

AIRCRAFT BATTERIES



 **Krusik**
HOLDING CORPORATION

THE BATTERY FACTORY

MILITARY USE

KRUŠIK-THE BATTERY FACTORY is the only large battery manufacturer in the South-East Europe and it belongs to the line of the most important in its branch in the whole Europe. Our tradition of the battery production is more than half a century old. The high quality and the competitiveness of our products, which are designed to meet the desires of each of our clients, stand for solid confirmation of "Krušik The Battery Factory", which is a reliable partner for the old and new clients, but also those who are yet to become ones.

Krušik - The Battery Factory has the integrated quality management system certified as per: ISO 9001: 2008; OHSAS 18001: 2007; ISO 14001:2004 and Type product certificate IEC 60623.

KRUŠIK-THE BATTERY FACTORY offers a range of products that are indispensable in military use. These include many types of Ni-Cd batteries with sintered electrodes, as well as Ag-Zn batteries(ASC-K i ASC-SK).

NI-CD BATTERIES IN MILITARY USE

a) Semi-hermetically closed Ni-Cd batteries with sintered electrodes are used for starting aircraft and helicopter motors produced according to the license of the Western European countries;

b) Hermetically-closed Ni-Cd batteries with sintered electrodes are widely applied in the military for powering stationary and portable connection systems, as well as electronic devices in combat vehicles.

USE OF STORAGE BATTERY IN AIRCRAFT KRUŠIK-THE BATTERY FACTORY

N U M B E R	KRUSIK type	Voltage (V)	Capacity (Ah)	Dimensions (mm)	Mass battery (kg)	Type	Comment
						<ul style="list-style-type: none"> aircrafts helicopters 	
1.	VB-20/22	24	22	340 223 226	26	Jastrebova 75 Iljušin (m) MI-8 helicopters (m)	Starting motors
2.	VB-20/36	24	36	414 201,5 267	36	Orao Gazela h (m)	Starting motors
3.	15ASC-K-45	22,5	45	432 130 221	17	MIG-21 MIG-23 MIG-25 MIG-29 MIG-31	Starting motors

Ag-Zn BATTERIES

IN MILITARY USE

Powering electronic and electrical systems in aircrafts, helicopters, submarines, torpedoes, rockets, and for Starting aircraft motors on aircrafts of Russian manufacture.

Their general characteristics are:

- Rechargeable
- High discharging currents
- Resistant to tilts and vibrations
- Little self-discharge
- Wide span of work temperatures (from -20°C to +50°C)
- High specific energy per unit of mass and volume

Krušik - The Battery Factory manufactures Ag-Zn cell type ASC-K-45 and Ag-Zn batteries type 15-ASC-K-45 with characteristics:

TECHNICAL SPECIFICATIONS ASC-K-45 cell

01	Rated voltage at normal discharge	1.5 V
02	Rated capacity at 5h discharge	45.0 Ah
03	Rated charge current	5.0 A
04	Maximum permissible charge voltage	2.0
05	e.m.f. of charged cell	1.82 to 1.86 V
06	Rated discharge current	9.0 A
07	Test discharge current	20.0 A
08	Minimum recommended discharge voltage	1.1 V
09	Minimum permissible discharge voltage	0.8 V
10	Electrolyte density	1.4 - 1.45 gr/cm ³
11	Weight of cell: • dry • wet	max.720 gr max.895 gr
12	Shelf life: • dry • wet discharged • filled charged	48 months 6 months 1 month

TECHNICAL SPECIFICATIONS 15-ASC-K-45 STORAGE BATTERY

01	Rated voltage	22.5V
02	Rated capacity at 5h discharge	45 Ah
03	Rated charge current	5.0 A
04	Rated discharge current	9.0 A
05	Test discharge current	20.0 A
06	Normal operating temperature	20±5°C
07	Operating temperature range	-40 to +50°C
08	Temperature below which battery is heated with external heater	below 5 °C
09	Battery dimensions	432 ^{±1} x 129 ^{±2} x 225 ^{±2} mm
10	Battery weight: • with electrolyte • without electrolyte	around 17 kg around 14 kg
11	Number of aircraft engine starts, each with 5Ah consumption, during service life	120
12	Number of successive engine starts, without battery boosting, each with 5 Ah consumption	3
13	Minimum voltage at starting with currents of max. 750 A	19V
14	Shelf life, after which battery must not be mounted in aircraft	6 months
15	Minimum permissible capacity for use in aircraft	80% of rated capacity
16	Resistance to vibrations with amplitude from 0.2 to 0.7 mm	20 to 150 Hz
17	Resistance to centrifugal acceleration: • laterally, • from the bottom towards the valves	3 to 4 g 6 to 7 g
18	Max.permissible relative humidity at +60°C	95%