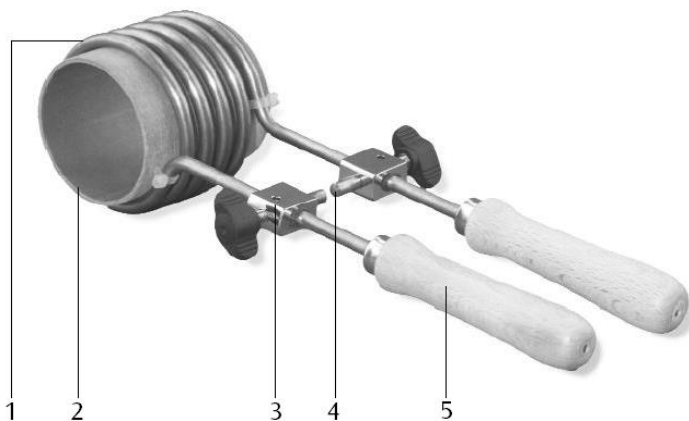


## Coil with 5 turns 1000981

### Instruction sheet

10/15 ALF



- 1 Coil with 5 turns
- 2 Insulating sleeve
- 3 Clamping device
- 4 Contact pins
- 5 Wooden handle

### 1. Safety instructions

When using the coil with 5 turns, extremely high temperatures are generated during the course of the experiments.

Caution: during spot welding experiments, sparks may jump from glowing metal droplets.  
 Caution: As a result of the action of gravity, the glowing part of the melting nail drops downwards in the experiment requiring the melting of a nail.

- Conduct the experiment on a heat-resistant surface.
- After completing the experiment, allow the apparatus to cool for at least 5 minutes.
- Always switch off the primary voltage before undertaking any assembly/set-up work on the transformer.
- Limit the duration of the experiment to a maximum of approximately 30 seconds.

### 2. Description

The coil with 5 turns is used as a secondary coil in a high-current transformer in experiments to demonstrate the application of Joule heat.

The coil consists of a copper wire which has been wound around an insulating sleeve in 5

turns. The extended ends of the coil are fitted with wooden handles. The contact pins are held in place with the help of a clamping device.

### 3. Technical data

Secondary side of the high-current transformer  
 Short-circuit current: 350 A approx.  
 Open-circuit voltage: 2.4 V approx.  
 Number of turns: 5  
 Wire gauge: 28.25 mm<sup>2</sup>  
 Material: Copper

### 4. Sample experiments

In order to conduct the experiments, the following apparatus is additionally required:

- |  |         |
|--|---------|
| 1 Mains coil @230 V                        | 1000987 |
| or   |         |
| 1 Mains coil @115 V                        | 1000986 |
| 1 Transformer core<br>with yoke and clamps | 1000976 |
| 1 Set of sheet metal strips                | 1000982 |
| or   |         |
| 1 Set of nails                             | 1000983 |

#### 4.1 Spot welding

- Set up the high-current transformer as shown in Fig. 1 and place it on a heat-resistant surface.
- Attach the contact pins so that they face one another.
- Switch on the web coil and hold a pair of sheet metal strips between the contact pins.

To achieve a strong point weld, take two identical overlapping sheet metal strips and align their corners. Apply gentle pressure and position the corners flush between the electrodes.

#### 4.2 Experiment for melting a nail

- Set up the high-current transformer as shown in Fig. 2 and place it on a heat-resistant surface.
- Turn the clamping device and insert a nail through the holes at the sides.
- Press the handles together and clamp the nail tight with the hand screws.
- Switch on the mains coil.

Owing to the strong current, the nail starts glowing and melts completely after a short while.

- After conducting the experiment, allow the remains of the nail to cool for at least five minutes.

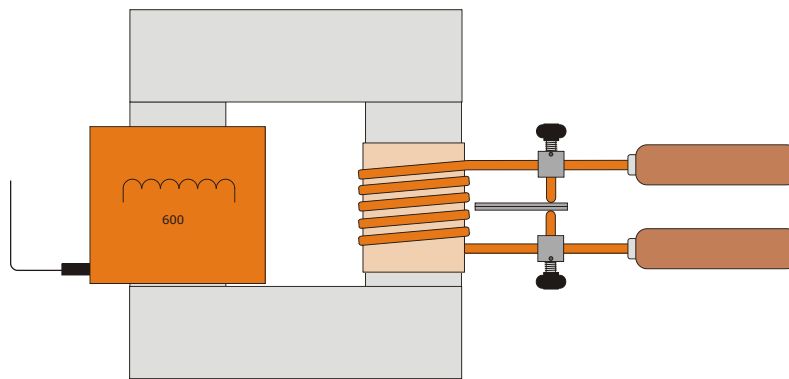


Fig. 1 Spot welding

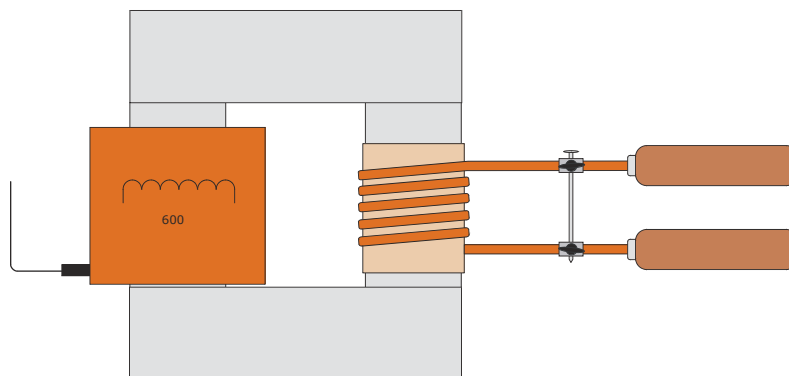


Fig. 2 Experiment for melting a nail