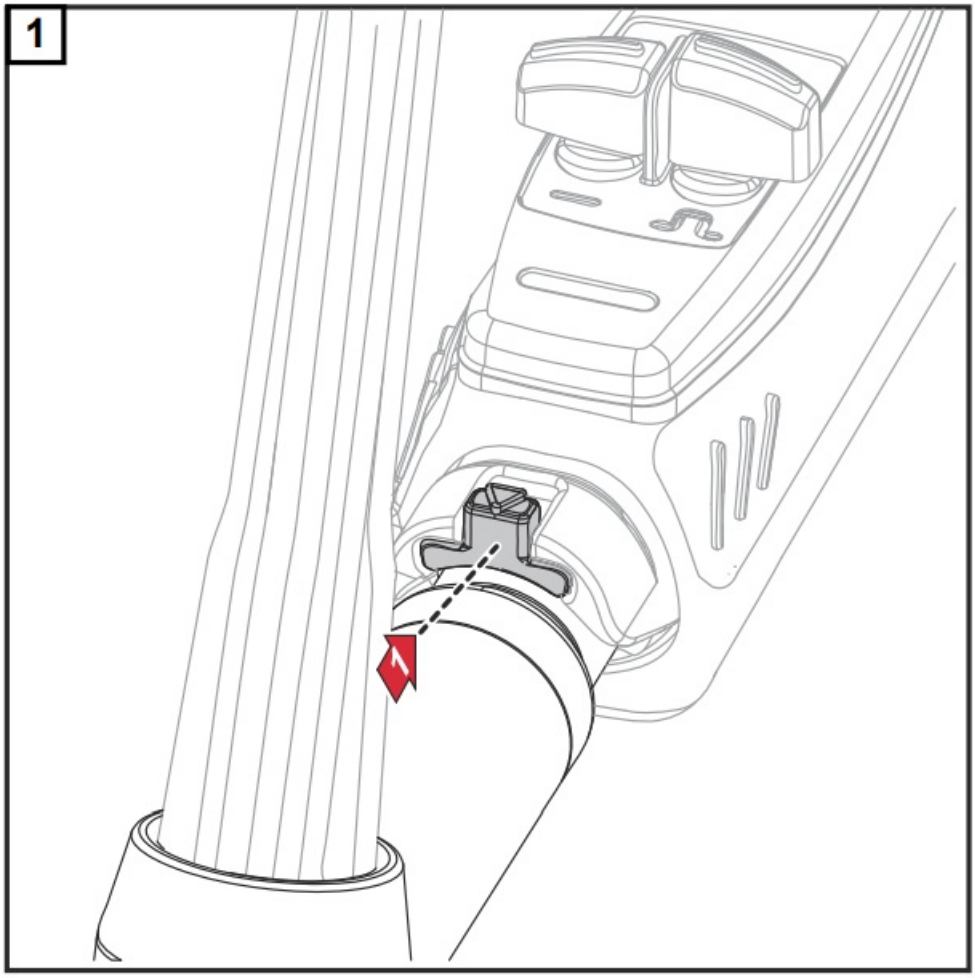


Changing The Torch Body Of A Gas-cooled Welding Torch

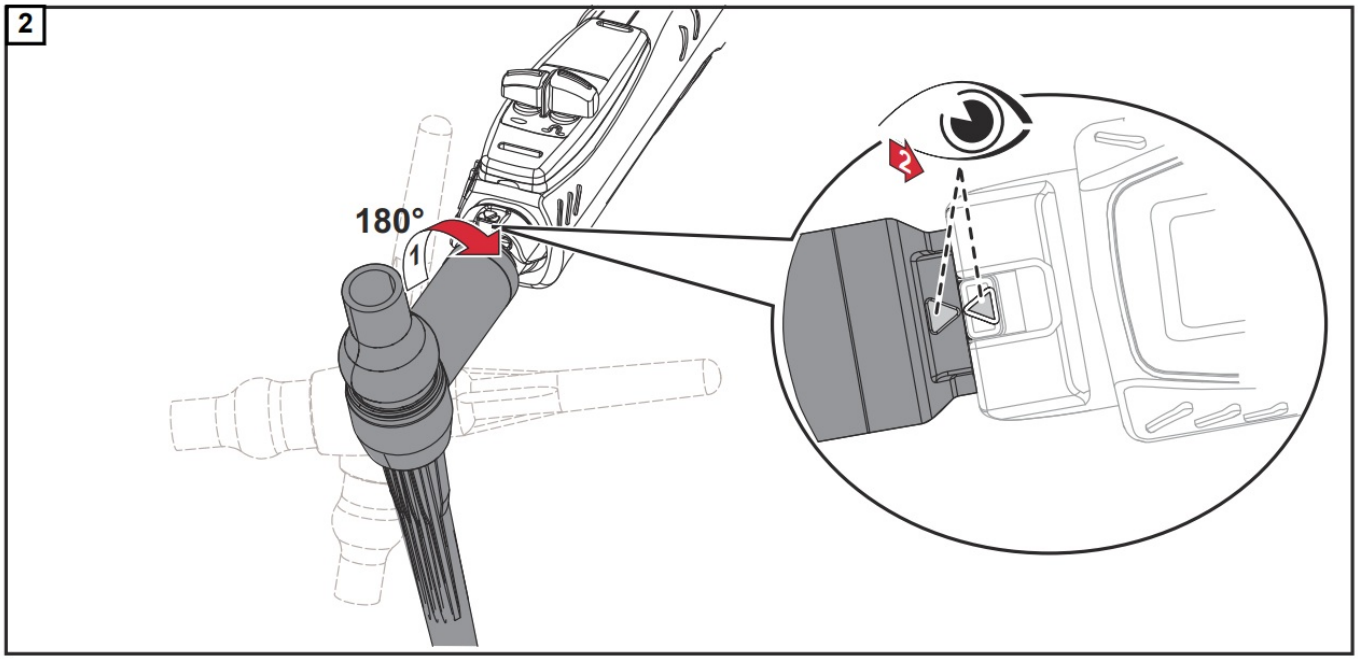
Changing the torch body

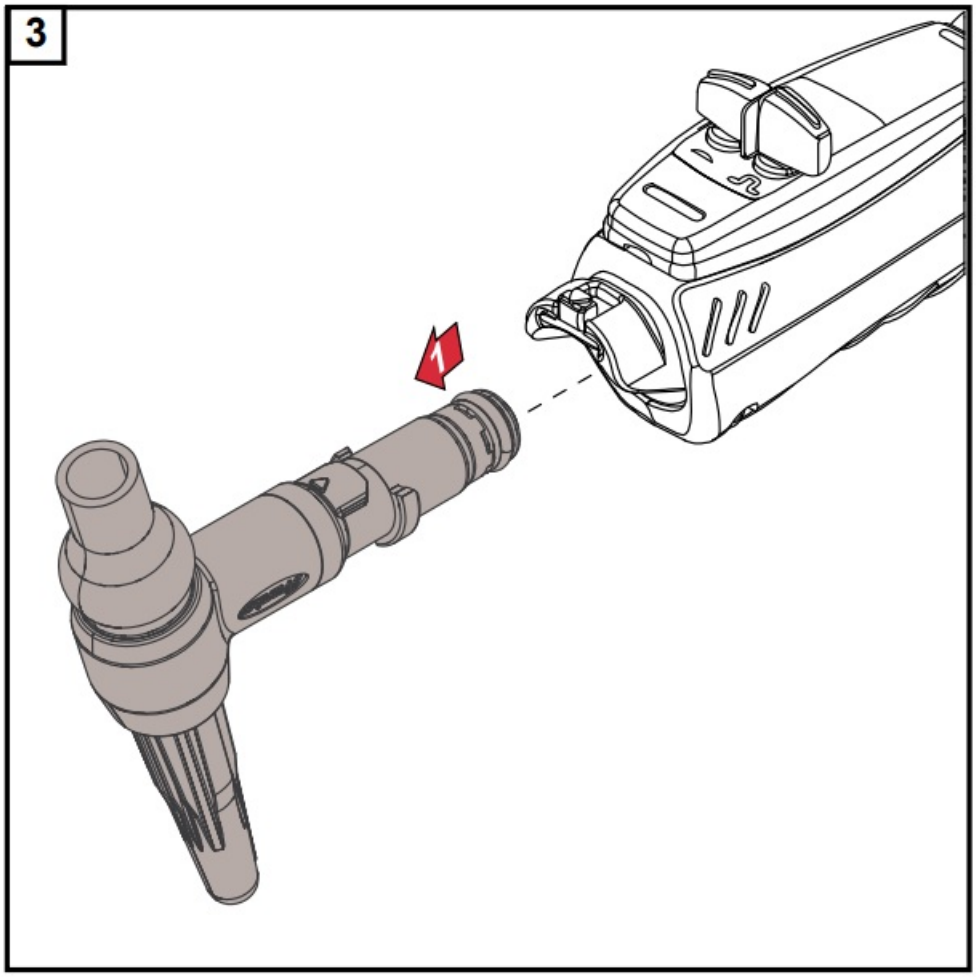
Removing the torch body:

1



2





Remove contamination from the hose pack interface
Remove contamination from the torch body interface
Fit the protective cap to the torch body interface

Fitting the torch body:

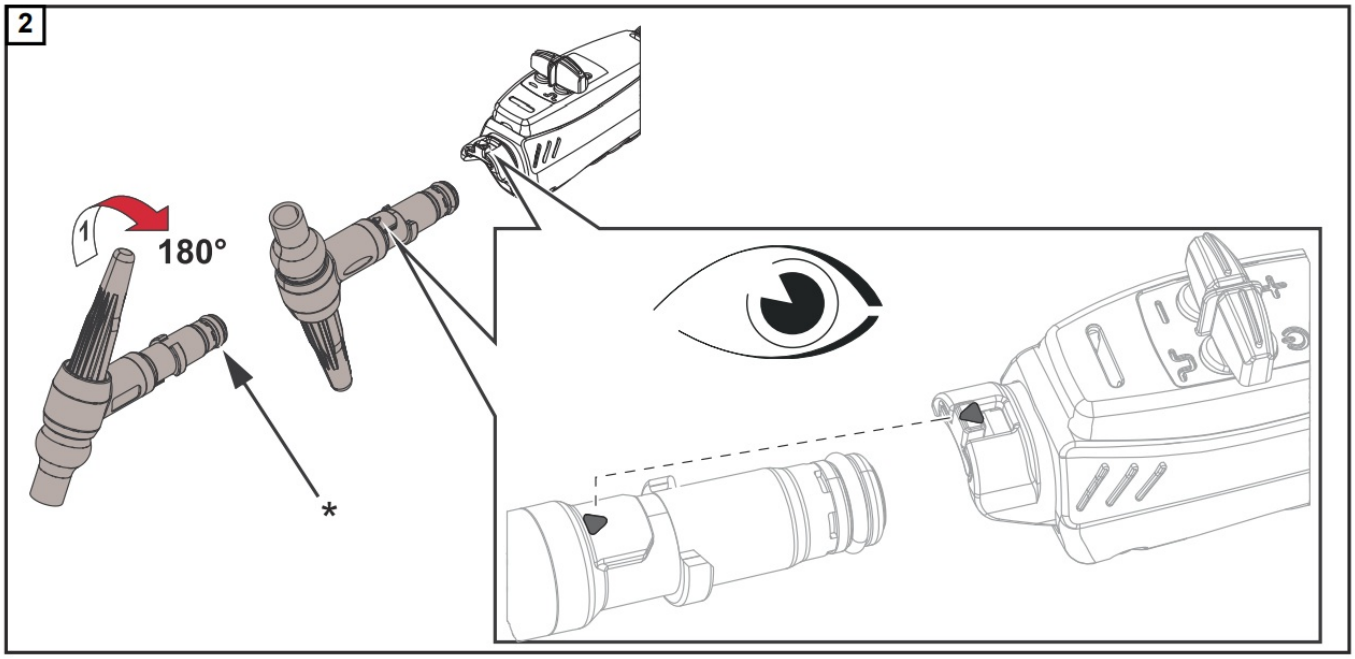
⚠ CAUTION! Danger due to incompatible system components.
This can result in damage to property.

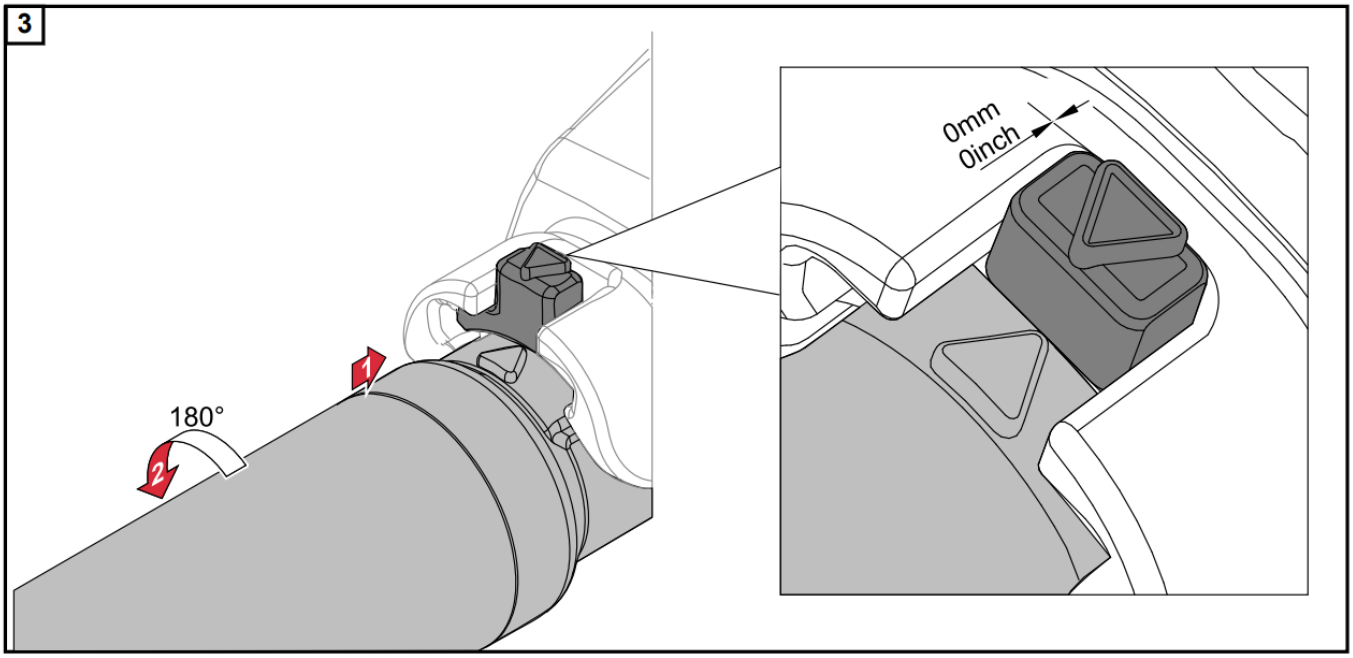
- Only connect torch bodies and hose packs that are using the same type of cooling.
- Only fit gas-cooled torch bodies to gas-cooled hose packs.

NOTE! Risk due to damaged O-ring on the torch body.
A damaged O-ring on the torch body can lead to contamination of the shielding gas, resulting in a defective weld.

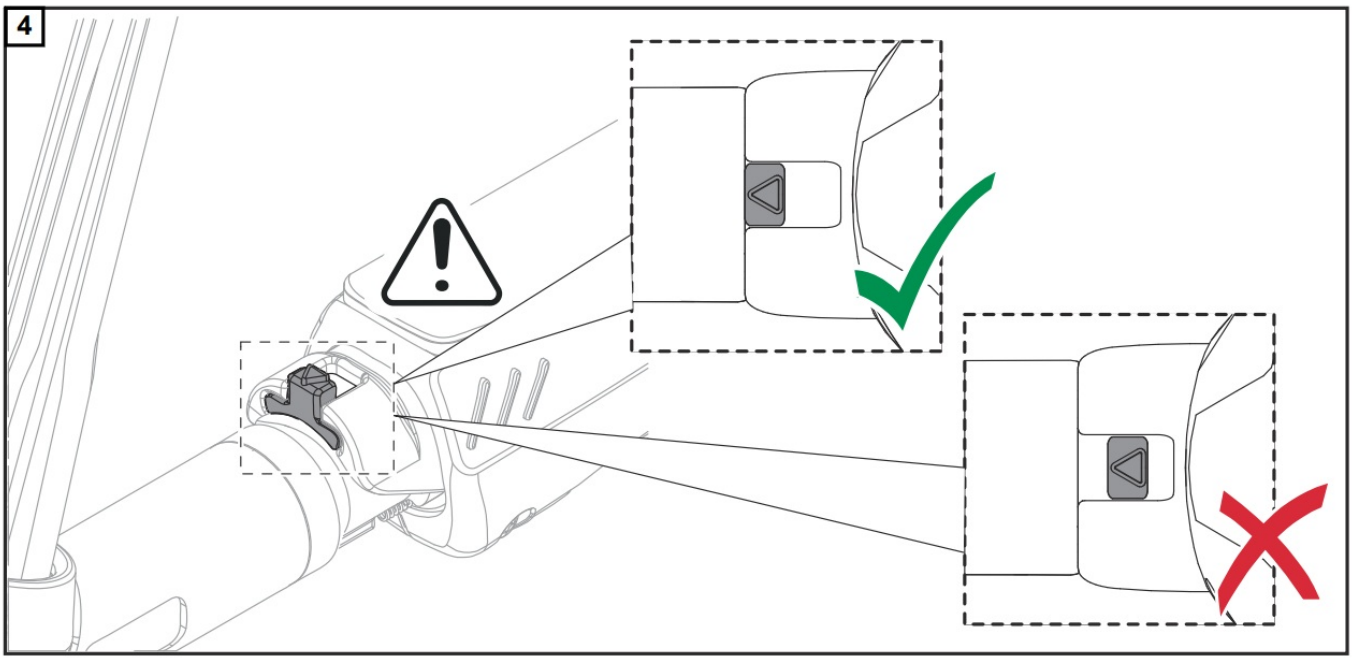
- Before each start-up, ensure that the O-ring on the torch body is undamaged.

Grease the O-ring on the torch body





Push the torch body locking device fully back and at the same time turn the torch body 180°.



⚠ CAUTION! Danger due to incorrectly fitted torch body.
This can result in damage to property.

- Ensure that the locking device is fully forward after fitting the torch body – only then is the torch body properly fitted and locked.

Perform a test weld and check the quality of the weld

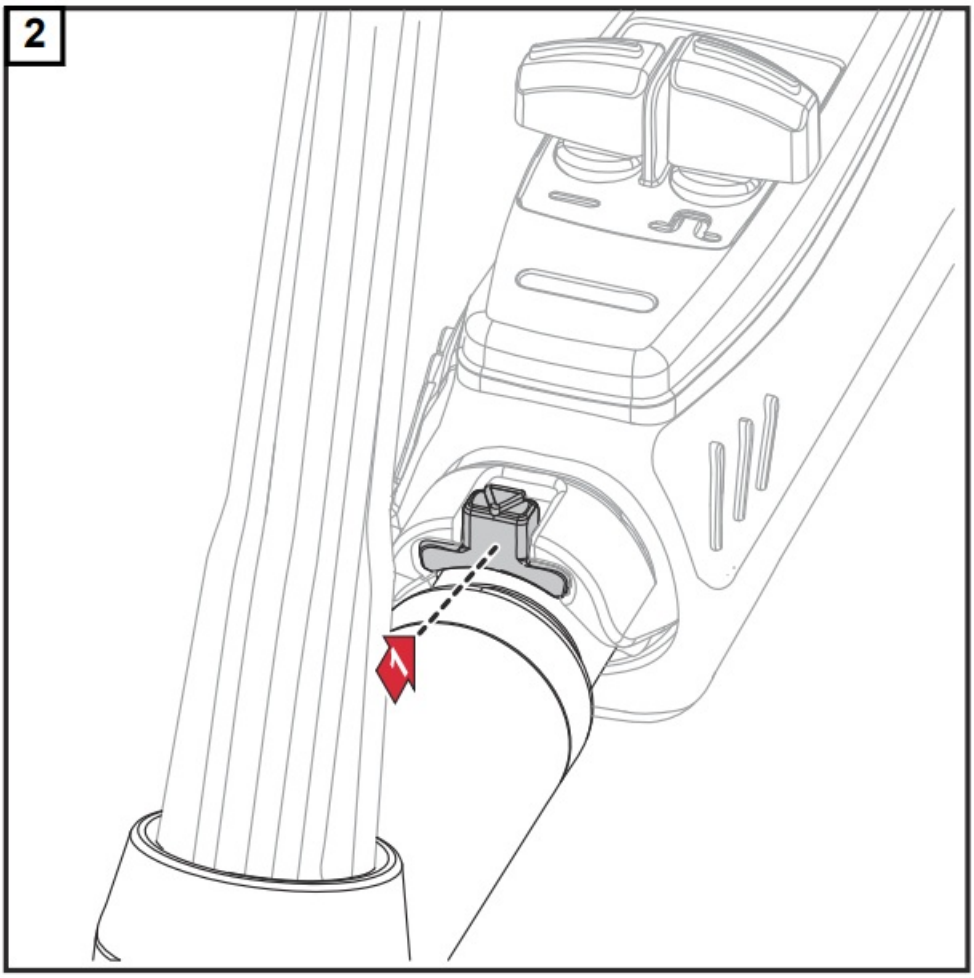
Changing The Torch Body Of A Water-cooled Welding Torch

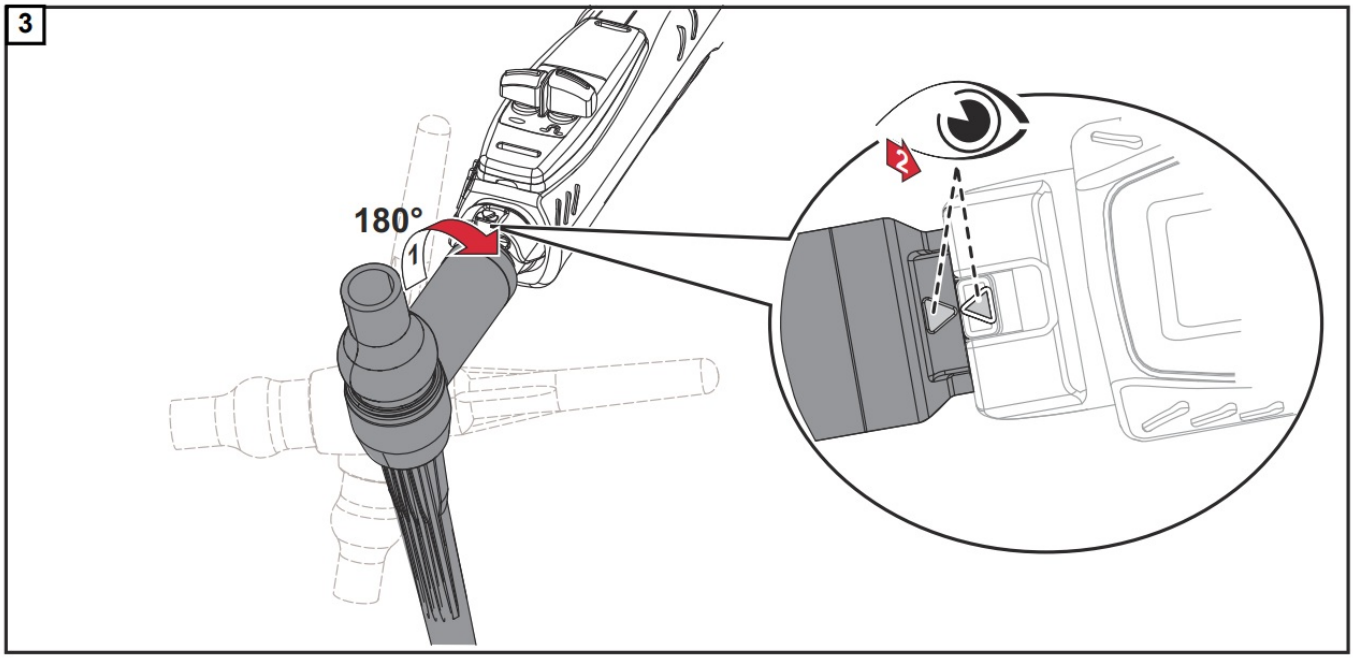
Automatic emptying of the welding torch and changing the torch body

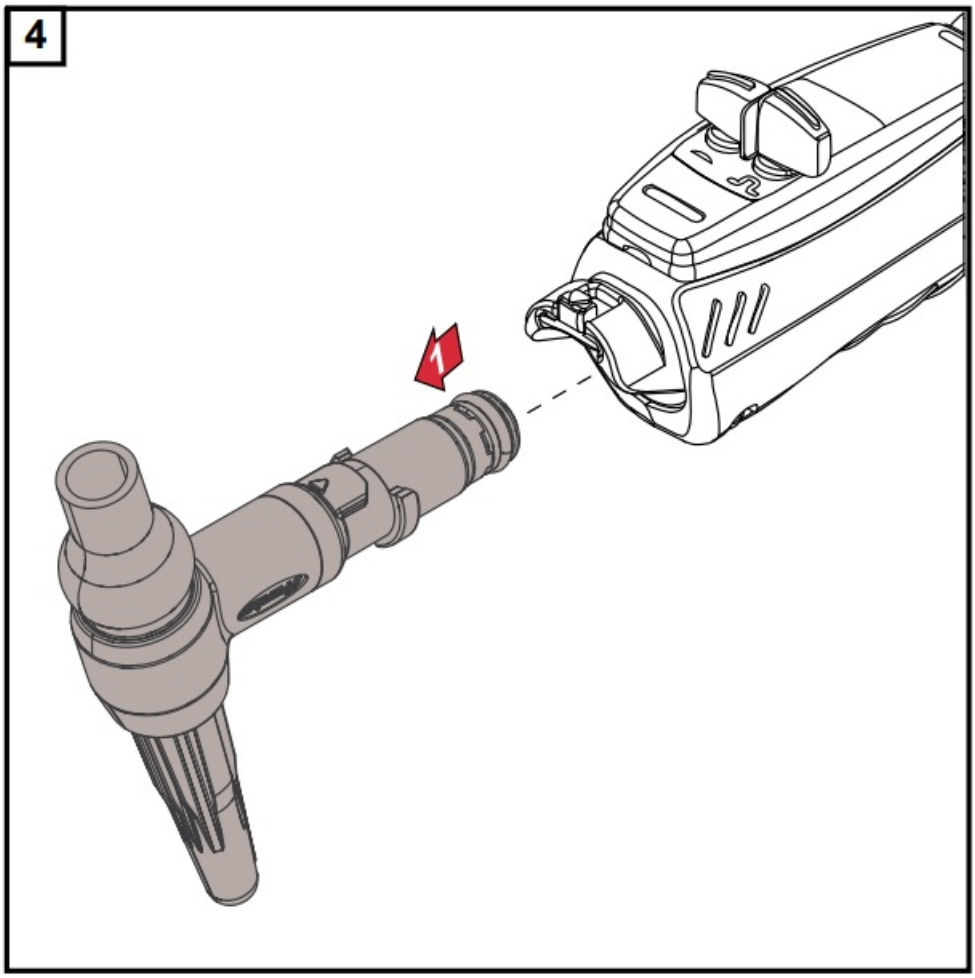
Danger from switched on power source during automatic emptying of the welding torch.
Unintentional arc ignitions can occur.

- Follow the instructions for automatic emptying of the welding torch in the cooling unit Operating Instructions, the power source Operating Instructions, and on the power source control panel.
- When carrying out the work on the torch body as described below, keep at least 1 m (39.37 in.) away from electrically conductive objects.

Automatic emptying of the welding torch (e.g., with CU 600t /MC) and removing the torch body:
Empty the torch hose pack using the corresponding cooling unit function


2
1


3
180°
1
2



Remove contamination and coolant residues from the hose pack interface
Remove contamination and coolant residues from the torch body interface
Fit the protective cap to the torch body interface

Fitting the torch body:

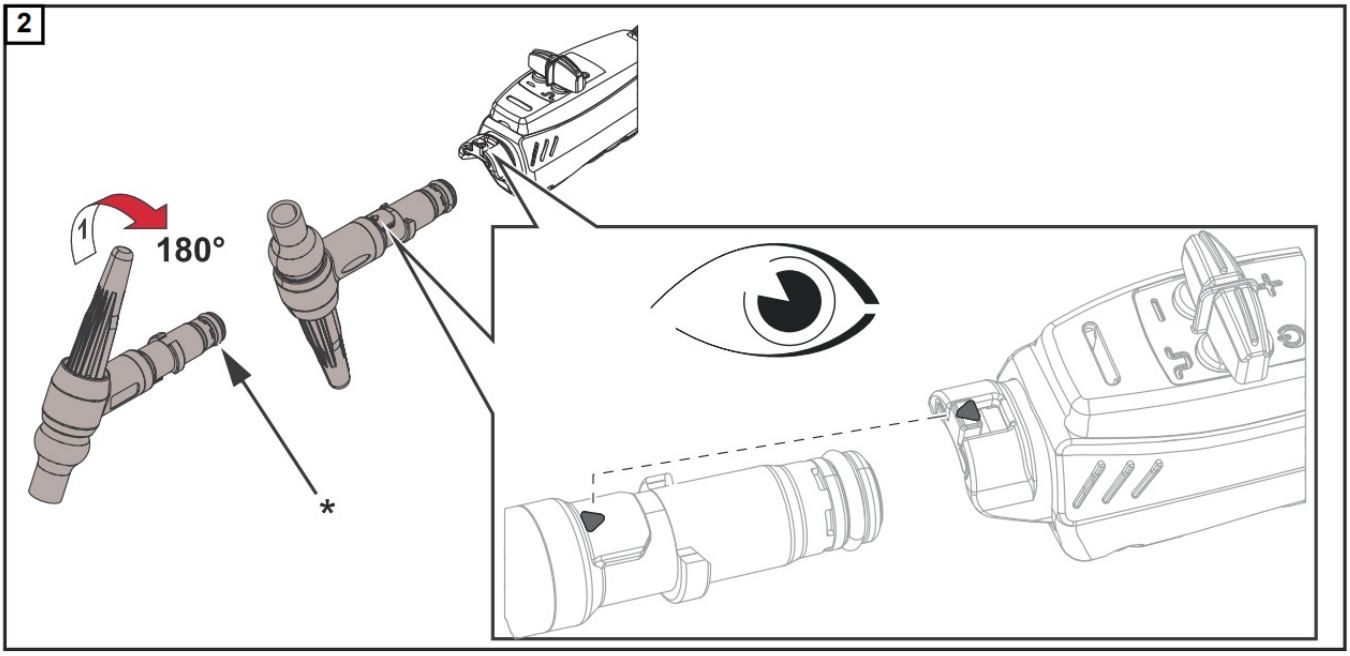
⚠ CAUTION! Danger due to incompatible system components.
This can result in damage to property.

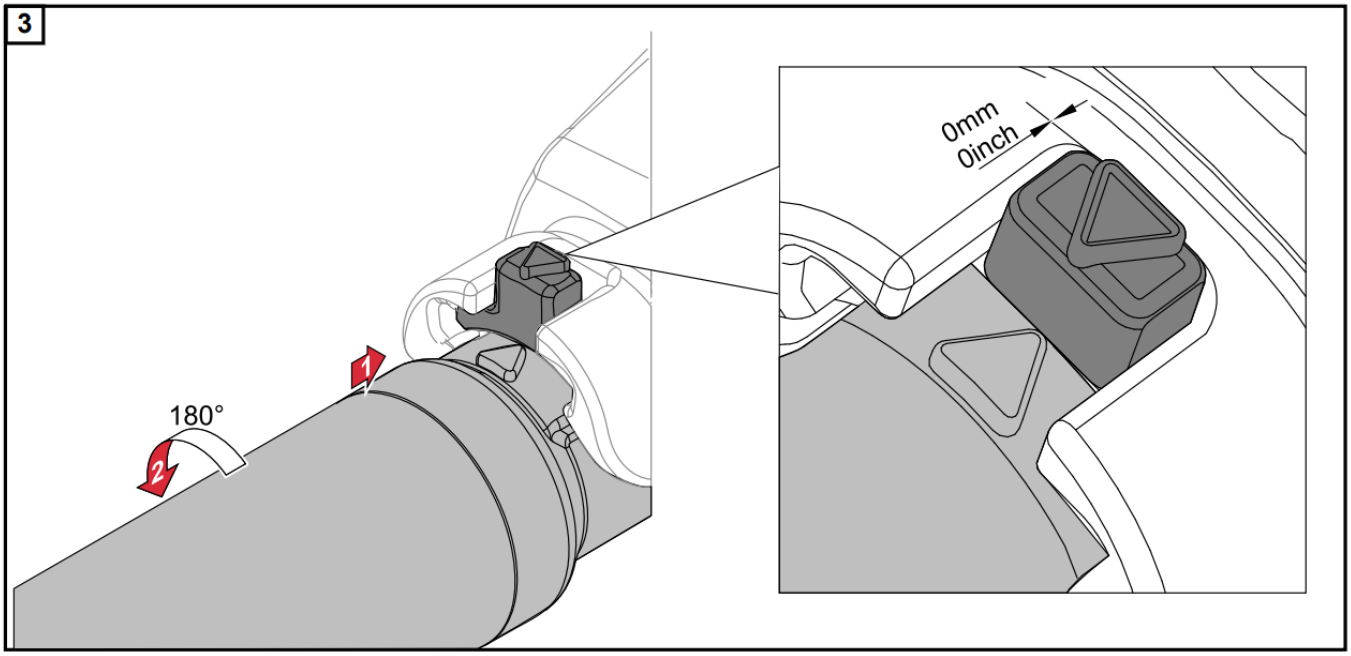
- Only connect torch bodies and hose packs that are using the same type of cooling.
- Only fit water-cooled torch bodies to water-cooled hose packs.

NOTE! Risk due to damaged O-ring on the torch body.
A damaged O-ring on the torch body can lead to contamination of the shielding gas, resulting in a defective weld.

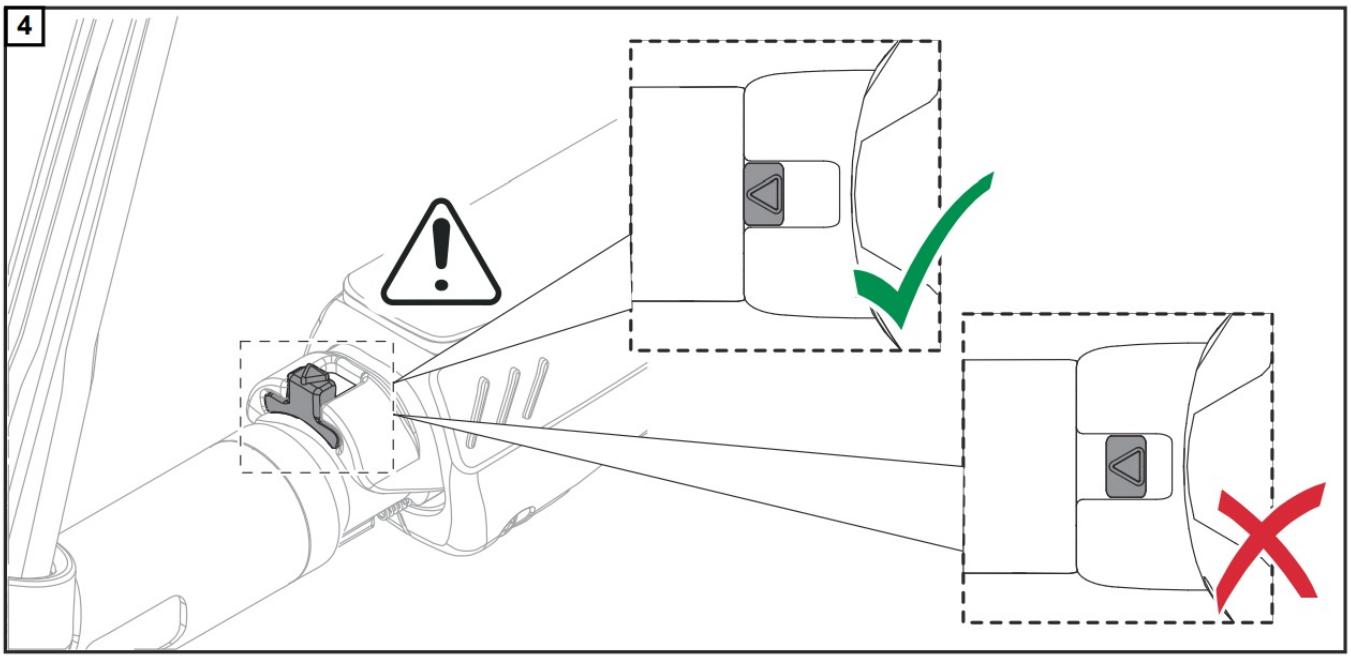
- Before each start-up, ensure that the O-ring on the torch body is undamaged.

* Grease the O-ring on the torch body





Push the torch body locking device fully back and at the same time turn the torch body 180°.



⚠ CAUTION! Danger due to incorrectly fitted torch body.
This can result in damage to property.

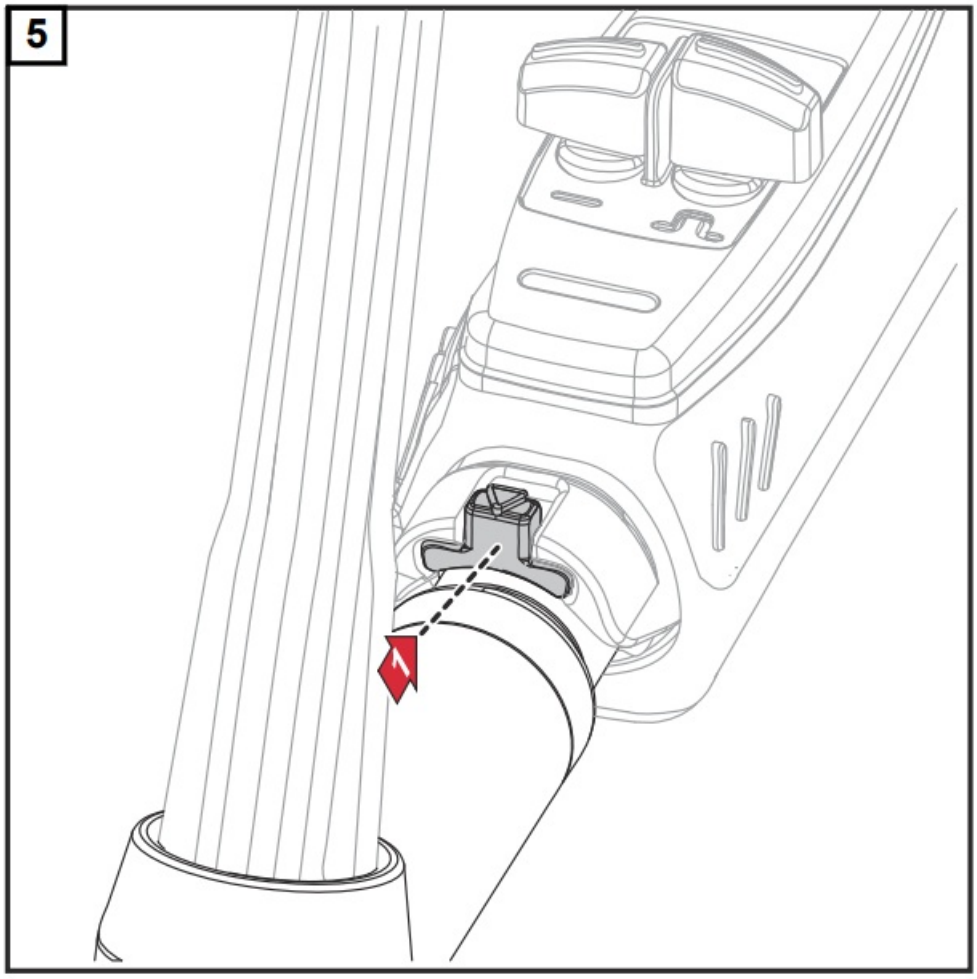
- Ensure that the locking device is fully forward after fitting the torch body – only then is the torch body properly fitted and locked.

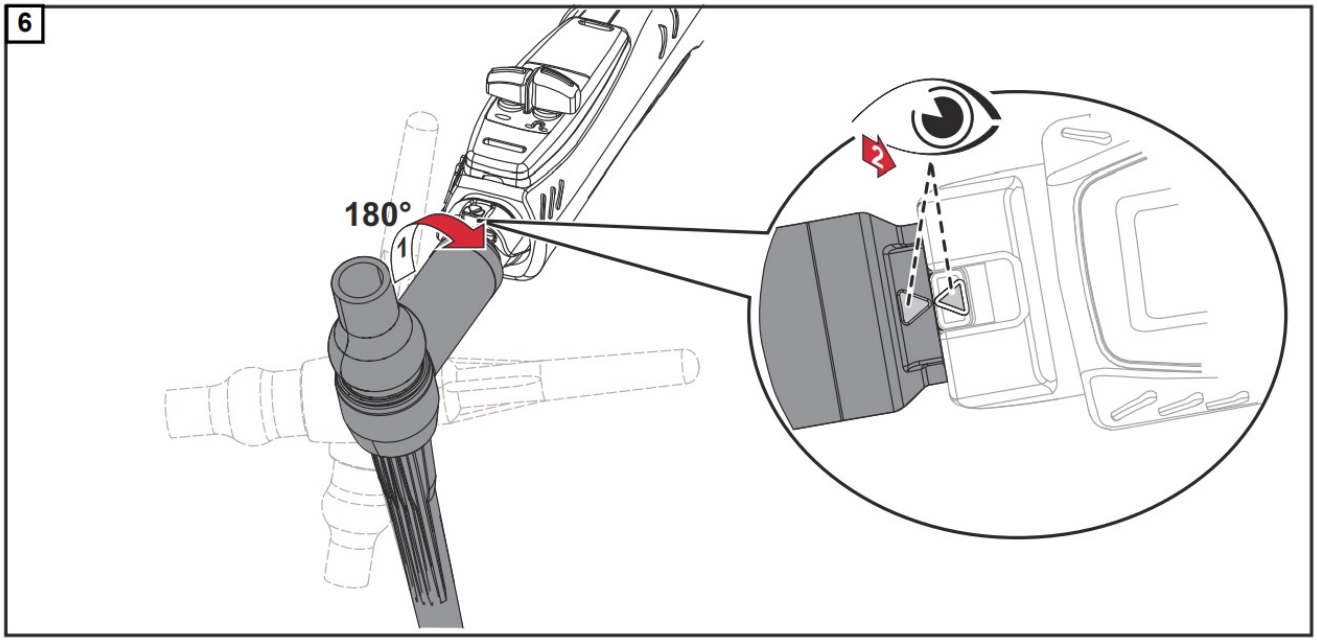
Press the gas-test button on the power source Shielding gas flows out for 30 s.
Check the coolant flow:
You must be able to see a strong return flow into the cooling unit coolant container.
Perform a test weld and check the quality of the weld

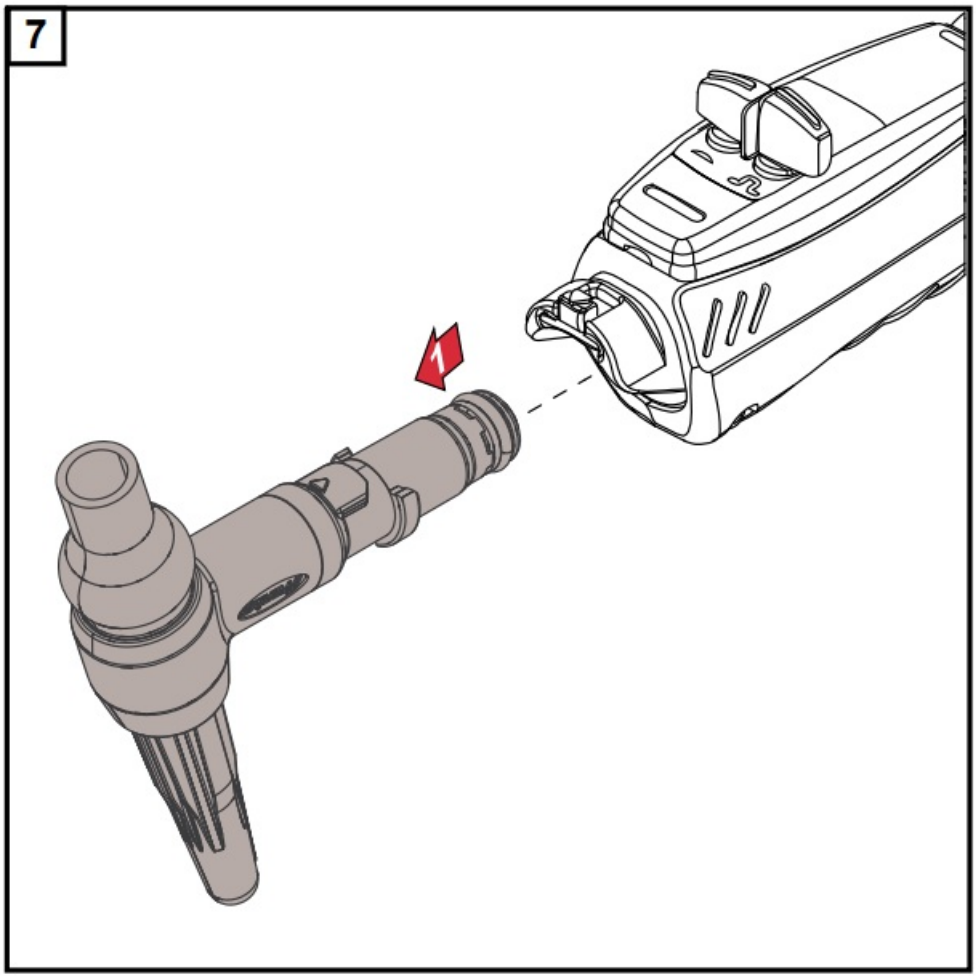
Manually emptying the welding torch and changing the torch body

Manually emptying the welding torch and removing the torch body:

1. Switch off the power source and disconnect from the grid
2. Wait for the cooling unit to run down
3. Shut off the coolant supply hose from the cooling unit
4. Purge the coolant supply hose with compressed air at maximum 4 bar (58.02 psi)
   – This will cause a large part of the coolant to flow back into the coolant container


5
1


6
180°
1
2



Remove contamination and coolant residues from the hose pack interface
Remove contamination and coolant residues from the torch body interface
Fit the protective cap to the torch body interface

Fitting the torch body:

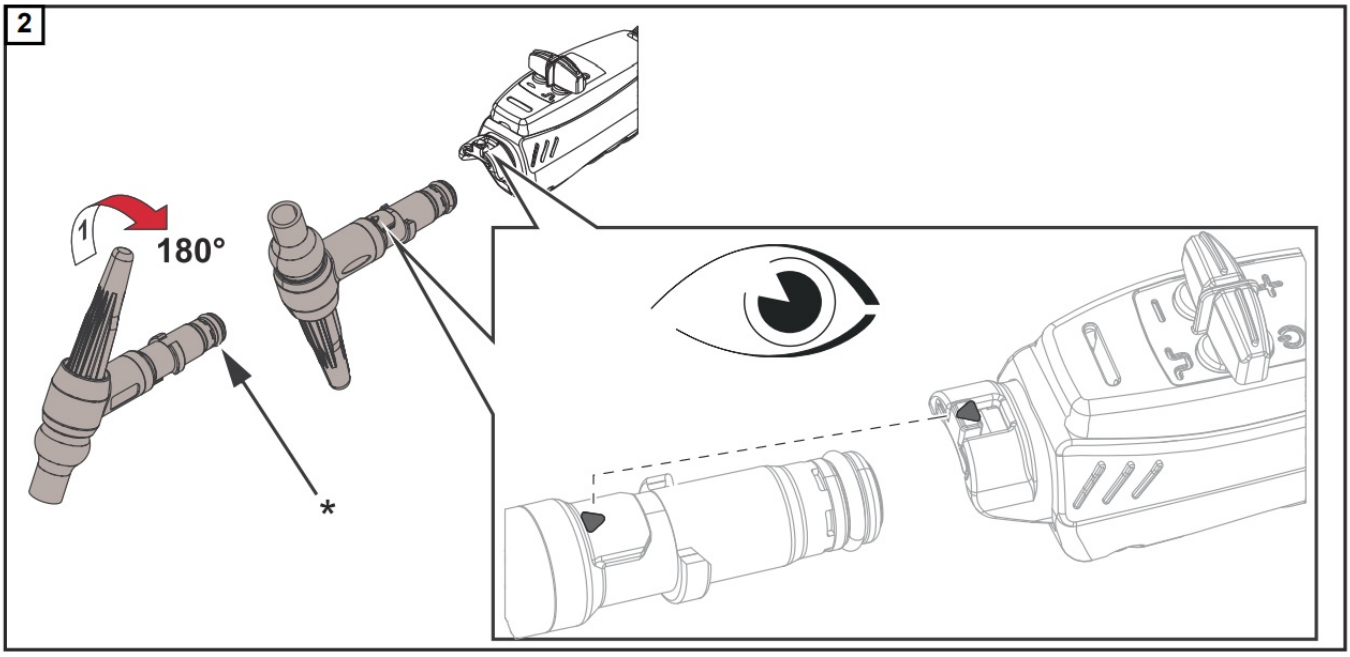
⚠ CAUTION! Danger due to incompatible system components.
This can result in damage to property.

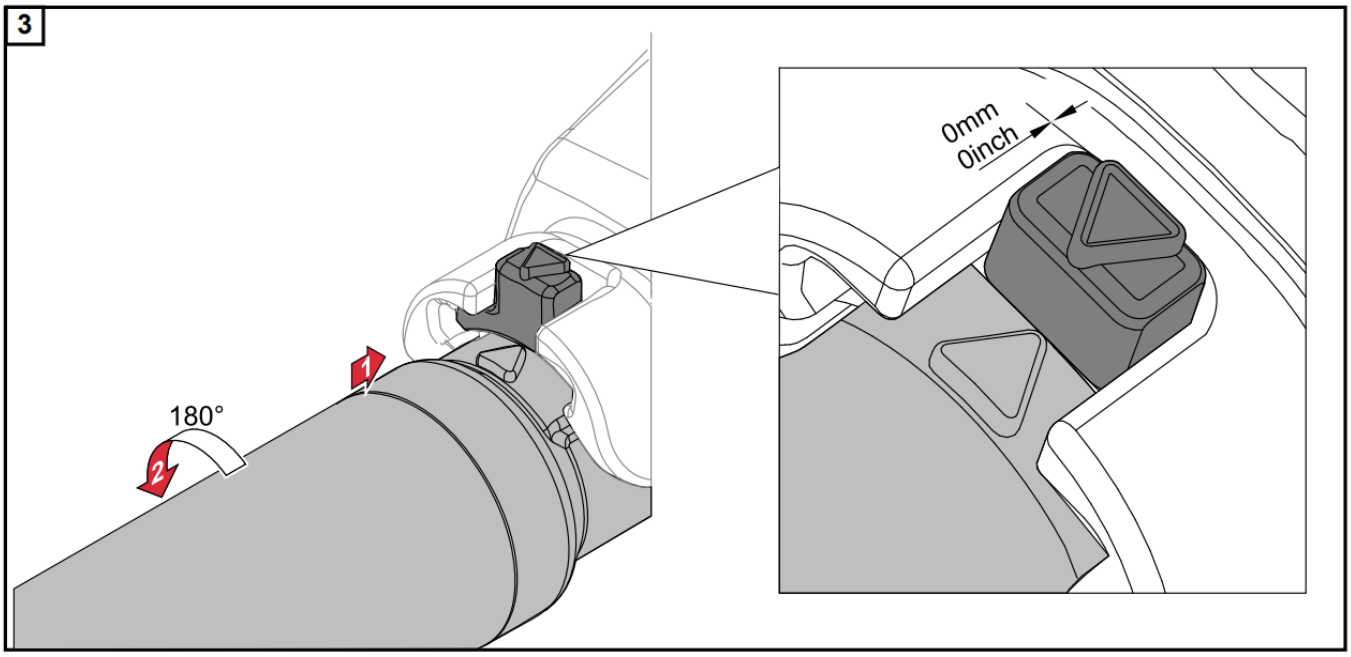
- Only connect torch bodies and hose packs that are using the same type of cooling.
- Only fit water-cooled torch bodies to water-cooled hose packs.

NOTE! Risk due to damaged O-ring on the torch body.
A damaged O-ring on the torch body can lead to contamination of the shielding gas, resulting in a defective weld.

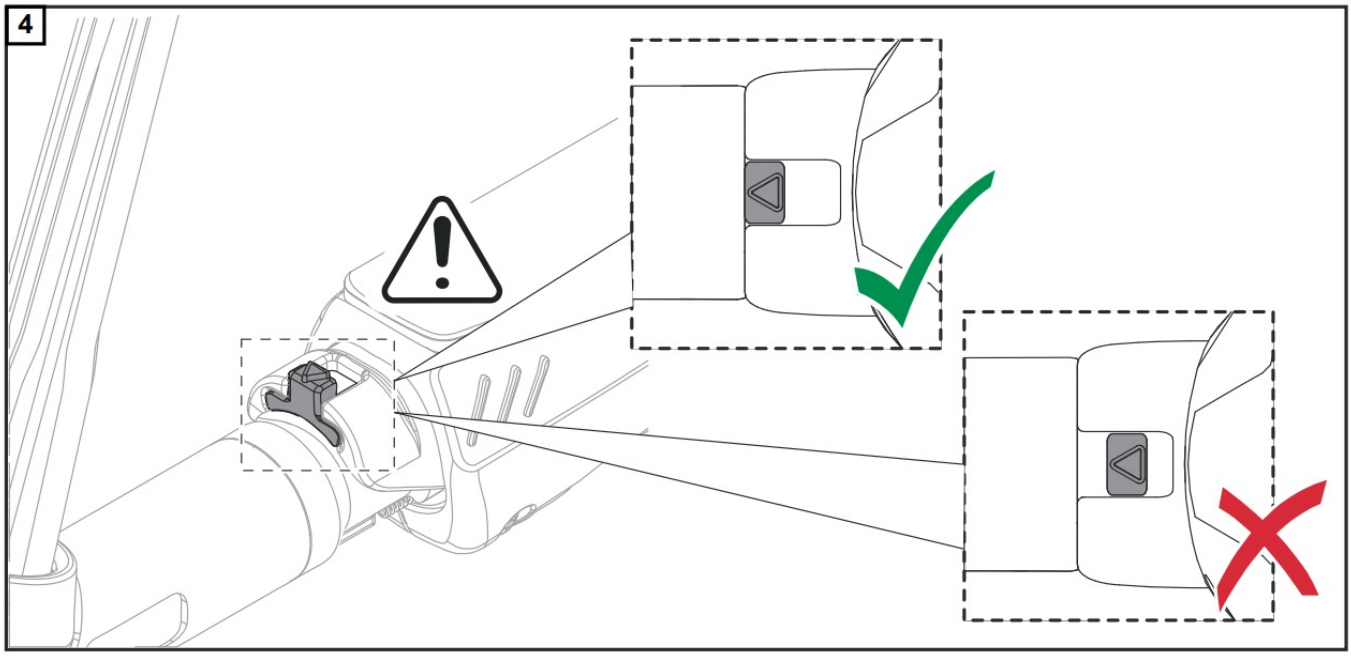
- Before each start-up, ensure that the O-ring on the torch body is undamaged.

* Grease the O-ring on the torch body





Push the torch body locking device fully back and at the same time turn the torch body 180°.



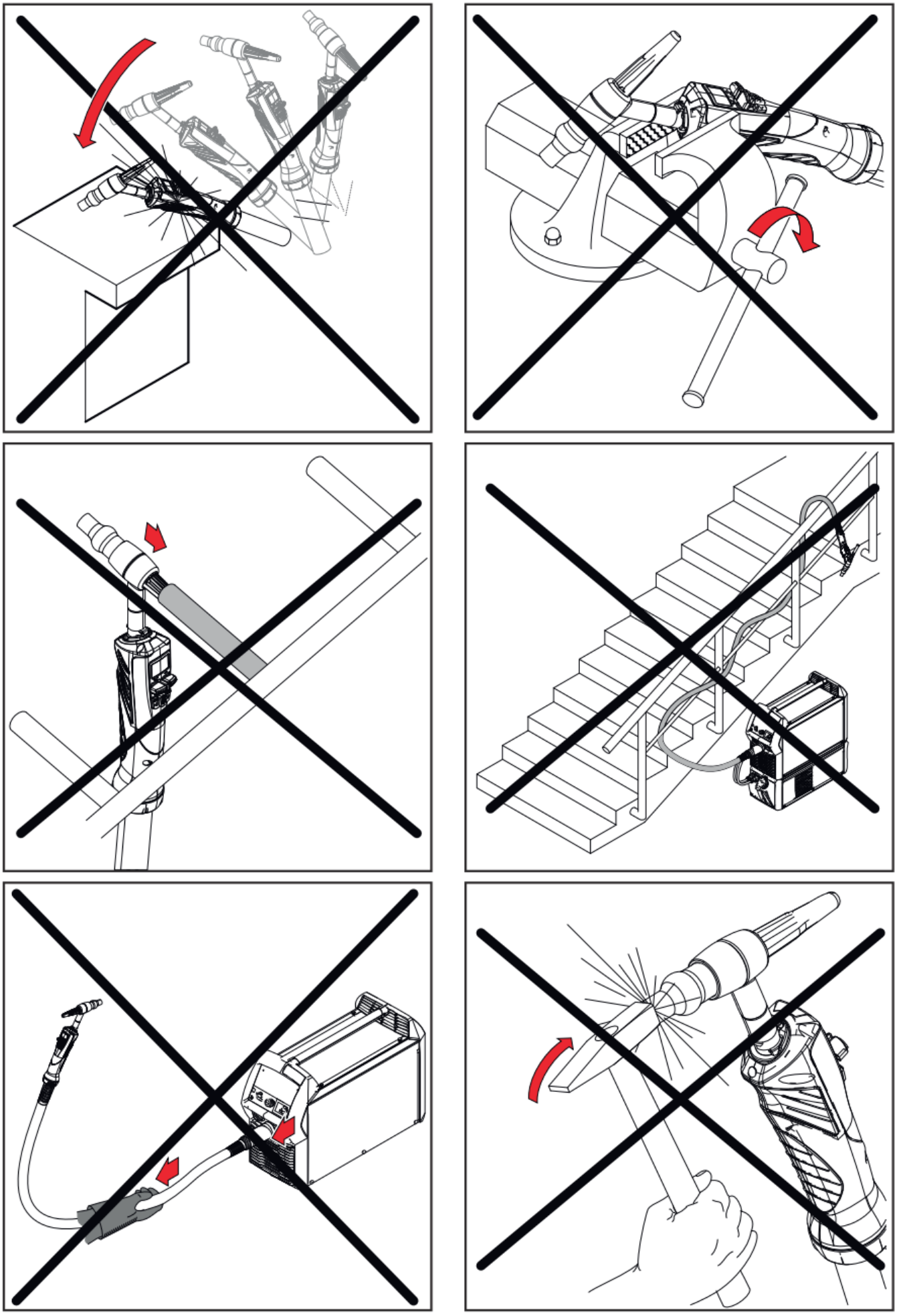
⚠ CAUTION! Danger due to incorrectly fitted torch body.
This can result in damage to property.

- Ensure that the locking device is fully forward after fitting the torch body – only then is the torch body properly fitted and locked.

Connect the power source to the grid and switch on
Press the gas-test button on the power source Shielding gas flows out for 30 s.
Check the coolant flow:
You must be able to see a strong return flow into the cooling unit coolant container.
Perform a test weld and check the quality of the weld

Service, Maintenance And Disposal

Prohibited



Maintenance at every start-up

- Check wearing parts, replace faulty wearing parts
- Purge the gas nozzle of welding spatter In addition to the above list of steps to be carried out at every start-up, for water-cooled welding torches:
- Ensure that all coolant connections are leak-tight
- Ensure that there is a proper coolant return flow

Disposal Materials should be disposed of according to valid local and national regulations.

Troubleshooting

Welding torch cannot be connected

Cause: Bayonet lock bent
Remedy: Replace bayonet lock

No welding current

Power source switched on, power source indication illuminates, shielding gas present

Cause: Incorrect ground connection
Remedy: Establish proper ground connection

Cause: Power cable in welding torch interrupted
Remedy: Replace welding torch

Cause: Tungsten electrode loose
Remedy: Tighten tungsten electrode using torch cap

Cause: Wearing parts loose
Remedy: Tighten wearing parts

No function after pressing torch trigger

Power source switched on, power source indication illuminates, shielding gas present

Cause: Power plug not plugged in
Remedy: Plug in power plug

Cause: Welding torch or welding torch control line faulty
Remedy: Replace welding torch

Cause: Plug connections “torch trigger/control line/power source” faulty
Remedy: Check plug connection / send power source or welding torch to service team

Cause: PCB in welding torch faulty
Remedy: Replace PCB

HF flashover at welding torch connection

Cause: Welding torch connection not sealed
Remedy: Replace O-ring on the bayonet lock

HF flashover at the shell-type handle

Cause: Hose pack is not sealed
Remedy: Replace hose pack

Cause: Shielding gas hose connection to torch body not sealed
Remedy: Adjust and seal hose

No shielding gas

All other functions present

Cause: Gas cylinder empty
Remedy: Change gas cylinder

Cause: Gas pressure regulator faulty
Remedy: Replace gas pressure regulator

Cause: Gas hose kinked, damaged, or not attached
Remedy: Attach and straighten gas hose. Replace faulty gas hose

Cause: Welding torch faulty
Remedy: Replace welding torch

Cause: Gas solenoid valve faulty
Remedy: Contact service team (have gas solenoid valve replaced)

Poor-quality weld properties

Cause: Incorrect welding parameters
Remedy: Check settings

Cause: Incorrect ground connection
Remedy: Check ground connection and terminal for polarity

Welding torch gets very hot

Cause: Welding torch is inadequately dimensioned
Remedy: Observe duty cycle and load limits

Cause: For water-cooled systems only: Coolant flow too low
Remedy: Check water level, water flow rate, water contamination, etc. Coolant pump blocked: Switch on shaft of coolant pump at the gland using a screwdriver

Cause: For water-cooled systems only: “Cooling unit Ctrl” parameter is set to “OFF”.
Remedy: In the Setup menu, set the “Cooling unit Ctrl” parameter to “Aut” or “ON”.

Porosity of weld seam

Cause: Spattering in the gas nozzle, causing inadequate gas shield for weld seam
Remedy: Remove welding spatter

Cause: Holes in gas hose or imprecise gas hose connection
Remedy: Replace gas hose

Cause: O-ring at central connector is cut or faulty
Remedy: Replace O-ring

Cause: Moisture/condensate in the gas line
Remedy: Dry gas line

Cause: Gas flow too strong or weak
Remedy: Correct gas flow

Cause: Too much parting agent applied
Remedy: Remove excess parting agent/apply less parting agent

Poor ignition properties

Cause: Unsuitable tungsten electrode (e.g., WP electrode for DC welding)
Remedy: Use suitable tungsten electrode

Cause: Wearing parts loose
Remedy: Screw on wearing parts tightly

Gas nozzle is cracked

Cause: Tungsten electrode not protruding far enough out of the gas nozzle
Remedy: Have tungsten electrode protrude more out of the gas nozzle

Technical Data

General

This product meets the requirements set out in standard IEC 60974-7.

NOTE! The performance data specifications only apply when using standard wearing parts.
When using gas lenses and shorter gas nozzles, the welding current is reduced.

NOTE! The welding current specifications apply to gas-cooled torch bodies only from a length of 65 mm (2.56 in.).
When using shorter torch bodies, the welding current is reduced by 30%.

NOTE! When welding at the power limit of the welding torch, use larger tungsten electrodes and gas nozzle opening diameters to increase the service life of the wearing parts.
Take amperage, AC balance, and AC current offset into account as performance-enhancing factors.

Gas-cooled torch body – TTB 80, TTB 160, TTB 220

	TTB 80 G	**TTB 160 G F**
DC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 80 A	35% D.C.1) / 160 A
	60% D.C.1) / 60 A	60% D.C.1) / 120 A
	100% D.C.1) / 50 A	100% D.C.1) / 90 A
AC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 30 A	35% D.C.1) / 120 A
		60% D.C.1) / 90 A
		100% D.C.1) / 70 A
Shielding gas (Standard EN 439)	Argon	Argon
Electrode diameter	1.0 – 3.2 mm (0.039 – 0.126 in.)	1.0 – 3.2 mm (0.039 – 0.126 in.)

	TTB 220 G
DC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 220 A
	60% D.C.1) / 170 A
	100% D.C.1) / 130 A
AC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 180 A
	60% D.C.1) / 130 A
	100% D.C.1) / 100 A
Shielding gas (Standard EN 439)	Argon

	TTB 220 G
Electrode diameter	1.0 – 4.0 mm 0.039 – 0.158 in.

	TTB 220 A G F	TTB 220 P G F
DC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 220 A	30% D.C.1) / 220 A
	60% D.C.1) / 170 A	60% D.C.1) / 160 A
	100% D.C.1) / 130 A	100% D.C.1) / 130 A
AC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 180 A	30% D.C.1) / 170 A
	60% D.C.1) / 120 A	60% D.C.1) / 120 A
	100% D.C.1) / 100 A	100% D.C.1) / 100 A
Shielding gas (Standard EN 439)	Argon	Argon
Electrode diameter	1.0 – 4.0 mm 0.039 – 0.158 i n.	1.0 – 4.0 mm 0.039 – 0.158 i n.

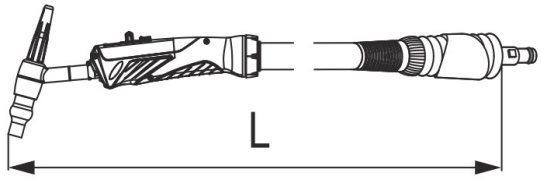
1) D.C. = duty cycle

Water-cooled torch body – TTB 180, TTB 300

	TTB 180 W	TTB 300 W
DC welding current at 10 min / 40 °C (104 °F)	60% D.C.1) / 180 A	60% D.C.1) / 300 A
	100% D.C.1) / 140 A	100% D.C.1) / 230 A
AC welding current at 10 min / 40 °C (104 °F)	60% D.C.1) / 140 A	60% D.C.1) / 250 A
	100% D.C.1) / 110 A	100% D.C.1) / 190 A
Shielding gas (Standard EN 439)	Argon	Argon
Electrode diameter	1.0 – 3.2 mm (0.039 – 0.126 i n.)	1.0 – 3.2 mm (0.039 – 0.126 i n.)
Minimum permissible coolant flow Qmin	1 l/min (0.26 gal/min)	1 l/min (0.26 gal/min)

1) D.C. = duty cycle

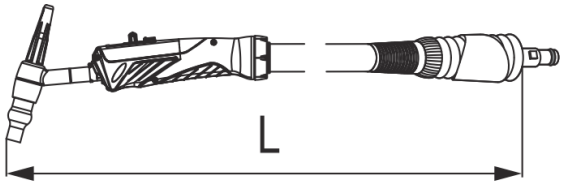
Gas-cooled hosepack – THP 120 G SH, THP 180 G SH

	THP 120 G SH	THP 180 G SH
DC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 120 A	35% D.C.1) / 180 A
	60% D.C.1) / 100 A	60% D.C.1) / 130 A
	100% D.C.1) / 80 A	100% D.C.1) / 100 A
AC welding current at 10 min / 40 °C (104 °F)	35% D.C.1) / 90 A	35% D.C.1) / 120 A
	60% D.C.1) / 70 A	60% D.C.1) / 90 A
	100% D.C.1) / 50 A	100% D.C.1) / 70 A
Shielding gas (Standard EN 439)	Argon	Argon
	4.0 m / 8.0 m (13 ft. + 1.48 in. / 26 ft. + 2.96 in.)	4.0 m / 8.0 m (13 ft. + 1.48 in. / 26 ft. + 2.96 in.)
Maximum permitted open circuit voltage (U0)	113 V	113 V
Maximum permitted striking voltage (UP)	10 kV	10 kV
Torch trigger Umax	35 V	35 V
Torch trigger Imax	100 mA	100 mA

1) D.C. = duty cycle

Gas-cooled hosepack – THP 150 G SH

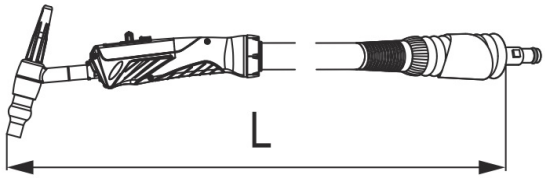
NOTE! The THP 150 G SH hosepack is not intended or suitable for arc ignition devices, for example high frequency ignition.
The hosepack is intended for use with TransPocket 150/180 and AccuPocket 150 power sources only.

	THP 150 G SH
DC welding current at 10 min / 40 °C (104 °F)	25% D.C.1) / 150 A
	35% D.C.1) / 120 A
	60% D.C.1) / 100 A
	100% D.C.1) / 80 A
AC welding current at 10 min / 40 °C (104 °F)	25% D.C.1) / 110 A
	35% D.C.1) / 90 A
	60% D.C.1) / 70 A
	100% D.C.1) / 50 A
Shielding gas (Standard EN 439)	Argon
	4.0 m / 8.0 m (13 ft. + 1.48 in. / 26 ft. + 2.96 in.)

	THP 150 G SH
Maximum permitted open circuit voltage U0	113 V
Maximum permitted striking voltage UP	**Not intended for or suitable for arc ignition devices!**

1) D.C. = duty cycle

Water-cooled hosepack – THP 300 SH

	THP 300 SH
DC welding current at 10 min / 40 °C (104 °F)	60% D.C.1) / 300 A
	100% D.C.1) / 230 A
AC welding current at 10 min / 40 °C (104 °F)	60% D.C.1) / 250 A
	100% D.C.1) / 190 A
Shielding gas (Standard EN 439)	Argon
	4.0 m / 8.0 m (13 ft. + 1.48 in. / 26 ft + 2.96 in.)
Lowest cooling capacity as per IEC standard 60974-2, depending on the hosepack length	650 W / 650 W
Minimum permissible coolant flow Qmin	1 l/min (0.26 gal./min [US])
Minimum permissible coolant pressure pmin	3 bar (43 psi)
Maximum permissible coolant pressure pmax	5.5 bar (79 psi)
Maximum permitted open circuit voltage U0	113 V
Maximum permitted striking voltage UP	10 kV

1) D.C. = duty cycle

Customer Support

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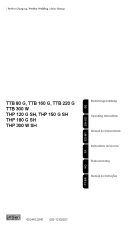
Under www.fronius.com/contact you will find the adresses of all Fronius Sales & Service Partners and locations.

Documents / Resources

	Fronius TTB 80 G Multilock Torch Body [pdf] Instructions TTB 80 G Multilock Torch Body, TTB 80 G, Multilock Torch Body, Torch Body, Body

References

- Corporate Contact