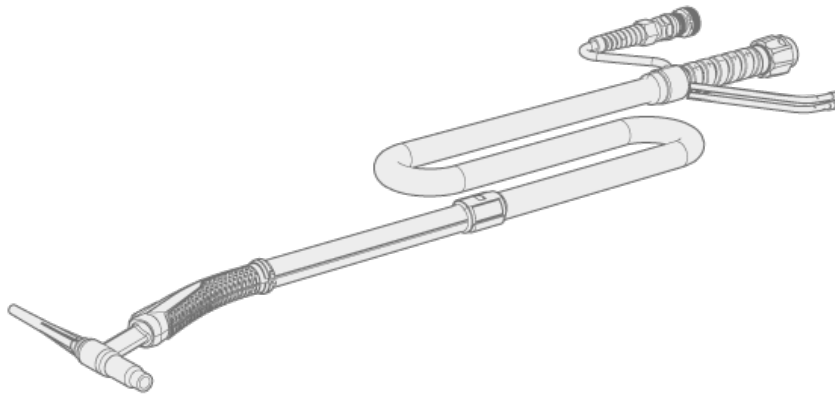


# FLEXLITE TX



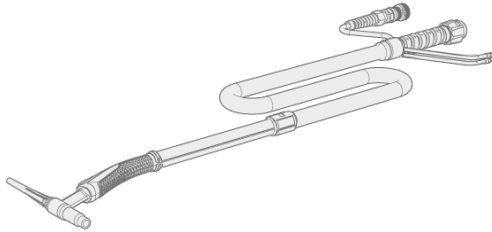
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## 1. GENERAL

These instructions describe the use of Kemppi's Flexlite TX TIG welding torches. Flexlite TX torches are designed for manual welding in demanding industrial use and they are compatible with Kemppi TIG welding equipment with 4-pin or 7-pin connectors. Flexlite TX range covers both water-cooled and gas-cooled models.



Flexlite TX torches are available in series 3 and 5, each designed to serve specific welding needs.


| Series 3 | Series 5 |
|----------|----------|
| TX 133   | TX 135   |
| TX 163   | TX 165   |
| TX 223   | TX 225   |
| TX 253   | TX 255   |
| TX 303   | TX 305   |
| TX 353   | TX 355   |
|          | TX 455   |

### Important notes

Read the instructions through carefully. For your own safety, and that of your working environment, pay particular attention to the safety instructions delivered with the equipment.

Items in the manual that require particular attention in order to minimize damage and harm are indicated with the below symbols. Read these sections carefully and follow their instructions.

 *Note: Gives the user a useful piece of information.*

 *Caution: Describes a situation that may result in damage to the equipment or system.*

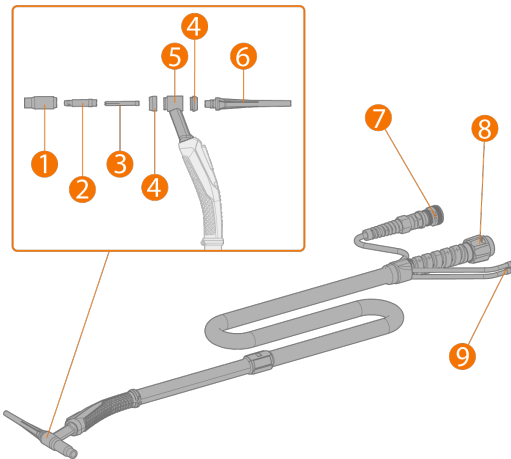
 *Warning: Describes a potentially dangerous situation. If not avoided, it will result in personal damage or fatal injury.*

### DISCLAIMER


While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions. Kemppi reserves the right to change the specification of the product described at any time without prior notice. Do not copy, record, reproduce or transmit the contents of this guide without prior permission from Kemppi.

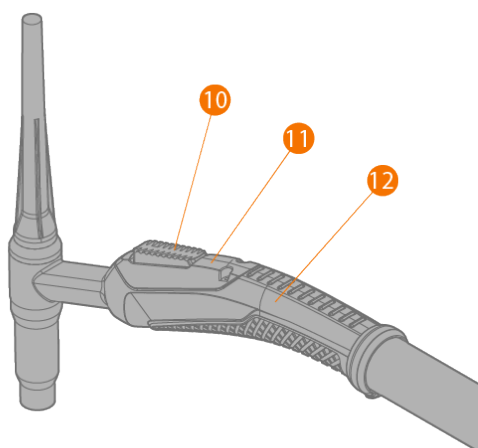
## 2. ABOUT EQUIPMENT

The Flexlite TX TIG welding torches are packed with features designed to support professional welding. The equipment consists of:





1. Gas nozzle
2. Collet body
3. Collet
4. Insulating ring\*
5. Torch body
6. Electrode back cap
7. Control cable connector (start and remote signals)
8. Welding cable connector (shielding gas and welding current)
9. Coolant outlet and inlet hose connectors (water-cooled models only)

 *Series 3 torches differ from series 5 torches in connectors, for example. For information on series 3 torch connectors, refer to "Connecting torch" on page 13.*



10. ON/OFF switch
11. Switch cover
12. Torch handle

\* Some Flexlite TX torch models also include a back cap insulating ring, in addition to the gas nozzle insulating ring.

-  *Separate series 3 torches with a DIX connector and a manual gas valve on the torch body are also available. Use these torches with MMA power sources for scratch and TouchArc TIG ignition.*
-  *Dedicated lens models of the collet body and the gas nozzle exist for laminar flow welding. Bigger lens consumables require an additional insulating ring.*

## EQUIPMENT IDENTIFICATION

### **Quick Response (QR) code**

Device-related information or a web link to such information may be found in the form of a QR code on the device. The code can be read, for example, with a mobile device camera and a QR code application.

### 3. INSTALLATION



*Ensure that the welding equipment is not connected to the mains or that the welding torch is not connected to the welding machine at this stage.*



*Protect the equipment from rain and direct sunshine.*

"Assembling torch" on the next page

"Installing torch remote" on page 9

"Installing start switch extension" on page 11

"Connecting torch" on page 13

#### Before installation and use

Ensure compliance with your local and national safety requirements regarding the installation and use of high voltage units.

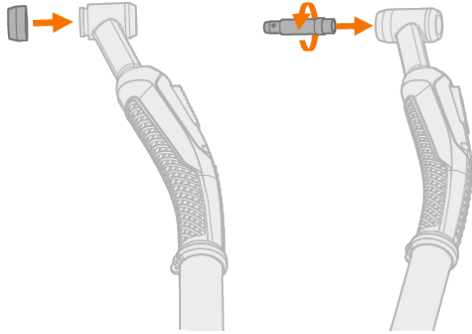
Check the contents of the packages and make sure the parts are not damaged.

Do not connect welding equipment to the mains before the installation is complete.

### 3.1 Assembling torch

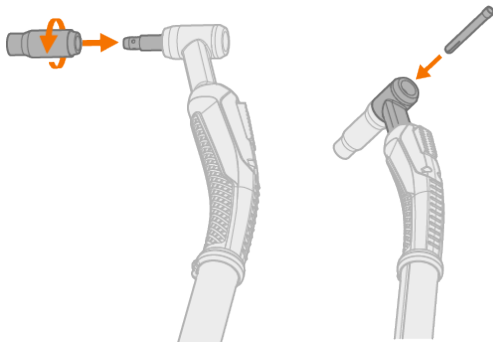
This chapter describes a typical Flexlite TX welding torch assembly. The details shown may vary depending on the exact torch setup.

1. Install the insulating ring and collet body.

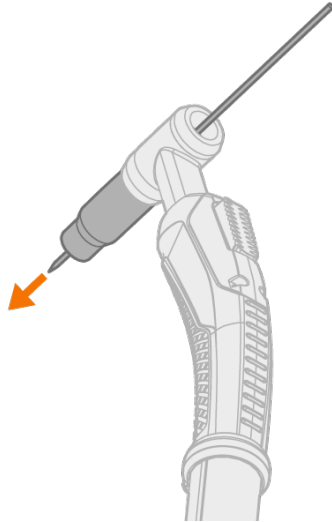


**i** Some Flexlite TX torch models also include a back cap insulating ring, in addition to the gas nozzle insulating ring.

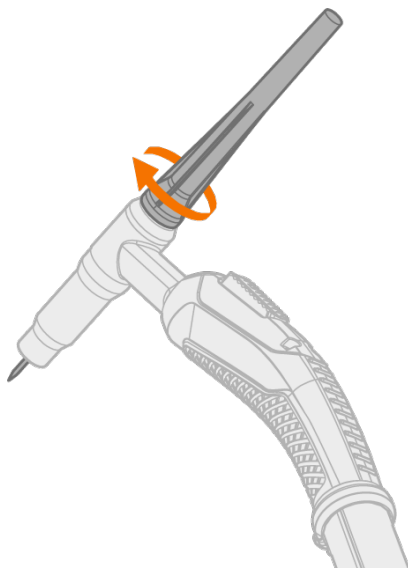
2. Install the gas nozzle and the collet.



3. Prior to installing the tungsten electrode, grind the electrode tip to the appropriate dimensions for your welding application. For more information, refer to the section "Electrode tip" on page 18.
4. Push the electrode into the torch and through the collet and gas nozzle.



5. Install the electrode back cap. Tighten the back cap to lock the electrode in place.



*Do not use excessive force. Overtightening may damage the torch components.*




*By loosening the electrode back cap, the electrode can be installed also by pushing it into the torch from the other side.*

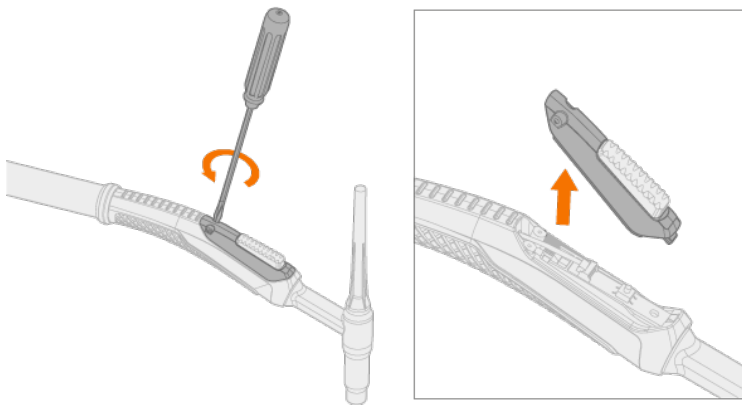
## 3.2 Installing torch remote

 You can install a torch remote on a series 5 torch only.

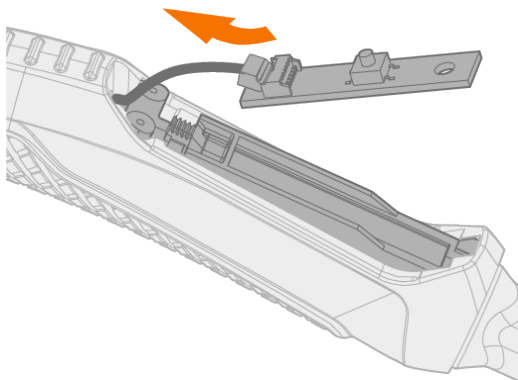
Many Flexlite TX welding torches are equipped as standard with ON/OFF start/stop switches. Optional remote control devices can be fitted to these TX torch models, allowing both start/stop function and welding current adjustment.

 Ensure that the welding equipment is not connected to the mains or that the welding torch is not connected to the welding machine at this stage.

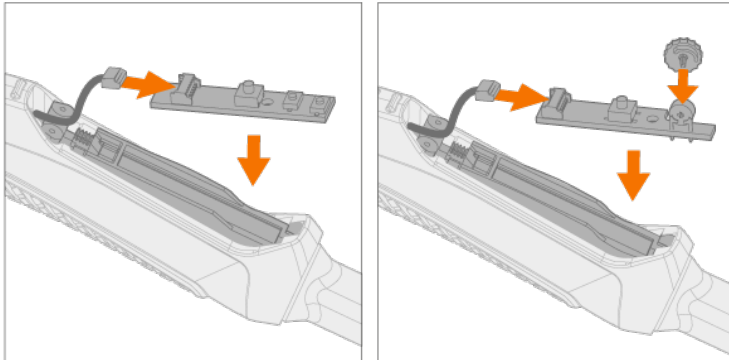
1. Open the switch cover by releasing the screws in the rear section of the cover and remove the cover.



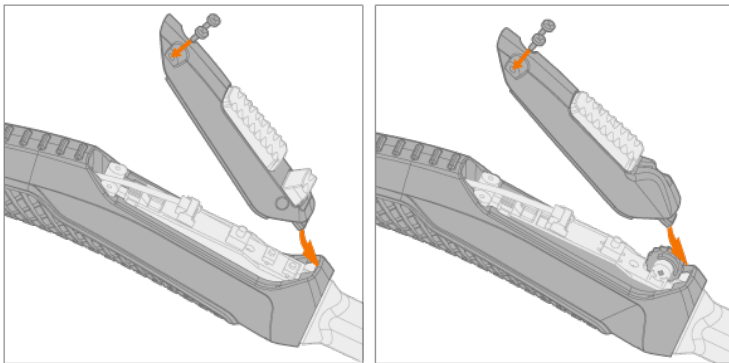
2. Take the existing circuit board out of its slot in the handle and unplug the connector.



3. Connect the torch remote control circuit board to the connector and place it in its slot in the handle. (Rocker switch model shown on the left and roller switch model on the right:)



4. Install the new switch cover by placing the front end of the cover in first and then pushing the rear end of the cover down. (Rocker switch model shown on the left and roller switch model on the right:)

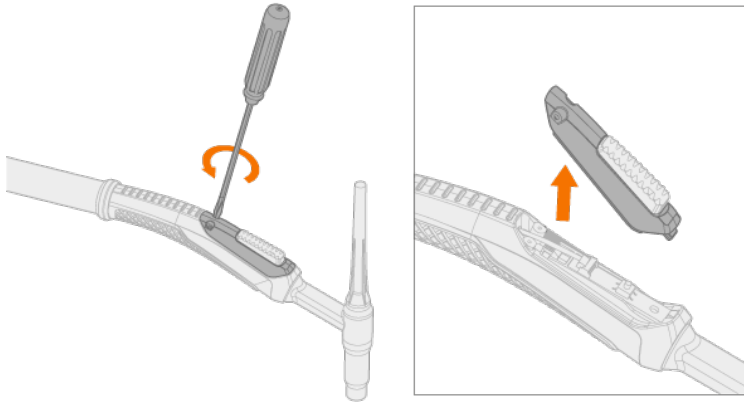


5. Secure the switch cover in place with the two screws in the rear section of the cover.

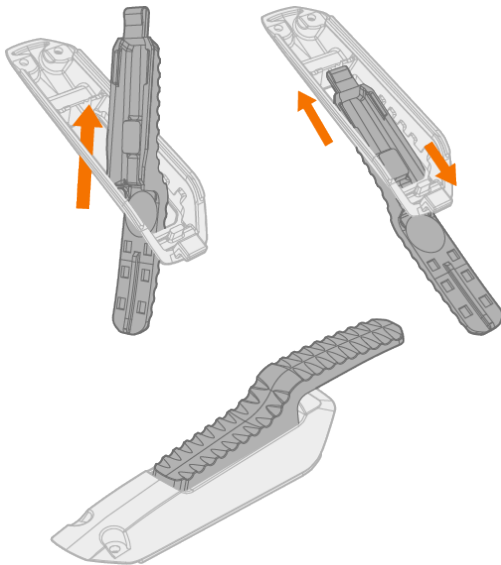
### 3.3 Installing start switch extension

The standard ON/OFF switch can be replaced with an extended start switch.

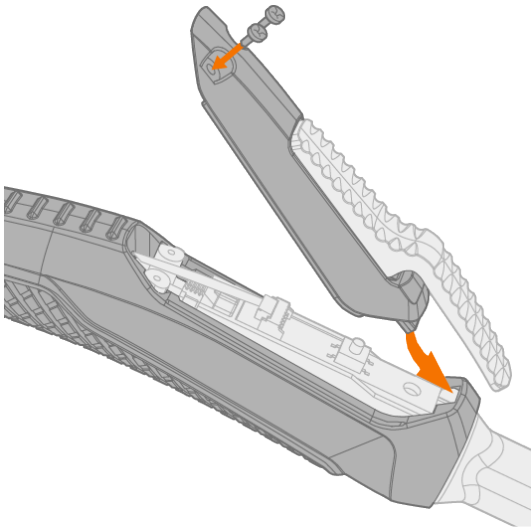
1. Open the switch cover by releasing the screws in the rear section of the cover and remove the cover.



2. Replace the standard start switch button on the cover with the extended start switch button.



3. Install the cover with the start switch extension in place.





4. Secure the switch cover in place with the two screws in the rear section of the cover.



*The switch extension cannot be used with the S neck TX torch models.*

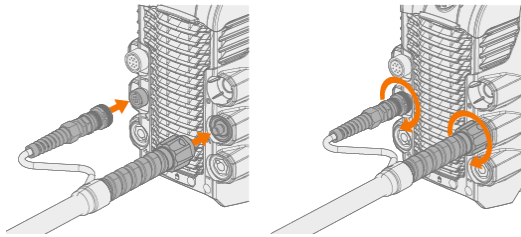
### 3.4 Connecting torch

 *Hand tighten the torch connectors. Loose connectors may overheat, create contact disturbances, mechanical damage and water or gas leakage.*

 *For connecting the torch, refer also to your welding equipment's instructions.*

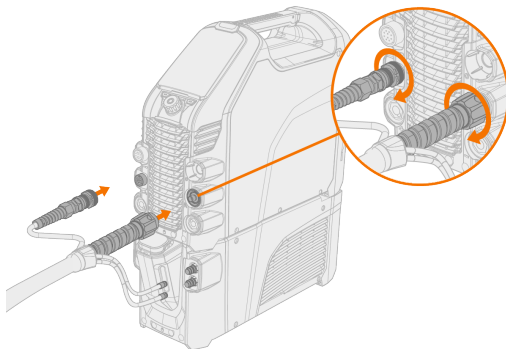
#### **Gas-cooled TIG torch (series 5)**

1. Connect the welding cable and the control cable to the power source. Secure by turning the connectors clockwise.

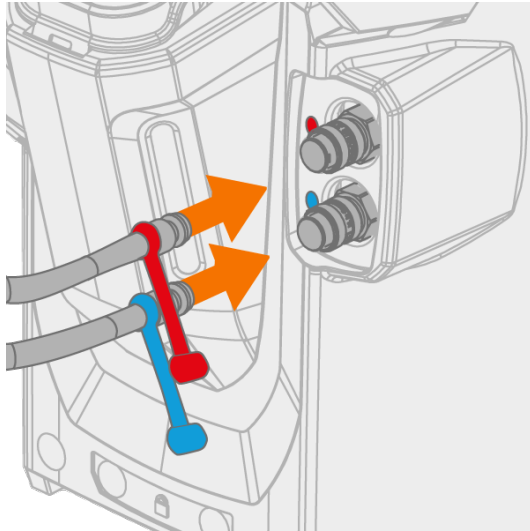


#### **Water-cooled TIG torch (series 5)**

1. Connect the welding cable and the control cable to the power source. Secure by turning the connectors clockwise.

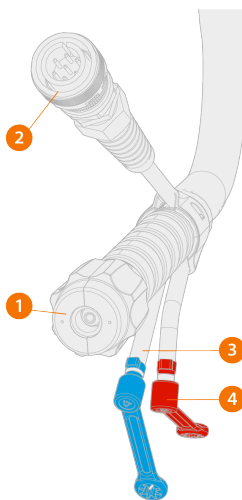


2. Connect the coolant inlet and outlet hoses to the cooling unit. Note that the connectors are color-coded.



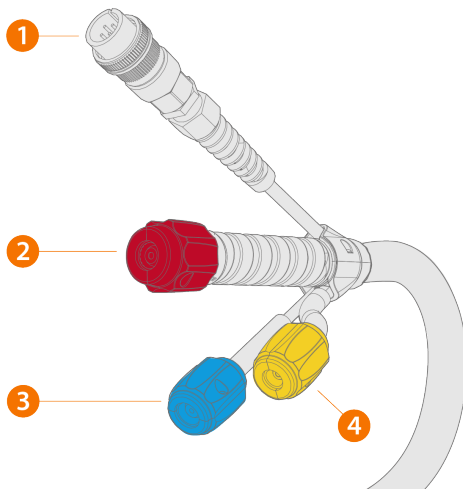
*Make sure to connect the coolant hoses to the correct hose connectors. If the connections cross, the torch and torch body may overheat.*

#### Connectors in TIG torch (series 5)



1. Welding cable connector
2. Control cable connector
3. Coolant hose connector
4. Coolant hose connector

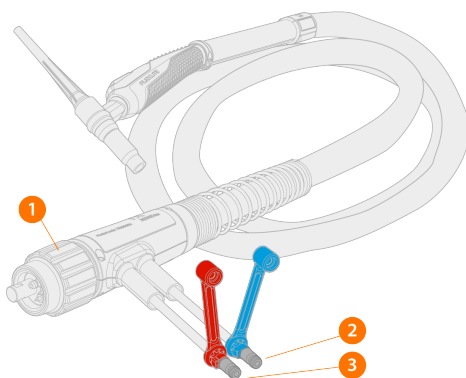
### Connectors in TIG torch (series 3)



1. Control cable connector.
2. Welding cable and coolant connector. In water-cooled torches this is the coolant outlet hose connector. In gas-cooled torches this is the shielding gas connector.
3. Coolant inlet hose connector (water-cooled torches only).
4. Shielding gas connector (water-cooled torches only).

 With series 3 torches that have a DIX connector, use a separate gas hose for gas connection.






### Connectors in TIG torch with euro connector (series 3)



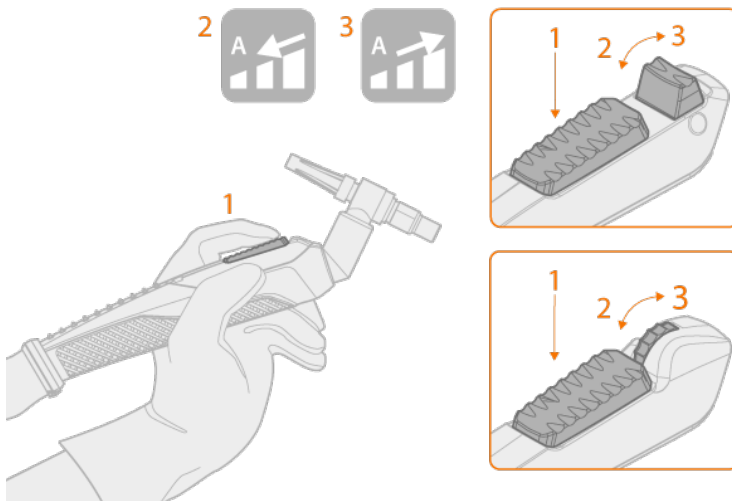
1. Euro connector
2. Coolant hose connector
3. Coolant hose connector

## 4. OPERATION


Before using the equipment, ensure that all the necessary installation actions have been completed according to your equipment setup and instructions.

-  *Welding is forbidden in places where there is an immediate fire or explosion hazard!*
-  *Welding fumes may cause injury. Take care to ensure sufficient ventilation during welding and wear respiratory protection!*
-  *Always check before use that interconnecting cable, shielding gas hose, earth return lead/clamp and mains cable are in serviceable condition. Ensure that the connectors are correctly fastened. Loose connectors can impair welding performance and damage connectors.*
-  *Many Flexlite TX torches are equipped with an ON/OFF switch. The exact operation and function of the switch may vary depending on your welding machine settings (e.g. 2T, 4T or Minilog).*
-  *Series 3 DIX torches have a manually operated shielding gas valve on the torch body.*

1. Ensure that the earth return cable is connected to the welding machine and piece to be welded.
2. To start welding, press the ON/OFF switch (1) on the welding torch handle.



3. With the roller and rocker switch versions: Adjust the welding current by rolling the roller switch (2/3) or by pulling/pushing the rocker switch (2/3).

-  *Welding current adjustment is available for series 5 torches only.*

## 4.1 Consumable and gas flow selection



The tables in this chapter provide some basic guidance only and must not be considered as a definitive source of electrode and gas flow rate information.

The welding current setting defines the electrode size and the shielding gas flow rate. The most typical shielding gas for TIG welding is argon.

The following tables provide some basic guidance for the electrode size and shielding gas flow rate selection.

| Welding current DC- (AC)<br>A | Electrode<br>ø mm | Gas nozzle |                | Gas flow rate<br>l/min |
|-------------------------------|-------------------|------------|----------------|------------------------|
|                               |                   | Number     | ø mm           |                        |
| 5...80 (5...50)               | 1.0               | 4/5        | 6.5/8.0        | 5...6                  |
| 70...150 (30...100)           | 1.6               | 4/5/6      | 6.5/8.0/9.5    | 6...7                  |
| 130...250 (80...150)          | 2.4               | 6/7        | 9.5/11.0       | 7...8                  |
| 220...350 (120...210)         | 3.2               | 7/8/10     | 11.0/12.5/16.0 | 8...10                 |
| 330...500 (180...280)         | 4.0               | 10/11/12   | 16.0/17.5/19.0 | 10...12                |

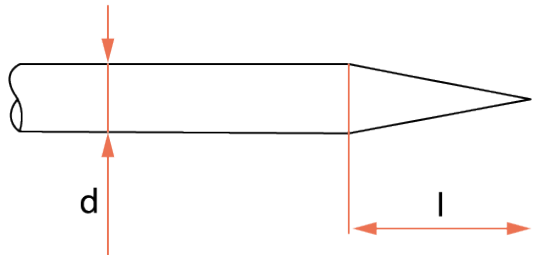
| Electrode |              | Welding current | Base material |    |    |    |
|-----------|--------------|-----------------|---------------|----|----|----|
| Type      | Symbol color |                 | Fe            | Ss | Al | Ti |
| WC20      | grey         | AC, DC-         | x             | x  | x  | x  |
| WZ8       | white        | AC, DC-         |               |    | x  |    |
| W         | green        | AC, DC-         |               |    | x  |    |

## 4.2 Electrode tip

### DC welding

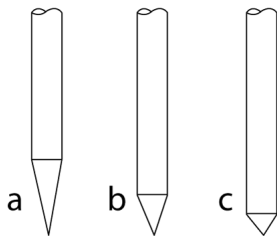
For DC TIG welding, grind the tip of the tungsten electrode lengthways, into cone shape. The sharpened electrode tip provides a steady and concentrated arc to the weld piece. The sharpening angle and length has an effect on the arc width and penetration depth.

Sharpening principle:



Where  $l = 1 \dots 5 \times d$ .

The sharpening length best suited for your purposes depends on the most used welding current level:

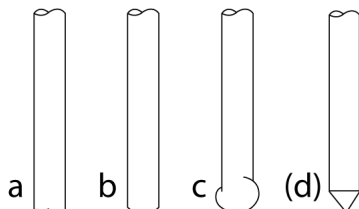


- a. Low currents
- b. Mid currents
- c. High currents

 When sharpening the electrode, always grind along the electrode.

### AC welding

In AC TIG welding the electrode tip temperature can exceed the melting point of the electrode. Therefore the electrode diameter selected and its suitability for welding current applied, can be evaluated based on the formation of the electrode tip.



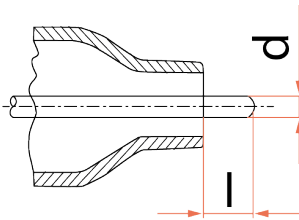
- a. Too low welding current or too big electrode size. The arc is not steady and directed on the weld piece.
- b. Suitable current.
- c. The welding current is too high for the electrode diameter selected.

**i** When using Kemppi AC TIG equipment for specific applications, it is also possible to prepare and maintain a small point on the electrode tip ( $d$ ). This improves the directional control of the welding arc and weld pool size.

**Tip:** You can also prepare the basic tip formation for AC welding with the following technique:

1. Adjust the welding current a little higher than required.
2. Burn the arc over a waste piece of material, keeping the torch electrode in a vertical position.
3. Extinguish the arc immediately when the electrode tip has formed rounded spherical surface, no larger than the diameter of the electrode, holding the same torch position as the electrode cools during the post gas cycle.
4. Reduce the current setting to a level suitable for the work target and start welding.

### Electrode tip length



The optimal protrusion ( $l$ ) of the electrode tip measured from the gas nozzle tip depends on the electrode diameter, welding current level and weld joint type.

**Tip:** Cleaning the electrode with steel wool can improve ignition and overall welding properties, by removing surface oxides.

## 5. MAINTENANCE

When planning routine maintenance, consider the operating frequency of the welding equipment and the working environment.

Correct operation of the welding equipment and regular maintenance helps you avoid unnecessary downtime and equipment failure. Mainly due to the high temperatures, the TIG torch head and parts require regular checks and maintenance. Periodically, check the cables set for damage and ensure connections are tightened correctly.

### Daily maintenance



*Disconnect the power source from the mains power supply before handling electrical cables.*

#### **Torch head maintenance**

- All insulations are undamaged and intact.
- Gas nozzle is intact and suitable for work.
- Shielding gas flows freely and steadily.
- Electrode is intact and suitable for work.
- Fastening parts of the electrode are intact and the electrode is fastened tightly in place.
- Check all the cables and connectors. Do not use them if they are damaged.

#### **Maintenance of torch cable**

- Torch cable insulations and connectors are intact.
- There are no sharp bends in the torch cable.
- Components are tightly fastened.
- Check that the current transfer surface on the torch current connector is clean and undamaged.
- Check the protective hose on the cable for damage.

For repairs, contact your Kemppi dealer.

### Periodic maintenance



*Only qualified service personnel are allowed to carry out periodic maintenance.*

Check the electric connectors of the unit at least every six months. Clean oxidized parts and tighten loose connectors.



*Use the correct tension torque when fastening loose parts.*



*Do not use pressure washing devices.*

### Service workshops

Kemppi Service Workshops complete the welding system maintenance according to the Kemppi service agreement.


The main aspects in the service workshop maintenance procedure are:

- Cleanup of the machine
- Maintenance of the welding tools
- Checkup of the connectors and switches
- Checkup of all electric connections
- Checkup of the power source mains cable and plug

- Repair of defective parts and replacement of defective components
- Maintenance test
- Test and calibration of operation and performance values when needed.

Find your closest service workshop at Kempfi website.

## 5.1 Troubleshooting

 *The problems and the possible causes listed are not definitive, but suggest some typical situations that may turn up during normal use of the welding system. For further information and assistance, contact your nearest Kemppi service workshop.*

### General:

The welding system does not power up

- Check that the mains cable is plugged in properly.
- Check that the mains switch of the power source is at the ON position.
- Check that the mains power distribution is on.
- Check the mains fuse and/or the circuit breaker.
- Check that the earth return cable is connected.

The welding system stops working

- The torch may have overheated. Wait for it to cool down.
- Check that none of the cables is loose.
- The power source may have overheated. Wait for it to cool down and see that the cooling fans work properly and the air flow is unobstructed.

### Welding torch:

The torch overheats

- Make sure the torch body is properly connected.
- Make sure that the welding parameters are within the range of the welding torch. If different torch components have separate limits for the maximum current; the lower one of these is the maximum current that can be used.
- Make sure the coolant circulation is working normally (see the coolant circulation warning LED on the power source).
- Measure the coolant circulation speed: detach the coolant output hose from the cooler unit when the power source is on, and let the coolant run into a measurement cup. The circulation must be at least 0.5 l/min.
- Make sure you are using original Kemppi consumable and spare parts. Incorrect spare part materials may also cause overheating.
- Make sure the connectors are clean, undamaged and properly fastened.

### Weld quality:

Dirty and/or poor weld quality

- Check that the shielding gas has not run out.
- Check that the shielding gas flow is unobstructed.
- Check that the gas type is correct for the application.
- Check the polarity of the torch/electrode.
- Check that the welding procedure is correct for the application.

Varying welding performance

- Check the welding electrode size, type and wear.
- Check that the welding torch is not overheating.
- Check that the earth return clamp is properly attached to a clean surface of the workpiece.

Arc is not ignited

- Cable is loose or there is a bad connection.
- The torch electrode is highly oxidized. Sharpen again lengthwise. Check that the post gas time is long enough. Check ignition by using pre gas.
- There are impurities in shielding gas (moisture, air).

- Protective hose or another insulation of torch is broken and ignition spark is “escaping”.
- Torch is wet.
- Too big or blunt electrode is used at low currents.

Gas shielding is bad (weld pool “boils”, electrode gets oxidized)

- There are impurities in shielding gas (moisture, air).
- There are impurities in base material (rust, base coat, grease).
- Impurities stuck on gas nozzle or on collet body.
- Net of gas lens is damaged.
- There is too much draft at welding place.

## 5.2 Disposal of machine



Do not dispose of any electrical equipment with normal waste!

In observance of WEEE Directive 2012/19/EU on waste of electrical and electronic equipment and European Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, and their implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and taken to an appropriate environmentally responsible recycling facility. The owner of the equipment is obliged to deliver a decommissioned unit to a regional collection center, as per the instructions of local authorities or a Kemppi representative. By applying these European Directives you improve the environment and human health.

## 6. TECHNICAL DATA

"Technical data TX 133" on the next page

"Technical data TX 135" on page 27

"Technical data TX 163" on page 28

"Technical data TX 165" on page 29

"Technical data TX 223 and TX 253" on page 30

"Technical data TX 225 and TX 255" on page 31

"Technical data TX 303 and TX 353" on page 32

"Technical data TX 305 and TX 355" on page 33

"Technical data TX 455" on page 34

"Technical data TX E 223, TX E 253 and TX E 353" on page 35

For ordering codes, refer to "Ordering codes" on page 36.

## 6.1 Technical data TX 133

| Flexlite TX                                       |             | 133GF        |
|---|-------------|--------------|
| Feature   |             | Value        |
| Type of cooling                                   |             | Gas          |
| Coolant flow rate                                 | l/min       | -            |
| Coolant pressure (min)                            | MPa         | -            |
| Coolant pressure (max)                            |             | -            |
| Arc striking voltage                              | kV          | 10           |
| Rating of electrical components (remote, nominal) | V           | 10           |
|   | mA          | 10           |
| Type of connection                                | Current-gas | R1/4         |
|   | Control     | 4-pin        |
|   | Coolant     | -            |
| Electrode diameters                               | mm          | 1.0...2.4    |
| Load capacity @ 40 % (Argon) DC                   | A           | 130          |
| Load capacity @ 100 % (Argon) DC                  | A           | -            |
| Load capacity @ 40 % (Argon) AC                   | A           | 100          |
| Load capacity @ 100 % (Argon) AC                  | A           | -            |
| Operating temperature range                       | °C          | -10...+40 °C |
| Storage temperature range                         | °C          | -40...+60 °C |
| Minimum cooling power at 1.0 l/min                | kW          | -            |
| Remote control                                    |             | -            |
| Neck type   |             | Bendable     |
| Standards   |             | IEC 60974-7  |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.2 Technical data TX 135

| Flexlite TX                                       |             | 135GF        |
|---|-------------|--------------|
| Feature   |             | Value        |
| Type of cooling                                   |             | Gas          |
| Coolant flow rate                                 | l/min       | -            |
| Coolant pressure (min)                            | MPa         | -            |
| Coolant pressure (max)                            |             | -            |
| Arc striking voltage                              | kV          | 10           |
| Rating of electrical components (remote, nominal) | V           | 10           |
|   | mA          | 10           |
| Type of connection                                | Current-gas | R1/4         |
|   | Control     | 7-pin        |
|   | Coolant     | -            |
| Electrode diameters                               | mm          | 1.0...2.4    |
| Load capacity @ 40 % (Argon) DC                   | A           | 130          |
| Load capacity @ 100 % (Argon) DC                  | A           | -            |
| Load capacity @ 40 % (Argon) AC                   | A           | 100          |
| Load capacity @ 100 % (Argon) AC                  | A           | -            |
| Operating temperature range                       | °C          | -10...+40 °C |
| Storage temperature range                         | °C          | -40...+60 °C |
| Minimum cooling power at 1.0 l/min                | kW          | -            |
| Remote control                                    |             | Optional     |
| Neck type   |             | Bendable     |
| Standards   |             | IEC 60974-7  |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

### 6.3 Technical data TX 163

| Flexlite TX                                       |             | 163GF        | 163GS        | 163GVD9      |
|---|-------------|--------------|--------------|--------------|
| Feature   |             | Value        |              |              |
| Type of cooling                                   |             | Gas          | Gas          | Gas          |
| Coolant flow rate                                 | l/min       | -            | -            | -            |
| Coolant pressure (min)                            | MPa         | -            | -            | -            |
| Coolant pressure (max)                            |             | -            | -            | -            |
| Arc striking voltage                              | kV          | 10           | 10           | -            |
| Rating of electrical components (remote, nominal) | V           | 10           | 10           | 10           |
|   | mA          | 10           | 10           | 10           |
| Type of connection                                | Gas/current | R1/4         | R1/4         | DIX 9 mm *   |
|   | Control     | 4-pin        | 4-pin        | -            |
|   | Coolant     | -            | -            | -            |
| Electrode diameters                               | mm          | 1.0...4.0    | 1.0...2.4    | 1.0...4.0    |
| Load capacity @ 40 % (Argon) DC                   | A           | 160          | 160          | 160          |
| Load capacity @ 100 % (Argon) DC                  | A           | -            | -            | -            |
| Load capacity @ 40 % (Argon) AC                   | A           | 100          | 110          | 110          |
| Load capacity @ 100 % (Argon) AC                  | A           | -            | -            | -            |
| Operating temperature range                       | °C          | -10...+40 °C | -10...+40 °C | -10...+40 °C |
| Storage temperature range                         | °C          | -40...+60 °C | -40...+60 °C | -40...+60 °C |
| Minimum cooling power at 1.0 l/min                | kW          | -            | -            | -            |
| Remote control                                    |             | -            | -            | -            |
| Neck type   |             | Bendable     | Rotating     | 70° angle    |
| Standards   |             | IEC 60974-7  | IEC 60974-7  | IEC 60974-7  |

\* Use a separate gas hose for gas connection.

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.4 Technical data TX 165

| Flexlite TX                                       |             | 165GF        | 165GS        | 165G         |
|---|-------------|--------------|--------------|--------------|
| Feature   |             | Value        |              |              |
| Type of cooling                                   |             | Gas          | Gas          | Gas          |
| Coolant flow rate                                 | l/min       | -            | -            | -            |
| Coolant pressure (min)                            | MPa         | -            | -            | -            |
| Coolant pressure (max)                            |             | -            | -            | -            |
| Arc striking voltage                              | kV          | 10           | 10           | 10           |
| Rating of electrical components (remote, nominal) | V           | 10           | 10           | 10           |
|   | mA          | 10           | 10           | 10           |
| Type of connection                                | Gas/current | R1/4         | R1/4         | R1/4         |
|   | Control     | 7-pin        | 7-pin        | 7-pin        |
|   | Coolant     | -            | -            | -            |
| Electrode diameters                               | mm          | 1.0...4.0    | 1.0...2.4    | 1.0...4.0    |
| Load capacity @ 40 % (Argon) DC                   | A           | 160          | 160          | 160          |
| Load capacity @ 100 % (Argon) DC                  | A           | -            | -            | -            |
| Load capacity @ 40 % (Argon) AC                   | A           | 100          | 110          | 120          |
| Load capacity @ 100 % (Argon) AC                  | A           | -            | -            | -            |
| Operating temperature range                       | °C          | -10...+40 °C | -10...+40 °C | -10...+40 °C |
| Storage temperature range                         | °C          | -40...+60 °C | -40...+60 °C | -40...+60 °C |
| Minimum cooling power at 1.0 l/min                | kW          | -            | -            | -            |
| Remote control                                    |             | Optional     | Optional     | Optional     |
| Neck type   |             | Bendable     | Rotating     | 70° angle    |
| Standards   |             | IEC 60974-7  | IEC 60974-7  | IEC 60974-7  |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.5 Technical data TX 223 and TX 253

| Flexlite TX                                       |             | 223G         | 223GS        | 223GVD13     | 253WS        |
|---|-------------|--------------|--------------|--------------|--------------|
| Feature   |             | Value        |              |              |              |
| Type of cooling                                   |             | Gas          | Gas          | Gas          | Liquid       |
| Coolant flow rate                                 | l/min       | -            | -            | -            | 1            |
| Coolant pressure (min)                            | MPa         | -            | -            | -            | 0.1          |
| Coolant pressure (max)                            |             | -            | -            | -            | 0.5          |
| Arc striking voltage                              | kV          | 10           | 10           | -            | 10           |
| Rating of electrical components (remote, nominal) | V           | 10           | 10           | 10           | 10           |
|   | mA          | 10           | 10           | 10           | 10           |
| Type of connection                                | Gas/current | R1/4         | R1/4         | DIX 13 mm *  | -            |
|   | Control     | 4-pin        | 4-pin        | -            | 4-pin        |
|   | Coolant     | -            | -            | -            | R1/4 & R3/8  |
| Electrode diameters                               | mm          | 1.0...4.0    | 1.0...4.0    | 1.0...4.0    | 1.0...4.0    |
| Load capacity @ 40 % (Argon) DC                   | A           | 220          | 220          | 220          | 250          |
| Load capacity @ 100 % (Argon) DC                  | A           | -            | -            | -            | 200          |
| Load capacity @ 40 % (Argon) AC                   | A           | 160          | 120          | 160          | 250          |
| Load capacity @ 100 % (Argon) AC                  | A           | -            | -            | -            | 140          |
| Operating temperature range                       | °C          | -10...+40 °C | -10...+40 °C | -10...+40 °C | -10...+40 °C |
| Storage temperature range                         | °C          | -40...+60 °C | -40...+60 °C | -40...+60 °C | -40...+60 °C |
| Minimum cooling power at 1.0 l/min                | kW          | -            | -            | -            | 1.0 kW       |
| Remote control                                    |             | -            | -            | -            | -            |
| Neck type   |             | 70° angle    | Rotating     | 70° angle    | Rotating     |
| Standards   |             | IEC 60974-7  | IEC 60974-7  | IEC 60974-7  | IEC 60974-7  |

\* Use a separate gas hose for gas connection.

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.6 Technical data TX 225 and TX 255

| Flexlite TX  |             | 225G         | 225GFL             | 225GS        | 255WFL             | 255WS          |
|--|-------------|--------------|--------------------|--------------|--------------------|----------------|
| Feature  |             | Value        |                    |              |                    |                |
| Type of cooling                                      |             | Gas          | Gas                | Gas          | Liquid             | Liquid         |
| Coolant flow rate                                    | l/min       | -            | -                  | -            | 1                  | 1              |
| Coolant pressure (min)                               | MPa         | -            | -                  | -            | 0.1                | 0.1            |
| Coolant pressure (max)                               |             | -            | -                  | -            | 0.5                | 0.5            |
| Arc striking voltage                                 | kV          | 10           | 10                 | 10           | 10                 | 10             |
| Rating of electrical components<br>(remote, nominal) | V           | 10           | 10                 | 10           | 10                 | 10             |
|  | mA          | 10           | 10                 | 10           | 10                 | 10             |
| Type of connection                                   | Gas/current | R1/4         | R1/4               | R1/4         | R1/4               | R1/4           |
|  | Control     | 7-pin        | 7-pin              | 7-pin        | 7-pin              | 7-pin          |
|  | Coolant     | -            | -                  | -            | Snap connector     | Snap connector |
| Electrode diameters                                  | mm          | 1.0...4.0    | 1.0...4.0          | 1.0...4.0    | 1.0...2.4          | 1.0...2.4      |
| Load capacity @ 40 % (Argon) DC                      | A           | 220          | 220                | 220          | 250                | 250            |
| Load capacity @ 100 % (Argon) DC                     | A           | -            | -                  | -            | 200                | 200            |
| Load capacity @ 40 % (Argon) AC                      | A           | 160          | 120                | 120          | 250                | 250            |
| Load capacity @ 100 % (Argon) AC                     | A           | -            | -                  | -            | 140                | 140            |
| Operating temperature range                          | °C          | -10...+40 °C | -10...+40 °C       | -10...+40 °C | -10...+40 °C       | -10...+40 °C   |
| Storage temperature range                            | °C          | -40...+60 °C | -40...+60 °C       | -40...+60 °C | -40...+60 °C       | -40...+60 °C   |
| Minimum cooling power at 1.0 l/min                   | kW          | -            | -                  | -            | 1.0 kW             | 1.0 kW         |
| Remote control                                       |             | Optional     | Optional           | Optional     | Optional           | Optional       |
| Neck type  |             | 70° angle    | Rotating, lockable | Rotating     | Rotating, lockable | Rotating       |
| Standards  |             | IEC 60974-7  | IEC 60974-7        | IEC 60974-7  | IEC 60974-7        | IEC 60974-7    |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.7 Technical data TX 303 and TX 353

| Flexlite TX                                       |             | 303WF        | 353W         |
|---|-------------|--------------|--------------|
| Feature   |             | Value        |              |
| Type of cooling                                   |             | Liquid       | Liquid       |
| Coolant flow rate                                 | l/min       | 1            | 1            |
| Coolant pressure (min)                            | MPa         | 0.1          | 0.1          |
| Coolant pressure (max)                            |             | 0.5          | 0.5          |
| Arc striking voltage                              | kV          | 10           | 10           |
| Rating of electrical components (remote, nominal) | V           | 10           | 10           |
|   | mA          | 10           | 10           |
| Type of connection                                | Gas/current | -            | -            |
|   | Control     | 4-pin        | 4-pin        |
|   | Coolant     | R1/4 & R3/8  | R1/4 & R3/8  |
| Electrode diameters                               | mm          | 1.0...2.4    | 1.0...4.0    |
| Load capacity @ 40 % (Argon) DC                   | A           | 300          | 350          |
| Load capacity @ 100 % (Argon) DC                  | A           | 200          | 250          |
| Load capacity @ 40 % (Argon) AC                   | A           | 250          | 300          |
| Load capacity @ 100 % (Argon) AC                  | A           | 140          | 200          |
| Operating temperature range                       | °C          | -10...+40 °C | -10...+40 °C |
| Storage temperature range                         | °C          | -40...+60 °C | -40...+60 °C |
| Minimum cooling power at 1.0 l/min                | kW          | 1.0 kW       | 1.0 kW       |
| Remote control                                    |             | -            | -            |
| Neck type   |             | Bendable     | 70° angle    |
| Standards   |             | IEC 60974-7  | IEC 60974-7  |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.8 Technical data TX 305 and TX 355

| Flexlite TX                                       |             | 305W           | 305WF          | 355W           |
|---|-------------|----------------|----------------|----------------|
| Feature   |             | Value          |                |                |
| Type of cooling                                   |             | Liquid         | Liquid         | Liquid         |
| Coolant flow rate                                 | l/min       | 1              | 1              | 1              |
| Coolant pressure (min)                            | MPa         | 0.1            | 0.1            | 0.1            |
| Coolant pressure (max)                            |             | 0.5            | 0.5            | 0.5            |
| Arc striking voltage                              | kV          | 10             | 10             | 10             |
| Rating of electrical components (remote, nominal) | V           | 10             | 10             | 10             |
|   | mA          | 10             | 10             | 10             |
| Type of connection                                | Gas/current | R1/4           | R1/4           | R1/4           |
|   | Control     | 7-pin          | 7-pin          | 7-pin          |
|   | Coolant     | Snap connector | Snap connector | Snap connector |
| Electrode diameters                               | mm          | 1.0...2.4      | 1.0...2.4      | 1.0...4.0      |
| Load capacity @ 40 % (Argon) DC                   | A           | 300            | 300            | 350            |
| Load capacity @ 100 % (Argon) DC                  | A           | 200            | 200            | 250            |
| Load capacity @ 40 % (Argon) AC                   | A           | 250            | 250            | 300            |
| Load capacity @ 100 % (Argon) AC                  | A           | 140            | 140            | 200            |
| Operating temperature range                       | °C          | -10...+40 °C   | -10...+40 °C   | -10...+40 °C   |
| Storage temperature range                         | °C          | -40...+60 °C   | -40...+60 °C   | -40...+60 °C   |
| Minimum cooling power at 1.0 l/min                | kW          | 1.0 kW         | 1.0 kW         | 1.0 kW         |
| Remote control                                    |             | Optional       | Optional       | Optional       |
| Neck type   |             | 70° angle      | Bendable       | 70° angle      |
| Standards   |             | IEC 60974-7    | IEC 60974-7    | IEC 60974-7    |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.9 Technical data TX 455

| Flexlite TX                                       |             | 455W           |
|---|-------------|----------------|
| Feature   |             | Value          |
| Type of cooling                                   |             | Liquid         |
| Coolant flow rate                                 | l/min       | 1              |
| Coolant pressure (min)                            | MPa         | 0.1            |
| Coolant pressure (max)                            |             | 0.5            |
| Arc striking voltage                              | kV          | 10             |
| Rating of electrical components (remote, nominal) | V           | 10             |
|   | mA          | 10             |
| Type of connection                                | Current-gas | G1/4           |
|   | Control     | 7-pin          |
|   | Coolant     | Snap connector |
| Electrode diameters                               | mm          | 1.0...4.0      |
| Load capacity @ 40 % (Argon) DC                   | A           | 450            |
| Load capacity @ 100 % (Argon) DC                  | A           | 320            |
| Load capacity @ 40 % (Argon) AC                   | A           | 320            |
| Load capacity @ 100 % (Argon) AC                  | A           | 225            |
| Operating temperature range                       | °C          | -10...+40 °C   |
| Storage temperature range                         | °C          | -40...+60 °C   |
| Minimum cooling power at 1.0 l/min                | kW          | 1.0            |
| Remote control                                    |             | Optional       |
| Neck type   |             | 70° angle      |
| Standards   |             | IEC 60974-7    |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 6.10 Technical data TX E 223, TX E 253 and TX E 353

Flexlite TX E torches are compatible with X5 FastMig only.

| Flexlite TX E                                     |             | 223GE        | 253WSE         | 353WE          |
|---|-------------|--------------|----------------|----------------|
| Feature   |             | Value        |                |                |
| Type of cooling                                   |             | Gas          | Liquid         | Liquid         |
| Coolant flow rate                                 | l/min       | -            | 1              | 1              |
| Coolant pressure (min)                            | MPa         | -            | 0.1            | 0.1            |
| Coolant pressure (max)                            |             | -            | 0.5            | 0.5            |
| Arc striking voltage                              | kV          | -            | -              | -              |
| Rating of electrical components (remote, nominal) | V           | -            | -              | -              |
|   | mA          | -            | -              | -              |
| Type of connection                                | Gas/current | Euro         | Euro           | Euro           |
|   | Control     | -            | -              | -              |
|   | Coolant     | -            | Snap connector | Snap connector |
| Electrode diameters                               | mm          | 1.0...4.0    | 1.0...2.4      | 1.0...4.0      |
| Load capacity @ 40 % (Argon) DC                   | A           | 220          | 250            | 350            |
| Load capacity @ 100 % (Argon) DC                  | A           | -            | 200            | 250            |
| Load capacity @ 40 % (Argon) AC                   | A           | -            | -              | -              |
| Load capacity @ 100 % (Argon) AC                  | A           | -            | -              | -              |
| Operating temperature range                       | °C          | -10...+40 °C | -10...+40 °C   | -10...+40 °C   |
| Storage temperature range                         | °C          | -40...+60 °C | -40...+60 °C   | -40...+60 °C   |
| Minimum cooling power at 1.0 l/min                | kW          | -            | 1.0 kW         | 1.0 kW         |
| Remote control                                    |             | -            | -              | -              |
| Neck type   |             | 70° angle    | Rotating       | 70° angle      |
| Standards   |             | IEC 60974-7  | IEC 60974-7    | IEC 60974-7    |

EU directive 2019/1784 conformity notification: The Flexlite TX TIG (Tungsten Inert Gas) electrode contains tungsten.

## 7. ORDERING CODES

**Tip:** The name of the welding torch tells its properties and use. For example, in Flexlite TX 165G:

| Model series | Power rating (160A) | Product series | Gas-cooled |
|--------------|---------------------|----------------|------------|
| <b>TX</b>    | <b>16</b>           | <b>5</b>       | <b>G</b>   |

The letters with the product model names stand for:

W = water-cooled, G = gas-cooled, F = bendable neck, S = S neck, V = gas valve, D = DIX connection (9 or 13 mm), E = euro connection, N = no switch (no remote option), FL = lockable FL neck.

| Flexlite TX          |               |           |            |
|----------------------|---------------|-----------|------------|
| Product              | Ordering code |           |            |
|                      | 4m:           | 8m:       | 16m:       |
| Flexlite TX 133GF    | -             | TX133GF8  | -          |
| Flexlite TX 135GF    | TX135GF4      | TX135GF8  | TX135GF16  |
| Flexlite TX 135GFN   | TX135GFN4     | TX135GFN8 | -          |
| Flexlite TX 163GF    | -             | TX163GF8  |            |
| Flexlite TX 163GS    | TX163GS4      | TX163GS8  |            |
| Flexlite TX 163GVD9  | TX163GVD94    | -         | -          |
| Flexlite TX 165G     | TX165G4       | TX165G8   | TX165G16   |
| Flexlite TX 165GF    | TX165GF4      | TX165GF8  | TX165GF16  |
| Flexlite TX 165GS    | TX165GS4      | TX165GS8  | TX165GS16  |
| Flexlite TX 165GFN   | TX165GFN4     | TX165GFN8 | -          |
| Flexlite TX 165GSN   | -             | TX165GSN8 | -          |
| Flexlite TX 223G     | TX223G4       | TX223G8   |            |
| Flexlite TX 223GE    | TX223GE4      | -         | -          |
| Flexlite TX 223GS    | -             | TX223GS8  | TX223GS16  |
| Flexlite TX 223GVD13 | TX223GVD134   | -         | -          |
| Flexlite TX 225G     | TX225G4       | TX225G8   | TX225G16   |
| Flexlite TX 225GFL   | TX225GFL4     | TX225GFL8 | -          |
| Flexlite TX 225GN    | TX225GN4      | TX225GN8  | -          |
| Flexlite TX 225GS    | TX225GS4      | TX225GS8  | TX225GS16  |
| Flexlite TX 255WFL   | TX255WFL4     | TX255WFL8 | TX255WFL16 |
| Flexlite TX 253WS    | TX253WS4      | TX253WS8  | -          |
| Flexlite TX 253WSE   | TX253WSE4     | -         | -          |
| Flexlite TX 255WS    | TX255WS4      | TX255WS8  | TX255WS16  |
| Flexlite TX 255WSN   | -             | TX255WSN8 | -          |
| Flexlite TX 303WF    | -             | TX303WF8  | -          |

|                    |          |           |           |
|--------------------|----------|-----------|-----------|
| Flexlite TX 305W   | TX305W4  | TX305W8   | -         |
| Flexlite TX 305WF  | TX305WF4 | TX305WF8  | TX305WF16 |
| Flexlite TX 305WFN | -        | TX305WFN8 | -         |
| Flexlite TX 353W   | TX353W4  | TX353W8   | TX353W16  |
| Flexlite TX 353WE  | TX353WE4 | -         | -         |
| Flexlite TX 355W   | TX355W4  | TX355W8   | TX355W16  |
| Flexlite TX 355WN  | -        | TX355WN8  | -         |
| Flexlite TX 455W   | TX455W4  | TX455W8   |           |

External package dimensions, mm (L x W x H): 590 x 390 x 130 / 80.

| Flexlite TX remotes (optional, for series 5 torches only) |                         |                       |
|---|-------------------------|-----------------------|
| Product   | Ordering code           |                       |
|   | For water-cooled torch: | For gas-cooled torch: |
| Flexlite TXR10 remote, roller switch                      | TXR10W                  | TXR10G                |
| Flexlite TXR20 remote, rocker switch                      | TXR20W                  | TXR20G                |

| Flexlite TX other accessories (optional) |               |
|--|---------------|
| Product                                  | Ordering code |
| Flexlite TX trigger extension            | SP014802      |
| Adapter R1/4 to DIX 9mm                  | SP016758      |
| Adapter R1/4 to DIX 13mm                 | SP016759      |