

Operating Manual

ECONOMY

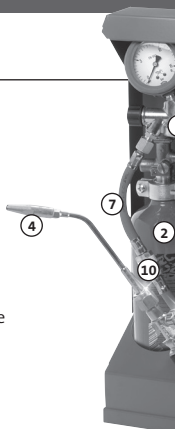
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Made in Germany

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1. Description

We congratulate you for purchasing a PERKEO brand product. By purchasing the ECONOMY brazing device, you have acquired a PERKEO quality product. This device was carefully designed and manufactured. The Operating Manual shall enable you to use the device properly and safely. Please observe this Operating Manual as well as the notes on the propane cylinder in order to avoid accidents but increase the economic viability and service life of the devices.

2. Proper use

The ECONOMY brazing device is operated with oxygen and propane and attains flame temperature of 2,800°C! You can therefore do brazing, heat up, anneal and melt all metals and weld non-ferrous metals (e.g. brass, copper, lead, etc.) as well! This mobile brazing device was specially developed for refrigeration, air-conditioning, sanitary and heating installation craftsmen as well as for roofers / plumbers, and it conforms to the transport guidelines ADR/GGVs for transport regulations for the protection of shut-off valves and DIN EN ISO 11117 (old DIN EN 962).



- (1) Carrying frame
- (2) Propane cylinder
- (3) Oxygen cylinder
- (4) Brazing torch
- (5) Handle
- (6) Orange gas hose
- (7) Blue oxygen hose
- (8) Constant propane regulator
- (9) Oxygen pressure reducer
- (10) Single-cylinder check valve



It can be transported in the installation vehicle without time-consuming conversion; the cylinder pressure reducers must not be dismantled! The device is TÜV-certified.

3. Scope of delivery

You obtain the brazing device packaged in a carton. Cut the carton carefully from the top and remove the device.

These parts must be included in the delivery:

Carrying frame (1) with the propane cylinder (2) and the oxygen cylinder (3)

Brazing torch (4) with the handle (5)

Orange gas hose (6) with constant propane regulator (8)

Blue oxygen hose (7) with oxygen pressure reducer (9)

Each hose is 3 m long and is equipped with a single-cylinder check valve with flame arrester according to DIN EN 730 (10) to ensure user's safety.

4. Attention – oxygen!

Oils and fats of all kinds can ignite explosively in the presence of pure oxygen. Therefore, the following applies to oxygen: keeping cylinder valves, pressure reducers, hoses, and the torch free of oil and fat. However, also oily rags and cloth or oily fingers can be dangerous.

5. Starting operation

Put the brazing device upright in place. The device cannot function properly in the horizontal state, since liquid propane-gas may penetrate through the propane regulator into the torch nozzle - and cause trouble.

Open the Velcro strap loop and remove the hose package.

Remove the handle from the holder on the carrying frame.

Close both valves on the handle (5) by turning it in clockwise direction. The red-marked hand-wheel regulates the gas supply; the blue-marked hand-wheel is for oxygen supply.

Open the valve of the oxygen cylinder by rotating it in counter-clockwise direction.

The left manometer on the oxygen pressure reducer is the working manometer. It indicates the pressure inside the oxygen hose and torch (working pressure). The right manometer is the content manometer. It indicates the pressure and thus also the content inside the cylinder.

With the turning knob on the lower side of the oxygen pressure reducer, you adjust the working pressure. Rotating it in clockwise sense increases the pressure, rotating it in counter-clockwise sense reduces the pressure.

Set the working pressure of 2 bar for oxygen.

When you are working in a windy or strong air draught, **REDUCE** the working pressure of oxygen to 1 bar. The flame will be stable in the wind and not go off easily. The flame temperature remains the same. **DO NOT INCREASE THE PRESSURE!**

Open the valve of the propane cylinder by rotating it in counter-clockwise direction.

6. Igniting the torch

Experienced users ignite the torch by first opening the blue-marked

hand-wheel for oxygen by carefully rotating it in counter-clockwise direction until a faint hiss is audible. Subsequently, open the red-marked hand-wheel for gas supply by rotating it a bit in counter-clockwise direction. Ignite the gas oxygen mixture with the help of a suitable gas-igniting device on the copper burner nozzle.

Inexperienced users can first ignite the gas and then open the oxygen valve. Nonetheless, black soot emerges first.

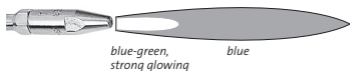
7. Adjusting the flame

Using the red-marked hand-wheel on the handle piece, you regulate the size and appearance of the flame. When the flame cannot be ignited or when it goes off then the amount of gas is too high. In this case, you have to throttle down the gas valve (red-marked hand-wheel) on the torch handle by rotating it in the clockwise direction.

The oxygen valve (blue-marked hand-wheel) on the torch handle must be fully open.

When flame is yellow, it has excessive amount of gas. Throttle the gas valve carefully (red-marked hand-wheel) on the torch handle by rotating it in the clockwise direction.

When the flame is narrow and short and appears glassy violet, it has excess amount of oxygen. Open the gas valve carefully (red-marked hand-wheel) on the torch handle by rotating it in the in counter-clockwise direction.



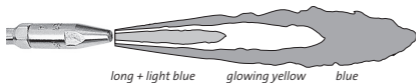
blue-green, strong glowing blue

Correct adjustment



short + violet blue

Excess amount of oxygen



long + light blue glowing yellow blue

Excess amount of gas

Then adjust a neutral flame. That means that the strong blue-green glowing flame core must be sharply surrounded by a dark blue flame edge (secondary flame).

8. Extinguishing the flame

To extinguish the flame, first close the gas valve (red-marked hand-wheel) and then the oxygen valve (blue-marked hand-wheel) on the torch handle by rotating it in the clockwise direction.

Close the propane cylinder and the oxygen cylinder valves by rotating them in clockwise direction. Close the valves even during longer pauses.

After completing the brazing task: open the gas and oxygen valves on the handle briefly with the cylinder valves of gas and oxygen on the handle, and do not allow the rest amount of gas to escape. In this manner, you relieve the hoses and the pressure reducer.

Wrap the hoses and fasten them with a Velcro strap on the frame. Stick the torch handle into the holder provided for it on the side of the carrying frame.

9. Exchanging the propane cylinder

Close the valve of the propane cylinder by rotating in clockwise direction.

Unscrew the propane constant regulator in clockwise sense (left-hand thread).

The propane cylinder is fastened with a holder on the carrying frame. Loosen the holder with a cross-recess screwdriver in counter-clockwise sense (cross recess size 3).

Replace the empty propane cylinder with a full one, or refill the propane cylinder with a suitable refill nozzle.

Screw again the holder for the propane cylinder with the cross recess screwdriver in clockwise sense. Position the propane cylinder such that the cylinder valve points towards the right.

Screw the propane constant regulator counter-clockwise on the propane cylinder (left thread).

10. Exchanging the oxygen cylinder

Close the valve of the oxygen cylinder by rotating in clockwise direction.

Unscrew the oxygen pressure reducer in counter-clockwise sense. The oxygen cylinder is likewise fastened with a holder on the carrying frame.

Loosen the holder with a cross-recess screwdriver in counter-clockwise sense (cross recess size 3).

Replace the empty oxygen cylinder with a full one, or refill the oxygen cylinder with a suitable refill device.

Screw again the holder for the oxygen cylinder with the cross recess screwdriver in clockwise sense. The cylinder valve must point towards the left.

Screw the oxygen pressure reducer in clockwise sense on the oxygen cylinder (SW 32, right-hand thread).

11. Behaviour in case of trouble and maintenance

<i>Fault</i>	<i>Cause/remedy</i>
The flame becomes yellow.	Then either the oxygen cylinder valve is closed or the oxygen cylinder is empty. Open the oxygen cylinder valve. Replace the empty oxygen cylinder with a full one, or refill the oxygen cylinder with a suitable refill device.
The flame becomes smaller or lifts off the torch.	Either the propane cylinder valve is closed or the propane cylinder is empty. Open the propane cylinder valve by rotating it in counter-clockwise sense (further) or replace the propane cylinder.

Regularly check the hoses for cracks and leakage (visual test). Exchange the supply pipe with individual cylinder safety elements, when individual elements become loose after a flame flashback. The hose eventually become porous with time. Therefore, replace the supply pipe as soon as small cracks appear on the hoses.

12. Transport and storage

For transport, the valve of the oxygen cylinder and that of the propane cylinder must be closed. The pressure reducers may be connected to the cylinder valves during transport in a vehicle.



The brazing device conforms to the transport guidelines ADR/GGVS for transport regulations for the protection of shut-off valves and DIN EN ISO 11117 (old DIN EN 962). It can be transported without conversion in the installation vehicle. The device is TÜV-certified as a unit.

Secure the brazing device against toppling and slipping on the loading surface. For transport in a car, leave a gap in the window wide open. The small van must have a ventilation system.

Damaged frames must not be used for transportation anymore.

Do not store the brazing device in drawers, cupboards, or containers with lid (danger of explosion).

Do not keep empty cylinders in cellars, garages, or passages.

13. PERKEO craftsman tips

For Germany:

This brazing device makes you independent from gas suppliers. Both cylinders - the propane as well as the oxygen cylinder, can be refilled by you using an appropriate refill adapter in your own premises. The provisions in other countries can be different and must be checked in advance.

You can refill the oxygen cylinder in your own premises. For this, there is the PERKEO refill bend made of copper - **Article No. 607** or the flexible PERKEO refill hose **Article No. 607/10**. At best, you should use an oxygen cylinder with at least 10 l content. The provisions of TRBS 3145/TRGS 725 (formerly TRG 402), TRGS 510, TRGS 555 must be observed.

In accordance with TRBS 3145/TRGS 725 (formerly TRG 402), you can refill the propane cylinder in your own premises. The notes on refill and safety are found on the refill instructions on the propane cylinder. For this purpose, there is the PERKEO refill nozzle **Article No. 797/04**.

You can operate the brazing device also with a different torch nozzle or with a cutting nozzle series KLEIN RISTA.

14. PERKEO safety notes

Propane gas is highly flammable, colourless, heavier than air, and has remarkable smell.

Propane cylinders and oxygen cylinders may not be left at children disposal.

Store propane and oxygen cylinders in a well-ventilated place.

Do not smoke when working on the cylinders.

Keep propane cylinders and oxygen cylinders away from ignition sources.

Check the leakage of screw connections with leather-forming media (e.g. soap water, leakage detection spray).

Close the cylinder valves in case of faults and after work.

Do not use the brazing device in a horizontal posture. In a horizontal posture, propane cylinder, liquid gas penetrates into the constant propane regulator and the torch nozzle and causes malfunction.

15. Safety regulations and standards

Legal safety regulations and technical guidelines must be observed. Repairs may be performed only by PERKEO or by an authorised specialist workshop.

- ➔ Do not leave the brazing device without monitoring during application. An acute danger of fire exists.
- ➔ Keep the device free of oil and fat.
- ➔ Oils and fats of all kinds can ignite explosively in the presence of pure oxygen.
- ➔ Wear a pair of welding protective goggles.
- ➔ Wear hardly inflammable cloth.
- ➔ Cater for adequate ventilation.
- ➔ Ensure that the manometer on the oxygen pressure reducer is firmly seated. Replace damaged manometer only with original spare parts.

Standards and regulations: DGUV 100-500 (formerly BGR 500), DIN EN ISO 11117 (formerly DIN EN 962) EN 417, DIN EN ISO 3821 (formerly DIN EN 559), EN 730-1, EN 730-2, ÖNORM EN 730, DIN EN ISO 2503, ISO 5175, AS 4603, SABS, TRBS, TRGS, TRF, German Devices Safety Law, PED 97/23 EU.

16. Notes

You recognise PERKEO devices in their robust engineering, insusceptibility to malfunction and repair, service life and in such things worked out to the smallest detail. We are always grateful about suggestions from our customers, to design our products in a better, more practical and thoughtful manner. Every PERKEO device is thoroughly tested prior to leaving the factory. Nonetheless, should a reason for complaint arise – please return the device unchanged.

17. Technical data and spare parts

799/16/01/4/G	ECONOMY carrying frame
795/oF/1/T	Propane cylinder with 0.425 kg filling
444/2L	Oxygen cylinder 2 l / 0.4 m ³
381/K	Oxygen-pressure reducer 0 – 10/16 bar
570/T	Constant propane regulator with thread G 3/8" LH
828/T6	KLEIN RISTA handle with fine regulating valves
820/P	KLEIN RISTA brazing nozzle, size 3 for 2 – 4 mm material thickness
415/02/99	3 m rubber supply hose with individual cylinders, non-return valves und flame arrester according to BGR 500
206/36	Velcro strap for holding the hose

Flame temperature:	2,800°C
Operating duration of propane:	2 h. 10 min.
Operating duration of oxygen:	1 h. 40 min.
Dimensions:	540 x 340 x 125 mm
Weight:	12.60 kg



Propane,
UN 1965 (accord. to DIN 51622),
Class 2, Item 2F ADR



Oxygen, UN 1072,
Class 2, Item 10 ADR

