

POLYS P-4

**Electronic Welder
for Socket Fusion Welding**

Directions for Use

Dear customer,

The equipment you have just bought was manufactured by DYTRON EUROPE Company, a world-wide recognized manufacturer of plastic welding equipment. We believe you would be satisfied with its quality and reliability.

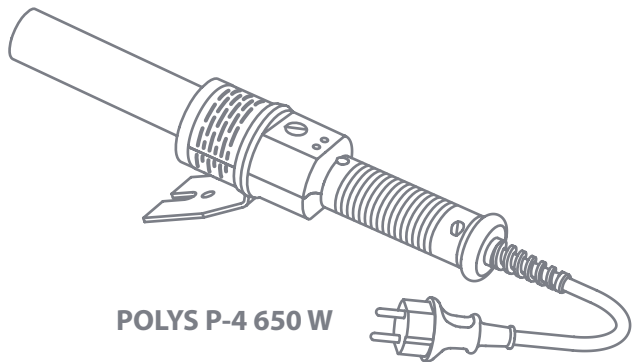
Before putting the equipment into operation for the first time, please read these Operating Instructions carefully. They provide you with important information on safe and correct operation and maintenance of your socket welder.

Principles of the Welder Use

- ▶ Use socket welder for welding of plastic pipes in the environment free from aggressive gases, combustibles and explosives.
 - ▶ Protect your welder from shocks that could result in controller damage, or damage to the welder as a whole.
 - ▶ Put aside your welder into a fixed clamp or lay it with its stand upon a flat incombustible pad.
 - ▶ If the welder is put aside with its heating element still hot, it should not touch other materials.
 - ▶ The heating element must not touch the power cord.
 - ▶ Do not insert any objects into the openings of perforated cover, the thermal-insulating basket may not be covered.
 - ▶ Adapters may be replaced with the welder switched off only.
 - ▶ Do not touch the heating element or the welding adapters with bare hands.
 - ▶ Wear protective gloves when replacing welding adapters.
 - ▶ According to EN 60 335-1, poly-fusion welders are classified as hand-held tools of Class I; for safety reasons, for work in normal environment, it is therefore necessary to connect them only to a socket that is properly grounded (this also applies to connecting with extension cords, which must be three-cored and connected according to standards in force). The socket must be protected by a current protector.
 - ▶ Store hot adapters in the welding set case or on an incombustible pad after use.
 - ▶ When you have finished your work, switch off the welder by pulling the power cord from main socket.
 - ▶ Do not disassemble the welder.
 - ▶ In the event that the power supply cord of this appliance is damaged, it should be replaced by the manufacturer or an authorised service engineer or other adequately qualified person in order to avoid the occurrence of an accident.
 - ▶ For safety reasons, use power sockets with properly grounded pins only. The socket should be protected with a ground fault interrupter.
 - ▶ An isolation transformer must be used for protection when working in outdoor environment.
 - ▶ Avoid using damaged, unprofessionally repaired extension cables or cables of unknown origin.
 - ▶ For work safety purposes, we recommend to check the correct connection of the power socket before connecting the power cord to the welding equipment, and in case of using a cable extension to check the extension as well.
 - ▶ If any mechanical damage to the welder or the power feeding cable occurs, disconnect the power cord from the socket and do not use the welder anymore and hand it over to the authorised service for repair.
- Storage conditions:**
Temperature: -10 to +60°C
relative humidity: <75 %, no condensation
- Operating conditions:**
Temperature: -5 to +40°C
relative humidity: <90 %, no condensation
- Socket welder may not:**
- ▶ get into contact with water
 - ▶ be used in damp environment
 - ▶ be used in works not designed to
 - ▶ be suspended on the power cord
 - ▶ be left switched on unattended

POLYS P-4 Hand Welders - 650 W ROD

This welder is ideal for welding in less accessible places. It is designed to combine the cylindrical heating element with the patented solution of attaching fusion adapters. The advantage of this welder lies in the possibility to clamp 2 to 3 adapters to the heating rod in different positions at the same time. The adapters are replaceable easily even when hot.

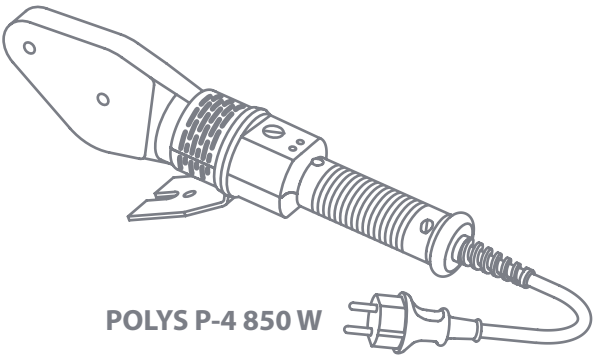


TECHNICAL DATA	
Type of welding	Socket welding
Welding diameter	16 – 63 mm
Type of adaptors	Jaw adaptors
Power demand	650 W
Voltage	230 V, 50 Hz
Temperature control	Electronic regulator
Thermal stability	3° C

P-4 650 W		TYPES OF SETS AVAILABLE		
		SOLO	MINI	PROFI
		Weight 1,6 kg	Weight 5,6 kg	Weight 9,8 kg
Welder		✓	✓	✓
Jaw adaptors (Black coating provides Blue coating provides)	Ø 16 mm			✓
	Ø 20 mm		✓	✓
	Ø 25 mm		✓	✓
	Ø 32 mm		✓	✓
	Ø 40 mm			✓
	Ø 50 mm			✓
	Ø 63 mm			✓
Ø 100 mm Flat				✓
Cardboard box		✓		
Sheet metal case PROFİ				✓
Sheet metal case MINI			✓	
Foot stand			✓	✓
Workbench clamp				✓
4 mm Allen key		✓	✓	✓
DYNO shears			✓	✓

POLYS P-4 Hand Welders - KNIFE 850 W

Up to 2 adapters simultaneously can be clamped on the knife-shaped heating element. The welder features very good temperature transfer from the heating element to the adapter and the increased thermal capacity. For this reason, it is not necessary to make any temperature correction when using larger adapters.



TECHNICAL DATA

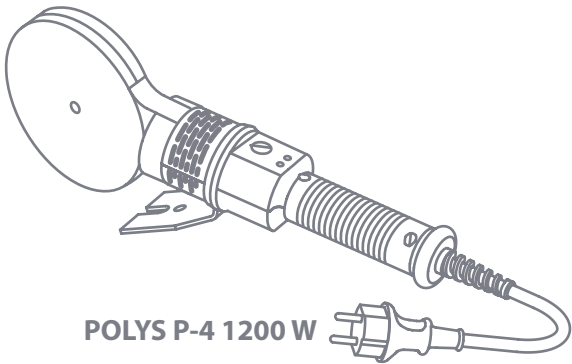
Type of welding	Socket welding
Welding diameter	16 – 75 mm
Type of adaptors	Pair adaptors
Power demand	850 W
Voltage	230 V, 50 Hz
Temperature control	Electronic regulator
Thermal stability	3° C

TYPES OF SETS AVAILABLE

P-4 850 W		SOLO	MINI	PROFI
		Weight 2,0 kg	Weight 5,6 kg	Weight 8,8 kg
Welder		✓	✓	✓
Pair adaptors (Black coating provides Blue coating provides)	Ø 16 mm			✓
	Ø 20 mm		✓	✓
	Ø 25 mm		✓	✓
	Ø 32 mm		✓	✓
	Ø 40 mm			✓
	Ø 50 mm			✓
	Ø 63 mm			✓
Cardboard box		✓		
Sheet metal case PROFİ				✓
Sheet metal case MINI			✓	
Workbench stand		✓		
Workbench clamp				✓
Foot stand			✓	✓
6 mm Allen key		✓	✓	✓
DYNO shears			✓	✓

POLYS P-4 Hand Welders - PLATE 1 200 W

The shape and the power input of this welder facilitates welding pipes of larger diameters. The advantages of this welder consist in quickly reaching set temperatures and in high thermal capacity. One adapter only can be clamped on the welder.



POLYS P-4 1200 W

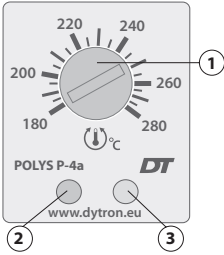
TECHNICAL DATA	
Type of welding	Socket welding
Welding diameter	40 – 125 mm
Type of adaptors	Pair adaptors
Power demand	1 200 W
Voltage	230 V, 50 Hz
Temperature control	Electronic regulator
Thermal stability	3° C

TYPES OF SETS AVAILABLE					
P-4 1200 W		SOLO	PROFI 40 - 90 mm	PROFI 50 - 110 mm	PROFI * 75 - 125 mm
		Weight 2,4 kg	Weight 9 kg	Weight 10,8 kg	Weight 11,8 kg
Welder		✓	✓	✓	✓
Pair adaptors Black coating provides Blue coating provides)	Ø 40 mm		✓		
	Ø 50 mm		✓	✓	
	Ø 63 mm		✓	✓	
	Ø 75 mm		✓	✓	✓
	Ø 90 mm		✓	✓	✓
	Ø 110 mm			✓	✓
	Ø 125 mm				✓
Cardboard box		✓			
Sheet metal case PROFÍ			✓	✓	✓
Foot stand			✓	✓	✓
Workbench stand		✓			
Workbench clamp			✓	✓	✓
6 mm Allen key		✓	✓	✓	✓

*Adaptor dim 125 mm could be used for regulations P-4a or P-4c only

P-4a – temperature control options

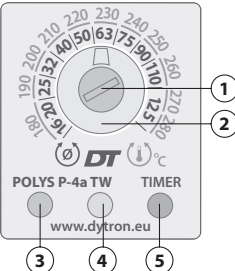
P-4a



1	Temperature adjustment control comb
2	Red LED (switch-on indication)
3	Green LED (temperature indication) Permanently lit: the temperature of the welder is lower than the set temperature. Do not use the welder before the green LED starts flashing. Flashing: the temperature of the welder is identical with the set temperature the welder is ready for use. Off: the temperature of the heating element is too high. Wait till the moment the green LED starts flashing.

P-4a TraceWeld® temperature control options

P-4a TraceWeld®



1	Temperature adjustment control knob
2	Acoustic signalling adjustment control knob
3	Red LED (switch-on indication)
4	Green LED (temperature indication)
5	Acoustic signalling actuation push-button

Acoustic signalling TraceWeld®

In addition to correct temperature, the welding quality depends also on the observance of technological time limits In addition to correct temperature, the welding quality depends also on the observance of technological time limits.

The outer control knob facilitates to adjust acoustic signalling for the particular dimension of pipe being welded. The knob is equipped with click stops at certain pipe diameters from 16 to 110 mm. Turn the control knob over to the diameter you require before starting the welding technological process. After heating up to the required temperature, place the pipe on the adapter (first the fitting, and then the pipe) and press the push-button (5).

The process is indicated as follows:

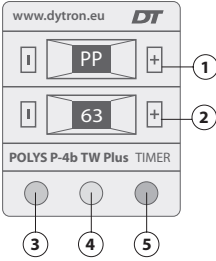
- a) Melting time – a short acoustic signal indicating the beginning of the welding process
- b) Pipe fixing time - continuous, quickly interrupted acoustic signal delimiting the phase of pipe replacement; this time limit must not be exceeded
- c) Cooling time - long acoustic signal informing of the welding process termination.

An overview for PP type 3 (PP-R) of melting, part joining and cooling times is given in the following table:

Acoustic signalling TraceWeld® - Reference times

An overview for PP type 3 (PP-R) of melting, part joining and cooling times			
PIPE DIAMETER [mm]	MINIMUM MELTING TIME [sec]	MAXIMUM PIPE FIXING TIME [sec]	MINIMUM COOLING TIME [sec]
16	5	3	6
20	6	4	8
25	7	4,5	11
32	9	5	14
40	12	5,5	19
50	17	6	24
63	23	7	30
75	30	7,5	36
90	40	8	43
110	50	8,5	52
125	60	10	60

P4-b TraceWeld Plus Regulation

P-4b TraceWeld Plus®	
	1 Push wheel switch for setting of the welded material
	2 Push wheel switch for setting of the welded diameter
	3 Red diode (ON indication)
	4 Green diode (ON indication) informing about the status of the welder heating-up
	5 Push button for starting of acoustic signalling

P-4b TraceWeld Plus welder allows to set the required temperature by selecting the welded material and the pipe diameter, and in addition, it emits acoustic signal indicating the welding process. The setting of the welded material and the diameter is done by means of the push wheel switches. For the given welded material, the push wheel switch may take the following values:

Push wheel switch value	PP	PEH	PEL	PVD	PB	OFF
Meaning	PP typ 1, 2, 3	PE - HD	PE - LD	PVDF	PB	Heating OFF

PP: Polypropylene. Thermoplastic polymer used in a wide range of applications. It is divided into the Types 1, 2, and 3. Type 3 is indicated as the PP Type 3 (PP-R) and is used for normal water distribution piping systems (hot and cold water) or for heating.

PE-HD: High-density polyethylene. Due to its good chemical stability, it is resistant to acids, caustics, numerous organic solvents, and hot water. It is a good electricity non-conducting material, and it is easy to weld. It is used mostly for external water, gas, and drainage distribution networks.

PE-LD: Low-density polyethylene. It shows its good characteristics even under very low temperatures, in particular its high impact-tenacity. It is resistant to water, solutions of non-oxidant acids, caustics and salts. It is often used for irrigation systems.

PVDF: Polyvinyl iden-fluoride. Highly impact-resistant, physiologically non-tainting material, with very good resistance to almost all chemicals, deep-drawing, with high values of mechanical strength, good resistance to UV radiation, suitable for external use. It is used for piping systems in food-processing and chemical industries.

PB: Poly-butene. It is exceptionally resistant to corrosion under stress and creep, and it is long-term resistant to the temperatures of up to approx. 93°C. It is used for hot water and heating networks.

Note: The OFF position does not disconnect the equipment from the electrical power grid. When you finish working with the welder, disconnect it from the electric power grid by pulling out the power cord from the power socket!

Acoustic signalling:

Upon heating-up to the required temperature (the green diode will start flickering) slip the pipe over the adapter and press the TIMER pushbutton. The pressing will start the count. The whole process is then indicated in the following way:

- a) **MELTING TIME** - short acoustic signal informing of the welding process star
- b) **PIPE FIXING TIME** - continuous, quickly interrupted acoustic signal delimiting the phase of pipe replacement; this time limit must not be exceeded;
- c) **COOLING TIME** - long acoustic signal informing of the welding process termination.

In the case that you happen to press the TIMER pushbutton again during the welding process, you will make the process to start again, which may result in an incorrectly executed weld.

The following tables show all the set-up times for individual materials used (in the case of the 650 W socket welders, the dimensions of 90 and 110 mm are intended for butt welding)

P4-b TraceWeld Plus Regulation integrated table times

PP Type 1, 2, and 3 - Temperature at adapter: 260°C			
Diameter / Wall thickness [mm]	MELTING TIME T1 [sec]	PIPE FIXING TIME T2 [sec]	COOLING TIME T3 [sec]
16	5	3	5
20	5	3	5
25	7	3	7
32	8	6	8
40	12	6	12
50	18	6	18
63	24	8	30
75	30	8	30
90 / 3.5*	58	10	360 (6 min)
110 / 4.3*	65	11	360 (6 min)


PE-HD Temperature at adapter: 225 °C			
Diameter / Wall thickness [mm]	MELTING TIME T1 [sec]	PIPE FIXING TIME T2 [sec]	COOLING TIME T3 [sec]
16	5	3	5
20	5	3	5
25	7	3	7
32	8	6	8
40	12	6	12
50	18	6	18
63	24	8	30
75	30	8	30
90 / 1,8-4,5**	45	10	360 (6 min)
110 / 1,8-4,5**	45	10	360 (6 min)

PE-LD Temperature at adapter: 190 °C			
Diameter / Wall thickness [mm]	MELTING TIME T1 [sec]	PIPE FIXING TIME T2 [sec]	COOLING TIME T3 [sec]
16	5	3	5
20	5	3	5
25	7	3	7
32	8	6	8
40	12	6	12
50	18	6	18
63	24	8	30
75	30	8	30

PVDF Temperature at adapter: 260 °C			
Diameter / Wall thickness [mm]	MELTING TIME T1 [sec]	PIPE FIXING TIME T2 [sec]	COOLING TIME T3 [sec]
16	4	4	6
20	6	4	6
25	8	4	6
32	10	4	12
40	12	4	12
50	18	4	12
63	20	6	18
75	22	6	18
90 / 4,3*	84	9	480 (8 min)
110 / 5,3*	94	9	540 (9 min)

PB Temperature at adapter: 270 °C			
Diameter / Wall thickness [mm]	MELTING TIME T1 [sec]	PIPE FIXING TIME T2 [sec]	COOLING TIME T3 [sec]
16	5	3	15
20	6	4	15
25	6	4,5	15
32	10	5	20
40	14	5,5	20
50	18	6	30
63	22	7	30
75	26	7,5	60
90 / 10*	70	14	600 (10 min.)
110 / 10*	70	14	600 (10 min.)

P-4c TraceWeld® temperature control options

P-4c TraceWeld®	
	1 Display
	2 Black push-button - temperature down
	3 Black push-button - temperature up
	4 Acoustic signalling control push-button

Working temperature adjustment

After plugging the power cord into a socket, the display shows the last set temperature. Decrease and increase temperature by pushing the left and the middle button respectively. Push-buttons are to be pressed and held, till the display shows the required temperature. After the push-button is released, the set temperature value flashes three times and the display switches back to the mode of actual temperature of the heating element. By pushing one of the buttons for less than one second, it is possible to verify the set temperature.

Acoustic signalling

The only variable to be set in P-4c welder is the pipe size. The respective technological time limits are programmed in the microprocessor control according to data provided by pipe manufacturers and from the welding specifications (see the table provided with P-4a welder with acoustic signalling).

Setting required dimensions

P-4c welder can be switched over to the mode of welding sizes adjustment by pressing and holding (approx. 2 sec.) the right push-button. The mode is switched over after second beep. The display shows the pipe size to be welded. The size can be changed by means of the left and the middle push-buttons. The size adjustment process is terminated automatically after you have failed to make a change within 5 seconds, or you can terminate it by pressing the right push-button. After the adjustment process termination, the welder switches back to the mode of temperature displaying.

Immediately after putting pipe and fitting on the adapter, it is necessary to switch on acoustic signalling by shortly pressing the right push-button. The process is then indicated as follows:

- a) **Melting time** - short acoustic signal informing of the welding process start
- b) **Part joining time** - continuous, quickly interrupted acoustic signal delimiting the phase of pipe replacement; this time limit must not be exceeded
- c) **Cool-down time** - long acoustic signal informing of the welding process termination

Error messages

The welder features a self-diagnostics capability. An error message (Er 1-2) is displayed if a defect occurs. In such a case, disconnect the welder from mains and bring it to a service shop.

Welding Procedure

This working procedure covers only the description of socket welding principle. It does not substitute applicable regulations and professional training of workers.

Socket welding process consists in melting the outer surfaces of plastic pipe ends and the inner surfaces of pipe fittings. Both parts are fitted into each other after having been heated up, resulting in a perfect permanent joint.

Fusion adapters of required diameters should be clamped to the heating element before the welder is connected to power supply. Welder can be laid aside or be fixed in a clamp.

Welder is connected to mains with required temperature set. While the welder is being heated up, time can be spent in preparing pipes and fittings for welding, degreasing them and in cleaning oxidised surfaces to be welded.

After the required temperature is reached, wait for an additional period of 10 minutes to allow heat to distribute evenly, particularly when using adapters of larger diameters.

After that, the fitting is put on the fusion adapter rod and the pipe end inserted into the adapter hollow. When both ends are heated up, they are removed from the adapter and pressed together.

Weld only pipes made out of the same material and from the same manufacturer. Avoid rotating pipes and fittings when joining them together.

- ▶ Allow the joint to cool down. Technological time limits and temperatures are specified by pipe manufacturers.
- ▶ Switch off the welder by pulling its power cord from mains.
- ▶ Fusion adapters may be replaced with the welder switched off only.
- ▶ Wear protective gloves when replacing fusion adapters.
- ▶ Store hot adapters in the welding set case or on an incombustible pad after use.

When you have finished your work, switch off the welder by pulling the power cord from mains socket. Do not disassemble the welder.

For welding of the pipes with the diameter exceeding 50mm, it is necessary to use a suitable fixing device (e.g. MP 75 or MP 110 manufactured by Dytron Europe).

Maintenance

Fusion surfaces of adapters should be kept clean. Wooden spatula or a dry rag of non-synthetic material can be used for cleaning. It is not permitted to clean the welding adapter with metal objects, as this would damage the top anti-adhesive layer.

Keep the welder clean, particularly the contact areas for the adapters. The welder does not require any special maintenance.

All repairs of the welder can be performed by service stations authorised by DYTRON EUROPE s.r.o.

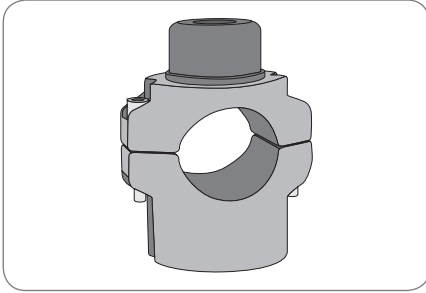
PERFORMING OF REVISIONS

The initial product revision is done by the manufacturer. The user is obliged to carry out revisions (hand welders are hand-held tools of the Class I) according to the requirements of statutory instruments of the country of the user. If there are no legislative rules of this kind, the manufacturer recommends to carry our revisions in the below mentioned periods.		Recommended frequency of revisions
A	Welder used it is operated only occasionally (up to 100 operating hours / year)	6 months
B	Welder used it is operated often, for short periods (100 to 250 operating hours / year)	3 months
C	Welder used it is operated often, for long periods (over 250 operating hours / year)	2 months

The revisions can be made by a service organisation authorised by Dytron Europe s.r.o. or a service organisation with a similar authorisation in compliance with the rules of law of the country of the user. At least once a year, it is necessary to carry out verification of the welder temperature control. The period of validity of this verification is then indicated on the welder (month and year). ATTENTION! If an extension cable is used for connecting the welder to power socket, it is necessary for safety reasons to subject this extension cable to the verification according to EN 66 335-1 together with the welder.

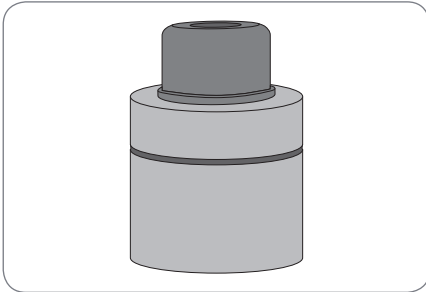
Functional dimensions of the welding adapters comply with the requirements of the respective European standards concerning dimensions of the plastic pipes and fittings.

The adapters are coated with a special high-quality blue double-layer anti-adhesive DT coating, or with a black one-layer anti-adhesive PTFE coating.



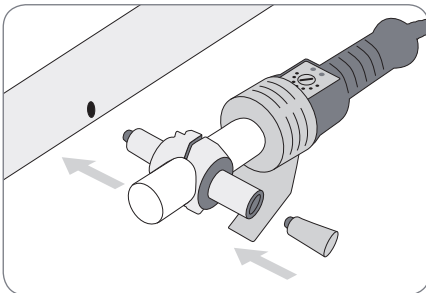
Jaw Adapter

- ▶ For welders with a rod heating element
- ▶ For welding at difficult accessible places
- ▶ Type A as standard, but available also in Type B (for welding of pipes requiring calibration)
- ▶ Increased thermal effectiveness
- ▶ Fixing by using a 4 mm inbus key



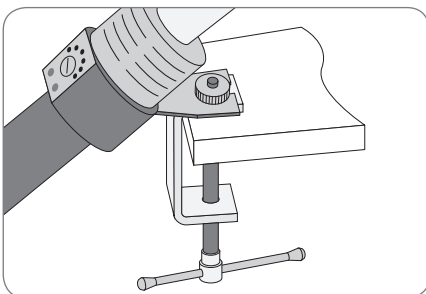
Pair Adapter

- ▶ For welders with a knife heating element
- ▶ Type A as standard, but available also in Type B (for welding of pipes requiring calibration)
- ▶ Available in 16 – 125mm
- ▶ High thermal capacity
- ▶ Fixing by using a 6 mm inbus key



Repair Adapter

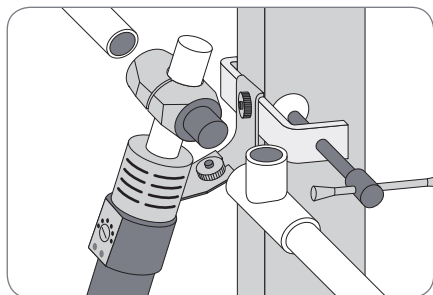
- ▶ For welders with a rod heating element
- ▶ For repairs of plastic piping
- ▶ Available standalone or with a repair rod
- ▶ Fixing by using a 4 mm inbus key



Clamp

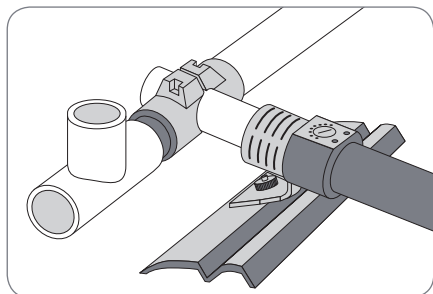
- ▶ Designed for all types of welders
- ▶ For fixing the welder onto a workbench and other worktops

Optional Accessories



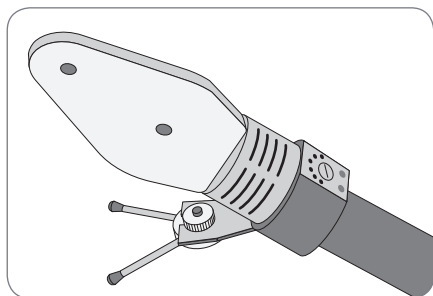
Universal clamp

- ▶ Suitable for attaching the welder to almost any object
- ▶ Designed for all types of welders



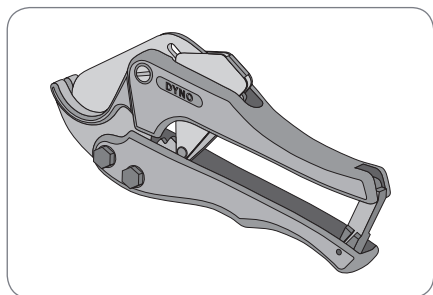
Foot stand

- ▶ For holding the welder by a foot during work
- ▶ Designed for all types of welders



Workbench stand

- ▶ For placing the welder on a workbench
- ▶ For welders with 850 and 1 200 W output



DYNO shears

- ▶ are used to cut plastic pipes up to 40 mm in diameter

Authorised Service Shops

for the Czech Republic

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