



Thermopatch

an Avery Dennison Company

MANUAL

HS-21-SQR



ATTENTION!

All persons involved in installation, commissioning, operation, maintenance and repair of this product should be made available to these instructions.

EN v.1.1 - 11/23



Copyrights

© 2024, Thermopatch bv, Almere, the Netherlands.

No part of this publication may be reproduced by any means without the prior written permission of Thermopatch bv, the Netherlands.

Thermopatch and the Thermopatch logo, Thermoseal and Thermocrest are registered trademarks of Thermopatch.

Introduction

Dear user,

Congratulations and welcome to the ever growing number of Thermopatch users.

You have acquired a machine which has been manufactured by Thermopatch with the greatest possible care. We are confident that you will be enjoying the use of this machine for a long time.

Please take note of the contents of this manual to familiarize yourself with the workings and safety aspects of the machine. This manual was written for the benefit of all users and technicians who install and maintain the machine. You will find information on operating, safety and maintenance as well as spare parts and supplies.



Content

Copyrights	2
Introduction.....	2
1. General description	5
1.1 What did you receive ?.....	5
1.2 Warranty	5
2. Intended use.....	6
3. Assembly and installation	6
3.1 Installing the HS-21-SQR.....	6
3.2 Electrical Requirements.....	6
4. Operating manual	7
4.1 How to operate the HS-21-SQR.....	7
4.2 The HS-21-SQR display.....	7
4.3 How to operate the display	7
To change from Celsius to Fahrenheit and vice versa.....	8
To adjust the heat sealing time:.....	8
To adjust the energy saver setting:.....	8
To adjust the day total counter:.....	8
To see the grand total counter:.....	8
To adjust the heat sealing pressure:.....	8
Working with Thermopatch heat seal products:	8
5. Overview of safety measures and warnings	11
5.1 Safety	11
6. Technical specifications.....	12
6.1 Specifications of the HS-21-SQR.....	12
7. Transport and storage.....	13
7.1 Transport	13
7.2 Storage.....	13
8. Maintenance.....	13
8.1 Daily maintenance.....	13
8.2 Periodical maintenance	13

9.	Technical annexes	14
9.1	Faults:	14
9.2	Replacement parts	14
9.3	Exploded views and parts	15
9.3A	Heating plate enhancement June 2018	27
9.4	Electrical diagram.....	28
11.	Recycling	29
12.	Declaration of conformity.....	29
13.	Disclaimer	30



1. General description

Labels, patches, transfers and emblems can be applied quickly thanks to the two press plates. With a warm-up time of less than a minute, efficient work is guaranteed. The HS-21-SQR provides full digital control; the graphic display clearly shows the current status of the press, including temperature and heat seal time.

1.1 What did you receive ?

The HS-21-SQR has been packed in a cardboard box. The following articles should have been delivered:

- HS-21-SQR heat seal machine
- Electrical power cable
- User's Guide on USB

If one of these articles is missing, please contact our customer service or your Thermopatch supplier.

1.2 Warranty

Thermopatch refers to its warranty and product liability conditions as laid down in our general conditions. These can be obtained at your Thermopatch supplier.



2. Intended use

The HS-21-SQR has been developed to heat seal labels, patches, transfers and emblems quickly thanks to the two press plates. The machine warms up to the required temperature within a minute which ensures efficient working.

3. Assembly and installation

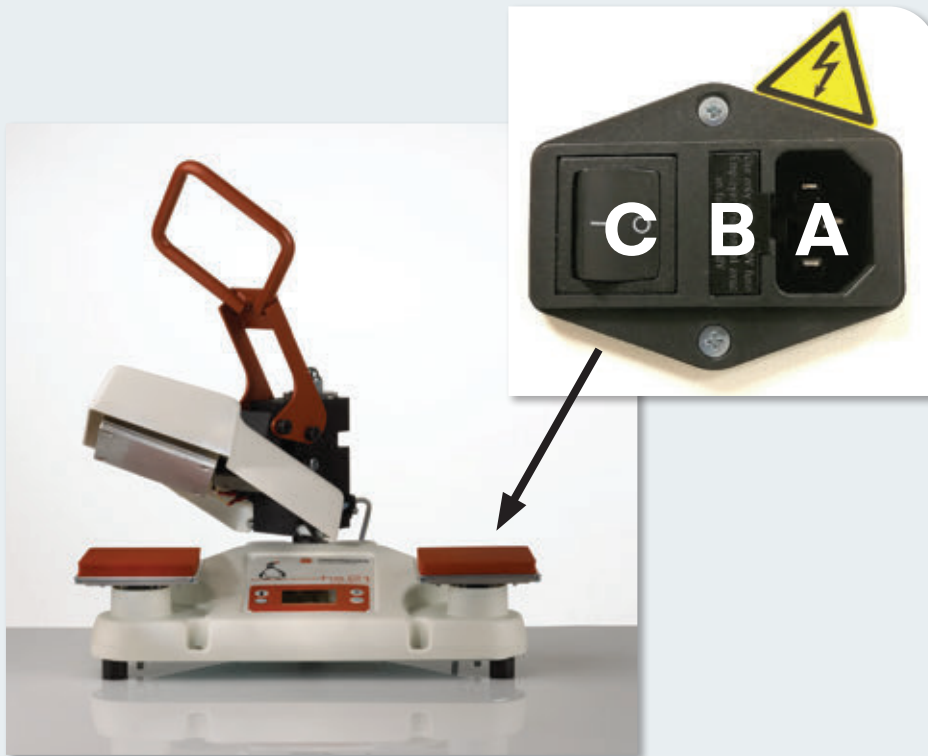
3.1 Installing the HS-21-SQR

Take the machine out of the box and put it on a worktable near an earthed wall socket. Ensure that there is sufficient free space around the HS-21-SQR. Also ensure that there are no items near the HS-21-SQR, which are sensitive to heat radiation.

3.2 Electrical Requirements

The HS-21-SQR should be connected to the electricity grid (230V) with the supplied electrical cable (A).

The HS-21-SQR is earthed and has been provided with two fuses of 3 Amps (B).





4. Operating manual

4.1 How to operate the HS-21-SQR

Starting up:

- Switch on the machine: pushing the on-off switch at the back to “on” (C, see page 5).
- Wait until the standard set temperature has been reached.

The standard sealing temperature is set on 204 °C. During warming up, which will take a few minutes and the actual temperature is displayed. When the HS-21-SQR has reached the desired temperature we advise to close it for several moments to heat up the silicone rubber sealing pad.

4.2 The HS-21-SQR display



4.3 How to operate the display

The display has one set of buttons on the left (1+2) - and one set on the right side (3+4), with a digital LED screen in the middle.

To adjust the heat seal temperature:

Press the upper left button (1) and increase (3) or decrease (4) the temperature per degree with the buttons on the right side.

Default set heat seal temperature: 204 °C

The set temperature can be checked and confirmed with Thermopatch temperature measuring strips.

If the temperature on the screen should not equal the set temperature, adjust it as follows:

Push the upper (1) and lower (2) left buttons at the same time for 3 seconds and adjust temperature with the buttons 3 and 4.

The new setting will be stored if the buttons are not touched for 3 seconds.

- Should you want to seal a garment with a much lower temperature other than the standard seal temperature, you should set the HS-21-SQR to the desired values.



To change from Celsius to Fahrenheit and vice versa

Press the 3 and 4 buttons and hold for more than 3 seconds and the changed setting will be shown on the LED screen.

To adjust the heat sealing time:

Press the lower left button (2) once and change the seal time in seconds (3) or (4).

Default set heat sealing time: **12 seconds**.

- The seal time ranges from 0-60 seconds.

To adjust the energy saver setting:

Press the lower left button (3) twice to set the energy saver in minutes (3) or (4).

The energy saver will start after the set time in minutes.

Default start energy saver: **20 minutes**

The new setting will be stored if the buttons are not touched for 3 seconds.

Energy saving is active when the sleeping penguin is shown on the LED display:



To adjust the day total counter:

Press the upper right button (3) once to see the day count during 5 seconds. When pushed 3 seconds, the day count will become 0.

To see the grand total counter:

Press the lower right button (4) once to see the grand total during 5 seconds.

The grand total is shown with this symbol:



To adjust the heat sealing pressure:

The pressure on the HS-21-SQR is not adjustable. Due to its unique construction, a constant pressure is maintained while heat sealing.

Working with Thermopatch heat seal products:

With the HS-21-SQR it is very easy to apply heat seal products such as HiQ-labels, Digiline-emblems and Thermopatch repair patches to textiles.

Follow the procedure listed below:

- Set the time.
Almost all Thermopatch heat seal products need 12 - 15 seconds for correct adhesion.
- Pull the fabric tightly over the silicone rubber sealing pad.
Make sure that the fabric is pulled tight and no seams, buttons, zippers or other thick parts are under the machine.
These will take away pressure from the heat seal product and can cause problems with the adhesion.
- Place the label (or any other heat seal product).
Note: Thermopatch materials cannot be removed easily. The material is meant for permanent adhesion.



Therefore, make sure that the position is correct.

- Close the machine by pressing the press arm down until it locks.

This will start the heat sealing cycle.

At the end of the set heat sealing time, the buzzer will be activated, indicating that the heat sealing cycle is completed and the garment needs to be removed.

- Open the press.

Open the press by moving the arm upward and remove the fabric and check the result.

Once cooled off, the heat seal product is permanently attached.

- Repairs

Preferably repair damages without the loss of fibres, such as right-angled tears, from the inside of the fabric.

In almost all cases it is sufficient to use a press time of 12 – 15 seconds.

Exceptions are thick fabrics like materials for gauntlets and patches for protective clothing, which can require up to 20 seconds.

- Labels and emblems

Shrinkage, finishes and coatings on the textile can influence the heat sealing result in a negative way.

Pre-heating can offer a solution in some cases.

If it appears that there is not a complete adhesion, it is recommended to re-seal another 10 seconds.

Remark:

Some modern fabrics cannot withstand the heat sealing temperature of 204 °C. If you cannot be sure of the result, use a sample of the same fabric, if possible, to establish its heat resistance. Also care labels in garments can inform you of their heat resistant properties (iron ability). When it is necessary to lower the temperature, it is necessary to press for a longer time.

How to remove heat sealed Thermopatch labels:

Because Thermopatch labels must be wash resistant to all industrial washing processes, it is not easy to remove heat seal products.

When necessary you can try following procedure:

- Put the garments with the label to be removed under the press for about 7 seconds. The glue layer will melt again.
- Leave the garment on the plate and remove the label, if necessary by means of a blunt scraper or tweezers.
- Please note: Heating plate and labels are hot!!
- Repeat this procedure if you are not successful the first time trying.

Interrupting the heat sealing cycle:

You can interrupt the operation at any moment by unlocking the arm of the closed heat seal machine during the press cycle.

When you wish to shut down the machine, switch the main switch to off. It is located on the right side of the machine.

The indicators on the control panel are then turned off.



Trouble shooting:

Some problems and failures that can occur, are listed below.

After describing each problem, the possible cause (sometimes more than one) is given, as well as a possible solution.

If the described solution cannot solve the problem, please contact the service department of your distributor.

Heat sealing problems:

Insufficient adhesion of the glue layer

- Press time too short.
- Increase the time in steps of 2 seconds and try again.
- Temperature too low.
- Check with Thermolabels and increase the temperature, if necessary.

The pressure is not sufficient.

- The silicone rubber sealing pads are worn out: replace when worn.
- The sealing pressure is set in the factory and cannot be adjusted.
- The teflon self-adhesive coating of the press element is dirty or worn-out.
- Clean with a damp cloth and replace it, if necessary. When replacing the old teflon, it is very important that adhesive residue is removed from the heating element. To do this it is necessary to heat up the machine, scrape off the glue remains by using a blunt edged scraper. It is important to avoid scratching the metal of the heating plate.
- After this is done, degrease the heating element and apply the self-adhesive teflon cover.

Glue layer becomes too thin, causing adhesion problems

- Sealing time too long.
- Lower the time in steps of 2 seconds and try again.
- Temperature too high.
- Check with Thermolabels and lower the temperature, if required.

5. Overview of safety measures and warnings

5.1 Safety

The HS-21-SQR has been equipped with various safety features to ensure safe operation.

1. Safety thermostat

The safety thermostat is installed to prevent overheating when the controller should fail. It switches off the power to the heating element when the temperature exceeds 260°C. If this happens, the machine has to be checked by a qualified technician.

2. Acoustic signal

Once the press cycle is complete an acoustic signal will be sound after which the press must be opened.

3. Automatic Switch-Off

When the HS-21-SQR is not opened after 10 seconds it will automatically switch off to prevent damaging it.

4. Warning symbols

The HS-21-SQR is marked with appropriate heat radiation safety symbols on either side of the press head and the hazardous voltage symbol next to the power inlet on the back.

WARNING!



HOT SURFACE



ELECTRIC TENSION

Safety tips

The customer service of your distributor has its own service engineers, and if required, maintenance is available. A maintenance contract ensures prompt service in the event of appliance failure together with additional periodic inspections.

Under normal conditions accidents are rare; however, listed below are some practical points to ensure your safety:

- Pull out the electrical plug from the wall socket when doing maintenance or cleaning work on the appliance.
- Ensure that there is sufficient space around the appliance. Cables and connections must not get jammed. Although the heat radiation of the press is low, there should be enough space for cooling down.
- Avoid contact with the heating element.

6. Technical specifications

6.1 Specifications of the HS-21-SQR

Power consumption	650 W
Power supply	230 V
Temperature	50-225 °C
Machine height	(open) 525 mm
Machine height	(closed) 315 mm
Machine width	465 mm
Machine depth (connections included)	420 mm
Net weight	15 kg
Press pad dimensions	Square 120 x 120 mm
Fuses	3 amps
A-weighted noise level	< 70 dB (A)





7. Transport and storage

7.1 Transport

When the machine needs to be moved, Thermopatch recommends to use the original packaging.

7.2 Storage

When the machine needs to be stored, Thermopatch recommends to use the original packaging. The machine should preferably be stored on a pallet, off the floor, in dry conditions.

8. Maintenance

8.1 Daily maintenance

For good heat sealing results it is important to keep the press surfaces clean. Therefore, clean the teflon coating of the upper plate with a clean, dry cloth.

Also clean the rubber pads daily with a dry cloth. Do not use solvents or other chemical substances to remove impurities.

Do not let buttons, zippers, etc. come between the plates. It will keep the silicone rubber undamaged for a long time.

8.2 Periodical maintenance

The mechanism needs no maintenance.

First switch off the machine, let it cool down and pull the plug out of the socket.

Replace the rubber pads and the teflon regularly.

Clean the outside of the machine regularly with a clean, moist cloth.

In order to replace the teflon, the press machine must be warm ($\pm 80^{\circ}\text{C}$). Remove the teflon and carefully remove all glue residues from the metal surface with a putty knife. Then use a copper brush to clean the surface.

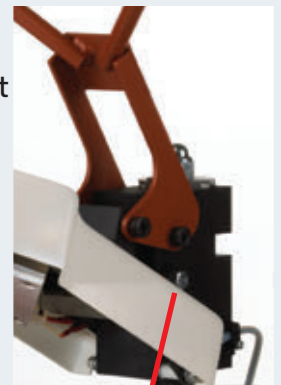
Finally, use a dry cloth to clean the element. The surface must be absolutely clean and smooth, so that the new teflon sticks well, without air bubbles.



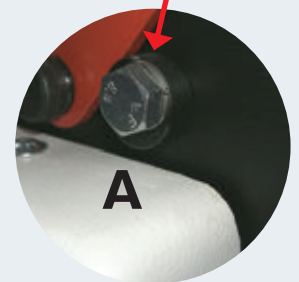
9. Technical annexes

9.1 Faults:

1. Press does not warm up, the time does not count down or the temperature does not rise on the display:
 - The machine is not connected to the electricity grid. Put the plug of the power cable in an earthed socket and switch the machine on.
 - The machine is not connected. Set the switch at the back of the machine to the ON position.
 - A switch has broken or a connector has come loose. Please contact the service department.
2. Press does not warm up:
 - The sensor is defective. Please contact the service department.
 - The safety thermostat has been activated. Please contact the service department.
 - The heating element is defective. Please contact the service department.
3. The press time cannot be set correctly:
 - The electronics are defective. Please contact the service department.
 - There is no signal at the end of the press time.
 - The timer or the beeper is defective. Please contact the service department.
4. Press does not close or is difficult to open:
 - Adjust the excenter screw (A) and close the machine. By turning the eccentric, the momentum for opening can be easily adjusted. Turn clockwise for a lighter setting and counter clockwise for a heavier setting.



- Turn the excenter screw from left to right for a lighter setting.
- Turn the excenter screw from right to left for a heavier setting.



Error codes:

Below you will find an overview of the error codes which appear on the display. If these error codes occur, please contact your Thermopatch supplier.

Error code 1: Breakage of wire in PT1600 (resistance high)

Error code 2: PT1600 short circuit (resistance low or 0)

Error code 3: Heating element is broken down.

Error code 4: Electronics are broken down.

9.2 Replacement parts

The following parts should be replaced regularly:

Silicone rubber sealing pad 120 x 120 mm square

Self-adhesive teflon cover 120 x 120 mm square

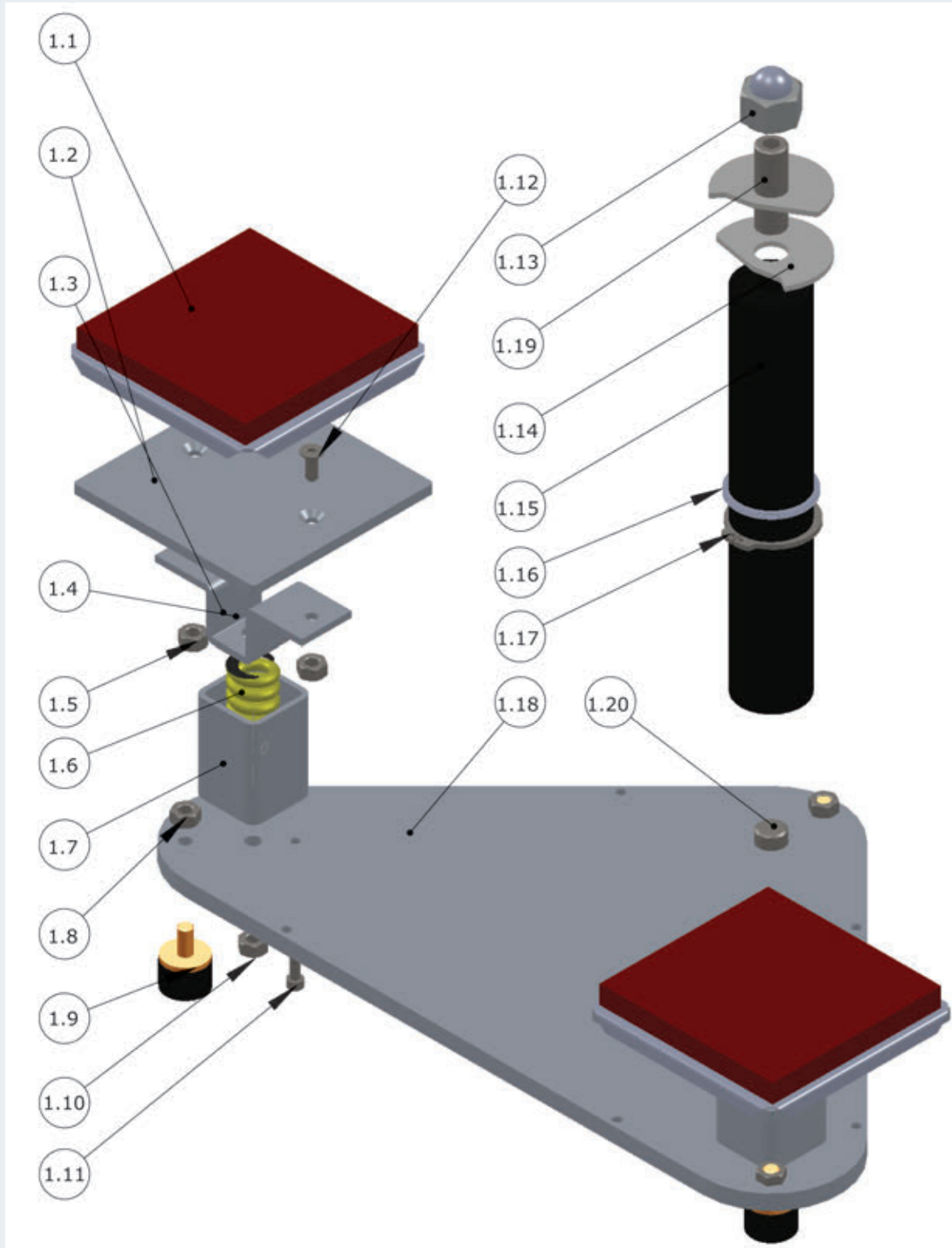
SPAPEN-21026

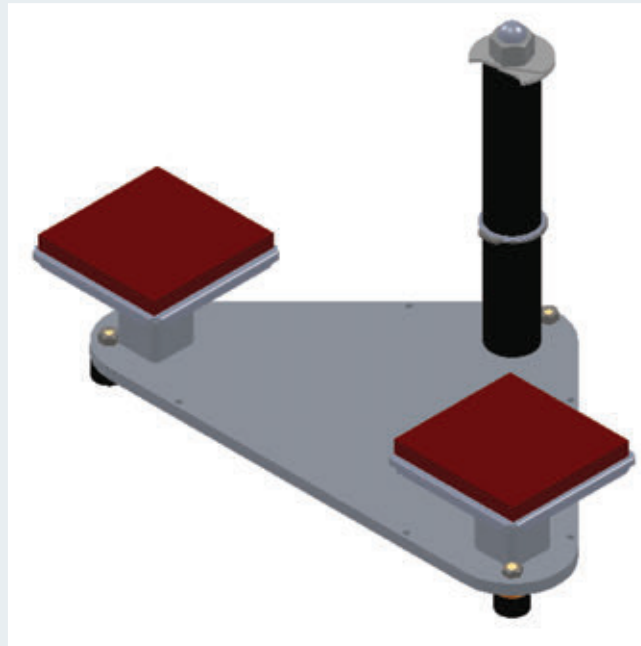
SPAPEN-21316



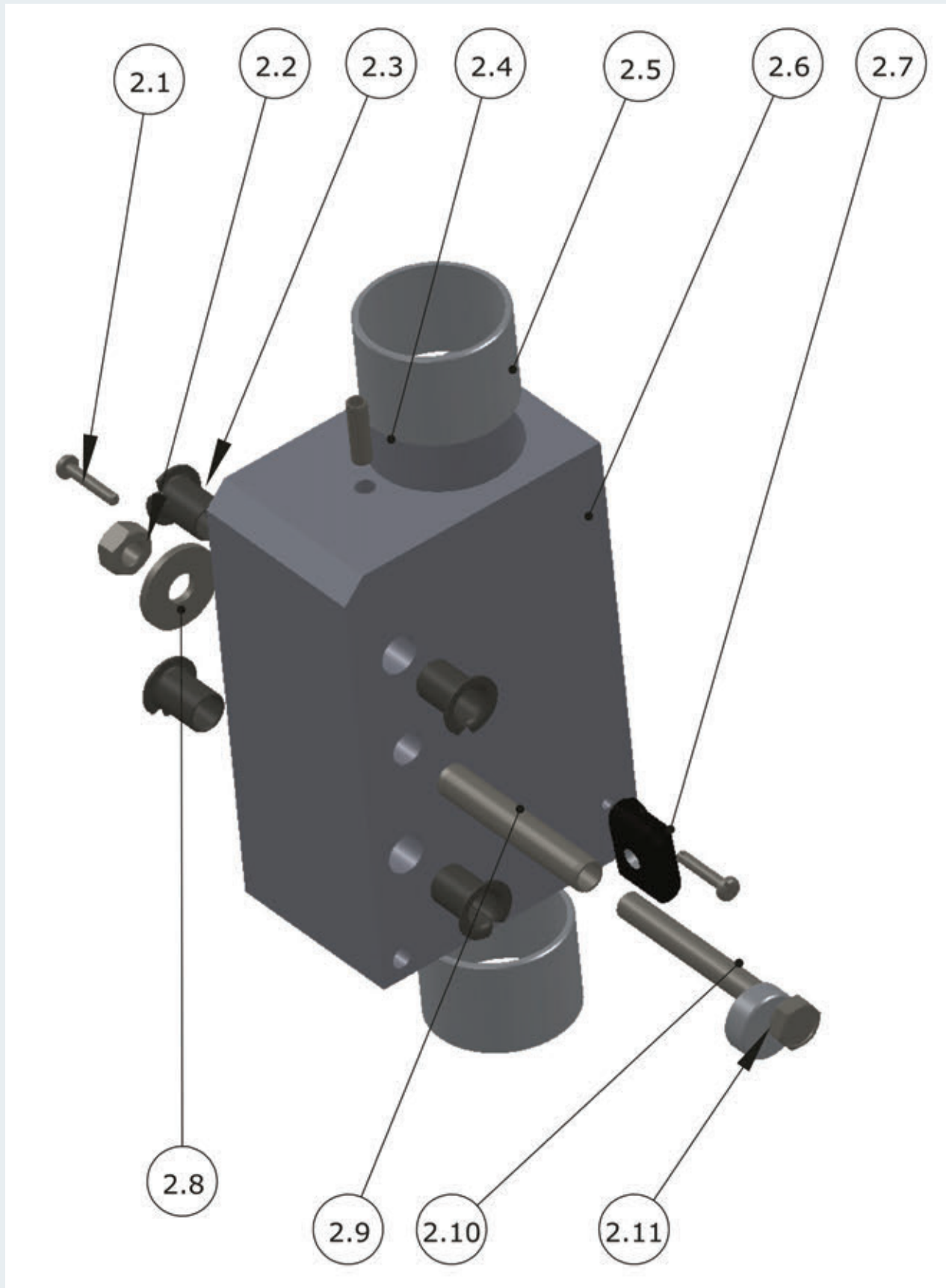
9.3 Exploded views and parts

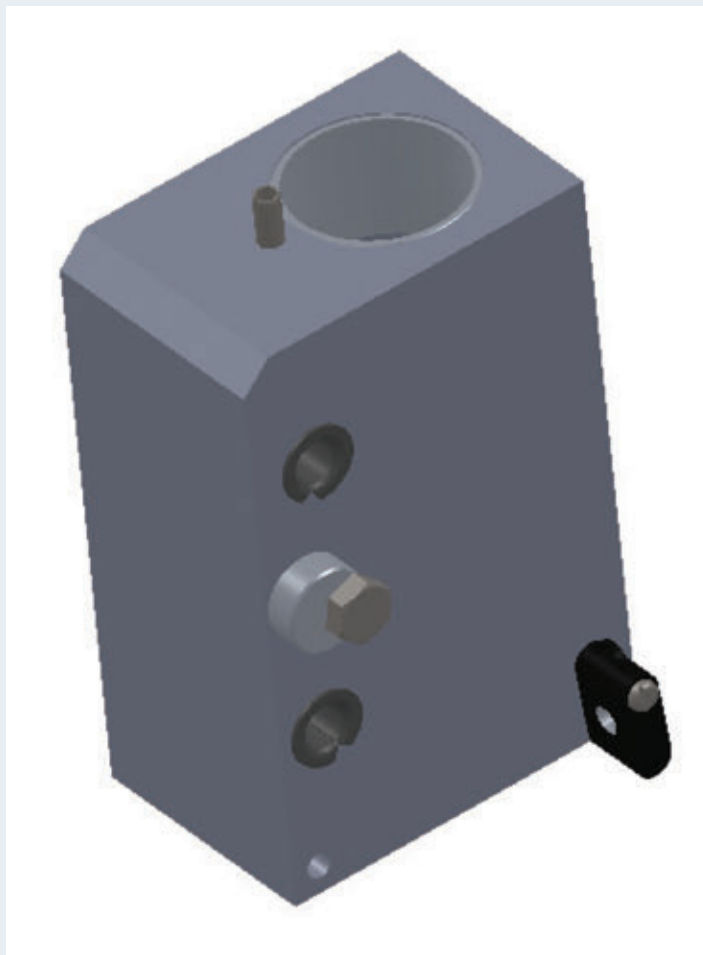
Please visit our website for more information: www.thermopatch.com, Equipment and parts





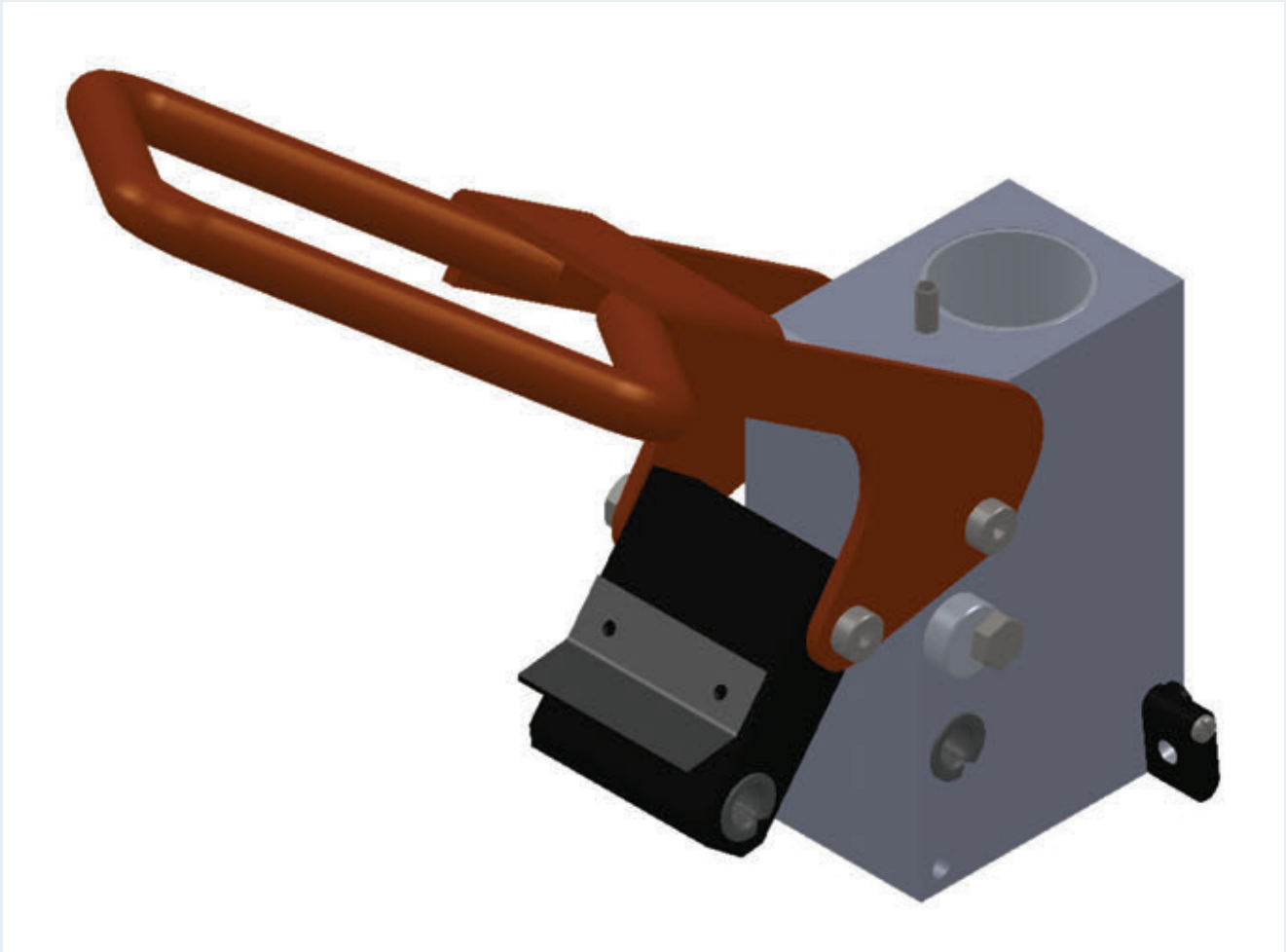
1.1	Sealing plate	120 x 120	2	SPAPEN-21026
1.1	Sealing plate	60 x 20	2	SPAPEN-21026A
1.1	Sealing plate	70 x 30	2	SPAPEN-21026B
1.1	Sealing plate	100 x 120	2	SPAPEN-21026C
1.2	Sealing plate support		2	SPAPEN-21025
1.3	Spring support		2	SPAPEN-21006
1.4	Allen screw	M8 X 65	2	DIN 912
1.5	Nut M5	M5	2	DIN 934
1.6	Press spring		2	SPAPEN-21033
1.7	Spring retainer		2	SPAPEN-21004
1.8	Nut	M6	3	DIN 934
1.9	Rubber foot	D25 h 20	3	SPAPEN-01-03
1.10	Nut + spring washer	M8	2	DIN 934
1.11	Allen screw + spring washer	M5 X 20	2	DIN 912
1.12	Countersunk screw	M5 X 16	4	DIN 7991
1.13	Cap nut + spring washer	M16	1	DIN 1587
1.14	Locking disc		2	SPAPEN-21013
1.15	Main column		1	SPAPEN -21010
1.16	Filling washer		X	SPAPEN-01-01
1.17	Circlip	Ø40	1	SPAPEN-01-12
1.18	Mounting plate		1	SPAPEN-21023
1.19	Set screw	M16 x 40	1	DIN913
1.20	Bolt	M16 x 40	1	DIN931



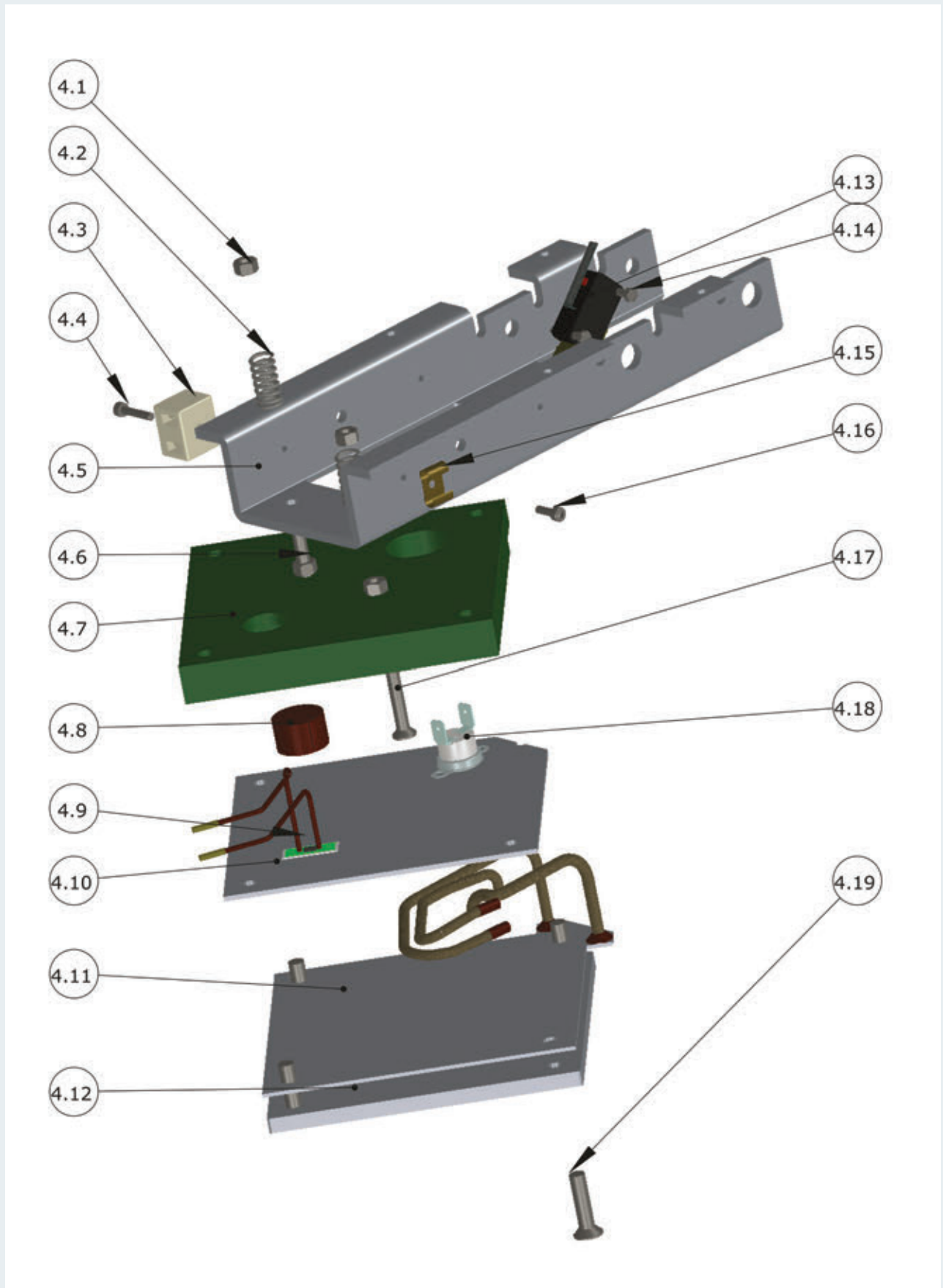


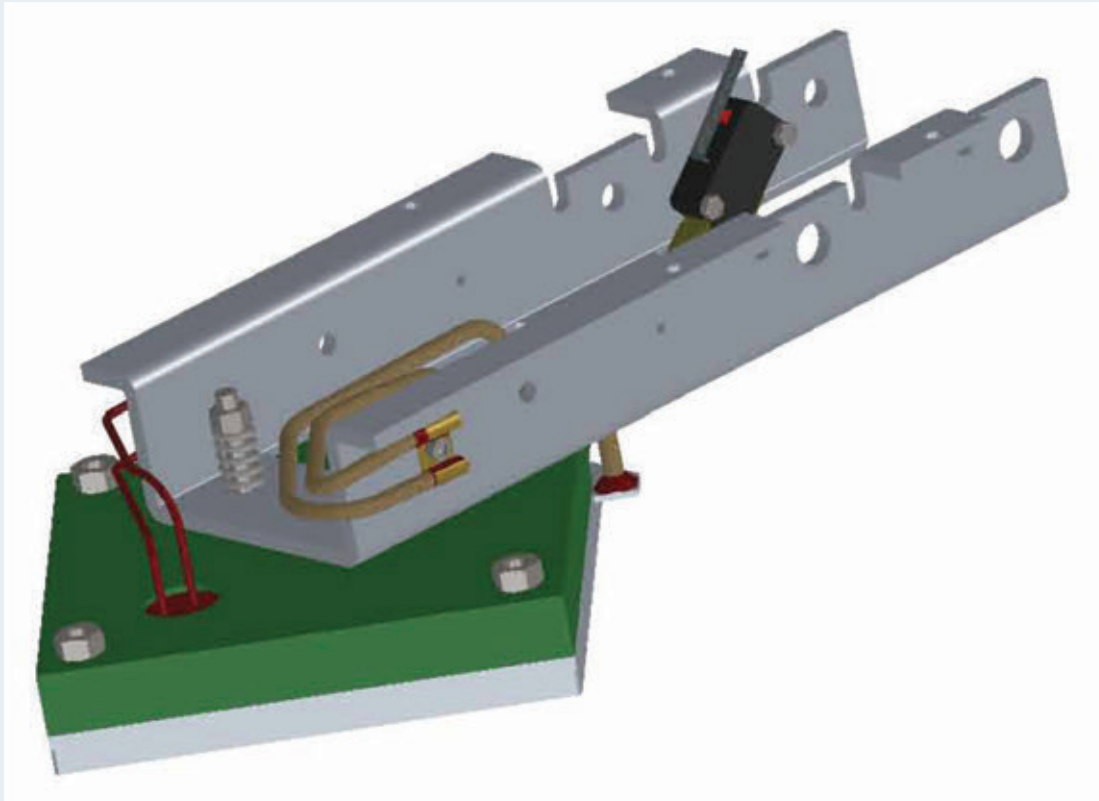
2.1	Tapping screw	3 x 25	2	DIN 965
2.2	Nylock nut	M8	1	DIN 7971
2.3	Collar bearing	10170-P14 10-12-10	4	SPAPEN-21012
2.4	Spring dowel	Ø 6 x 40	1	DIN 7344
2.5	Bearing	4030-P10	2	SPAPEN-21203
2.6	Hinge block		1	SPAPEN-21017
2.7	Pull relief		2	SPAPEN 02-02
2.8	Ring	M8	1	DIN 9021
2.9	Spring dowel	Ø 10 x 8.5 x 60	1	DIN 7346
2.10	Bolt	M8 x 80	1	DIN 933
2.11	Eccentric disc			SPAPEN-21005



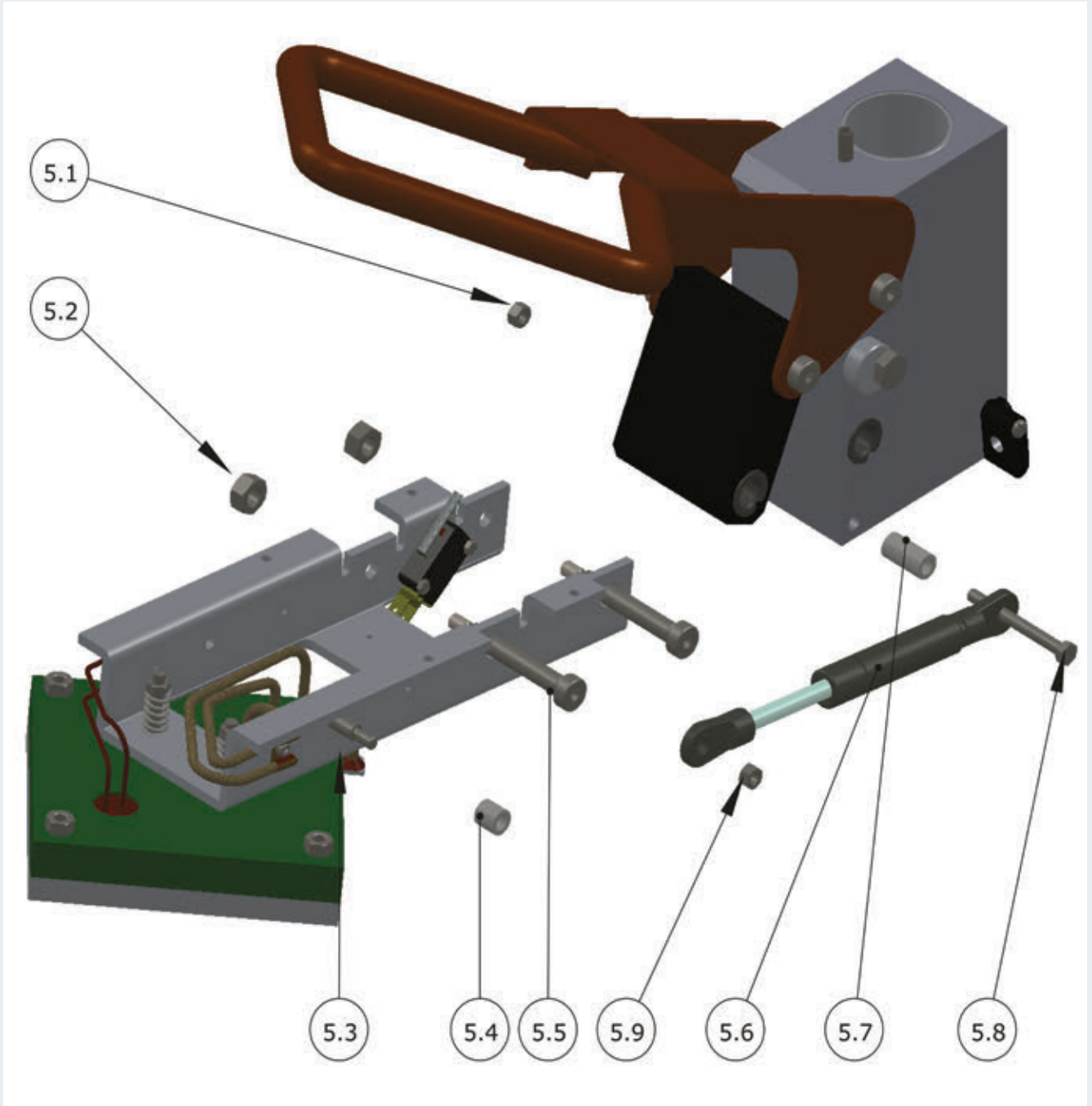


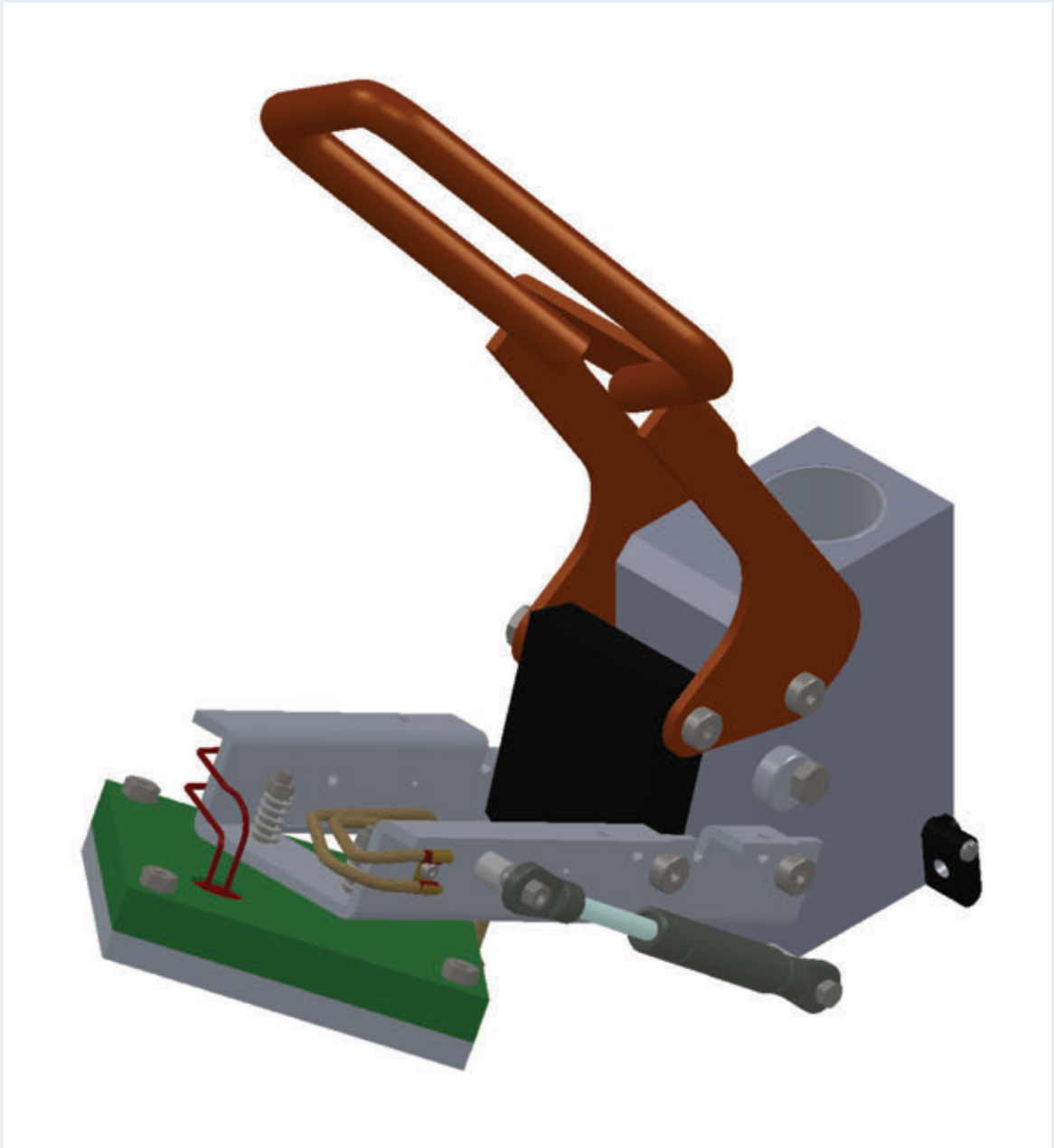
3.1	Handle		1	SPAPEN-21015
3.2	Nylock nut	M8	2	DIN 985
3.3	Nylon press link		1	SPAPEN-21001
3.4	Collar bearing	10170-P14	4	SPAPEN-21012
3.5	Shoulder bolt	C7111.080.070	2	ISO 7393
3.6	Screw	3 x 10mm	2	DIN 7971
3.7	Cover plate (black)		1	SPAPEN 009



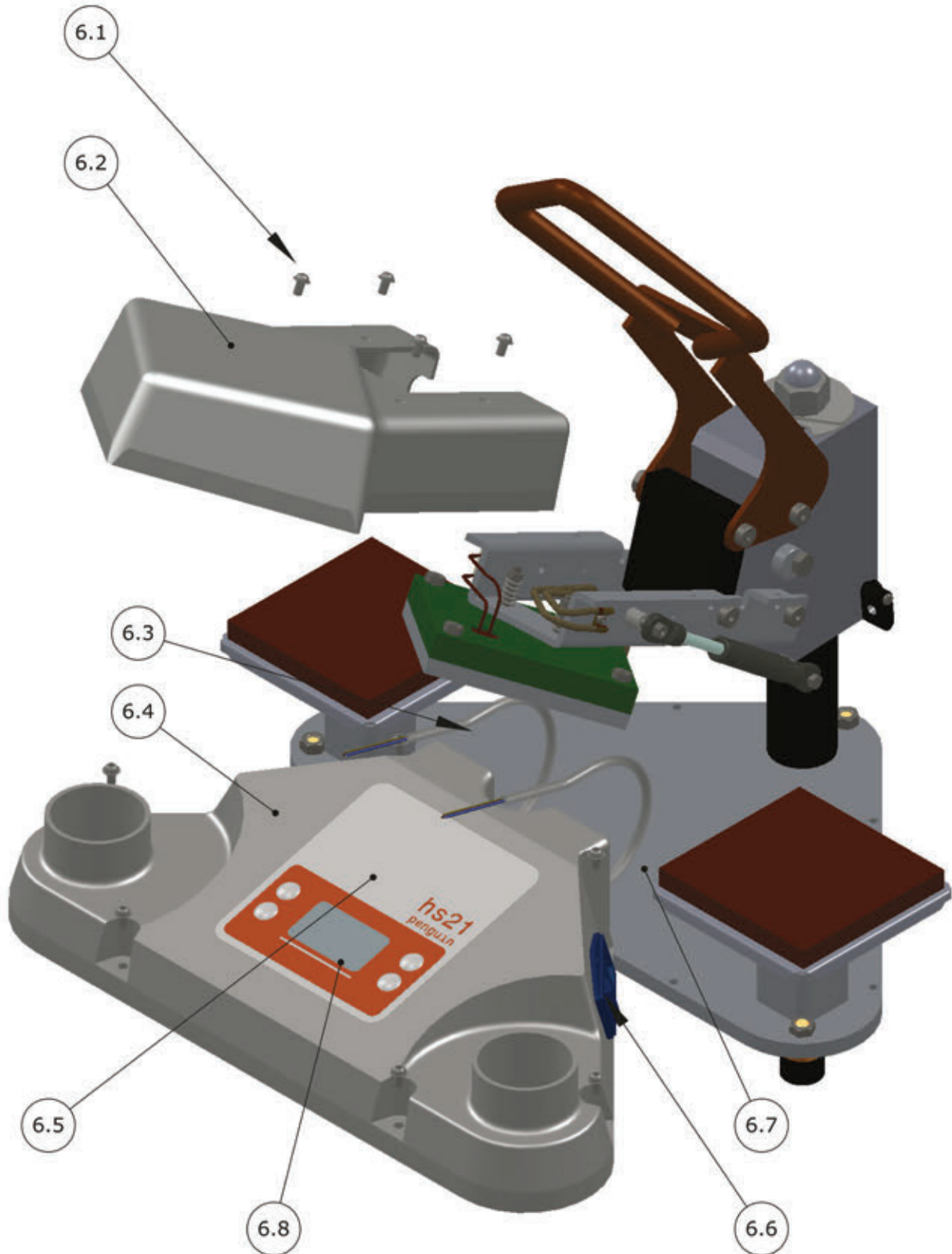


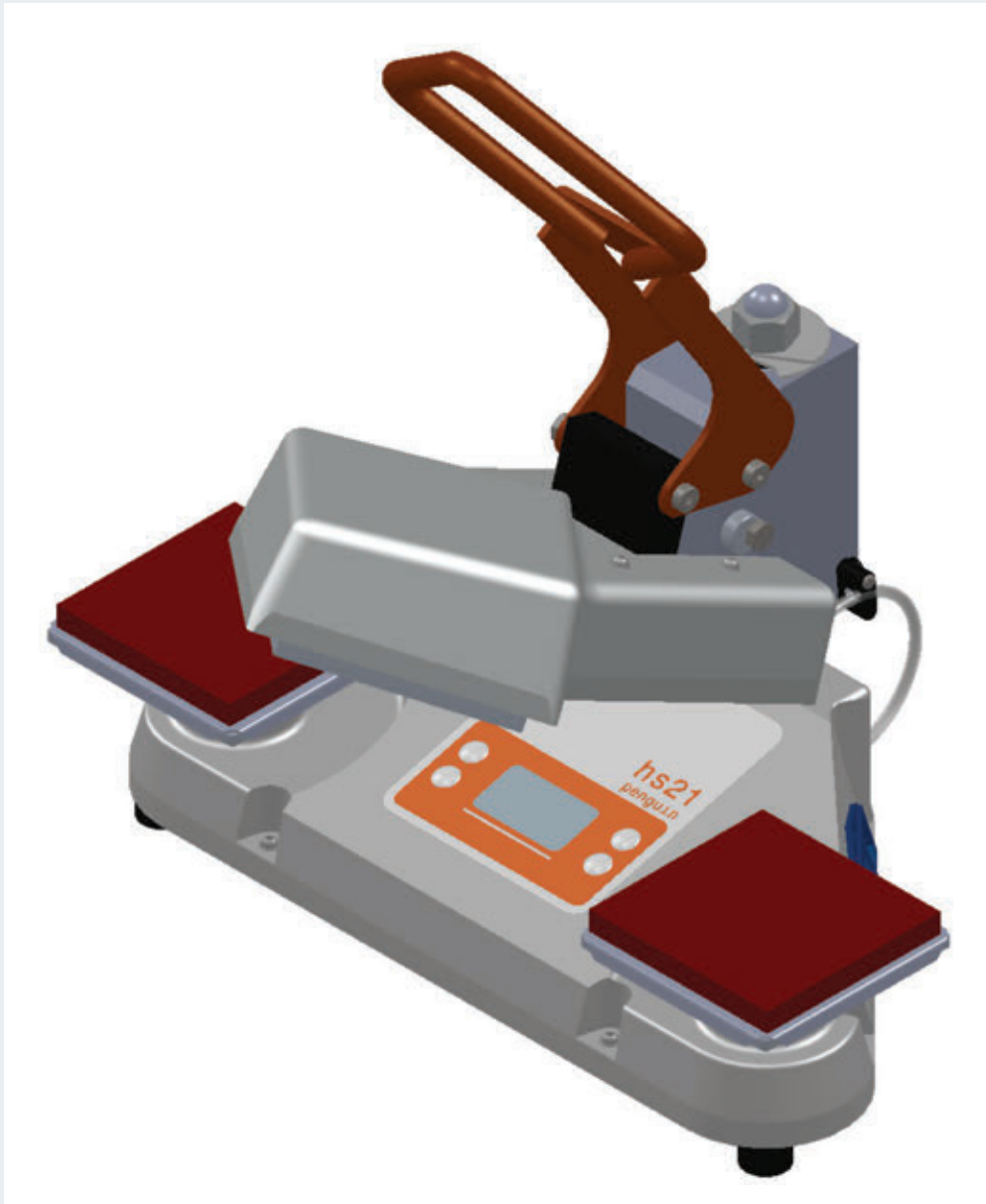
4.1	Nylock nut	M5	6	DIN 985
4.2	Spring D-180S	D-180S	2	SPAPEN-21032
4.3	Connector Porcelain	Porcelain	1	SPAPEN-03-04
4.4	Allen screw	M3 x 20	1	DIN 912
4.5	Press arm		1	SPAPEN-21011
4.6	Nut	M5	2	DIN 934
4.7	Isolating plate		1	SPAPEN-21027
4.8	Rubber		1	SPAMA-01-01-A
4.9	Heat sensor	PT 1600	1	SPAPEN-03-11
4.10	Sensor plate		1	SPAPEN-21023
4.11	Heating element		1	SPAPEN-21031
4.12	Heat shield		1	SPAPEN-21021
4.13	Micro switch			SPAPEN 03-09
4.14	Allen screw + nut	M3 x 16	2	DIN 912
4.15	Cable clamp		1	SPAPEN-21033
4.16	Allen screw	M3 x 5	1	DIN 912
4.17	Countersunk screw	M5 X 35	2	DIN 7991
4.18	Thermostat		1	SPAPEN 03-02
4.19	Countersunk screw	M5 X 30	4	DIN 7991





5.1	Nylock nut	M6	1	DIN 985
5.2	Nylock nut	M8	2	DIN 985
5.3	Shoulder bolt	M5 x 35	1	DIN 7379
5.4	Nylon bushing	10 x 10 x 6,5	1	SPAPEN-02-13
5.5	Shoulderbolt 07111-080-070	M8 x 70	2	DIN 7379
5.6	Gas spring	21 381K	1	SPAPEN 02-09
5.7	Nylon bushing	20 x 10 x 6,5	1	SPAPEN 02-08
5.8	Hex bolt	M6 X 95	1	DIN 933
5.9	Nylock nut	M5	1	DIN 985





6.1	Cap screw	M5 x 10	10	ISO 7380
6.2	Press arm cover		1	SPAPEN-21020
6.3	Harness, low voltage		1	SPAPEN-21603
6.4	Base cover		1	SPAPEN-029
6.5	Panel sticker		1	SPAPEN-21029
6.6	Power inlet		1	SPAPEN-03-13
6.7	Harness, 230 Volt		1	SPAPEN-21607
6.8	Electronics	Not on drawing	1	
6.9	Teflon self adhesive cover	120 x 120 mm	1	SPAPEN-21316

9.3A Heating plate enhancement June 2018

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SPAPEN-21031	Heating element HS-21 SQR	1
2	SPAPEN-21027	Insulation plate HS-21	1
3	SPAPEN-21021-1	Heating element protector HS-21 square	1
4	SPAPEN-21023	Heater shield HS-21 square	1
5	SPAPEN-21021	SQR Heater Shield	1

**Construction before
HS-21SQR-18-12867
(up to June 2018)**

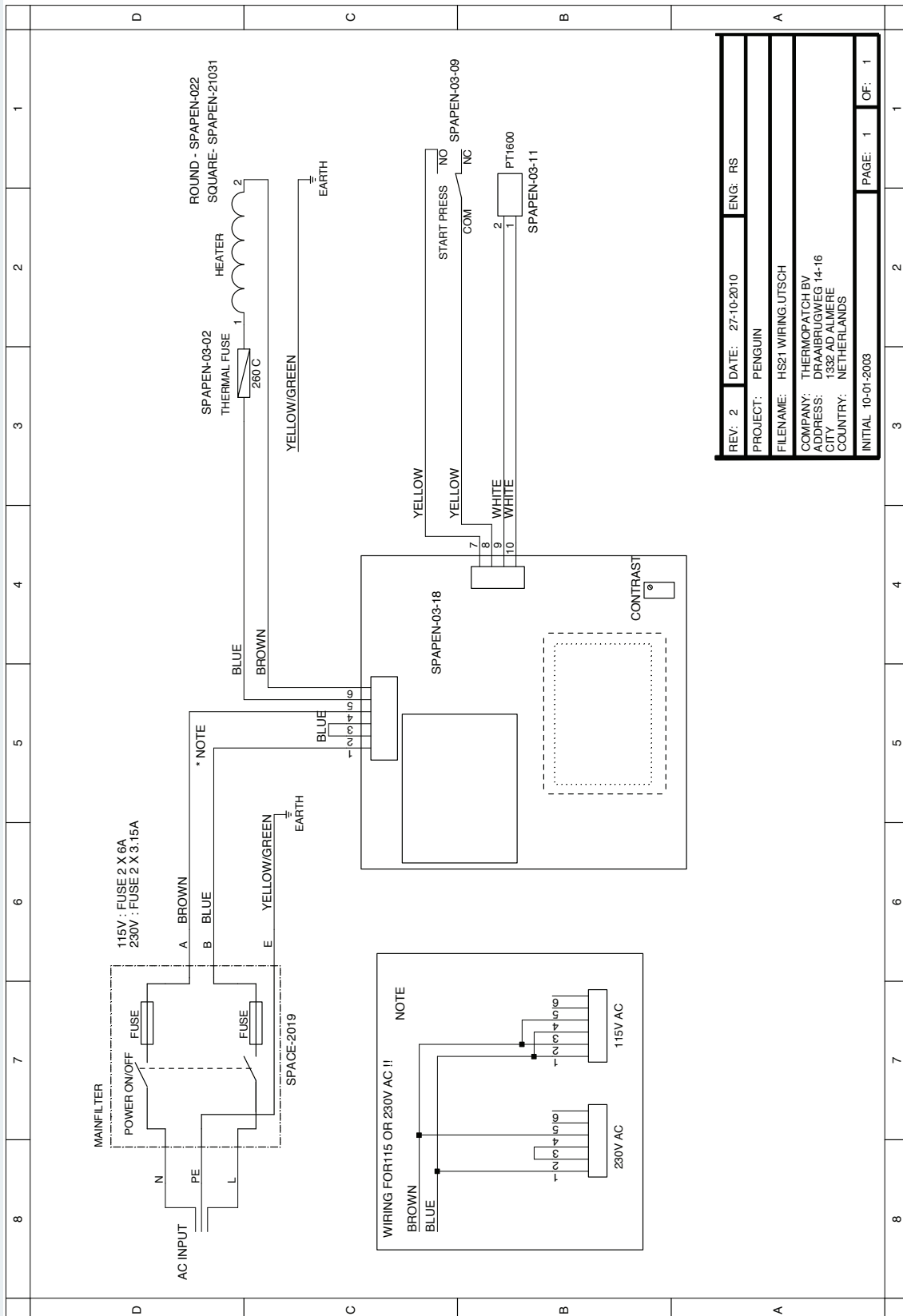
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:				FINISH:	DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
NAME	SIGNATURE	DATE					
IS		29-05-2018					
CHWD							
APPRD							
MFG							
Q.A.							
			MATERIAL:				
			WEIGHT:				
			TITLE:		From serial number HS21SQR-18-12867		
			DWG NO.		Replace setup square heater		
					A3		
			SCALE:1:2		SHEET 1 OF 1		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SPAPEN-21031	Heating element HS-21 SQR	1
2	SPAPEN-21027	Insulation plate HS-21	1
3	SPAPEN-21021-B	SQR Heater Shield	1
4	SPAPEN-21023	Heater shield HS-21 square	1

**Construction starting from
HS-21SQR-18-12917
(after June 2018)**

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:				FINISH:	DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
NAME	SIGNATURE	DATE					
IS		29-05-2018					
CHWD							
APPRD							
MFG							
Q.A.							
			MATERIAL:				
			WEIGHT:				
			TITLE:		From serial number HS21SQR-18-12917		
			DWG NO.		New setup square heater		
					A3		
			SCALE:1:2		SHEET 1 OF 1		

9.4 Electrical diagram





11. Recycling

Choose to dispose of the machine responsibly when it has reached its end of life. Electrical machinery, accessories and packaging should be recycled as much as possible in an environmentally responsible manner.

- Dismantle the machine groups: steel parts / pneumatic components / electrical components
- These can be separated and returned for recycling.

Always dispose according to current and locally applied guidelines for health and safety and disposal requirements.



12. Declaration of conformity

We,
Thermopatch B.V.
Draaibrugweg 14
1332 Almere
Netherlands



Declare under our own responsibility that the heat sealing machine:
Thermopatch HS-21-SQR Penguin, which this declaration refers to, is in accordance with the
conditions of the following Directive(s):

2014/30/EU (emc directive)
2014/35/EU (Low tension directive)

Netherlands, Almere, 01-9-2020

Stephen Huyton
Business & Financial Director Thermopatch EMEA



We,
Thermopatch BV
Draaibrugweg 14
1332 Almere
Netherlands



declare that the DoC is issued under our sole responsibility and belongs to the following product: Thermopatch HS-21-SQR, which this declaration refers to, is in accordance with the conditions of the following guidelines:

- Electromagnetic Compatibility Regulations (EMC) 2016
- Electrical Equipment (Safety) Regulations (LVD) 2016
- Supply of Machinery (Safety) Regulations 2008

The Netherlands, Almere, 01-05-2022

Stephen Huyton
Business & Financial Director Thermopatch EMEA

13. Disclaimer

The information contained in these documents is confidential, privileged and only for the information of the intended recipient and may not be used, published or redistributed without the prior written consent of Thermopatch B.V.

The opinions expressed are in good faith and whilst every care has been taken in preparing these documents, Thermopatch B.V. makes no representations and gives no warranties of whatever nature in respect to these documents, including but not limited to the accuracy or completeness of any information, facts and/or opinions contained therein.

Thermopatch B.V., its subsidiaries, the directors, employees and agents cannot be held liable for the use and reliance of the opinions and findings in this document.

For any warranty Thermopatch B.V. refers to its general terms and conditions.

We can confirm that the machines we supply conform to CE when in standard configuration.

Using sealing pads of any format other than the standard supplied with the machine may render the CE declaration invalid.

Thermopatch accepts no responsibility for any damage or injury that may result from possible non-conformity.

Choosing an alternative configuration other than the standard is at the customer's own responsibility.

Thermopatch BV

Draaibrugweg 14

1332 AD Almere

The Netherlands

T +31 36 549 11 11

sales@thermopatch.nl

www.thermopatch.com



Thermopatch
an Avery Dennison Company