ROTHENBERGER

ROWELD P 1200 B

Bedienungsanleitung
Instructions for use

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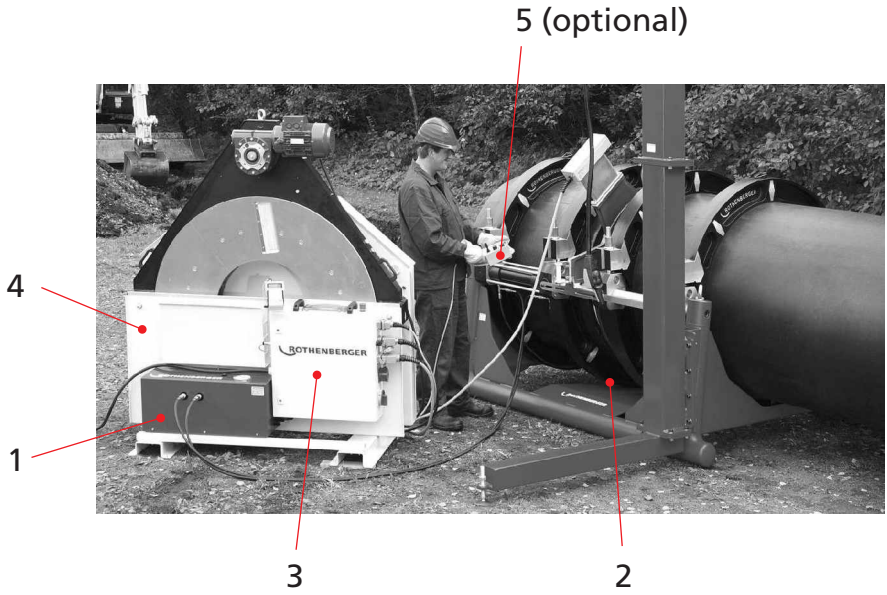
- **5.4254 P1200B cpl.**
- **5.4247 P1200B basic**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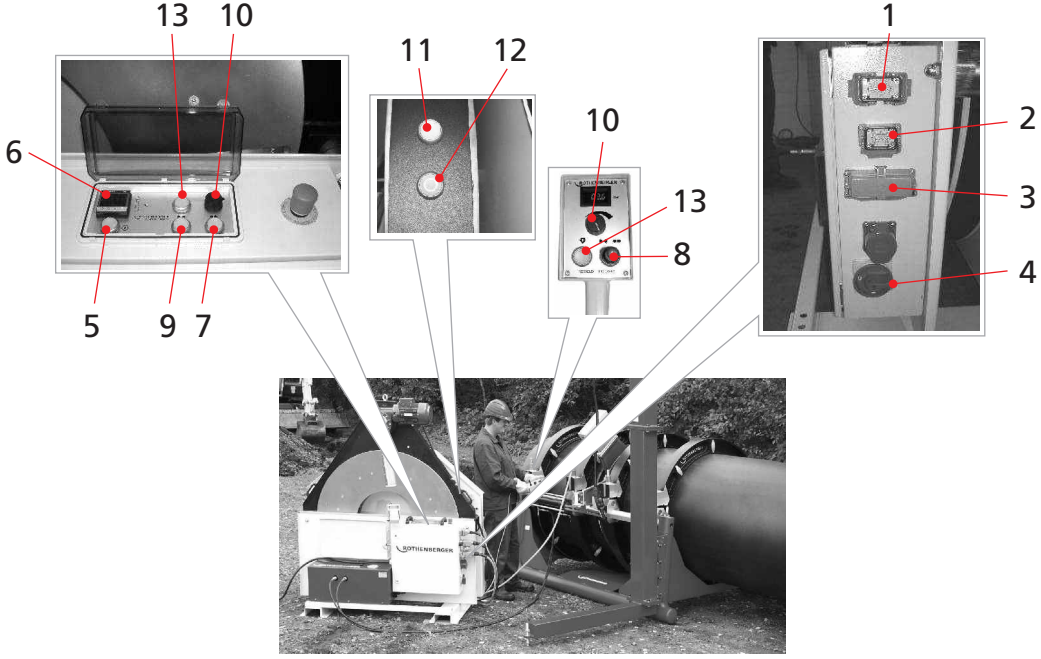
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Bedienungsanleitung bitte lesen und aufbewahren! Nicht wegwerfen!
Bei Schäden durch Bedienungsfehler erlischt die Garantie! Technische Änderungen vorbehalten!

Please read and retain these directions for use. Do not throw them away! The warranty does not cover damage caused by incorrect use of the equipment! Subject to technical modifications!

0. About this manual

The warning notices, symbols and their meanings as used in this manual are explained below to help you quickly understand the format of this instruction manual and how to use the machine safely

0.1 Warning notice

Warning notices are used in this manual to inform you of possible injuries or damage to property. Please read them and always abide by these warnings!

Symbol	Meaning
 **DANGER**	Imminent accute danger! Failure to comply could result in death or extremely serious injury.
 **WARNING**	Possible accute danger! Failure to comply could result in serious injury.
CAUTION	Dangerous situation! Failure to comply could lead to injury or damage to property.

Warnings are always structured in the same manner:

- Warning symbol
- Type and source of danger
- Possible consequences, explanation of danger
- Prohibited (if applicable) (symbol: ⃠)
- Ways to prevent the danger (symbol: ▶)

0.2 Other symbols and notices

Symbol	Meaning
Important	This notice contains especially important information.
Attention 	Mandatory: you must observe this regulation.
1.	Call for action in a particular sequence. You must do something here.
▶	Single call for action. You must do something here.
▷	Call for action under certain circumstances. You must do something here if the condition beforehand has been fulfilled.

0.3 Abbreviations

Abbr.	Meaning
P 1200	Butt fusion machine d 800–1200 mm
DVS	Deutscher Verband für Schweisstechnik (German Association of Fusion Technology)
HD-PE	High Density Polyethylen
PE	Polyethylene
PP	Polypropylene
PTFE	Polytetrafluorethylene
d	Pipe outer diameter

1. Safety instructions

The ROWELD P1200 B Butt Fusion Machine (here in after referred to as P1200) is designed according to the latest standards of technology. Using it for purposes other than those described in this manual may cause injury to the operator or to others. It may also cause damage to the machine or other equipment.
Any person in the company, who is involved in the assembly, disassembly, reassembly, installation, operation or maintenance (inspection, maintenance work, repair work) of the P 1200 must have read and understood the complete instruction manual, and in particular Section 1 on "Safety instructions.
It is recommended that the user has this confirmed in writing.
Thus:

- The machine should only be used when in perfect working order.
- Always follow the safety instructions
- Complete documentation should be kept in the vicinity of the machine.

1.1 Proper use

The P 1200 is to be used exclusively for the fusion of pipes and fittings made of PE and PP.

1.2 General safety measures

- Use only the materials and dimensions specified in this manual. Other materials may only be used after consulting ROTHENBERGER after sales service.
- Use only original ROTHENBERGER spare parts and equipment.
- Inspect the P 1200 daily for visible signs of damage or defects. Have damage or defects repaired immediately.
- Any work on the electrical equipment may only be done by a specialist.

1.3 Working with safety in mind

"Make your contribution to safety in the workplace."

- Report any deviations from normal operation immediately to the person in charge.
- Always keep safety in mind while working.

For your own personal safety as well as for the safe and optimal handling of the machine, the P 1200 must be installed correctly.
Connect hydraulic hoses to and from the machine only when the hydraulic unit is shut off and not under pressure (observe manometer).

Warning
Danger of cutting hands! The planer blades are sharp! Danger of cutting hands on the planer disk.
⦸ Do not touch the rotating planer disk.

Warning
Danger of burning! The heater is hot (≥210 °C)! Danger of burning hands on the hot heater (internal storage case plate).
⦸ Do not touch the heater when on.
▶ Use the handles on the heater.

Warning
Danger of crushing hands! The machine slide moves! Danger of injury to hands in the moving machine slide!
⦸ Do not reach into the machine when moving to the end positions.

1.4 Disposal

Shavings and used hydraulic oil should be disposed of properly.

1.5 Further safety guidelines

Observe all the regulations, standards and guidelines applicable in your country.

2. General

2.1 Introduction

This instruction manual was written for those persons responsible for the operation and care of the P 1200. It is expected and assumed that such persons have read, understood and will abide by the manual in its entirety.

Only with the knowledge contained in this manual can faults on the P 1200 be prevented and trouble-free operation be ensured. It is therefore imperative that the responsible persons are familiar with this manual.

We recommend that this manual be read carefully prior to putting the machine in operation, as we are not liable for any damage or interruptions in operation resulting from failure to comply with this manual.

Should problems nevertheless arise, please contact the nearest **ROTHENBERGER** representative.

This manual applies only to the P 1200.
We reserve the right to make the technical changes necessary to improve the P 1200 which may result in deviations from the illustrations and information contained in this manual.

2.2 Range of application

The P 1200 is designed exclusively for the fusion of plastic pipes, fittings and valves in the dimension range d 800–1200 mm. Any other use is not authorized. The manufacturer cannot be held liable for damages resulting from unauthorized use; the user bears sole responsibility.

2.3 Copyright

ROTHENBERGER Werkzeuge GmbH, Industriestraße 7, D- 65779 Kelkheim

3. Product design, equipment

3.1 Overview (fig. A)

1 Hydraulic unit

2 Basic machine

3 Power control box

4 Storage case with heater and planer

5 Remote control cable (optional)

3.2 Standard equipment (fig. B)

Base machine: Hardened and hard chrome-plated guide shafts, Tool and wrench set

Hydraulic unit: Precise hydraulic control unit for a consistent setting of the fusion pressure. Protocolling device DATALINE (optional)

Storage case with heater and planer:

Heating element: PTFE-coating, Power cord 5,5m,

Electric planer:

Worm drive, Stop mechanism for safety, Safety micro switch to prevent unintentional start-up, Planer blades sharpened on both sides (double per side)

Power control box: Made of sheet-steel and protected on storage case. All functional and safety components are contained inside: relay, electronic thermostat, main switch.

Hydraulic hose package: With anti-drip, rapid-action couplings

Remote control cable: Pressure and machine controller with digital pressure gauge

4. Technical specifications

Planer	Power:	Electromotor 3000 W
	Voltage:	400 V
Heater	Power:	16,00 kW
	Voltage:	400 V
Hydraulic unit	Power:	1,5/1,8 kW; 50-60 Hz
	Voltage:	400 V
	Oil-type:	Viscosity 46
Power control box	Voltage:	400 V
Machine complete	Power:	20,5 kW
	Voltage	400 V

4.1 Characteristic data

Machine type	Plastic butt fusion machine P 1200
Total piston area	2983 mm^2
Maximum pressure	138 bar / 10 l/min
Weight of basic machine	1210 kg
Weight of hydraulic unit	53 kg
Power control box	57 kg
Weight of planer	375,5 kg
Weight of heater	118 kg
Noise level	70 dB(A)

5. Transport and assembly

5.1 Packaging
A decisive factor in the choice of packaging is the means of transport. Normally, the machine and all the accessories are delivered in a cardboard box on a pallet.

5.2 Sensitivity
Special care must be taken when transporting the P1200 in order to prevent damage from impact or improper loading and unloading. All movable parts must be fixed in place.
Transport insurance should be provided for according to the type and duration of transport. Condensation due to large temperature fluctuations and sharp jolts during shipment should be avoided.
Please handle the P1200 with care.

5.3 Intermediate storage
If the P1200 is not used immediately upon delivery, the machine must be stored in a safe place and properly covered.

5.4 Scope of delivery
The contents (number of transport crates, pallets, packages) and their condition should be checked immediately upon receipt. Any damage and/or missing parts should be noted right away on the bill of lading and reported to ROTHENBERGER Werkzeuge GmbH without delay.

6. Fusion preparation

6.1 General information

Chapter 6, Fusion Preparation, and Chapter 7, The Fusion Process, are based on the instruction sheets and guidelines issued by the DVS.

The fusion area should be protected against the influences of weather (humidity, ambient temperature <+ 5 °C, extreme direct exposure to sun) with such measures as pre-warming the fusion materials, tents, heating.

For optimal use of the P1200 operating personnel should be specially trained by ROTHENBERGER. In-depth knowledge of the machine and it´s components and competence rule out handling errors thereby also preventing faulty fusion joints.

6.2 Preparations

1. Connect heater, planer and cable remote-control to the power control box.
2. Connect power control box to the power.

   CAUTION! Check the voltage!

   ▷ Main power (4) switch on

   ▷ Heating element (5) switch on. Button lights on, if heating element switching on

3. Set temperature controller (6) to the correct fusion temperature. For guidelines, see the fusion tables in Chapter 7.5, from pg S. 31

   Light on controller turns red during heating and starts blinking when setting temperature is reached.

   Suggestion: Before beginning with the first fusion, we recommend waiting approx. 10 minutes after the set fusion temperature has been reached to allow for even heat distribution.

4. Check the fusion surfaces with a quick-indication temperature measurement device for the set temperature.
5. Clean the couplings on the machine and the hoses.
6. Connect the hydraulic hoses to the machine and to the hydraulic unit.

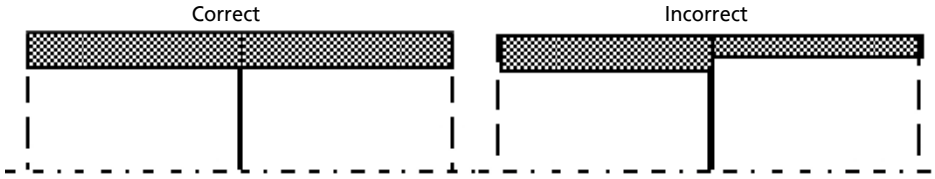
7. Fusion (s. Fig. B)

7.1 The basics of butt fusion

For butt fusion with a heating element, the parts to be joined (pipe/pipe, pipe/fitting or fitting/fitting) are heated to fusion temperature in the fusion area and are fused under pressure without the use of additional materials.
The heating element butt fusion joint must be done with a controllable equalization pressure. See pressure/time tables, Chapter 7.5, from pg. 31.

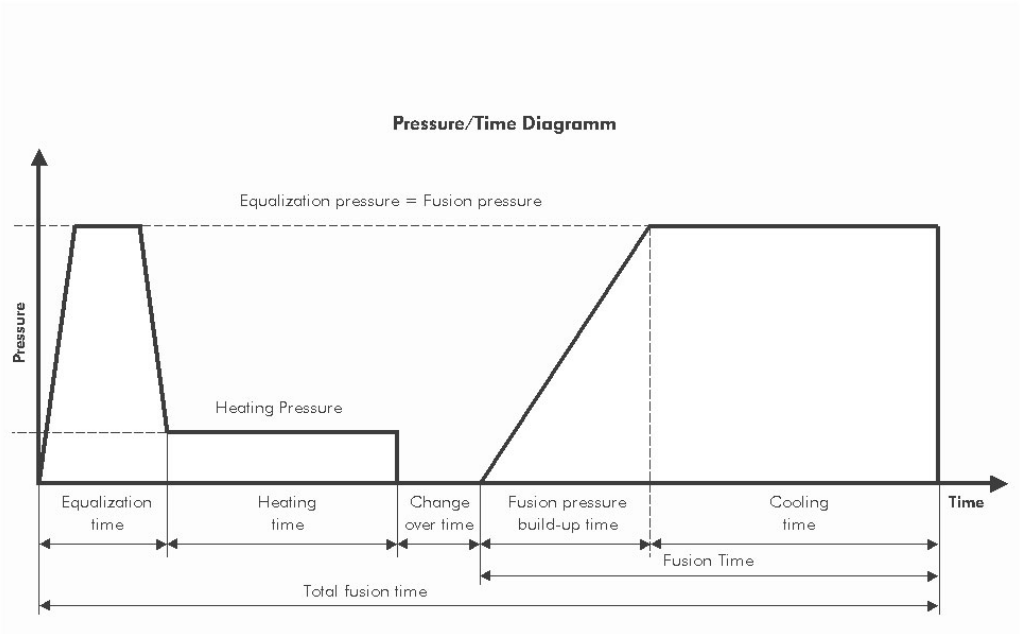
Attention: Only the same type of materials are to fuse

The wall thicknesses in the fusion area needs to be the same.



Only the same wall thicknesses in the fusion area!

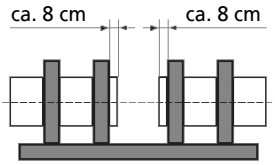
Equalization- and fusion pressure are identical.
The heat soak pressure is significant lower, but the contact between the pipe/fitting and the heating element needs to be ensured.



7.2 The fusion process

In order to weld pipes and/or fittings d < 1000 mm, insert matching clamping half shells and fasten them with the screws.

▶ Clamp pipe/pipe, pipe/fitting or fitting/fitting in the clamping element. Pipe and/or fitting ends need to reach out at least 8 cm from the pipe clamps in order to perform a proper weld. Make sure they are exactly aligned in the axial direction.



If necessary, the pipes/fittings can be turned or the clamping force changed with the clamping screw to achieve a better clamping position.

Adjustable roller supports or a floating suspension assist horizontal movement of the pipes clamped in the slide.

7.2.1 Calculating drag pressure

WARNING

Danger of crushing hands!

Machine slide moves!

Danger of injury in the moving machine slide!

⦸ When moving to the end positions do not reach into the machine.

ATTENTION! The machine drag pressure must be calculated before each new fusion.

1. Open machine to stop (button (7) or turn joystick (8) rightwards).
2. Reduce pressure with the adjustment pressure valve (10) (turn counter-clockwise).
3. Increase pressure with the adjustment pressure button(10) (turn clockwise) while simultaneously pressing button (9) or turn joystick (8) to the left .
4. Check the movement pressure on the manometer, as soon as the machine slide moves evenly, or read the pressure gauge on the cable remote-control.

7.2.2 Calculating of the fusion pressure

ATTENTION! The fusion pressure is the sum of the "table value + movement pressure" (e. g. 37,2 bar * + 8 bar = 45,2 bar) * for HD–PE d 800 mm, SDR 26 see Chapter 7, pg. 31, Time/Pressure diagram

7.2.3 Adjusting of the fusion pressure

1. Open the machine.
2. Reduce pressure with the adjustment pressure button (10) (turn counter-clockwise).
3. Pressing button (9) or turn joystick (8) to the left and increase pressure on the pressure valve (turn clockwise) until basic machine moves smoothly.
4. Adjust fusion pressure with the adjustment pressure button (10) as soon as both pipe ends are in contact (turn clockwise).

If the fusion pressure is set too high, re-adjust:

5. Open the machine.
6. Turn the adjustment pressure button (10) approx. 3 revolutions to the left.
7. Start fusion pressure again and set as described above.

7.2.4 Preparing the fusion surfaces

WARNING

Danger of cutting hands!

Sharp planer blades!

Danger of injury to hands if the planer disk is touched.

⦸ Do not touch the rotating planer disk.

▶ Check the safety lock.

1. Open the machine.
2. Insert planer.
3. Checking the safety lock closed.
   This prevents the planer unit from jumping out of the machine during planing.

   CAUTION! Constant high pressure when facing, can cause damage on the drive and/or the motor of the facer.
4. Plane the facing surface of pipes/fittings until shavings are turned out in ribbons which are the same width as the pipe wall thickness.

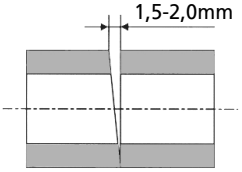
   CAUTION! Be sure, that no chippings get behind the planer washer! If happened, Switch facer off, protect towards resetting and remove all chippings!

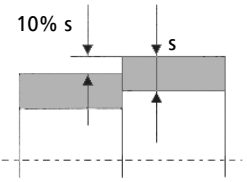
   The max. planer pressure is 10 bar above the drag resistance.

   To make sure the gap and the wall offset are in order, both sides must always be planed!
5. Switch facer off (press button (12).

   ▷ Remove facer of the machine and place in the case.
6. Close machine until pipes/fittings. Touch each other. The maximum tolerance of the gap my be 1.5 mm for d ≤ 1000 and 2.0 mm for d > 1000 mm.
7. Check the alignment at the same time.
8. The wall offset on the outside may not exceed 10 % of the wall thickness.
9. If it is larger, the pipe/fitting can be turned or the clamping force on the inner clamping units can be changed to achieve a better clamping position.
10. In this case, the fusion surfaces need to be remachined.
11. Remove shavings which have fallen into the pipe e.g with a brush. Before each fusion, the fusion surfaces must be cleaned with lint-free paper and grease-free cleaner, e.g. industrial alcohol (Tangit KS).

    ATTENTION! Never touch the fusion surfaces with your hand after cleaning!





7.2.5 Fusion process

The PTFE coating of the heating element must be protected from mechanical damage and/or dirt. Heating element with demaged PTFE -covering has to be replaced. Non-observance affects the quality of the joining, see Chapter 9.1, pg. 37.

WARNING

Danger of burning!

The heater is hot (210 °C)!

Danger of burning hands on the hot heater.

⦸ Do not touch the heater when on.

▶ Use the handles on the heater.

For fusion parameters, see Chapter 7.5, pg. 31

Equalization (fusion bead created on both sides)

1. Insert Heater.
2. Move the parts to be joined together, pressing button (9) or turn joystick (8) to the left.
3. Until the preset pressure has been reached, remain in this position and hold 15 sec.

Equalization pressure = fusion pressure

Release (reduction of equalization pressure after formation of the fusion bead)

1. After formation of the equalization bead around the entire pipe circumference (check fusion chart chapter 7.5, pg.31) pressing button (13) until the manometer or pressure range is nearly 0.

   CAUTION! Do not open the machine!
   Pipes have to keep contact with the heating element.

2. Start timer with preset heat soak time.

Heat soak (of the fusion material)

For PE: 10 x wall thickness in mm

For PP: Interpolate the intermediate values

The heat soak pressure is kept constant by the hydraulic system while the heat soak time.

Change-over (removing the heating element)

The change-over time should be as short as possible.

When the heat soak has ended

▶ Pressing button (7) or turn joystick (8) rightwards.

▷ Immediately remove the heating element from the machine.

Joining (Fusion process)

▶ Pressing button (9) or turn joystick (8) to the left until pipes touch each other and the preset fusion pressure is reached. Hold this position for 15 sec.

The surfaces to be joined are fused.

▷ Place the heating element in the storage case without damaging or contaminating the fusion surfaces.

Cooling (the fusion joint)

CAUTION! The cooling time must always be observed.
The use of cooling agents is not permitted during cooling.

Releasing (the hydraulic system)

WARNING

Danger of bruising!

▶ Release the pressure of the hydraulic system before opening the clamping stations.

1. Pressing button (13) until the manometer or pressure range is nearly 0.

   CAUTION! Do not open machine slides.

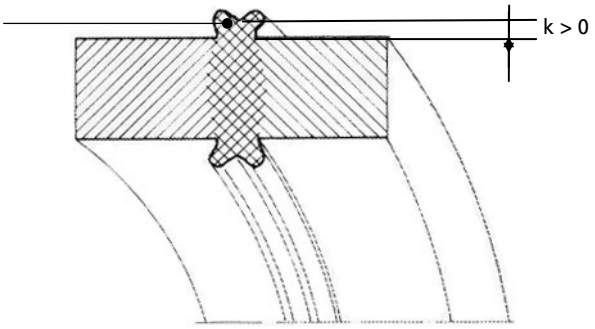
2. Open clamping station before removing welded pipes/fittings.

   CAUTION! All fusion joints must have cooled completely before the pressure test is performed. This is generally the case approx. 1 hour after the last fusion operation.

7.3 Visual check of welding bead

Immediately after removing the welded pipes/fittings visually check the part for correct cultivated double bead and the k-value.

Even double bead



7.4 Example

Pipe/fitting	HD–PE	Heater temperature	210 °C
Pipe outer diameter	800 mm	Drag resistance	8 bar
Pressure rating	SDR 26	Table value	37 bar
Wall thickness	30,6 mm	Adjustment value on hydraulic unit	45 bar

Equalize	with a pressure of 45 bar until a bead height of 3.0 mm results
Heat soak	for 306 sec with a pressure of 0.01 N/mm^2 (column t_1)
Change-over	within max. 16 sec (column t_2)
Join	for max. 19 sec (column t_3)
Cooling	for 37 min (column t_4)

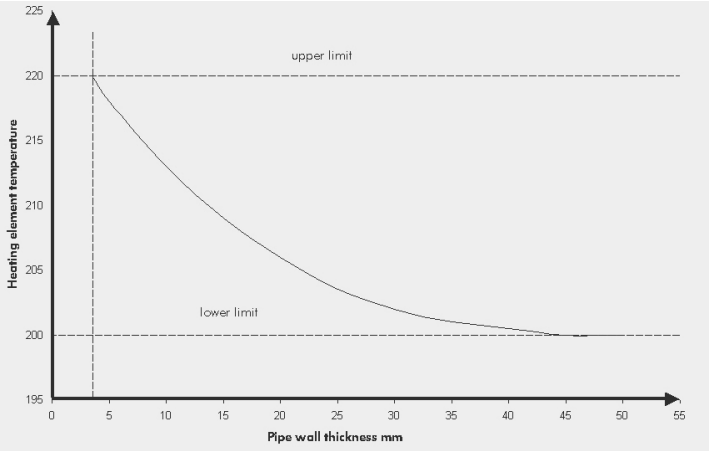
7.5 Fusion data

Heating element butt fusion of HD–PE

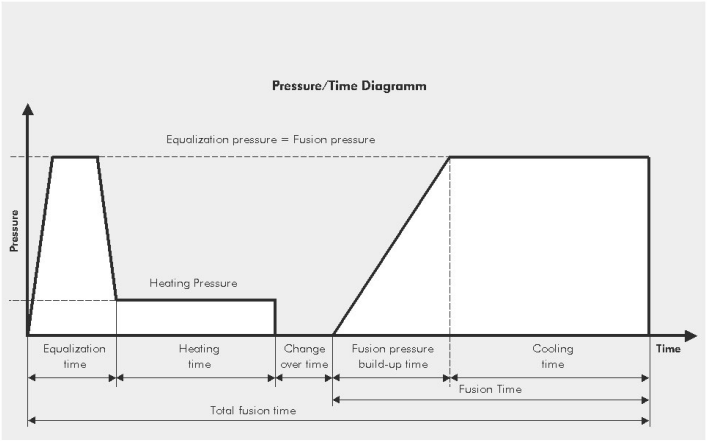
Fusion table/DVS 2207/1 guidelines (09/05)
Heating element temperature 200-220 °C. If PE 100 choose the upper temperature

	1	2	3	4	5
Nominal wall thickness	Equalize Bead height on heating element after equalization (equalization at 0,15N/mm²)	Heat soak Heat soak time = 10 x wall thickness (heat soak at 0,02 N/mm²)	Change-over	Choin Time until max pressure reached	Cooling Cooling time at fusion pressure p = 0,15 N/mm² ± 0,01
mm	mm (min.value)	sec	sec (max. time)	sec	min (min. value)
up to 4,5	0,5	45	5	5	6
4,5 – 7,0	1,0	45 – 70	5 – 6	5 – 6	6 – 10
7,0 – 12,0	1,5	70 – 120	6 – 8	6 – 8	10 – 16
12,0 – 19,0	2,0	120 – 190	8 – 10	8 – 11	16 – 24
19,0 – 26,0	2,5	190 – 260	10 – 12	11 – 14	24 – 32
26,0 – 37,0	3,0	260 – 370	12 – 16	14 – 19	32 – 45
37,0 – 50,0	3,5	370 – 500	16 – 20	19 – 25	45 – 60
50,0 – 70,0	4,0	500 – 700	20 – 25	25 – 35	60 – 80

Curve for standard values for heater temperatures in relation to pipe wall thickness



Process steps for heating element butt fusion



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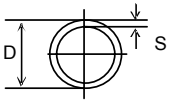
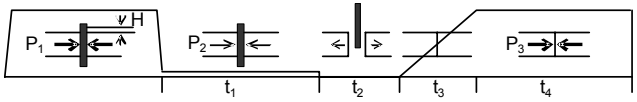


P1200B

PE-80/PE-100

DVS 2207/T1(9/05)



D [mm]	SDR	S [mm]	T [°C] PE-80	T [°C] PE-100	P1[bar]	H [mm]	P2[bar]	t1 [sec]	t2 [sec]	t3 [sec]	P3[bar]	t4 [min]
800	41	19,6	207	220	24,2	2,5	3,2	196	10	11	24,2	25
	33	24,5	205	220	30,0	2,5	4,0	245	12	13	30,0	30
	26	30,6	203	220	37,2	3,0	5,0	306	14	16	37,2	37
	17,6	45,3	200	220	54,0	3,5	7,2	453	19	23	54,0	55
	11											
	7,4											
900	41	22,0	206	220	30,5	2,5	4,1	220	11	12	30,5	27
	33	27,6	204	220	38,0	3,0	5,1	276	13	15	38,0	34
	26	34,4	202	220	47,0	3,0	6,3	344	15	18	47,0	42
	17,6	51,0	200	220	68,4	4,0	9,1	510	20	26	68,4	61
	11											
	7,4											
1000	41	24,5	205	220	37,8	2,5	5,0	245	12	13	37,8	30
	33	30,6	203	220	46,9	3,0	6,2	306	14	16	46,9	37
	26	38,2	201	220	58,0	3,5	7,7	382	16	20	58,0	46
	17,6	56,6	200	220	84,4	4,0	11,2	566	22	28	84,4	67
	11											
	7,4											
1200	41	29,4	203	220	54,4	3,0	7,2	294	13	16	54,4	36
	33	36,7	201	220	67,4	3,0	9,0	367	16	19	67,4	45
	26	45,9	200	220	83,7	3,5	11,2	459	19	23	83,7	55
	17,6	68,0	200	220	121,6	4,0	16,2	680	25	34	121,6	78
	11											
	7,4											

Die oben genannten Schweißparameter sind nur Anhaltswerte, für die ROTHENBERGER keine Gewähr übernimmt!
Im Einzelfall sind unbedingt die materialspezifischen Bearbeitungsparameter der Rohrhersteller einzuholen!
The above mentioned welding-parameters are only reference values without any warranty!
Please contact the plastic-pipe-manufacturers for the specific material characteristics!

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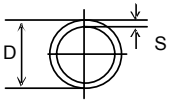

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PP

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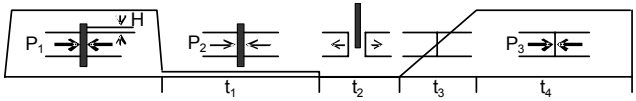


D [mm]	SDR	S [mm]	T [°C]	P1 [bar]	H [mm]	P2 [bar]	t1 [sec]	t2 [sec]	t3 [sec]	P3 [bar]	t4 [min]
800	41	19,6	210	16,1	1,5	1,6	336	9	17	16,1	31
	33	24,5	210	20,0	1,5	2,0	385	11	21	20,0	38
	26	30,6	210	24,8	2,0	2,5	436	12	26	24,8	46
	17,6	45,3	210	36,0	2,5	3,6	533	16	39	36,0	65
	11										
	7,4										
900	41	22,0	210	20,3	1,5	2,0	360	10	19	20,3	34
	33	27,6	210	25,4	2,0	2,5	412	11	23	25,4	42
	26	34,4	210	31,4	2,0	3,1	465	13	30	31,4	51
	17,6										
	11										
	7,4										
1000	41	24,5	210	25,2	1,5	2,5	385	11	21	25,2	38
	33	30,6	210	31,2	2,0	3,1	436	12	26	31,2	46
	26	38,2	210	38,7	2,5	3,9	492	14	33	38,7	56
	17,6										
	11										
	7,4										
1200	41	29,4	210	36,2	2,0	3,6	426	12	25	36,2	45
	33	36,7	210	45,0	2,0	4,5	483	14	32	45,0	55
	26	45,9	210	55,8	2,5	5,6	536	16	40	55,8	65
	17,6										
	11										
	7,4										

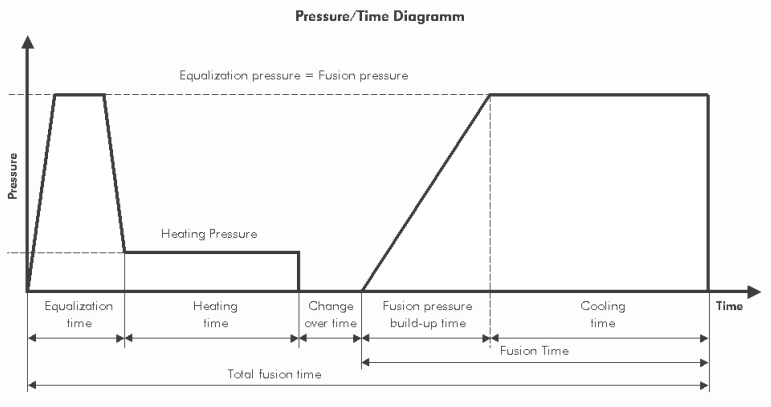
Die oben genannten Schweißparameter sind nur Anhaltswerte, für die ROTHENBERGER keine Gewähr übernimmt
Im Einzelfall sind unbedingt die materialspezifischen Bearbeitungsparameter der Rohrhersteller einzuholen!
The above mentioned welding-parameters are only reference values without any warranty!
Please contact the plastic-pipe-manufacturers for the specific material characteristics!

Heating element butt fusion of PP

Fusion table/DVS 2207/11 guidelines (02/99)
Heating element temperature 210 °C ±10 °C

	1	**2**	**3**	**4**	**5**
Nominal wall thickness mm	Equalize Bead height on heating element after equalization (equalization at 0,10N/mm²) mm (min.value)	Heat soak (heat soak at 0,01 N/mm²) sec	Change-over sec (max. time)	Choin Time until max pressure reached sec	Cooling Cooling time at fusion pressure (p = 0,10 N/mm² ± 0,01) min (min. value)
until 4,5	0,5	until 135	5	6	6
4,5 – 7,0	0,5	135 – 175	5 – 6	6 – 7	6 – 12
7,0 – 12,0	1,0	175 – 245	6 – 7	7 – 11	12 – 20
12,0 – 19,0	1,0	245 – 330	7 – 9	11 – 17	20 – 30
19,0 – 26,0	1,5	330 – 400	9 – 11	17 – 22	30 – 40
26,0 – 37,0	2,0	400 – 485	11 – 14	22 – 32	40 – 55
37,0 – 50,0	2,5	485 – 560	14 – 17	32 – 43	55 – 70

Process steps for heating element butt fusion



8. Failure analysis

1. On cracks parallel to or across the fusion joint, check
   - in the joint
   - in the heat flow zone
   - in the basic material
2. Bead notches traversing or local notches parallel to the joint with their roots in the basic material, due to
   - insufficient fusion pressure
   - heat soak time too short
   - cooling time too short
3. Notches and grooves in the basic material, running parallel to or across the joint, due to
   - clamping tools
   - improper transport
   - faulty fusion preparation
4. Displaced fusion surfaces due to
   - oval shaped pipe ends (improper storage of pipes!)
   - improper fastening in the clamps
5. Angular deflection of fused components due to
   - machine error
   - adjustment error
6. Fusion bead is narrow, raised, sharp-edged, over the entire or part of the joint circumference due to
   - incorrect fusion parameters
7. Fusion bead is too wide or too narrow, over the entire or part of the joint circumference due to
   - wrong heat soak time
   - wrong heater temperature
   - wrong fusion pressure
8. Fusion bead is uneven over the entire or part of the joint circumference due to
   - non-angular fusion surfaces
9. Jointing error on the fusion surfaces, over the entire or part of the joint circumference due to
   - dirty and/or oxidized fusion surfaces
   - change-over time too long
   - heater temperature too high/too low
10. Cavities in the fusion surfaces due to
    - insufficient fusion pressure
    - cooling time too short
11. Single, very widespread or local concentrations of pores due to
    - soiled heating element
    - vapors formed during fusion (water/solvents)

9. Maintenance

The ROWELD P 1200 B should be checked and cleaned periodically.

Normal care of the P 1200 is limited to periodic cleaning of the outside.

9.1 Replacement of worn parts

- PTFE coating of the heating element:

  Clots, cracks or other damage:

  – heating element needs to be recoated.
  – send the heating element to the nearest service center or to the manufacturer.

CAUTION! Danger of injury!
Sharp planer blades!
Danger of cutting if the planer blades, which are sharp on both sides, are touched.

- The planer blades on the planer should be replaced periodically.
  For order number see spare parts list.

9.2 Hydraulic system

- The hydraulic connections on the machine and on the hydraulic unit need regular cleaning.
- When not in use, the hydraulic connections on the P 1200 and on the hydraulic unit should be protected with the protective caps.

9.3 Hydraulic unit

Maintenance:

- Oil level check

  Check the hydraulic oil level regularly. If necessary, refill the hydraulic oil according to Chapter 4, pg. 24.

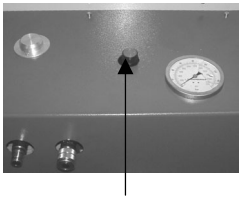
- Changing the hydraulic oil

After 3000 operating hours hydraulic oil need to be changed.

1. Let off the old hydraulic oil.

2. Pour in 2 liters of new hydraulic oil.

ATTENTION Dispose of used, dirty oil properly.



Oiler-filter neck

Service booklet: We recommend having a service booklet to record maintenance work for each P 1200 machine.

10. Customer Service

There is a separate spare part list for ordering replacement parts.
If repairs are necessary, please contact your local representative.
Please indicate the following information:
Machine type and machine-no. (see type plate).

Notes

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