

# Heavy Current Generators



HELLMAG 1000



HELLMAG 3000



HELLMAG 5000

HELLMAG-series mobile magnetizing devices are heavy current generators designed for current flow and field flow magnetisation, coil magnetization, pulse magnetization as well as for demagnetization.

During current flow magnetization the contact electrodes are being attached to the edges of the test piece, thus the part itself becomes a current-carrying conductor. The circular magnetic field generated around the part allows the detection of longitudinal cracks between the contact poles. This technique makes it also possible to find the defects which are located at an angle of up to 60 degrees off the axial line. In order to avoid overheating, burns or electric arcs in the contact area it is important to ensure proper current transition by using copper braid pads or melt-off electrodes.

When using HELLMAG equipment for field flow magnetization, power cables are being used as inner or outer conductors or as a cable coil respectively. Inner conductor: this way of magnetizing is used for testing ring shaped work pieces. Thereto the power cable should be put through the center hole (bore) of the work piece. Thereby cracks that are located mainly parallel to the conductor are being detected. Outer conductor: this way of magnetizing is often used for weld seams. Here one or more power cables should be positioned parallel to the weld. Thereby longitudinal cracks are being detected. In order to avoid field compensations, the current reverse flow cable is to be located as far away as possible from the magnetizing cable. Cable coils: while coil magnetizing, a current-carrying conductor should be wound like a coil with an appropriate number of windings. After energizing the coil, circular magnetic fields will be generated around each coil winding. In the center of the coil these magnetic fields add on to a general longitudinal magnetic field, therefore cracks located across the magnetic field i.e. transversal cracks are being indicated.

HELLMAG devices can be combined with a variety of testing equipment such as the chain testing device, closed or hinged coils, trapezoidal coils for testing of railway wheels (see also pages 35 to 36).

The testing current can be infinitely adjusted through a foot-switch operated potentiometer (when the magnetizing circuit is closed). A selector switch changes between the different modes: Magnetizing – Demagnetizing – Pulse. The devices are equipped with 230 V plug sockets for connecting additional equipment such as an UV lamp or a suspension pump.

Specifications:	HELLMAG 1000	HELLMAG 3000	HELLMAG 5000
Art.No.	131.100.091	131.100.080	131.100.085
Mains connection	230V, 50/60 Hz, Ceekon 16A	400V, 50/60 Hz, Ceekon 32A	400V, 50/60 Hz, Ceekon 63A
Power consumption, KVA	3	5	14
Testing current measured over 5 m high-current cable			
Effective, A	1 – 1100 AC	1 – 3000 AC	1 – 5000 AC / 1 - 2000 DC
Peak, A	1555	4242	7071
Current adjustment	Infinitely	Infinitely	Infinitely
Short-circuit current, A	1500	4000	7000
Relative duty cycle, %	30	60	30
Current indication	analog	analog	6" Touch Panel
Operating mode	Magnetisation, demagnetisation, pulse mode		
Power cable length, m	2 x 2,5	4 x 2,5	4 x 2,5
Power cable cross section, mm <sup>2</sup>	95	95	240
Dimensions, mm	520 x 240 x 320	630 x 300 x 324	900 x 580 x 750
Weight, kg	approx. 22	approx. 57	approx. 200

Technische Änderungen und Irrtümer vorbehalten! Technical errors and changes excepted!  
Heidgraben, Januar 2013