

# STAHLWERK®

Welding Technology



**OWNER'S MANUAL**

**WIG AC/DC 200 S**

**WIG AC/DC 200 Puls S**

**WIG AC/DC 200 Puls und Plasma S**

**Premium quality for professionals**

### **Warnings!**

During the cutting and welding operation you will probably face with the following major risks. Please read these instructions carefully before using the ACDC TIG 200 S, ACDC TIG 200 PULS S, ACDC TIG 200 PULS with PLASMA S devices.

### **Safety Warning!**

On the process of welding or cutting, there will be possibilities of injury. Please take protection into consideration during operation. For more details please review the Operator Safety Guide, which complies with the preventive requirements of the manufacturer.

### **Electric shock – Can cause serious personal injury or death!**

Set the earth fitting according to applying standard. It is forbidden to touch the bare electric parts and electrode with uncovered skin, wet gloves or clothes. Be sure that you are insulated from the ground and the work piece. Be sure that you are in safe position.

### **Gases and fumes - May be harmful to health or can cause to death!**

Keep your head out of the gases and fumes. When you are arc welding, ventilators or air extractors should be used to avoid breathing gases.

### **Arc rays - Harmful to your eyes and burn your skin!**

Please, wear suitable protective mask, light filter and protective garment to protect your eyes and body. Prepare suitable protective mask or curtain to protect looker-on.

### **Fire!**

Welding spark may cause fire! Be sure that there is no tinder stuff around the welding area.

### **Noise - Excessive noises will be harmful to hearing!**

Use ear protector or other tools to protect your ear.. Loud noises can cause irreversible hearing damage.

### **Malfunction – When a problem arises, contact professional experts!**

When a problem arises during installation and operation, please follow this manual instruction to check up. If you don't fully understand the owner's manual, or fail to solve the problem with the instruction, please contact the authorized retailer or the service center for professional help.

### Item description STAHLWERK AC DC TIG 200 S

3 in 1 Combine welding device:

1. TIG welder with 200 amp
2. Manual metal arc welding (MMA) mit 200 amp
3. AC Funktion allows also a welding of cast aluminum components and non-ferrous metals (brass, bronze)

### Item description STAHLWERK AC DC TIG 200 Puls S

4 in 1 Combine welding device:

1. TIG welder with 200 amp
2. Manual metal arc welding (MMA) mit 200 amp
3. AC Funktion allows also a welding of cast aluminum components and non-ferrous metals (brass, bronze)
4. TIG pulse function increases the welding precision

### Item description STAHLWERK AC DC TIG 200 Puls with Plasma S

5 in 1 Combine welding device:

1. TIG welder with 200 amp
2. Manual metal arc welding (MMA) mit 200 amp
3. AC Funktion allows also a welding of cast aluminum components and non-ferrous metals (brass, bronze)
4. TIG pulse function increases the welding precision
5. Integrated plasma torch with 50 amp. CUT 50

### All welding technology in one device:

- Highest efficiency for all requirements with reproducible welding results and excellent quality through the fully digital inverter welding technology.
- Easy to understand operating concepts for each choice of particular setting, so you can concentrate fully on your welding task.
- Through powerful TIG arc - faster, better and easier welding across the entire power range.
- Intelligent housing design with optimized air exchange.
- Powerful, high duty cycle of 60% at 200 amps.
- Quickly cooling ventilator allows a exploitation of maximum power.
- Energy saving.
- Volume and weight reduction by high-frequency welding of 100 Khz.
- TIG welding of 0.8 up to 10 mm with consistently high quality.

- Even thin sheet welding is possible.
- DC function – DIRECT CURRENT and AC function – ALTERNATING CURRENT.

- TIG pulse function increases the welding precision (**only AC DC 200 Puls S/ AC DC 200 Puls and Plasma S**)
- Cutting Power up to 10 mm (**AC DC 200 Puls with Plasma S**)
- The plasma torch work with a commercial air compressor (about 5,5 Bar) (**AC DC 200 Puls with Plasma S**)

**AC/DC TIG 200 S** offers the highest welding comfort in the vehicle, machinery, plant -and metal tool, with stair and balcony railings, pipes, tanks, appliances, car bodies, etc..

### Always a clean weld on all work pieces !!!

The newly developed TIG INVERTER series and welding equipment, allows you not only steel, but also un-and low-and high-alloy steels, nickel-based alloys, copper, and special materials and other ferrous metals with DC function (direct current) perfect to weld. For precision welding of cast aluminum components and non-ferrous metals (brass, bronze), **AC/DC TIG 200 S** is features with an AC function.

With the system chip MOSFET (Toshiba) our devices have a high-performance technology that is proven since 1998. The **AC/DC TIG 200 S** includes the most advanced, innovative, easy-to-use quality engineering, so even beginners with the TIG welding process work easily.

Compared to conventional welding equipment, the unique HF Inverter technology has many advantages. Smaller volume, reduced weight, continuously variable regulation, energy saving etc.. The application of inverter technology allows a focused and permanent power output. This makes an adjustment much more precise and practical. Our welder is working in a tube package with a ball joint and integrated switch (comparable models work with cable ties).

**Precision metering with TIG pulse function (only AC DC 200 Puls S/ AC DC 200 Puls with Plasma S)**

The increased arc stability provides better welding precision. Thanks to this pulse functions, you can deeper weld in the workpiece (10 mm) without it ever gets too hot. A burn of the workpiece is prevented and a clean and stable weld is the result.

The pulse function is particularly suited for welding thin plates whose materials may be heated only slightly. Also thin sheets can be welded without burning. During the welding operation for a specified time (depending on the setting), the arc is uploaded with energy and automatically reduced.

### **Welding with comfort**

You can use the AC / DC S series with a foot pedal, that will allow you a convenient and comfortable welding.

### **Startup the welding device**

The device is delivered in an impact-protected carton box. Additional to the welder the box includes the following accessories.

Description (please read first), ground cable, electrode holder for MMA-welding, gas hose, tube package for TIG welding, tube package for plasma cutting, water separator with manometer.

With this device is possible electric arc welding with stick electrodes or with the help of an inert gas, (for example argon 4.6), TIG-welding, or plasma cutting with existing compressed air supply.

On the back of the device you see:

The power cable with plug for 230 V, the output of the fan housing, the inert gas supply unit, connection to the argon gas cylinder and the compressed air supply.

The explanation of the front is linked with the respective welding task.

The so-called MMA is easily explained:

You connect the ground cable at the + pole and the electrode holder on the bottom left in the jack with the appropriate symbol, the - pole.

The toggle on the far right we switch on MMA. That is, we put him right, how to see in the symbolism.

The power cord is plugged in and the device is turned on at the main switch below the display.

On the 2nd knob on the top row from left, set the correct current for the welding task. It is continuously adjustable up to 200 A.

The chosen welding current is dependent on the strength of the material, welded workpiece, the thickness and composition of the electrode and the welding position in

which is welded (flat seam, fillet welds, vertical-up welds, weldability, etc.), and the personal habits of the welder.

It is therefore difficult to define an appropriate current strength of universally valid. A stick electrode during welding is pulled, not pushed.

For TIG - welding only the ground cable remains unchanged to the + pole, all other settings and connections must be changed.

The connection of the tube package is done in the second jack from the left, how it shows the symbolism. The tube package must be screwed here.

Right of it the control electronics is connected.

On the rear panel of the device the argon 4.6 - pressure bottle with the pressure reducer must be connected. On the front, the toggle right outside is switched up from MMA to TIG. The toggle on the left of it, we will switch first in the lower setting for linear welding current.

The switch 2 stroke / 4 stroke can be adjusted according to personal preference.

Some welders may prefer to hold the switch on the torch during the welding (2 stroke). Other welders prefer 4 stroke, in which the arc ignites only once and you can release the switch at the torch. The switch is only pressed again to extinguish the arc.

The device has some features that are only in 4 - stroke mode available.

We are now seeing the top row of knobs and go from left to right.

"Start Current" provides to set a different amperage at beginning of the welding process, as the actual welding current that we can adjust on the 2nd knob.

Only in the 4 - stroke mode, in TIG welding, it can be for example a small current, after lowering the welding helmet to find the arc.

It can also be a larger current, for example with thick aluminum to bring some more heat into the material. The use of this function depends on the particular welding operation. If you decide to start current, this is triggered by pressing the switch on the TIG torch and remains active as long as you hold down the switch. After letting go the switch, the device automatically changes into the welding current, which is set on 2nd knob. Far right hand, we have the knob for the circuit current. This is usually set lower to prevent loopholes through too deep weld penetration at the end of the weld.

The knobs- pulse current, pulse range and pulse rate all work together.

Pulse welding works only in direct current operation DC.

By the two knobs welding current and pulse current can be set two different current levels for a welding process, between which the welding current is always changing. It is recommended a difference of about a quarter of the maximum current.

At pulse welding we have to do with a kind of pendulum movement.

With the pulse range we set now, how long "the pendulum" (the welding current) reaches the current strength of the pulse current before it swings back to normal

welding amperage. The impulse frequency determines how often in a specified period of time the current strength switch back and forth between the two values . A good welder can thus find settings that provide a better welding efficiency.

The third knob on the bottom row, the power shift is only in alternating current operation AC significant.

In the processing of aluminum is welded with alternating current.

The toggle at the top right of the device is being switched to AC.

The operation of this procedure is quite similar to the pulse welding, but the frequency of the alternating current is fixed, 50 x in the second.

In addition, the current changes now constantly the direction, not the amperage. You can also hear very clearly the loud buzzing sound that occurs there.

Back to the knob 3: If the current now jumps between + and - back and forth, It can be influenced with the power shift whether it tends more to the + pole, or to the - pole. Both can bring advantages for the respective welding task.

Orientation to the + pole: oxide layer is destroyed more easily!

Orientation to the - pole: deeper weld penetration. From this it follows: when welding thin aluminum sheets a power shift to the + pole is recommended.

The 4th knob, the current reduction is the slow reduction of the welding current when extinguishing the arc.

When taking off, the arc loopholes in the weld can be prevented.

Knob 5, the gas-post-flow-time can be adjusted in seconds.

The following inert gas prevents oxidation of the weld at the air oxygen.

Recommendation: 5 sec

TIG - welding is best in a comfortable, seated position.

A right handed does the tube package into the right hand and the additional material in the left. The filler material should consist of the same material as the work piece.

At V2A welding in DC- - you sharpen the tungsten electrode to a point, running with the microsection to the top. Used is a red.

When aluminum welding in AC - operation the electrode is sharpened half-round.

Welding example from practice:

Now we weld V2A tube 42.2 mm with 2 mm wall thickness.

The person chosen amperage lies with 39-45 A.

Here you have to lead the tungsten electrode circular to the tube, which requires some practice. The best welding results are achieved when the tube inside is also filled with argon. The weld will look inside from the tube as well as outside.

TIG - welding is well suited to weld vertical-up seams

The use of pulse welding function, can improve the result again. However, if you are not able to achieve at linear power supply good welds, you will not achieve this even with pulse function. The pulse function is more suited to add the last 10 - 20% to the optimal welding result.

Correctly used, the pulse function improves the quality of the weld, by better melting of the weld metal and still a lower overall current.

This leads to less distortion, better stability, less annealing colours etc..

Based on our welding example "tube 42.4 mm" - choke - pulse current power 45-55 A and current (here: lower value) 32-40 A.

The used filler material is also made of V2A or more noble and 1 - 1.5 mm thick.

The more comfortable setting for welding is the 4 stroke - process. Only at the 4-stroke welding, you are able to use all possibilities of this technical outstanding device. (eg. current reduction).

During the pulse welding the changing of the current strength is also audible. With a slow pulse frequency rate, through a humming, which swells and subsides. With faster pulse rate with a loud bright hum.

### **Finally, we explain the possibility of plasma cutting.** **(only AC DC 200 Puls<sup>o</sup> with Plasma S)**

This universal device offers three fully-fledged devices in one.

For plasma cutting, something must be rebuilt.

Back of the device, we now connect a compressed air line (compressor)

For this we also need the water separator with manometer, which we assemble on the device. This direct the compressed air, dehumidified and set the correct operating pressure.

At the front of the device we connect the plasma tube package with the jack.

To the right again the control electronics is connected.

The toggle on the right top of the device is switched in the third possible position.

Switch down - symbol shows the plasma torch.

The ground cable is fixed to the being cut work piece.

The compressor must have built up the necessary working pressure of 5 bar. The plasma torch is held at the correct distance from the work piece and ignited.

Simultaneous with the ignition arc the compressed air is blown out of the front of the gas nozzle.

In the arc, the material is liquefied and blown out with compressed air out of the solid material. Such a sharp dividing line occurs in the material.

The current strength is chosen depending on material thickness. It is important that the compressor delivers constant pressure, otherwise there is an unclean cutting. A too small compressor is not suitable for large cutting capacity. You can separate steel and stainless steel in this way, but also ferrous metals such as copper.

When working with this device, please wear suitable protective clothing.

When welding, especially during TIG - welding, you have to protect the skin from the aggressive ultraviolet radiation. When MMA welding is also the risk of ignition the clothes.

We wish you a lot of fun at work and when practicing!!

## ALL SIGNIFICANT WELDING PARAMETERS IN DIRECT ACCESS

### TIG-welding:

Works with a TIG torch in which is inserted a tungsten electrode and argon shielding gas. Additionally a filler material is required, depending on the material. The device will provide up to 200 amps and it can be used with alternating current (AC) and direct current (DC) welding. Thus, allows to weld almost all metals, e.g. steel, stainless steel, copper, brass, and thanks to AC function, light metals such as aluminum and titanium. The welding current is continuously adjustable from 10-200 amps. By advanced inverter technology the device achieves 60% duty cycle at 200 amps. It can handle material thicknesses of 0.5-10mm and aluminum up to 6mm in excellent quality.

### AC/DC alternating current / direct current operation:

Direct current operation (DC) is standard for most materials such as mild and free cutting steel. Alternating current (AC) is necessary when light metals such as aluminum and titanium are to be welded. By use of alternating current, the surface of the work piece is not so hot and the interfering oxide layer of aluminum is removed electrically.

- **2 Stroke and 4 Stroke – circuit:** at **2-stroke**, the torch button of the TIG tube package has to remain pressed and held. Once the button is released the arc is extinguished. **At 4-stroke** the arc remains stable after pressing. Only by pressing the torch button the arc is extinguished and the current reduction occur. automatically with the gas-run time. Professional settings in which you achieve results of a quality that impress even the professional user.

- **Antistick:** prevents annealing of the electrode (less consumable electrodes), because the power is immediately terminated.
- **Hot Start:** automatic voltage increase at the start.
- **HF Ignition:** high-frequency contactless ignition to the workpiece.
- **MMA:** manual metal arc welding.
- **Tube package:** with ball joint and integrated switch.
- **Gas magnet valve:** opens only when the hand torch is operating and closes when the welding process is finished.
- **Over heat protection:** when temperature of machine exceed the required standard, the welding machine will stop working automatically. A red indicator light turns on and turns off when the device is cooled down again.
- **Automatic cooling ventilators**
- **Remote control / Foot controller:** The device has a 7-pin remote controller / foot controller port.

### Adjustable via rotary switches welding parameters

- **Adjustable welding current:** adjustable from 0 to 200 A.
- **AC-Frequency:** frequency of alternating welding current. Adjustable from 50 to 200 Hz.
- **Gas Pre Flow Time:** Is needed to ignite the arc when the argon has already reached the workpiece. The only way to weld constantly in a protective atmosphere.
- **Starting Current:** Adjustable from 0 to 200 amps. Immediately after complete ignition of the arc, the system will adjust the welding current to the value, specified with this parameter.
- **Current rise:** After complete ignition of the arc, the welding operation goes on to a current increase phase in which the welding current is linearly increased from the set start current value to the desired welding current value. The duration of this phase is adjustable from 0 to 10 seconds.
- **Current reduction:** prevents loop-hole at the end of the weld. Reduces the current strength when the arc becomes extinct, on this way you achieve a clean end of the weld. When the welding operation is completed, the transmitter is in a current reduction phase. During this phase the welding current (depending on the value) is constantly reduced to zero. The value is between 0 and 10 seconds continuously adjustable.
- **Circuit current:** Adjustable from 0 to 200 amps. The slope is terminated when the current level has reached the set-circuit current value specified value.
- **Gas post flow time:** important to protect the weld from airflow and to create the gas atmosphere. Protects the tungsten electrode from excessive wear and protects the weld from oxidation.

- **Current shift:** Only important for aluminum welding. The AC welding cause a shift of the positive or negative wave movement of the stream. This reduces penetration, post-gas and gas pre-flow.
- **ARC Force** in MMA mode: Curing improved and more stable arc. When the arc is shortened by this regulation, the current value is automatically increased.

**Welding with pulsing:** penetrates deeper into the work piece.  
(only AC DC 200 Puls S and AC DC 200 Puls with Plasma S)

- **Pulse frequency:** adjustable from 0,5 - 200 Hz.
- **Impulse current:** adjustable from 10 - 200 A.
- **Impulse range:** adjustable from 10 % - 90 %.

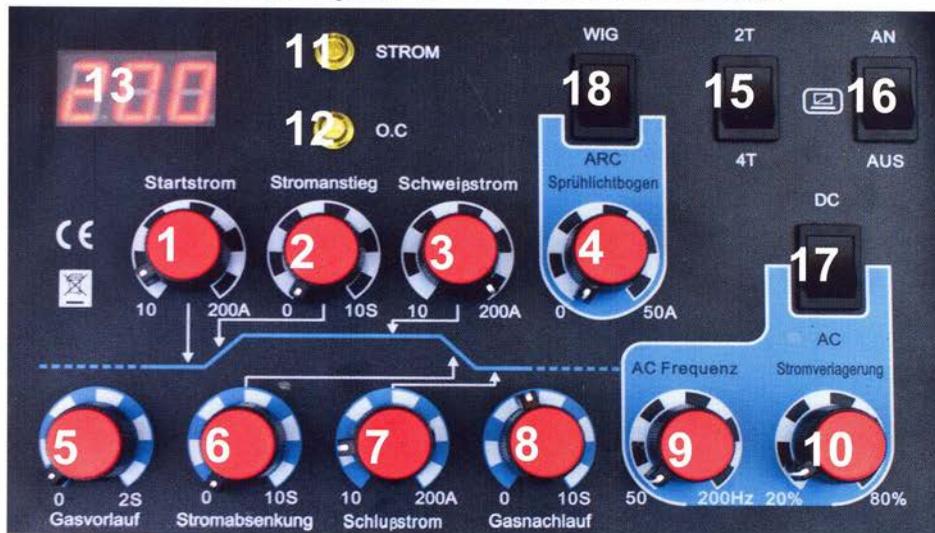
Very important: Only after you have pressed the switch from TIG hose or foot pedal, the amp setting is visible.

**Integrated plasma cutter with 50 amp**  
(only AC DC 200 Puls with Plasma S):

- **Welding Current:** Adjustable from 0 to 50 amps with the welding current switch.

Cutting capacity up to 12 mm depending on the material: steel ST37 to 12 mm, and 8 mm V2A, aluminum 7-8 mm.

### Panel description STAHLWERK AC DC 200 S



- |   |                                   |
|---|-----------------------------------|
| 1. Start power controller 10 – 200 A    | 10. Displacement current 20 - 80% |
| 2. Current rise from 0 to 10 sec        | 11. LED for commissioning         |
| 3. Welding current regulator 10 – 200A  | 12. LED overheat                  |
| 4. Arc force regulator 0 – 50 A         | 13. Digital display ampere        |
| 5. Gas pre flow regulator 0 - 2 sec.    | 14. <b>Main switch ON – OFF</b>   |
| 6. Current reduction 0 - 10 sec         | 15. Switching 2 stroke / 4 stroke |
| 7. Circuit current controller 10 – 200A | 16. Switch on foot pedal          |
| 8. Gas post flow regulator 0 - 10 sec   | 17. Switch AC / DC mode           |
| 9. AC frequency regulator 50 – 200 Hz   | 18. Switching MMA/TIG             |

**\*The switch 14 is located on the back side of the device**

### Panel description STAHLWERK AC DC 200 PULS S



- |   |                                   |
|---|-----------------------------------|
| 1. Gas pre flow regulator 0 – 2 sec.    | 12. Displacement current 20 – 80% |
| 2. Current rise from 0 – 10 sec.        | 13. Arc force regulator 0 – 50 A  |
| 3. Welding / Cutting current regulator  | 14. Switch on PLULS function      |
| 4. Start power controller 10 - 200 A    | 15. LED for commissioning         |
| 5. Impulse current regulator 10 – 200A  | 16. LED overheat                  |
| 6. Current reduction from 0 – 10 Sek.   | 17. Digital display ampere        |
| 7. Circuit current regulator 10 – 200 A | 18. Main switch ON – OFF          |
| 8. Gas post flow regulator 0 – 10 sec.  | 19. Switching 2 stroke / 4 stroke |
| 9. Impulse range regulator              | 20. Switch on foot pedal          |
| 10. Impulse frequency regulator         | 21. Switch AC / DC mode           |
| 11. AC frequency regulator 50 – 200 Hz  | 22. Switching MMA/TIG             |

\*The switches 18 and 20 are located on the back side of the device

### Connection description AC DC 200 S & AC DC 200 PULS S



- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| 1. Connection for electrode holder  | 3. Power connector for cable assembly |
| 2. Gas connection for hose assembly | 4. Connection for foot pedal          |
|                                     | 5. Connection for ground wire         |

### Panel description AC DC 200 PULS with PLASMA S



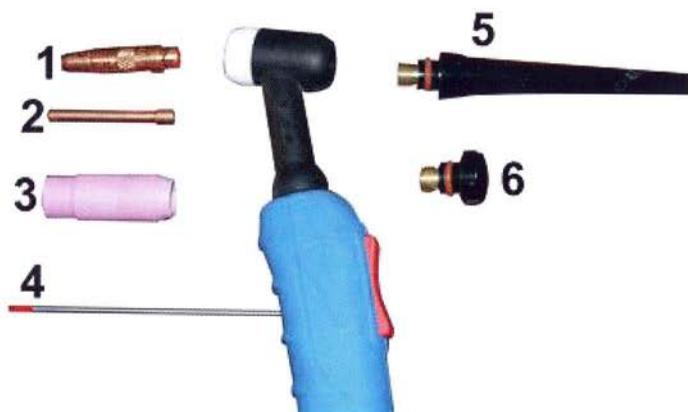
- |   |  |
|---|--|
| 1. Gas pre flow regulator 0 – 2 sec.    | 16. LED overheat                           |
| 2. Current rise from 0 – 10 sec.        | 17. Digital display ampere                 |
| 3. Welding / Cutting current regulator  | 18. <b>Main switch ON – OFF</b>            |
| 4. Start power controller 10 - 200 A    | 19. Switching 2 stroke / 4 stroke          |
| 5. Impulse current regulator 10 – 200A  | 20. <b>Switch on foot pedal</b>            |
| 6. Current reduction from 0 – 10 Sek.   | 21. Switch AC / DC mode                    |
| 7. Circuit current regulator 10 – 200 A | 22. Switching MMA/TIG                      |
| 8. Gas post flow regulator 0 – 10 sec.  | 23. Connection for electrode holder        |
| 9. Impulse range regulator              | 24. Gas / air connection for hose assembly |
| 10. Impulse frequency regulator         | 25. Current connection for hose assembly   |
| 11. Arc force regulator 0 – 50 A        | 26. Connection for foot pedal              |
| 12. AC frequency regulator 50 – 200 Hz  | 27. Connection for ground wire PLASMA      |
| 13. Displacement current 20 – 80%       | 28. Connection for ground wire MMA / WIG   |
| 14. Switch on PULS function             |  |
| 15. LED for commissioning               |  |

**\*The switches 18 and 20 are located on the back side of the device**

### Commissioning TIG welding

1. Please connect before switching the device on the ground clip and the TIG tube package to the given connections (see illustration). If you want to weld electrodes, connect the electrode clamp to the given connector  
**Important:** Switch the toggle to TIG
2. TIG-welding: You need a cylinder of argon gas Model 4.6. Connect the pressure reducer to the gas cylinder. The flow rate is measured in liters and should not exceed 6 liters.
3. Connect the connecting tube from the pressure reducer to the device. (Connection is located on the back of the device.) This is not included in delivery. You can use a tube with 6 mm diameter. Install this hermetically. The air and gas connection is identical on the back of the device..
4. Connect the power plug into a 230 V socket with a 16 amp protection.
5. Clamp a tungsten electrode, e.g. 1.6 is color code gray, in the TIG-tube package. Important: The tungsten electrode should be sharpened. The clamping of the tungsten electrode and the choice of size and color code you can see on the welding parameters in the illustration below. The composition of the TIG tube package, see to the illustration.
6. Fix ground clamp to the workpiece
7. Before you start working, check whether gas flows out of the TIG-tube package flows. When the torch is operating, gas must flow.
8. Hold the torch at a distance of approximately 0.5 cm from the workpiece and press the switch at the burner. An arc (HF ignition - contactless) is generated.
9. The additional material that is added during the welding process should consist of the same ingredient e.g. material stainless steel = additional material stainless steel.
10. The shown welding parameter is just a help and no standard value.
11. We also have videos in our range which can be sent on request via e-mail.

### Composition TIG-torch



- 1 = Collet housing
- 2 = Clamping sleeve
- 3 = Gas nozzle
- 4 = Tungsten electrode
- 5 = long back cap
- 6 = short back cap

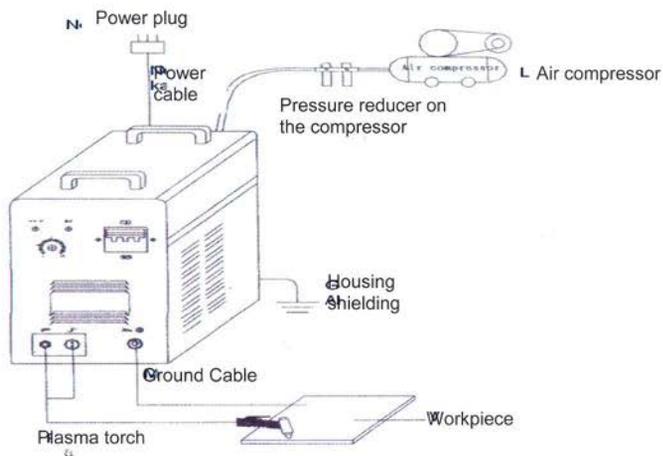
#### Composition:

- Nr. 1 screw in
- Nr. 2 + 4 fit together
- Nr. 2 and 4 pug together in No.1
- Nr. 5 or nr. 6 screw in
- Nr. 3 over nr. 1 screw in
- Important, the tungsten electrode should look out approximately 0,5 cm from the gas nozzle

### Commissioning Plasma CUT

1. Flip toggle switch to the plasma. Fix water separator and manometer to the device (at the back). Screw the supplied two screws right and left on the water separator. Should air escape or you hear a hissing noise, seal this with the supplied teflon tape. Place the tube (length 20 cm, included in the delivery) from the water separator to the device connection.
2. The compressor should have a minimum flow of 80 liters per minute and about 4.5 bar power. Connection from the compressor to water separator with a hose (not included in the delivery).
3. Plug the power cable to a one with 230 V and 16 ampere protection socket.
4. Connect plasma torch to the device. .
5. Connect ground cable to the device.
6. Start compressor and device.
7. Lift on the water separator the overhead knob and set about. 4 – 4,5 bar.. When operating with the torch must flow air out of the front of the nozzle.

- Clamp ground cable to the workpiece (Rust and paint-containing materials can't be cut).
- Put the torch straight to the workpiece and press the switch. It must seem an arc. Start with the cutting.
- The cutting power and speed is depending on the material and thickness of the material.



### Composition of the nozzles, electrodes, swirl rings and ceramic cap (only AC DC 200 Puls with Plasma S)



### Commissioning MMA welding

1. Important: switch toggle to MMA welding. Before switching on the device connect the ground clamp and electrode holder.
2. Plug the power cable to a one with 230 V and 16 ampere protection socket. (Important: use only a separate line for this.)
3. Clamp the right electrode in the electrode holder.
4. Fix the ground clamp on the workpiece. Rust and paint-containing materials can't be welded

### Welding parameters- valid for all TIG devices

Sheet thickness (mm)	Tungsten electrode diameter (mm)	Gas nozzle No..	Addition stick diameter (mm)
1	1	4	1,6
2	1,6	4 - 6	2
3	1,6	6	2,4
4	2,4	6 - 8	3
5	2,4 - 3,0	6 - 8	3,2
6	3,2	8	4
8	4	8 - 10	4

Sheet thickness (mm)	Welding current amp. Steel	Welding current amp. Stainless steel	Welding current amp. Aluminium
1	30 - 35	35 - 50	55 - 75
2	40 - 60	55 - 75	80 - 95
3	65 - 100	80 - 120	100 - 125
4	105 - 135	125 - 145	130 - 160
5	140 - 165	150 - 170	165 - 170
6	170 - 190	175 - 200	175 - 185
8	195 - 220	205 - 230	190 - 210

Color code green	only Aluminium
Color code gray	Universal for all materials
	Disadvantage by Aluminium = is not formed kallote

### Technical datas

	AC DC 200 Puls with Plasma	AC DC 200 Puls	AC DC 200
Power Vol.	AC 230 V	AC 230 V	AC 230 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Output current	200 A	200 A	200 A
Display of the output current:			
TIG	0 - 200 A	0 - 200 A	0 - 200 A
Plasma torch	0 - 50 A		
MMA	0 - 200 A	0 - 200 A	0 - 200 A
Gas preflow time	0 - 2 sec.	0 - 2 sec.	0 - 2 sec.
Gas post flow time	0 - 10 sec.	0 - 10 sec.	0 - 10 sec.
Current reduction	0 - 10 sec.	0 - 10 sec.	0 - 10 sec.
Power shift	20 - 80%	20 - 80%	20 - 80%
Arc rash TIG	HF - ignition	HF - ignition	HF - ignition
Duty cycle TIG	60 % by 200 A	60 % by 200 A	60 % by 200 A
Duty cycle TIG	100 % by 155 A	100 % by 155 A	100 % by 155 A
Duty cycle PLASMA	60 % by 50 A		
Duty cycle PLASMA	100 % by 35 A		
Remote control	Yes: foot pedal	Yes: foot pedal	Yes: foot pedal
Protection	16 C	16 C	16 C
Insulation grade	F	F	F
Housing shielding grade	IP21	IP21	IP21
Weight	20kg	20kg	18 kg
Dimension L x W x H (mm)	610 x 295 x 498	610 x 295 x 498	610 x 295 x 498
Welding strength	10 mm	10 mm	10 mm
Cutting strength	12 mm		

**STAHLWERK®**

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**Premium quality for professionals**