UNIVERSIDADE DO PORTO
REITORIA

PASTA N.º 4.050
Farmacologia (Prof. Santiago)
- do fundo de corredor
- embutida Prof. Walter Oswald (futura)

Fisiologia
- Inundação ao fundo do corredor
- juntura de deambulire 4 e 7
- Hospital de arco (Bióteos)
- teto da contagem da sala de reuniões

Sala de trabalho freiberg
- 25 cadeiras de poliprópileno
- 2 mesas quadradas (1m x 1m)
- tapete e ferro de salvar mentolário
- laboratório com fumaça vidrada em fun da altura
- 1 ecrã de projeção
- 1 quadro negro e cavalete
- Iluminação fluorescente
GAIOLA MOVEL PARA CAES

FACE ANTERIOR S/ PORTA

FACE LATERAL

FACE POSTERIOR

FACE LATERAL DO TABULEIRO

FACE SUPERIOR
EBECO
E. BECKER & CO. GMBH
Hermannstraße 2 – 8
D-4620 Castrop-Rauxel · Germany
Phone: 02305 – 72031 · Telex 8 229 544

ANIMAL CAGES
ANIMAL LABORATORY EQUIPMENT
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<td>Accessories for cages</td>
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<td>16.0</td>
<td>Cleaners</td>
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<tr>
<td>17.0</td>
<td>Flying insect exterminater</td>
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<td>19.0</td>
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List of contents

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<td>2.0</td>
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<td>Flying insect exterminater</td>
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<td>18.0</td>
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<tr>
<td>19.0</td>
<td>Bioklimatik Air Steriliser</td>
<td>52</td>
</tr>
</tbody>
</table>
Equipment for feeding up animals and laboratory

Since establishing of our firm in 1948 we have been manufacturing cages for animals. Shortly afterwards we added cages for experimental animals. The result of year long development and fertile collaboration with the customers (pharmaceutical industry, scientific institutes and animal-breeding firms) you find in this catalogue.

We offer you the following service:

- we inform you about new developments,
- we set up plans for exhibition and inform you about the number of animals in the experimental animal-keeping, considering the species, number, utilization of space and the daily work by drawings and by exact calculation,
- if desired we give you the names of institutes and firms near you, which use our equipment.

Our products give you the following advantages:

- best constructions on the base of practical experience,
- our racks and sets with its cages and lids bring order and cleanness to your animal-laboratory. This gives you the possibility to work reasonably,
- our racks and sets can extensively be equipped with automatic control regarding watering and draining.

From the beginning we influenced form and design of the cages and covers, which is your profit, if you buy our equipment.
1.0 Animal cages for mice, rats, hamsters, guinea pigs a.s.o.

1.1 Animal cages made of Makrolon

Short indication: M

Order number: see table pages 3

For the experimental breeding of animals and animal experiments in general, Makrolon (Polycarbonate) provides an optimal combination of properties, that cannot be rivalled by any other plastic:

- is transparent
- proof against fracture and heavy blows
- low heat conductivity
- light weight
- formstability at high temperatures:
  - can be autoclaved at 118 to 120 °C
  - can be sterilized with hot air up to 120 °C
- no adverse physiological effects
- can be stacked

If your Makrolon cages are properly treated and looked after, this will result in longer durability.

However no unlimited durability can be expected because of the extrem high requirements by cleaning, disinfection and sterilization.

1.2 Animal cages made of Polypropylene

Short indication: P

Order number: see table page 3

Cages from Polypropylene are chosen, it not so high requirements are expected concerning the durability and usability. They have the following attributes:

- non-transparent, milky
- proof against fracture and heavy blows
- keeps in form at temperatures to 70 °C
- no adverse physiological effects
- can be stacked
# 1.0 Experimental cages for small animals

<table>
<thead>
<tr>
<th>Size of cage / type</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>III dbbr</th>
</tr>
</thead>
<tbody>
<tr>
<td>length × width top exterior mm</td>
<td>235 × 135</td>
<td>260 × 200</td>
<td>420 × 260</td>
<td>590 × 380</td>
<td>420 × 570</td>
</tr>
<tr>
<td>length × width bottom interior mm</td>
<td>215 × 100</td>
<td>220 × 160</td>
<td>375 × 210</td>
<td>550 × 330</td>
<td>370 × 510</td>
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<tr>
<td>height mm</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>200</td>
<td>150</td>
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<tr>
<td>floor area cm²</td>
<td>200</td>
<td>350</td>
<td>800</td>
<td>1815</td>
<td>1890</td>
</tr>
<tr>
<td>average number of animals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>corresponding to weight and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>utilization of the animals</td>
<td>4 mice</td>
<td>8 mice</td>
<td>18 mice</td>
<td>40 mice</td>
<td>50 mice</td>
</tr>
<tr>
<td></td>
<td>1 rat</td>
<td>2 rats</td>
<td>5 rats</td>
<td>18 rats</td>
<td>20 rats</td>
</tr>
<tr>
<td></td>
<td>2 hamsters</td>
<td>3 hamsters</td>
<td>2 guinea pigs</td>
<td>5 guinea pigs</td>
<td>6 guinea pigs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>order no.</th>
<th>short indication</th>
<th>weight kg</th>
<th>order no.</th>
<th>short indication</th>
<th>weight kg</th>
<th>order no.</th>
<th>short indication</th>
<th>weight kg</th>
<th>order no.</th>
<th>short indication</th>
<th>weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makrohon-cage M</td>
<td>01.0001 M I</td>
<td>0.30</td>
<td>01.0002 M II</td>
<td>0.46</td>
<td>01.0003 M III</td>
<td>1.02</td>
<td>01.0004 M IV</td>
<td>2.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polypropylene-cage P</td>
<td></td>
<td></td>
<td>01.0102 P I</td>
<td>0.31</td>
<td>01.0103 P II</td>
<td>0.68</td>
<td>01.0104 P IV</td>
<td>1.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polystyrol-cage PES</td>
<td></td>
<td></td>
<td>01.0202 PES I</td>
<td>0.05</td>
<td>01.0203 PES II</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet metal-cage BK</td>
<td></td>
<td></td>
<td>01.3022 BK I</td>
<td>1.14</td>
<td>01.3023 BK II</td>
<td>1.68</td>
<td>01.3024 BK III</td>
<td>3.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet metal-cage with wire bottom BKL</td>
<td></td>
<td></td>
<td>01.3037 BKL I</td>
<td>1.12</td>
<td>01.3038 BKL II</td>
<td>1.63</td>
<td>01.3039 BKL III</td>
<td>3.30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet metal-cage with front and bottom made</td>
<td></td>
<td></td>
<td>01.3032 BKFL I</td>
<td>1.09</td>
<td>01.3033 BKFL II</td>
<td>1.57</td>
<td>01.3034 BKFL III</td>
<td>3.12</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>of wire BKF</td>
<td></td>
<td></td>
<td>01.3012 DK I</td>
<td>0.75</td>
<td>01.3013 DK II</td>
<td>1.30</td>
<td>01.3014 DK III</td>
<td>2.25</td>
<td>01.3018 DK III dbr</td>
<td>2.01</td>
<td></td>
</tr>
</tbody>
</table>

* only when ordered, not in stock

cages of sheet made only of stainless steel
for cages of wire only reference number for type made of stainless steel is valid for type chromium-plated Order-No. 01.2 . . .
1.3 Animal cages made of Polystyrol

Short indication: PES

Order number: see table page 3

These cages are for single use if series of experiments with toxic components, rays or something like that are made. They can be used either as inserts for cages made of Makrolon-, Polypropylen-, sheet or wire, (0.8 mm P.S.) or for single arrangement on tables or shelves (1.4 mm P.S.), when at the beginning the thickness of the sheet is chosen correspondently. In any case they can be used with covers of correspondent size.

Polystyrol is slightly transparent and easily inflammable. So after use the cages can easily be destroyed by burning. No poisonous gas or acid will be produced by burning.

1.4 Animal cages made of sheet

Short indication: BK Cages of sheet
BKL Cages of sheet with running bottom made of wire
BKFL Cages of sheet with front and running bottom made of wire

Order number: see table page 3

These cages are produced of stainless steel, thickness of sheet 0.7 mm, material number 1.4301. In their dimensions they correspond to the cages made of plastics and can be used together with normal covers. Their high quality guarantees high stability, retaining form and temperature stability and long duration of life.

Cages of sheet are used for breeding and keeping mice, rats and guinea-pigs and as litter cages for mice and rats.

Please, attention that racks with bins for droppings must be used, if you choose cages with bottoms of wire.
1.5 Animal cages made of wire

Short indication: DK
Order number: see table page 3

Wire cages are often used instead of the plastic cages, especially for long-duration experiments. The wire cages match the dimensions of the plastic cages, so that the lids can be used for both wire and plastic cages.

The clear width of the elded wire meshes is about 8 mm, so that even young animals cannot escape. Wire cages should be kept out of drafts as far as possible.

The racks for wire cages always have places to fit droppings trays.

We only have wire-clothed cages from stainless steel in stock. If desired, wire-clothed cages are deliverable in chromium-plated designs, but only in larger numbers.

1.6 Riser for cages type III

Short indication: ZA III
Order number: 01.3008
Weight: circa 1.05 kg

The riser increase the clear height of type III cages by about 5 cm. The riser is suitable if one is keeping larger rodents, for example, fully grown rats and, above all, guinea pigs. The riser fits on the top of the cages. Every lid of type III fits on the riser.

1.7 Divider for animal cages

Short indication: KT 1  KT 2  KT 3
Order number: 01.3001  01.3002  01.3003

By inserts the cages can be parted and so by using standardized elements it is possible, to keep small rodents separately and to save space. Stainless steel which fit to the form of the cage an lid and which are kept to distance by nose sheets, separate the cage in the longitudinal expansion in divisions of about the same bottom area (2 at type I and 3 at type II and III). In each division a drinking-bottle can be installed in the lid-rack and the food is placed around the drinking cap.
1.8 Insert-Floors for plastic cages

Short indication:  see following table
Order number:  see following table

Insert-floors lie on the bottom of the cages and their dimensions therefore match the corresponding cages. They are made of stainless steel.

They have a distance of about 20 mm between bottom of the cage and tread and in that way, they prevent a direct contact of the experimental animals with litter and droppings.

<table>
<thead>
<tr>
<th>Insert-floors</th>
<th>mesh 10 x 10 mm</th>
<th>mesh 10 x 30 mm</th>
<th>mesh 10 x 20 mm</th>
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<td>order-No.</td>
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<td>for cages typ I</td>
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<td>EB 1/10</td>
<td>0.12</td>
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<tr>
<td>for cages typ II</td>
<td>01.3047</td>
<td>EB 2/10</td>
<td>0.17</td>
</tr>
<tr>
<td>for cages typ III</td>
<td>01.3048</td>
<td>EB 3/10</td>
<td>0.37</td>
</tr>
<tr>
<td>for cages typ IV</td>
<td>01.3044</td>
<td>EB 4/20</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Use and Maintenance of Makrolon® Cages for Experimental Animals

Care: Use an ample amount of bedding capable of absorbing the excrements of the animals and replace it often enough according to the number of animal kept. The cages can be identified with lettered adhesive tapes or with crayons. Residues can be removed with ethyl alcohol. Never use any other solvents. Inscriptions made with felt-point pens can in most cases not be removed and may attack the surface. The cages can also be identified by attaching tags to the lids.

Cleaning: We recommend our special cleaner BEROL 25 S with disinfecting effect. This cleanser on the basis of acidity dissolves urine stone and removes feces as carefully as possible. Doses: for manual cleaning 5 %, for one-chamber washing apparatus 1 %, for two- or more chamber washing apparatus 0.8 % for prewashing and main-washing and 0.2 % for re-washing (1 % = 1 litre of BEROL 25 S for 100 litres of water). BEROL 25 S does not contain any hydrochloric acid, does not foam and is therefore especially suitable for washing apparatus.

If you wash the cages frequently, use softened water to help prevent a whitish grey layer forming from on the MAKROLON®.

Disinfection: If you intend to disinfect the cages additionally, remember that solutions of disinfectants may have an adverse effect upon the life of MAKROLON® depending upon their composition. Disinfectants derived from phenol, for instance, have such an adverse effect. In cases of doubt, apply to the manufacturer.

Always make sure that wetted with disinfectants are never heated.

Sterilization: Cages should not be sterilized while containing clean or contaminated bedding. Thermal sterilization may cause substances to be released from the bedding which may cause irreparable damage to the surface of the cages and to the structure of MAKROLON®, forming whitish layers on the bottom and walls of the cage, inducing cracks and fissures particularly in the corners, and reducing the resistance to fracture and impacts.

Chemical Sterilization: MAKROLON® can be chemically sterilized without any damage by using 2% peracetic acid. (Observe safety regulations when handling peracetic acid!)

Hot Air Sterilization: PAG® cages for experimental animals are sufficiently stable up to temperatures of about 120 deg. C. At temperatures above 130 deg. C, the MAKROLON® components are subject to deformation by their own weight, particularly when they are stacked. The local occurrence of hot spots by far exceeding 130 deg. C is a drawback frequently observed with hot air sterilization. This can be eliminated by installing the control thermometer in the hot air outlet.

Sterilization by Steam: PAG® cages may be autoclaved at temperatures from 118 to 120 deg. C. Stacks in heights of more than 80 cm should be avoided as this would impose an excessive load on the bottom cages during the sterilization process. Accurate and fast-acting temperature controls and a reliable supply of steam must be available if the cages are to be satisfactorily sterilized with steam. A frequent drawback is the carry-over of alkaline corrosion inhibitors, such as sodium liquor and calcium carbonates, etc. from the boiler feed water by an excessive steam flow rate. Alkaline substances may destroy the plastic material and calcium carbonate may cause dull, whitish layers on the surface of the cages.

Recomendation for the Use and Care of Wire Lids and Wire Cages and Racks

Lids and cages made of stainless steel become expedient with our special cleaner BEROL 25 S. Treat. If possible, all other lids and cages made of wire or sheet metal should be washed in a washing machine should be washed in a washing machine to which Prl detergent is added. After washing in the machine, the lids and wire cages, in particular, should be placed in a hotair machine or dried in some other way to prevent remaining moisture causing rust at the wire junctions. To remove hardened urine, it is best to use a steamjet apparatus. In the case of Nirosta parts, weak acids can also be used.

The racks can be cleaned with a steam-jet apparatus without any addition. If such an apparatus is not available, hot water to which Prl has been added and bristle brushes should be used. The racks can also be autoclaved, as the castors withstand the temperature in autoclaves. In some firms, the rack is then put into autoclave upsidedown to prevent a possible deformation of the castors.
All drop on lids, standard lids and tensioned lids have following specialities:

Foods loss is very largely eliminated by the special form of the food crib.

The cribs in the lids end at metal sheets at both sides. This prevents the food being soiled by excrements.

Each lids with continuous food crib is supplied with a dividing sheet of metal, that prevents the animals from gnawing the Makrolon-Bottle. This sheet of metal separates the food and drinking bottle compartments.

The Nirosta lids are made of stainless chromium-nickel steel, material-No. 1.431. These lids are electropolished after production and offer the best protection against rust for years. The Nirosta lids can be recommended, since they are more economic in the long run despite their price.

The galvanized lids have a zinc film of about 20 μ. They are subsequently chromated to provide better rust protection. The galvanized lids are very cheap and provide adequate surface protection.

The chromium-plated lids are plated by the duplex-nickel-chromium process. This process is used to achieve specially pore-free nickel films. In the process different nickel films are deposited in two separate galvanizing baths to provide exceptionally good resistance to corrosion. The resistance to corrosion is further increased by an additional chromium film. The total coating is about 20 μ. This process guarantees a particularly resistant surface.
## 2.0 Lids for animal cages made of plastic, sheet metal and wire

<table>
<thead>
<tr>
<th>Sizes of lid / type</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>III dbr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions mm</td>
<td>240 × 140</td>
<td>265 × 205</td>
<td>425 × 265</td>
<td>600 × 390</td>
<td>570 × 420</td>
</tr>
<tr>
<td></td>
<td>order no.</td>
<td>order no.</td>
<td>order no.</td>
<td>order no.</td>
<td>order no.</td>
</tr>
<tr>
<td></td>
<td>short indication</td>
<td>short indication</td>
<td>short indication</td>
<td>short indication</td>
<td>short indication</td>
</tr>
<tr>
<td></td>
<td>weight kg</td>
<td>weight kg</td>
<td>weight kg</td>
<td>weight kg</td>
<td>weight kg</td>
</tr>
</tbody>
</table>

### 2.1 Lids with continuous food cribs

- **Standard lids**
  - 02.3411 DST I 0.34
  - 02.3412 DST II 0.43
  - 02.3413 DST III 0.89
  - 02.3414 DST IV 1.44
  - 02.3518 DÜ III dbr 1.49

- **Drop on lids**
  - 02.3512 DÜ II 0.47
  - 02.3513 DÜ III 0.93
  - 02.3614* DSP IV 1.42
  - 02.3618* DSP III dbr 1.22

- **Tensioned lids**
  - 02.3612 DSP II 0.43
  - 02.3613 DSP III 0.76
  - 02.3604 TB IV 0.13
  - 02.3403 TB III 0.08

- **Dividing metal sheet**
  - 02.3401 TB I 0.07
  - 02.3402 TB II 0.07
  - 02.3403 TB III 0.08

### 2.2 Lids with crib on one side

- **Standard lids**
  - 02.3422* DST Ile 0.48
  - 02.3423 DST IIle 0.84

- **Drop on lids**
  - 02.3522 DÜ IIle 0.51
  - 02.3523* DÜ IIIle 0.88

- **Tensioned lids**
  - 02.3622* DSP IIle 0.47
  - 02.3623* DSP IIIle 0.77

### 2.3 Lids without food and drinking cribs

- **Standard lids**
  - 02.3431 DST I oR 0.24
  - 02.3432* DST II oR 0.32

- **Drop on lids**
  - 02.3532 DÜ II oR 0.35

- **Tensioned lids**
  - 02.3632* DSP II oR 0.30

### 2.4 Special lids

- **Standard lids for guinea pigs**
  - 02.3416 DST III MS 0.67

- **Tensioned lids with 2 food cribs**
  - 02.3643 DSP III/2 0.85

---

*Only order number for type made of stainless steel
for type made of galvanized Order-No. 02.1...
for type made of chromium-plated Order-No. 02.2...

* = not in stock, manufacturing only if larger numbers are ordered
3.0 Racks for animal cages made of plastic, sheet metal or wire

Short indication: see table page 11
Order number: see table page 11

It has proved extremely convenient to arrange the animal cages made of plastic, sheet metal or wire in racks.

The racks on castors are particularly advantageous, offering great flexibility for reorganization.

Our galvanized or stainless steel racks are made of tube and section iron. They have following advantages:

- space-saving accommodation
- good accessibility to the cages, thereby saving of time for feeding and carrying out of experiments
- castors made of neoprene. This means that the complete rack can be autoclaved.

The racks are fitted with castors 100 m Ø. If requested, castors 125 mm Ø or stands can be supplied at additional costs.

Moreover the racks can be equipped with distance-castors which prevent damaging of walls and doors in operation.

All the racks for animals cages made of plastic, sheet metal or wire have the same length, circa 1.230 mm, and the same height, circa 1.780 mm. The depth depends on the cage type.

The difference between the racks for cages made of plastic, sheet metal or wire is that the racks for cages made of plastic and sheet metal with closed bottom always have 6 or 7 storeys, while the racks for cages made of sheet metal or wire with running bottom have only 5 storeys. In this case there is an additional space between each storey to fit droppings trays.
<table>
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<th>Order No.</th>
<th>Type</th>
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<th>Stainless Steel</th>
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<th>Weight (kg)</th>
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</table>

*Not in stock, manufacturing only if larger numbers are ordered.

Type L = stands made of tube 60/20 mm welded in L- or J-form respectively.
Type R = stands made of tube 30/15 mm welded in frame-form respectively.
3.1 Racks with automatic watering-installation for cages made of plastics, plate and wire for small animals

Short indication: like normal skeletons with addition aT, for example G II d/70 L aT

Order number: like normal skeletons (see schedule page 11) however number 83 in front instead of 03, for example 83.3177

Skeletons for cages made of plastics, plates and wire according to 03 can be equipped with automatic watering installation, by this the installation of watering bottles made of makrolon is not necessary. Cages made of plastics get a round or long loop at the front side covered with stainless steel, cages made of plates get a perforation at the corresponding place. The watering conduits made of stainless steel with welded watering nipples made of stainless steel are installed at the rear in one-sided skeletons, in double-sided skeletons they are in the middle, and that horizontally. The connection from floor to floor at the front side of the skeletons is made by chrome-plated angle pipes and short straight pipes.

At the highest point of the watering pipe an evacuation-valve is installed. Nearly in the level of the upper watering pipe a bilaterally closing connection of plastics is installed for connecting the watering pipe to the circular conduit or to the supply conduit. The connection stops the flow of water.

The watering valves work with a pressure of about 0.3 bar. This pressure must be adjusted by a pressure reducing valve in the supply conduit.

In addition to the pressure-regulating valve we recommend to install a filter for gathering fibres at the beginning of the supply conduit. This filter shall prevent the infiltration of suspended substance or foreign substance in the very sensible watering valves for avoiding leakage.
3.2 Racks with automatic watering installation and dropping gutter for cages made of plastics, plates and wire for small animals

Short indication: like normal skeletons however with addition WR, for example G II d/70 L WR

Order number: like normal skeletons (see schedule page 11) however number 93 in front instead of 03, for example 93.3177

If the watering valve leaks or if the experimental animals lie one on the other and the stem of the watering valve is pushed up by one of the animals there is the danger in the night or in unwatched periods that closed cages (cages of plastics or plates) run full of water and the animals get drowned. By that test-series become useless or wrong. To prevent that the ends of the watering nipples are not in the cage, but in a short distance before the cage, but so near that the animals can still reach the watering nipples from the cages, which reasonably have long loops. Then the dropping water must be caught by a gutter fixed under the watering nipples and it is drained to a vertical pipe at the front of the skeleton. A dropping gutter is necessary because of the construction of the cages, for without gutter the dropping water would fall into the cages which are one floor lower, when this arrangement is used.

3.3 Movable universal skeletons for cages made of plastics, plates and wire for small animals

Short indication: UG, see as per margin

Order number: UG, see as per margin

Dimensions: length: about 1,230 mm
depth: about 600 mm
height: about 1,780 mm

2 movable L-skeletons are combined to each other by cage-frames corresponding to your choice and in the same realization as the normal skeletons. As the cage-frames are screwed, they can be changed to frames of other cage-types at any time. That means there is the possibility to arrange frames of different cage types in movable universal skeletons at the same time. Please inform us in your order about the desired kind of cages for the universal skeleton.

If connected cages are desired, six floors of cages can be arranged when the floor distance is 250 mm. If the cages are open at the bottom, the floor distance must be 300 mm and only 5 floors are possible because for droppings trays and the frames for the droppings trays.
3.5 Static Universal Skeletons, Wall-Construction for cages made of plastic, sheet metal and wire for small animals

Short indication: WK see schedule
Order number: see schedule
Dimensions: length each field about 1800 mm
  depth depending on the size of cage
  height wall-bars about 1700 mm

The big advantage of a wall construction consists in a free space under the skeleton for easier cleaning of the floor.

U-bars with a rectangular perforation in intervals of 50 mm are fixed a ratcheting gauge of 1180 mm vertically to the wall. The perforation is so wide that two cage-frames of side by side fields can be put in. For better air-circulation and cleaning the U-bars have a distance of about 50 mm from the wall. For compensation of unevennesses of the wall the lower distance-holder of the U-bars can be regulated in height.

In the choice of the cage-frames for cages of type I-IV from plastic, sheet metal or wire you are free at the starting equipment of if you eventually want to change equipment later that means, you can put – like in the movable universal skeleton different types of cages in one wall-construction. If sheet metal cages with running bottom and wire cages are used, you must think of the frame for droppings trays.

The ratcheting gauge of the rectangular perforation of the U-bars causes a floor-distance for the cage-frames of 250 mm and 300 mm, fast gauge is especially for cages with droppings trays.

The universal skeleton, which can be delivered in galvanized or in stainless steel, can be equipped with an automatic watering installation. This watering installation, however, is no more variable in relation to the frame for different types of cages, if installed.

If the construction or bearing strength of the walls doesn’t allow a clamping of the bars to the wall, stands from perforated rectangular pipes can be put in, too, if the galvanized type is used.

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<tr>
<th>article</th>
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<th>order no. stainless steel</th>
<th>weight kg</th>
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<td>03.3120</td>
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3.6 Universal Rack of Aluminium

Short indication: WGA

The rack consists of extruded profiles of armour-aluminium with a surface of tarnished aluminium protective coating.

Brackets are fixed to the wall at the top and at the bottom for taking up flat iron bars which run horizontally. Vertical profile girders, which can infinitely variably be moved to the sides and are fastened by set screws in the desired interval, can be set on these flat iron bars. These profile girders take up the supporting arms of double-T-shapes, whereby the double-T-shapes can again be moved infinitely variably in the height. By choosing double-T-shapes with a web-height of 50 mm and a breadth of 30 mm it is possible to hang in cages and droppings trays. The length of the supporting arms depends on the sizes of the cages, but should not exceed 600 mm.

Because of the universal adjustability of the profile girders and supporting arms it is possible to arrange racks for each possible type and size of cages. Furthermore there is the possibility to arrange supporting plates so that a shelf which is movable in the height can be made of this.

The whole rack has enough distance to the wall, so that an incontestable cleaning and disinfection of the wall is given.

The flat iron bars and supporting arms are full-shapes, the vertical profile girders are hollow shapes, which are locked at the top and at the bottom by aluminium moulded pieces.
4.0 Animal cages for guinea pigs and rabbits

Short indication: see table page 17  
Order number: see table page 17

The cages, which are specified here, are inserted in corresponding supports of frames or sets. The upper side is open and they are covered by sheets or wire-lattices, which belong to the frames. If specially ordered, the cover of the single cage can be made by a wire cover, which belongs then to the cage.

The breeding cage MZK 80/25 for guinea pigs, which mostly gets a wire-lattice because of its small height, has a closed bottom.

For saving space, when stored for transport and for cleaning in the washing machine the metal cages (stainless steel) are either collapsible by hinge-joints or can conically by stacked. The back-walls and the side-walls of the collapsible cages are made of sheet till half the height and above made of wire. The conical cages have three shut sides.

Double cages, which are especially used for breeding, can be divided by a dividing wall. When used as breeding cage, litter boxes can be inserted.

All cages have in common, that a fodder-chest and watering devices can be installed in the front as wire-lattice, mostly with door.
### 4.0 Cages for guinea pigs and rabbits

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<th>T depth mm</th>
<th>H height mm</th>
<th>F area of bottom cm²</th>
<th>Weight w. bottom perforated sheet</th>
<th>Application for</th>
<th>Note</th>
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<td>2000</td>
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<td>holding</td>
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<td>holding</td>
<td>same as M 300/8</td>
</tr>
<tr>
<td>cage for rabbits</td>
<td>X</td>
<td>K 400/3</td>
<td>04.3022 stainless steel</td>
<td>870</td>
<td>520</td>
<td>400</td>
<td>4520</td>
<td>11.8</td>
<td>holding and breeding</td>
<td>same as M 300/8</td>
</tr>
<tr>
<td>cage for rabbits</td>
<td>X</td>
<td>K 38/35</td>
<td>04.3116 stainless steel</td>
<td>440</td>
<td>610</td>
<td>350</td>
<td>2000</td>
<td>7.3</td>
<td>holding</td>
<td>3 shut sides, front-lattice with 1 door and openings to take 1 drinking devices TE and 1 feeder FUKA</td>
</tr>
<tr>
<td>cage for rabbits</td>
<td>X</td>
<td>K 47/40</td>
<td>04.3119 stainless steel</td>
<td>580</td>
<td>610</td>
<td>510</td>
<td>400</td>
<td>2500</td>
<td>holding</td>
<td>same as K 38/35</td>
</tr>
<tr>
<td>cage for rabbits</td>
<td>X</td>
<td>K 85/40</td>
<td>04.3128 stainless steel</td>
<td>920</td>
<td>580</td>
<td>510</td>
<td>400</td>
<td>4500</td>
<td>holding and breeding</td>
<td>same as K 38/35, however with 2 doors and opening, with 1 partition wall</td>
</tr>
<tr>
<td>rabbit-metabolism-cage</td>
<td>X</td>
<td>K 38/35 St.</td>
<td>04.3117 stainless steel</td>
<td>440</td>
<td>610</td>
<td>520</td>
<td>350</td>
<td>2000</td>
<td>metabolism</td>
<td>same as K 38/35, without door, front-lattice are made of sheet metal ½; the height, with draining funnel</td>
</tr>
</tbody>
</table>
Bottoms for cages:

All cages, which are made of stainless steel, have bottoms of perforated sheets, round or flat wires, which can be pushed in or intercalated. The desired construction is to be specified, when ordered.

Normal construction for guinea pigs cages:

a) Bottom of round wire, width of mesh 10 × 30 mm,
   wire of frame 6 mm ©
   wires mesh 2 mm ©

Normal construction for rabbits cages:

b) Bottom of perforated sheet with staggered countersunk perforation of 18 mm ©

Alternativ constructions:

c) Bottom of round wire, width of mesh 12 × 30 mm,
   wire of frame 6 mm ©
   wires mesh 2 mm ©

d) Bottom of round wire, width of mesh 14 × 30 mm
   wire of frame 6 mm ©
   wires mesh 2 mm ©

e) Bottom of flat wire, width of mesh 10 × 90 mm
   wire of frame 6 mm ©
   flat wire 8 × 2 mm

f) Bottom of flat wire, width of mesh 10 × 90 mm
   wire of frame 6 mm ©
   flat wire 4 × 2 mm

All bottoms are produced only of stainless steel.
5.0 Batteries for guinea pigs and rabbits cages

In batteries several cages for guinea pigs and rabbits are arranged side by side and one upon the other. These batteries can be movable rack or stationary arrangements. They can be equipped for manual operation, but also for fully automatic operation such as automatic watering and feeding the animals, timed cleaning etc. In the case of inquiries and orders your detailed wishes are required.

The batteries can be supplied with racks in standard steel, galvanized or in stainless steel. Normally the movable batteries are in stock or can be delivered at short notice. Stationary batteries are only manufactured, when ordered.

5.1 Mobile batteries with cages for guinea pigs and rabbits

Short indication: see table page 21
Order number: see table page 21

The side-supports, cage-supports and the supports for the droppings-trays of the mobile racks are constructed of rectangular pipes and angle irons. The supports of the droppings-trays are the cover for the lower cages in a distance of about 25 mm and therefore they are equipped with a wide-meshed wire-lattice. For covering the cages of the highest floor covering sheets are supplied with the racks.

The mobility of the racks is achieved by 4 castors of 100 mm Ø. If requested castors with 125 mm Ø or setscrews can be delivered for extra costs.

The necessary accessories for the racks and cages you find in the table on page 97.
5.2 Mobile batteries with automatic watering and cages for guinea pigs and rabbits

Short indication: like batteries in table page 21 with addition at for example KB 38/6 at

Order number: like batteries in table page 21 with 85 in front instead of 05 for example 85.3116

All batteries can also be equipped instead of watering devices or watering bottles with an automatic watering.

In the watering pipes of stainless steel on the back-side of the rack one or two watering valves TRV1 or TRV4 – depending on the size and number of the animals – are installed. Upon request watering-places for biting TRV 7 can be installed. The cages have corresponding openings for the watering valves.

The water flows through a connection, which shuts both sides automatically. The pressure of the water must be reduced before entering in the system. It is recommended, to add a pressure reducing valve to the watersupply network or to the battery. The blocking of the watering valves should be prevented by adding devices for retaining filaments in the supply network.

5.3 Movable batteries with metabolism cages for rabbits

Short indication: KB 38/6 St

Order number: 05.1117 for galvanized rack
05.3117 for rack of stainless steel

The metabolism-cages are completely shut in the lower half, so that all urine flows into the draining funnels under the cages and can be collected in a box. For retaining the droppings a wire net with the width of 4 x 4 mm is inserted in the draining funnel.
## 5.1 Mobile batteries with cages for guinea pigs and rabbits

<table>
<thead>
<tr>
<th>object</th>
<th>short indication</th>
<th>order no. rack galvanized</th>
<th>stainless steel</th>
<th>numbers of cages</th>
<th>dimensions B length mm</th>
<th>T depth with and without access. mm</th>
<th>H height mm</th>
<th>weight for compl. battery kg</th>
<th>accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea pig-battery</td>
<td>MB 300/8</td>
<td>05.1010 05.3010</td>
<td></td>
<td>8</td>
<td>950</td>
<td>550 700</td>
<td>1800</td>
<td>120</td>
<td>8 drinking devices TE, 8 feeders FUKA, 8 droppings trays KSB 2 or KKP 2</td>
</tr>
<tr>
<td>Guinea pig-battery</td>
<td>MB 300/4</td>
<td>05.1020 05.3020</td>
<td></td>
<td>4</td>
<td>950</td>
<td>550 700</td>
<td>1800</td>
<td>102</td>
<td>same as MB 300/8</td>
</tr>
<tr>
<td>Guinea pig-breeding-battery</td>
<td>GM/5</td>
<td>05.1106 05.3106</td>
<td></td>
<td>5</td>
<td>860</td>
<td>630 1940</td>
<td>1800</td>
<td>75</td>
<td>5 front-lattice, 5 feeders FU M2K, 5 holder for drinking bottle F 75, 5 drinking bottles F 75 TCK, 5 coverings</td>
</tr>
<tr>
<td>Guinea pig-breeding-battery</td>
<td>GM/10</td>
<td>05.1107 05.3107</td>
<td></td>
<td>10</td>
<td>1700</td>
<td>630 1940</td>
<td>1800</td>
<td>134</td>
<td>same as GM/5, however 10 piece</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 300/8</td>
<td>05.1011 05.3011</td>
<td></td>
<td>8</td>
<td>950</td>
<td>550 700</td>
<td>1800</td>
<td>120</td>
<td>same as MB 300/8</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 300/4</td>
<td>05.1021 05.3021</td>
<td></td>
<td>4</td>
<td>950</td>
<td>550 700</td>
<td>1800</td>
<td>102</td>
<td>same as MB 300/8, for breeding with littering boxes</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 400/6</td>
<td>05.1012 05.3012</td>
<td></td>
<td>6</td>
<td>950</td>
<td>550 700</td>
<td>1800</td>
<td>100</td>
<td>same as MB 300/8, however 6 pieces</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 400/3</td>
<td>05.1022 05.3022</td>
<td></td>
<td>3</td>
<td>950</td>
<td>550 700</td>
<td>1800</td>
<td>87</td>
<td>same as MB 300/8, however 6 pieces, for breeding with littering boxes</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 38/6</td>
<td>05.1116 05.3116</td>
<td></td>
<td>6</td>
<td>1000</td>
<td>600 700</td>
<td>1800</td>
<td>99</td>
<td>6 drinking devices TE, 6 feeders FUKA, 6 droppings trays KSB 2 or KKP 2</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 38/9</td>
<td>05.1126 05.3126</td>
<td></td>
<td>9</td>
<td>1480</td>
<td>600 700</td>
<td>1800</td>
<td>135</td>
<td>same as KB 38/6, however 9 pieces</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 47/6</td>
<td>05.1119 05.3119</td>
<td></td>
<td>6</td>
<td>1200</td>
<td>600 700</td>
<td>1800</td>
<td>108</td>
<td>same as KB 38/6 however 6 droppings trays KSB 3</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 47/9</td>
<td>05.1129 05.3129</td>
<td></td>
<td>9</td>
<td>1770</td>
<td>600 700</td>
<td>1800</td>
<td>146</td>
<td>same as KB 38/6, however 9 droppings trays KSB 3</td>
</tr>
<tr>
<td>Rabbit-battery</td>
<td>KB 85/3</td>
<td>05.1128 05.3128</td>
<td></td>
<td>3</td>
<td>1000</td>
<td>600 700</td>
<td>1800</td>
<td>99</td>
<td>6 drinking devices TE, 6 feeders FUKA, 6 droppings trays KKP 2, for breeding with littering boxes</td>
</tr>
<tr>
<td>Rabbit-metabolism-battery</td>
<td>KB 38/6 St.</td>
<td>05.1117 05.3117</td>
<td></td>
<td>6</td>
<td>1000</td>
<td>600 700</td>
<td>1800</td>
<td>120</td>
<td>6 drinking devices FH 75/1-TK, 6 feeders FUKA, 6 droppings trays KSB 2 or KKP 2</td>
</tr>
</tbody>
</table>

Batteries with automatic watering installation: like normal batteries with addition aT (for example MB 300/8 aT) and order number like normal batteries however number 85 in front instead of 05 (for example 85.1010)
5.6 Stationary batteries with conveyor belt of paper for clearing the cages of guinea pigs and rabbits

Short indication: e.g. Pe3-18 K 400/3 aT
or Pd3-42 K 38/35 aT

Order number: without

The short indication specifies if it is a one-sided (e) (wall) or a double-sided (d) battery, how many floors the battery has and how many cages of a certain type can be inserted.

Corresponding its space every battery can be put together concerning its capacity with the help of the following table. There is specified that basic units take up 4 small or 2 large cages (double cages) on every floor and side.

The rack of a battery with conveyor belt of paper for clearing the cage consists of a robust profile-tube construction and according to your wishes it can be delivered of galvanized standard steel or stainless steel. In any case the guide-sheets for the paper conveyor-belt as well as the draining funnel and possibly the boxes for the droppings are made of stainless steel.

The three main elements of the battery are:
- unrolling station (clean side)
- rolling up station with draining funnels
- additional elements for taking up the cages

On the clean side the paper rolls are taken up by unrolling pins. From there the paper strip is pulled over guide-pulleys to the guide-sheets and it is inserted in the slitslike rolling up pins. The draining funnels are arranged in such a way that the urine and droppings which fall from the paper conveyor belt reach the drains or a box for droppings by their dead weight. In the box for droppings urine and droppings can be parted from each other and only the urine flows to the drains. The guide-sheets for the paper conveyor-belt are the cover for the corresponding lower cages. The cages of the highest floor are covered by a sheet (galvanized or stainless steel) arranged on the rack.

Batteries with conveyor belt of paper are equipped with automatic watering nearly exclusively. The watering pipes of the one-sided battery are fixed on the walls and the watering pipes of the double-sides battery are fixed in the middle. For every single cage one watering valve is planned and for every double cage two watering valves are planned. The watering pipes and the watering valves are made of stainless steel and their construction is similar to those of the movable racks with automatic watering (see 5.2)

Accessories: cages, feeders, paper rolls, possibly devices for taking up filaments and pressure reducing valve

If you pay attention to the measurements you can also use batteries with paper conveyor-belt clearing for wire-cages and makronol or sheet metal-cages of different size with open bottom. Depending on the measurements of the cages more than 4 floors are possible.
**Stationary batteries with conveyor belt of paper**

<table>
<thead>
<tr>
<th>for cage-type</th>
<th>A</th>
<th>B</th>
<th>width basic unit mm</th>
<th>1/2 additional unit mm</th>
<th>1/2 additional unit mm</th>
<th>depth one-sided mm</th>
<th>depth double-sided mm</th>
<th>height mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 300/8</td>
<td>4</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>M 300/4</td>
<td>2</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 300/8</td>
<td>4</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 300/4</td>
<td>2</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 400/6</td>
<td>4</td>
<td>3</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 400/3</td>
<td>2</td>
<td>3</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 38/35</td>
<td>4</td>
<td>3</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.550</td>
<td>1.800</td>
</tr>
<tr>
<td>K 47/40</td>
<td>3</td>
<td>3</td>
<td>2.920</td>
<td>1.800</td>
<td>900</td>
<td>800</td>
<td>1.550</td>
<td>1.900</td>
</tr>
<tr>
<td>K 85/40</td>
<td>2</td>
<td>3</td>
<td>3.100</td>
<td>1.980</td>
<td>990</td>
<td>800</td>
<td>1.550</td>
<td>1.900</td>
</tr>
</tbody>
</table>

A = number of cages per unit and storey  
B = number of storey

Purpose-battery with conveyor belt of paper with makrolon-cages type M II with wire bottom for small rodents
5.7 Stationary batteries with flushing (flushing clearing) for cages of guinea pigs and rabbits

Short indication:  e.g. We 4-20 K 300/4 aT
or   Wd 3-48 K 47/40

Order number:  without

For batteries with flushing there are the same conditions concerning the short indication and the number of animals, which is specified in 5.6 with regard to the battery with conveyor-belt of paper clearing.

Flushing batteries can be constructed with an incline to one head-side, to both head-sides or to the middle, depending on the length of battery and the arrangement of the drainings.

According to your wishes the racks of a robust profile-tube-construction can be delivered of galvanized standard steel or stainless steel. The sheets for the droppings, draining funnels and boxes for the droppings are made of stainless steel anyway. The sheets for the droppings, which have an incline to the backside and which are higher there have a flushing pipe at the front. So you can choose if the flushing is slight or strong when clearing the cage. Droppings, urine and flushing water flow to a draining pit on the head-side of the battery and from there into the drains or into a draining box, where the droppings can be retained.

For improving the cleaning possibilities we deliver a washing brush with the basic unit. It is fixed to a handle and prepared for water connection.

The sheets for the droppings are the cover for the corresponding lower cages at the same time. The cages of the highest floor are covered by a sheet galvanized or stainless steel arranged on the rack.

Regarding the automatic watering the same is valid, which is specified in 5.6 concerning the battery with conveyor-belt of paper clearing.

Accessories: cages, feeders, possibly devices for taking up filaments and pressure reducing valve

If you pay attention to the measurements you can also use batteries with paper conveyor-belt clearing for wire-cages and makrolon or sheet metal-cages of different size with open bottom. Depending on the measurements of the cages more than 4 floors are possible.
<table>
<thead>
<tr>
<th>for cage-type</th>
<th>A</th>
<th>B</th>
<th>basic unit (mm)</th>
<th>1/2 additional unit (mm)</th>
<th>1/2 additional unit (mm)</th>
<th>depth one-sided (mm)</th>
<th>depth double-sided (mm)</th>
<th>height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 300/8</td>
<td>4</td>
<td>4</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>M 300/4</td>
<td>2</td>
<td>4</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 300/8</td>
<td>4</td>
<td>4</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 300/4</td>
<td>2</td>
<td>4</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 400/6</td>
<td>4</td>
<td>3</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 400/3</td>
<td>2</td>
<td>3</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>750</td>
<td>1.450</td>
<td>1.900</td>
</tr>
<tr>
<td>K 38/35</td>
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<td>3</td>
<td>2.400</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.550</td>
<td>1.800</td>
</tr>
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<td>3</td>
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<td>800</td>
<td>1.550</td>
<td>1.900</td>
</tr>
</tbody>
</table>

A = number of cages per unit and storey
B = number of storey
5.8 Stationary batteries with clearing by a slider for cages of guinea pigs and rabbits

Short indication: e.g. Se 3-24 K 400/6 aT
or Se 3-60 K 300/8 aT

Order number: without

Concerning the short designation and the number of animals see introduction of stationary battery with conveyor belt of paper clearing in 5.6.

Arrangements with slider clearing are the best possibilities for automatic clearing.

After opening a water tap for wetting the sheets for the droppings (wetting the droppings) and after pushing one of the push-button switches a slider with a felt strip moves up and down the gutter for the droppings. The slider is driven by an electric motor, a roll and a rope. It pushes the water, the droppings and the urine in the retaining funnels and the drains on both head-sides of the battery. This process can also be started by a watch and the clearing is automatically executed in certain, regulated periods. Clearing 4-6 times in 24 hours can be regarded as sufficient. Construction material and design of the slider arrangement for clearing are similar to the conveyor belt of paper arrangement.

Accessories: cages, feeders, possibly devices for taking up filaments and pressure reducing valve

Slider arrangements for clearing are also possible for makrolon- and sheet metal-cages with open bottom and wire-cages. The number of the floors depends on the height of the cages.
### Stationary batteries with clearing by slider

<table>
<thead>
<tr>
<th>for cage-type</th>
<th>A</th>
<th>B</th>
<th>width basic unit mm</th>
<th>1/4 additional unit mm</th>
<th>1/2 additional unit mm</th>
<th>depth one-sided mm</th>
<th>depth double-sided mm</th>
<th>height mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 300/8</td>
<td>4</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.500</td>
<td>2.000</td>
</tr>
<tr>
<td>M 300/4</td>
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<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.500</td>
<td>2.000</td>
</tr>
<tr>
<td>K 300/8</td>
<td>4</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.500</td>
<td>2.000</td>
</tr>
<tr>
<td>K 300/4</td>
<td>2</td>
<td>4</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.500</td>
<td>2.000</td>
</tr>
<tr>
<td>K 400/6</td>
<td>4</td>
<td>3</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.500</td>
<td>2.000</td>
</tr>
<tr>
<td>K 400/3</td>
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<td>3</td>
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<td>1.880</td>
<td>940</td>
<td>800</td>
<td>1.500</td>
<td>2.000</td>
</tr>
<tr>
<td>K 38/35</td>
<td>4</td>
<td>3</td>
<td>3.000</td>
<td>1.880</td>
<td>940</td>
<td>850</td>
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<td>1.900</td>
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<tr>
<td>K 47/40</td>
<td>3</td>
<td>3</td>
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<td>900</td>
<td>850</td>
<td>1.600</td>
<td>2.000</td>
</tr>
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<td>3</td>
<td>3.100</td>
<td>1.980</td>
<td>990</td>
<td>850</td>
<td>1.600</td>
<td>2.000</td>
</tr>
</tbody>
</table>

A = number of cages per unit and storey
B = number of storey

Se 4 – K 400/6 aT, purpose-battery with service car
6.0 Cages for cats, batteries for cats and pens for cats

6.1 Cages for cats for single keeping, can be stacked

Short indication: KAKA 1
Order number: 06.3811
Dimensions of the cage:
- width about 500 mm
- depth about 700 mm
- height of living space about 500 mm
- total height about 650 mm

The cage is constructed of angle iron. It is shut on the back wall and on the right side. The left side wall is constructed of metal sheet in the lower part and at half height of a wire-lattice like in the upper cover. The door fixed by hinges is shut by a gravity catch. Feeding and drinking dishes are hung in the wire netting of the door. A sitting board of plastics (PVC) is arranged in front of the back wall of the cage.

The running bottom of flat wire 8 x 2 mm has a gap on one side, thus the droppings of the cat can directly fall into the inserted box for droppings.

The cage made of stainless steel has edges for stacking and can be stacked one upon the other up to three times.

6.2 Battery for cat-cages KAKA 1

Short indication: B-KAKA 1
Order number: 06.3841
Dimensions:
- width about 1120 mm
- depth about 750 mm
- height about 1700 mm

The rack for 4 cages is a hot-galvanized construction of sectional pipes, mobility is achieved by 4 castors of 100 mm or 125 mm, two of them can be fixed.

6.3 Battery with cat-cages KAKA 2

Short indication: B-KAKA 2
Order number: 06.3842
Dimensions of the cages:
- width about 700 mm
- depth about 500 mm
- height about 400 mm

Dimensions of the rack:
- width about 1560 mm
- depth about 600 mm
- height about 1750 mm

The rack, movable by 4 castors 100 mm, made of sectional pipes, hot-galvanized, can take up 6 cages and 6 droppings trays, each made of stainless steel. The narrow side and the back wall of each cage are made of metal sheet, the lid is made of a wire-lattice with mesh width 100 x 30 mm. The front consisting of frame and vertical bars has got a wide door at the inner side of which drinking and feeding dishes can be hooked in by holding devices.

The running bottom made of flat wire 8 x 2 mm with a gap-width of 10 mm has got a corner for droppings. In the left third of the cage a board for sitting made of plastics (PVC) can be arranged about 200 mm above the running bottom.
6.4 Cat pens

Cat pens have been constructed and produced in different shapes. It is impossible to describe all possible variations. We therefore want to point out a few facts that should be considered when planning.

- Keeping on bottom or keeping on running bottom made of profiles, wire, to walk on or not,
- sliding or easy adjustable partition walls,
- arranging of sleeping box,
- toys,
- sand pit or sand-box for droppings,
- material for bottom, side walls, front, sleeping-boxes etc.,
- arrangement of feeding and drinking dishes.

Please inform us about your assignment and available rooms, we shall submit our proposals.
7.0 Cages and units for dogs

7.1 Cage for dogs HK 1

Short indication: HK 1
Order number: 06.3701
Dimensions:
- width about 920 mm
- depth about 810 mm
- height of living space about 800 mm
- total height about 1140 mm

The stainless steel cage, movable by 4 castors of 100 mm \( \varnothing \), is closed at 3 sides and at the top by metal sheet. The door made of bars is fixed to the cage by hingers and is shut by a gravity catch. In the lower third of the door there are apertures for the folding and in their end-position lockable feeding and drinking dishes.

Alternatively the cage can be equipped with an automatic watering TRV 8 (Lixit).

The sliding running bottom is made of round bars (6 mm) with a gape-width of 19 mm. The droppings trays are also insertable.

For metabolic experiments cages are supplied with a close meshed wire bottom above the tub for droppings to separate droppings and urine.

If there is little room available, two cages (order number 06.3721) can be stacked by removing the castors of one cage.

7.2 Cages for dogs HK 2

Short indication: HK 2
Order number: 06.3702
Dimensions:
- width about 950 mm
- depth about 1000 mm
- height of living space about 800 mm
- total height about 1200 mm

This cage is made of sectional pipes with spot-welded walls of metal sheet and a wire mesh as cover. Door, feeding and drinking dishes are the same as described under 7.1. The cage is movable by 4 castors of 100 mm \( \varnothing \).

The insertable running bottom consists of canted sheet profiles spot-welded in angled frame to give the dogs a large area for treading. The gap-width of 15 mm makes a troublefree falling through of droppings possible.

The insertable droppings tray has got a drain to one side.

This cage for dogs with an additional wire bottom is suitable for metabolic experiments as well as cage HK 1. If there is only little room available, it is also possible to stack two cages (order number 06.3722).

All material used for this cage are made of stainless steel.
7.3 Boxes and units for dogs

In order to give dogs more moving space in desired intervals at maximum utilization of space and to make contact possible with other animals, boxes that are arranged side by side are connected in such a way, that you get a passage when removing the bolt. Thus the dogs get a larger living and playing area at the same time. The pictures show such an unit.

Each single cage is supplied with devices for metabolic experiments, e.g. with a meter for the quantity of water, which is installed in the pipes to the drinking valves. Under the drinking valves tubs are installed for catching the water and measuring the water which is not lapped up.

Such units are made of stainless steel.

Units for single and group keeping in boxes are also produced.

The front gratings with doors and tiltable feeding dishes are made of bars. The partition walls can be totally closed or made of bars in the upper part. As material for the partition walls metal sheets (galvanized or stainless steel), plastics or slabs made of eternite can be used. The back walls of the boxes mostly are the walls of the room.
You can use cement-floor of the building as running bottom, possible with installed warmed sleeping place, or you can put in duckboards made of round and profile bars — stainless steel. For cleaning the boxes the duckboards are to be turned up to the sides.

If boxes with a space to run about situated in the open are desired, double swinging shutters have to be installed in the communicating doors leading outside or in the back walls made of bricks.

The shutters are also supplied by our firm.

Boxes for interior rooms are almost exclusively supplied with an automatic watering. You should use drinking dishes made of stone or stainless steel if the units are out doors.

If you are interested in our offers, please inform us about:

- Size and number of single boxes,
- Room dimensions, with drawing, if possible,
- Desired kind of partition walls,
- Possibilities for anchoring parts of construction in the walls,
- Desired kind of running bottom,
- Material for front lattice, partition walls and running bottoms,
- Desired kind of watering,
- Narrow passages in the building for the transport of large elements.

Dog units with a space by double swinging shutters, running bottom
8.0 Cages for pigs and wethers

8.1 Cage for minipigs

**Short indication:** MPK 1  MPK 2

**Order number:**
- hot galvanized: 06.1751  06.1752
- stainless steel: 06.3751  06.3752

**Dimensions about:**
- length: 800 mm  1000 mm
- width: 300 mm  400 mm
- height of running bottom: 270 mm  270 mm
- height of living space: 560 mm  560 mm
- total height: 830 mm  830 mm

Cages for minipigs with **front** and **side walls** of wire-lattice with 2.5 and 6 mm  Ø wires, welded in frames of angle iron, are constructed in the modular-design principle and can be stacked. A **tiltable through** is fixed at the front. The **back wall** is of metal sheet and can be removed as easily as the cover which is designed as wire-lattice.

The spot welded wire-lattice as running bottom with wires of 3.1 mm  Ø has a mesh width of about 20  x 30 mm. A **catching tub** is inserted under the running bottom, where a narrow meshed **wire-bottom** can be put in to retain the urine and droppings for **metabolic experiments**. The tub with wire-bottom and the tiltable trough are of stainless steel anyway, the other parts are hot galvanized in full bath or of stainless steel.

Upon request an **automatic watering** installation can be planned. Furthermore there is the possibility to supply these cages with castors.

8.2 Cage for wethers

**Short indication:** HMK

**Order number:** 06.1771

**Dimensions:**
- width about: 675 mm
- length without food-rack about: 1150 mm
- length with food-rack about: 1500 mm
- height of running bottom about: 600 mm
- total height about: 1450 mm

The cage for wethers is produced in strong **profile-pipe construction**. To put the animals in, the **back wall** sheet hung in various a decline to the urine drain has to be taken out. The **front** of the cage has an opening for reaching the **water-bucket** and an aperture for the **hay and food rack**, that can be hung on. Solid or pulverized food can also be given in the lower part of the rack. The **side walls** of wire-lattices one side is designed as **sliding door** to be able, to fasten the urine dish of non-rigid PVC to the wether for **metabolic experiments**.

The **running bottom** of the cage is a strong wire-lattice with a gap in the front part for the draining flexible tube of the urine dish. A **small tub** for catching rests of fodder is inserted in the cage under the running bottom at the front and a **bigger one** in the rear part of the cage for gathering the droppings. The parts of the cages for wethers are of steel, hot galvanized, the catching tubs of stainless steel.

For transport the wether-cage can be provided with castors. Wether cages can be joined to **double cages** (order number 06.1776). In that case the partition walls between the two cages consists of metal sheet instead of a mat.
9.0 Cages for monkeys

9.1 Cages for small primates

(Gerbil, Tupaia, Marmoset etc.)

<table>
<thead>
<tr>
<th>Short indication</th>
<th>PRK 1</th>
<th>PRK 2</th>
<th>PRK 3</th>
<th>PRK 4</th>
<th>PRK 5</th>
</tr>
</thead>
<tbody>
<tr>
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<td>06.3902</td>
<td>06.3903</td>
<td>06.3904</td>
<td>06.3905</td>
</tr>
</tbody>
</table>

Dimensions:

<table>
<thead>
<tr>
<th></th>
<th>width mm</th>
<th>depth mm</th>
<th>height mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRK 1</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>PRK 2</td>
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<td>750</td>
</tr>
<tr>
<td>PRK 4</td>
<td>500</td>
<td>500</td>
<td>750</td>
</tr>
<tr>
<td>PRK 5</td>
<td>500</td>
<td>750</td>
<td>1000</td>
</tr>
</tbody>
</table>

As shown in the pictures, cages for small primates were delivered and can be delivered in different designs and dimensions.

General constructions features:

Cages either have hinges or can be put together for space-saving storage or for the washing-machine or they have fixed walls. In any case front, bottom, lid and one side wall are made of wire mats with 5 or 6 mm frame wires and 2 mm filling wires, that are welded to mats of 20 × 20 mm mesh width or upon request of 20 × 30 mm mesh width. Mainly with regard to hinged cages the second side wall and the back wall can also be made of wire mats; if a prevention of sight and touch to the adjacent cage is intended, they may be composed of metal sheet.

In the front of the cage a door is installed to let the animals in, which can be shut either by a carabine hook or a turning lock. A second door can be situated in the front, in a side wall or in the lid. This door enables either the installation of a hiding box with bar into the cages or its insertion into the guide beads fitted to the door opening.

When using a feeding dish situated in front of the cage, an opening is located in the front, to be able to reach through to the feeding dish. There can also be an opening for a feeding dish, that projects into the cage and can be filled outside the cage.
The primates are watered by watering bottles, to be hung on the front side. The watering cap of the watering bottle has got a pipe of 3.5 cm length which projects into the cage. If an automatic watering is desired, the back wall gets an opening for the insertion of a drinking valve.

The cages can be alternatively equipped with bars for sitting and for droppings.

The cages are put into movable or wall racks by suspension beads that are spot-welded to the sides or by hooks installed at the back wall. Under the cages there can be boxes for droppings or sheets for a paper belt.

The material for cages, hiding box and feeding dish is stainless steel, in exceptional cases it can be standard steel covered with rilsan.
9.2 Cages for monkeys

The requirements applying to monkey cages and their designs are so numerous that until now no standardization has taken place. The illustrations shown here which are explained below only show a few of the design examples. Please inform us of your problem and we will be pleased to send you a suitable quotation.

The first monkey cages illustrated with living space dimensions of 710 mm wide, 710 mm depth and 800 mm height are made entirely of stainless steel. The cage has a sliding rear wall, insertable droppings tray with drain and drinking bottle or automatic watering installation.

The vertical sliding door can secured absolutely by a special closure. In bottom position the feed container is also protected from being thrown out by the door.

The double cages shown below with living space dimensions for the single cage of $W = 700$ mm, $D = 700$ mm and $H = 1000$ mm can be placed side by side in any quantity with suitable rack facilities. They are distinguished primarily by the fact that all parts such as top, back, pull-out back and floor are inserted without screw fastenings and are therefore readily dismantled for cleaning.
Only the front is bolted to the frame, thus locating the above mentioned cage parts. The **push-in sides** and **partitions projecting at the front and back** can consist of **framed wire mats, makrolon, plastic or sheet metal panels**.

As regards securing the vertical sliding door and feed container the same applies as to the above mentioned cage. The cages can be fitted with sliding and lockable back panel. A **box to catch the solids** and with connection to the drainage system for disposing of the liquids is located underneath the **droppings tray drain**.

Cages and droppings trays are of stainless steel, the frame is either hot galvanized or of stainless steel.

In the case of the third monkey cage illustrated here with living space dimensions of \( W = 850 \text{ mm}, D = 800 \text{ mm} \) and \( H = 900 \text{ mm} \) which is hung in a two-tier **rack with droppings trays** and central drainage, the sides, the back and the top are closed. For improved ventilation of the cage the sides have a large number of holes drilled in them in the top third. As regards the other features the same applies as before.

**Watering** of the monkeys can in all cases be provided by means of a suspended **watering bottle** suitably protected from being thrown out or **automatically** by means of a **watering valve** (TRV 6). If required the cages can also be fitted with a perch.
10.0 Cages for poultry

10.1 Cages for chicken type III
Short indication: KUK III
Order number: 01.3016
Dimensions: above 420 x 265 mm
           bottom 380 x 225 mm
           height 200 mm

The feed and watering container is attached to the front with adjustable feeding grille. On the back there is a flap through which the animals can be taken out without having to remove feed and watering container. The 8 mm mesh bottom is detachable. The cage is fitted with a DU III or lid.

Cage, bottom, top and feed container are of stainless steel, the watering container is plastic.

Rack GDK III e/20 R accommodates 20 of these cages (see pages 11 and 12) with 10 KKP 1 or KSB 1 droppings trays.

Chick cages KUK III are intended for chicks up to 4 weeks old.

10.2 Cages for chicken type III double-width
Short indication: KUK III dbr
Order-number: 01.3019
Dimensions: above 580 x 440 mm
           bottom 530 x 380 mm
           height 260 mm

Design as for chick cages KUK III. Instead of a flat top this cage has a lid which is raised approximately 50 mm. Each cage has a feed container which extends over the entire front. Drinking water supply is by means of a polyester resin watering trough which is attached to the appropriate tier of each rack.

Rack GDK III dbr e/8 R accommodates 8 KUK III dbr chick cages as well as 8 KKP 1 or KSB 1 droppings trays.

10.3 Hens-Cages-battery
Short indication: HB
Order number: 05.1400 galvanized
               05.3400 stainless steel
Dimensions of the cages: width 365 mm, depth 450 mm, height according to hanging of the bottom 320 – 400 mm
Dimensions of the rack: width 1150 mm, depth 700 mm, height 1950 mm

In the three-tier battery 3 cages each with two divisions are mounted on top of one another so that a total of 9 hens can be accommodated.

The cages have on the front and back for each bay inward opening swing doors through which the animals can be inserted and removed. In front of each cage is attached a feed container with feeding grille to prevent feed loss and a plastic watering container. Underneath the cages in the frame there is a continuous droppings tray for each tier. If required the battery can be equipped with automatic nipple watering, the watering containers being deleted.

Rack, cages, droppings trays and feed containers can be supplied in galvanized or stainless steel form.

10.4 Cages for pigeons
Short indication: TAK 1
Order number: 06.3760
Dimensions: width 400 mm, depth 450 mm, height of living space 350 mm, total height 410 mm

The cage is made from 2.0 and 4.6 mm diameter wire and has a mesh size of approx. 20 x 20 mm. In the front is fitted an approx. 175 mm x 175 mm inward opening swing door. Two stainless steel feed and watering containers are attached to the openings provided for the purpose. The bottom is detachable.

Finish: stainless steel.

If required racks can be supplied to accommodate these cages.
11.0 Metabolism cages

11.1 Metabolism cages for mice, rats and guinea pigs

Short indication: URIMAX N for short term experiments
URIMAX L for long term experiments

Order number: 01.3150
01.3151

Dimensions:
cage height 155 mm
diameter interior 200 mm
funnel height 230 mm
Accessories — feed and watering devices

The URIMAX N metabolic cage is a round wire cage of close wire mesh with a detachable lid and two bottoms, all parts being of stainless steel. The 12 × 12 mm wide mesh bottom allows droppings to fall through. If they should be retained the 2.5 × 2.5 mm mesh bottom is fitted.

The URIMAX L metabolic cage which is also a round wire cage of spot welded wire mat with looped on top has cut outs for feed and watering devices. The bottom has a mesh width of 11 × 23 mm. This cage is suitable for long term experiments.

Both cages are placed on a plastic funnel whose outlet has channels to guide the urine into a special side outlet. Here the urine is collected in a container. Droppings and feed remnants drop through the main drainage tube into another vessel.

To accommodate 12 metabolic cages there is the GURI rack where the funnels of the cages are located in perspex plates and for collection of droppings and storage of urine collection vessels KK 2 droppings trays are fitted.

11.2 Metabolism cage for rats

Short indication: M 2 ST

Order number: 01.3152

Dimensions: base and overall extension 200 × 240 mm
upper protruding part with feeding and watering equipment 220 × 400 mm
overall height 530 mm
living space for the rat as Marolon cage type II (see table page 3)

For extremely complicated research on animals of short or long duration, especially quantitative experiments.

Secure separation and collection of excrements and urine, far-reaching prevention of mixture of excrements, urine and food, secure measurement of absorbed and secreted substances without losses.

The construction of the cage economizes space, its arrangement is clear and it can easily be dismantled. One can combine various units to batteries when using appropriate stands.

All parts of the cage are made of stainless steel. The living space of the rat is a reconstructed Makronol cage type II.
12.0 Other cages
12.1 Universal cage

Short indication: UK
Order number: 06.1740 galvanized
06.3740 stainless steel

Dimensions:
- length: 800 mm
- width: 460 mm
- height: 750 mm

The cage with hinged top and door on the front is collapsible. In the door there are openings to accommodate a feed and a watering container. Underneath the bottom a droppings tray is inserted. Feed and watering container as well as droppings tray are supplied in all cases in stainless steel.

The very robust cage is made up of 5 and 6 mm diameter frame wires and 3.1 mm diameter filler wires.

Suitable for: transporting and keeping dogs, cats, geese, ducks etc.

12.2 Large transporting cage

Short indication: 400/6 Tr
Order number: 06.3748

Dimensions:
- length: 500 mm
- width: 420 mm
- height: 450 mm

This cage is a modified K 400/6 rabbit cage as described on catalogue pages 16 to 17. The cage has two carrying handles and a hinged top. In the front it has a door with opening for FUKA feed container and TE watering device. Underneath the bottom a KKP 1 droppings tray is inserted. The entire cage is made of stainless steel.

Suitable for: transporting small dogs, cats, rabbits, geese, ducks, hens etc.

12.3 Small transporting cage

Short indication: 200/1 Tr
Order number: 06.1745 galvanized
06.3745 stainless steel

Dimensions:
- length: 450 mm
- width: 220 mm
- height: 230 mm

The cage consists of 20 × 20 mm mesh wire grille and has a hinged top with carrying handles. Under the bottom a droppings tray is inserted.

Suitable for: transporting rabbits, guinea pigs, rats, pigeons, hens etc.
12.4 Pyrogen experiment boxes for rabbits

12.41 Plastic pyrogen experiment box

Short indication:  PTB 1
Order number:     06.2001

The pyrogen experiment box with carrying handle is made from polypropylene. To hold the rabbit in position there are adjustable, detachable slides on the front through which the head of the rabbit can be inserted.

12.42 Stainless steel pyrogen experiment box

Short indication:  PTB 2
Order number:     06.2002

With this pyrogen experiment box the head of the rabbit can also be held in position if required by inserting a transverse rod in the front of the box. If the transverse rod is not inserted the head of the animal is free to move.

To hold the rabbit in position at the rear there is a sheet metal slide which can be moved along on a notched fixture to suit the size of the animal. The sheet metal slide has an aperture for insertion of sensors.
### 13.0 Accessories for cages

#### 13.10 Drinking bottles made of Makrolon

<table>
<thead>
<tr>
<th></th>
<th>0.15 l</th>
<th>0.30 l</th>
<th>0.50 l</th>
<th>0.75 l</th>
<th>1.0 l</th>
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<tr>
<td></td>
<td>150 ml</td>
<td>300 ml</td>
<td>500 ml</td>
<td>750 ml</td>
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<tr>
<td>Drinking bottle for silicone</td>
<td></td>
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<tr>
<td>rubber sealing ring</td>
<td></td>
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<tr>
<td>Short indication:</td>
<td>F 15</td>
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<td>12.5002</td>
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</tr>
<tr>
<td>to them</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Silicone rubber sealing ring</td>
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<tr>
<td>Drinking bottle with</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conical neck</td>
<td></td>
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<td>12.5007</td>
<td></td>
<td>12.5008</td>
<td>12.5009</td>
</tr>
</tbody>
</table>

Drinking bottles and silicone rubber sealing rings are autoclaved to 120 °C.

---

### 13.11 Drinking caps made of stainless steel

<table>
<thead>
<tr>
<th></th>
<th>conical cap</th>
<th>drawn out nipple</th>
<th>35 mm long drinking tube</th>
<th>35 mm long drinking tube</th>
<th>110 mm curved drinking tube</th>
<th>110 mm curved drinking tube</th>
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</thead>
<tbody>
<tr>
<td>Boring mm:</td>
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<td>ball closure</td>
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<tr>
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<td>TK</td>
<td>TGR</td>
<td>TGK</td>
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</tbody>
</table>

All drinking caps fit to drinking bottles F and FK.
13.12 Baskets for transporting and washing

<table>
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<tr>
<th>Short indication:</th>
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<th>Dimensions about makrolon bottles:</th>
<th>Maximum number of makrolon bottles:</th>
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</thead>
<tbody>
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<td>SPÖ 30</td>
<td>12.5085</td>
<td>480 × 480 × 190 mm</td>
<td>36 piece 300 ml</td>
</tr>
<tr>
<td>SPÖ 75</td>
<td>12.5086</td>
<td>480 × 480 × 190 mm</td>
<td>36 piece 750 ml</td>
</tr>
<tr>
<td>SPÖ 15-30</td>
<td>12.5083</td>
<td>510 × 270 × 200 mm</td>
<td>18 piece 150 or 300 ml</td>
</tr>
<tr>
<td>SPÖ 50-75</td>
<td>12.5084</td>
<td>510 × 270 × 200 mm</td>
<td>18 piece 500 or 750 ml</td>
</tr>
</tbody>
</table>

The baskets for transporting water bottles can also be used for washing the bottles in washing machines. They are made of stainless steel and have a hinged lid.

13.13 Openers for makrolon bottles

<table>
<thead>
<tr>
<th>Short indication:</th>
<th>Order number:</th>
<th>Order:</th>
</tr>
</thead>
<tbody>
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<td>Ø 1</td>
</tr>
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<td>Ø 2</td>
<td>12.5092</td>
<td>Ø 2</td>
</tr>
</tbody>
</table>

All the watering caps of makrolon bottles can be lifted off with the openers. Opener Ø 1 is used to open bottles held in the hand whilst opener Ø 2 can be used to open bottles standing in the basket after the lid of the bottle washing basket has been opened.

The openers should be used in all cases for watering caps with tube to prevent breaking off the drinking tubes.

13.14 Drinking devices and holder for makrolon bottles

<table>
<thead>
<tr>
<th>Short indication:</th>
<th>Order number:</th>
<th>Order:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container and 1 litre plastic bottle.</td>
<td>12.5050</td>
<td></td>
</tr>
<tr>
<td>FH 75/3-TGK</td>
<td>12.5118</td>
<td>FH 75/3-TGK</td>
</tr>
<tr>
<td>Holder with vertical 750 ml makrolon bottle and watering cap with curved drinking tube and ball closure.</td>
<td>12.5111</td>
<td></td>
</tr>
<tr>
<td>FH 75/1-TR</td>
<td>12.5112</td>
<td>FH 75/1-TR</td>
</tr>
<tr>
<td>FH 75/1-TK</td>
<td>12.5115</td>
<td>FH 75/1-TK</td>
</tr>
<tr>
<td>FH 75/2-TR</td>
<td>12.5116</td>
<td>FH 75/2-TR</td>
</tr>
<tr>
<td>FH 30/1-TR</td>
<td>12.5113</td>
<td>FH 30/1-TR</td>
</tr>
<tr>
<td>FH 30/1-TK</td>
<td>12.5114</td>
<td>FH 30/1-TK</td>
</tr>
</tbody>
</table>

TE: The TE watering unit consists of a stainless steel container and a 1 litre plastic bottle facing downwards. A hole on the bottle neck always allows as much water to flow into a small dish of the container as is consumed.

FH: These are stainless steel wire bottle holders suspended in front of the cages with makrolon bottles and watering caps. The number specifies the bottle content (300 or 750 ml). The watering bottles can be inserted and removed without removing the bottle holder from the cage.

The FH 75/3-TGK bottle holder is used mainly on MZK 80/25 guinea-pig breeding cages.

FH 75/1 and FH 30/1 signify 1 watering bottle per holder, FH 75/2 and FH 30/2 signify 2 watering bottles per holder.
13.15 Drinking valves for automatic watering installation

<table>
<thead>
<tr>
<th>Short indication</th>
<th>Order number</th>
<th>Use for</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRV 1</td>
<td>12.5061</td>
<td>mouse, hamster,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rat, guinea pig</td>
</tr>
<tr>
<td>TRV 4</td>
<td>12.5064</td>
<td>guinea pig, rabbit</td>
</tr>
<tr>
<td>TRV 6</td>
<td>12.5066</td>
<td>monkey</td>
</tr>
<tr>
<td>TRV 7</td>
<td>12.5067</td>
<td>dog</td>
</tr>
<tr>
<td>TRV 9</td>
<td>12.5069</td>
<td>poultry</td>
</tr>
</tbody>
</table>

All watering valves are of stainless steel. They are welded (TRV 1) or screwed into suitable watering pipes. Watering valves TRV 1 and TRV 9 operate at a water pressure of approx. 0.25 bar whilst the other watering valves can be used with a water pressure up to approx. 0.8 bar.

**TRV 1:** The valve stem has a thread on the front end onto which is screwed the valve cap. The valve cap with an inserted spring holds the valve needle with the seal against the seat face of the valve stem. The other side of the valve needle projects through the hole in the valve cap. When the valve needle is moved by the animal the seal face is released and allows water to emerge.

**TRV 4 – TRV 7:** Operate on the same principle as TRV 1. At the valve inlet opening there is in addition a small strainer to hold back impurities which cause minor valve leaks. In all cases the supply lines should be properly cleaned before inserting the valves.

**TRV 9:** With this valve the valve stem is forced against the seal face by gravity and water pressure. The valve can only be used in a vertical position, that is to say with the outlet at the bottom and is only intended for chickens, chicks etc.
13.16 Pressure reducing valve
Short indication: DMI
Order number: 12.5096
The pressure reducing valve is designed for fitment in the supply line to racks and batteries with automatic watering system. The pressure is adjustable from 0 – 1.6 bar.

13.17 Liquid filter
Short indication: FF 30
Order number: 12.5098
A polypropylene liquid filter should additionally be fitted to the supply lines of automatic watering systems. It is equipped with a filter cylinder which holds back all solid impurities to be found in tap water which can lead to watering valve leakage.

13.20 Identification plates
13.21 Identification plates made of stainless steel
<table>
<thead>
<tr>
<th>Short indication</th>
<th>Order number</th>
<th>Dimensions about: breadth x height</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 1</td>
<td>10.4501</td>
<td>80 x 60 mm</td>
</tr>
<tr>
<td>S 2</td>
<td>10.4502</td>
<td>130 x 75 mm</td>
</tr>
<tr>
<td>S 6</td>
<td>10.4506</td>
<td>150 x 115 mm</td>
</tr>
<tr>
<td>S 7</td>
<td>10.4507</td>
<td>110 x 75 mm</td>
</tr>
</tbody>
</table>

The identification plates are manufactured from stainless steel and are designed for use with insertable cards.

13.22 Identification plates made of plastic
Short indication: S 3
Order number: 10.4503
Dimensions about: 105 x 65 mm
These identification tags are made of PVC thermoplastic and can be marked with either wax crayon or felt-tipped pen. Markings can subsequently be erased with alcohol or activator.
### 13.40 Feed containers

<table>
<thead>
<tr>
<th>Short indication</th>
<th>Order No.</th>
<th>Dimensions (breadth × depth × height, eating position breadth × depth × height, total)</th>
<th>Capacity</th>
<th>Fodder sort</th>
<th>Use for cage type animal</th>
</tr>
</thead>
<tbody>
<tr>
<td>FU R1</td>
<td>08.3701</td>
<td>100 × 60 × 60 mm&lt;br&gt;100 × 75 × 140 mm</td>
<td>0.14 kg</td>
<td>meal</td>
<td>Cages type II – III (mouse, hamster, rat)</td>
</tr>
<tr>
<td>FU R2</td>
<td>08.3702</td>
<td>same as FU R1, however 2 eating positions</td>
<td>0.3 l</td>
<td>meal</td>
<td>Same as FU R1 (same as FU R1)</td>
</tr>
<tr>
<td>FU R3</td>
<td>08.3703</td>
<td>same as FU R1, however 3 eating positions</td>
<td>0.24 kg</td>
<td>meal</td>
<td>Same as FU R1 (same as FU R1)</td>
</tr>
<tr>
<td>FU R5</td>
<td>08.3705</td>
<td>100 × 45 × 45 mm&lt;br&gt;100 × 80 × 140 mm</td>
<td>0.5 l</td>
<td>meal</td>
<td>Same as FU R1 (same as FU R1)</td>
</tr>
<tr>
<td>FU M3</td>
<td>08.3713</td>
<td>85 × 130 × 40 mm&lt;br&gt;85 × 150 × 145 mm</td>
<td>0.50 kg</td>
<td>pellets</td>
<td>Cages type III (guinea pigs)</td>
</tr>
<tr>
<td>FU M4</td>
<td>08.3714</td>
<td>145 × 125 × 40 mm&lt;br&gt;145 × 125 × 120 mm</td>
<td>0.86 kg</td>
<td>pellets</td>
<td>Cages type IV (guinea pigs)</td>
</tr>
<tr>
<td>FU MZK</td>
<td>08.3724</td>
<td>165 × 50 × 55 mm&lt;br&gt;165 × 125 × 170 mm</td>
<td>1.28 kg</td>
<td>pellets</td>
<td>MZK 80/25 (guinea pigs)</td>
</tr>
<tr>
<td>FU KA</td>
<td>08.3721</td>
<td>125 × 80 × 50 mm&lt;br&gt;125 × 160 × 190 mm</td>
<td>1.14 kg</td>
<td>pellets</td>
<td>Cages for guinea pigs (and rabbits)</td>
</tr>
<tr>
<td>FU KZ</td>
<td>08.3728</td>
<td>140 mm Ø, 50 mm height</td>
<td>0.40 kg</td>
<td>mash, water</td>
<td>Cages for cats (cages for dogs and minipigs)</td>
</tr>
<tr>
<td>FU TR1</td>
<td>08.3740</td>
<td>250 × 150 × 130 mm&lt;br&gt;250 × 150 × 145 mm</td>
<td>2.90 kg</td>
<td>pellets, mash, water</td>
<td>Cages for monkeys</td>
</tr>
<tr>
<td>FU AF</td>
<td>08.3730</td>
<td>235 × 55 × 65 mm&lt;br&gt;235 × 55 × 110 mm</td>
<td>0.57 kg</td>
<td>pellets</td>
<td>Cages for monkeys</td>
</tr>
</tbody>
</table>

All feed containers are manufactured from stainless steel and are designed in such a way that feed loss is reduced to a minimum.

FU R1 – FU R3 are equipped with a movable insert and a wire grille with a mesh size of 10 × 10 mm. The insert presses down on the feed as the latter is consumed.

FU R5 is equipped with a swing-type wire grille with a mesh size of 6 × 6 mm, through which the feed descends in pace with the rate of consumption.

FU M3 - FU M4 and FU MZK have been specially developed for guinea pigs. Loss of feed is largely prevented by the inwardly sloping baffle of the feed container.
E. BECKER & CO GMBH

FU KA Can be used in conjunction with all guinea pig and rabbit cages (see catalogue, page 93), except MZK 80/25.
FU KZ This round feed and watering dish can, with suitable holding brackets, be used in cat cages and enclosures.
FU TR 1 Tilting trough for dog and minipig cages.
FU AF Feed container specially designed for monkeys, provided with a reach-through opening on the side facing the cage.

13.50 Droppings trays
13.51 Droppings trays made of stainless steel

<table>
<thead>
<tr>
<th>Short indication: number:</th>
<th>Order:</th>
<th>Dimensions:</th>
<th>Use for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSB 1</td>
<td>09.4201</td>
<td>450×580×40 mm</td>
<td>GDK III</td>
</tr>
<tr>
<td>KSB 2</td>
<td>09.4202</td>
<td>450×680×40 mm</td>
<td>KB and MB, without KB 47</td>
</tr>
<tr>
<td>KSB 3</td>
<td>09.4203</td>
<td>550×680×40 mm</td>
<td>KB 47/6, KB 47/9</td>
</tr>
<tr>
<td>KSB 4</td>
<td>09.4204</td>
<td>380×670×40 mm</td>
<td>GDK IV</td>
</tr>
<tr>
<td>KSB 5</td>
<td>09.4205</td>
<td>1175×325×40 mm</td>
<td>GDK II</td>
</tr>
</tbody>
</table>

The droppings trays are manufactured from 0.8 mm thick stainless steel sheet.

13.52 Droppings trays made of fibre-glass reinforced polyester resin

<table>
<thead>
<tr>
<th>Short indication: number:</th>
<th>Order:</th>
<th>Dimensions:</th>
<th>Use for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>KKP 1</td>
<td>09.4211</td>
<td>450×580×40 mm</td>
<td>GDK III</td>
</tr>
<tr>
<td>KKP 2</td>
<td>09.4212</td>
<td>450×680×40 mm</td>
<td>KB and MB, without KB 47</td>
</tr>
</tbody>
</table>

Droppings trays made of fibre-glass reinforced polyester resin are light, impact-resistant and can be autoclaved up to 120 °C.

13.53 Droppings trays made of polystyrene

<table>
<thead>
<tr>
<th>Short indication: number:</th>
<th>Order:</th>
<th>Dimensions:</th>
<th>Use for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>KK 2</td>
<td>09.4217</td>
<td>220×300×45 mm</td>
<td>cages type II, GURI</td>
</tr>
<tr>
<td>KK 3</td>
<td>09.4218</td>
<td>285×460×45 mm</td>
<td>cages type III</td>
</tr>
<tr>
<td>KK 4</td>
<td>09.4219</td>
<td>380×670×45 mm</td>
<td>cages type IV</td>
</tr>
</tbody>
</table>

These are individual droppings trays which can be hung in normal supporting racks. This means that racks for cages with closed bottoms can also be used for cages with wire mesh bottoms. These droppings trays are used mainly in conjunction with universal racks.
14.0 Transporters
14.1 Laboratory trolley

Short indication: LABO
Order number: 11.1701
Dimensions table-top
length: 1200 mm
about:
 breadth: 575 mm
 height: 830 mm

The trolley frame is fully hot-galvanized and is provided with a handle at the front end. The two tiers of the trolley are available either in laminated hardwood board (Order No. 11.1701) or stainless steel sheet (Order No. 11.1702). Similarly, the laboratory trolley can be supplied entirely in stainless steel (Order No. 11.3702).

The trolley is mounted on 4 swivel castors 125 mm in diameter, of which two are provided with brakes.

14.2 Waste collecting trolley

Short indication: ABSA
Order number: 11.1707
Dimensions table-top
length: 1200 mm
about:
 breadth: 575 mm
 height: 1020 mm

The top tray has a built-in waste chute which is provided with a clamping ring for the purpose of attaching a waste bag which then rests on the bottom tray. The trays are of stainless steel whilst the trolley frame is available either in galvanized steel (Order No. 11.1707) or stainless steel (Order No. 11.3707). The swivel castors have a diameter of 125 mm, two of which are provided with brakes.

14.3 Trolley for feed sacks

Short indication: FTW
Order number: 11.1711
Dimensions about
 breadth: 680 mm
 depth: 580 mm
 height: 860 mm

The feed sack transport trolley runs on 4 swivel castors of 125 mm diameter and consists of a tubular frame with wire basket.

Available either in galvanized or stainless steel finish (Order No. 11.3711).

14.4 Feed storage bin

Short indication: FVB
Order number: 11.3721
Dimensions:
 breadth: 500 mm
 depth: 500 mm
 height: 1280 mm
 inner height: 1000 mm

Capacity about:
 100 kg pellets

The food storage bin, made of stainless steel, is strongly constructed and guarantees a dry and clean stock of food. The food can be taken easily by means of a nozzle at the bottom of the storage bin.

The food storage bin is mounted on 4 swivel castors 100 mm Ø, of which two are provided with brakes.
15.0 Animal operating tables
15.1 Operating table for mice
Short indication: OPM
Order number: 13.5580
Dimensions of operating plate 80 x 140 mm, made of chromium plated brass, with spring-loaded head support, tail clips and 4 paw clamps. The operating plate is movable in all directions by a ball-and-socket joint on a circular stand base.

15.2 Operating table for rats and guinea pigs
Short indication: OPR
Order number: 13.5581
The operating table 140 x 280 mm is made of chromium plated brass. Paw clamps with locking spring for rapid and reliable positioning of experimental animals. The paw clamps are movable in longitudinal and transverse slots. The table top can be moved into any desired position by means of a heavy ball joint. Heavy cast iron tripod base. With fully adjustable head support with nose ring and ether mask.

15.3 Operating table for rabbits, cats and small dogs
Short indication: OPK
Order number: 13.5582
The operating table in dimensions 440 x 650 mm is made of stainless steel. 4 telescopic feet provide adjustment of height and slope angle. A rod-frame system and clamps around the table allow fixing of the animal by means of belts. Built-in heating, 220 V, for heating the plate up to about 30 to 32 °C.
16.0 Cleaners
16.1 Cleaner BEROL 25 S

Short indication: BEROL 25 S
Order number: 40,1001

BEROL 25 S is a special cleaner on the basis of acidity with disinfecting effect. BEROL 25 S is especially suitable for cages made of Makrolon as well for cages and lids made of stainless steel. It dissolves urine stone and removes feces as carefully as possible. It does not contain any hydrochloric acid, does not foam and is therefore especially suitable for washing apparatus.

BEROL 25 S is deliverable in cans with a contents of 12 or 30 kg.

Doses: for manual cleaning up to 10 % BEROL 25 S
for one-chamber washing apparatus 1 % BEROL 25 S
for two- or more chamber washing apparatus
for prewashing and main washing 0.8 % BEROL 25 S
for re-washing 0.2 % BEROL 25 S
(1 % = 1 litre BEROL 25 S for 100 litres of water)

17.0 Flying insect exterminater
17.1 KATLAN Flying insect exterminater

Short indication: Professional HL, Senator HL
Order number: 40,3001, 40,3002

Specification:
Rated voltage 220 V, 50 Hz
Power rating 65 W
Degree of protection class I
Type of protection rainproof, radio suppressed
Voltage at UV reflector 4,000 V/15 mA
Approx. dimensions: width 720 mm, depth 190 mm, height 440 mm

The electrical flying insect exterminaters operate with special UV fluorescent lamps. Insect pests are killed off in a flash by high voltage within the effective range of the light sources and the UV Diamond reflectors.
### 18.0 Laminar-Flow-Cabinet

<table>
<thead>
<tr>
<th>Short indication</th>
<th>Order No.</th>
<th>Dimensions: Width x Depth x Height (incl. frontal honeycomb structure)</th>
<th>for accommodating:</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFS 1</td>
<td>13.5521</td>
<td>1310x 850x 1980 mm</td>
<td>42 Type I Cages</td>
</tr>
<tr>
<td>LFS 2</td>
<td>13.5522</td>
<td>1310x 850x 1980 mm</td>
<td>30 Type II Cages</td>
</tr>
<tr>
<td>LFS 3</td>
<td>13.5523</td>
<td>1310x 1070x 1980 mm</td>
<td>24 Type III Cages</td>
</tr>
<tr>
<td>LFS 4</td>
<td>13.5524</td>
<td>1310x 1250x 1980 mm</td>
<td>18 Type IV Cages</td>
</tr>
</tbody>
</table>

**Technical Data:**
- Prefilter: 2 Z-cells 395 x 495 x 47 mm
- HOSCH-Filter: 2 with 1525 x 610 x 150 mm
- Power consumption: approx. 0.3 W
- Electric connection: 220 V, 50 Hz
- Weight: approx. 140 kg

The laminar flow cabinet is a dust and germ free air filter device, in which low turbulence displacement flow air is supplied through the honeycomb structure fitted at the front.

Via a prefilter an intake fan sucks in impure room air, which is then supplied to the high-capacity suspended particle air filter (HOSCH) with a minimum rate of precipitation of 99.99% for particle sizes of 0.3 µ. The downstream frontal honeycomb structure is thus subjected to an air flow of 0.45 m/s. This thus prevents the entry of dust particles from the impure vicinity.

The air flow is monitored by two display units which continuously indicate when the prefilter has to be renewed, and whether the actual speed of 0.45 m/s is obtained in the purified room area. This function only applies when all honeycombs are equipped with cages. The radial blower is infinitely variable via a control transformer.

The frontal honeycomb structure can be supplied with types I-IV cages as required, and can be exchanged quite simply. The HOSCH-filter can be exchanged by removal of the frontal honeycomb structure. If required a removable work top can be fitted in the frontal honeycomb structure.

All parts are made of stainless steel (with the exception of the electrical equipment and the filter).
Amigos e Senhores,

Com a presente vimos junto de V.Exs. fazer referência à empreitada de Remodelação Rede de Água e Esgotos nos Serviços de Fisiologia Farmacologia Médica da Faculdade de Medicina da universidade do Porto.

Dado que a referida obra se encontra concluída muito agradeceríamos de V/parte, caso não vejam impedimentos, o favor de nos remeter documento comprovativo da recepção provisória.

Sem outro assunto de momento e agradecendo desde já rápidas noticias subscrevemo-nos com a nossa mais elevada estima e consideração,

De V.Exs.

Atentamente,
2/2/86

Grisemo a
S. Inácio
S. Francisco que
podia ser feito
a recepção
quero dizer
al prmo
con

Mo.
A VENTARCO - Ventilação e Ar Condicionado, Lda
Largo Dr. Tito Fontes, 119-40
4000 PORTO

Obras de remodelação da rede de água e esgotos nos serviços de
Fisiologia e Farmacologia médica da Faculdade de Medicina da U.P.

Levo ao conhecimento de V. Exéºs que se encontra em pagamento
na secção de finanças junto do Banco de Portugal nesta cidade, a autori-
zação nº 14938 de esc:
1 482 164.50 , referente à situação
nº única , do qual se anexa cópia do respectivo auto de medição.

Com os melhores cumprimentos.

/DIRECTOR DE SERVIÇOS

(Júlio Amaral de Carvalho)

NOTA: - A importância terá de ser recebida impreterivelmente até 31
de Janeiro de 1986.
**MINISTÉRIO DO EQUIPAMENTO SOCIAL**
**DIREÇÃO-GERAL DAS CONSTRUÇÕES ESCOLARES**

Direção da Serviços Regionais de Construção Escolares do Norte

Imposto de Transações

**REGULARIZADO**

O INTERESSADO FEZ PROVA DE QUE TEM A SUA SITUAÇÃO CONTRIBUTIVA REGULARIZADA PERANTE A PREVIDÊNCIA.

**AUTO DE VISTORIA E MEDICAÇÃO DE TRABALHOS**

**Obras de remodelação da rede de água e esgotos nos serviços de Fisiologia e Farmacologia Médica da Faculdade de Medicina da U.P.**

Empreitada: VENTARCO - Ventilação e Ar Condicionado, Ltda., por proposta autorizada p/desp.

**13.9.85**

Em 13.9.85, em Subdirector Geral, Conto Nú 50029561

por contrato n.º 1/81, Registo n.º 187, Deleg. de

na importância de Esc. 7.482.164$50, visado pelo Tribunal de Contas em

o Eng. Técnico - Renato Ribeiro da Silva

Representante

e o adjudicatário

a fim de, em harmonia com as condições do programa do concurso e condições gerais do respectivo caderno de encargos, procederem ao exame e medição dos trabalhos, tendo verificado que se encontram executados as quantidades de trabalhos que constam nas folhas de medição de trabalhos anexas rubricadas pelos intervenientes;

<table>
<thead>
<tr>
<th>CÓDIGO</th>
<th>DESIGNAÇÃO (RESUMO)</th>
<th>Importâncias totais</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>arquivocentral</td>
</tr>
<tr>
<td></td>
<td>valor dos trabalhos realizados</td>
<td>1.489.613$00</td>
</tr>
</tbody>
</table>

**DISCONTOS:**

- 0,5% para garantia
- 0,5% para C.G. de Aposentações

**Total:** 7.482.164$50

Importância líquida a receber: Um milhão quatrocentos e oitenta e nove mil seiscentos e treze escudos.

E nada mais havendo a tratar se lavrou o presente auto que depois de lido e julgado conforme, vai ser assinado pelo funcionário que nele tomou parte e pelo adjudicatário.

O representante da Direcção-Geral

O adjudicatário

Visto

Em 4.11.1985

O Director
Decende: Enviéi o selo aos
21/10/81.

A D. Géni pediu esclarecimentos para
a prof. 363. — Venturco

[Signature]

17.10.81
A Firma:
Venturco-Ventilação e Ar Condicionado, Lda
Largo Dr. Tito Fontes, 119-4º
4000 PÓRTO

ASSUNTO: "Empreitada de Obras de Remodelação da rede de Água e Esgotos nos Serviços de Fiscalização e Farmacologia Médica da Faculdade de Medicina da Universidade do Porto".

Comunica-se a V. Exas, que por despacho de 13/9/85 de Exmº Sr. Subdirector-Geral da D.G.C.E. foi autorizada a vossa proposta, no valor de Esc.: 1 489 613$00, para execução da (o) empreitada, especificamente em epígrafe.

Com os melhores cumprimentos.

O ENGENHEIRO DIRECTOR,

(Júlio Amaral de Carvalho)
ASSUNTO: "11.12.49-01-Empreitada de Obras de Remodelação da rede de Agua e Esgotos nos Serviços de Fiscalização e Farmacologia Médica da Faculdade de Medicina da Universidade do Porto"

Por ser necessário e urgente realizar as obras em epígrafe, elaborou-se o orçamento anexo na importância de Esc.1 379 374$00 que me permito apresentar à apreciação de V. EXª.

Dada a necessidade premente da realização das obras e na persuasão que o referido orçamento mereça aprovação, promoveu esta Direcção nos termos da alínea a) do nº 1 do artº 5º do Decreto lei nº 211/79 de 12 de Julho, a abertura de um concurso limitado, em 14.6.85 entre firmas de comprovada idoneidade e capacidade técnica, abaixo mencionadas, para adjudicação da empreitada com o prazo de
90 dias:

-Rost & Janus,Sucurs,Lda
-Nunes Correia-Indústrias Térmicas do Norte,Lda
-Ventarco-Ventilação e Ar Condicionado,Lda

tendo sido recebidas as seguintes propostas:

-Rost & Janus,Sucurs,Lda.................................1 584 121$00
-Nunes Correia-Industrias Térmicas do Norte,Lda......1 558 705$00
-Ventarco-Ventilação e Ar condicionado,Lda..........1 489 613$00

Da análise das propostas apresentadas,figura-se que é de aceitar a proposta da firma Ventarco-Ventilação e Ar condicionado,Lda no valor de Esc:--
1 489 613$00 porque:

-Oferece o preço mais baixo,embora ligeiramente superior ao preço base,mas que se considera insignificante.
-Obedece ao caderno de Encargos
-Obriga o titular a concluir a empreitada no prazo estipulado.
-Tem demonstrado, noutras obras por si realizadas, possuir qualida-
que garantem a boa execução desta.

Tem-se pois, a honra de sugerir a V.Exª que a empreitada seja adju-
dicada à firma Ventarco-Ventilação e Ar Condicionado,Lda, pela importância de Esc:
1 489 613$00 com dispensa de contrato escrito ao abrigo da disposição legal atrás
citada, com as alterações que lhe foram introduzidas pelo Decreto Lei n° 227/85
de 4 de Julho.

A verba de Esc: 1 489 613$00 prevista para o ano em curso tem ca-
bimento nas disponibilidades da rubrica orçamental em referência.

[Assinatura]

ENG. DIRETOR GERAL DAS CONSTRUÇÕES ESCOLARES

LISBOA
RS/CR

po-1050 : 0070
5132400240001 1489 642 20 8645
1487 612 00
06/09/85 13.9.85

ESTE EMPREendimento
CONTA DO PLANO CONS. REM.
07/09/85
O PLANEAMENTO DA CEN

U. PORTO
ASSUNTO: "1 13 12 43 02-Empreitada de Obras de Remodelação da rede de Agua e Esgotos nos Serviços de Fiscalização e Farmacologia Mé-
dica da Faculdade de Medicina da Universidade do Porto"

Por ser necessário e urgente realizar as obras em epígrafe, ela-
borou-se o orçamento anexo na importância de Esc;1 379 374$00 que me permito apre-
SENTAR à apreciação de V.Exª.

Dada a necesidade premente da realização das obras e na persuação que o referido orçamento mereça aprovação, promoveu esta Direcção nos termos da alinea a) do nº 1 do artº 5º do Decreto lei nº 211/79 de 12 de Julho, a abertura de um concurso limitado, em 14.6.85 entre firmas de comprovada idoneidade e capa-
cidade técnica, abaixo mencionadas, para adjudicação da empreitada com o prazo de
90 dias:
-Rost & Janus, Sucurs, Lda
-Nunes Correia-Indústrias Térmicas do Norte, Lda
-Ventarco-Ventilação e Ar Condicionado, Lda

tendo sido recebidas as seguintes propostas:
-Rost & Janus, Sucurs, Lda. ....................1 584 121$00
-Nunes Correia-Indústrias Térmicas do Norte, Lda. ....1 558 705$00
-Ventarco-Ventilação e Ar condicionado, Lda. .........1 489 613$00

Da análise das propostas apresentadas, afigura-se que é de aceitar a proposta da firma Ventarco-Ventilação e Ar condicionado, Lda no valor de Esc:-- 1 489 613$00 porque:

- Oferece o preço mais baixo, embora ligeiramente superior ao preço base, mas que se considera insignificante.
- Obedece ao caderno de Encargos
- Obriga o titular a concluir a empreitada no prazo estipulado.
- Tem demonstrado, noutras obras por si realizadas, possuir qualidades que garantem a boa execução desta.

Tem-se pois, a honra de sugerir a V. Exª que a empreitada seja adjudicada à firma Ventarco-Ventilação e Ar Condicionado, Lda, pela importância de Esc: 1 489 613$00 com dispensa de contrato escrito ao abrigo da disposição legal atrás citada, com as alterações que lhe foram introduzidas pelo Decreto Lei nº 227/85 de 4 de Julho.

A verba de Esc: 1 489 613$00 prevista para o ano em curso tem cabimento nas disponibilidades da rubrica orçamental em referência.

O ENGENHEIRO DIRECTOR

(Júlio Amaral de Carvalho)

E xmo. Senhor
ENG. DIRECTOR GERAL DAS CONSTRUÇÕES ESCOLARES
LISBOA
RS/CR
<table>
<thead>
<tr>
<th>Cód. Mog</th>
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<tbody>
<tr>
<td>06/09/85</td>
<td>6</td>
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</tbody>
</table>

Seção de Contabilidade

**CERTIFICAÇÃO**

Este empreendimento consta do [assinatura]

DATA: 07/09/85

O M.P. [assinatura]
PIIDAC/85

INFORMAÇÃO PARA CONTROLE DO PLANO E ORÇAMENTO

1 - O valor da proposta escalonada para o corrente ano tem cabimento no saldo da rubrica orçamental respectiva de (a) 

105.241.441.300 contos.

2 - O valor da proposta excede em __________________ contos o valor do saldo por cabimento na rubrica orçamental respectiva (a) __________________ contos.

Oferece-se como contrapartida uma redução de (b) __________________ contos.

(a) - Indicar o saldo existente.

(b) - Indicar a empreitada ou fornecimento do mesmo ou de outro empreendimento onde se propõe a redução.

Prop. 363 | 05/07/85 | 14.896.613

Até a consolidação de toda a obra e assunto serem serviços de fiscalização e higienização final.

O diretor: Mário Magalhães
PIDDAC/85

INFORMAÇÃO PARA CONTROLE DO PLANO E ORÇAMENTO

1 - O valor da proposta escalonada para o corrente ano tem cabimento no saldo da rubrica orçamental respectiva de (a)

166.481,24 contos.

2 - O valor da proposta excede em __________________ contos o valor do saldo por cabimento na rubrica orçamental respectiva (a) __________________ contos.

Oferece-se como contrapartida uma redução de (b) __________ contos.

(a) - Indicar o saldo existente.

(b) - Indicar a empreitada ou fornecimento do mesmo ou de outro empreendimento onde se propõe a redução.
VENTARCO - VENTILAÇÃO E AR CONDICIONADO, LDA., com sede no Largo Dr. Tito Fontes 119-4º no Porto, titular dos Alvarés de Empreiteiros de Obras Públicas nºs:

9062 - 7ª Subcategoria "Ventilação, Aquecimento e Condicionamento de Ar" da VI Categoria "Instalações Eléctricas e Mecânicas" - Classe 4 - Obras de valor até 100.000.000$00

9063 - 8º subcategoria - "Equipamentos" da VI Categoria "Instalações Eléctricas e Mecânicas" - Classe 4 - Obras de valor até ESC: 100.000.000$00.

11135 - 9ª Subcategoria "Canalizações e Instalações dos respectivos dispositivos de utilização" da I Categoria - "Construção Civil" - Classe 3 - Obras de valor até 50.000.000$00

11136 - 6ª Subcategoria - "Instalações de Iluminação, Sinalização, etc". da VI Categoria "Instalações Eléctricas e Mecânicas" Classe 4 - Obras de valor até 100.000.000$00.

.../...
Depois de ter tomado conhecimento do objecto da empreitada de "REMODELAÇÃO DA REDE DE AGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MEDICA DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO, a que se refere o convite datado de 3 de Junho de 1985, obriga-se a executar a referida empreitada, de harmonia com o Caderno de Encargos, pela quantia de ESC:1.489.613$00 (UM MILHÃO, QUATROCENTOS E OITENTA E NOVE MIL SEISCENTOS E TREZE ESCUDOS), conforme a lista de preços unitários apensa a esta proposta e que dela faz parte integrante e no prazo de 90 dias.

Mais declara que renuncia a foro especial e se submete em tudo o que respeitar à execução do seu contrato, ao que se achar prescrito na legislação portuguesa em vigor.

Proto, 12 de Junho de 1985

[Assinatura]
<table>
<thead>
<tr>
<th>Designação dos Trabalhos</th>
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<th>Preços</th>
<th>Importâncias</th>
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<tr>
<td></td>
<td></td>
<td>Mão de obra</td>
<td>Materiais</td>
</tr>
<tr>
<td>EMPREITADA DE REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MÉDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO.</td>
<td></td>
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<tr>
<td><strong>CAPITULO UNICO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Artº 1º-</strong> Fornecimento e montagem de um termoacumulador elétrico para reaquecimento da água, c/ a capacidade de 650 lts. construído em chapa de aço com posterior galvanização devidamente isolado e revestido.</td>
<td>1 un.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Artº 2º-</strong> Fornecimento e montagem de um electroacelerador de retorno de água quente a instalar junto ao termoacumulador.</td>
<td>1 un.</td>
<td></td>
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</tr>
<tr>
<td><strong>Artº 3º-</strong> Substituição de válvulas de passagem com os diâmetros seguintes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 1 1/2&quot;</td>
<td>3 un.</td>
<td>3.290$00</td>
<td>9.870$00</td>
</tr>
<tr>
<td>Ø 1&quot;</td>
<td>2 un.</td>
<td>2.080$00</td>
<td>4.160$00</td>
</tr>
<tr>
<td><strong>Artº 4º-</strong> Idem, idem de válvula de retenção com Ø 1 1/2&quot;</td>
<td>1 un.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Artº 5º-</strong> Ligações elétricas ou equipamento instalado, incluindo todos os trabalhos e material necessário</td>
<td>1 un.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designação dos trabalhos</td>
<td>Quantidades</td>
<td>Preços</td>
<td>Importâncias</td>
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<tr>
<td></td>
<td>Mão de obra</td>
<td>Materiais</td>
<td>Mão de obra</td>
</tr>
<tr>
<td>Artº 6º-Fornecimento e montagem de tubo de ferro galvanizado da série média DIN 2440, incluindo acessórios rosados:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 1 1/1&quot;</td>
<td>145,00 ml</td>
<td>1.231$00</td>
<td>178.495$00</td>
</tr>
<tr>
<td>Ø 1&quot;</td>
<td>18,00 ml</td>
<td>916$00</td>
<td>16.488$00</td>
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<td>Ø 3/4&quot;</td>
<td>36,00 ml</td>
<td>730$00</td>
<td>26.280$00</td>
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<td>Artº 7º-Isolamento da tubagem com manta de lã mineral de 30 mm de espessura de 70 kg/m³, revestida a chapa galvanizada nº 22 incluindo pintura.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 1 1/2&quot;</td>
<td>145,00 ml</td>
<td>1.520$00</td>
<td>234.900$00</td>
</tr>
<tr>
<td>Ø 1&quot;</td>
<td>18,00 ml</td>
<td>1.370$00</td>
<td>24.660$00</td>
</tr>
<tr>
<td>Artº 8º-Desmontar e remover todo o material existente a substituir, p/ fora da área da Faculdade.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 un</td>
<td></td>
<td></td>
<td>324.000$00</td>
</tr>
<tr>
<td>Artº 9º-Execução de todos os trabalhos de construção civil inerentes à montagem e desmontagem do material de aquecimento incluindo todos os remates e pinturas necessárias.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 un</td>
<td></td>
<td></td>
<td>367.200$00</td>
</tr>
<tr>
<td>Artº 10º-Ensaios hidráulicos e de funcionamento da canalização</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>un.</td>
<td></td>
<td></td>
<td>54.000$00</td>
</tr>
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</table>

Porto, 12 de Junho de 1985

1.489.613$00
PROPOSTA PARA A EMPREITADA DE "REMODELACAO DA
REDE DE AQUA QUENTE NOS SERVICOS DE FISIOLOGIA
DA UNIVERSIDADE DO PORTO".

U. PORTO

F. A. E. FARMACOLOGIA MEDICA DA FACULDADE DE MEDICINA

DIRECçAO DE SERVICOS REGIONAL DE
CONSTRUÇOES ESCOLARES DO NORTE

Rua Julio Dinis, 826-4º
4000 Porto
ROST & JANUS, SUCCE, LDA.
RUA BARÃO DE FORRESTER, 914
4000 PORTO

PROPÓSTA

ROST & JANUS, SUCCE, LDA., com sede na Rua Barão de Forrester, nº. 914 no PORTO e Filial na Rua D. Pedro V, nº. 21 em LISBOA, titular do alvará de empreiteiros de obras públicas nº. 4.128 e classificados na 7ª Subcategoria da VI Categoría e na 2ª Classe (Subclasse A), depois de ter tomado conhecimento do objecto da empreitada de "REMODELACÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MÉDICA DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO", a que se refere o convite datado de 3 de Junho de 1985, obriga-se a executar a referida empreitada, de harmonia com o Caderno de Encargos, pela quantia de ESCR: 1.584.121,900 (UM MILHÃO QUINHENTOS E OITENTA E QUATRO MIL CENTO E VINTE E UM ESCUDOS) conforme a lista de preços unitários apensa a esta proposta e que dela faz parte integrante, e no prazo de 90 dias.

Mais declara que remúnscia a foro especial e se submete, em tudo o que respeitar à execução do seu contrato, ao que se achar prescrito na legislação portuguesa em vigor.

Porto, 14 de Junho de 1985

[Assinatura]
PROPOSTA

ROST & JANUS, SUCCS., LDA., com sede na Rua Barão de Forrester, nº. 914 no PORTO e Filial na Rua D. Pedro V., nº. 21 em LISBOA, titular do alvará de empreiteiros de obras públicas nº. 4.128 e classificados na 7ª Subcategoria da 6ª Categoria e na 2ª Classe (Subclasse A), depois de ter tomado conhecimento do objeto da empreitada de "REMODELÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MÉDICA DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO", a que se refere o convite datado de 3 de Junho de 1985, obriga-se a executar a referida empreitada, de harmonia com o Caderno de Encargos, pela quantia de ESC 1.584.121,00 (UM MILHÃO QUINHENTOS E OITENTA E QUATRO MIL CENTO E VINTE E UM ESCUDOS) conforme a lista de preços unitários apensa a esta proposta e que dela faz parte integrante, e no prazo de 90 dias.

Mais declara que renúncia a foro especial e se submete, em tudo o que respeitar à execução do seu contrato, ao que se achar prescrito na legislação portuguesa em vigor.

Porto, 14 de Junho de 1985

[Assinatura]

[Escrita]
EMPREITADA DE REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MEDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO

CAPÍTULO ÚNICO

Art.º 1º. - Fornecimento e montagem de um termostato elétrico para aquecimento da água, com capacidade de 650 litros, construído em chapa de aço com posterior galvanização, devidamente isolado e revestido. 1 161.000$00

Art.º 2º. - Fornecimento e montagem de um electroacelerador de retorno de água quente a instalar junto ao termostato. 1 31.820$00

Art.º 3º. - Substituição de válvulas de passagem com os diâmetros seguintes:

<table>
<thead>
<tr>
<th>Diâmetro</th>
<th>Quantidade</th>
<th>Preço</th>
<th>Importância</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \phi 1\ 1/2'' )</td>
<td>3</td>
<td>3.510$00</td>
<td>10.530$00</td>
</tr>
<tr>
<td>( \phi 1'' )</td>
<td>2</td>
<td>2.215$00</td>
<td>4.430$00</td>
</tr>
</tbody>
</table>

Art.º 4º. - Idem, idem de válvula de retenção com \( \phi 1\ 1/2'' \) 1 3.060$00

Art.º 5º. - Ligacões elétricas ou equipamento instalado, incluindo todos os trabalhos e material necessário. 1 67.850$00

Art.º 6º. - Fornecimento e montagem de tubo de ferro galvanizado da série média DIN 2440, incluindo acessórios roscados:

<table>
<thead>
<tr>
<th>Diâmetro</th>
<th>Quantidade</th>
<th>Preço</th>
<th>Importância</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \phi 1\ 1/2'' ) m1</td>
<td>145</td>
<td>1.310$00</td>
<td>189.950$00</td>
</tr>
<tr>
<td>( \phi 1'' ) m1</td>
<td>18</td>
<td>976$00</td>
<td>17.568$00</td>
</tr>
<tr>
<td>( \phi 3/4'' ) m1</td>
<td>36</td>
<td>778$00</td>
<td>28.008$00</td>
</tr>
<tr>
<td>DESIGNAÇÃO</td>
<td>Quant.</td>
<td>PREÇOS</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td></td>
<td>MÃO DE OBRA</td>
<td>MATERIAIS</td>
</tr>
<tr>
<td><strong>Artf. 7º.</strong> - Isolamento da tubagem com manta de lã mineral de 30 mm de espessura 70 Kg/m³, revestida a chapa galvanizada nº. 22, incluindo pintura.</td>
<td></td>
<td>145</td>
<td>1.725$00</td>
</tr>
<tr>
<td>$ 1 \frac{1}{2}^a$ m1</td>
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<td></td>
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<tr>
<td>$1$ m1</td>
<td></td>
<td>18</td>
<td>1.460$00</td>
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<tr>
<td><strong>Artf. 8º.</strong> - Desmontar e remover todo material existente a substituir, para fora da área da Faculdade.</td>
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<td></td>
<td></td>
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<tr>
<td><strong>Artf. 9º.</strong> - Execução de todos os trabalhos de construção civil inerentes à montagem e desmontagem do material de aquecimento incluindo todos os remates e pinturas necessárias.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Artf. 10º.</strong> - Ensaios hidraulicos e de funcionamento da canalização.</td>
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</table>

**ESC:** 1.584.121$00
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<thead>
<tr>
<th>Designação</th>
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<th>Importâncias</th>
</tr>
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<tr>
<td>EMPREITADA DE REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MEDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO</td>
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<td><strong>CAPÍTULO ÚNICO</strong></td>
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<tr>
<td>Art. 1º. — Fornecimento e montagem de um termoacumulador elétrico para reaquecimento da água, com a capacidade de 650 litros, construído em chapa de aço com posterior galvanização, devidamente isolado e revestido.</td>
<td>1</td>
<td>31.820$00</td>
<td></td>
</tr>
<tr>
<td>Art. 2º. — Fornecimento e montagem de um electroacelerador de retorno de água quente a instalar junto ao termoacumulador.</td>
<td>1</td>
<td>10.530$00</td>
<td></td>
</tr>
<tr>
<td>Art. 3º. — Substituição de válvulas de passagem com os diâmetros seguintes:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- $ 1 ½&quot;</td>
<td>3</td>
<td>3.510$00</td>
<td>10.530$00</td>
</tr>
<tr>
<td>- $ 1&quot;</td>
<td>2</td>
<td>2.215$00</td>
<td>1.430$00</td>
</tr>
<tr>
<td>Art. 4º. — Idem, idem de válvula de retenção com $ 1 ½&quot;</td>
<td>1</td>
<td>3.060$00</td>
<td></td>
</tr>
<tr>
<td>Art. 5º. — Ligações elétricas ou equipamento instalado, incluindo todos os trabalhos e material necessário.</td>
<td>1</td>
<td>67.850$00</td>
<td></td>
</tr>
<tr>
<td>Art. 6º. — Fornecimento e montagem de tubo de ferro galvanizado da série média DIN 2440, incluindo acessórios rosados:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- $ 1 ½&quot;</td>
<td>145</td>
<td>1.310$00</td>
<td>189.950$00</td>
</tr>
<tr>
<td>- $ 1&quot;</td>
<td>18</td>
<td>976$00</td>
<td>17.568$00</td>
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<tr>
<td>- $ 3/4&quot;</td>
<td>36</td>
<td>778$00</td>
<td>28.008$00</td>
</tr>
<tr>
<td>DESIGNAÇÃO</td>
<td>Quant.</td>
<td>PRÊÇOS</td>
<td>IMPORTÂNCIAS</td>
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<td></td>
<td></td>
<td>MÃO DE OBRA</td>
<td>MATERIAIS</td>
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<tr>
<td>Art. 7º, - Isolamento da tubagem com manta de lã mineral de 30 mm de espessura 70 Kg/m³ revestida da chapa galvanizada nº. 22, incluindo pintura.</td>
<td></td>
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</tr>
<tr>
<td>Ø 1 1/2&quot; m1</td>
<td>145</td>
<td>1.725$00</td>
<td>250.125$00</td>
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<td>Ø 1&quot; m1</td>
<td>18</td>
<td>1.460$00</td>
<td>26.280$00</td>
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<td>Art. 8º, - Desmontar e remover todo material existente a substituir, para fora da área da Faculdade.</td>
<td>1</td>
<td></td>
<td>345.000$00</td>
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<tr>
<td>Art. 9º, - Execução de todos os trabalhos de construção civil inerentes à montagem e desmontagem do material de aquecimento incluindo todos os remates e pinturas necessárias.</td>
<td>1</td>
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<td>391.000$00</td>
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<td>Art. 10º, - Ensaios hidráulicos e de funcionamento da canalização.</td>
<td>1</td>
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<td>57.500$00</td>
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<tr>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1.584.121$00</td>
</tr>
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</table>
rost & janus, succs. lda.
RUA BARÃO DE FORRESTER, 914
APARTADO 1252
4201 PORTO CODEX

DIREÇÃO-GERAL DAS CONSTRUÇÕES ESCOLARES

PROPOSTA PARA A EMPREITADA DE:

"REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE
FISIOLOGIA E FARMACOLOGIA MÉDICA DA FACuldADE DE ME-
DICINA DA UNIVERSIDADE DO PORTO"
NUNES CORREIA - INDÚSTRIAS TÉRMICAS DO NORTE, LDA.

RUA DA FIRMEZA, 482 4000 PORTO
TELEFONES 28034 29448
TELEX 26144 NUCOR P

AGENTES DE:

Carrier

PRIMEIRA MANCA MUNDIAL
EN AR CONDICIONADO

INSTALADORES DE:

Aquecimento central
Refrigeração
Condicionado
Iluminação
Hidráulica
Mecânica
Contrato Incêndios
Instalações Sanitárias
Queimadores de Óleo
Etc

ARMAZENISTAS DE:

Tubos e Acessórios
Materiais referentes
às suas diversas actividades
Válvulas e Torneiras
Material de Vapor
Purgasores
Redutores de Pressão
Aparelhos de medida
Aparelhos de Controle
Condensadores
Cilindros de ar quente
Estufas Industriais
Bomba
Etc

PROPOSTA

NUNES CORREIA - INDÚSTRIAS TÉRMICAS DO NORTE, LIMITADA, com sede na Rua da Firmeza, n°. 482, no Porto, titular do
Alvará de Empreiteiro de Obras Públicas n°. 12.053, da 9ª.
Subcategoria, da I Categoria, 3ª. Classe, depois de ter to-
mado conhecimento do objecto da empreitada de "REMODELÃO
DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACO-
LOGIA MÉDICA DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO POR-
TO", a que se refere o Convite datado de 3 de Junho de 1985,
obriga-se a executar a referida empreitada, de harmonia com
o Caderno de Encargos, pela quantia de:

Esc.1.558.705,00 (UM MILHÃO QUINHENTOS E CINQUENTA E OITO
MIL SETECENTOS E CINCO ESCUDOS),

conforme a lista de preços unitários apresenta a esta proposta
e que dela faz parte integrante, no prazo de 90 dias.

Mais declara que renuncia a foro especial e se submete,
em tudo o que respeitar à execução do seu contrato, ao que se
achar prescrito na legislação portuguesa em vigor.

Porto, 12 de Junho de 1985

NUNES CORREIA-Indústrias Térmicas do Norte, Lda.

A. GERENÇA

RUA FIRMEZA, 462
TELEFONE 28034
- PORTO -

MF/PM
544-85
<table>
<thead>
<tr>
<th>DESIGNAÇÃO DOS TRABALHOS</th>
<th>QUANTIDADES</th>
<th>PREÇO UNITÁRIO</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPREITADA DE REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MÉDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO</td>
<td></td>
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<tr>
<td>CAPÍTULO ÚNICO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art. 1º. — Fornecimento e montagem de um termaocumulador elétrico para reaquecimento da água, com a capacidade de 650 litros, construído em chapa de aço com posterior galvanização, devidamente isolado e revestido.</td>
<td>1 un.</td>
<td>158.200$00</td>
<td></td>
</tr>
<tr>
<td>Art. 2º. — Fornecimento e montagem de um electroacelerador de retorno de água quente a instalar junto ao termaocumulador.</td>
<td>1 un.</td>
<td>33.230$00</td>
<td></td>
</tr>
<tr>
<td>Art. 3º. — Substituição de válvulas de passagem com os diâmetros seguintes:</td>
<td>3 un.</td>
<td>3.450$00</td>
<td>10.350$00</td>
</tr>
<tr>
<td>( \phi 1\ \frac{1}{2}'' )</td>
<td>2 un.</td>
<td>2.180$00</td>
<td>4.360$00</td>
</tr>
<tr>
<td>( \phi 1'' )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art. 4º. — Idem, idem de válvula de retenção com ( \phi 1\ \frac{1}{2}'' ).</td>
<td>1 un.</td>
<td></td>
<td>3.010$00</td>
</tr>
<tr>
<td>Art. 5º. — Ligação elétricas ou equipamento instalado, incluindo todos os trabalhos e material necessário.</td>
<td>1 un.</td>
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<td>66.670$00</td>
</tr>
<tr>
<td>Art. 6º. — Fornecimento e montagem de tubo de ferro galvanizado da série</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designação dos Trabalhos</td>
<td>Quantidades</td>
<td>Preço unitário</td>
<td>Total</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
<td>----------------</td>
<td>-------</td>
</tr>
<tr>
<td>média DIN 2440, incluindo acessórios roscados:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 1 1/1&quot;</td>
<td>145,00 mL</td>
<td>1,288$00</td>
<td>186,760$00</td>
</tr>
<tr>
<td>Ø 1&quot;</td>
<td>18,00 mL</td>
<td>960$00</td>
<td>17,280$00</td>
</tr>
<tr>
<td>Ø 3/4&quot;</td>
<td>36,00 mL</td>
<td>765$00</td>
<td>27,540$00</td>
</tr>
</tbody>
</table>

Art.7º - Isolamento da tubagem com manta de lã mineral de 30 mm de espessura 70 Kg/m³, revestida a chapa galvanizada nº. 22, incluindo pintura:

| Ø 1 1/2" | 145,00 mL | 1,695$00 | 245,775$00 |
| Ø 1" | 18,00 mL | 1,435$00 | 25,830$00 |

Art.8º - Desmontar e remover todo material existente a substituir, para fora da área da Faculdade:

| 1 un. | | | 339,000$00 |

Art.9º - Execução de todos os trabalhos de construção civil inerentes à montagem e desmontagem do material de aquecimento incluindo todos os remates e pinturas necessárias:

| 1 un. | | | 384,200$00 |

Art.10º - Ensaios hidráulicos e de funcionamento da canalização:

| 1 un. | | | 56,500$00 |

TOTAL ESC.: 1,558,705$00

Porto, 31 de Maio de 1985

Nunes Correia-Indústrias Técnicas do Norte, Ltda.
RUA FIRMEZA, 482
TELEFONE 28034
PORTO

po-1050 : 0091

AQUECIMENTO — AR CONDICIONADO — VENTILAÇÃO — REFRIGERAÇÃO — SANITÁRIAS — ELECTRICIDADE
RUA FIRMEZA, 462 4000 PORTO
TELEFONES 28034 / 29448

PROPOSTA PARA A EMPREITADA DE "REMODELAÇÃO DA REDE DE AGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MÉDICA DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO".

DIREÇÃO DE SERVIÇOS REGIONAL DE CONSTRUÇÕES ESCOLARES DO NORTE
Rua Júlio Dinis, 826-4º
4000 PORTO
EMPREITADA DE REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MEDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO

MEMORIA DESCRIPTIVA E JUSTIFICATIVA

Refere-se o orçamento anexo, aos trabalhos a realizar nos sectores de Farmacologia e Fisiologia Médica e, referem-se à substituição da rede de distribuição de água quente naqueles Serviços, totalmente obstruída e junto da Assessoria já podre, e essencialmente constam do seguinte:

- Fornecimento e assentamento de um termaacumulador eléctrico;
- Fornecimento e montagem de um electroacelerador de retorno;
- Substituição de válvulas de passagem e retenção;
- Fornecimento e montagem de tubos de ferro galvanizado nos diâmetros de 1 1/2", 1" e 3/4".
- Isolamento de toda a tubagem montada, com manta de lã de vidro mineral de 30 mm de espessura, revestida a chapa galvanizada nº. 22 devidamente pintada;
- Desmontar e remover todo o material existente e irrecuperável para fora da área da Faculdade.

Importam estes trabalhos no montante de esc.: 1 379 374$00 (um milhão, trezentos e setenta e nove mil, trezentos e setenta e quatro escudos)

Porto, 31 de Maio de 1985

O ENGENHEIRO TÉCNICO PRINCIPAL,

[Assinatura]

(RENATO RIBEIRO DA SILVA)
EMPREITADA DE REMODELAÇÃO DA REDE DE Água QUENTE NOS SERVIÇOS DE FISIOLOGIA E FARMACOLOGIA MÉDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO

CADEIRNO DE ENCARGOS

Art.1º. - Definição da empreitada
A presente empreitada diz respeito às obras de remodelação da rede de água quente a levar a efeito na Escola Faculdade de Medicina da U.P.,
Os trabalhos serão executados de acordo com as peças escritas e patentes no orçamento do concurso, bem como a de alguns pormenores que porventura haja necessidade de se fornecer se algum dos concorrentes ou posteriormente o adjudicatário o exigirem para o esclarecimento de dúvidas. O prazo de execução é de 90 dias.

Art.2º. - Os trabalhos serão por medição. O concorrente obriga-se a apresentar com a sua proposta a relação dos preços unitários que serviram de base à sua elaboração, incluindo a quantidade de trabalhos e as importâncias parciais e totais. Pelos referidos preços, serão pagos os respectivos trabalhos realizados.

Art.3º. - O adjudicatário obriga-se a pagar à entidade fornecedora a água consumida, pelo valor da factura acrescida dos encargos usuais para o que terá de instalar um contador diferencial.

Art.4º. - O adjudicatário é responsável pelos prejuízos e danos que eventualmente venha a causar no edifício ou a terceiros obrigando-se a substituir e a resfazer as partes danificadas.

Art.5º. - Os trabalhos deverão ser conduzidos por forma a não prejudicarem o normal funcionamento dos serviços da Escola, cumprindo um programa de trabalhos a apresentar pelo adjudicatário após prévia reunião no local da obra, com a Fiscalização e o Conselho Directivo da Escola, para definição de prioridades e escalonamento em tempo da execução da mesma.
Em cada espaço de aula e de circulação, ou por sectores do edifício, os trabalhos serão realizados de forma contínua, sem interrupção na intervenção das diversas artes, devendo o citado programa prever o correspondente período de intervenção em função do prazo da empreitada.

**Art.6º.-** Todos os trabalhos terão de ser executados dentro das boas normas da construção; os materiais a aplicar serão de 1ª. qualidade; terá de ser feita limpeza nas zonas que, por circunstâncias de trabalho, fiquem sujas.

Devem ser executados em obediência aos regulamentos e normas de construção em vigor nomeadamente as prescritas no Decreto-Lei nº: 41.821 (Regulamento de Segurança do Trabalho).

**Art.7º.-** A demolição a que alguns artigos se referem deve ser executada com o máximo cuidado de modo a não prejudicar o que se mantém e ainda a procurar ao máximo aproveitar os materiais demolidos.

**Art.8º.-** Todos os entulhos provenientes das demolições e das restantes obras serão retirados pelo adjudicatário da área do edifício sem direito a qualquer indemnização pela realização do trabalho.

**Art.9º.-** O adjudicatário fica obrigado a cumprir a legislação em vigor no que diz respeito a salários mínimos.

**Art.10º.-** A modalidade de revisão de preços prevista neste caderno de encargos é a preconizada no art. 3º. do Decreto-Lei nº: 273-B/75 de 3 de Junho, com as alterações que lhe foram introduzidas pelo Decreto-Lei nº: 540/75 de 27 de Setembro.

**Art.11º.-** Disposição final

Esta empreitada é regulada pelo Decreto-Lei nº: 48.871 de 19.2.69, em que define o regime jurídico para as empreitadas de obras públicas.

Porto, 31 de Maio de 1985

O ENGEMHEIRO TÉCNICO PRINCIPAL, (Renato Ribeiro da Silva)
<table>
<thead>
<tr>
<th>DESIGNAÇÃO DOS TRABALHOS</th>
<th>QUANTIDADES</th>
<th>PREÇOS UNITÁRIOS</th>
<th>IMPORTâNCIAS</th>
</tr>
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<tbody>
<tr>
<td>EMPREITADA DE REMODELAÇÃO DA REDE DE ÁGUA QUENTE NOS SERVIÇOS DE FISIOLÓGIA E FARMACOLOGIA MEDICA, DA FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>CAPÍTULO ÚNICO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art.1º.- Fornecimento e montagem de um termostato elétrico para aquecimento da água, com a capacidade de 650 litros, construído em chapa de aço com posterior galvanização, devidamente isolado e revestido.</td>
<td>1 un.</td>
<td>140 000$00</td>
<td>140 000$00</td>
</tr>
<tr>
<td>Art.2º.- Fornecimento e montagem de um electroacelerador de retorno de água quente a instalar junto ao termostato.</td>
<td>1 un.</td>
<td>29 400$00</td>
<td>29 400$00</td>
</tr>
<tr>
<td>Art.3º.- Substituição de válvulas de passagem com os diâmetros seguintes:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>$1 \frac{1}{2}''$</td>
<td>3 un.</td>
<td>3 050$00</td>
<td>9 150$00</td>
</tr>
<tr>
<td>$1''$</td>
<td>2 un.</td>
<td>1 925$00</td>
<td>3 850$00</td>
</tr>
<tr>
<td>Art.4º.- Idem, idem de válvula de retenção com $1 \frac{1}{2}''$.</td>
<td>1 un.</td>
<td>2 660$00</td>
<td>2 660$00</td>
</tr>
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<td>Art.5º.- Ligações elétricas ou equipamento instalado, incluindo todos os trabalhos e material necessário.</td>
<td>1 un.</td>
<td>59 000$00</td>
<td>59 000$00</td>
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<td>Art.6º.- Fornecimento e montagem de tubo de ferro galvanizado da série</td>
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<td></td>
</tr>
<tr>
<td>DESIGNAÇÃO DOS TRABALHOS</td>
<td>QUANTIDADES</td>
<td>PREÇOS UNITÁRIOS</td>
<td>IMPORTÂNCIAS</td>
</tr>
<tr>
<td>--------------------------</td>
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<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>média DIN 2440, incluindo acessórios roscados:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 1 1/4&quot;</td>
<td>145,00 mℓ</td>
<td>1 140,00$00</td>
<td>165 300$00</td>
</tr>
<tr>
<td>Ø 1&quot;</td>
<td>18,00 mℓ</td>
<td>849$00</td>
<td>15 282$00</td>
</tr>
<tr>
<td>Ø 3/4&quot;</td>
<td>36,00 mℓ</td>
<td>677$00</td>
<td>24 372$00</td>
</tr>
</tbody>
</table>

Art.7º.-Isolamento da tubagem com manta de lã mineral de 30 mm de espessura 70 Kg/m3, revestida a chapa galvanizada nº. 22, incluindo pintura.

| Ø 1 1/2" | 145,00 mℓ | 1 500$00 | 217 500$00 |
| Ø 1" | 18,00 mℓ | 1 270$00 | 22 860$00 |

Art.8º.-Desmontar e remover todo material existente a substituir, para fora da área da Faculdade.

| 1 un. | 300 000$00 | 300 000$00 |

Art.9º.-Execução de todos os trabalhos de construção civil inerentes à montagem e desmontagem do material de aquecimento incluindo todos os remates e pinturas necessárias.

| 1 un. | 340 000$00 | 340 000$00 |

Art.10º.-Ensaios hidráulicos e de funcionamento da canalização.

| 1 un. | 50 000$00 | 50 000$00 |

Porto, 31 de Maio de 1985

[Assinatura]

ENG. TECNICO PRINCIPAL,

(Renato Ribeiro da Silva)

RS/MV
DECLARAÇÃO

O Conselho Directivo desta Escola declara para os efeitos julgados convenientes que depois das reparações das deficiências verificadas e comunicadas ao senhor Neto (fiscal da parte civil), nos meses de Inverno, neste momento não há deficiências de vulto na parte civil da construção.

FELgueiras e Escola Preparatória em 14 de Junho de 1985.

O Presidente do Conselho Directivo,

(Francisco António da Cunha Ferreira Alves)
Área directa: 3.45 m