FASER® S.A.

The Factory of Rescue Equipment
and Miner's Lamps
„FASER" S.A.

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POLAND

www.faser.pl

We Serve Your Safety Needs

The equipment manufactured by Fabryka Sprzętu Ratunkowego i Lamp Górniczych "FASER" S.A. is used primarily in the mining, metallurgy, chemical and petrochemical industries, as well as in the fire service, defence industry, shipbuilding, agriculture and medical treatment.

We have been exporting our products for many years.

The good marks that our products receive abroad are confirmed by the continuity of our exports.

We conduct our export activities independently and in cooperation with Polish foreign trade organisations.

Today is the fulfilment of the Mission "We Serve Your Safety" by offering high-end respiratory protective equipment and headlamps, the quality of which is confirmed by numerous certificates, including ISO 9001:2015, AQAP 2110:2016.

The company holds a licence from the Minister of the Interior and Administration for the manufacture and marketing of products for military use.

Our products protect human life and health and must therefore be highly effective and reliable in their performance.

The results of research and tests determine whether a new product will be put into production. We carry them out in our own research laboratories and construction laboratories.

In addition, all our products are approved by Polish classification institutions.


CENTRUM CERTYFIKACJI JAKOŚCI

CERTYFIKAT

Fabryka Sprzętu Ratunkowego i Lamp Górniczych "FASER" S.A.

AQAP 2110:2016


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ISO 9001:2015


WOJSKOWE CENTRUM NORMALIZACJI, JAKOŚCI I KODYFIKACJI

ZAŚWIADCZENIE

CERTIFICATE

FABRYKA SPRZĘTU RATUNKOWEGO I LAMP GÓRNICZYCH „FASER" S.A.

0322H

In order to fulfil the tasks resulting from the production profile of our company, we have gathered a staff of specialists in the areas of construction, research, quality and execution.

We offer:

- Oxygen apparatuses
- Masks
- Absorbers
- Control and measuring equipment
- Lamps and batteries
- Carriers
- Equipment for handling rechargeable lamps
- Gas filters
- Collective respiratory protection (shelters and mobile objects)

Chemical Oxygen Escape Apparatus ATU-1 type

The ATU-1 escape oxygen apparatus is designed for single use to protect the user's respiratory system during his withdrawal (escape) from a zone threatened by gases harmful to health and in zones where oxygen concentration is insufficient for breathing.

It is used for safe exit from a zone affected by fire, gas discharge or failure of a chemical installation.

The apparatus is designed for underground mining and other industries.

It can be used in underground mines in non-methane and methane fields in areas classified as "a", "b" and "c" degree of danger.

ATU-1 apparatus is not a working apparatus, rescue or diving apparatus.

Chemical Oxygen Escape Apparatus ATU-1 type

Advantages of the apparatus:

- Simple, intuitive way to open the apparatus
- Ability to breathe freely immediately after activation.
- Contralateral nose squeeze - one-handed use
- Handle for carrying the device in your hand
- Heat exchanger

(Max. temperature of inhaled air below 40°C.

- Double protection against opening (seal, locking cap)
- Two-phase innovative indicator

~ 50% of moisture inside the apparatus - clumping - indication of inspection

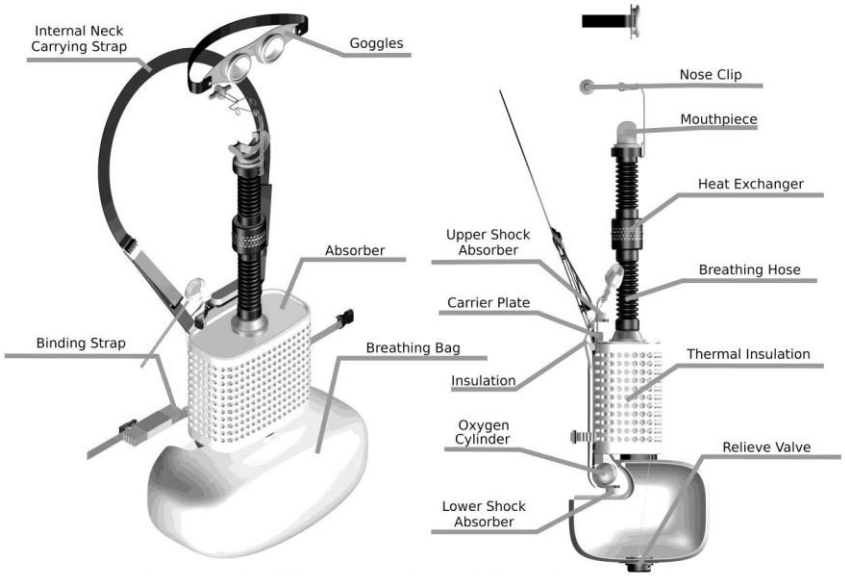
~ 80% moisture inside the apparatus - dissolving - withdrawal from use

- Sight glass for observation of the inside of the device
- 2 internal shock absorbers to protect the apparatus core
- Option to wear on back or shoulder strap
- Operation for a minimum of 70 minutes
- One-handed opening mechanism (right or left)
- Easier to keep clean, thanks to the ribbed design on the inside of the apparatus
- No need for a leak test on the instrument

	Apparatus type	ATU-1
Item	Parameters \ Draw. no	1004
1.	Protective operation time: - at a volumetric flow rate of 35 [l/min]	min. 70 minutes
2.	Protective operation time: - at a volumetric flow rate of 10 [l/min]	min. 220 minutes
3.	Relative humidity during use	≤100 %
4.	Dimensions: - height - width - thickness	about 291 mm about 224 mm about 128 mm
5.	Weight of apparatus not open with riser Weight of apparatus in use	≤ 3980 g ≤ 3 kg
6.	Ambient temperature	-5 ℃ to +60 ℃
7.	Housing temperature at the point of contact with the user	arround 60 °C
8.	Surface temperature of the apparatus (metal parts)	arround 115 °C
9.	Shelf life	Up to 10 years from the date of delivery, depending on the method of use.
10.	Atmospheric pressure	700 to 1300 hPa
11.	EC Type Examination Certificate:	UE/836/2022/1437
12.	Apparatus type: K-type regenerative escape apparatus Designation "K": Escape apparatus with chemically bound oxygen (KO2) Designation "S": Apparatus corresponding to Annex A EN 13794:2002	

Chemical Oxygen Escape Apparatus ATU-1 type

DRAW.1 CHEMICAL OXYGEN ESCAPE APPARATUS ATU-1
(CLOSED)



DRAW.2 CHEMICAL OXYGEN ESCAPE
APPARATUS ATU-1
(OPEN)

WSK "PZL-KALISZ" S.A.

The TR-1 Training Self-rescuer

The TR-1 training apparatus is designed for training and practicing the activities associated with the proper activation of the "ATU-1 escape oxygen apparatus". The TR-1 does not protect the respiratory tract in atmospheres contaminated with toxic substances, dust and oxygen deficiency.

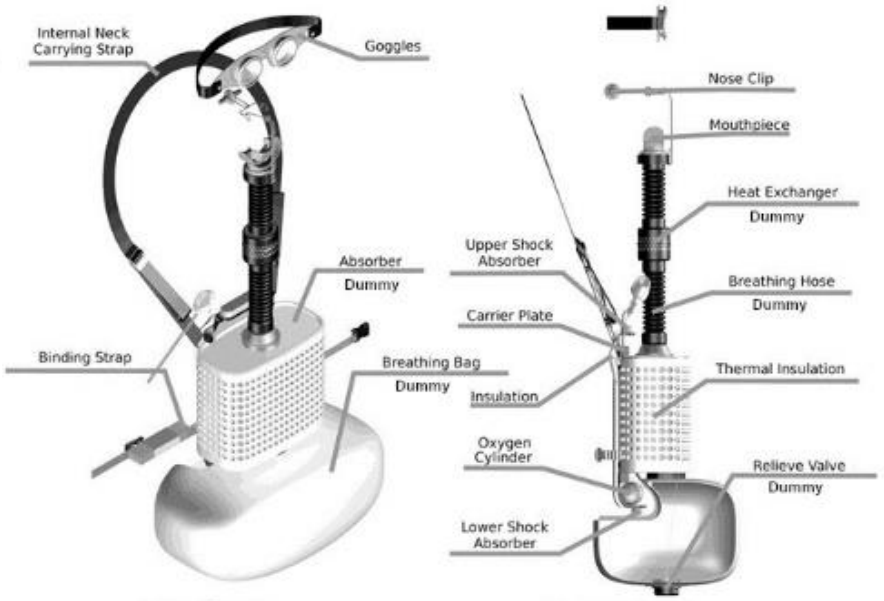
	Training Self-rescuer	TR-1
Item	Parameters / Draw. no	1020
1.	Dimensions: - height - width - thickness	about 291 mm about 224 mm about 128 mm
2.	The weight of the apparatus not open with the riser	≤ 3980 g
3.	The weight of the apparatus in use	≤ 3 kg
4.	The apparatus meets the requirements of Annex C of the standard PN-EN 13794:2005 (EN 13794:2002) - Respiratory protective equipment. Escape regenerative apparatus. Requirements, testing, marking.	

The TR-1 training apparatus is a dummy of the ATU-1 apparatus of similar weight. It consists of the same components except:

- the breathing hose is replaced by a dummy breathing hose having a dummy heat exchanger, a mouthpiece with a connector - a chamber simulating breathing resistance, which is interchangeable,
- the canister is replaced by a dummy canister without oxygen generating mass,
- the oxygen cylinder is empty, and the built-in cylinder valve imitates its opening,
- the bleeder valve is replaced by a dummy bleeder valve - without closing components,
- the breathing bag is replaced by a dummy breathing bag,
- the lock of the apparatus is reusable,
- the moisture indicator is made as a permanently loose, insoluble dummy,
- the lids of the apparatus are red,
- the label is in green with the inscription - "TR-1 TRAINING APPEARANCE for training only".

The TR-1 Training Self-rescuer

DRAW. 1 THE TR-1 TRAINING SELF-RESCUER (CLOSED)



DRAW. 2 THE TR-1 TRAINING SELF-RESCUER (OPEN)

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Chemical Oxygen Escape Apparatus KA-60 type

The KA-60 escape oxygen apparatus is designed to protect the respiratory system of the user during his withdrawal (escape) from the zone endangered by gases harmful to health and where the concentration of of oxygen is insufficient for breathing. The apparatus is designed for mining underground and other industries. It can be used in underground mining plants in non-methane and methane fields in rooms classified degree "a", "b" and "c" of explosion danger.

Key advantages:

- Permits escape from the danger zone when the escape time is even more than 60 minutes
- While at rest waiting for help, the minimum time of protective operation is 180 minutes
- Maintainability over the entire range of use
- Provides an indicator to indicate suitability for use
- The mouthpiece has a heat exchanger that lowers the temperature of the inhaled breathing mixture
- Training in the use of the apparatus is carried out using the TKA-60 training apparatus
- The design of the apparatus allows, depending on the needs, to wear the
- The design of the device allows it to be worn on the shoulder or on the back
- It has a strap that allows the apparatus to be carried in the hand
- The housing of the apparatus is made of highly mechanically resistant plastic, which does not accumulate electrostatic charges
- Protective goggles included with the apparatus (inside)
- Additional inner strap

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Chemical Oxygen Escape Apparatus KA-60 type

Item	Parameters \ Apparatus type: Draw. no	KA-60: 910
1.	Protective action time: - at volumetric flow rate flow rate of 35 [l/min]	min. 60 minutes
2.	Protective action time: - at a volumetric flow rate of 10 [l/min].	min. 180 minutes
3.	Relative humidity during use	≤100 %
4.	Dimensions	~ (260mm x 220mm x 140mm)
5.	Weight of braces in reconstruction with backing tape Weight of braces ready for use with use risers	≈3900g ≈3400g
6.	Operating temperature	-5 ºC ÷ +60 ºC
7.	Housing temperature at the point of contact with the user	about 60 °C
8.	Surface temperature of the apparatus (metal parts)	about 150 °C
9.	Shelf life	Up to 10 years from the date of manufacture including a maximum of 5 years after putting into multi-shift operation
10.	EC Type Examination Certificate:	
11.	Apparatus type: K-type regenerative escape apparatus Designation "K": Escape apparatus with chemically bound oxygen (KO2) Designation "S": Apparatus corresponding to Annex A EN 13794:2002	

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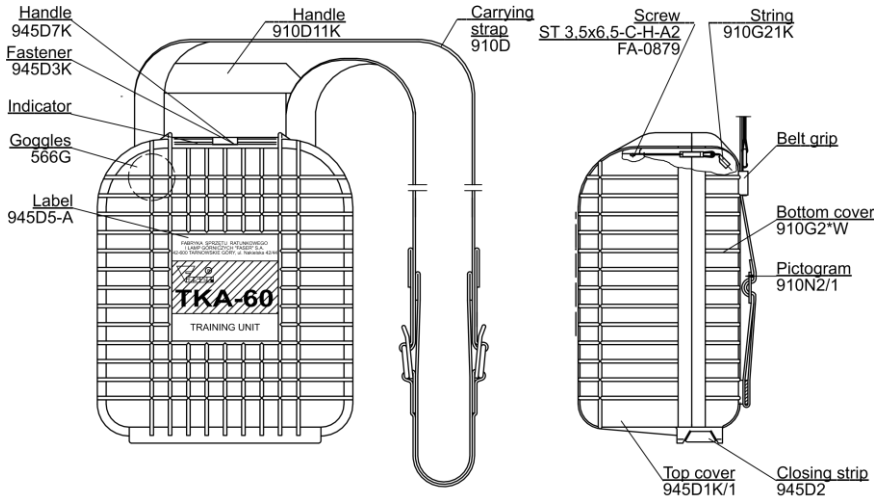
The TKA-60 Training Self-Rescuer

The TKA-60 training apparatus is designed for training and practicing the correct activation of the "KA-60 escape breathing apparatus". The TKA-60 apparatus does not protect the respiratory tract in atmospheres contaminated with toxic substances, dust and in oxygen deficiency.

	Training Self-rescuer	TKA-60
Item	Parameters / Draw. no	945
1.	Dimensions: - height - width - thickness	about 260 mm about 220 mm about 140 mm
2.	The weight of the apparatus in use	about 3,7 kg
3..	Resistance to breathing at a volumetric flow rate of 35 l/min (20 cycles/min; 1.75 l/stroke)	about 6 mbar (inhalation and exhalation)
4.	Oxygen content of the inhaled air	< 19 %
5.	Average CO2 content of the inhaled air	> 1,5 %
6.	The apparatus meets the requirements of Annex C of EN 13794:2005 (EN 13794:2002). Respiratory protective apparatus. Respiratory protective devices for self-rescue. Requirements, testing, marking.	



The TKA-60 training self-rescuer (closed)

The TKA-60 training apparatus is a dummy of the KA-60 apparatus of similar weight. It consists of the same components except:

- the breathing hose has a dummy exchanger, the mouthpiece with a chamber simulating breathing resistance is interchangeable,
- the canister is replaced by a metal plate,
- the oxygen cylinder is empty and the incorporated cylinder valve mimics its opening,
- the bleeder valve is a pass-through valve without closing components,
- the lock of the apparatus and the locking bar (latch) are reusable,
- the humidity indicator is made as a permanent blue dummy

Oxygen Escape Apparatus SR-K30A type

The SR-K30A escape breathing apparatus is designed to protect the wearer's respiratory system during withdrawal (escape) from an area endangered by gases hazardous to health and where the oxygen concentration is insufficient for breathing.
The apparatus is designed for underground mining and other industries.
It can be used in underground mines in non-methane and methane fields in areas classified as 'a', 'b' and 'c' methane explosion hazards and 'A' and 'B' coal dust explosion hazards.
It is used for safe exit from areas affected by fire, gas explosion or failure of a chemical installation.
It is designed for single use.
The escape breathing apparatus is intended solely for self-rescue (escape) from the danger zone in the event of danger. The SR-K30A is not a working, rescue or diving apparatus.

Two versions of the apparatus:

- Worn on the waist belt
- worn on the shoulder

CE 1437

Oxygen Escape Apparatus SR-K30A type

The apparatus meets the requirements of PN-EN 13794:2005 (EN 13794:2002)

Oxygen Escape Apparatus SR-K30A type

	Apparatus type	SR-K30A
Item	Parameters / Draw. no	909/1
1.	Protective operation time: - at a volumetric flow rate of 35 [l/min] - at volumetric flow rate flow rate 10 [l/min]. - at a ventilation rate of 30 [l/min	min. 30 minutes min. 90 minutes min. 45 minutes
2.	Relative humidity during use	≤100 %
3.	Dimensions: - height - width - thickness	about 200 mm about 205 mm about 90 mm
4.	The weight	about 2 kg
5.	Ambient temperature	-5ºC ≤ Tamb ≤ +60ºC
6.	Housing temperature at point of contact	about 60 °C
7..	Surface temperature of the apparatus (metal parts)	about 115 °C
8.	Shelf life	10 years from date of manufacture (including a maximum of 5 years after putting into service) The period may be extended to a maximum of 10 years provided that the unit is operated in single-shift operation for a maximum of 8 hours a day and 7 days a week with a maximum of 7 days a week of operation. 8 hours a day and a maximum of 7 days a week with that records of the use of the apparatus are kept and certified by the person responsible for issuing the apparatus.
9.	EC TYPE-APPROVAL CERTIFICATE	
10.	Apparatus type: K-type regenerative escape apparatus Designation "K": Escape apparatus with chemically bound oxygen (KO2) Designation "S": Apparatus corresponding to Annex A EN 13794:2002	

Training Unit TSR-K30A type

The TSR-30A training unit is designed for training and practice in the use of the SR-K30A self-contained chemical oxygen self-rescuer as well as other similar rescuers. TSR-K30A does not protect the wearer's breathing against an atmosphere containing toxic substances or lack of oxygen.

	Training Self-rescuer	TSR-K30A
Item	Parameters / Draw. no	944/1
1.	Dimensions: - height - width - thickness	about 190 mm about 205 mm about 85 mm
2.	Mass	about 2 kg
3.	The apparatus meets the requirements of Annex C of EN 13794:2005 (EN 13794:2002) . Respiratory protective devices. Respiratory protective devices for self-rescue. Requirements, testing, marking.	

The TSR-K30A training apparatus is a dummy of the SR-K30A. It consists of the same components except:

- the breathing hose does not have a heat exchanger,
- the canister does not have an oxygen generating mass, it has been replaced by sand,
- the initiator has no reactants. The initiator lever simulates the size of the starter actuation force,
- the bleeder valve is through-hole without closing elements,
- the instrument drawstring is reusable,
- the moisture indicator is made as a permanent blue dummy.

Training Unit TSR-K30A type

Filter Self Rescuer POG-8M

The POG-8M filter self-rescuer is a respiratory protective device designed for personal escape only. The self-rescuer protects against carbon monoxide arising from fires of explosions in underground mining and tunnelling, enabling escape from the danger area.

The filter self-rescuer effectively protects the user against carbon monoxide when:

- oxygen content in the inhaled air is not less than 19 % by vol,
- carbon monoxide content in the inhaled air is not higher than 1,5 % by vol,
- carbon dioxide content in the inhaled air is not higher than 2,0 % by vol,
- content of hydrogen chloride, hydrogen sulphide, sulphur dioxide, nitric oxide do not exceed 0,05% by vol.

Filter type		POG-8M
Item	Parameters \ Draw. no	910
1.	Dimensions: - Lenght - Width - Height	about 105 mm, about 95 mm about 145 mm.
2.	Rated duration at the sinusoidal flow of 30 l/min (20 cycles/min x 1,5 l/ stroke) at carbon monoxide concentration of 0,25% by vol., the relative humidity of (95 ÷ 100) %	60 minutes
3.	Maximal temperature of the inhaled air	< 50°C
4.	Inhalation resistance	< 12 mbar
5..	Exhalation resistance	<3,5 mbar
6.	Weight of the complete self-rescuer	<1,1 kg
7.	Weight of the self rescuer during usage (which burdens the head)	<0,6 kg
8.	Shelf life	For canisters with painted steel can (796, 796*PS, 796*PSS). Shelf life 3.5 years from date of manufacture, including 3 years from date of entry into service, but not beyond. For canisters with stainless steel cans (796*K, 796*P, 796*PSN). Shelf life 5.5 years from date of manufacture including 5 years from date of entry into service but not beyond the end of the shelf life
9.	The POG-8M protective extractor meets the requirements of the Council Directive 89/686/EEC and the harmonised standard EN 404:2005 in class - FSR 1 A	

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CE 1297

Training Filter Self-Rescuer TPG-8

The TPG-8 training filter self-rescuer is designed for training and practicing activities related to the correct use of the POG-8 and POG-8M filter self-rescuer.

The TPG-8 training filer self-rescuer does not protect the airways in an atmosphere contaminated with toxic substances, dust and oxygen deficiency.

Training Filter		TPG-8
Item	Parameters / Draw. no	707
1.	Dimensions: - lenght - width - height	about 105 mm about 95 mm about 145 mm
2.	Weight of the apparatus not open with carrying strap	Same as POG-8M filter self-rescuer
3.	Weight of the apparatus in use	Same as POG-8M filter self-rescuer

Training in the operation and use of the canister is carried out using the TPG-8 training mining canister

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Regenerative Apparatus W-70M Type

The W-70M (EN 145 / O2/ 4N) regenerative apparatus with closed circuit apparatus is designed for protecting the wearer's breathing circuit when rescue work is carried out in an irrespirable atmosphere for example oxygen deficiency or harmful gasses. Equipped with well fitting full face mask, it corresponds with European Standard PN-EN 145:2000.

Basic advantages:

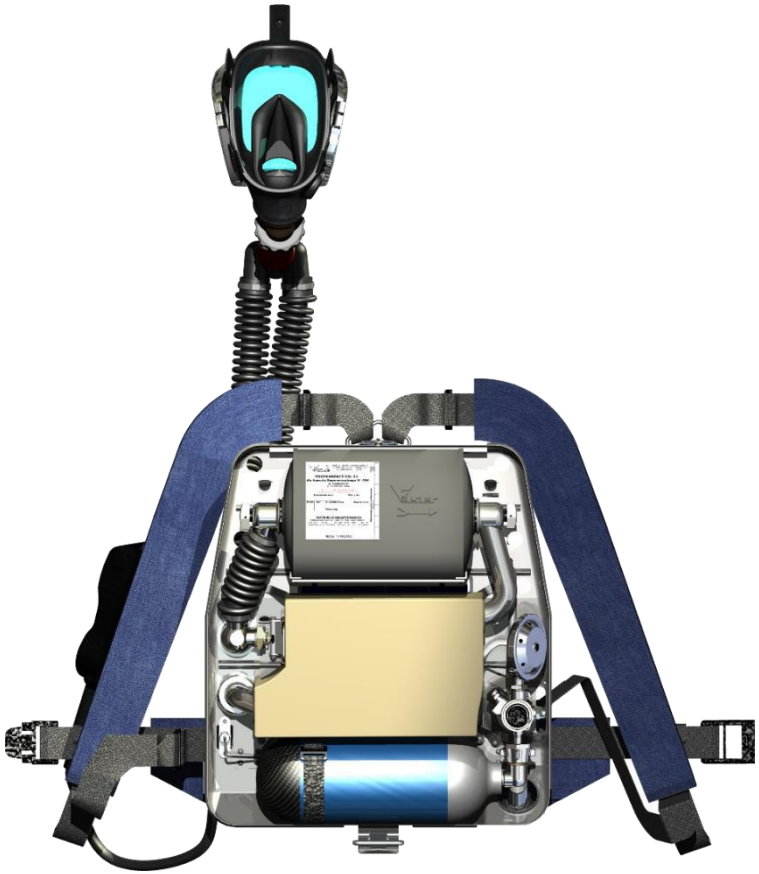
- **Simple installation due to modular design.**
- **Cooler that reduces the temperature of the inhaled air.**
- **Comfort in wearing the apparatus - ergonomic straps.**
- **Facilitated donning of the apparatus through the use of flexible breathing hoses, which the user wears under the arm.**
- **Comfortable central connector of the mask with breathing hose -type "quick-connect".**
- **The possibility of administering fluids without removing the mask.**

The ESN-AT Electronic Supervision System:

- Falls into group I, category M1 with Ma level of protection. The apparatus is designed for work in underground mines where potential explosive atmosphere of methane and / or coal dust can occur; it is also possible to use the apparatus in Ex atmospheres.
- Falls into group II, category 2G with Gb level of protection. The apparatus is designed for work in places other than underground mines where there is a possibility of gas explosion, vapor and mist of group IIC; there is a possibility to use the apparatus in 1 and 2 zones.
- The apparatus is a designed with Explosion-proof construction and is a Certified Intrinsically (level „ia")

Regenerative Apparatus W-70M Type

Technical data:



Apparatus type		W-70M
Item	Parameters / Draw. no	982
1.	Rated duration	>4 h
2.	Mass of complete apparatus	about 14 kg
3.	Mask weight	0,7 kg
4.	Overall dimensions of housing - width - height - thickness	 433 mm 500 mm 150 mm
5.	Oxygen cylinder: - capacity - diameter - length - weight - thread E 17 according to EN 144-1:2000 - marking in compliance with directive 97/23/WE - unequivocal designation on the cylinder:O_2	 2dm³ Ø110±1 mm 305±1,5 mm max. 1,4 kg
6.	Oxygen in cylinder–according to PN-EN 145: 2000 (EN 145:1997) Concentration of oxygen delivered into breathing circuit	min. 99,5%
7.	Water vapour content in oxygen in cylinder at the pressure of 1 bar	max. 50 mg/m³
8.	Working pressure	200 bar
9.	Reduced oxygen pressure	4±0,1 bar
10.	Constant oxygen dosage (at 200 bar)	1.5±0,1 dm³/min
11.	Dosage of supplementary oxygen supply valve at the pressure in cylinder > 50 bar	> 80 dm³/min
12.	Maximal dosage at the pressure in cylinder of > 10 bar	≥ 80 dm³/min
13.	Capacity of flushing dose	6,0 dm³
14.	Capacity of breathing bag	6,5 dm³
15.	Absorber CO_2 21: - dimensions - weight for the absorber 963 - weight for the absorber 1039	9 x 18 x 21 cm 1,75 ÷ 2,0 kg ~2,7 kg
16.	Cooling agent - gel compress 20x18 (cartridge) in stainless steel cassette : weight	1,0 kg
17.	Electronic supervision system ESN-AT: - Power supply - Working temperature - Range of measured pressure	 2 alkaline batteries x 1,5 V -6÷60 °C 0÷250 bar
18.	Battery (for safety it is recommended to use the specified types of batteries)	Only the specified types of batteries are included in IU-993
19.	Approved full face masks:	MT 313/4 ANKA 1 EN 136:1998 CL3 MT 313/5 ANKA 2 EN 136:1998 CL3 (with liquid dosage device)

Regenerative Apparatus W-70M Type

Technical data (rated indicators of the apparatus confirmed by testing for compliance with:
PN-EN 145:2000 and Regulation of the European Parliament and of the Council (EU) 2016/425 dated March 9, 2016).

Environmental conditions that are recommended during use and component conditions of the W-70 M regenerative apparatus.

Environmental conditions		
During use	Temperature	-6 ÷ 60 °C
	Air pressure	900 ÷ 1200 hPa
	Relative humidity	0 ÷ 100 %
Storage conditions	Temperature	5 ÷ 30 °C
	Air pressure	900 ÷ 1200 hPa
	Relative humidity	30 ÷ 80 %

LN-IZA Type Cap Lamp

The LN-IZA cap lamp is designed for work in underground mines where potential explosive atmosphere of methane and / or coal dust can occur; it is also possible to use the lamp in Ex atmospheres.

The LN-IZA cap lamp:

- Falls into Group I, category M1 with Ma level of protection .
- The lamp is a designed with Explosion-proof construction and is a Certified Intrinsically (level „ia”)
- The cap lamp is designed for maintenance free charging, ease of operation and gives excellent
- illumination in different work situations

Locator transmitter versions 938/2-GL and 938/2-L can be used. GL cover with GLON locator transmitter and emergency light source in the cover *(signaling the operation of the transmitter GLON).* LO cover with LOK locator transmitter and emergency light source in the cover *(signaling the operation of the LOK transmitter)*.

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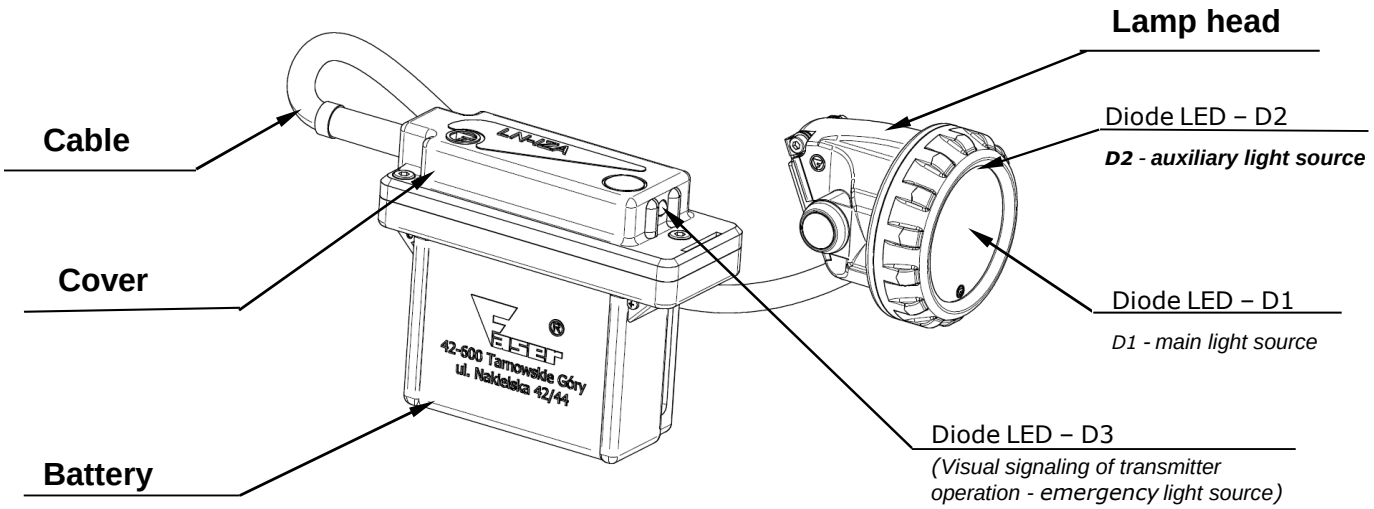
Small lamp head

Big lamp head



Drawing 1 The LN-IZA cap lamp

LN-IZA Type Cap Lamp

Technical data:

	Type of lamp	LN-IZA
Item	Parameters	938/2-*/938/3-*
1.	Rated voltage of battery	3,6 V (3 x Ni-MH 1,2 V)
2.	Rated ampere-hour capacity of battery	min. 4,0 Ah
3.	Life-span of battery *(number of charging /discharging cycles)*	min. 800 cycles
4.	Light source D1 – main light source *(according to PN-EN 60079-35-2)* D2 – auxiliary light source D3 – emergency light *(In the battery cover)*	D1, D2, D3
5.	Light source life	100 000 h
6.	Light intensity control	yes
7.	Overall dimensions *(l x b x h)* of battery	115mm x 46mm x 105mm
8.	Length of the cable – standard *(range of the applied cable length)*	1400 mm (od 1100mm do 1600mm)
9.	Over-current protection	Fuse WBO-1,6 A
10.	Ambient temperature	-5ºC ≤ Ta ≤ +40ºC *)
11.	Time of charging	max. 6 h (dla $I_{iad.}$= 0,95A)
12.	Additional devices *(Permissible to use in the LN-IZA lamp)*	➢ Locator transponder TTAG-868FSK/L ➢ Passive transponder TAG *) ➢ Locator transponder TTAG-A8F ➢ Marker EK-TAG/M ➢ Locator transponder TAG-3100 ➢ Communication module UMC_Ex1v1 ➢ Transponder EMTAG-16 ➢ Transponder BWTR version 03
13.	Marking	I M1 Ex ia I Ma
14.	Certificate of EC type examination	KDB 09ATEX130X
15.	Conformity with Directives: Directive ATEX Directive EMC	2014/34/UE 2014/30/UE

*) - for extended version -W9: 0ºC ≤ Ta ≤ +40ºC)
**) - VOLCANO TAG 230 Unique passive transponder or equivalents

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LN-IZA 938/2

Type of lamp		LN-IZA		
Item	Parameters	938/2-GL	938/2-LO	938/2-ND
1.	Level of housing protection *(according to PN-EN 60529:2003)*	IP65		
2.	Number of light source positions *(optional configurations)*	3		
3.	Minimal burning time *(for charged battery during guarantee period of using)*	Pos. 1 – 10 h Pos.2 (240 h ÷ 13h) Pos.3 - 70 h		Pos.1 - 10 h Pos.2 - (430 h ÷ 11h) Pos. 3- 130 h
4.	Maximum illumination intensity (measured on the axis at the distance of 1 m)	Pos.1 - min.4500 lx Pos.2 – adjusted 10% ÷90% Pos.3 - min. 3 lx		Pos.1 - min.8000 lx Pos.2 - adjusted 10% ÷ 90% Pos.3 - min. 3 lx
5.	Location transmitter	GLON5S	LOK5S	-
6.	Visual signaling of transmitter operation *(signaling diode **D3** In the battery cover)*	yes		-
7.	Duration of location transmitter	min. 170 h		-
8.	Mass of lamp	< 0,95 kg		< 0,9 kg
9.	Diameter of head	Ø 65 mm		

LN-IZA 938/3

Type of lamp		LN-IZA		
Item	Parameters	938/3-GL	938/3-LO	938/3-ND
1.	Level of housing protection *(according to PN-EN 60529:2003)*	IP65 / IP67		
2.	Number of light source positions *(optional configurations)*	3		4
3.	Minimal burning time *(for charged battery during guarantee period of using)*	Pos.1 - 10 h Pos.2 - (240 h ÷ 13h) Pos.3 - 12 h		Pos.1 - 10 h Pos.2 - 10 h Pos.3 - (430 h ÷ 11h) Pos.4 - 22 h
4.	Maximum illumination intensity (measured on the axis at the distance of 1 m)	Pos.1 - min.4500 lx Pos.2 – adjusted 10% ÷ 90% Pos.3 - min. 15 lx		Pos.1 - min.8000 lx Pos.2 - min.4500 lx Pos.3 – adjusted 10% ÷ 90% Pos.4 - min. 15 lx
5.	Location transmitter	GLON5S	LOK5S	-
6.	Visual signaling of transmitter operation *(signaling diode **D3** In the battery cover)*	yes		-
7.	Duration of location transmitter	min. 170 h		-
8.	Mass of lamp	< 1,0 kg		< 0,95 kg
9.	Diameter of head	Ø 75 mm		

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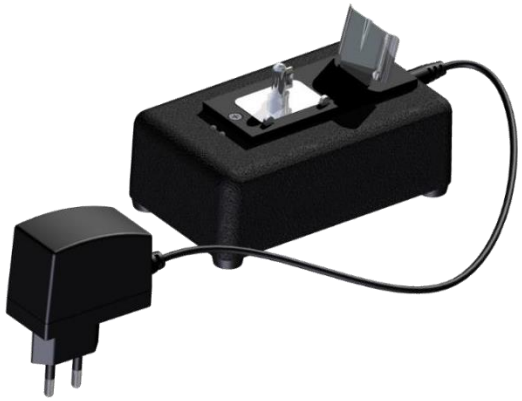
The CL-01P Cap Lamp

The CL-01P cap lamp:

- Falls into group I, ATEX category M1 with Ma level of protection. The cap lamp is designed for work in underground mines where potential explosive atmosphere of methane and / or coal dust can occur; it is also permitted to use the lamp in Ex atmospheres.
- Falls into group II, category 2G with Gb level of protection. The cap lamp is designed for work in places other than underground mines where there is a possibility of gas explosion, vapor and mist of group IIB; it is also permitted to use the lamp in 1 and 2 zones
- The lamp is a designed with Explosion-proof construction and is a Certified Intrinsically (level „ia")
- The cap lamp is designed for maintenance free charging, ease of operation and gives excellent illumination in different work situations

The lamp does not have a locator transmitter.

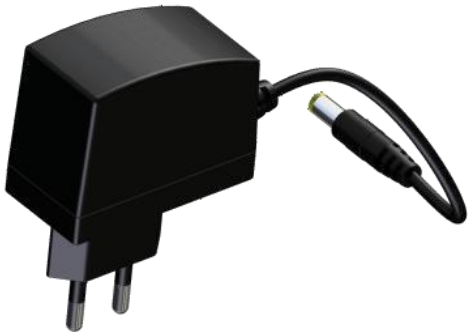
The CL-01P cap lamp battery should be charged by means of the LUC-... series type charging frames produced by FASER S.A., for example
- charging unit LUC-10” type No 984/2 (10-charging stands)
- charging unit LUC-1” type No 1001 (1-charging stand)



Draw. Charging unit LUC-1

Draw. Charging unit LUC-10

For charging purpose use the stabilized feeder 5V DC delivered by ” FASER” S.A. (the feeder is designed for charging of one lamp).



The CL-01P Cap Lamp

Type of lamp	CL-01P	
Parameters / Draw. no	974/1-PK	974/1-ZA
Weight	0,25 kg	
Rated voltage of battery	3,7V (Li-on)	
Life-span of battery	800 cycles	
Operating time/ Illumination intensity 1. main diode - full light 2. main diode - light with reduced brightness gradual adjustment 3. auxiliary diode in the head of the lamp	1. 10 h/ min. 4500 lx 2. . 240h÷11h/ min.(400÷4000) lx 3. 70 h/ min. 3 lx	
Temperature range	-20 ° C ≤ Ta ≤ + 40 °C	
Marking	I M1 Ex ia I Ma IEC 60079-35-1 II 2G Ex ia IIB T4 Gb	
Light source	Main light source Auxiliary light source	
Overall dimensions	77 x 75 x 65 mm	
Level of housing protection	IP65	
Charging time / charging current	max. 6h/550 mA	
EC type examination certificate	KDB 13ATEX0055X	
Compliance with directives	2014/34/EU (ATEX Directive) 2014/30/EU (EMC Directive)	

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LG-3MH type Cap Lamp

The LG-3MH cap lamp is designed for work in underground mines where potential explosive atmosphere of methane and / or coal dust can occur; it is also possible to use the lamp in Ex atmospheres.
The LG-3MH cap lamp:

- Falls into Group I, category M1 with Ma level of protection .
- The lamp is a designed with Explosion-proof construction and is a Certified Intrinsically (level „ia")
- The cap lamp is designed for maintenance free charging, easy of operation and gives excellent illumination in different work situations

Small lamp head

Big lamp head

Cover optional configurations:
Standard cover (without location transmitters)

- **Cover with location transmitter GLON4S**

Cover with GLON location transmitter and visual signalling of GLON transmitter operation

- **Cover with location transmitter LOK4S**

Cover with LOK location transmitter and visual signalling of LOK transmitter operation

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The LG-3MH type Cap Lamp

Technical data:

Item	Type of lamp / Parameters	LG-3MH
	Draw. no	920/3-* ; 920/3-*-* 920/4-* ; 920/4-*-*
1.	Rated voltage of battery	3,6 V (3 x Ni-MH 1,2 V)
2.	Rated ampere-hour capacity of battery	min. 8,0 Ah
3.	Life-span of battery *(number of charging /discharging cycles)*	min. 1000 cycles
4.	Light source D1 – main light source *(according to PN-EN 60079-35-2)* D2 – auxiliary light source	D1, D2
5.	Light source life	100 000 h
6.	Light intensity control	YES
7.	Overall dimensions *(l x b x h)* of battery	140 mm x 61 mm x 115 mm
8.	Length of the cable – standard *(range of the applied cable length)*	1400 mm *(from 1100 mm to 1600 mm)*
9.	Over-current protection	fuse WBO-1,6 A
10.	Ambient temperature	-5ºC ≤ Ta ≤ +40ºC
11.	Time of charging	max. 10 h (for łład.= 0,95A)
12.	Additional devices *(Permissible to use in the LG-3MH lamp)*	- locator transponder type TTAG-868FSK/L - passive transponder TAG *) - locator transponder type TTAG-A8F - tag EK-TAG/M - locator transponder type TAG-3100 - Transponder type EMTAG-16 - Transponder type BWTR version 03 - Transponder type UltraTAG-L
13.	Marking	I M1 Ex ia I Ma
14.	Certificate of EC type examination	KDB 08ATEX076X
15.	Conformity with : :Directive ATEX Directive EMC	2014/34/UE 2014/30/UE

*) – passive transponder VOLCANO TAG 230 Unique or equivalent

Small lamp head – 920/3

Type of lamp		LG-3MH		
Item	Draw. no / Parameters	920/3-GLON4S 920/3-GLON4S-*	920/3-LOK4S 920/3-LOK4S-*	920/3-N 920/3-N-*
1.	Level of housing protection *(according to PN-EN 60529:2003)*	IP65		
2.	Number of light source positions *(optional configurations)*	3		
3.	Minimal burning time *(for charged battery during guarantee period of using)*	**Position 1** - 12 h **Position 2** - (240 h ÷ 13h) **Position 3** - 120 h		**Position 1** - 20 h **Position 2 -** (450 h ÷ 22h) **Position 3** - 260 h
4.	Maximum illumination intensity *(measured on the axis at the distance of 1 m)*	**Position 1** - min.8000 lx **Position 2** - adjustable 10% ÷ 90% **Position 3** - min. 3 lx		
5.	Location transmitter	GLON4S	LOK4S	-
6.	Visual signaling of transmitter operation *(signaling diode **D3** In the battery cover)*	yes		-
7.	Duration of location transmitter	min. 170 h		-
8.	Mass of lamp	< 1,4 kg		< 1,3 kg
9.	Diameter of head	Ø 65 mm		

Big lamp head – 920/4

Type of lamp		LG-3MH		
Item	Draw. no / Parameters	920/4-GLON4S 920/4-GLON4S-*	920/4-LOK4S 920/4-LOK4S-*	920/4-N 920/4-N-*
1.	Level of housing protection (according to PN-EN 60529:2003)	IP65 / IP67		
2.	Number of light source positions *(optional configurations)*	4		
3.	Minimal burning time *(for charged battery during guarantee period of using)*	**Position 1** - 12 h **Position 2** - 12 h **Position 3** - (240 h ÷ 13h) **Position 4** - 24 h		**Position 1** - 20 h **Position 2** - 20 h **Position 3 -** (450 h ÷ 22h) **Position 4** - 45 h
4.	Maximum illumination intensity *(measured on the axis at the distance of 1 m)*	**Position 1** - min.8000 lx **Position 2** - min.4500 lx **Position 3** - adjustable 10% ÷ 90% **Position 4** - min. 15 lx		
5.	Location transmitter	GLON4S	LOK4S	-
6.	Visual signaling of transmitter operation *(signaling diode **D3** In the battery cover)*	yes		-
7.	Duration of location transmitter	min. 170 h		-
8.	Mass of lamp	< 1,5 kg		< 1,4 kg
9.	Diameter of head	Ø 75 mm		

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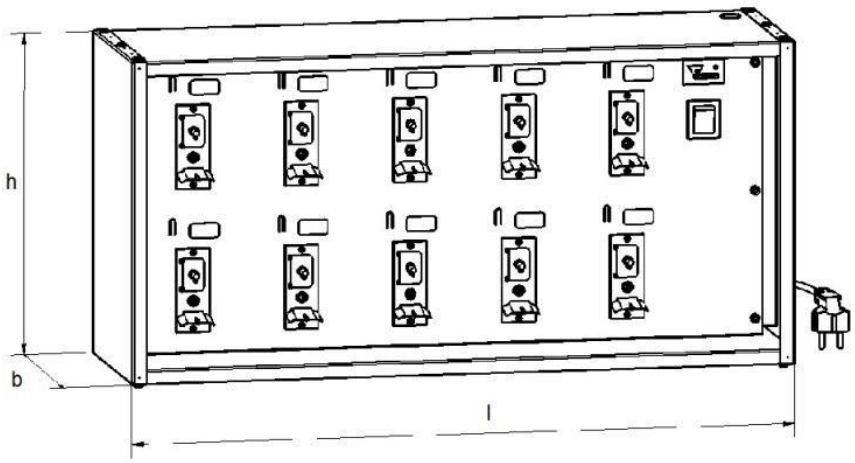
To recharge the batteries of the LG-3MH type headlamp, use the loaders manufactured by "FASER" S.A. - chargers guaranteeing the maintenance of the required charging parameters with full control over the characteristics and charging time.
The lamp to be charged is suspended from the appropriate position of the loader. The battery is hung on the hook of the loader (in loaders equipped with hooks), and the head is put on the contact pin. Turning the head clockwise by 180° turns the lamp into the charging circuit, which is signaled on the loader (charger) by the illumination of a yellow LED. The completion of charging is signaled by the lighting of a green LED on the charger.
The chargers guarantee charging of a fully discharged lamp in up to 10 hours.



Draw. LUC-10 charging unit „FASER”

Charging unite type		LUC-10
Item	Parameters / Draw. no	984/2
1.	Charging unit use	Charging cap lamps type CL-01P (974/1*PK)
2.	Number of charging stands	10
3.	Supply voltage	AC 88-240 V 50/60 Hz
4.	Consumption of power	max 35 W
5.	Protection	1,25A slow blow fuse
6.	Mass	max 11,5 kg
7.	Overall dimensions (l x b x h)	672 mm x 200 mm x 336 mm
8.	Protection degree of housing	IP40 (in accordance with PN-EN 60529:2003)
9.	Ambient atmoshpere temperature	-20°C ¸ +65°C
10.	Allowable humidity	96%
11.	Accordance with directives	- 2004/108/EC (EMC Directive) - 2006/95/EC

The LS-04 Signalling Lamp

The LS-04 signalling lamp :

- Falls into group I, category M1 with Ma protection level. The lamp is designed for work as warning lighting in underground mines and places other than underground mines where there is a possibility of methane explosion and / or coal dust
- Falls into group II , category 2G with Gb protection level. The lamp is designed for work as warning lighting in 1 and 2 zones endangered by gas explosion, vapor and mist of group IIB
- The lamp is a design with Explosion-proof construction and is a Certified Intrinsically Safe performance (device “ia”)
- The lamp is designed for maintenance free charging, applicative to routine operation, designed for different type of duty as warning lighting, adapted for use in positional safety guard OP-1 type which is designed for signaling the end of mine string of cars

Type of lamp		LS-04
Item	Parameters \ Draw. no	962/1
1.	Rated voltage of battery	3,6 V (3 x Ni-MH 1,2 V)
2.	Rated ampere-hour capacity of battery	min. 4,0 Ah
3.	Life-span of battery (number of charging /discharging cycles)	min. 800 cycles
4.	Light source DS1 – main light source (white) DS2 – signaling light source (red)	DS1, DS2
5.	Light source life	100 000 h
6.	Number of light source positions (optional configurations)	3
7.	Minimal burning time (for charged battery during guarantee period of using) Position 1 - diode LED DS2 Position 2 - diode LED DS2 Position 3 - diode LED DS1	24 h (continuous red light) 48 h (pulsating red light) 10 h (continuous white light)
8.	Maximum illumination intensity (measured on the axis at the distance of 1 m)	Poz.3 - min. 4500 lx
9.	Diameter of head	Ø 75 mm
10.	Head adjustment (adjustable bracket)	YES
11.	Level of housing protection (according to PN-EN 60529:2003)	IP65 / IP67
12.	Mass of lamp	< 0,9 kg
13.	Overall dimensions (l x b x h) of battery	140 mm x 61 mm x 55 mm
14.	Ambient temperature	-5°C ≤ Ta ≤ +40ºC
15.	Length of the cable – standard (range of the cable length)	600mm (od 500mm do 1600mm)
16.	Charging by means of charging frames of series: LU-... , LLK-… , LLKS-…	YES
17.	Charging time (charging current)	max. 6 h (dla $I_{ład.}$= 0,95A)
18.	Over-current protection	Fuse WBO-1,6 A
19.	Marking	I M1 Ex ia I Ma II 2G Ex ia IIB T4 Gb
20.	Certificate of EC type examination	KDB 10ATEX100X
21.	Conformity with:	2014/34/UE (Directive ATEX) 2014/30/UE (Directive EMC)

Cap Lamp LN-LUNA type

The LN-LUNA cap lamp is designed for work in underground excavation of mine facilities

- with no methane explosion hazard and with the “a” grade of explosion hazard.
- with methane explosion hazard and with “b” or “c” grades of explosion hazard.
- with no coal dust explosion hazard.
- with A and B classes of coal dust explosion hazard.

Cap lamp type LN-LUNA is a M1 category device and can operate in explosion endangered areas.

Cap lamp type LN-LUNA is designed for an individual illumination of a workplace of a miner. The lamp is fed with the Li-ion service-less battery, practical in use, ensuring good illumination in different working situations. Optionally, the lamp can be equipped with a transponder or radio-identifier designed to track the personnel movements.

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Cap Lamp LN-LUNA type

The headlamp consists of the following components:

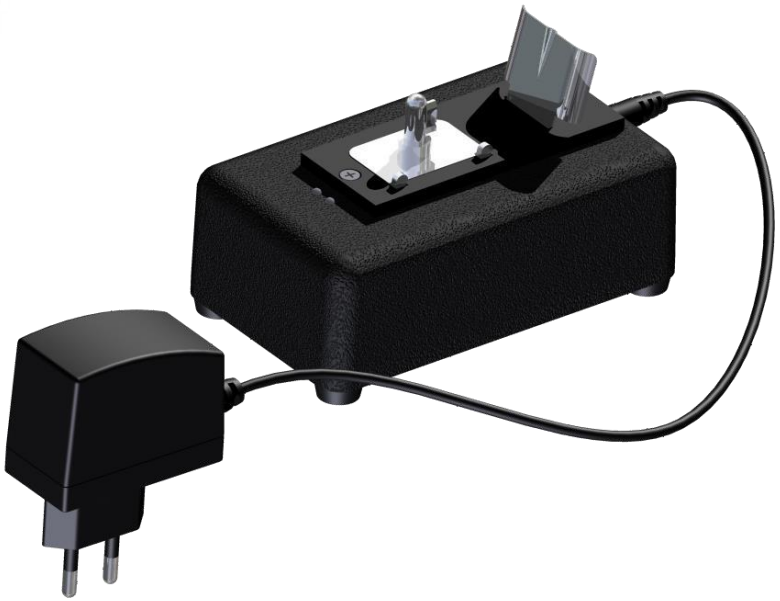
- the lamp container, consists of the battery assembly and the container cover
- headpiece
- the cable that connects the lamp container to the head

Item	Parameters	Lamp with location transmitter	Lamp without location transmitter
		Value (unit)	
1.	Rated voltage of the battery	3,6V	
2.	Service-less dry battery	Li-Ion 6,7 Ah	
3.	Number of work cycles of the battery	1000 cycles	
4.	Light source:	main GLED - LED nom. 1W additional DLED - LED nom. 80mW emergency ALED - diode LED nom. 10mW	
5.	Source light life	100 000 h	
6.	Minimal period of light emitting: (for charged battery in a guarantee operation period).	GLED /100%/ 10h GLED /20%/ 24h DLED 70h ALED 70h	GLED /100%/ 16h GLED /20%/ 36h DLED 70h ALED 70h
7.	Maximal light intensity from the distance of 1 meter	~ 4500lux	~ 6500lux
8.	Bound angle of light distribution	120^0	
9.	Ingress protection as per PN-EN 60529:2003	IP 65	
10.	Dimensions of the battery pack	117 x 107 x 57mm	
11.	Headpiece diameter	67 mm	
12.	Cable length	1400 mm	
13.	Weight	0,97kg	
14.	Ex coding	I M1 Ex ia op is I Ma	
15.	Certificate number	FTZU 11 ATEX 0294X	
16.	Conformity with:	Directive 2014/34/UE – ATEX Directive UE 2014/30/UE – EMC	

Charging Unit LU-01 type

Charging unit LU-1 is a universal charging unit designed to charge cap lamp and signal lamp batteries produced by FASER S.A. which are equipped with Ni-MH batteries at rated voltage 3,6V. The charging unit (depending on the programme version) is designed to charge lamps LN-04, LN-IZA, LS-04 or LG-3MH.

Electronic system of the charging unit controls stage of battery charging by means of microprocessor system. Visual displays which are based on LED diodes inform the user about the stage of operation, i.e. charging, lamp ready for use, defect.



Type of charging unit		LU-1	
Item	Parameter / Drawing No	941/4-06H	941/4-10H
1.	Application - designed to charge cap lamps type	LN-IZA LN-04 LS-04	LG-3MH
2.	Number of charging stands	1	
3.	Supply voltage	AC 90-264 V 50/60 Hz	
4.	Consumption of power	max 8 W	
5.	Type of charging	constant current charging	
6.	Visual display	LED diodes	
7.	Charging time	max 6 h	max 10 h
8.	Mass	max 0,3 kg	
9.	Overall dimensions (l x b x h) (battery modul dimensions	120mm x 70mm x 70mm	
10.	Protection degree of housing	IP44 (in accordance with PN-EN 60529:2003)	
11.	Working temperature	-20°C ÷ +65°C	
12.	Allowable humidity	96%	
13.	Accordance with directives	2014/30/UE (EMC) 2014/35/UE (LVD)	

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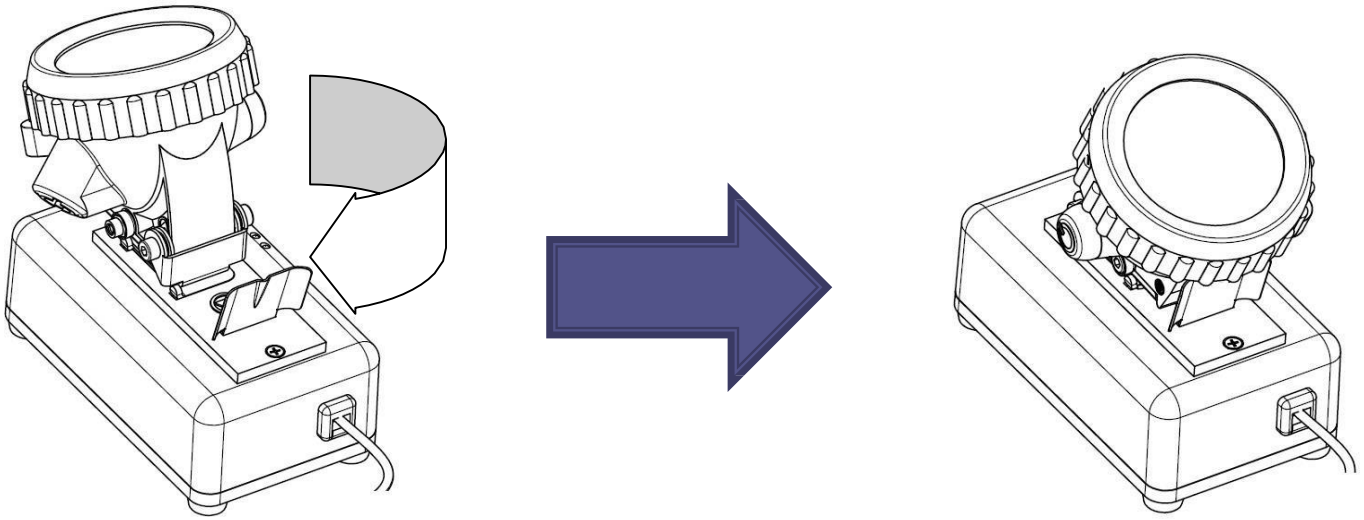
Charging of the lamp battery

Connect the lamp to the charger. To do this, the head of the lamp is put on the contact pin of the charger. Turning the head clockwise by 180°, the lamp is connected to the charging circuit. The illumination of the yellow LED indicates that the lamp's battery is properly connected and charging has begun. Turning the lamp off from the charging circuit is done by turning the head to the left.



Draw. Connecting the lamp for charging

Multi-position Charging Units type LU-…

LU type multi-position charger - ... type multi-station loaders are designed for maintenance-free charging of batteries of LG-3MH, LN-IZA, LN-04, LG-3MH lamps and LS-04 signal lamp manufactured by FASER S.A.

The 136-station and 102-station cargo holds are made as free-standing, the 68-station and 51-station holds are made as wall-mounted, and the 17-station hold is made as wall-mounted.

The 102 and 51-station holds can be equipped with a shelf for storing, for example, mining canisters or escape apparatus.

Features of the FAPX Charger:

- microprocessor control of the charging and discharging process
- full signaling of the current operating status of the charger (highlighting the state of completion of battery charging - a large green LED is lit)
- indication of battery charge
- protection against overcharging the battery (time limits)
- possibility of interrupting the discharge at any time and switching to charging
- indication of device failure
- protection against self-discharge and discharge of the battery by the electronic system - with the lamp connected after charging of the battery
- protection against power failure (memorization of the current program state in which the charger was before the power failure and automatic continuation of the program after the power supply is resumed)
- possibility of cooperation with a computer integrated system supervision of mining lamps.

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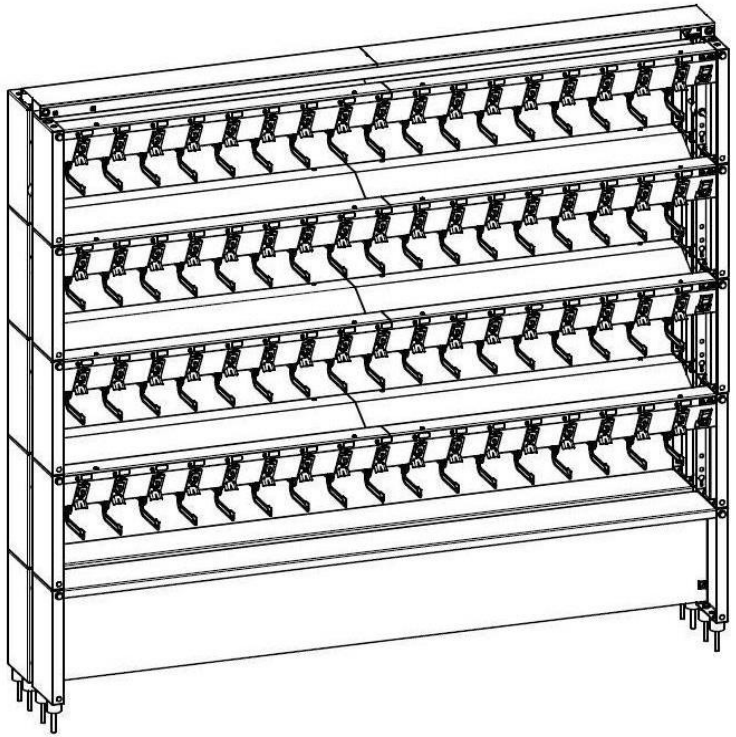
Charging Units LU-…

Item	Parameter / Type of charging unit	LU-136, LU-102, LU-68, LU-51, LU-17
1	Type of charging	constant current charging
2	Visual display	LED diodes
3	Protection degree of housing (acc. To EN 60529)	IP40
4	Ambient temperature	-5˚C ÷ +65˚C
5	Allowable humidity	85%
6	Accordance with directives	- 2014/30/UE (EMC) - 2014/35/UE (LVD)

Charging Unit LU-136



Draw. Charging unit LU-136

Type of charging unit		LU-136			
Item	Drawing No / Parameter	973-136- F06H23 0	973-136- F06H11 0	973-136- F10H23 0	973-136- F10H11 0
1.	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2.	Quantity of charging stands	136			
3.	Quantity of „Segments L-17„	8			
4.	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5.	Quantity of „Complete shelves" (No 973B2K)	2			
6.	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
7.	Consumption of power	<16 A	<24 A	<16 A	<24 A
8.	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
9.	Visual display	LED diodes			
10.	Time of charging	max. 6 h		max 10 h	
11.	Mass	< 182 kg			
12.	Overall dimensions (l x b x h)	1987mm x 388mm x 1775mm			

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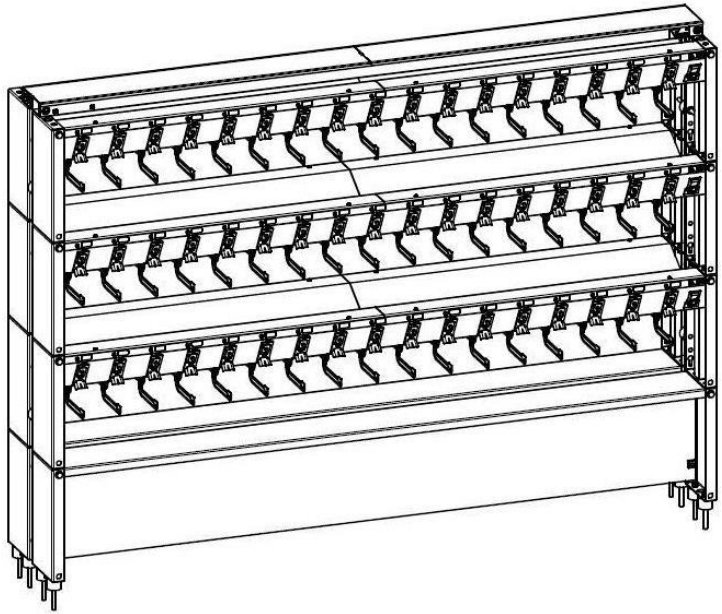
Charging Unit LU-102



Draw. Charging unit LU-102

Type of charging unit		LU-102			
Item	Drawing No / Parameter	973-102-F06H230	973-102-F06H110	973-102-F10H230	973-102-F10H110
1	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2	Quantity of charging stands	102			
3	Quantity of „Segments L-17„	6			
4	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5	Quantity of „Complete shelves" (No 973B2K)	2			
6	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
7	Consumption of power	< 12 A	< 18 A	< 12 A	< 18 A
8	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
9	Visual display	LED diodes			
10	Time of charging	max. 6 h		max 10 h	
11	Mass	< 146 kg			
12	Overall dimensions (l x b x h)	1987mm x 388mm x 1435mm			

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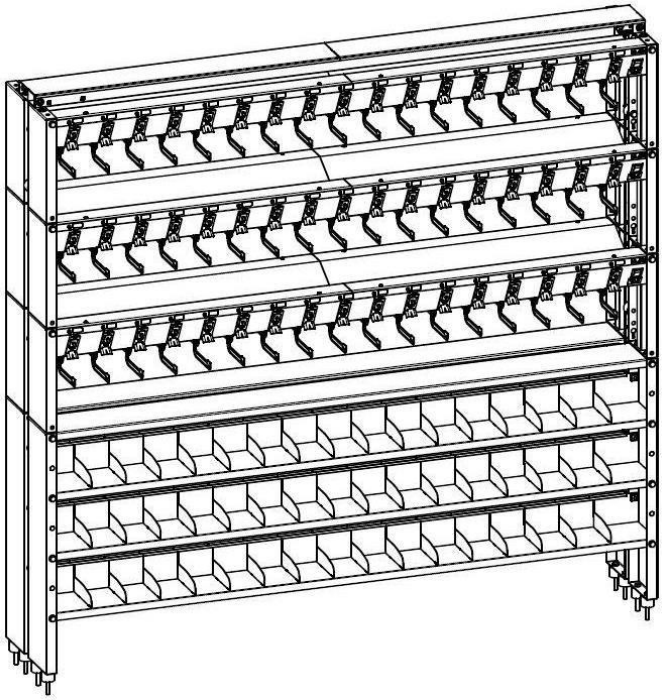
Charging Unit LU-102 (with ”POG shelf”)



Draw. Charging unit LU-102 (with „POG shelf”)

Item	Type of charging unit / Drawing No / Parameter	LU-102			
		973-102-F06H230	973-102-F06H110	973-102-F10H230	973-102-F10H110
1	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2	Quantity of charging stands	102			
3	Quantity of „Segments L-17„	6			
4	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5	Quantity of „Complete shelves” (No 973B2K)	2			
6	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
7	Consumption of power	< 12 A	< 18 A	< 12 A	< 18 A
8	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
9	Visual display	LED diodes			
10	Time of charging	max. 6 h		max 10 h	
11	Mass	< 186 kg			
12	Overall dimensions (l x b x h)	1987mm x 388mm x 1880mm			

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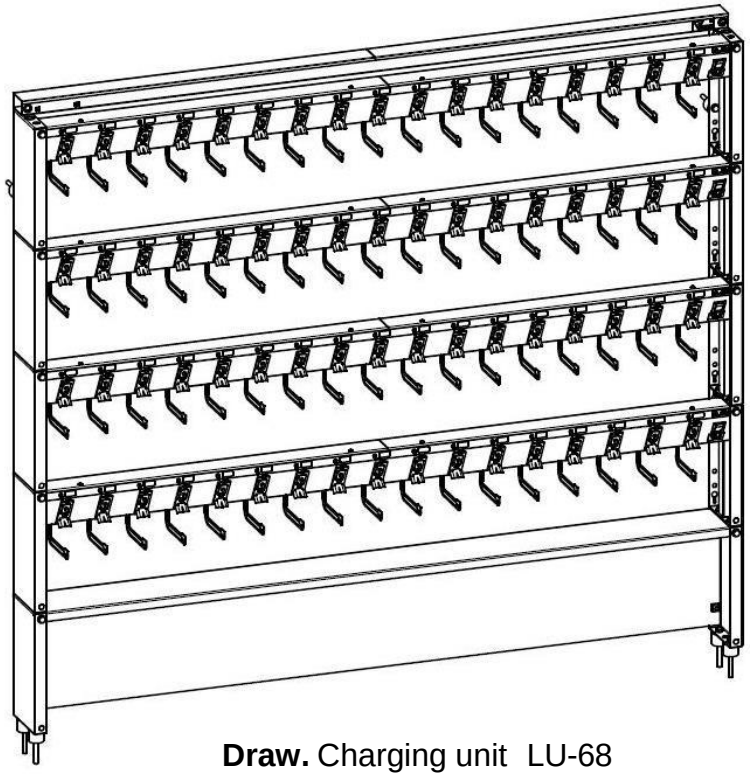
Charging Unit LU-68



Draw. Charging unit LU-68

Item	Type of charging unit / Parameter	LU-68			
	Drawing No	973-68-F06H230	973-68-F06H110	973-68-F10H230	973-68-F10H110
1	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2	Quantity of charging stands	68			
3	Quantity of „Segments L-17„	4			
4	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5	Quantity of „Complete shelves" (No 973B2K)	1			
6	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
7	Consumption of power	< 8 A	< 12 A	< 8 A	< 12 A
8	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
9	Visual display	LED diodes			
10	Time of charging	max. 6 h		max 10 h	
11	Mass	< 91 kg			
12	Overall dimensions (l x b x h)	1987mm x 186mm x 1775mm			

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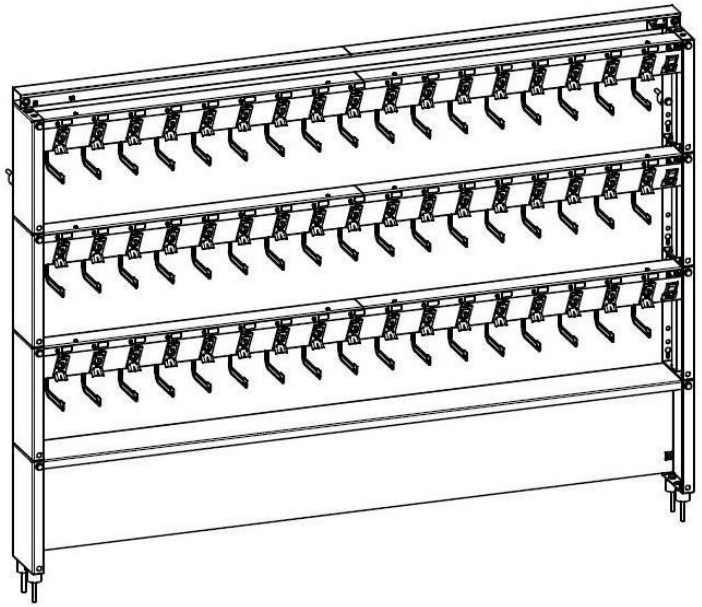
Charging Unit LU-51



Draw. Charging unit LU-51

Item	Type of charging unit / Drawing No / Parameter	LU-51			
		973-51-F06H230	973-51-F06H110	973-51-F10H230	973-51-F10H110
1	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2	Quantity of charging stands	51			
3	Quantity of „Segments L-17„	3			
4	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5	Quantity of „Complete shelves" (No 973B2K)	1			
6	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
7	Consumption of power	< 6 A	< 9 A	< 6 A	< 9 A
8	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
9	Visual display	LED diodes			
10	Time of charging	max. 6 h		max 10 h	
11	Mass	< 73 kg			
12	Overall dimensions (l x b x h)	1987mm x 186mm x 1435mm			

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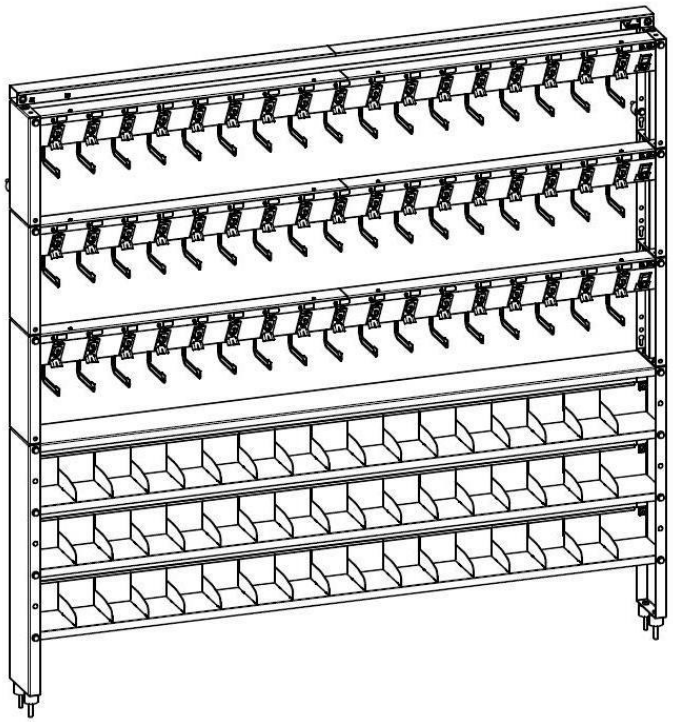
Charging Unit LU-51 (with „POG shelf”)



Draw. Charging unit LU-51 (with „POG shelf”)

Item	Parameter \ Drawing No	Type of charging unit: LU-51			
		973-51-F06H230 POG	973-51-F06H110 POG	973-51-F10H230 POG	973-51-F10H110 POG
1	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2	Quantity of charging stands	51			
3	Quantity of „Segments L-17„	3			
4	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5	Quantity of „Complete shelves” (No 973B2K)	1			
6	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
7	Consumption of power	< 6 A	< 9 A	< 6 A	< 9 A
8	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
9	Visual display	LED diodes			
10	Time of charging	max. 6 h		max 10 h	
11	Mass	< 93 kg			
12	Overall dimensions (l x b x h)	1987mm x 186mm x 1880mm			

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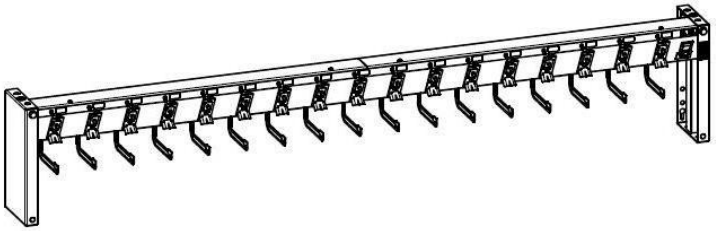
Charging Unit LU-17

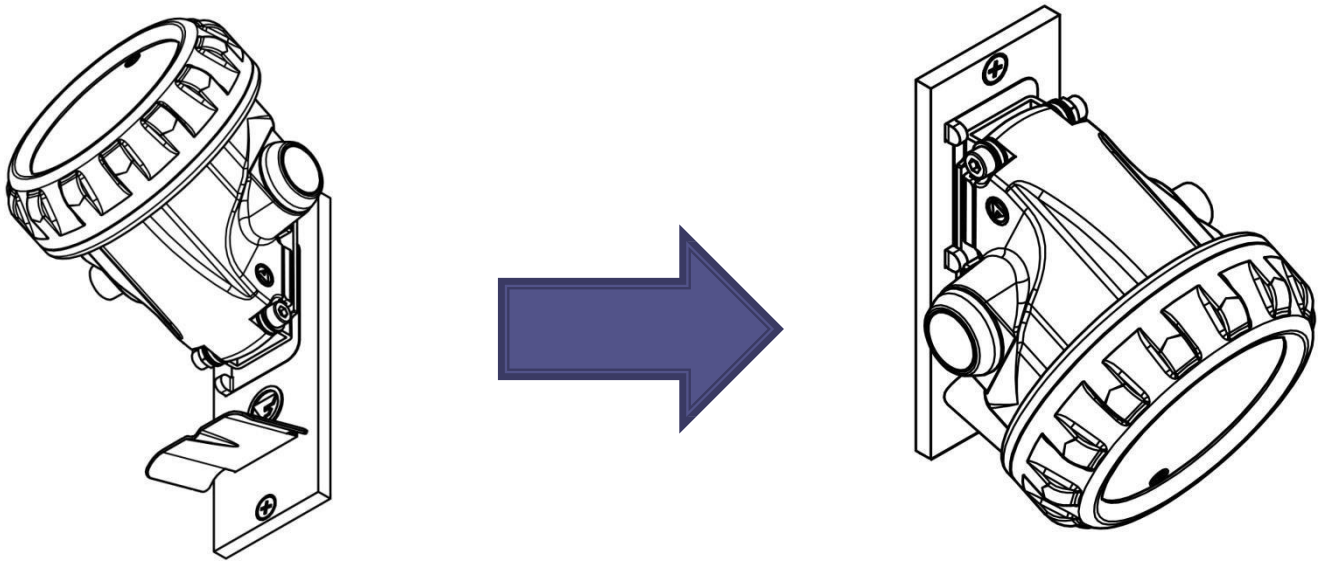


Draw. Charging unit LU-17

Item	Type of charging unit / Parameter / Drawing No	LU-17			
		973-17-F06H230	973-17-F06H110	973-17-F10H230	973-17-F10H110
1	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04		LG-3MH	
2	Quantity of charging stands	17			
3	Quantity of „Segments L-17„	1			
4	„Segment L- 17" number	973A4K/1-F06H230	973A4K/1-F06H110	973A4K/1-F10H230	973A4K/1-F10H110
5	Supply voltage	230 VAC	110 VAC	230 VAC	110 VAC
6	Consumption of power	< 2 A	< 3 A	< 2 A	< 3 A
7	Type of charger clip/ implementation number	FAPX / 1028-095-06H		FAPX / 1028-095-10H	
8	Visual display	LED diodes			
9	Time of charging	max. 6 h		max 10 h	
10	Mass	< 19 kg			
11	Overall dimensions (l x b x h)	1987mm x 186mm x 340mm			

Charging the lamp battery

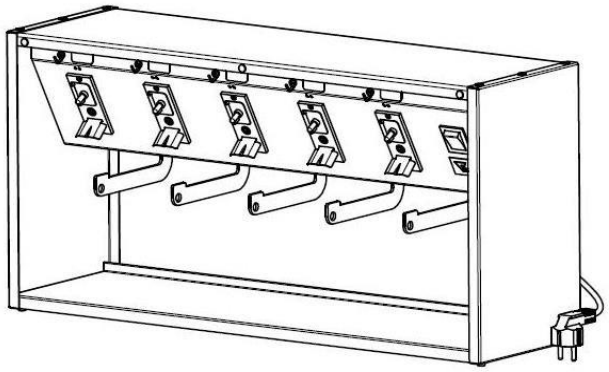
The lamp head is put on the contact pin in the "Contact base complete". Turning the head clockwise by 180° turns the lamp into the charging circuit, the yellow LED "CHARGING" lights up. Charging starts automatically when the lamp battery is switched into the charging circuit. The illumination of the yellow LED indicates that the lamp battery is properly connected and charging has begun.



Draw. Connecting the charging lamp

The LU-5 Charging Unit

The LU-5 type universal charging unit is designed for maintenance free charging of miners cap lamps and signaling lamps (hydride, alkaline battery Ni-MH at a rated voltage of 3.6V) produced by FASER S.A. Depending on the programming version, the charging unit is for charging of LN-04, LN-IZA, LG-3MH and LS-04 cap lamps.



Draw. The LU-5 charging unit

Type of charging unit		LU-5	
Item	Parameter / Drawing No	959/1-06H	959/1-10H
1.	Application - designed to charge cap lamps type	LN-IZA, LN-04, LS-04	LG-3MH
2.	Quantity of charging stands	5	
3.	Supply voltage	88-264 VAC 50/60 Hz	
4.	Consumption of power	max 50 W	
5.	Type of charging	constant current charging	
6.	Visual display	LED diodes	
7.	Time of charging	max 6 h	max 10 h
8.	Mass	max 11,5 kg	
9.	Overall dimensions (l x b x h) (dimensions of the charger module)	672mm x 200mm x 336mm	
10.	Protection degree of housing	IP40 (in accordance with PN-EN 60529:2003)	
11.	Ambient temperature	-20°C ÷ +65°C	
12.	Allowable humidity	96%	
13.	Type of charger clip/ implementation number	FAPX / 1028-095-06H	FAPX / 1028-095-10H
14.	Accordance with directives	2014/30/UE (EMC) 2014/35/UE (LVD)	

The LU-5 Charging Unit

The charger consists of a metal enclosure in which five identical charging stations are placed, and a single-phase power supply that supplies DC voltage to all stations.
Each station is equipped with:

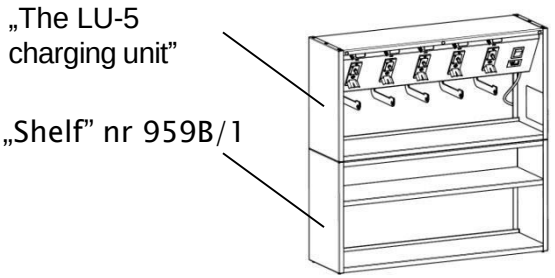
- "Charger" (electronic circuit for charging with operation status indication),
- "Contact stand complete" (contact pin and contact spring),
- "Hook" for hanging the lamp battery.

In addition, there is a main power switch on the front panel of the charger.

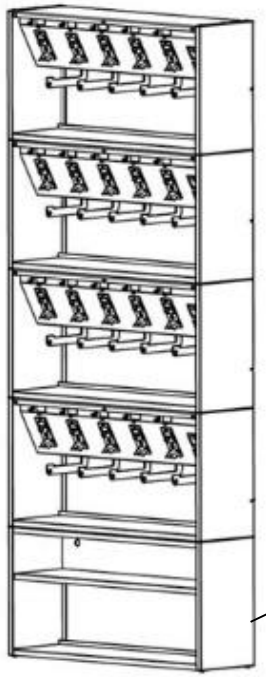
The design of the loader allows:

- hanging on the wall
- setting as free-standing (for example, on a table, on a special "Shelf" No. 959B)
- configuration into sets with a larger number of positions

5 positions



20 positions



Rys. LU-5 charger configurations into sets of more

Universal Stretcher NU-1

The NU-1 Universal Stretcher is used to transport the injured person horizontally as well as vertically from the site of the accident to the point where he will be picked up by medical services. Adaptable to underground mine transport means and use in mine shafts at fires of lower floors, staircases, etc.

Construction Description. The frame and support plate of the stretcher is made of aluminum alloy, which guarantees the rigidity required for the proper alignment of the spine.

The support plate and the headrest are lined with a mattress made of foam rubber and trimmed with a fabric rubberized on one side.

They have springs equipped with wheels that allow moving the stretcher with partial vibration leveling.

The bolster is used to position the victim's head during transport

vertical transport in order to prevent its hanging and pressure on the larynx. Belts are used to prevent the patient from slipping off the stretcher in both horizontal and vertical transport. The footrest is used in vertical transport as a support for the patient's legs. Covers are made of rubberized fabric are used as protection against the pressure of the belts on the body of the victim. The outriggers are used to fix the ropes when vertically transporting the injured person and to achieve an inclination of the stretcher in relation to the vertical within 5°-10°. The saddle is made of steel bars, and then inserted is a sponge rubber mattress covered with rubberized fabric. The saddle is used for vertical transport when the injured person has damaged legs.

Technical data

Weight:

- In vertical transport - 20kg
- In horizontal transport - 15.5kg
- Overall dimensions (length x width x height): 1900 x 530 x 228 mm
- Spacing of running pins - 480 mm

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WG-2M Gas Detector

The WG-2M gas detector is designed to detect and quickly determine the concentration of gas in the air. The gas detector consists of an accordion pump, carbon monoxide tube detectors and equipment. The whole is placed in a metal case, suitable for carrying on the shoulder belt.

The equipment includes a screwdriver for adjusting the capacity, a stepped accordion pump and spare parts in the package. The pouch is a metal container equipped with suitable compartments for placing all detector components.

Technical data:

Item	Parameters / Type if gas detector	WG-2M accordion pump
1.	Overall dimensions	150mm x 55mm x 90mm
2.	Weight	Max 0,3 kg
3.	Displacement capacity	(100±5) cm³
4.	Suction vacuum	$21{,}3^{(-2{,}6\div+4)}\,kPa\,(160^{(-20\div+30)}\,mmHg$
5.	Tightness (vacuum change when plugged socket)	666,1 Pa/min (5mmHg/min)
6.	Expansion time when air is sucked through a reference capillary with a resistance of 20000 Pa at a flow rate of 1dm³/min	(5÷20)s
7.	Cover weight	0,825 kg
8.	Total weight	1,3 kg

SX Carbon Monoxide Absorber type CO 804

Carbon monoxide absorber type 804 is designed for use during prolonged laboratory work, overhaul and repair, during disruption of industrial technological processes and in other situations requiring the use of protective equipment. Carbon monoxide canister CO type: 804 is designed to protect the respiratory system protecting against the harmful effects of carbon monoxide, provided that its concentration at the inlet to the canister is not greater than 0.25% by volume. It is permissible to briefly exceed the concentration of up to 1% by volume. The duration of protective action can be well over 210 minutes, depending on the moisture content. Low ambient moisture content prolongs the protective action time.

Technical data:

	Absorber	SX carbon monoxide
Item	Parameters / Type of absorber	CO 804
1.	Overall dimensions - cross-section - height	ok.140mm x 70mm x ok.270mm
2.	Threaded connection	Rd 40x1/7 in accordance with PN-EN 148-1
3.	Absorber weight	ok. 1,8 kg
4.	Resistance to breathing at a flow rate of 30 l/min at a flow rate of 95 l/min	< 2,6 mbar < 9,8 mbar
5.	Minimum time of protective operation Under conditions of 0.25% CO concentration, moisture content of 20.7 g/m3 ((85%÷90%)WZ) at a sinusoidal flow rate of 30 l/min	Minimum 210 min
6.	Storage period	4 years and 6 months from the date of manufacture

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