FASER S.A.

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

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42-600 Tarnowskie Góry
POLAND

www.faser.pl

70 LAT FIRMY 1954 - 2024

Od 70 lat dbamy o Wasze bezpieczeństwo.
Dziękujemy za zaufanie.

We Serve Your Safety

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
- Rechargeable lamps
- Charging
- 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.

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Chemical Oxygen Escape Apparatus ATU-1 type

Item	Apparatus type / Parameters	ATU-1
	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	

Advantages of the apparatus:

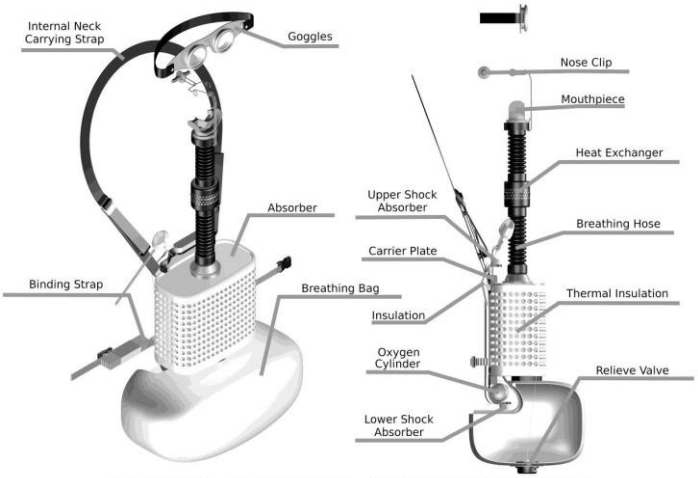
- Simple, intuitive way to open the apparatus
- Ability to breathe freely immediately after activation.
- Contralateral nose squeeze - one-handed use
- Handle for carrying the device in your hand
- Heat exchanger

(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

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)

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.**

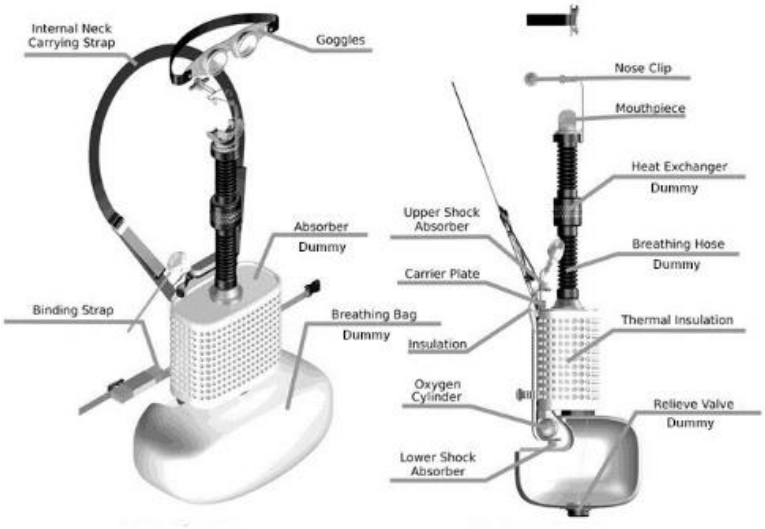
Training Self-rescuer		TR-1
Item	Parameters / Draw. no	1020
1.	Dimensions: - height - width - thickness	about 291 mm about 224 mm about 128 mm
2.	The weight of the apparatus not open with the riser	≤ 3980 g
3.	The weight of the apparatus in use	≤ 3 kg
4.	The apparatus meets the requirements of Annex 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

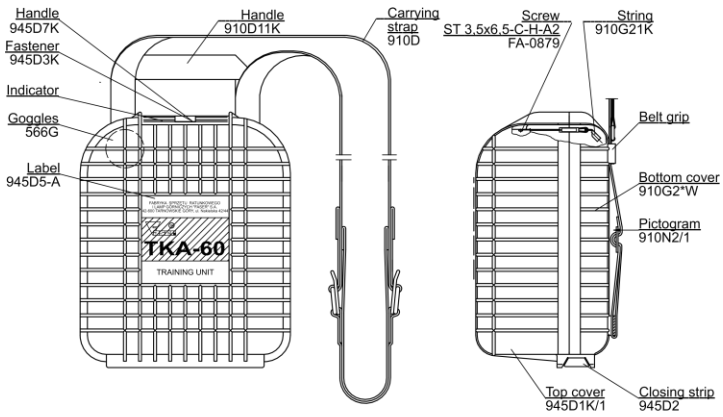
Chemical Oxygen Escape Apparatus KA-60 type

Item	Parameters / Draw. no	KA-60
	Apparatus type	KA-60
	Draw. no	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 13794:2005	

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-K30KS type

The SR-K30KS 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 is designed for use in underground mines in excavations at risk of methane and/or coal dust explosion. It is used to safely leave the area affected by a fire, gas explosionor failure of a chemical installation. It is designed for single use.
The escape breathing apparatus is designed exclusively for self-rescue (escape) from the danger zone in the event of danger. The SR-K30 KS is not a working, rescue or diving apparatus.

Three versions of wearing the apparatus:

- Worn on the waist belt - movable attachment
- Worn on the waist belt - fixed attachment
- Worn on the shoulder

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Oxygen Escape Apparatus SR-K30A type

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

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Oxygen Escape Apparatus SR-K30KS type

Item	Parameters \ Draw. no	909/1
	Apparatus type	**SR-K30A**
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)
9.	EC TYPE-APPROVAL CERTIFICATE	UE/996/2024/1437, edition 1
10.	Escape apparatus with chemically bound oxygen (KO2) Designation "S": Apparatus corresponding to Annex A EN 13794:2002	

Training Unit TSR-K30KS type

The TSR-K30A 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

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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	Draw. no / Parameters	796
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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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")

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Regenerative Apparatus W-70M Type

Apparatus type		W-70M
Item	Draw. no Parameters	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)

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

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

LN-IZA Type Cap Lamp

LN-IZA type headlamp is designed for use in underground mines in pits at risk of methane and/or coal dust explosion, with the possibility of use in an Ex atmosphere
LN-IZA type headlamp:

- is a Group I, M1 category device, with protection level Ma.
- is a device of explosion-proof construction, in intrinsically safe design (level “ia”);
- is suitable for maintenance-free charging, practical in operation, guaranteeing good
- illumination of the workplace in a wide variety of working 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 GLON transmitter operation). LO cover with LOK locator transmitter and emergency light source in the cover (signaling the operation of the LOK transmitter).

For recharging the batteries of LN-IZA type headlamp lamps, it is necessary to use chargers manufactured by “FASER” S.A. - Chargers that guarantee the maintenance of the required charging parameters with full control of the characteristics and charging time.

Small lamp head

Big lamp head

LN-IZA Type Cap Lamp

	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 $I_{ład.}$= 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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Lamp with a smal head 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		

Lamp with a large head 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		

LG-3MH type Cap Lamp

Headlamp type LG-3MH is designed for use in underground mines in pits at risk of methane and/or coal dust explosion, with the possibility of use in Ex atmosphere.
Headlamp type LG-3MH:

- is a device of Group I, category M1, with protection level Ma.
- is a device of explosion-proof construction, in intrinsically safe design (level “ia”);
- is suitable for maintenance-free charging, practical in operation, guaranteeing good lighting of the workplace in a wide variety of working situations.

To charge the batteries of the LG-3MH type of headlamp, use the chargers manufactured by “FASER” S.A. - Chargers that guarantee the maintenance of the required charging parameters with full control over the characteristics and charging time.

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

The LG-3MH type Cap Lamp

Type of lamp		LG-3MH
Item	Draw. no Parameters	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 Iład.= 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		

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	Draw. no / Parameters	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 $I_{lad.}$= 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)

ELESTER S.A.

The CL-01P Cap Lamp

The CL-01P headlamp:

- belongs to Group I, category M1 equipment, with protection level Ma. It is designed for use in underground mines in pits at risk of methane and/or coal dust explosion,
- with the possibility of use in an Ex atmosphere
- belongs to Group II, category 2G equipment, with protection level Gb. It is designed for use in places other than underground mines at risk of explosion of gas, mists and vapors of liquids of explosiveness group IIB, with the possibility of use in zones 1, 2
- is a device of explosion-proof construction, in intrinsically safe execution (level “ia”);
- is suitable for maintenance-free charging, practical in operation, ensuring good illumination of the workplace in a wide variety of working situations.

The lamp does not have a locator transmitter.

To charge the batteries of the CL-01P type headlamp, it is necessary to use chargers manufactured by “FASER” S.A. - Chargers that guarantee the maintenance of the required charging parameters with full control over the characteristics and charging time.

FASER® S.A.

The CL-01P Cap Lamp

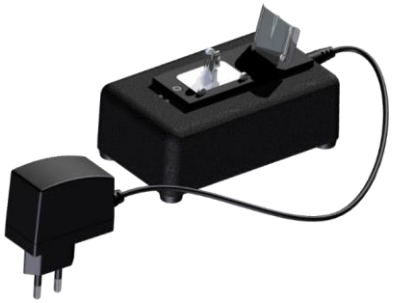
Type of lamp	CL-01P	
Draw. no / Parameters	974/1-PK	974/1-ZA
Weight	0,25 kg	
Rated voltage of battery	3,7V (Li-on)	
Life-span of battery	800 cycles	
Operating time/ Illumination intensity 1. main diode - full light 2. main diode - light with reduced brightness gradual adjustment 3. auxiliary diode in 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)	

FAMUR S.A.

CL-01P lamp chargers

To load the CL-01P type headlamp, use only chargers manufactured by “FASER ”S.A. LUC-...
For loading of headlamps type CL-01P (execution 974/1-PK), there are chargers intended:

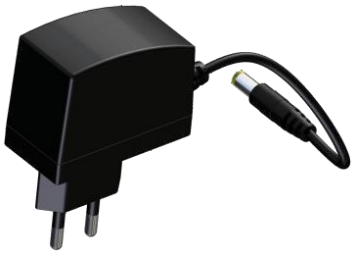
- “LUC-10 type cargo carrier” No. 984/2 (10-station cargo carrier)
- “LUC-1 type charger” No. 1001/1 (1-station charger)



Draw. Charging unit LUC-1

Draw. Charging unit LUC-10

For charging of headlamps of type CL-01P (execution 974/1-ZA) is intended “Power supply CL-01P” No. 974E3K supplied by “FASER” S.A. (the power supply is designed for charging 1 lamp).

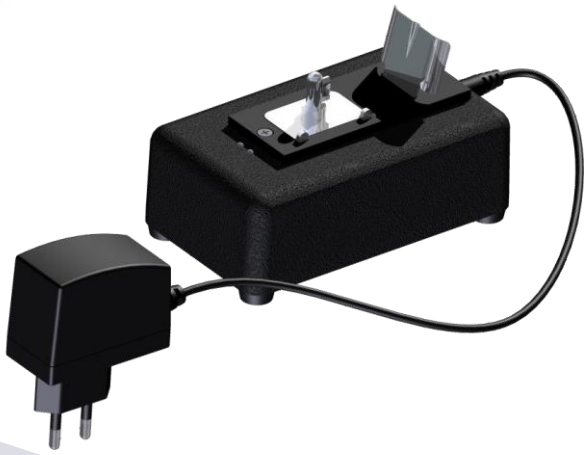


Charging Unit LU-01 type

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	Drawing No / Parameter	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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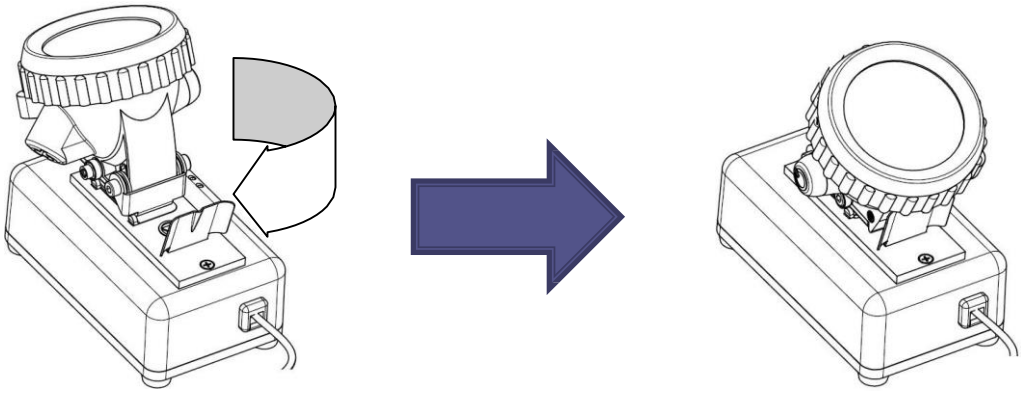
Charging of the lamp battery

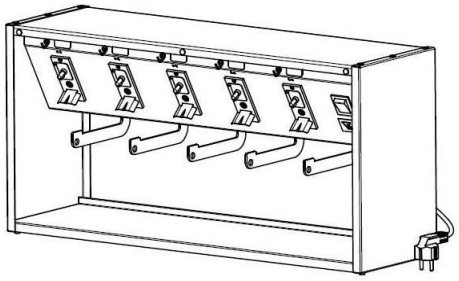
Connect the lamp to the charger. To do this, the head of the lamp is put on the contact pin of the charger. Turning the head clockwise by 180°, the lamp is connected to the charging circuit. The illumination of the yellow LED indicates that the lamp's battery is properly connected and charging has begun.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



Draw. Connecting the lamp for charging

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	Drawing No / Parameter	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.

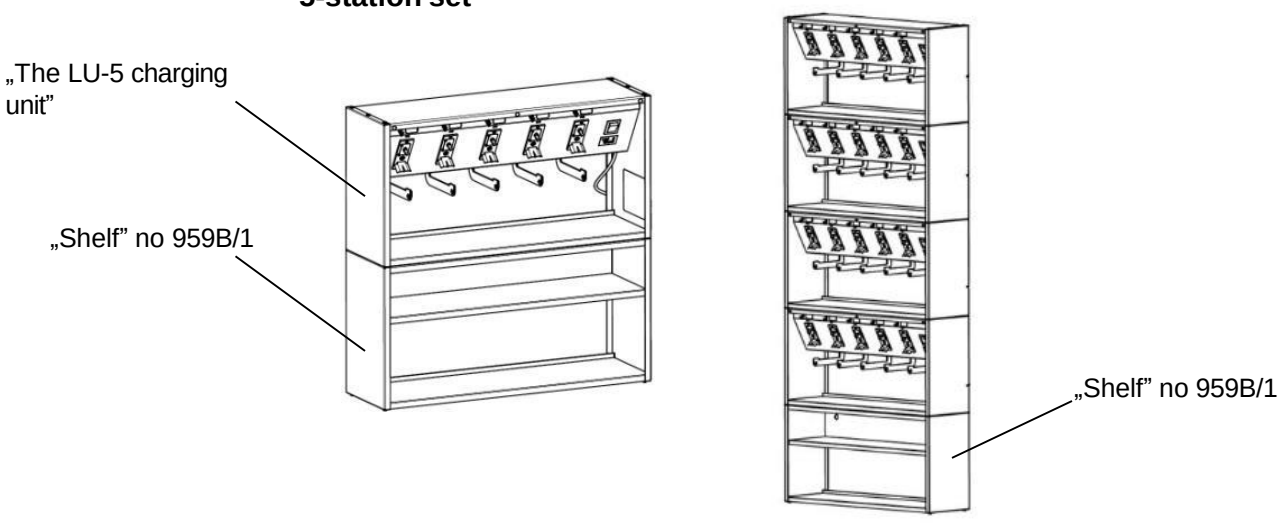
In addition, there is a main power switch on the front panel of the charger.

The design of the charger 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

20-station set

5-station set



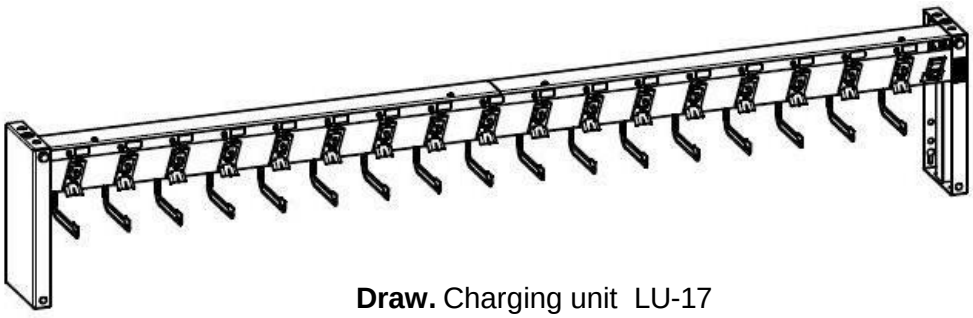
Draw. LU-5 charger configurations in sets

Charging Unit LU-17

The LU-17 charger is designed for maintenance-free charging of lamp batteries manufactured by “FASER” S.A. of the LN-IZA, LN-04, LG-3MH and LS-04 types (Ni-MH “hydride” alkaline batteries with nominal voltage of 3.6V).
Modern chargers placed in the chargers allow full control of the course of charging and discharging the battery with the help of a microprocessor system (individual course of charging and discharging the battery separately for each lamp). Signaling based on LEDs informs the user about the current operating status of the device, i.e. charging, discharging, lamp charged, failure.

Performance characteristics (charger features):

- microprocessor control of the charging process,
- full signaling of the current state of operation of the charger, (distinguished by the state of completion of battery charging - the green LED is lit),
- measurement of actual battery voltages (ignoring voltage drops on connections and wires),
- signaling the state of charge of the battery,
- protection against overcharging the battery (time limits),
- ability to perform a control discharge of the battery with automatic transition to charging (function available from the computer system),
- the ability to interrupt the discharge at any time and switch to charging (function available from the level of the computer system),
- signaling an interruption in the battery circuit (interruption in the process of charging or discharging the battery),
- signaling of device failure,
- protection against self-discharge and discharge of the battery by the electronic system - with the lamp connected after charging the battery,
- protection against loss of supply voltage (continuation of the program after resumption of power supply),
- possibility of cooperation with Computerized Lamp Room Supervision System.



Draw. Charging unit LU-17

Charging Unit LU-17

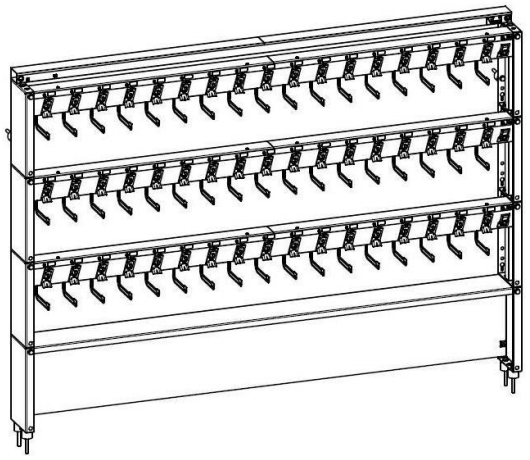
The charger consists of a metal housing in which 17 identical charging stations are placed, as well as a single-phase power supply that supplies DC voltage to all stations. Each station is equipped with:
“Charger” (electronic circuit for charging with indication of the operating status),
“Contact stand 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.

Type chargers		LU -17	
No.	Drawing No. / Parameter	973-17- *	
1 .	Destiny chargers - to charging lamp on the head type	LN- IZA , LN- 04, LS -04	LG -3MH
2 .	Quantity positions for charging	17	
3.	Tension Power Supply	230VAC	
4.	Collection current	< 2 A	
5.	Status indication work	diodes LED	
6.	Charging	max. 6 h	max 10 h
7.	Mass	< 19 kg	
8.	Method charging	landing constant current	
9.	Degree protection housings (according to EN 60529)	IP40	
10.	Temperature surroundings	-20 ° C ÷ +65 ° C	
11.	Permissible humidity	96 %	
12.	Compatibility With Directives	- 2014/30/EU (EMC) - 2014/35/EU (LVD)	

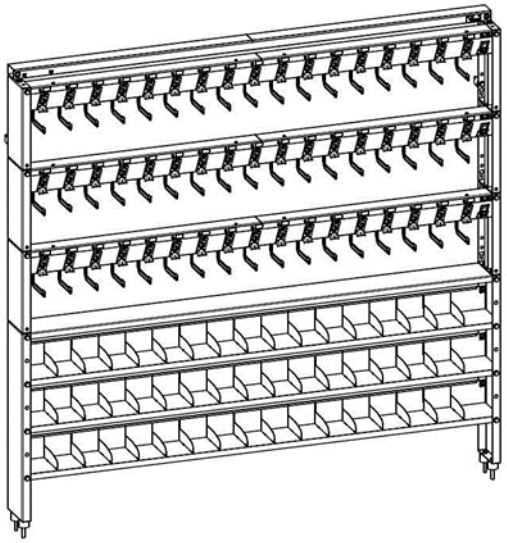
Multiuser sets

The design of the charger allows:

- hanging on the wall
- setting as free-standing (e.g. on a table, on dedicated shelves)
- configuring into pledges with a larger number of positions

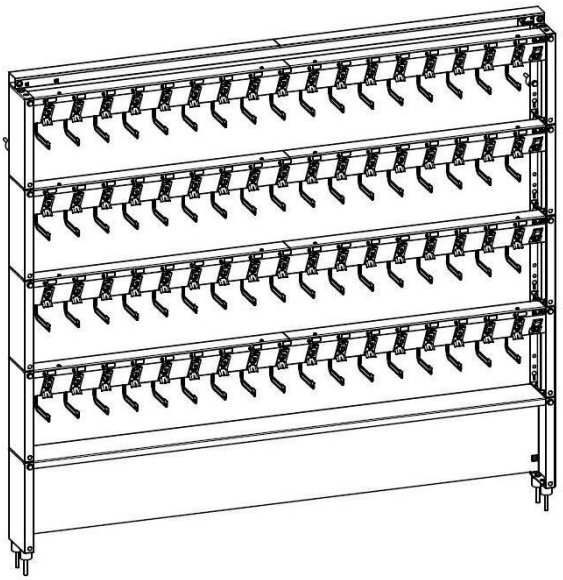


Draw. 51-place set

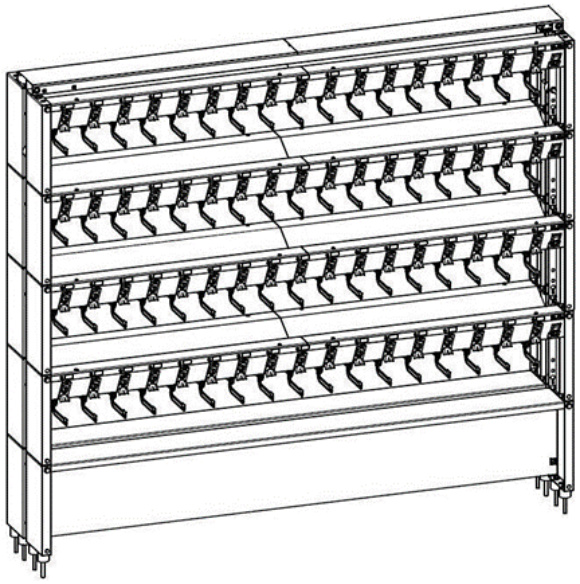


Draw. 51-place set with „POG shelf”

Multiuser sets

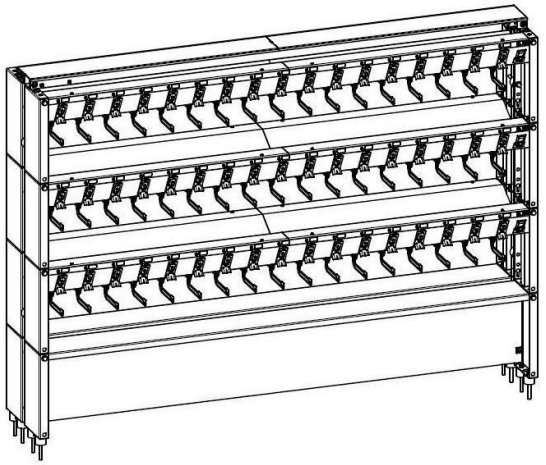


Draw. 68-place set

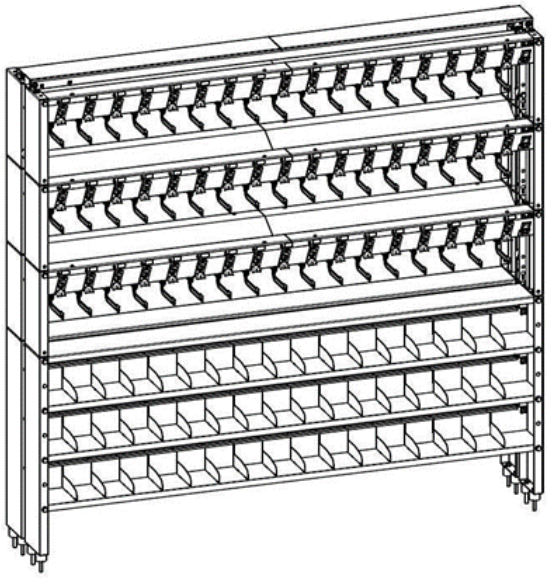


Draw. 136-place set

Multiuser sets



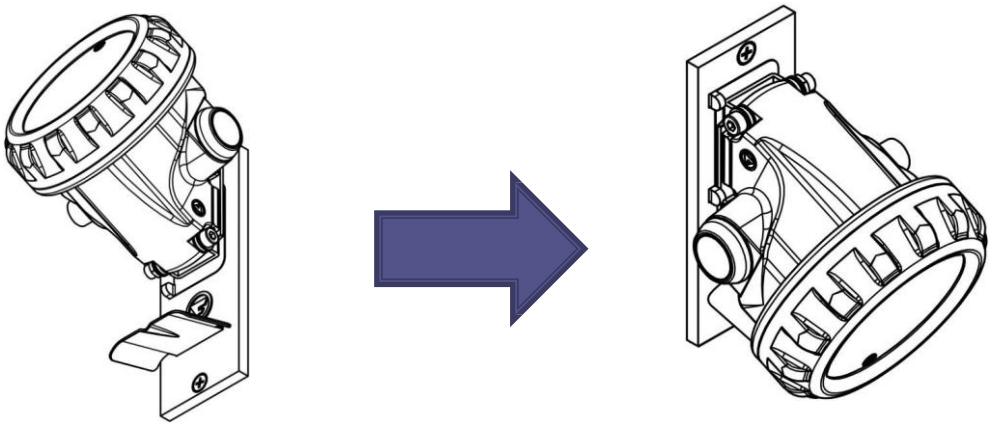
Draw. 102-place set



Draw. 102-place set
with „POG shelf”

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

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

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.

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

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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.

	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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