DDC|021|0022/1

05.06.84

1	CONTRACT AGREEMENT
2	TECHNICAL SPECIFICATION NO 1 TECHNICAL SPECIFICATION NO 2
3	DRAWINGS 1:100
4	MECHANICAL SPECIFICATION ELECTRICAL SPECIFICATION
5	LIST OF FURNITURE AND FITTINGS
6	LIST OF KITCHEN EQUIPMENT LIST OF TEXTILES AND FITTINGS LIST OF HOUSEHOLD ITEMS
7	TIMETABLE, PHASE I
8	TENDER OF THE CONTRACTOR ADDITIONAL DELIVERIES AGREED 5.6.1984/ ~~8.6.1984~~
9	GUIDELINES FOR THE SUBMISSION OF TENDERS BY CONTRACTORS
10	MODEL FOR LETTER OF CREDIT
11	MODEL FOR PROTOCOL OF ACCEPTANCE MODEL FOR CERTIFICATE OF THE COMPLETION OF THE ERECTION
12	MODEL FOR WARRANTY MODEL FOR PERFORMANCE BOND

plastipap

Kitchen fittings (ARC 007, 012)

- Colour: white
- Above the base units: Finnlon 2913

ARC 001 a + b (Laboratory, Doctor, Nurse, Infect Rooms)

- Above the sink: Finnlon 2913, 60 cm

ARC 008

- Akusto Karhu, colour: white

APP. 3.

MAKROTALO OY

11.06.1984 1 (2)

VOCATIONAL TRAINING AND SELF-RELIANCE CENTER/
VIENA/ANGOLA/A.N.C

Roof sheet + mouldings

Colour: Light umbra

Interior walls

Colour: Painter's white in all the buildings except
Ablution: green film-faced plywood
In bathrooms: Seinätelon no 20

Exterior walls

- Makrosan, colour: white
- MakroPanel, colour: Okra 2 outside and
Painters white no 17 inside

Floor covering

- Finnlon no 2913

Curtains

- ARC 001 a + b, 002, 003 colour: brown (Clinic, Classrooms)
- ARC 004, 007, 012 colour: white (Detached Houses, Administration)
- ARC 005, 006 colour: red (Dormitories)

Sheets

- colour: beige

Bed covering

Towels

- colour: dark blue

Felt

- Colour: brown (3)

MAKROTALO OY

CED/P. Vaske/rj 06.04.1984

ANC/VIENA/ANGOLA

TECHNICAL SPECIFICATION, NUMBER 1

1. Foundation Foundation is made of reinforced concrete slab, strengthened by beams. Sand/cement screed is included in our offer. The amount of levelling agent is 3 kg/sq.m.
The floor is covered with vinyl carpet.

2. Exterior Walls

Exterior walls are sandwich panel walls.

Buildings are built to endure the wind velocity of 50 m/s.

Structure (starting from inside):

- fibre cement board 4 mm, ready painted colour: painter's white
- polyurethane 45 mm + wooden frame
- fibre cement board 4 mm
- Makrosan exterior coating, acrylic based, water diluted coating with marble crush, colour light blue or white

- U-value 0,45 $W/m^2/^oC$
- all wooden structures are protected against termites
- exterior wall panels are easy to transport and assemble
- ceiling height is 2.47 m

3. Load-bearing Partition Walls

- painting, colour painter's white
- gypsum board 13 mm
- wooden frame 45 x 95, c/c 600
  pressure impregnated, protected against termites
- gypsum board 13 mm
- painting, colour painter's white

4. Non-bearing Partition Walls

- painting, colour painter's white
- gypsum board 13 mm
- steel frame 70 mm
- gypsum board 13 mm
- painting, colour painter's white

5. Walls between Classrooms

- painting, colour painter's white
- double gypsum boards, 13 + 13 mm
- steel frame 70 mm or wooden frame 45 x 95
- double gypsum boards, 13 + 13 mm
- painting, colour painter's white

--

Partition walls and interior surface of exterior walls in Ablution is film faced plywood.

6. Ceiling

Ceiling is made of Makro Ceiling Panels.

Structure:

- hardboard 3.2 mm
- polyurethane 30 mm
- hardboard 3.2 mm

The tightness of joints is assured by tongue and groove joints with sealing band.

The colour of the lower surface is white; vinyl covering.

Due to excellent insulation properties of polyurethane, heat resistance is good.

The space between roof and ceiling is ventilated with ventilation grilles in both ends. Grilles are equipped with mosquito nets.

7. Roof

Roof is made of profiled steel sheets with PVF2-coating.

Roof is a double-pitched roof with an inclination of 22 degrees which gives good shading from the roof overhangs.

8. Windows

Windows are aluminium louvre windows with mosquito nets.

9. Exterior Doors

- made of anodized aluminium, colour brown
- thickness of insulation 30 mm
- dimensions 9M x 21M
- equipped with cylinder locks with master key system, door pumps and handles

8. Interior Doors

- hardboard-honeycomb structure, ready painted
- equipped with standard fittings

9. Trimmings - plastic

EXTERIOR WALLS IN STORE COMPLEX, MECHANICAL WORKSHOP,
AND DINING HALL

- PVF2-coated steel plate
- polyurethane 45 mm
- PVF2-coated steel plate

The above mentioned buildings have a separate bearing steel frame.

The roof inclination of these buildings is 1:10.

06.04.1984

APP. 2.

T E C H N I C A L S P E C I F I C A T I O N, NUMBER 2

BUILDING SYSTEM FOR AFRICA

PROJECT ANC/VIENA/ANGOLA

General

The product in question has been planned according to the Makro Building System for Africa.

This system has been developed and produced by Makrotalo Oy based on the conditions prevailing in Africa.

Houses are structurally built to endure the difficult conditions which exist in that geographical area.

The system is primarily aimed at constructing buildings of high quality for extensive use.

Buildings will be erected by using prefinished wall sections, modular width 1200 mm, on a concrete slab foundation.

Due to the sandwich-structure and efficient insulation material, the elements are thin but very stiff and solid withstanding even rough handling during transportation and installation.

The exterior surface of the panels is coated with Makrosan - an acrylic based, water-diluted coating with marble crush - which endures the weather conditions in the mentioned area exceptionally well.

For the interior is used ready painted fibre cement board.

Windows and doors are installed into panels at the factory.

Polyurethane (PUR) is used as insulation material in Makro panels giving an excellent U-value for the exterior walls (0,45 W/m^2K or 0,077 BTU). This value corresponds with Type Approval Decision values granted by the Ministy of the Interior in Finland. Production is continually controlled by the Technical Research Centre of Finland (VTT).

The exterior walls and the central partition walls function as supporting vertical structures, upon which roofing sheets are installed.

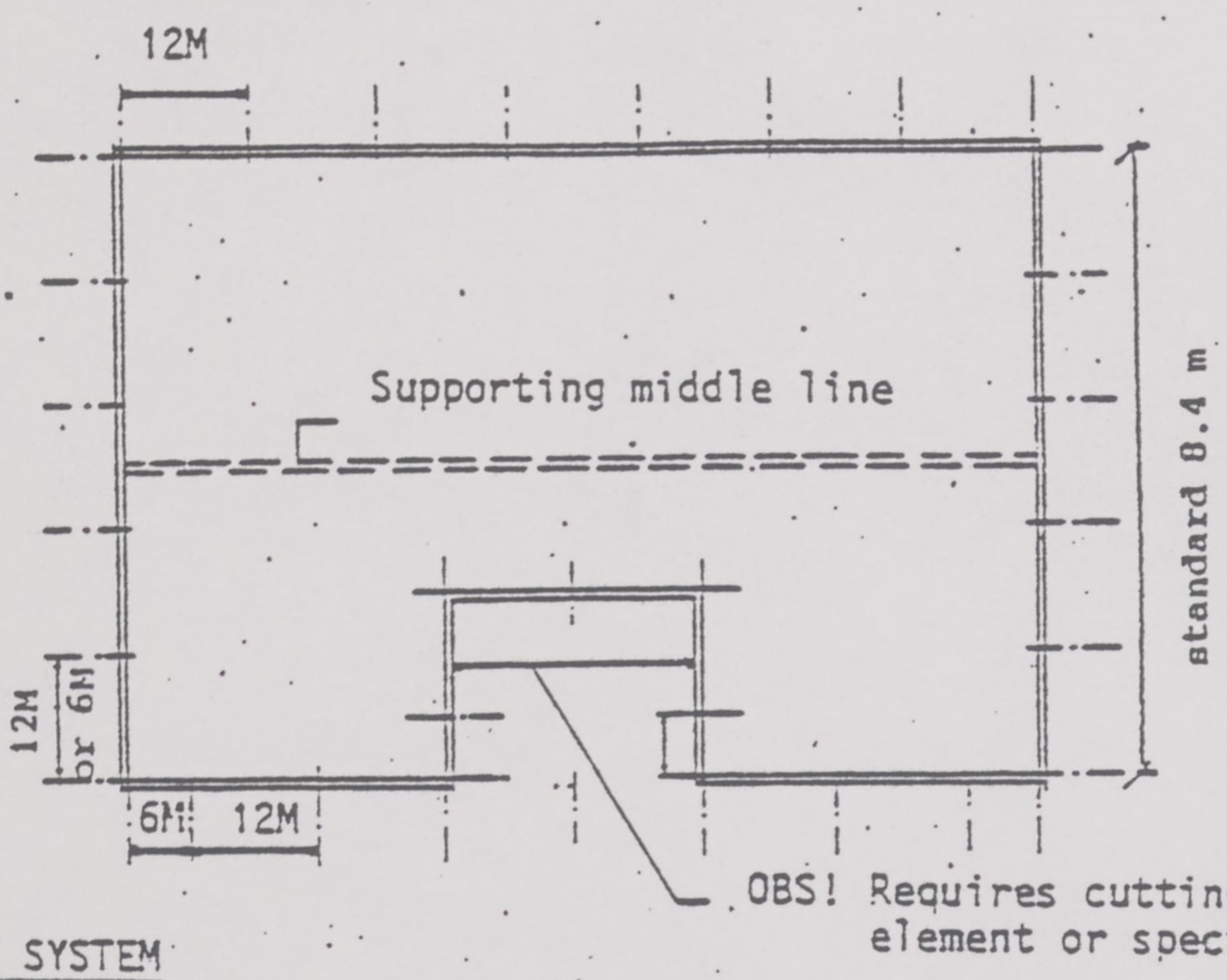
Makro Ceiling Panel is used as the insulated ceiling structure. The panel is of tongue-grooved sandwich construction with building boards on both sides and polyurethane (PUR) as insulation material.

The Ceiling Panel is normally covered with vinyl having a non-burning fire-rating and being ready installed at the factory.
The partition walls are of normal dry-wall construction and are installed on site.

More detailed information is included in the following specifications.

LEKOTALO OY

EASY LIFE BUILDING SYSTEM

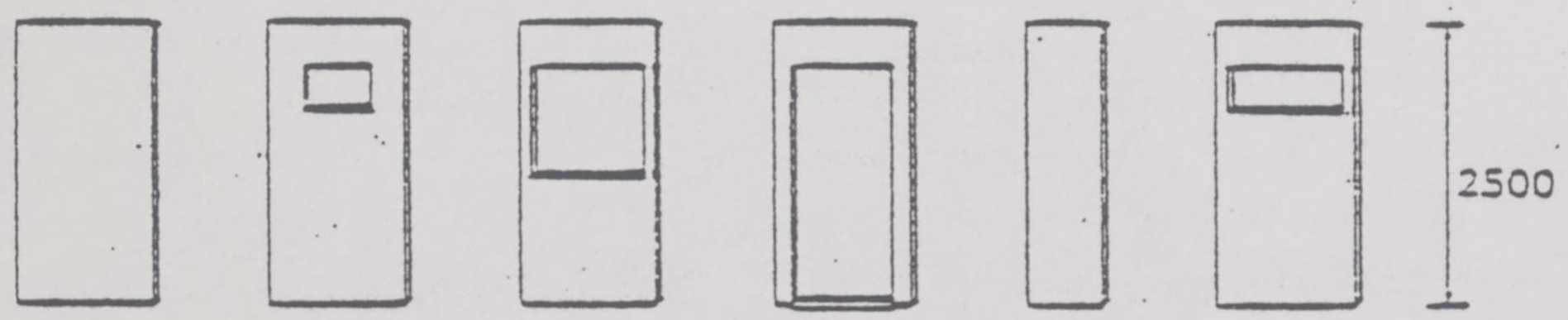


MODULE SYSTEM

* Design module: Use n. x 12M + adjusting element 6M, when needed
  M=100 mm

* Module line is situated on the inner side of the walls
* Building's measurements n x 12M + 130 mm walls (standard 8530

STANDARD MODULES

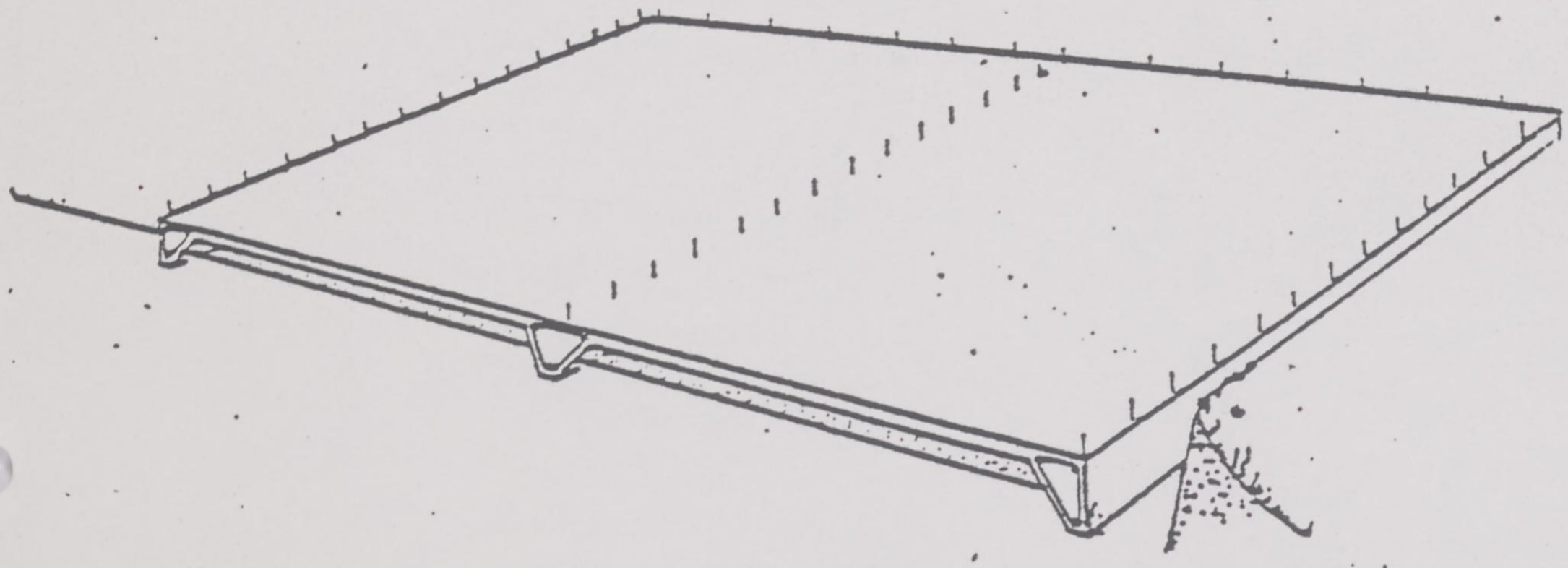


12M	12M	12M	12M	6M	12M
Solid-elem.	Air-condition	Window 10x10	Door 9x21	Solid-elem.	Window 10x4

NOTES

* Building: Pitched roof

* Under roof ridge, there must always be a load-bearing wall

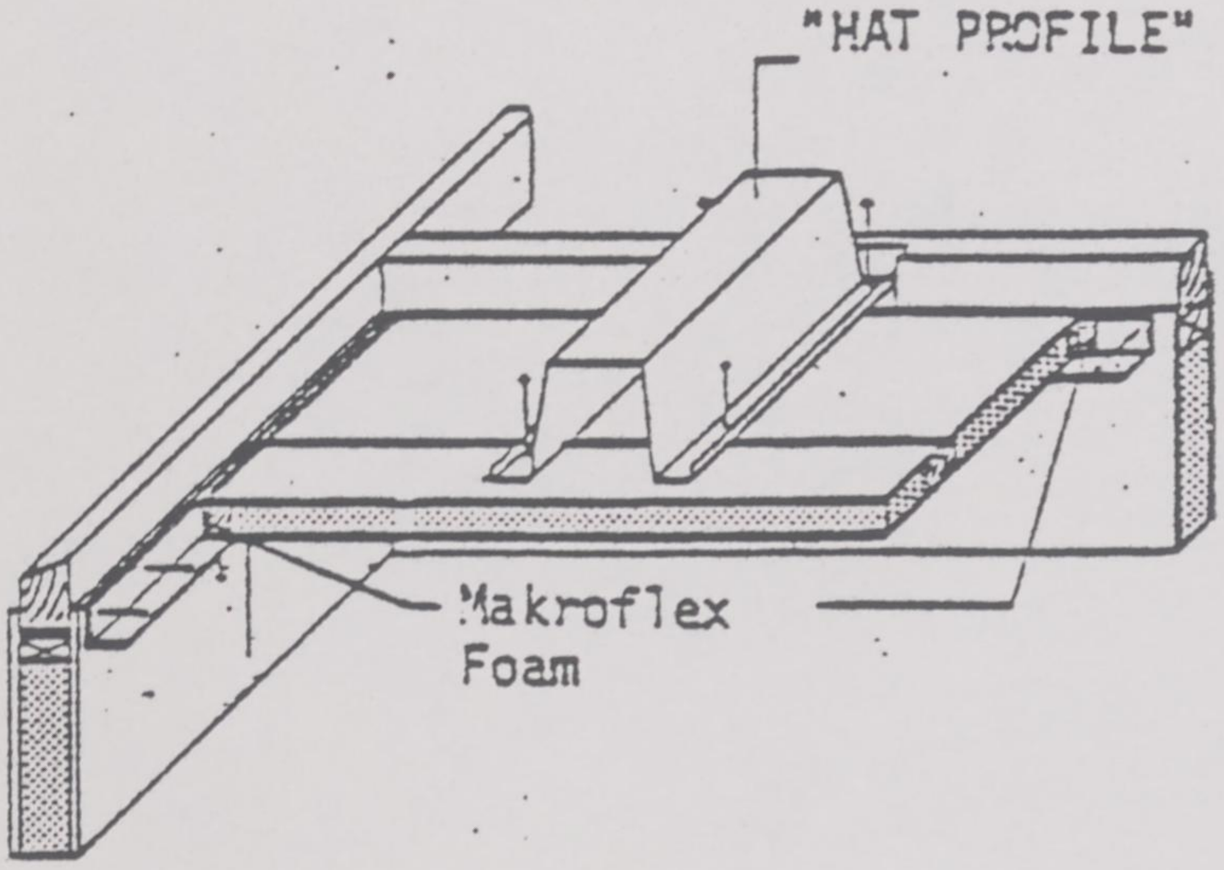


FOUNDATION

The foundation is a concrete slab on the ground thicker under structural walls. This kind of foundation has been particularly developped for lightweight buildings.

The thickness of the slab under the reinforcement depends on the soil conditions. Normally a 80 mm concrete slab with rainforcement is recommended. The strengthening beams shall be about 400 mm high.

INSTALLATION OF CEILING



INSTALLATION OF CEILING

- Supporting of ceiling panels with the steel profile.
- The ceiling elements are supported from the middle with "hat-profile" and fastened with screws to the ceiling from above.
- Space between ceiling panels and walls is sealed with Makroflex-foam.
- Tightening of the joints of ceiling panels: PVC-sealing is factory-installed on the elements.

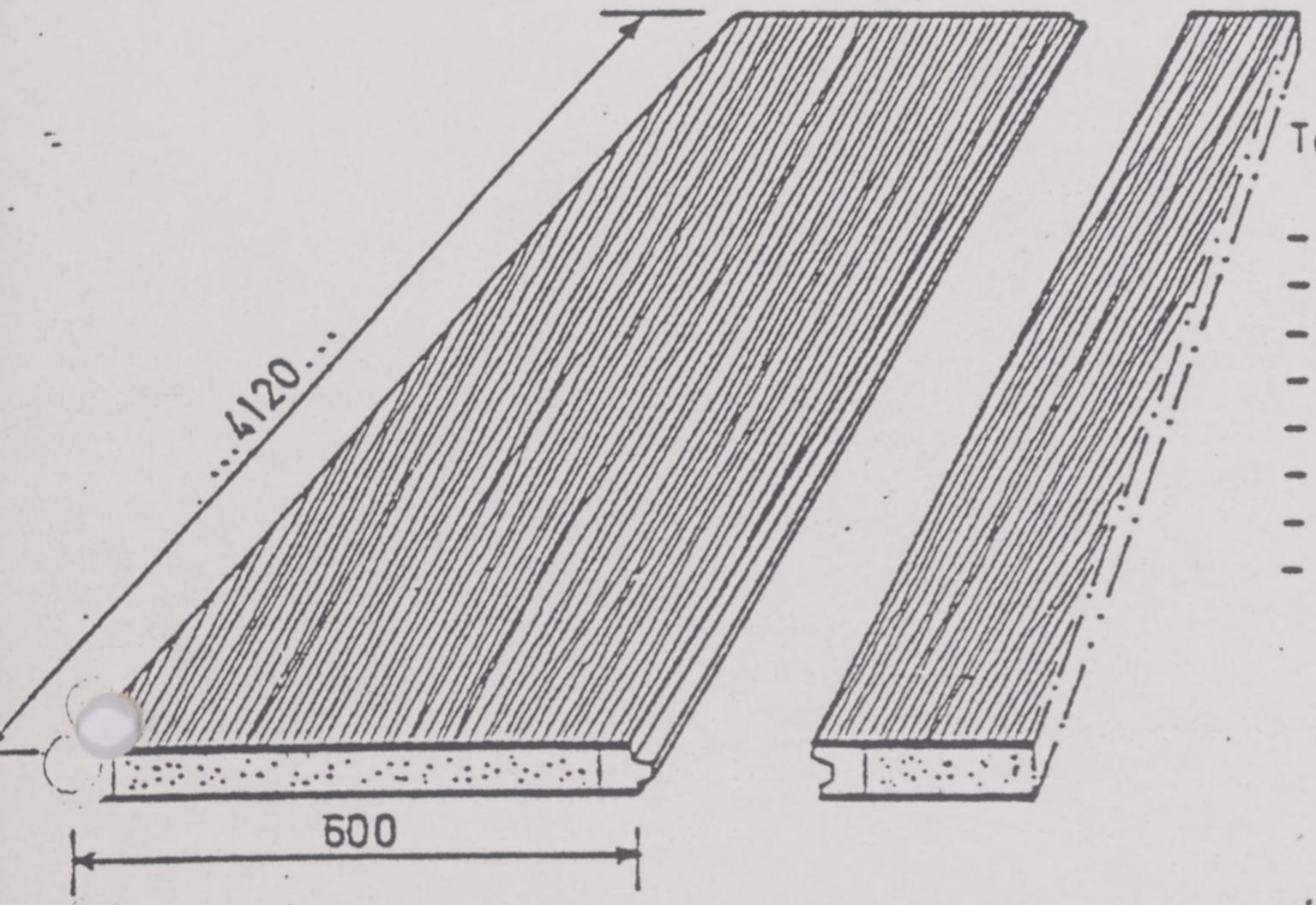
CEILING PANEL

Ceiling panel specification

- By using Makro Ceiling Panels, a completely finished, thermally insulated ceiling is obtained rapidly and easily, thus saving several work stages. The results is an even, finished and attractive surface.

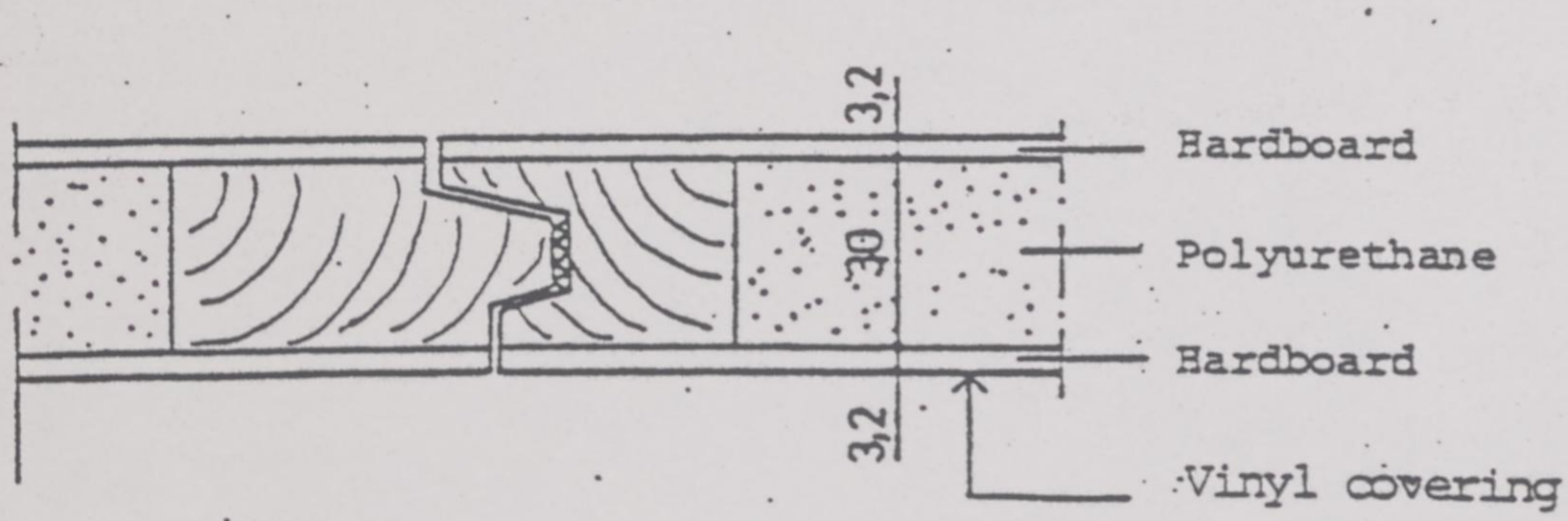
The Makro Ceiling Panel is a sandwich-structure consisting of two hardboards with a 30 mm layer of polyurethane foam between them. The interior board is covered with vinyl at the factory. The tongue-grooved system ensures airtight joints.

The structure of the panel allows the maximum span of 2700 mm. The panel itself can be considerably longer than this.
When the span exceeds 2700 mm the ceiling panel is supported.

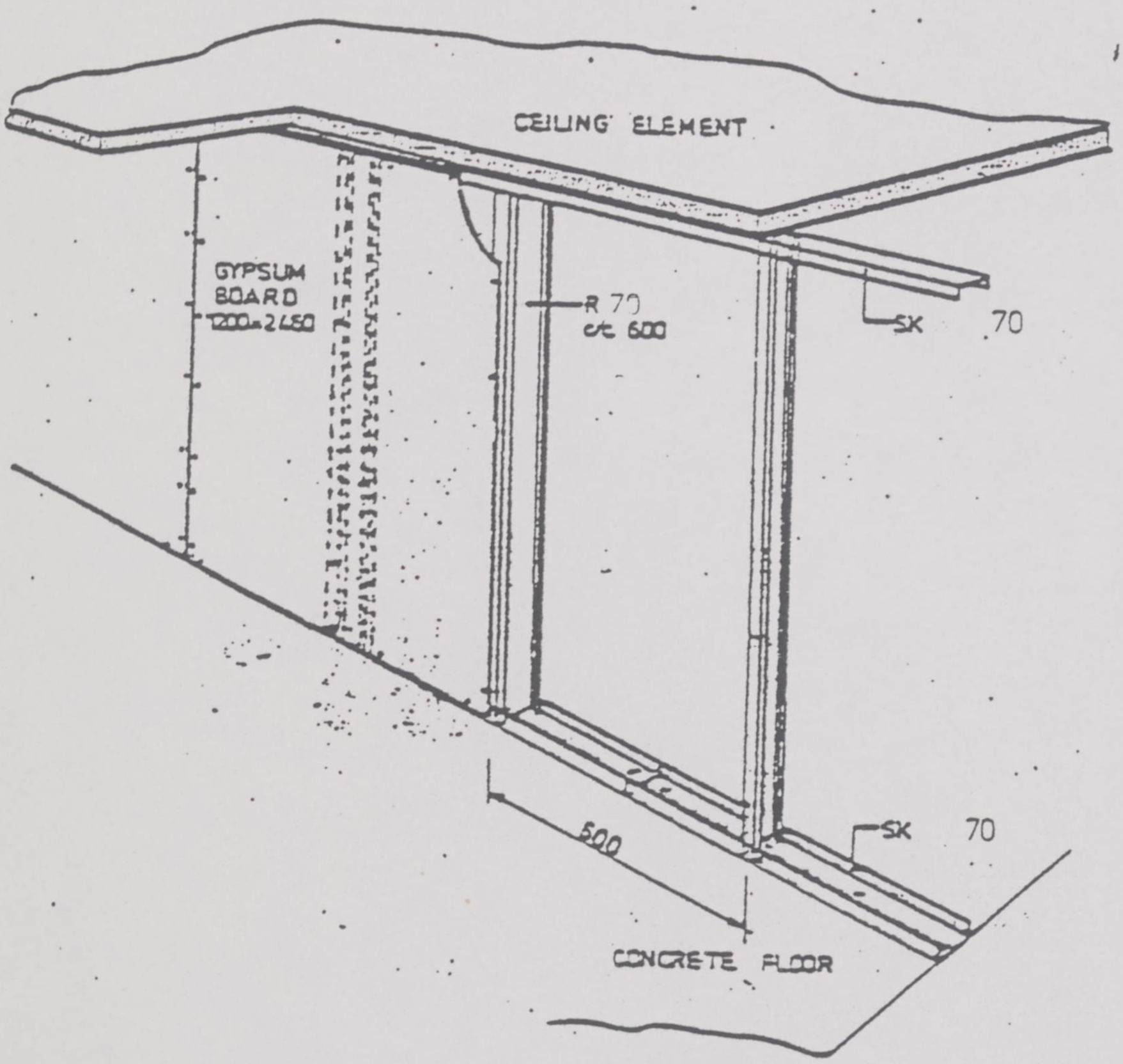


Technical data:

- Length 2000 - 6000 mm
- Spacing of supports 2700 mm
- Width 600 mm
- Thickness of panel 36,5 mm
- Thickness of insulation 30 mm
- Weight 8 kg/sq.m
- K-value 0.65 W/m^2 K
- λ = 0.024 W/m K



NON-BEARING PARTITION WALL

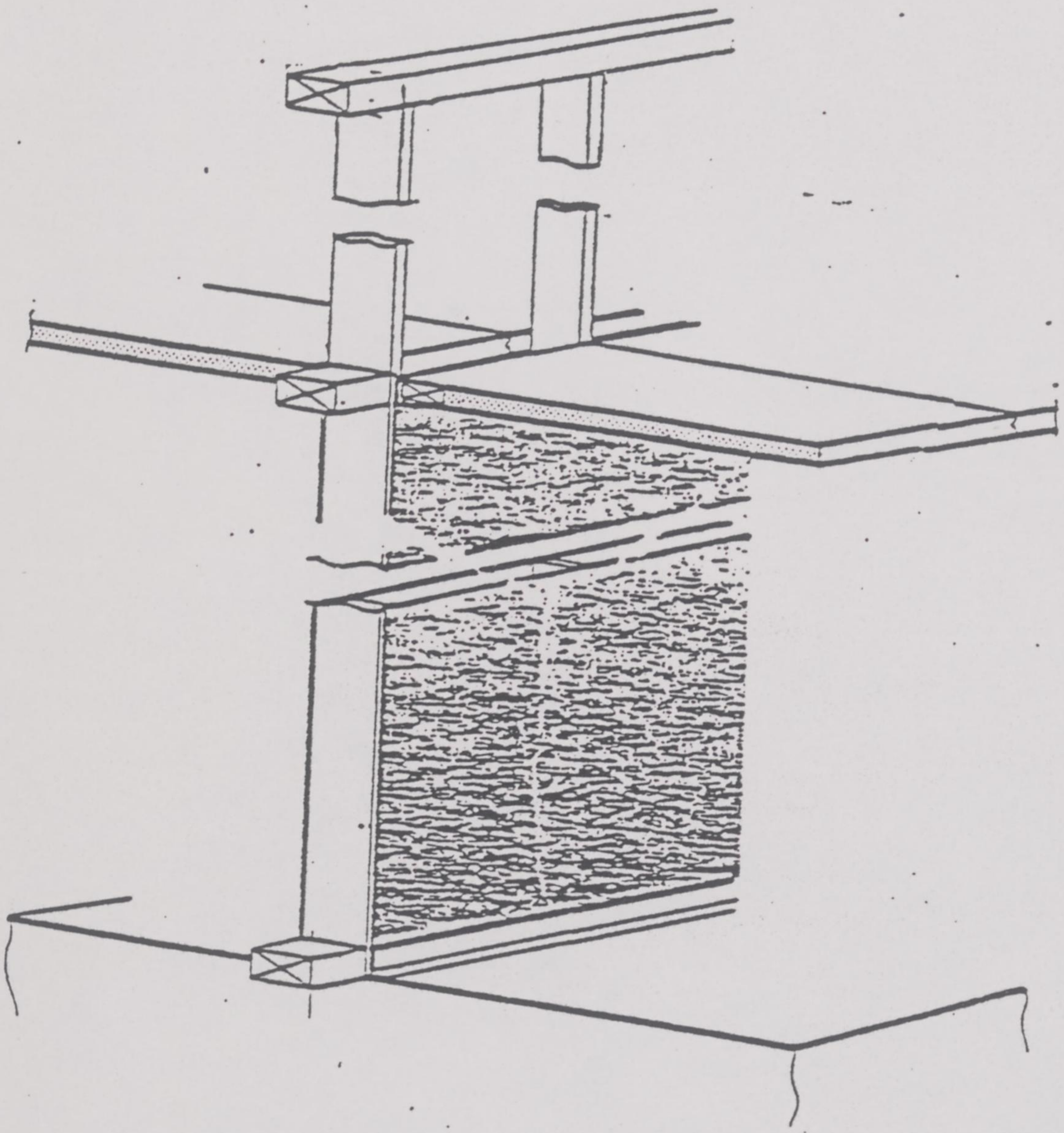


TECHNICAL SPECIFICATION

- Makro Ceiling panel
- Gypsum board 13 mm
- Rail SK 70(horizontal)
- Steel frame R 70
- Gypsum board 13 mm

LOAD-BEARING PARTITION WALL

Delivery in parts.



CONSTRUCTION SPECIFICATION

- Gypsum board	13 mm
- Wooden frame	45x95 mm
- Gypsum board	13 mm
	121 mm

- Paints in buckets for finishing

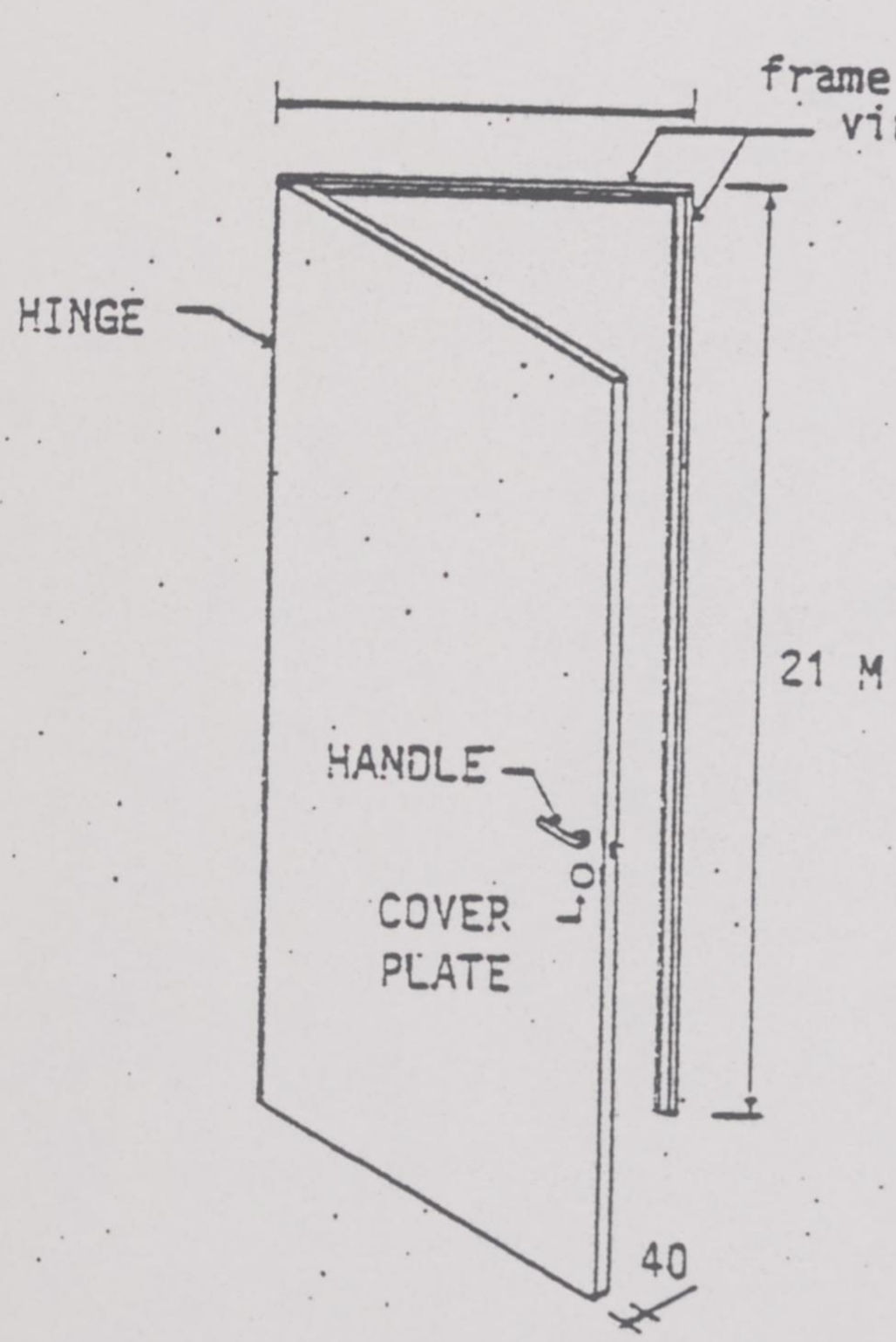
INTERIOR DOOR

Interior doors are painted symmetrical doors.
Door blades are of honeycomb sandwich construction.

Doors are provided with locks, handles, cover plates and two hinges, all high quality.

Door frames are of wood, completely covered with vinyl giving a trouble-free and easily cleaned surface.

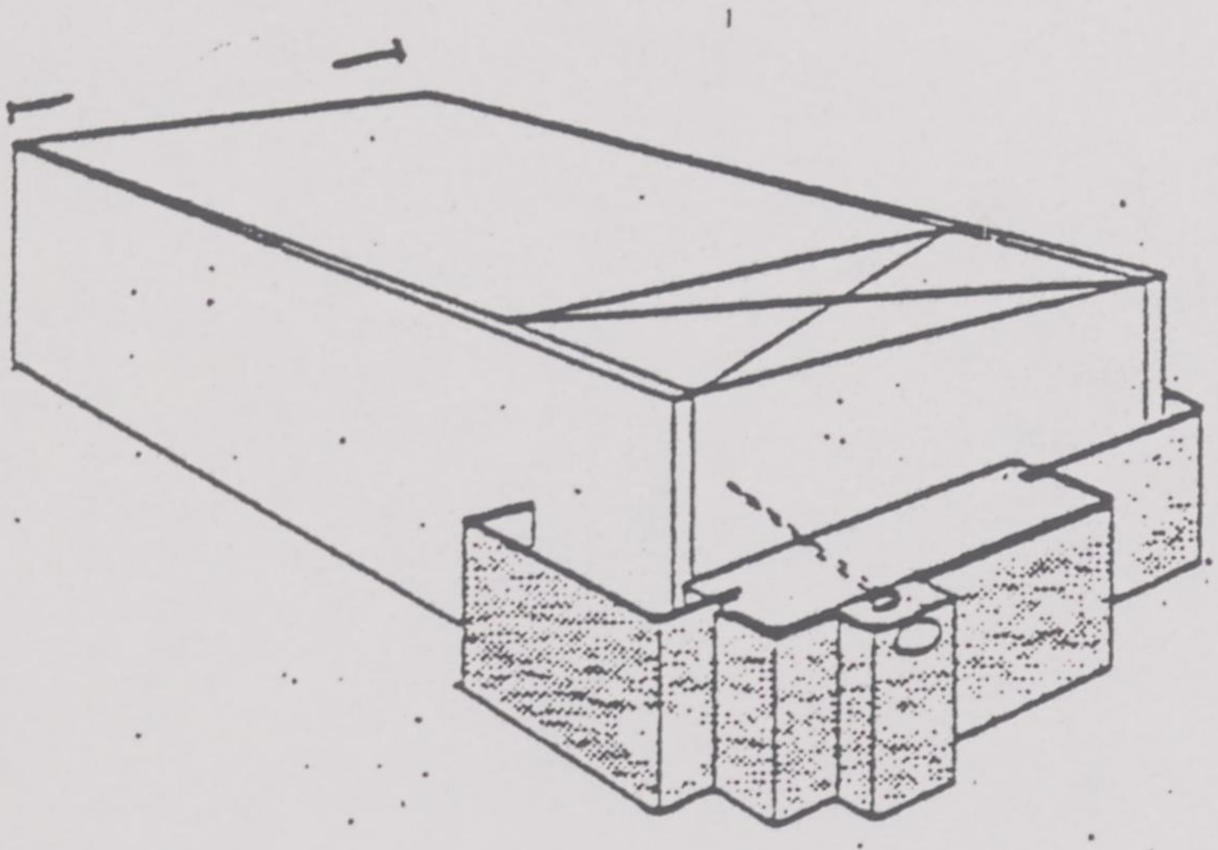
The bathroom door is fitted with "Toilet lock" having an indicator showing when occupied.



TECHNICAL INFORMATION

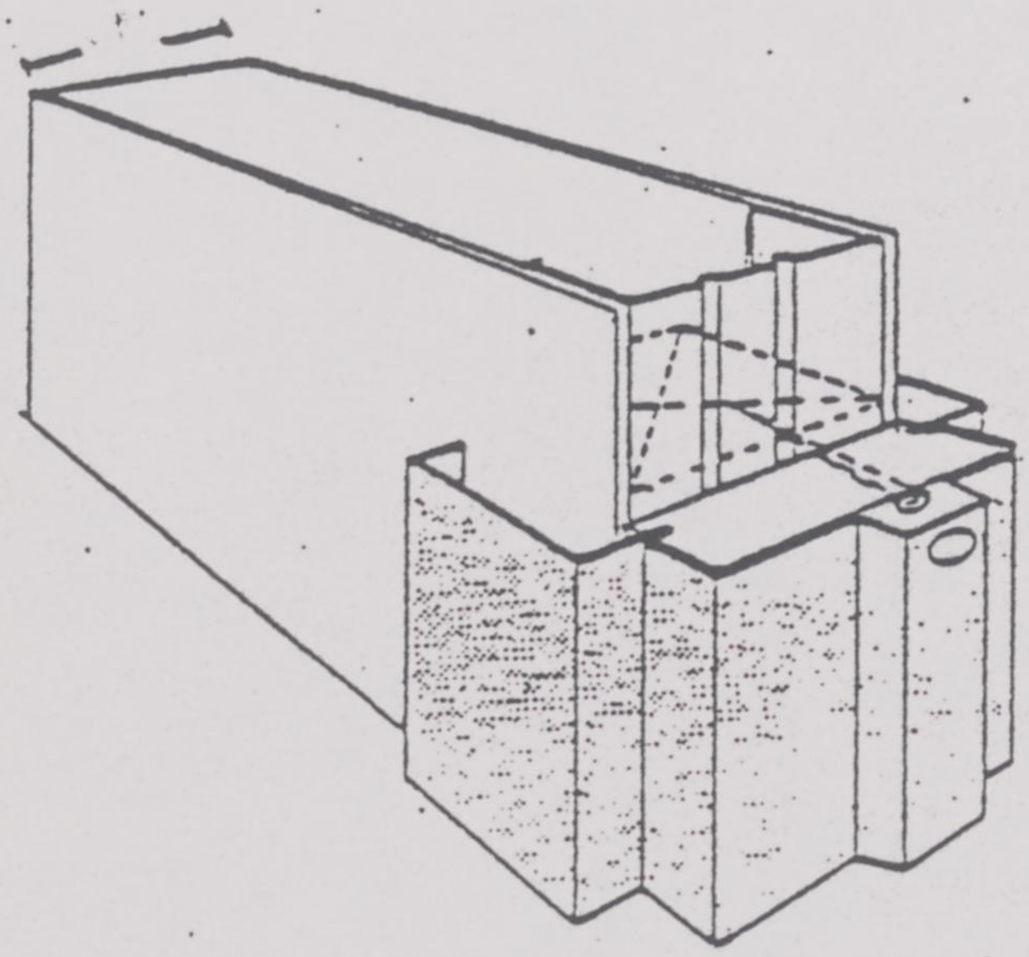
- lenght	2090 mm
- width	890 mm, 690 mm
- door thickness	40 mm,
- frame thickness	68 mm
- weight	15 kg
- honeycombed door	
- plastic fillets	

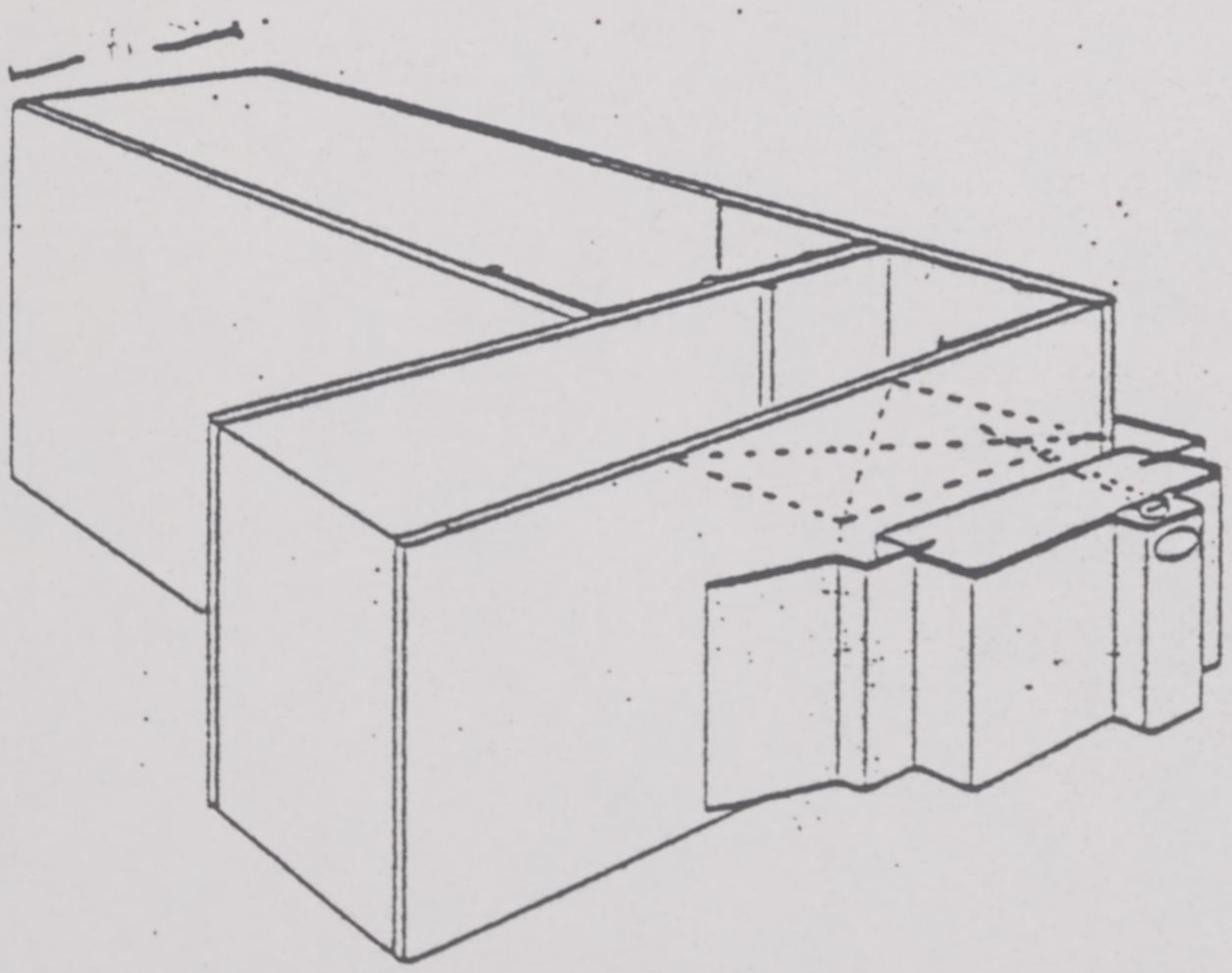
THE JOINTING OF DOOR FRAME TO THE PARTITION WALLS



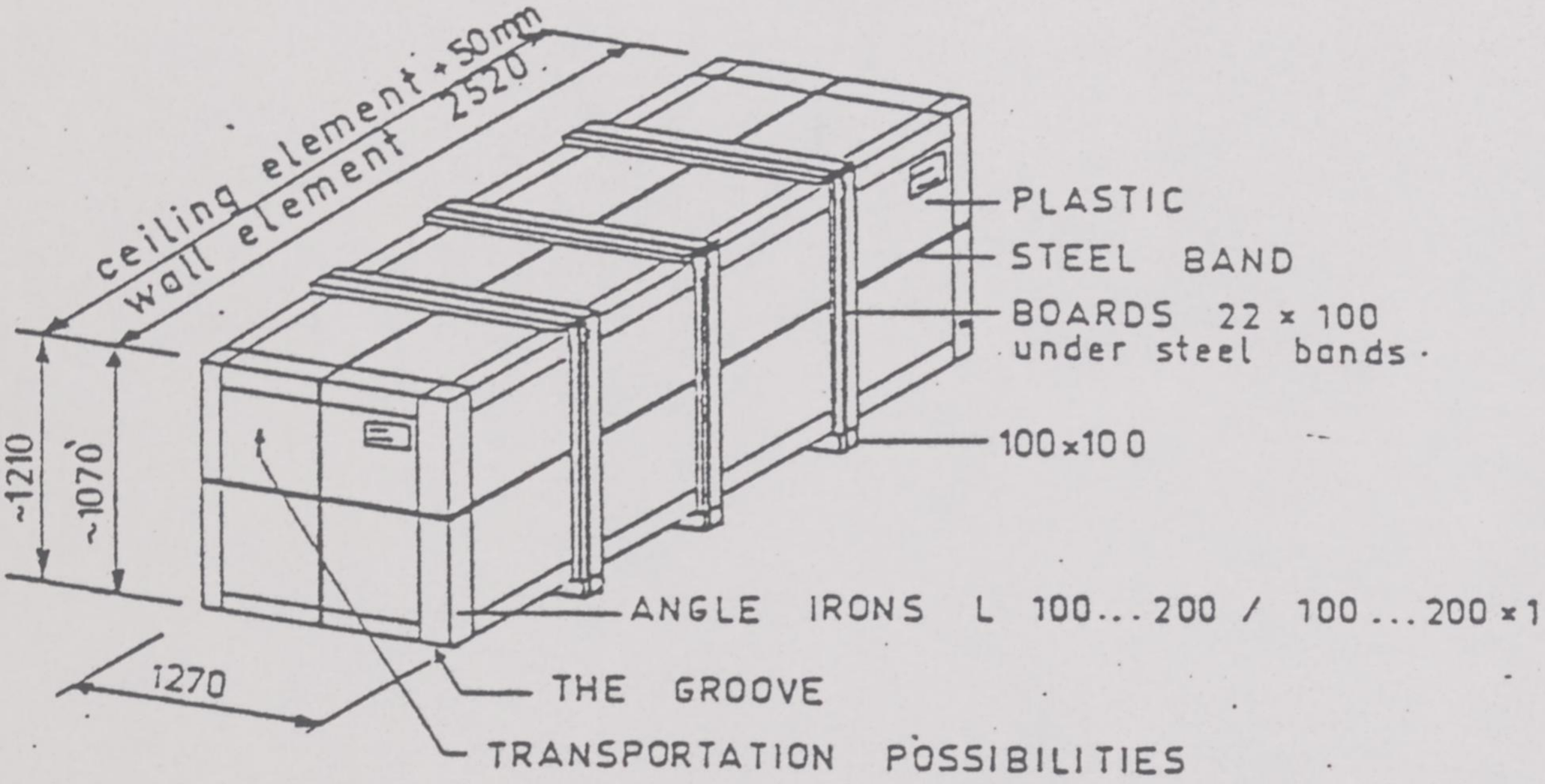
DOORWAY

- plastic coated frame
- plastic lining
- symmetrical lipped door

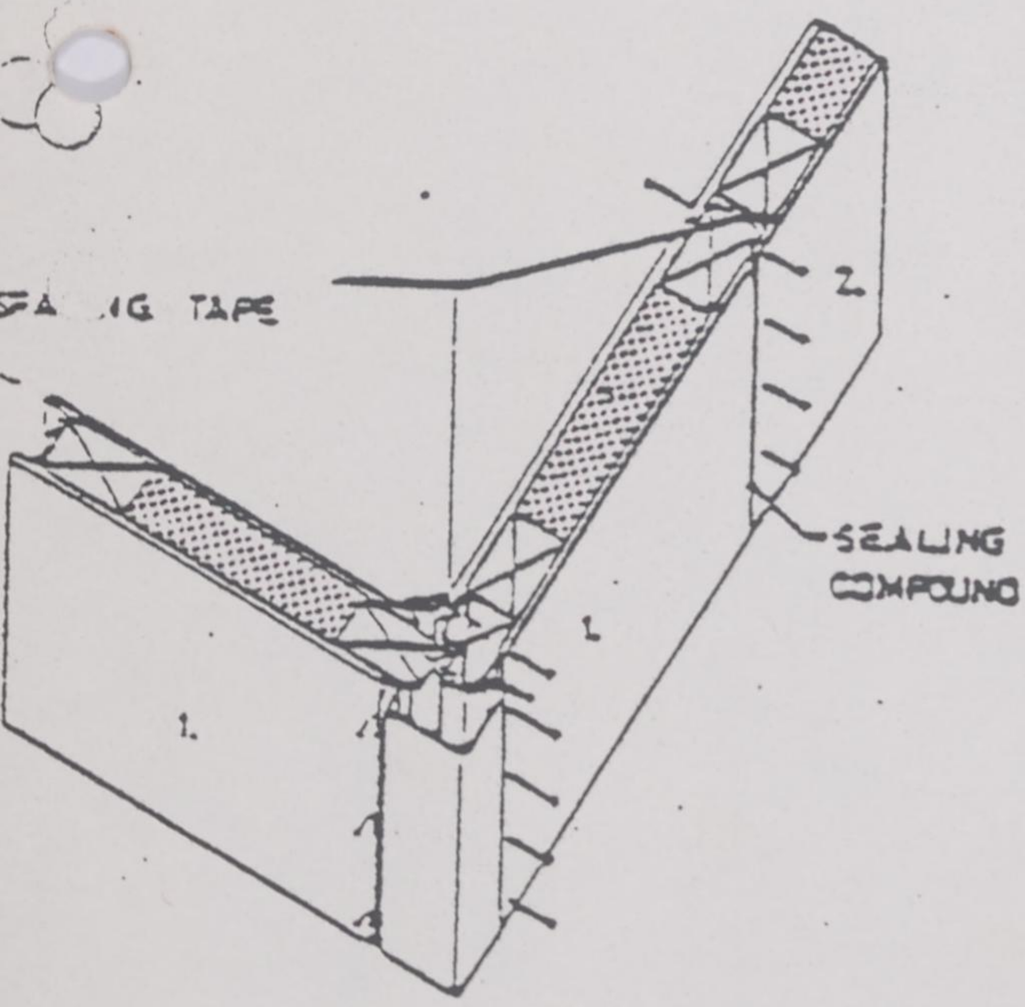




PACKINGWAY FOR
CEILING ELEMENTS AND WALL ELEMENTS



JOINTING DETAILS OF EXTERIOR WALL ELEMENT

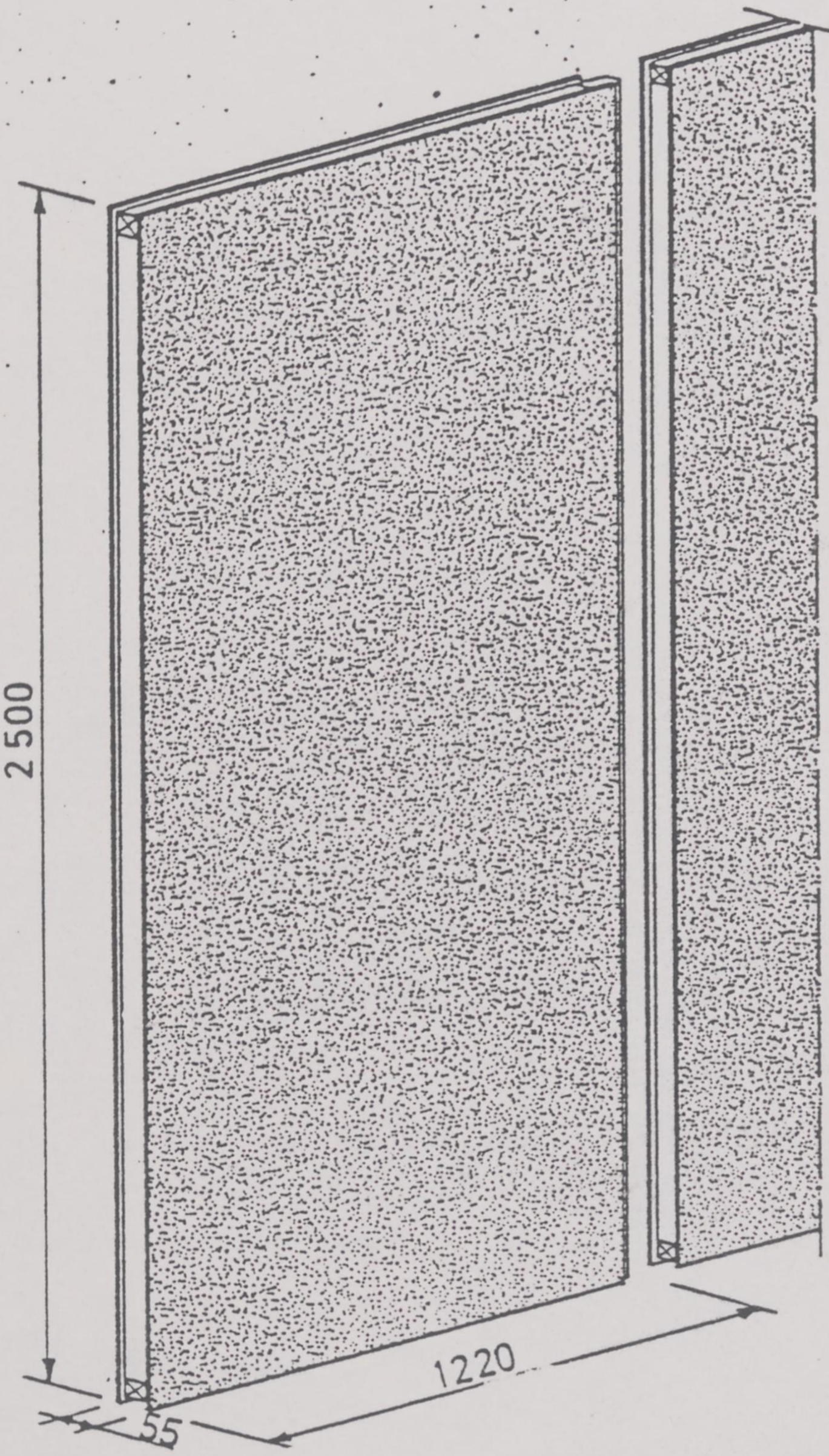


Corner and vertical jointing

- The erection is started from corner, proceeding to the next corner

- Tightening of joints with sealing-tap which is ready installedin the element. Finally the element joints are tighted by sealing compound.
- External angle sheet is placed on the external corners.
- The corner will be protected with sheet moulding.

EXTERIOR WALLPANEL



MAKROTALO OY
PIENI ROOBERTINKATU 16 A.
ISO ROOBERTINKATU 20—22 A
P O BOX 187 SF-00121 HKI 12 FINLAND
PUH 90-17311 TEL - 358-0-17311
TELEX 123054 125288 MAKRO SF

Exterior Doors: Factory installed to the elements

The exterior doors are anodized, insulated aluminium doors, factory outfitted with hinges, locks and handles of high quality.

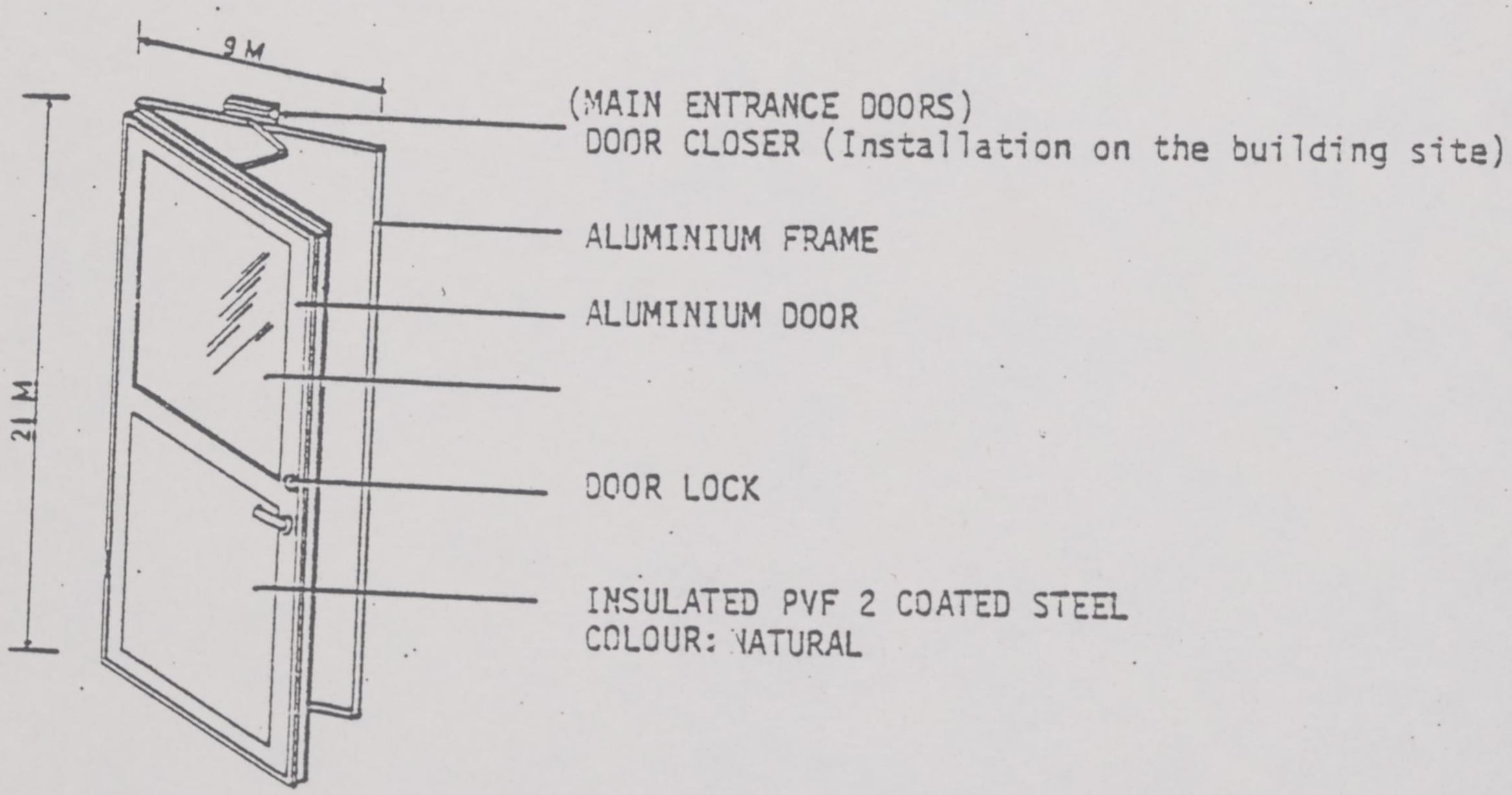
The locks are Boda-type or Abloy-type serial locks, with a master key system for access in case of emergencies.

The sandwich construction of the doors make them extremely stiff and durable.

The door pumps will be delivered for main entrance doors.

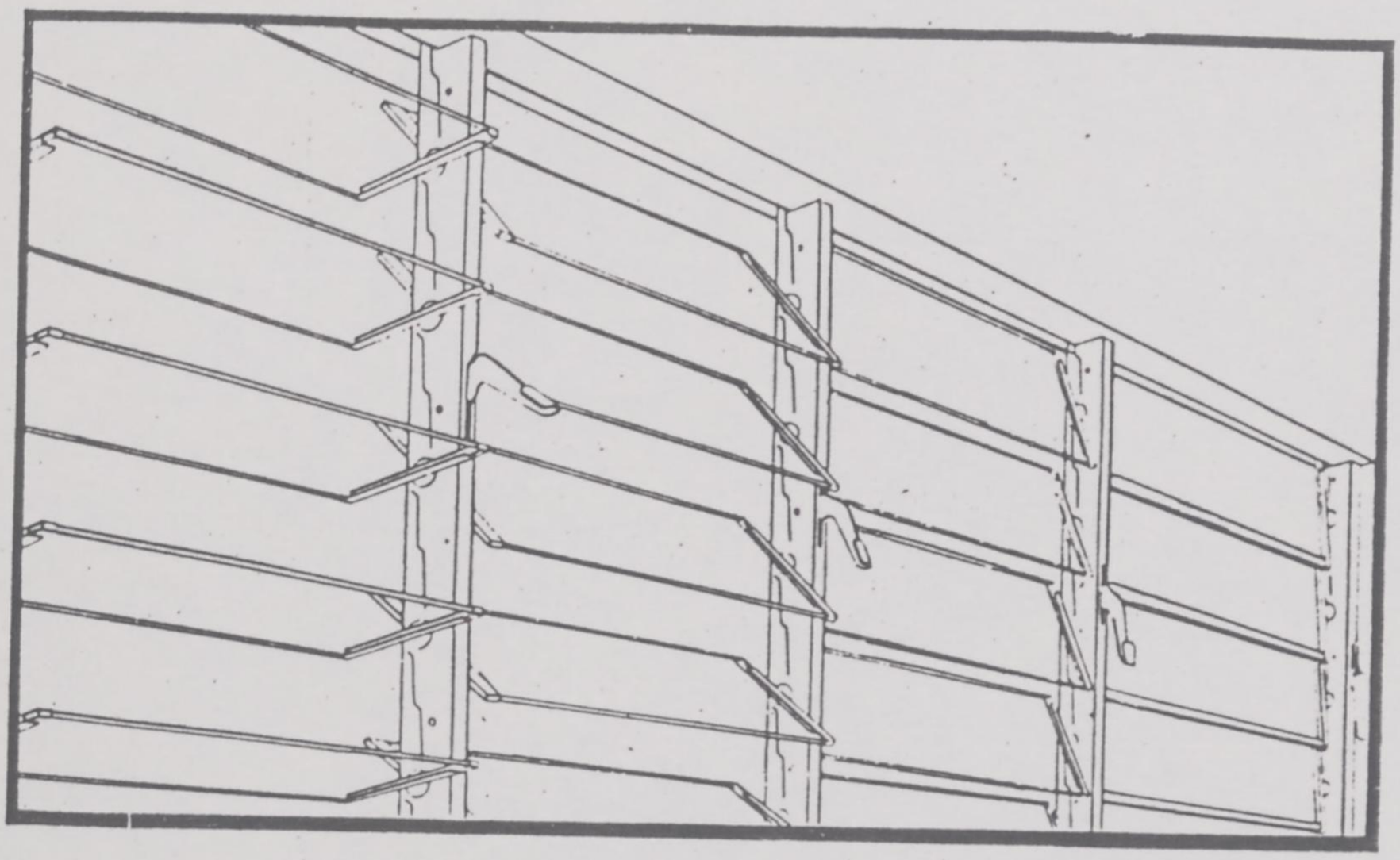
Technical information:

- height M21
- width M 9
- thickness of insulation 30 mm
- thickness of door 40 mm
- weight about 20 kg



Louvre Window. ~~724~~ 1004 × 1004

WITH MOSQUITO NET



Building ?
Renovating ?
Drafty home ?

DO IT YOURSELF ENERGY CONSERVATION

With Makroflex sealing foam you can stop the leakages easily and effectively.

Makroflex consists of polyurethane, the best insulating material available from the market today. It is also a most suitable sealant for nearly any application.

Joints and seams are rapidly insulated and sealed. Makroflex will penetrate easily into gaps unaccessible to other sealing materials.

During its reaction time, Makroflex will expand to nearly double of its applied volume and solidifies to become a rigid closed cell insulating foam. It will stick on permanently to most known surfaces, will not rot neither shrinks nor vaporizes.

Makroflex provides you the most effective insulator for door- and window frame sealing. Sealing the gaps caused by floor setting. Insulating and sealing plumbing and cable inlet openings and providing effective stoppage for cold bridging.

The manufacturer also supplies Makroflex in 9 kg and 18 kg pressure bottles.



MAKROFLEX

·for energy· conservation

Find out how the warmth of your home is escaping and study from below how to prevent it.

Look at the following illustrations and read carefully the given instructions. With Makroflex you can produce finished joints and insulations really fast and easily. It is the easy way to the difficult jobs and the result is always a fully sealed and thermally insulated joint. It can be the most cost effective solution to you.



1. SEALING DOOR- AND WINDOW FRAMES

Makroflex is used as sealant and insulator between the frame and wall. Makroflex is also used as permanent fixing agent when new frames are assembled to walls. Makroflex is always required when renovating old buildings.



2. SEALING PLUMBING AND CABLE INLETS

Makroflex is also sealant against water and moisture. It will provide the noise and sound insulation just as well as prevent dust and insects getting through.



3. SEALING THE GAPS FORMED BY FLOOR SETTING

After removing the skirting Makroflex can easily be applied to insulate and seal the floor joint. After solidification the excess must be cut off and removed before re-assembly of skirting.



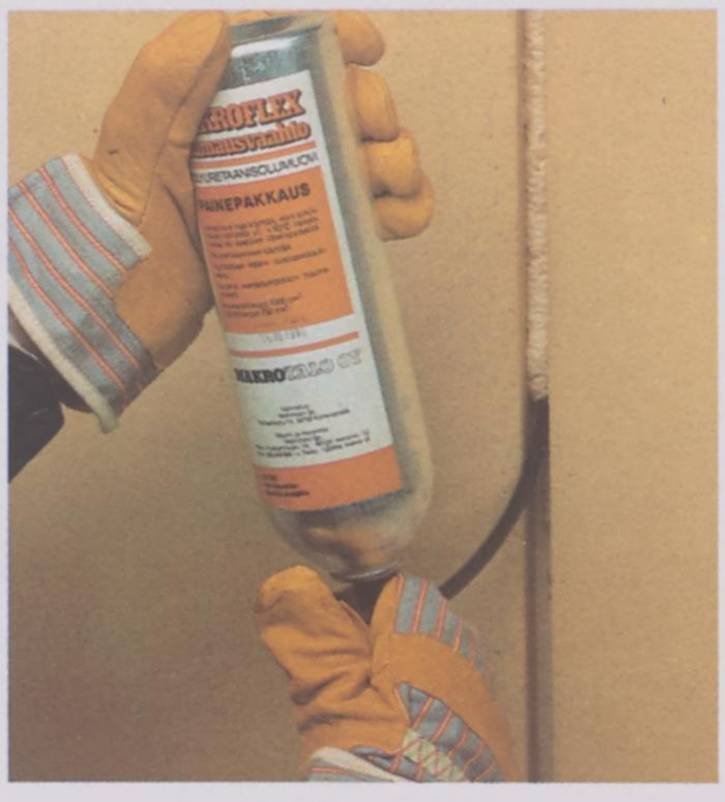
4. SEALING THE BUILDING ELEMENTS

A fully insulated sealed joint between the building elements (timber frame sections, pre-cast concrete blocks or even brick elements) will be accomplished with Makroflex. Similarly Makroflex can be used in many applications to replace and compensate the easily damaged sealing tapes.



5. THE USE AS JOINTING AND FIXING AGENT

The assembly and jointing of different building materials and sections is done with Makroflex to provide strong and lasting fastening. Makroflex is today used to fix e.g. timber to metal, stone to timber and metal to stone surfaces.



6. SEALING AND JOINTING THE INSULATION BOARDS

In renovation and insulation operation the boards are usually assembled with a gap which is then filled with Makroflex to provide a continuous insulated surface. Makroflex may also be used as glue to bond the renovation or insulating boards to uneven walls thus providing a lasting fixture.

Produced by:

MAKROTALO OY

Kornetintie 4, P.O.Box 105, SF-00381 Helsinki 38, Finland
Telephone (358-0-) 556 230, Telex 125288 makro sf

t·t 1982

1. 7. 1981

SEINÄ-TELON



11



12



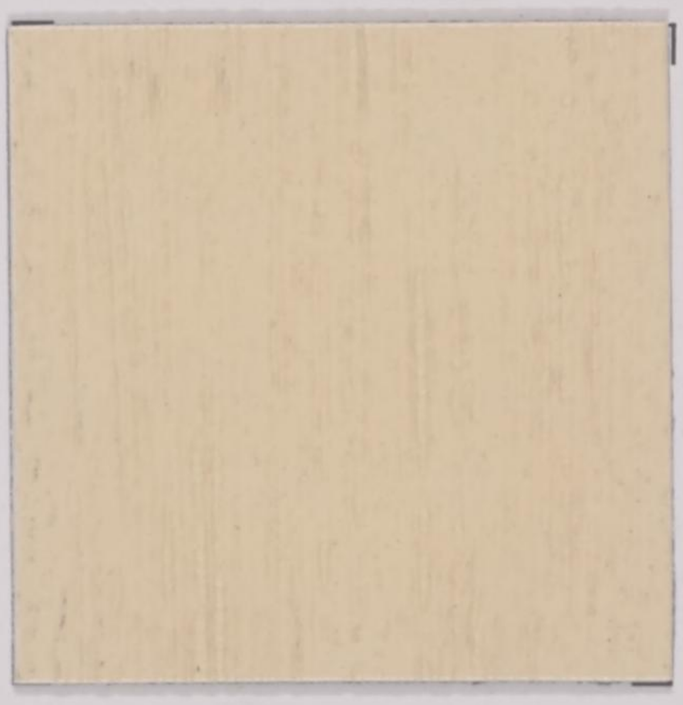
20



21



22



63



33



53



43

SEINÄ-TELON

PVC-MUOVINEN SEINÄNPÄÄLLYSTE

Käyttöalue: kosteat tilat sekä mekaaniselle kulutukselle alttiit julkiset tilat
Paksuus: 1,0 mm
Paino: n. 1200 g/m²
Rullan pituus: 15–30 m
Leveys: 120 cm

PLASTIC WALL COVERING

Recommended use: wet or damp areas and areas of high mechanical wear in public interiors
Thickness: 1,0 mm
Weight: abt 1200 g/sq.m.
Length of roll: 15–30 m
Width: 120 cm

VÄGGBEKLÄDNAD AV PVC-PLAST

Användningsområde: våtutrymmen och för mekaniskt slitage utsatta offentliga utrymmen
Tjocklek: 1,0 mm
Vikt: ca 1200 g/m²
Rullängd: 15–30 m
Bredd: 120 cm

СЕЙНЯ-ТЕЛОН—ПОЛИВИНИЛХЛОРИДНОЕ ПОКРЫТИЕ ДЛЯ СТЕН

Назначение: сырые помещения и общественные помещения, от покрытий которых требуется износостойкость
Толщина: 1,0 мм
Масса: пр. 1200 г/м²
Длина в рулоне: 15—30 м
Ширина: 120 см

KEMIKAALIEN VAIKUTUS

Suolahappo Rikkihappo Etikkahappo	Lipeä Sooda Ammoniakki	Talousspriі Eetteri	Bensiini Paloöljy Pesunafta Tärpätti Kevytöljy
Laimeana ei vaikutusta. Väkevyydestä riippuen voi aiheuttaa värin muutoksen.	Ei vaikutusta.	Ei vaikutusta.	Ajasta riippuen pehmentävä vaikutus.

LIIMAUS

Liimaus suoritetaan akryylidispersioliimalla siten, että vuodan yläreuna liimataan 10–20 cm:n leveydeltä kaksipuolisesti, muualta yksipuolisesti.
Kiinnitysmenetelmänä voidaan käyttää joko pusku- tai limisaumausta (sauman leveys 2–4 cm).
Puskusaumat on syytä varmistaa hitsaamalla langalla. Limisauma varmistetaan saumausnesteellä.
Ulkokulmissa on oltava ns. kynäpyöristys jotta kiinnitys onnistuisi.
Kiinnityslämpötilan tulee olla joko huoneenlämpötila tai vähintään +18°C.

KIINNITYSLIIMAT (liimatehtaiden suositus)

Bostik 34, Bostik 31, Casco 3435, Casco 3444, Uzin 428 DS, Uzinkontakti, Thomsit K 188, Pattex, Kesto SL 2, Kontix-Special, Vakoll MML, Vakoll Wakkeli

HOITO

Puhdistus suoritetaan haalealla vedellä, johon on tarvittaessa lisättävä synteettistä neutraalia pesuainetta.

HUOM.
Uusi leveys 120 cm voimassa marraskuun 1981 alusta lähtien.
Ylimenokautena toimitetaan myös 100 cm leveänä.

NOKIA
MUOVITEOLLISUUS

Nokia
Puh. (931) 409 111
Telex 22270 kymar sf
Sähke nokiaplast

Helsinki
Puh. (90) 6131

Kouvola
Puh. (951) 14 721 (vaihde)
(951) 13 897 (suoraan)

Kuopio
Puh. (971) 123 811
Autopuh. 94040-32 037

Oulu
Puh. (981) 226 144
Autopuh.
94040-81 462 (Moilanen)
94040-82 084 (Riihelä)

Turku
Puh. (921) 10 663
(921) 22 008
Autopuh.
94040-33 003 (Hörkkö)
94040-33 004 (Virtanen)

Vaasa
Puh. (961) 119 606
Autopuh. 94040-61 700

FINNLON

1. 9. 1983



2913



2923



2925



2934



2942



2941



2970



2961



2951

FINNLON

FINNLON — kalanteroitu ja laminoitu muovimatto

Käyttöalue: kotien kosteat tilat ja taloustilat sekä kosteat tilat julkisissa kohteissa
Kokonaispaksuus: 1,5 mm ±0,1 mm
Kulutuskerroksen paksuus: 0,5 mm
Paino: n. 2400 g/m²
Rullan pituus: 7—25 m
Maton leveys: 200 cm

CALANDERED AND LAMINATED PLASTIC FLOORING

Recommended use: in wet or damp conditions in the home and in public interiors and in domestic household areas
Total thickness: 1,5 mm ±0,1 mm
Thickness of wear layer: 0,5 mm
Weight: abt 2400 g/sq.m.
Length of roll: 7—25 m
Width: 200 cm

KALANDRERAD OCH LAMINERAD PLASTMATTA

Användningsområde: våtutrymmen och hushållsutrymmen i hemmet samt våtutrymmen i offentliga objekt
Total tjocklek: 1,5 mm ±0,1 mm
Tjocklek av slityta: 0,5 mm
Vikt: ca 2400 g/m²
Rullängd: 7—25 m
Bredd: 200 cm

ЛАМИ — КАЛАНДРИРОВАННОЕ ДВУХСЛОЙНОЕ ПОКРЫТИЕ ДЛЯ ПОЛА

Объекты применения: сырые квартирные, хозяйственные и общественные помещения
Общая толщина: 1,5 мм ± 0,1 мм
Толщина слоя износа: 0,5 мм
Масса: пр. 2400 г/м²
Длина рулона: 7—25 м
Ширина покрытия: 200 см

KÄYTTÖOMINAISUUDET

(VTT:n tutkimusselostus No RAT 1323)

Ominaisuus	Testaus-menetelmä	Tulos
Vesitiiviys	SFS 3935	vesitiivis
Veden vaikutus pituusmittoihin	SFS 3933	≦ 0,1 % pituussuunn. ≦ 0,2 % leveyssuunn.
Lämmön vaikutus pituusmittoihin	SFS 3934	≦ 0,7 % pituussuun. ≦ 0,1 % leveyssuunn.
Lämmön vaikutus painoon	SFS 3934	0,2 %
Painuma lyhyt-aikaisessa kokessa	SFS 3937	≦ 0,2 mm
Hitsaussauman vetolujuus	Bring no 18	n. 8 N/mm
Pyörivän tuolin-pyörän vaikutus	SFS 3938	profiilikäyrän erot ≦ 0,1 mm
Liiman tartunnan määritys	SBI-notat 32	hyvä kestävyys

KEMIKAALIEN VAIKUTUS

Suolahappo Rikkihappo Etikkahappo	Lipeä Sooda Ammoniakki Talousprii Eetteri	Bensiini Paloöljy Pesunafta Tärpätti Kevytöljyt
Laimeana ei vaikutusta. Väkevyydestä riippuen voi aiheuttaa värin muutoksen.	Ei vaikutusta.	Ajasta riippuen pehmentävä vaikutus.

KIINNITYSLIIMAT

Bostik 39, Bostik 35, Casco 3442, Casco 3445, Uzin 428 DS, Uzin KE 418, Thomsit K 188, Kestoryl Extra, Kestoryl, Kontix-Special, Vakoll MML, Vakoll M.T.L.

HUOM. Maton saumat on aina tiivistettävä muovisella hitsauslangalla. Kulmien ja läpimenojen tiivistämiseen käytetään itsekovettuvaa tiivistyspastaa.

HOITO-OHJEET

Peruspuhdistus	Perusvahaus	Ylläpitohoito	Tahranpoisto	Huomautus
Irtolian poisto. Kostea pyyhintä tai konepesu.	Vahausta ei suositella.	Kuten perus-puhdistus.	Ruoste- ja kalkkisaostumat poistetaan happamalla pesuaineella.	Happamien pesuaineiden käytön jälkeen suoritettava neutralointi lievästi emäksisellä pesuaineella.

NOKIA
Muoviteollisuus

Nokia
Puh. (931) 409 111
Autopuh.
(949) 231 193 (Heino)
94040 - 319 36 (Piilemä)
Telex 22270 kymar sf
Sähke nokiaplast

Ikaalinen
Puh. (933) 6531
Autopuh. 94040 - 331 68

Helsinki
Puh. (90) 6131

Kouvola
Puh. (951) 147 21 (vaihde)
(951) 138 97 (suoraan)
Autopuh. 94040 - 319 37

Kuopio
Puh. (971) 123 811
Autopuh. 94040 - 331 69

Mikkeli
Puh. (955) 369 493
Autopuh. 94040 - 320 37

Oulu
Puh. (981) 226 144
Autopuh.
94040 - 814 62 (Moilanen)
94040 - 820 84 (Riihelä)

Turku
Puh. (921) 106 63
(921) 220 08
Autopuh.
94040 - 330 03 (Hörkkö)
94040 - 330 04 (Virtanen)

Vaasa
Puh. (961) 119 606
Autopuh. 94040 - 617 00

JULKISIVUPINNOITE
värikartta

Renolit ja Marmosan
-julkisivupinnoitteet

Torni
-kalkkimaali

Winterol
-kivitalomaali



WINTER
laatua joka pisara

Julkisivupinnoite värikartta färgkarta

Julkisivumaalien värikartta

Ulkomaalien värikartta

5625	5630	5603	5608 ●	5367 ●	5631 ●
5600	5622	5613	5633 ●	5368 ●	5634 ●
5365	5627	5618	5635 ●	5354 ●	5626 ●
5366	5607	5624	5619 ●	5355 ●	5616 ●
5610	5601	5629	5609 ●	5617 ●	5611 ●
5605	5602	5604	5636 ●	5612 ●	5606 ●

● Merkityt sävyt saadaan myös Torni kalkkimaalina.

De med ● märkta nyanserna fås också som Torni kalkfärg.

TAMPRINT 1983

RENOLIT Julkisivupinnoite 1940, 1950, 1960
RENOLIT Fasadputs 1940, 1950, 1960

Renolit koostuu mineraalisista perusaineista, kuten kalsiumkarbonaatista, kiilteestä, sinkkioksidista sekä perliitistä. Sideaine on säänkestävä alkydi lisättynä pehmentimellä, joka estää materiaalin haurastumisen ja pitää pinnoitteen elastisena vuosikausia. Pigmentteinä käytetään vain sään- ja alkalinkestäviä pigmenttejä.
Renolit soveltuu rakennusten julkisivujen pinnoittamiseen, esim. betoni-, rappaus-, kevytbetoni- ja kevytsorabetonipinnoille sekä asbestisementti- ja muille säänkestäville rakennuslevyille.
Ei suositella punatiilipinnoille.

Renolit Julkisivupinnoitetta on kolmea karkeusastetta:

1940 EH = erittäin hieno (maalimainen), suurin raekoko 0,7 mm
1950 KK = keskikarkea, rakeisuus on tasainen, suurin raekoko 2,0 mm
1960 K = karkea, rakeisuus vaihtelee, suurin raekoko 4—5 mm

Renolit är uppbyggt av mineraliska beståndsdelar, såsom kalciumkarbonat, glimmer, zinkoxid samt perlit. Bindemedlet är en väderbeständig alkyd tillsatt med en mjukgörare, som hindrar materialet att bli skört och som håller putset elastiskt i åratal. Endast väder- och alkalibeständiga pigment har använts.
Renolit lämpar sig för behandling av fasadytor av betong, lättbetong eller lättklinkerbetong och rappade ytor samt för asbestcement- och andra väderbeständiga byggnadsskivor.
Rekommenderas ej för ytor av rödtegel.

Renolit Fasadputs finns med tre olika kornigheter:

1940 EH = mycket fin (påminner om målfärg) största kornstorlek 0,7 mm
1950 KK = medelgrov, kornigheten är jämn största kornstorlek 2,0 mm
1960 K = grov, kornigheten varierar största kornstorlek 4–5 mm

MARMOSAN Julkisivupinnoite 1910, 1920, 1930
MARMOSAN Fasadputs 1910, 1920, 1930

Markkinoidaan Ruotsissa nimellä Struktal.
Akryylipolymeeripohjainen julkisivupinnoite. Pigmentteinä käytetään sään- ja alkalinkestäviä pigmenttejä ja huokoisuutta lisääviä täyteaineita. Karkeudet pinnoitteelle antaa tarkoin valittu marmorirouhe.
Marmosan soveltuu rakennusten julkisivujen pinnoittamiseen, esim. betoni-, kevytbetoni- ja kevytsorabetonipinnoille sekä asbestisementti- ja muille säänkestäville rakennuslevyille.
Ei suositella punatiilipinnoille.

Marmosan Julkisivupinnoitetta on kolmea karkeusastetta:

1910 EH = erittäin hieno (maalimainen), suurin raekoko 0,3 mm
1920 KK = keskikarkea, suurin raekoko 2,0 mm
1930 K = karkea, suurin raekoko 5,0 mm

Marknadsföres i Sverige under namnet Struktal.
Marmosan Fasadputs är ett akrylpolymerbaserat fasadputs. Innehåller väder- och alkalibeständiga pigment och fyllmedel som ökar porositeten. Kornigheten hos putset har fåtts fram genom tillsats av siktat marmorkross.
Marmosan lämpar sig för behandling av fasadytor av betong, lätt betong eller lättgrusbetong samt för asbestcement- och andra väderbeständiga byggnadsskivor.
Rekommenderas ej för ytor av rödtegel.

Marmosan Fasadputs finns med tre olika kornigheter:

1910 EH = mycket fin (påminner om målfärg) största kornstorlek 0,3 mm
1920 KK = medelgrov största kornstorlek 2,0 mm
1930 K = grov största kornstorlek 5,0 mm

TORNI Kalkkimaali 1980
TORNI Kalkfärg 1980

Torni Kalkkimaali on perinteisesti märkäsammutettua kalkkia (kalsiumhydroksidia). Sammutus suoritetaan maanalaisissa haudoissa vähintään yhden vuoden ajan. **Torni Kalkkimaali** ei sisällä mitään lisäaineita.
Torni Kalkkimaali soveltuu rakennusten julkisivujen maalaukseen kalkkilaastipinnoille ja vanhoille kiinteille kalkkimaalipinnoille.
Kalkkimaalien sävyt ovat rajoitettuja, esim. tummia värisävyjä ei **Torni Kalkkimaalista** saa. Värikartassa pisteellä merkityt sävyt saadaan **Torni Kalkkimaalina.** Muista sävyistä sovittava tapauskohtaisesti erikseen.

Torni Kalkfärg är traditionell våtsläckt kalk (kalciumhydroxid). Släckningen sker i underjordiska kamrar under minst ett års tid.
Torni Kalkfärg innehåller inga tillsatsämnen.
Torni Kalkfärg lämpar sig för målning av fasadytor som rappats med kalkmurbruk och gamla ytor som tidigare målats med kalkfärg och där kalkfärgen ännu sitter fast.
Torni Kalkfärg fås endast i ett begränsat antal nyanser. **Torni Kalkfärg** fås ej i mörka färgnyanser utan endast i de nyanser som markerats med en punkt i färgkartan. Vill man ha andra färgnyanser bör härom överenskommas separat.

WINTEROL Kivitalomaali 1008
WINTEROL Stenhusfärg 1008

Winterol on vinyylipohjainen maali, jonka pigmentteinä käytetään sää[illegible] ja alkalinkestäviä pigmenttejä.
Winterol Kivitalomaali soveltuu rakennusten julkisivupintojen maalaukseen, esim. betoni- ja rappauspinnoille sekä vanhalle asbestilevylle. Soveltuu myös kiinteiden kalkkimaalipintojen maalaukseen.
Ei suositella kevytbetoni- ja tiilipinnoille. Soveltuu myöskin sisämaalaukseen pohjamaaliksi kiviainespinnoille alkydimaalin alle ja pintamaaliksi, kun halutaan himmeää pintaa.

Winterol är en vinylbaserad färg, vars pigment är väder- och alkalibeständiga.
Winterol Stenhusfärg lämpar sig för målning av fasader i betong eller med rappade ytor samt för målning av gamla asbestcementytor. Lämpar sig speciellt för målning på gammal kalkfärg som fortfarande sitter fast.
Rekommenderas ej för ytor av lättbetong eller för tegelytor.
Lämpar sig också inomhus som grundfärg under alkydfärg på stenytor, men kan också användas inomhus som ytfärg då man vill ha en matt yta.

MK 4,—

OY LOHJA AB
WINTER
33270 TAMPERE 27
PUH./TEL. 931/440 300

PINNOITEJAOS
PL 16
00981 HELSINKI 98
PUH./TEL. 90-314 133

SUOMALAINEN TUOTE

Suunnittele suomalaisittain!

Ja vaadi, että ostamasi poimulevy on kotimaista RAUTARUUKIN terästä.

Tilaa esite suunnittelusi avuksi.

RAUTARUUKKI OY

SINKITYT JA MUOVIPINNOITETUT LEVYT
Myynti ja tekninen neuvonta:
Hämeenlinnan tehdas, 13300 Hämeenlinna 30
Puhelin 917-2061 Telex 2327



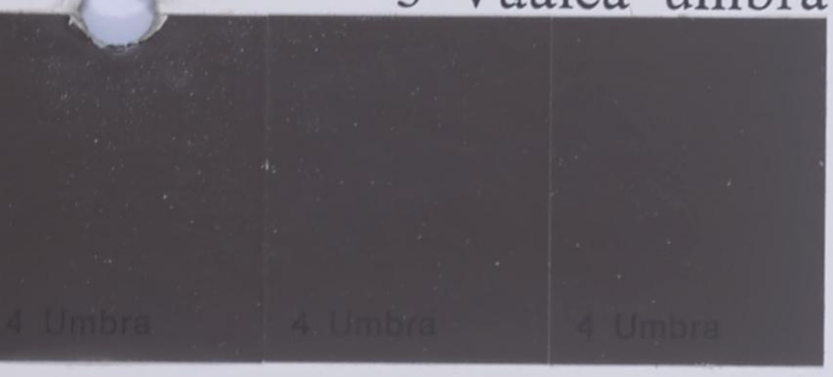
1 Okra



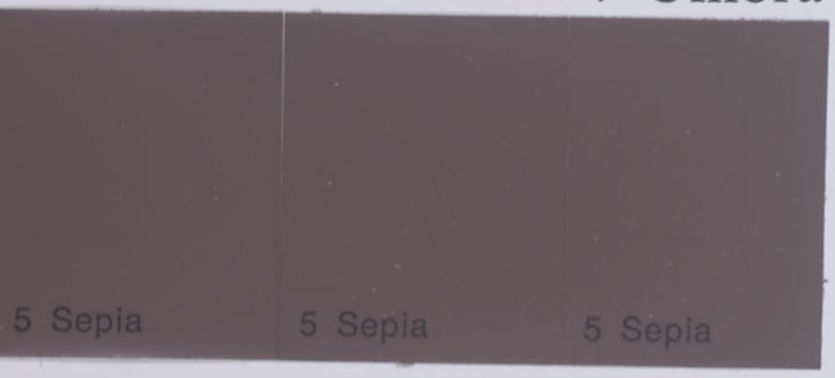
2 Vaalea okra



3 Vaalea umbra



4 Umbra



5 Sepia



6 Punaokra



7 Tiilenpunainen



8 Terrakotta



9 Oliivin vihreä

Kaikki värit ovat niin lähellä todellista kuin painoteknisesti on mahdollista.

Rautaruukki Oy:n muovipinnoitetut levyt sisä- ja ulkokäyttöön.

Rautaruukki Oy:n kylmävalssatut ja sinkityt levyt voidaan lisäksi laminoida jalopuujäljitelmin tai muulla värillisellä muovikalvolla eri tilauksesta.

Näitten tuotteitten myynti ja tekninen neuvonta Rautaruukki Oy:n Hämeenlinnan tehdas puh. 917-2061 • telex 2327

RUUKIN VÄRIVALMIS

Rautaruukki Oy/1. 2. 82



10 Ruohon vihreä



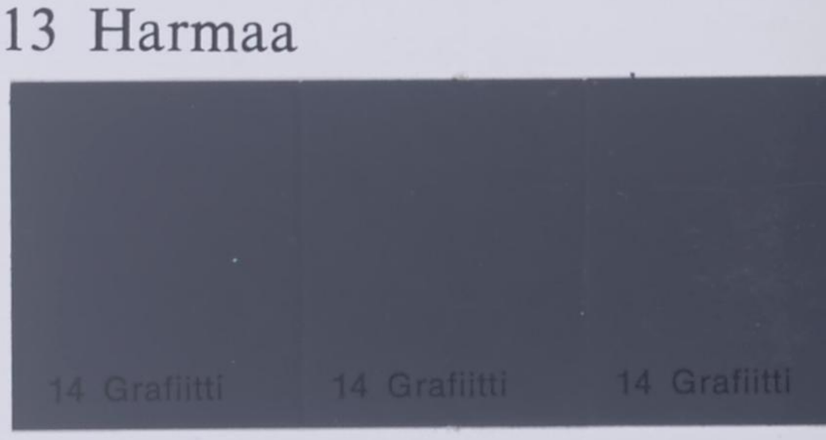
11 Havun vihreä



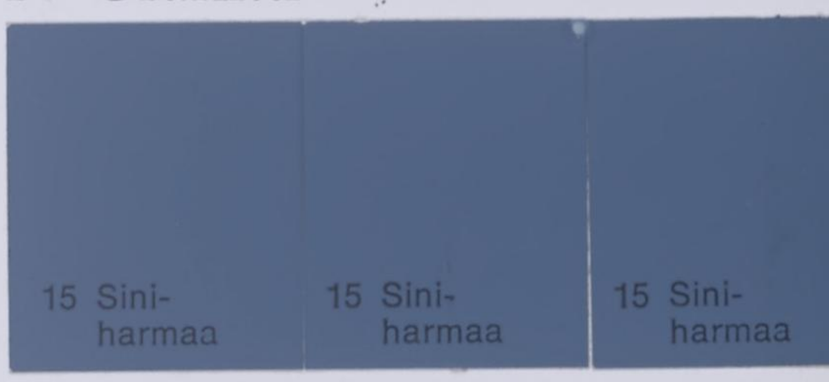
12 Musta



13 Harmaa



14 Grafiitti



15 Siniharmaa



16 Musteen sininen



17 Maalarin valkoinen

INTERIOR WALLS : PAINTERS WHITE

25	26	27	28
6757	6559	6460	6462
6357	6459	6360	6362
6257	6359	6260	6262
6157	6960	6160	6162
6054	6059	6060	6062
6063 Alueen 25 tehosteväri Effektkulör för färgrad 25	6936 Alueen 26 tehosteväri Effektkulör för färgrad 26	6659 Alueen 27 tehosteväri Effektkulör för färgrad 27	6855 Alueen 28 tehosteväri Effektkulör för färgrad 28

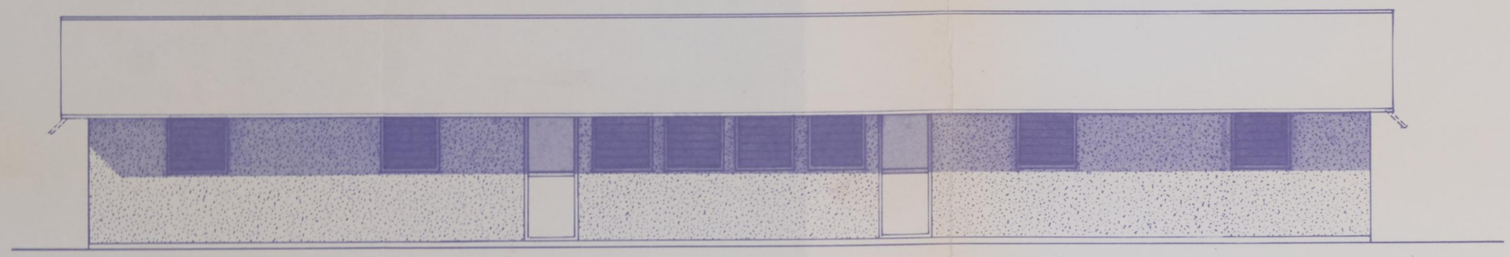
MAKROTALO OY

CED/P. Mannila/rj 14.06.1984

VOCATIONAL TRAINING AND SELFRELIANCE CENTER/VIENA, ANGOLA/ANC

ARC 324/001a + b	a) Clinic/Recept. Building	AV 05	08.06.1984
/002	c) Classroom/Library	AV 06	04.04.1984
/003	b) Classroom	AV 06	04.04.1984
/004	j) Administration	AV 11	04.04.1984
/005	e) Dormitory for 27 students	AV 08	04.04.1984
/006	f) Dormitory for 54 students		04.04.1984
/007	h) Semi-detached house	AV 10	05.06.1984
/008	d) Dining hall/Kitchen	AV 07	08.06.1984
/009	g) Ablution	AV 09	08.06.1984
/010	i) Mechanics workshop	AV 03	08.06.1984
/011	k) Truck parking		05.06.1984
/013	m) Tailoring workshop	AV 04	05.06.1984
/014	n) Storage	AV 02	08.06.1984
/015	Power plant building		08.06.1984

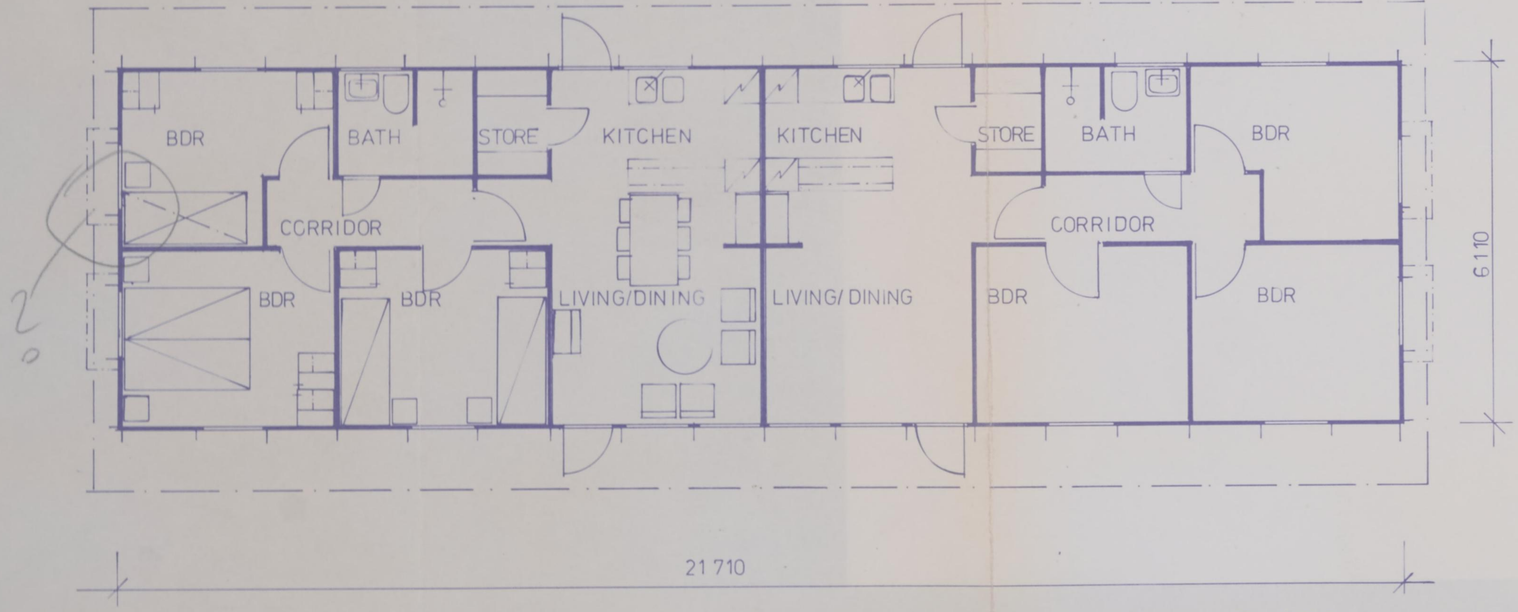
40.000 1.84 Parno



FACADE 1

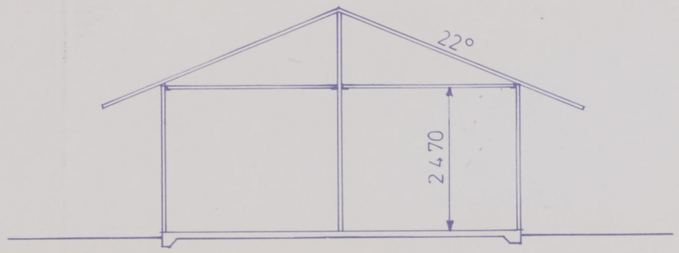


FACADE 2



PLAN

AREA 132.6 sq.m



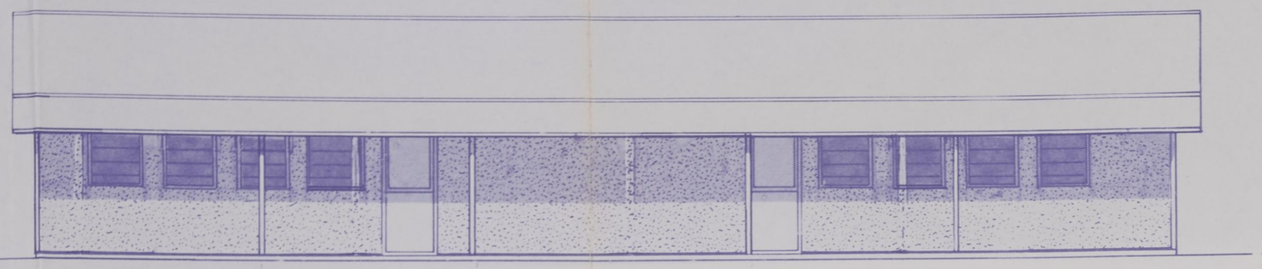
SECTION

RAKENNUSKOHDE/PROJECT	PIIRUSTUS/DRAWING	MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/VIENA, ANGOLA/A.N.C.	I) DETACHED HOUSE AV 10	1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A, P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17 311, TEL. +358-0-17 311 TELEX 123354 MAKRO SF	SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/012	MUUTOSTUNNUS

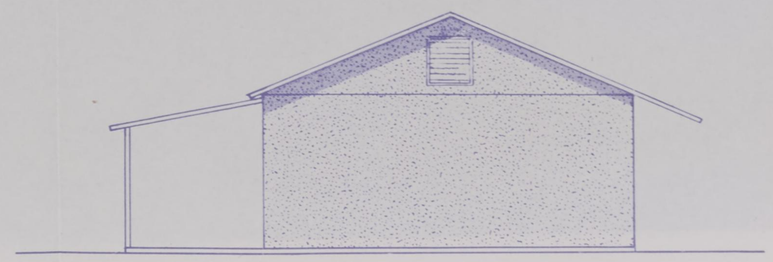
HELSINKI 06.04.1984	SUUNNITTELU/DESIGNER OT	PIIRT./DRAWN/BY	TARK./CHECKED	

Tätä piirustusta ei saa ilman suostumustamme jäljentää, luovuttaa kolmannelle henkilölle eikä käyttää muihin kuin meidän tilauksiimme. MAKROTALO OY.

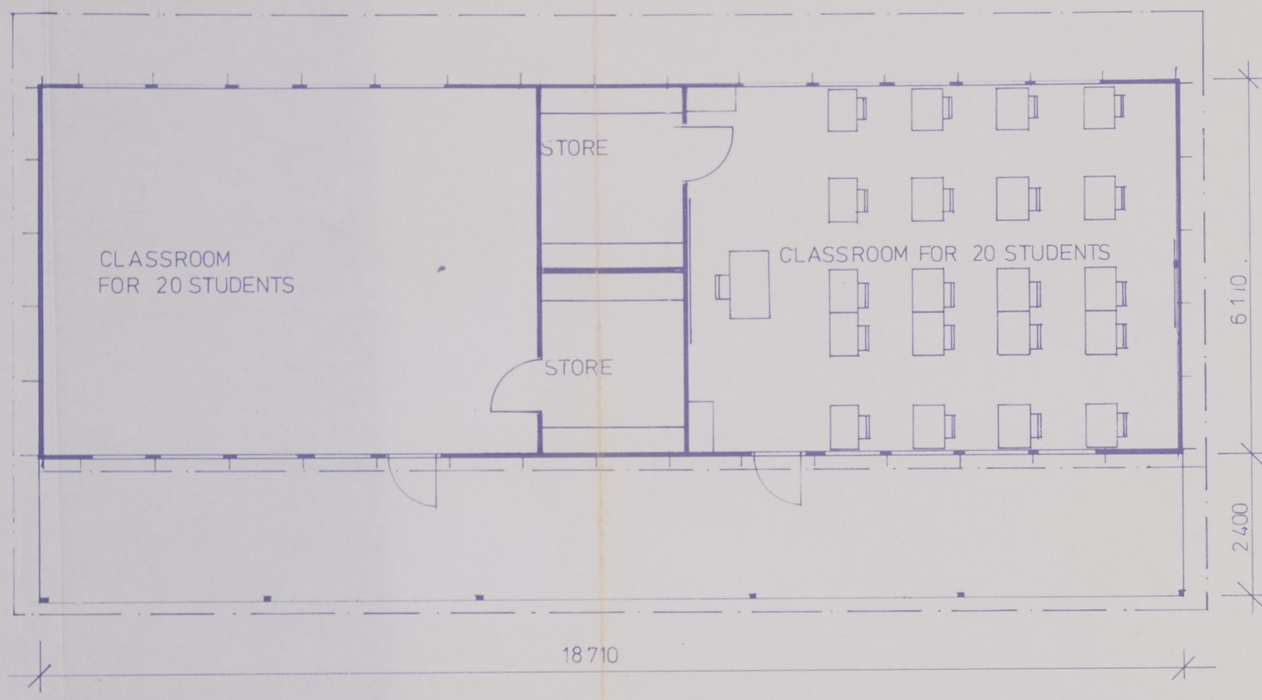
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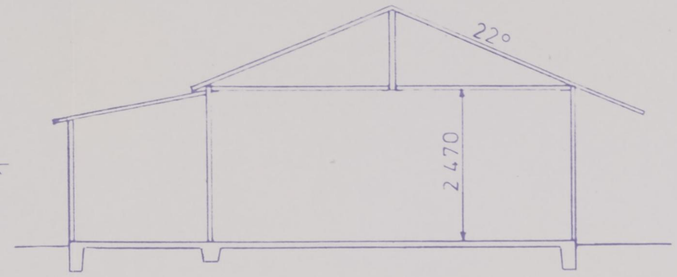
FACADE 1



FACADE 2



1



SECTION

2

AREA 114.3 sq.m
TOTAL 159.2 sq.m

Plan for
Clinic + Reception:
Bldg. belongs
before this plan.

ZCM

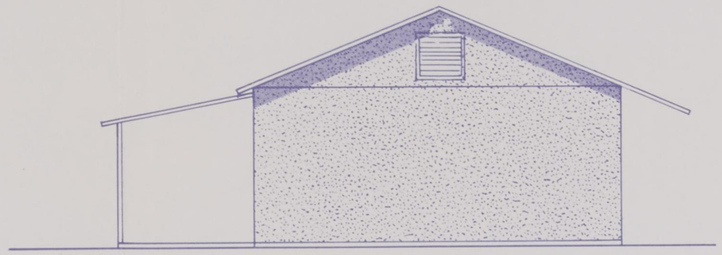
RAKENNUSKOHDE/PROJECT VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/ VIENA,ANGOLA/A.N.C		PIIRUSTUS/DRAWING b) CLASSROOM AV 06	MITTAKAAVA/SCALE 1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A, P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17311, TEL. +358-0-17311 TELEX 123354 MAKRO SF		SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/003	MUUTOSTUNNUS
HELSINKI 04.04.1984	SUUNNITTELU/DESIGNER	PIIRT./DRAWN/BY OT	TARK./CHECKED

Tätä piirustusta ei saa ilman suostumustamme jäljentää, luovuttaa kolmannelle henkilölle eikä käyttää muihin kuin meidän tilauksiimme. MAKROTALO OY

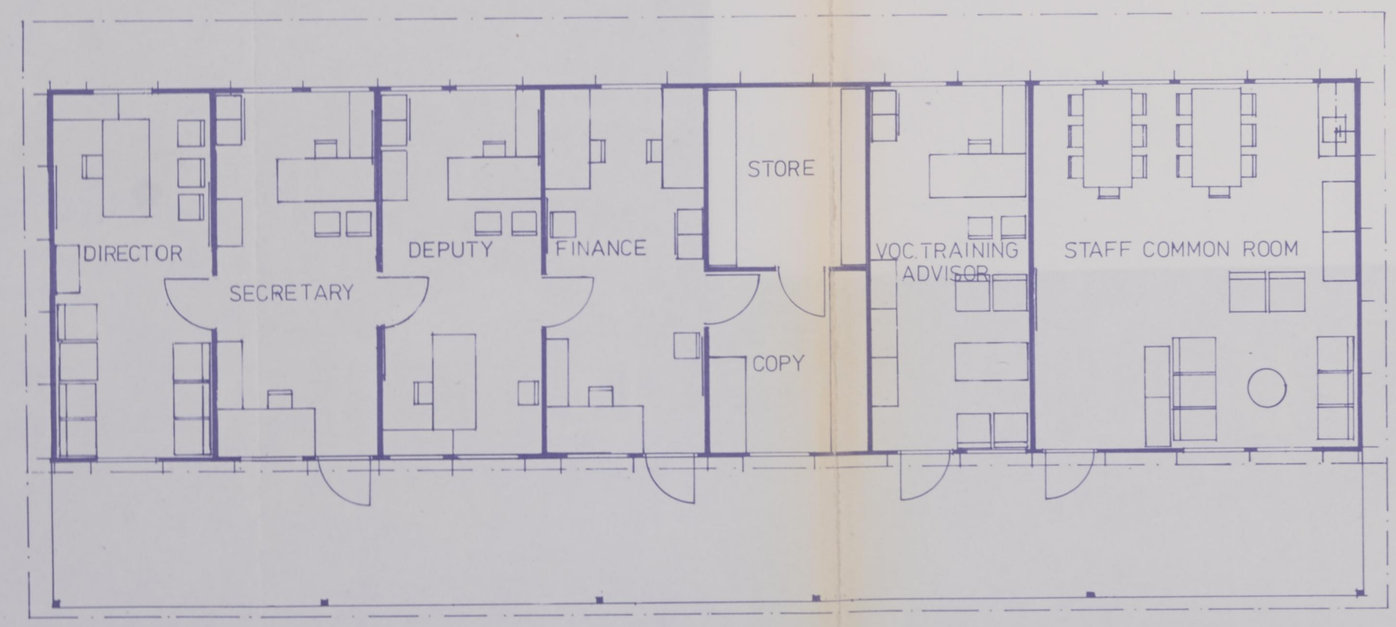
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FACADE 1



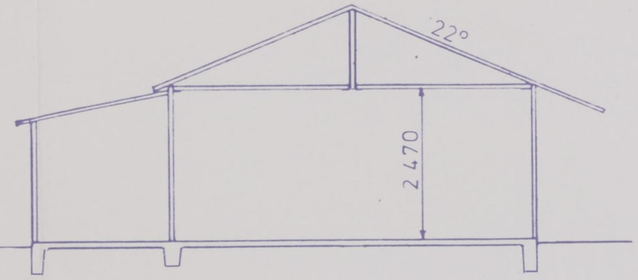
FACADE 2



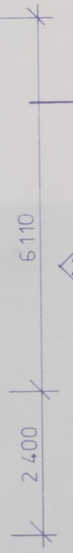
21710

PLAN

1



SECTION



AREA 132.6 sq. m
TOTAL 184.8 sq. m

RAKENNUSKOHDE/PROJECT	PIIRUSTUS/DRAWING	MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/VIENA, ANGOLA/A.N.C	j) ADMINISTRATION AV 11	1:100

MAKROTALO OY

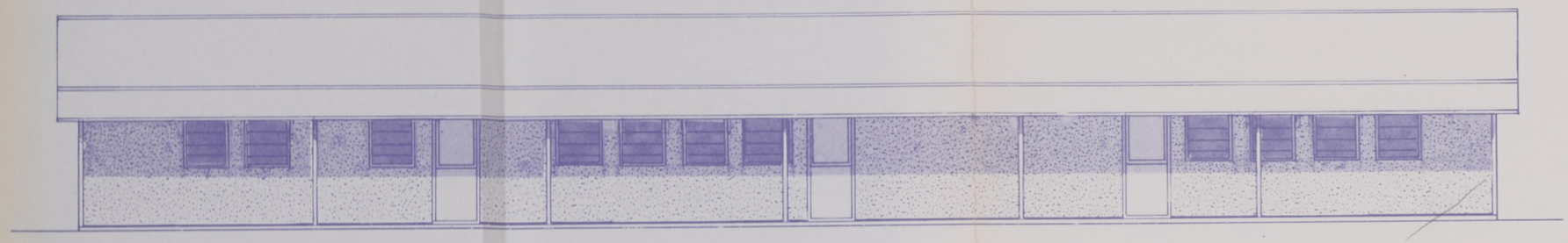
PIENI ROOBERTINKATU 16 A,
P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND
PUH 90-17311, TEL +358-0-17311
TELEX 123354 MAKRO SF

SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO.	MUUTOSTUNNUS
arc 324/004	

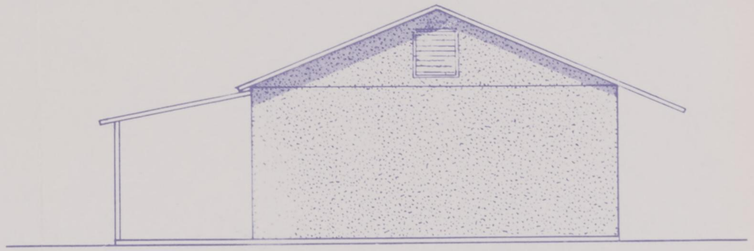
HELSINKI 04.04.1984	SUUNNITTELU/DESIGNER OT	PIIRT./DRAWN/BY OT	TARK./CHECKED

Tätä piirustusta ei saa ilman suostumustamme jäljentää, luovuttaa kolmannelle henkilölle eikä käyttää muihin kuin meidän tilauksiimme. MAKROTALO OY.

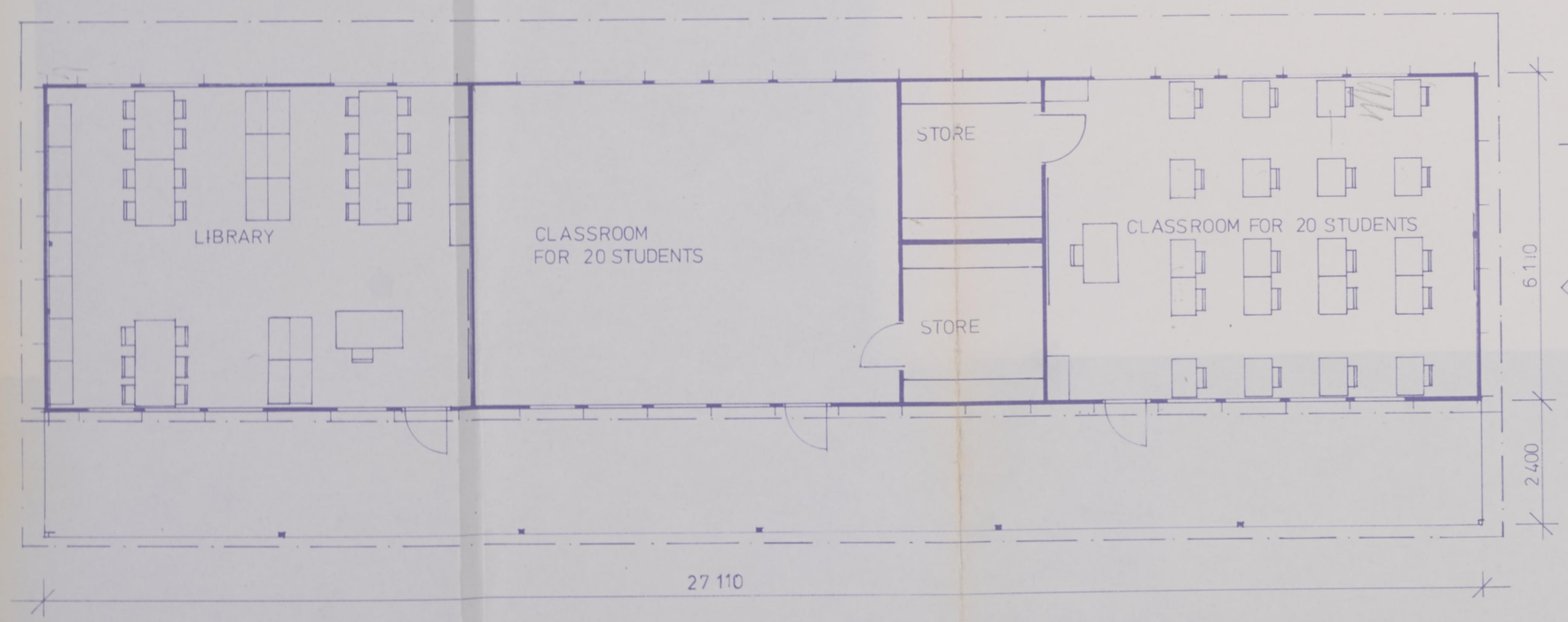
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FACADE 1

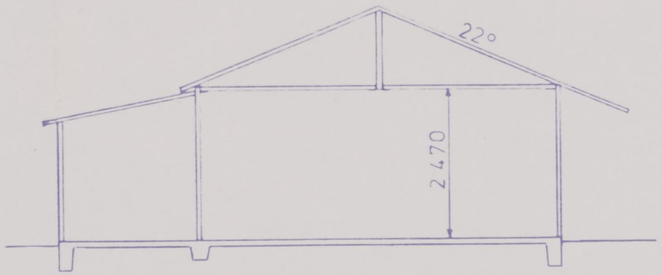


FACADE 2



PLAN

1



SECTION

2

AREA 165.7 sq.m
TOTAL 230.8 sq.m

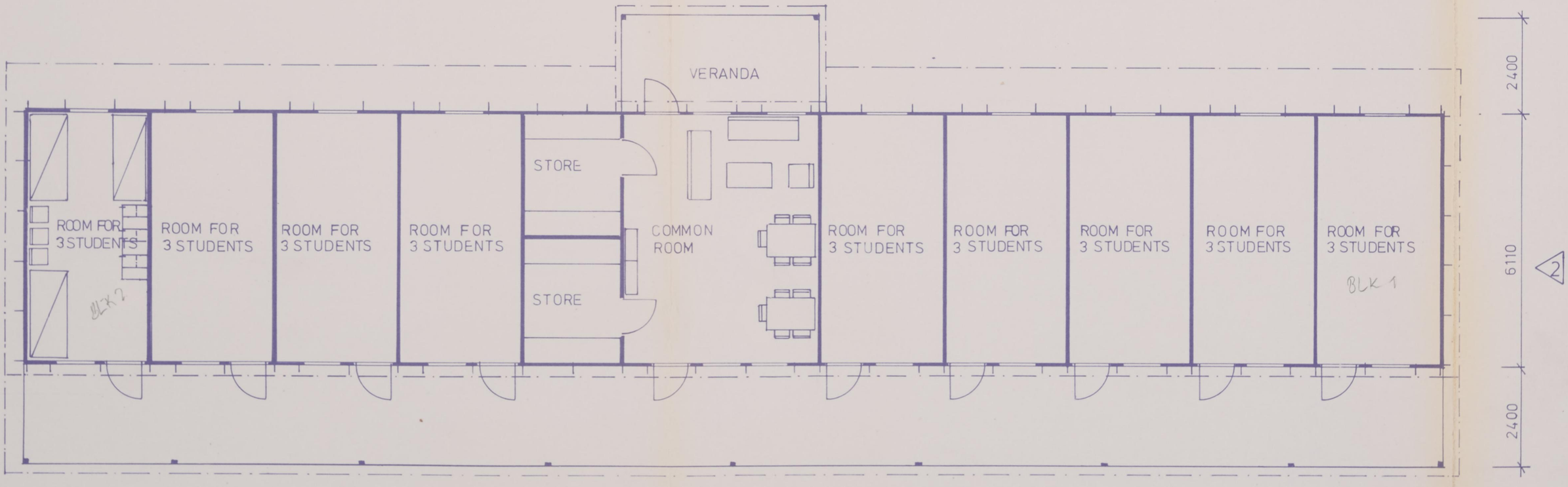
RAKENNUSKOHDE/PROJECT	PIIRUSTUS/DRAWING	MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF - RELIANCE CENTRE/VIENA,ANGOLA/A.N.C.	c) CLASSROOM/LIBRARY AV 06	1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A, P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17311, TEL. +358-0-17311 TELEX 123354 MAKRO SF	SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/002	MUUTOSTUNNUS
HELSINKI 04.04.1984 / SUUNNITTELU/DESIGNER	PIIRT./DRAWN/BY: OT / TARK./CHECKED	

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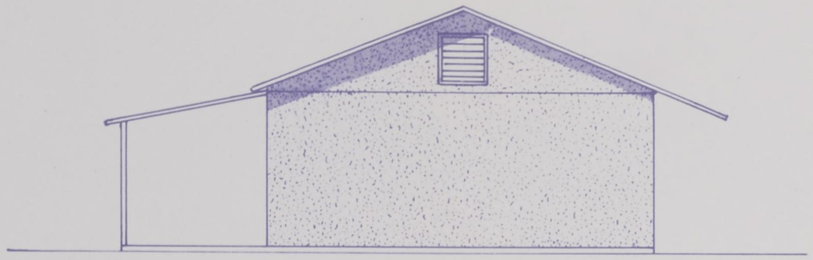


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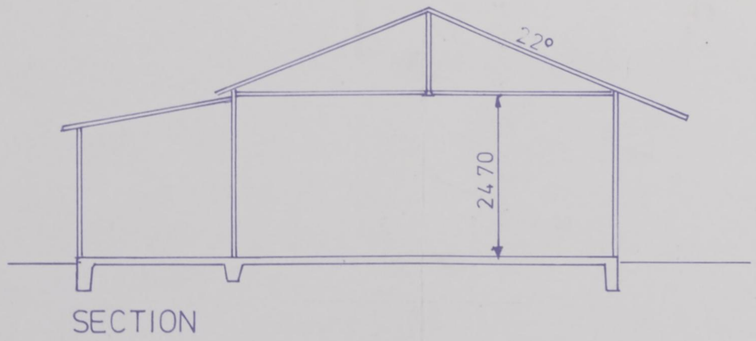


AREA 209,6 sq.m

TOTAL 303,5 sq.m



FACADE 2

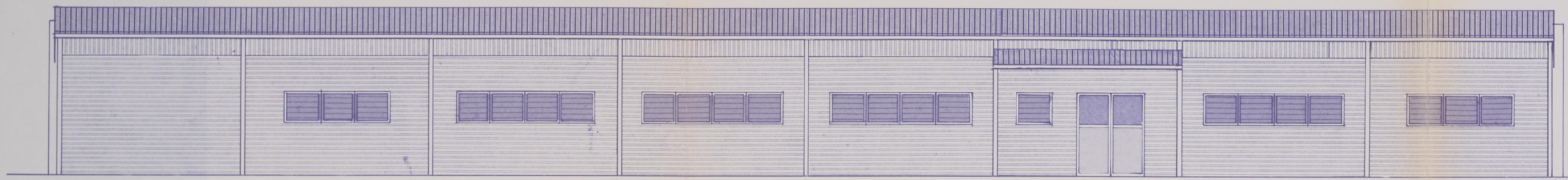


SECTION

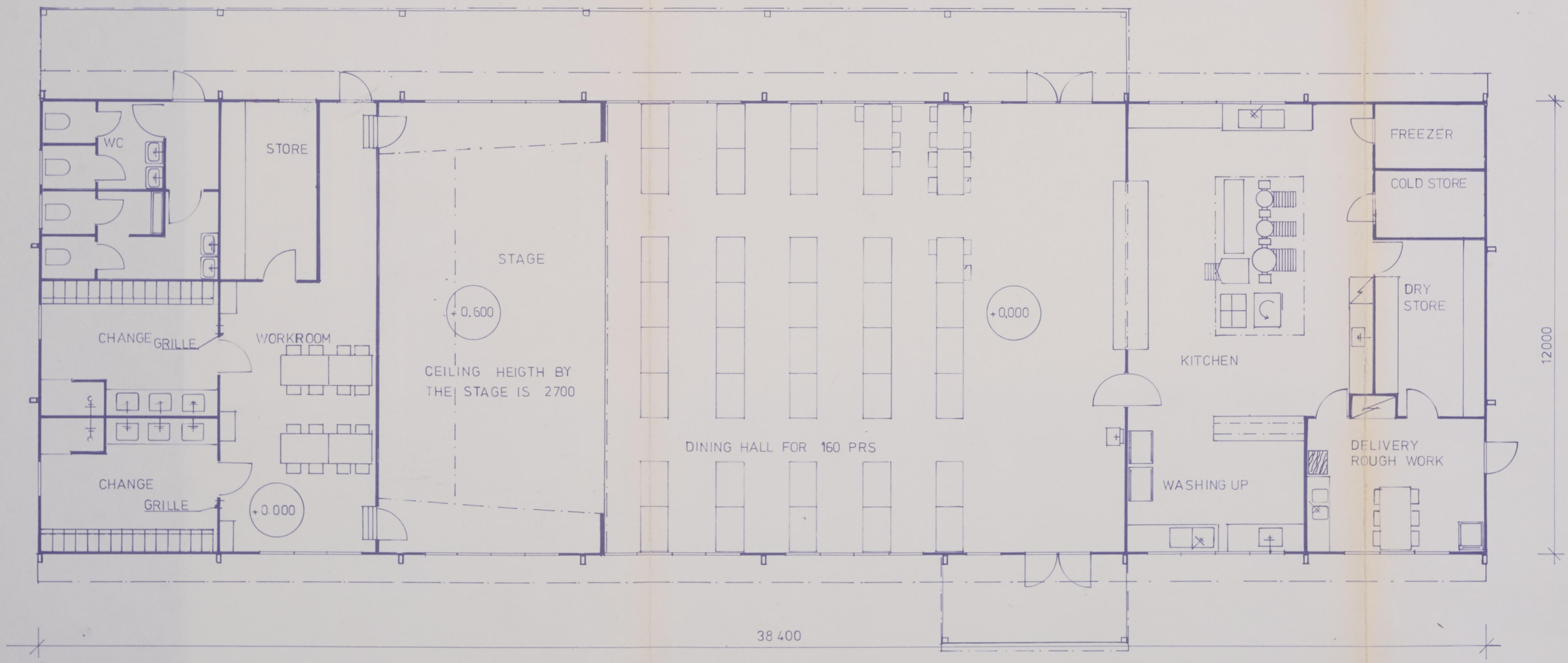
RAKENNUSKOHDE/PROJECT		PIIRUSTUS/DRAWING		MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF – RELIANCE CENTRE/VIENA, ANGOLA/A.N.C.		e) DORMITORY FOR 27 STUDENTS AV 08		1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17311, TEL. +358-0-17311 TELEX 123354 MAKRO SF		SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/005		MUUTOSTUNNUS
HELSINKI 04.04.1984	SUUNNITTELU/DESIGNER OT	PIIRT./DRAWN/BY pm	TARK./CHECKED	

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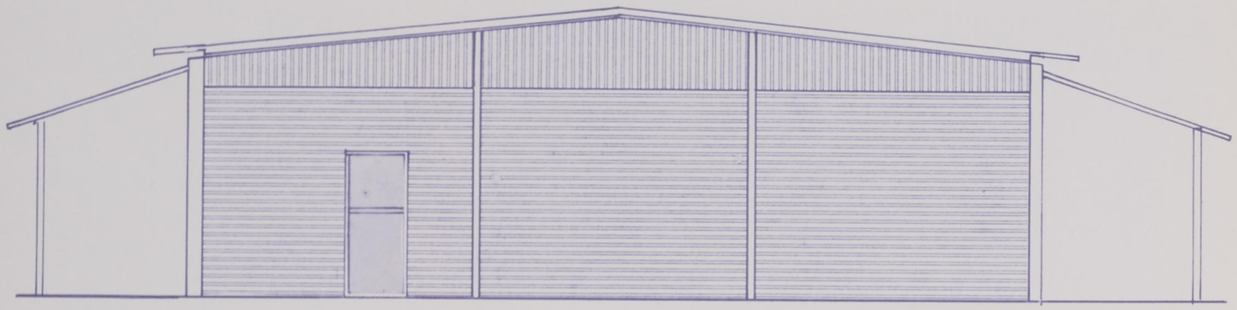


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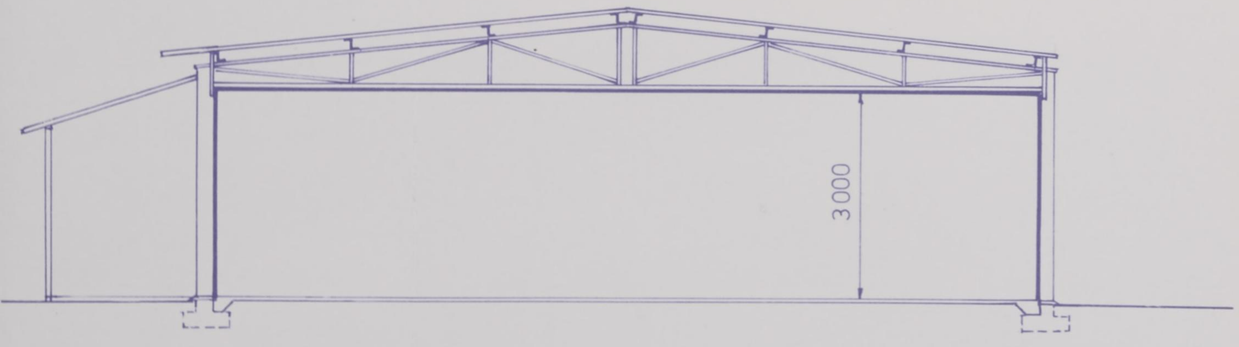


PLAN

AREA 460.8 sq.m



FACADE 2



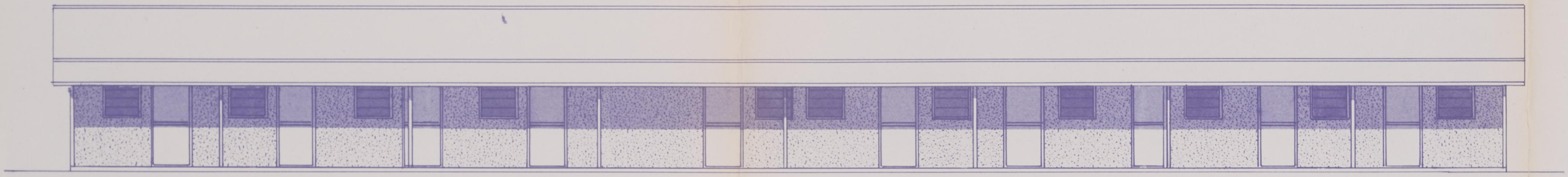
SECTION

08.06. 1984
05.06. 1984

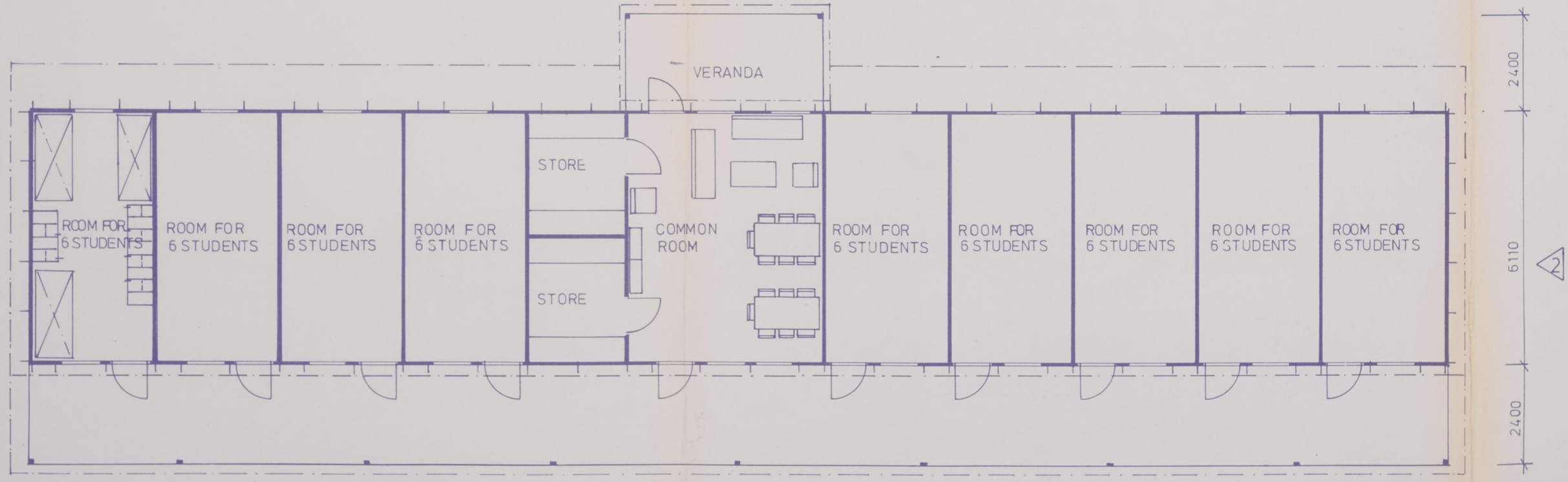
RAKENNUSKOHDE/PROJECT		PIIRUSTUS/DRAWING		MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF - RELIANCE CENTRE/VIENA, ANGOLA/A.N.C.		d) DINING HALL/KITCHEN AV 07		1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A P.O.BOX 187 SF-00121 HELSINKI 12 FINLAND PUH. 90-17 311 TEL. +358-0-17 311 TELEX 123354 MAKRO SF		SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/008		MUUTOSTUNNUS
HELSINKI 04.04.1984	SUUNNITTELU/DESIGNER OT	PIIRT./DRAWN/BY	TARK./CHECKED	

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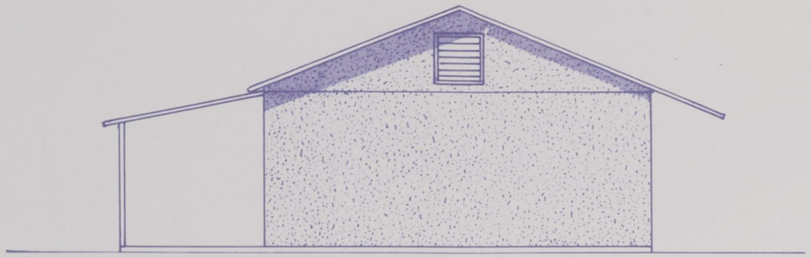


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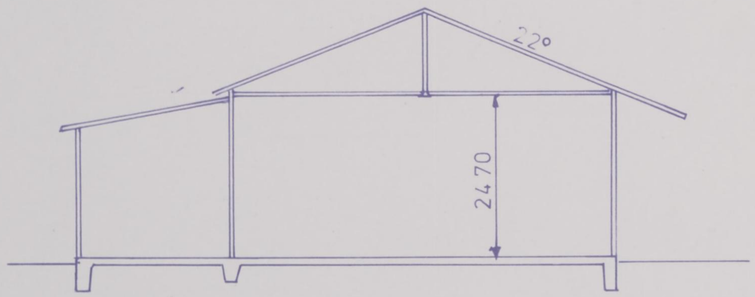


AREA 209,6 sq.m

TOTAL 303,5 sq.m



FACADE 2

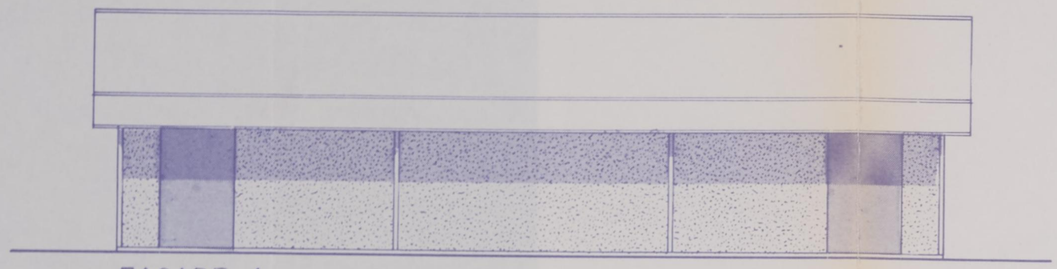


SECTION

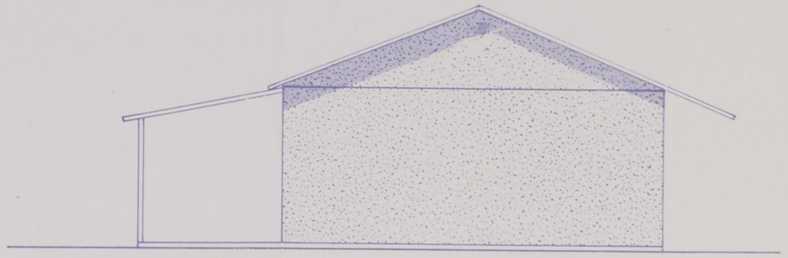
RAKENNUSKOHDE/PROJECT		PIIRUSTUS/DRAWING		MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/VIENA,ANGOLA/A.N.C.		f) DORMITORY FOR 54 STUDENTS		1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A, P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17 311, TEL. +358-0-17 311 TELEX 123354 MAKRO SF		SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/006		MUUTOSTUNNUS
HELSINKI 04.04.1984	SUUNNITTELU/DESIGNER	PIIRT./DRAWN/BY pm	TARK./CHECKED	

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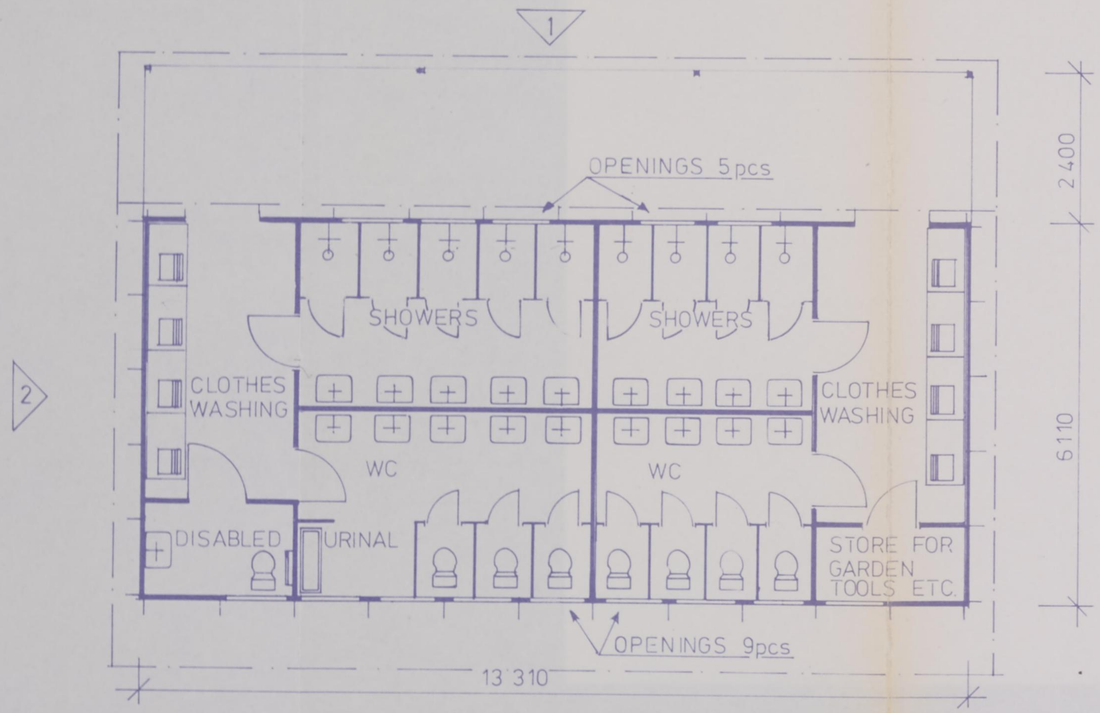
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FACADE 1

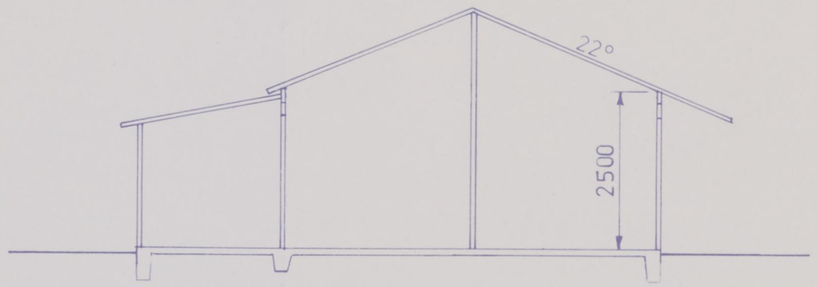


FACADE 2



PLAN

AREA 81.3 sq.m
TOTAL 113.3 sq.m



SECTION

NOTE! NO CEILING

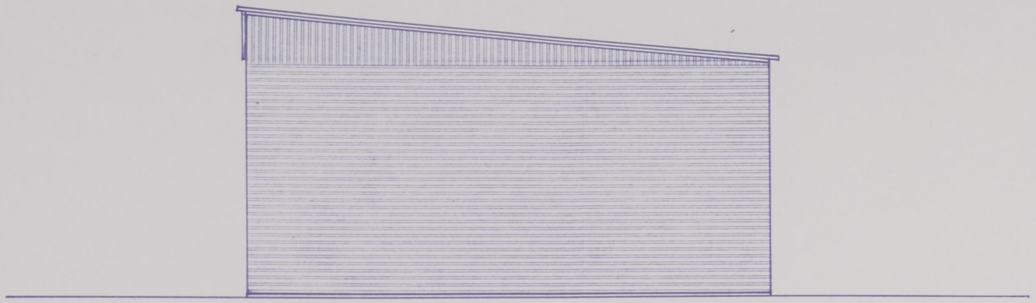
08.06.1984

RAKENNUSKOHDE/PROJECT	PIIRUSTUS/DRAWING	MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/VIENA, ANGOLA/A.N.C.	g) ABLUTION AV 09	1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A, P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17311, TEL. +358-0-17311 TELEX 123354 MAKRO SF	SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324 /009	MUUTOSTUNNUS .

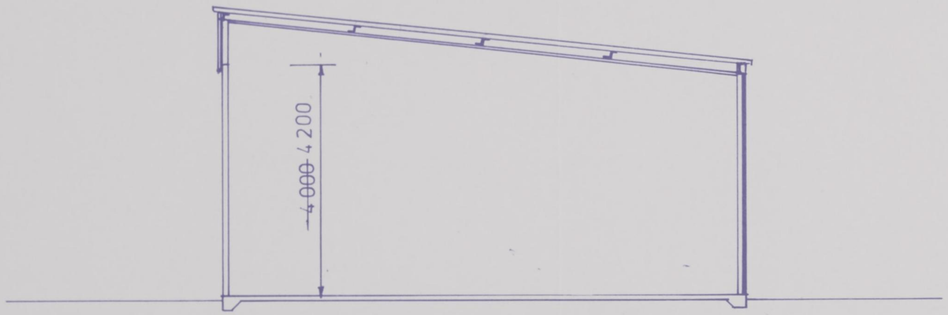
	SUUNNITTELU/DESIGNER	PIIRT./DRAWN/BY	TARK./CHECKED	
HELSINKI 04.04.1984		OT		

Tätä piirustusta ei saa ilman suostumustamme jäljentää, luovuttaa kolmannelle henkilölle eikä käyttää muihin kuin meidän tilauksiimme. MAKROTALO OY

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FACADE 2



SECTION

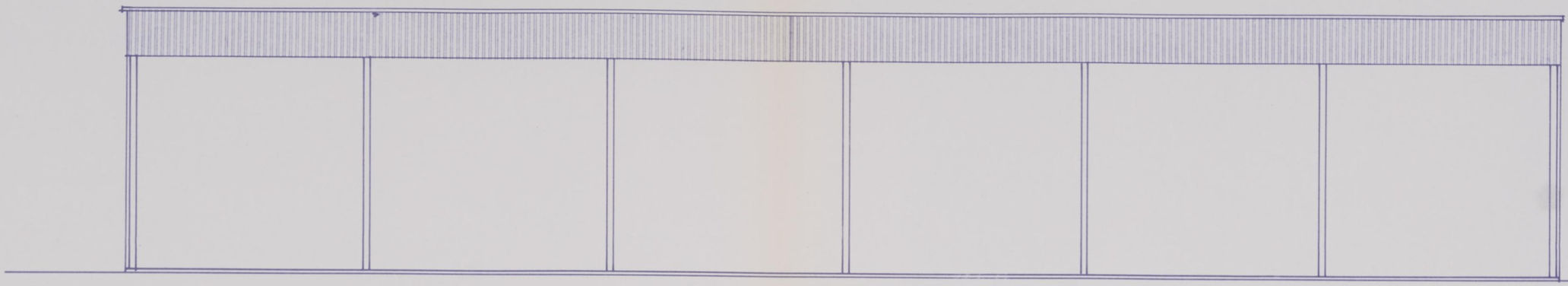
NOTE! NO CEILING

5. 6. 1984

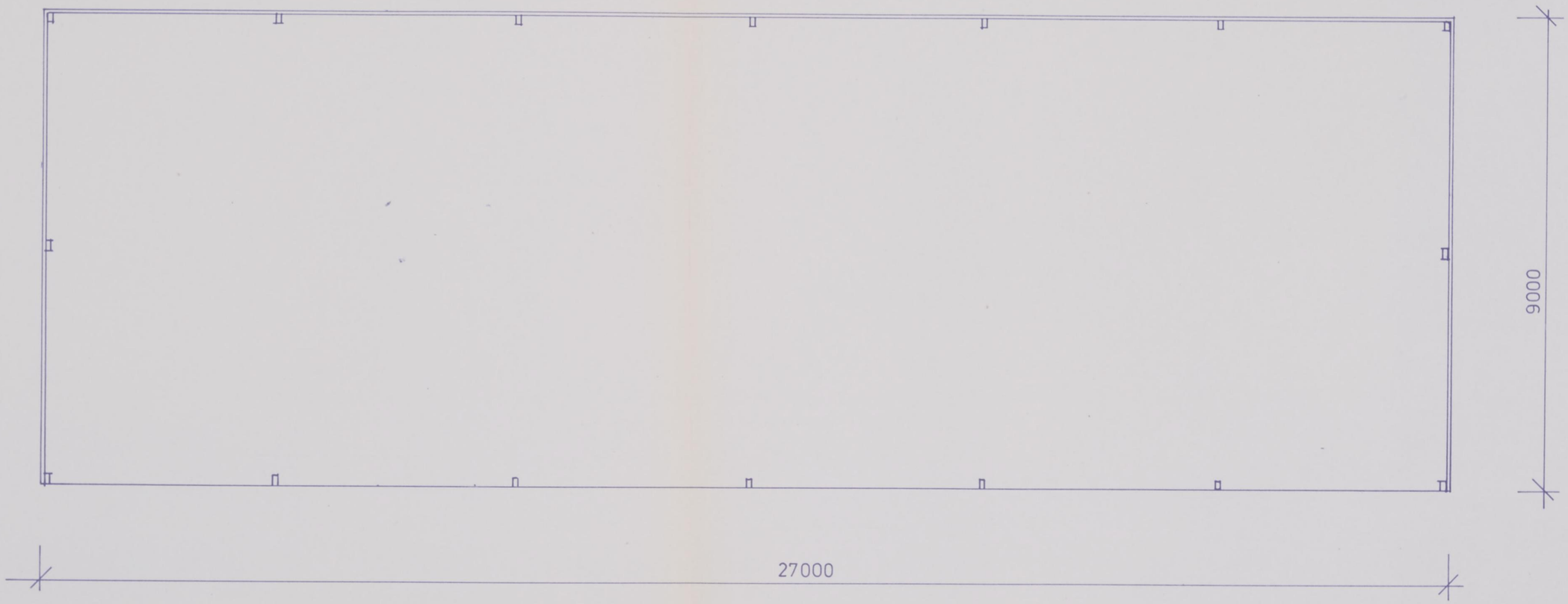
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VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/VIENA,ANGOLA/A.N.C.		k)TRUCK PARKING		1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A, P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17311, TEL. +358-0-17311 TELEX 123354 MAKRO SF		SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/011		MUUTOSTUNNUS
HELSINKI 06.04.1984	SUUNNITTELU/DESIGNER OT	PIIRT./DRAWN/BY	TARK./CHECKED	

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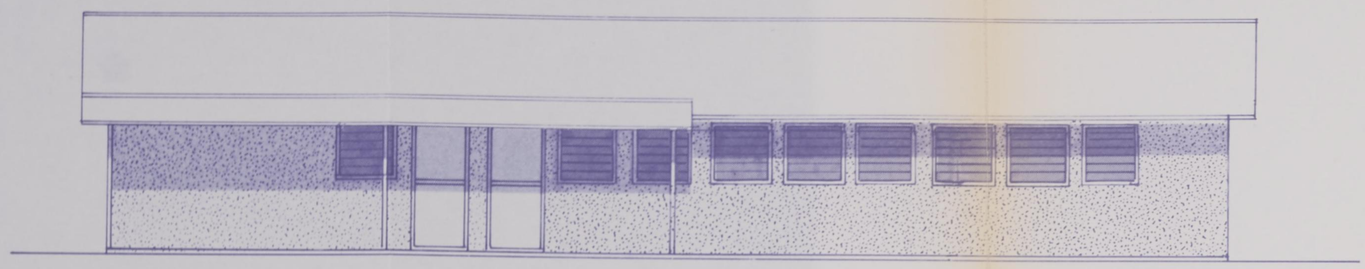


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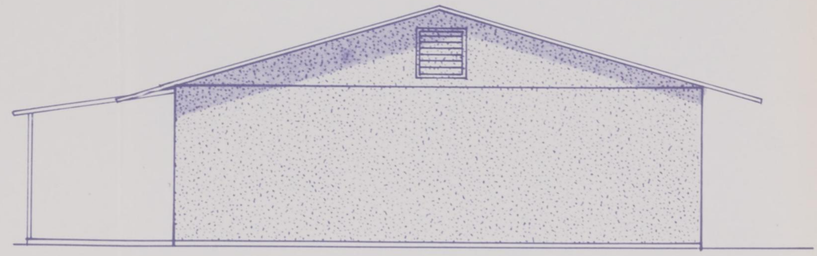


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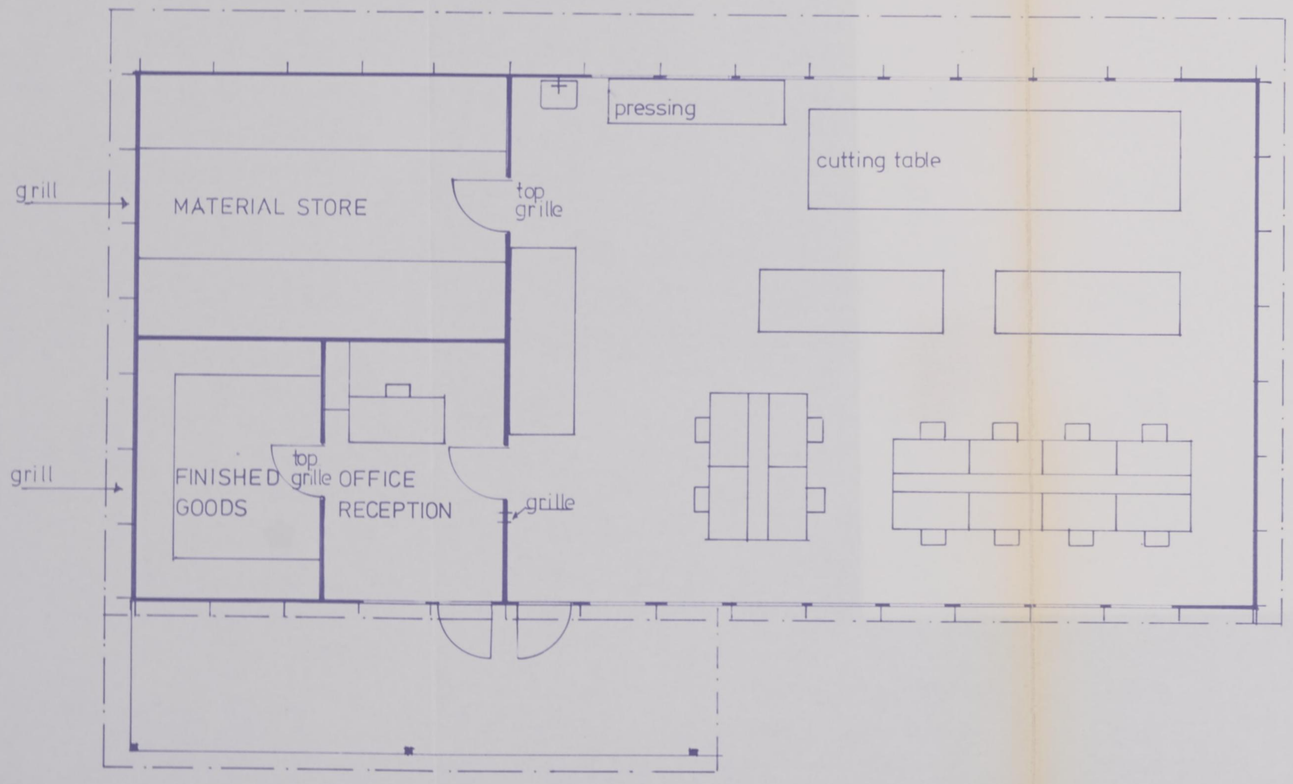
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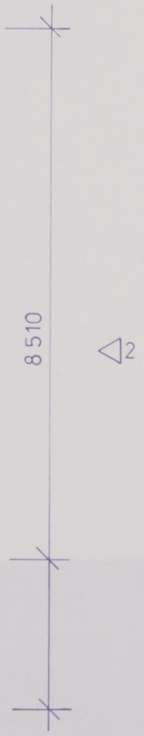


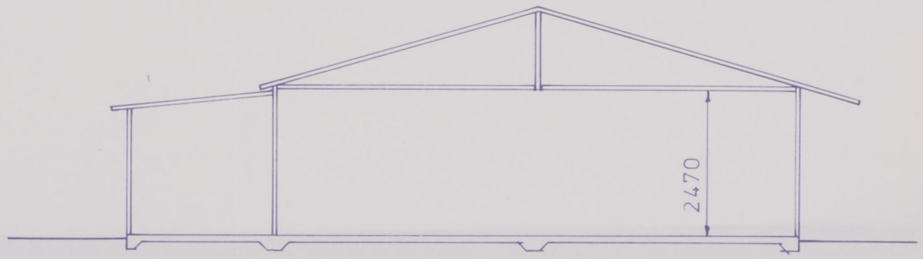
FACADE 1



FACADE 2







SECTION

1

AREA 154.1 sq.m
TOTAL 197.6 sq.m

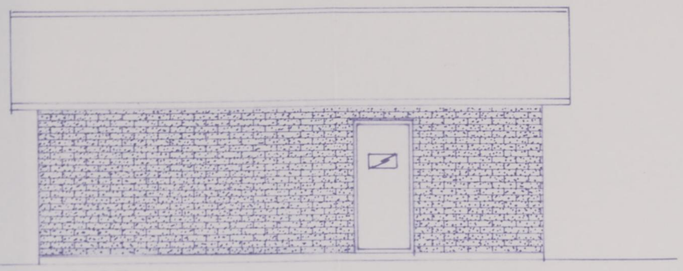
THE HOUSE SHALL BE REALIZED
AS MIRRORED

05.06.1984

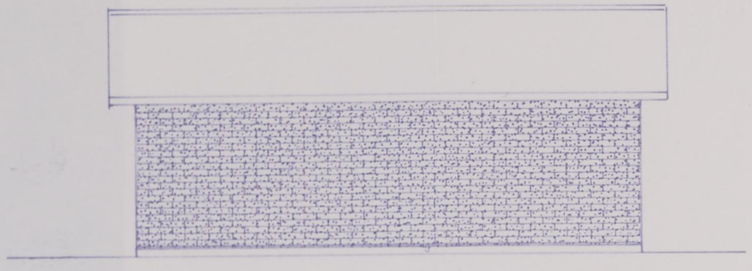
RAKENNUSKOHDE/PROJECT	PIIRUSTUS/DRAWING	MITTAKAAVA/SCALE
VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE/VIENA, ANGOLA/A.N.C.	m) TAILORING WORKSHOP AV 04	1:100
MAKROTALO OY PIENI ROOBERTINKATU 16 A P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17 311, TEL. +358-0-17 311 TELEX 123354 MAKRO SF	SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/013	MUUTOSTUNNUS
HELSINKI 06.04.1984 / SUUNNITTELU/DESIGNER: OT	PIIRT./DRAWN/BY	TARK./CHECKED

Tata piirustusta ei saa ilman suostumustamme jäljentää, luovuttaa kolmannelle henkilölle eikä käyttää muihin kuin meidän tilauksiimme. MAKROTALO OY

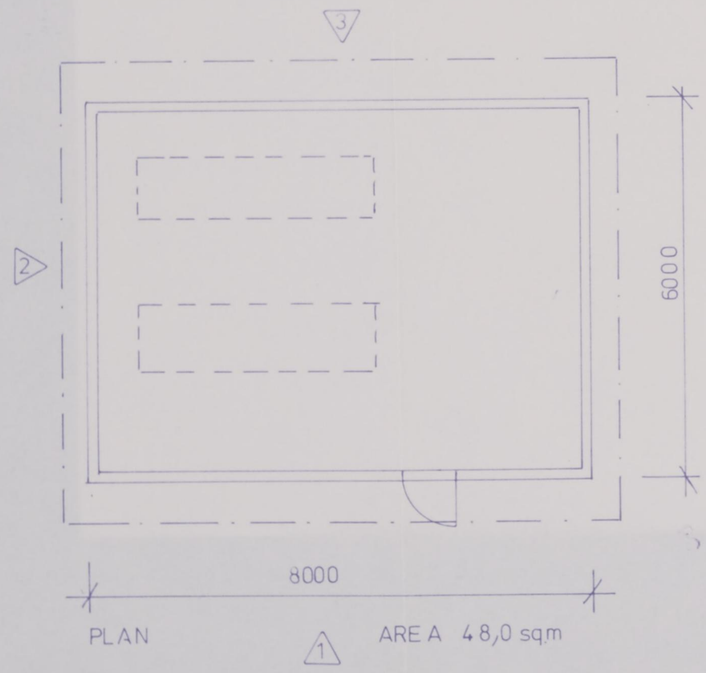
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FACADE 1

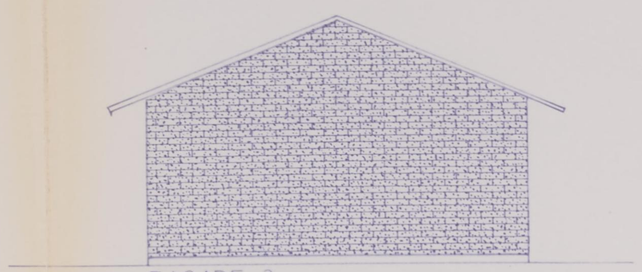


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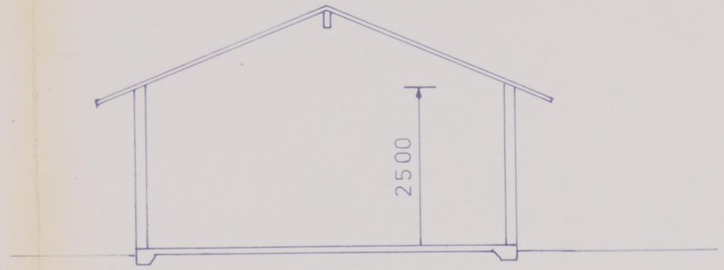


PLAN

AREA 48,0 sqm



FACADE 2

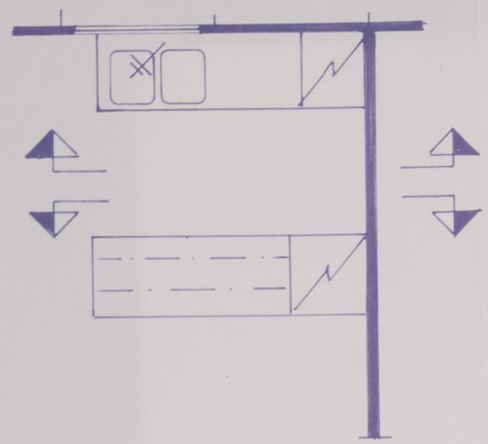


SECTION

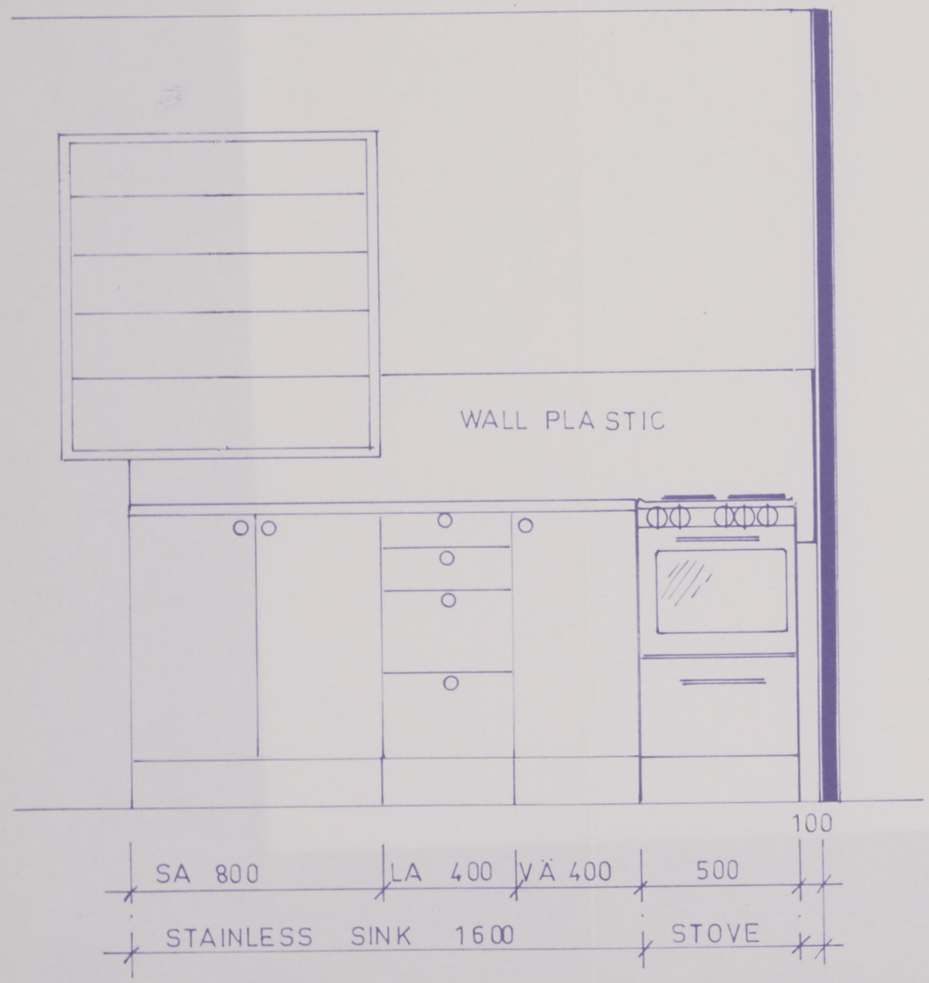
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MAKROTALO OY PIENI ROOBERTINKATU 16 A P.O.BOX 187, SF-00121 HELSINKI 12, FINLAND PUH. 90-17 311, TEL. +358-0-17 311 TELEX 123354 MAKRO SF		SUUNNITTELU ALA, TYÖ/PROJECT NO. PIIRUSTUS NO./DRAWING NO. arc 324/ 015		MUUTOSTUNNUS
HELSINKI 08.06.1984	SUUNNITTELU/DESIGNER pm	PIIRT./DRAWN/BY	TARK./CHECKED	

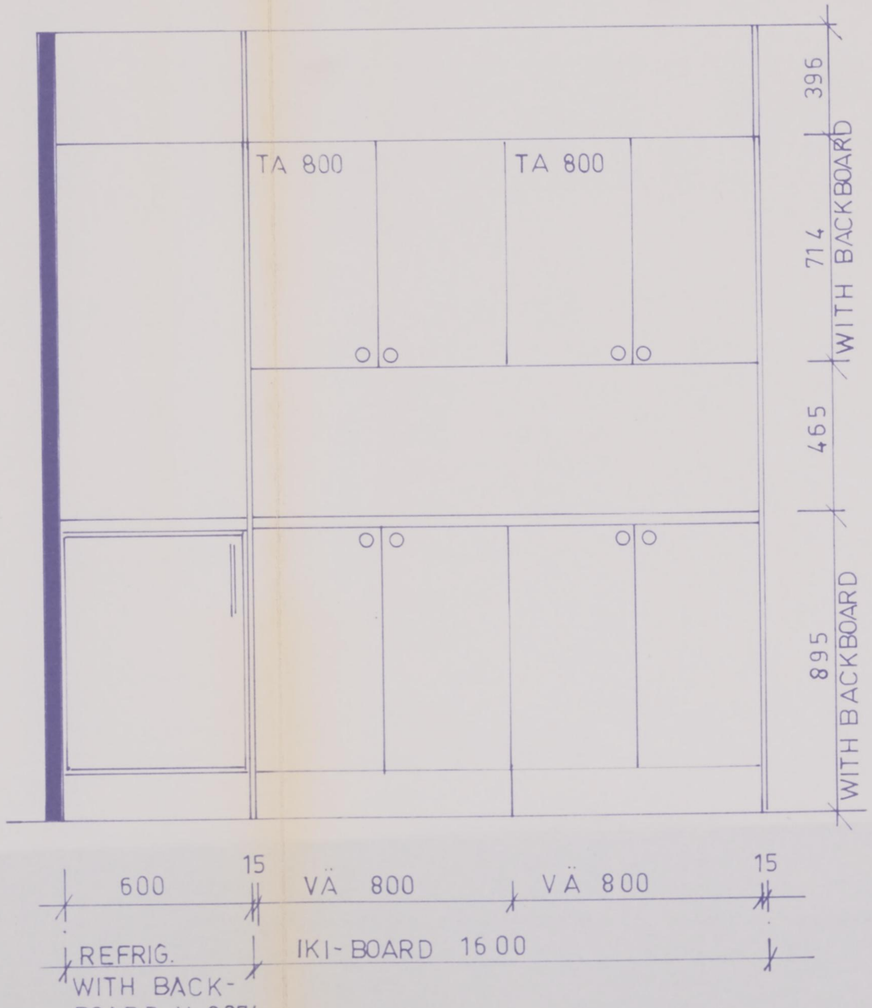
Tätä piirustusta ei saa ilman suostumustamme jäljentää, luovuttaa kolmannelle henkilölle eikä käyttää muihin kuin meidän tilauksiimme. MAKROTALO OY.

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1 PC LIKE THE DRAWING
1 PC AS MIRRORED





RAKENNUSKOHDE/PROJECT
VOCATIONAL TRAINING AND SELF-RELIANCE CENTER/VIENA, ANGOLA ANG.

MAKROTALO OY
PIENI ROOBERTINKATU 1 E A
P.O.BOX 197 SF-00121 HELSINKI 12 FINLAND
PUH 90-1361 TELEX 123554 MAKRO SF
TELEX 123554 MAKRO SF

SUUNNITTELU/DESIGNER

HELSINKI 05.06.1984 pm

PIIRUSTUS/DRAWING
ANNEX: SEMI-DETACHED HOUSE

SUUNNITTELU ALA TYÖ/PROJECT NO
PIIRUSTUS NO /DRAWING NO

MITTAKAAVA/SCALE
1:20

MUUTOSTUNNUS

PIIRT./DRAWN/BY

TARK./CHECKED

Tätä piirustusta ei saa ilman suostumustamme alentaa luovuttaa kolmanneile henkilöile eikä käyttää muihin kuin meidän hauksimme tarkoituksiin ilman kirjallista lupaamme MAKROTALO OY
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MAKROTALO OY

08.06.1984

ANC/VIENA/ANGOLA

M E C H A N I C A L I N S T A L L A T I O N S INSIDE BUILDINGS

SPECIFICATION ON THE FUNCTION OF THE WATER, SEWAGE AND VENTILATION SYSTEMS

40.000 1.84 Parno

CONTENTS

1. FRESH WATER

1.1. Materials

2. SEWAGE WATER

2.1. Materials

3. VENTILATION SYSTEM

3.1. Cross Ventilation

3.2. Duct Work

3.3. Exhaust Fans

40.000 1.84 Parno

1.
FRESH WATER

1.1.
Materials in the Makrotalo delivery

Makrotalo shall supply internal plumbing and water connections up to a distance of one metre outside the foundation perimeter.

- Pipes inside the buildings are made of copper with capillary seams

- Stop valves Oras-Ballvalves

- European water closets:

  European water closets are of vitreous china syphonic closet type, having an 'S' or 'P' trap, 7 liter capacity low level white glazed fireclay flushing cistern fixed to the wall, or built on the closet, 30 mm diameter flush pipe, low pressure ball valve and union, chromium plated stop valve, 20 mm overflow pipe. Flush valve for low level cistern plastic seat and cover of the best quality.

- Wash basins:

  Wash basins are made of stainless steel, fitted with an approved chromium plated tap or mixer, with plug and chromium plated chain, with chromium plated or plastic (ABS) water trap and with chromium plated or plastic (ABS) floor waste pipe with cover plate.

- Floor drains are made of coated high quality cast iron or plastic (ABS). Each floor drain has a water trap. This floor drain is suitable for plastic carpeted floors.
  In Messhouses' kitchen floor drains are made of stainless steel with grilles when specified.

40.000 1.84 Parno

- Kitchen sinks:

  Sink of stainless steel with chromium plated mixer, with plastic water trap and chromium plated chain.

- Electric storage water heaters

  Water will be heated electrically in hot water boilers, installed corresponding places.

  Water heaters are electrical, thermal storage pressure type manufactured by a reputable manufacturer.

  The unit generally consists of a cylindrical inner container constructed of enammelled steel sheet. The outer covering is made of high grade steel sheet. Space between inner and outer container is padded with officient thermal lagging.

- Sanitary and Sewage Fixtures and Fittings

  All plumbing fixtures are of best quality and fabricated by a manufacturer of established reputation. All ceramic fixtures are of best quality, regular selection, white vitreous china.

  All mixers required for cold and hot water system have a cold tap on the right hand side of the fixture and hot water on the left hand side.

  All fixtures have the manufacturer's guarantee label or trademark indicating first quality.

2.
SEWAGE WATER

2.1.
Materials

- Interior sewage water pipes are of PVC-plastic and are furnished with rubber tube seams. Pipes, which are installed in the floors of the houses are in the delivery 1 meter outside the foundation perimeter.

- Floor drains of plastic with plastic well gratings.

- In case of not having vent piping in sewage systems, the anti-siphon units are used for admission of air.

40.000 1.84 Parno

3.
VENTILATION SYSTEM

3.1.
Cross Ventilation

Ventilation is natural cross ventilation system.

3.2.
Ductwork

General

Necessary ductwork equipment is supplied according to the drawings. Ducts are made of galvanized steel sheets installed in strict compliance with the following requirements for low pressure ducts:

Duct largest size	Thickness mm
Ø 100 mm	0,50
160 mm	0,50
200 mm	0,50
315 mm	0,50

3.3
Exhaust Fans

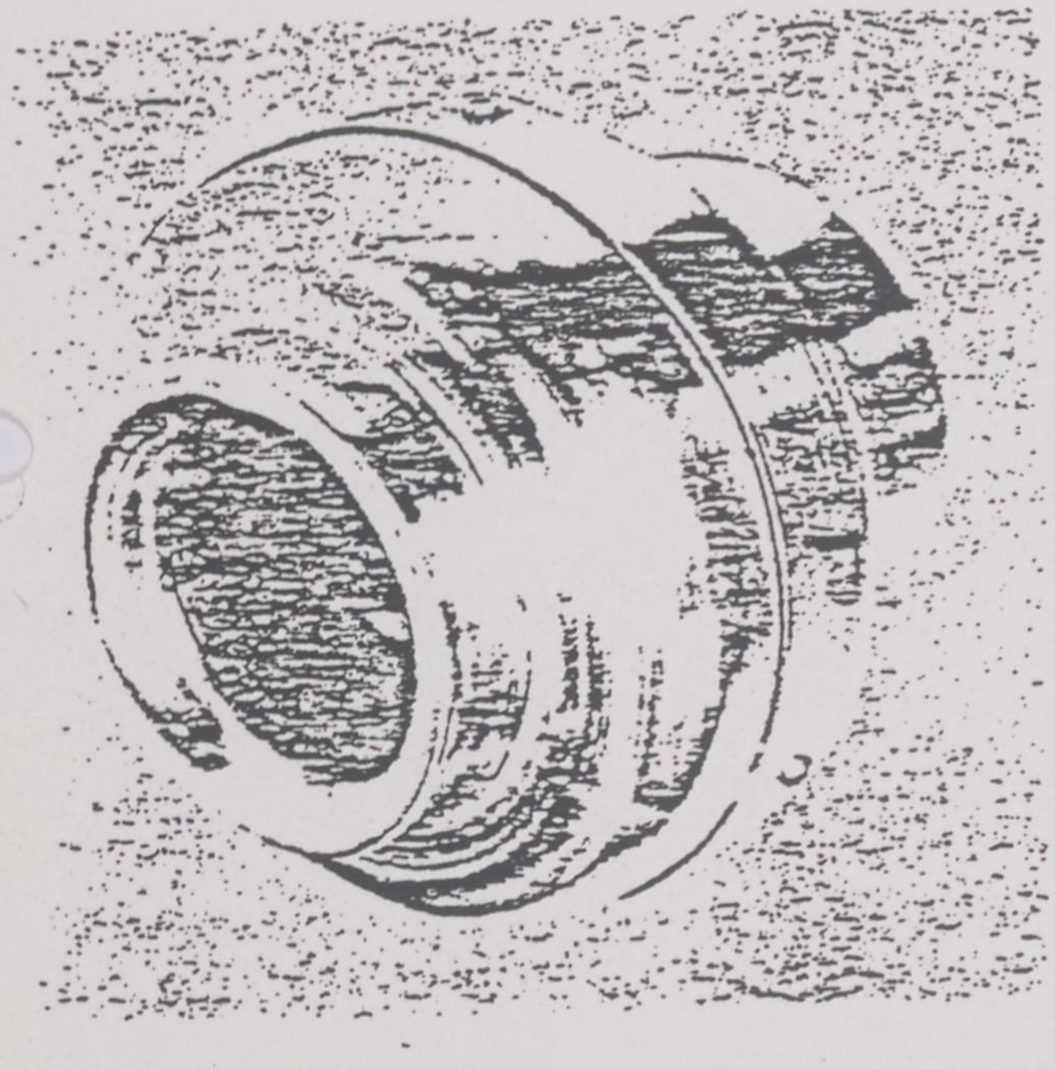
Dining Hall is equipped with an aluminium extract hood installed over the cooking range. Canopy is equipped with purpose made grease filters and ductwork to a centrifugal exhaust fan. Wall-mounted speed control is located in the kitchen.
All necessary supports are included.

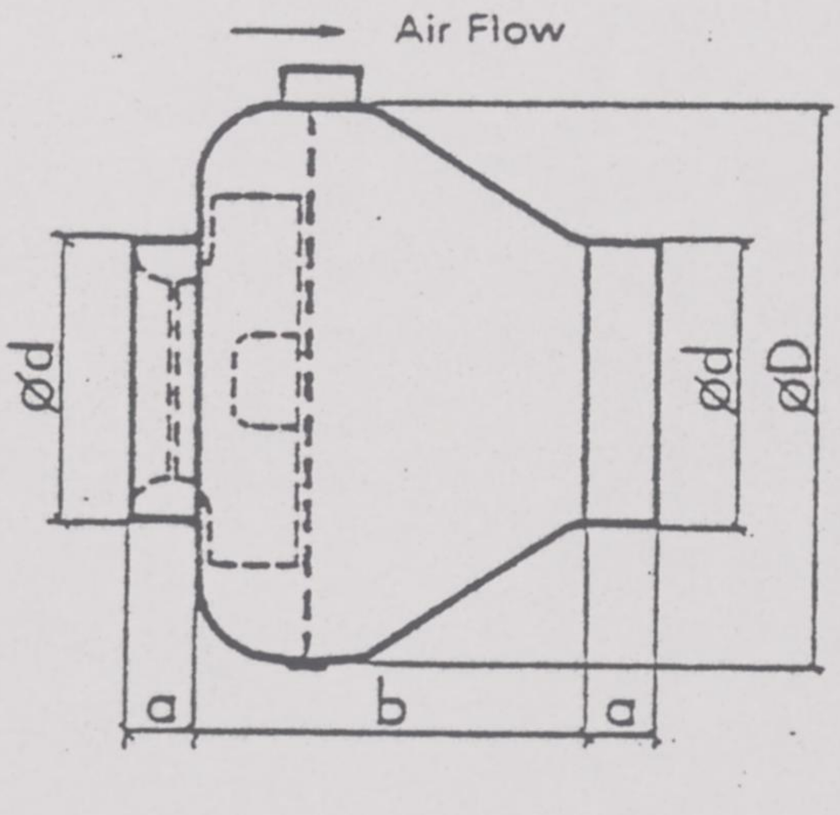
Ceiling Fans

6 ceiling fans (type Indola) will be supplied to the Dining Hall-Kitchen building AV 07/008.

40.000 1.84 Parno

EXHAUST FAN K2,K3





Duct Fan Type	K1/100	K1/125	K2/150	K2/160	K3s	K3	K4
Motor Type	Single phase 220 V, 50–60 Hz						220 V 50 Hz
Running Power W	32	32	84	84	94	140	295
Running Current A	0,19	0,19	0,37	0,37	0,40	0,62	1,35
Speed rpm	2300	2300	2150	2150	1690	2400	2400
Max. ambient Temp. °C	60	60	60	60	60	60	40
Weight Kg	1,5	1,5	2,5	2,5	3,2	3,7	5,2
Ød	100	125	150	160	250	250	315
ØD	204	204	294	294	357	357	410
b	150	128	150	150	160	160	190
a	25	25	30	30	40	40	35

MAKROTALO OY

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ARISTON

quand
le confort «eau chaude»
allie
la compétence
à la robustesse,
l'économie coule de source.

ARISTON

La société Thorflam possède une usine hautement automatisée produisant des chauffe-eau électriques émaillés en 2 couches.

□

Faisant partie d'un groupe International, Thorflam a hérité d'une expérience de plus de 35 ans dans la production des chauffe-eau électriques.

□

De construction récente, l'usine Thorflam a bénéficié des derniers développements en matière de technologie et d'organisation qui en font aujourd'hui une des unités les plus modernes d'Europe.

□

Cette technologie, cette compétence et la productivité de l'outil nous permettent de vous proposer un produit compétitif et de qualité.

ARISTON

LES PRODUITS

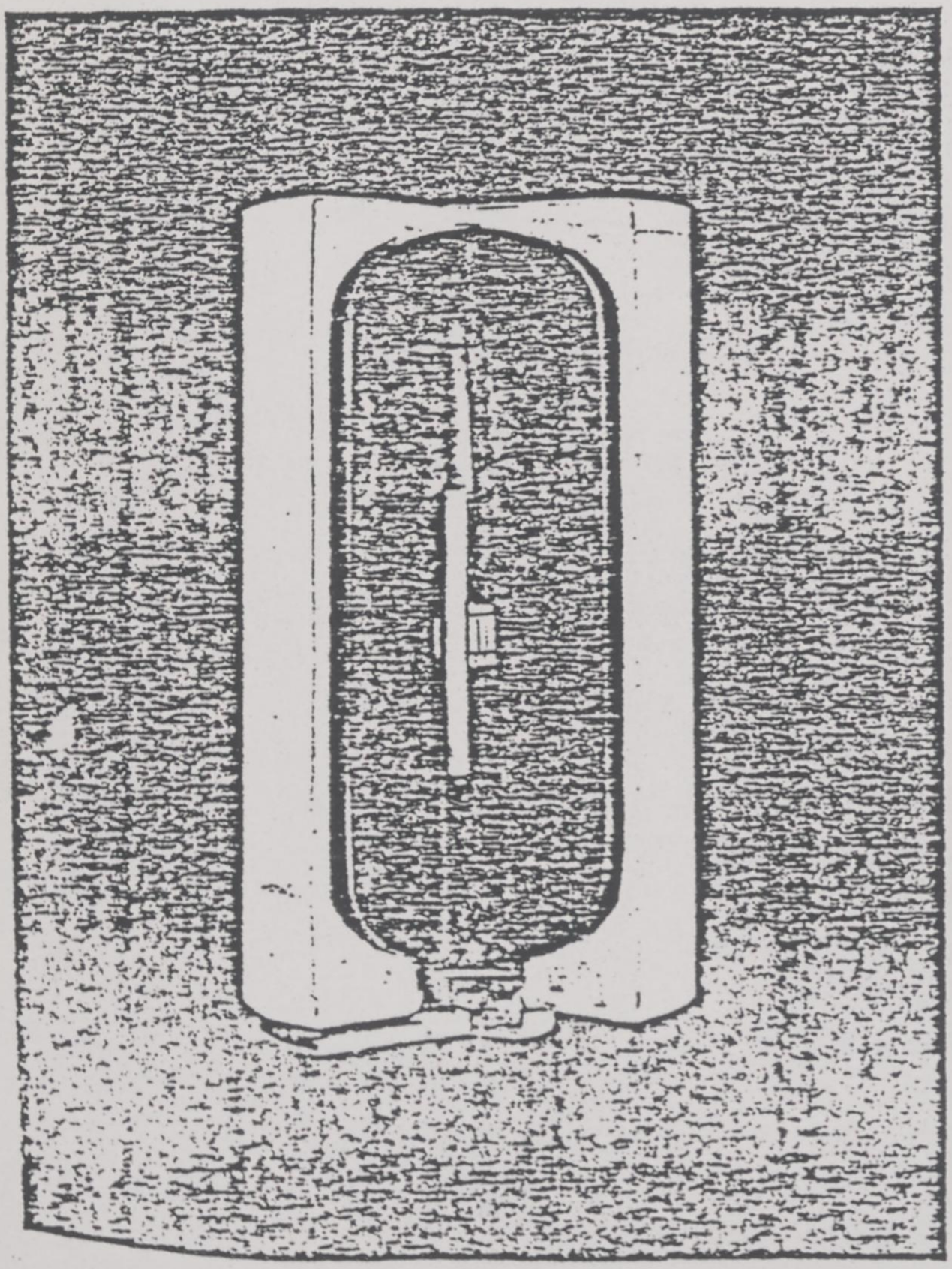
Dans un souci de répondre au mieux à chacun des bes
individuels des consommateurs, Thorflam pro
2 gammes de produits :

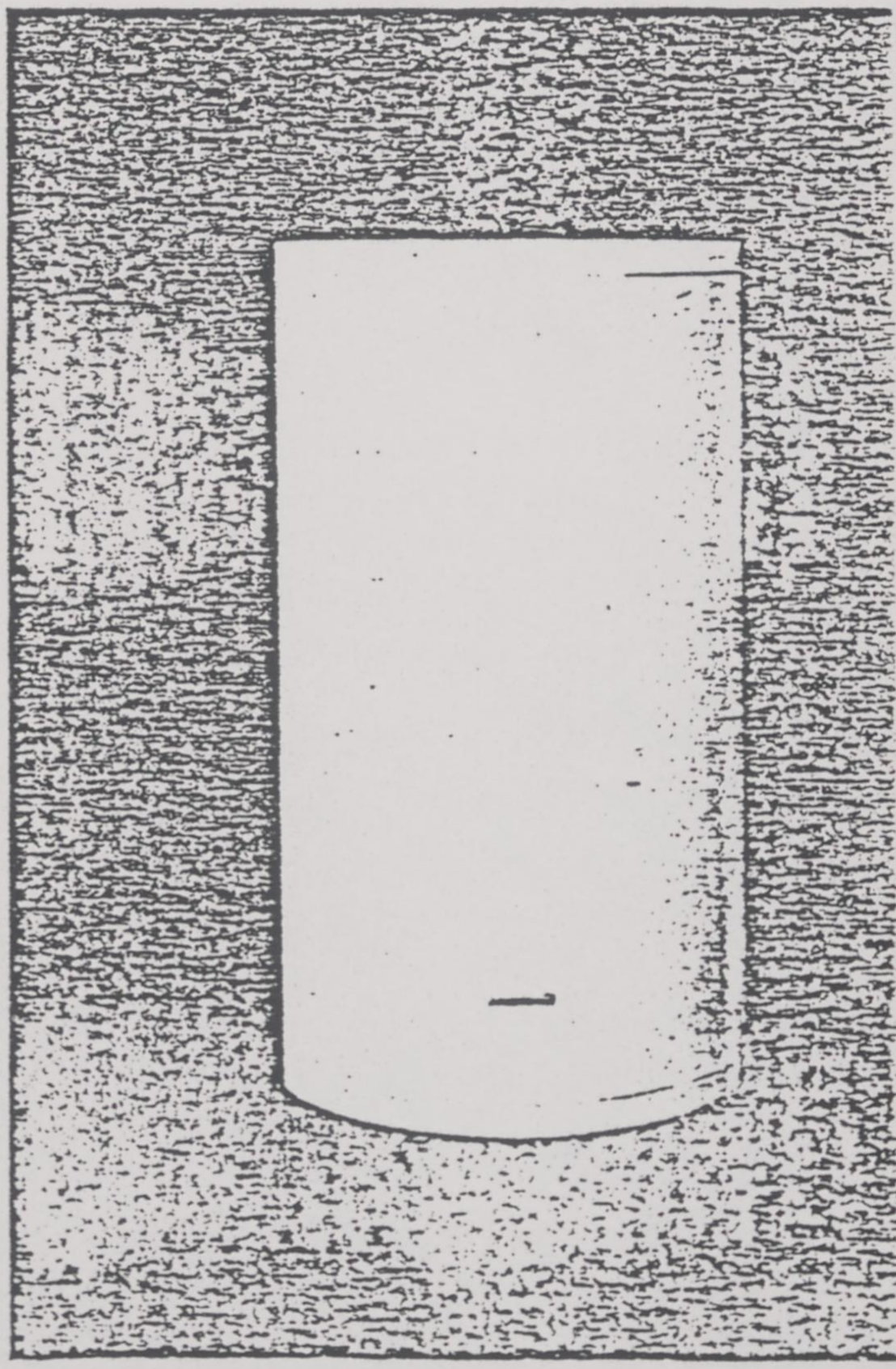
— Gamme « Classic »

Cette gamme très complète comprend des appareils
caux, sur socle, horizontaux, mixtes et à chauffe accél
Elle couvre les litrages de 50 à 300 L.
Les appareils sont équipés de thermo-plongeurs qui
directement en contact avec l'eau sanitaire assurant un
dement de chauffe optimal.
Ces produits sont particulièrement économiques et com
tifs.

— Gamme « Steatite »

Cette gamme est composée d'appareils verticaux et su
cle, allant de 75 à 300 Litres.
La résistance a stéatite n'est pas en contact direct avec
sanitaire de sorte qu'elle peut être aisément remplacée
nécessiter la vidange de l'appareil. Ce système rend la m
tenance du chauffe-eau plus facile et plus économique.
Tous les produits de cette gamme sont munis d'un rég
extérieur du thermostat permettant à l'utilisateur de sélec
ner la température d'eau correspondant à ses besoins
démontage du capot plastique protégeant les parties éle
ques.





ARISTON

LES CARACTERISTIQUES TECHNIQUES

La cuve :
En acier de forte épaisseur, nos cuves sont émaillées en 2 couches.

L'isolation :
Le calorifugeage de l'appareil est assuré par une mousse de polyuréthane de haute densité.

La carrosserie :
Elle est en acier peint en blanc à partir d'une résine époxy-polyester en poudre.
Elle est appliquée par un procédé spécial électrostatique et est ensuite polymérisée au four.

L'anode :
L'anode en magnésium constitue une garantie supplémentaire de longévité de votre chauffe-eau.

La résistance :
Nos appareils sont équipés de 2 types de résistances :
— thermo-plongeurs en acier inoxydable incoloy. (Gamme « Classic »);
— résistances à stéatite dont le fourreau de protection est en acier émaillé. (Gamme « Stéatite »).

Le thermostat :
La gamme « Stéatite » est munie de capots plastiques permettant le réglage extérieur du thermostat.
Pour la gamme « Classic » ce réglage nécessite le démontage du capot de protection.

ARISTON

LA QUALITE

Toutes nos cuves sont émaillées en 2 couches.
A l'issue de chaque émaillage elles subissent un passage au four à une température de 850 °C.
Après émaillage, plus aucune soudure n'est effectuée sur nos cuves.

Pourquoi 2 couches d'émail ?
Pour assurer sa fonction de protection contre l'agressivité des eaux, l'émail doit d'abord adhérer parfaitement à la cuve.

La première couche d'émail.
Ses caractéristiques ont été définies de manière à réaliser une liaison parfaite avec l'acier de la cuve.

La deuxième couche d'émail.
Elle est formulée de manière à assurer une protection totale contre la corrosion.
Cet émail se distingue par sa résistance à l'eau, à la vapeur d'eau et aux acides.
Une deuxième couche constitue une garantie supplémentaire de parfaite protection de l'acier de la cuve.

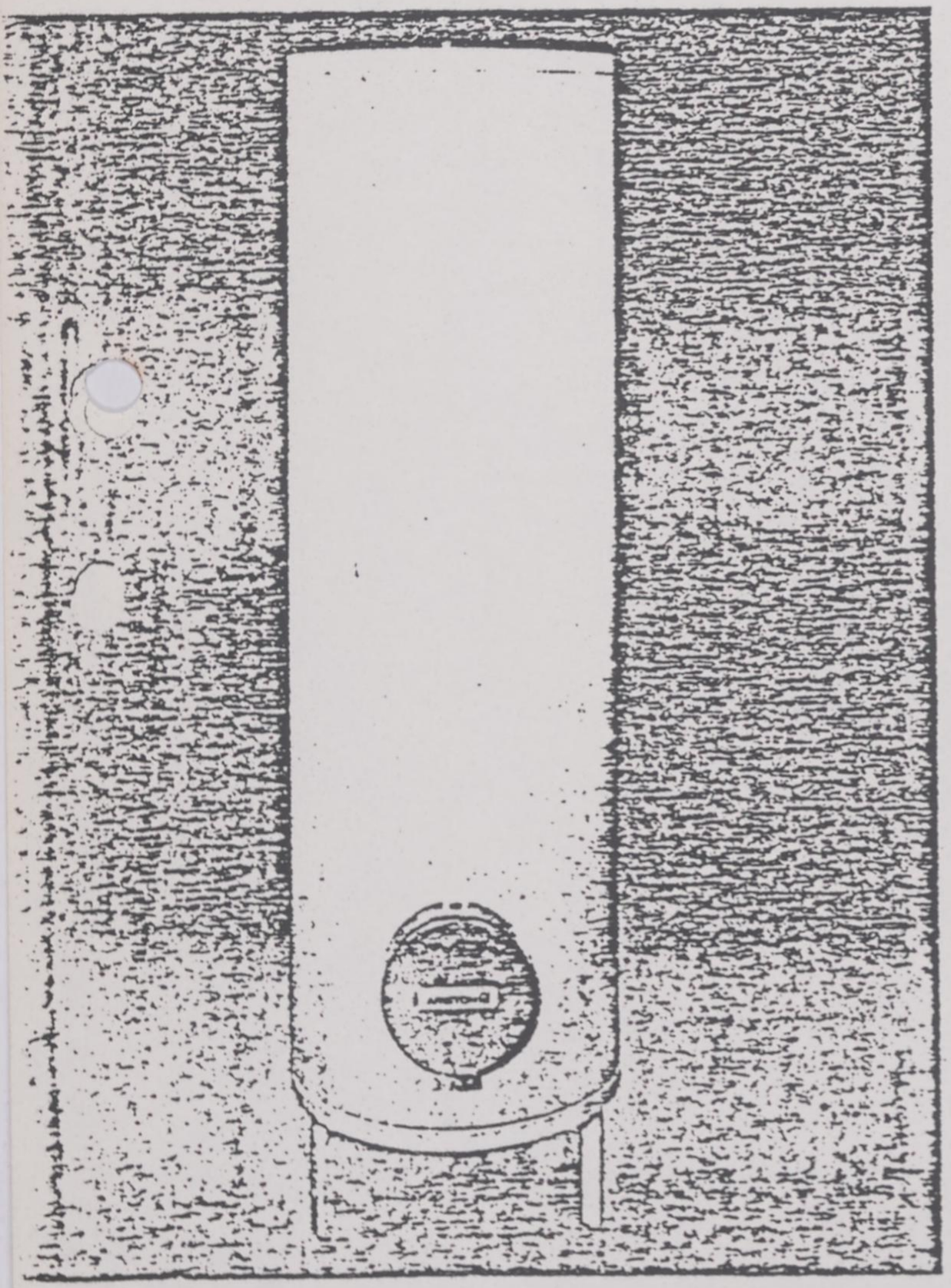
LA GARANTIE

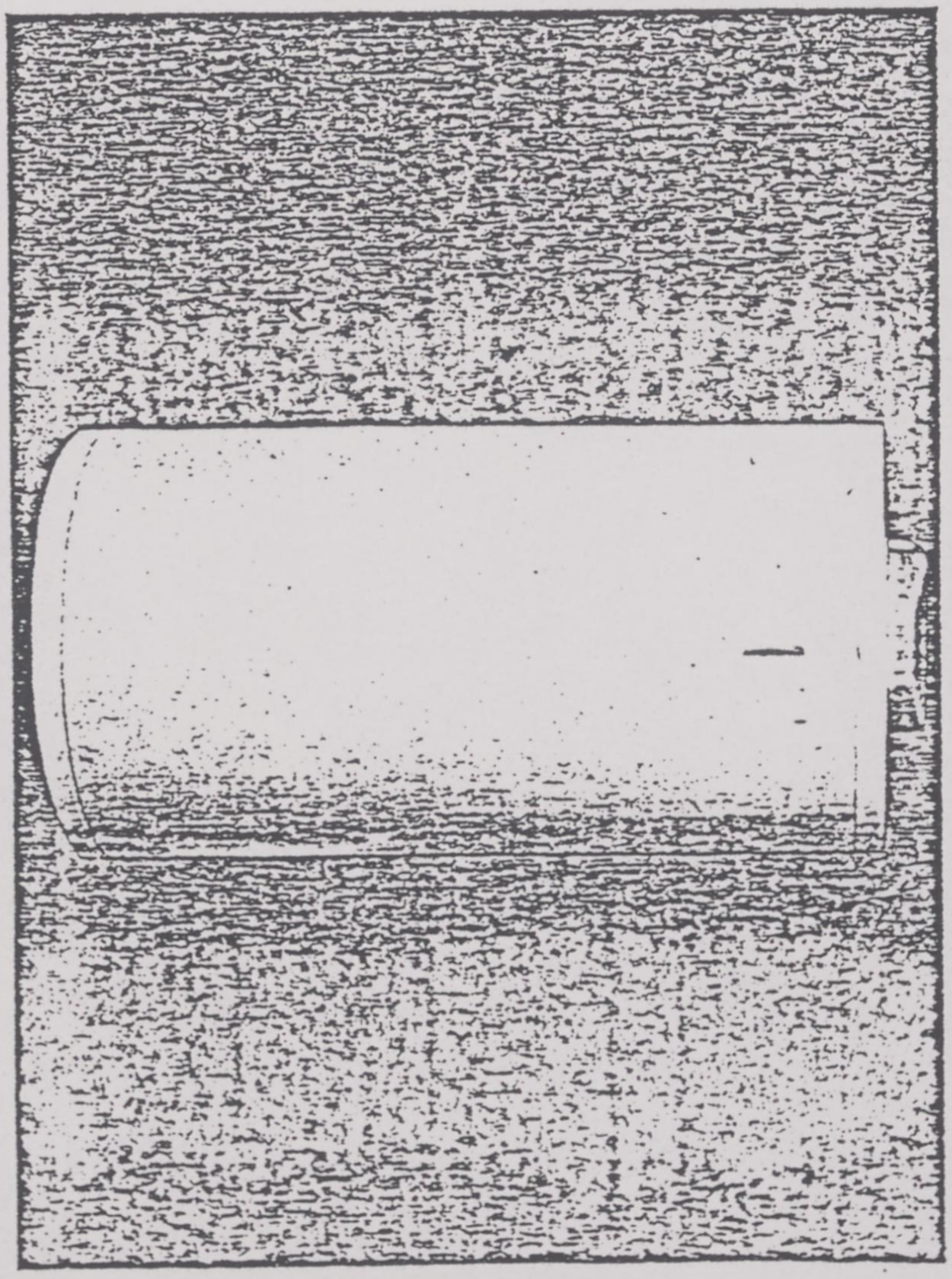
La qualité et la fiabilité de nos produits nous permettent de vous offrir des garanties importantes.

Cuve :
Garantie 10 ans.

Eléments électriques :

— Garantie 3 ans : sur les résistances à Stéatite.
— Garantie 2 ans : sur les thermo-plongeurs et thermostats.





ARISTON

GAMME STEATITE

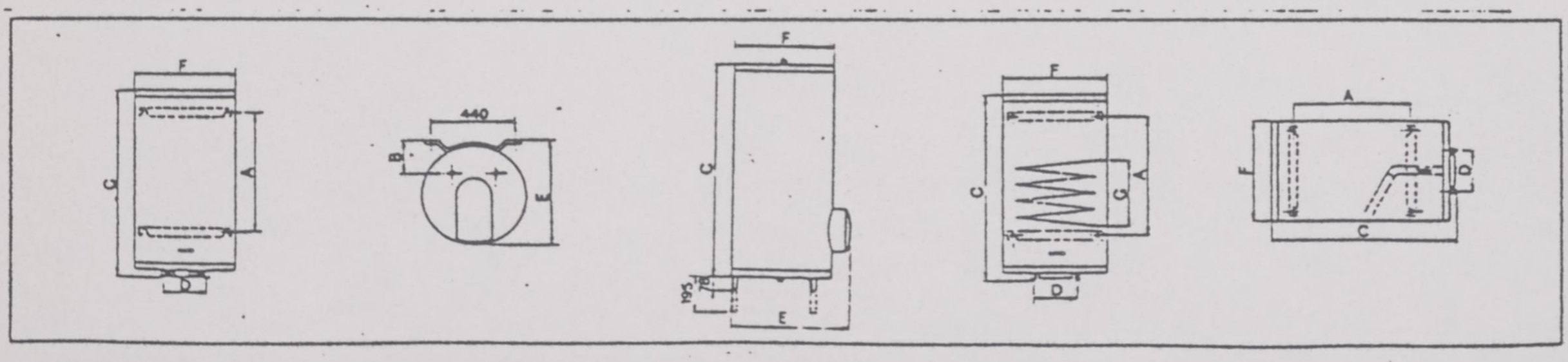
TYPE	LITRAGE L	PUISSANCE W	TENSION V (**)	TEMPS DE CHAUFFE JUSQU'À 65 °C	CONSOMMATION D'ENTRETIEN À 65 °C	RACCORDEMENT D'EAU	DIMENSIONS A	B	C	D	E	F	G	POIDS KG
VERTICAL					Kwh/24 h									
075 XVT	75	2400 (1600) (*)	220/380	2h45 (4h00)	1,47 (1,43)	3/4" G	173	175	623	230	570	550	—	40
100 XVT	100	2400 (1600) (*)	220/380	3h30 (5h15)	1,61 (1,52)	3/4" G	303	175	753	230	570	550	—	45
150 XVT	150	2400	220/380	5h15	1,73	3/4" G	500	175	1013	230	570	550	—	58
200 XST	200	2400	220/380	6h45	2,25	3/4" G	760	175	1273	230	570	550	—	70
SUR SOCLE														
200 XST	200	3000	220/380	5h15	2,51	3/4" G	—	—	1182	—	620	550	—	65
300 XST	300	3000	220/380	8h00	3,70	3/4" G	—	—	1702	—	620	550	—	85

(*) Livré en 2400 W mais commutable en 1600 W selon notre schéma de raccordement livré sur l'appareil.
(**) Livré en 220 V mono mais commutable en 220 Tri et 380 Tri.

GAMME CLASSIC

TYPE	LITRAGE L	PUISSANCE W	TENSION V (*)	TEMPS DE CHAUFFE JUSQU'À 65 °C	CONSOMMATION D'ENTRETIEN À 65 °C	RACCORDEMENT D'EAU	DIMENSIONS A	B	C	D	E	F	G	POIDS KG
VERTICAL					Kwh/24 h									
050 VM	50	1500	220 mono	3h00	0,95	1/2" G	—	120	592	160	474	460	—	24
075 VM	75	1500	220 mono	4h15	1,30	3/4" G	373	175	818	230	474	460	—	30
100 VM	100	1500	220 mono	5h30	1,61	3/4" G	303	175	753	230	570	550	—	42
150 VM	150	2500	220 mono	5h00	1,68	3/4" G	500	175	1013	230	570	550	—	55
150 VT	150	2550	220 ~~mono~~ 380	6h30	1,73	3/4" G	500	175	1013	230	570	550	—	55
200 VM	200	2500	220 mono	6h30	2,02	3/4" G	760	175	1273	230	570	550	—	67
200 VT	200	2550	220/380	6h30	2,05	3/4" G	760	175	1273	230	570	550	—	67
SUR SOCLE														
200 ST	200	3000	220/380	5h15	2,51	3/4" G	—	—	1182	—	620	550	—	62
300 ST	300	3000	220/380	7h30	3,70	3/4" G	—	—	1702	—	620	550	—	82
HORIZONTAL														
100 HMD	100	2000	220 mono	4h00	1,63	3/4" G	303	175	753	230	570	550	—	42
150 HMD	150	2000	220 mono	6h00	1,94	3/4" G	500	175	1013	230	570	550	—	55
MIXTE														
150 TMD	150	2500	220 mono	5h00	1,68	3/4" G	500	175	1013	230	570	550	350	63
200 TMD	200	2500	220 mono	6h30	2,02	3/4" G	760	175	1273	230	570	550	510	75
ACCELERE														
075 VT3	75	3000	220/380	2h15	1,50	3/4" G	173	175	623	230	570	550	—	37
100 VT3	100	3000	220/380	3h00	1,69	3/4" G	303	175	753	230	570	550	—	42

(*) 220/380 : livré en mono 220 mais commutable en 220 Tri et 380 Tri



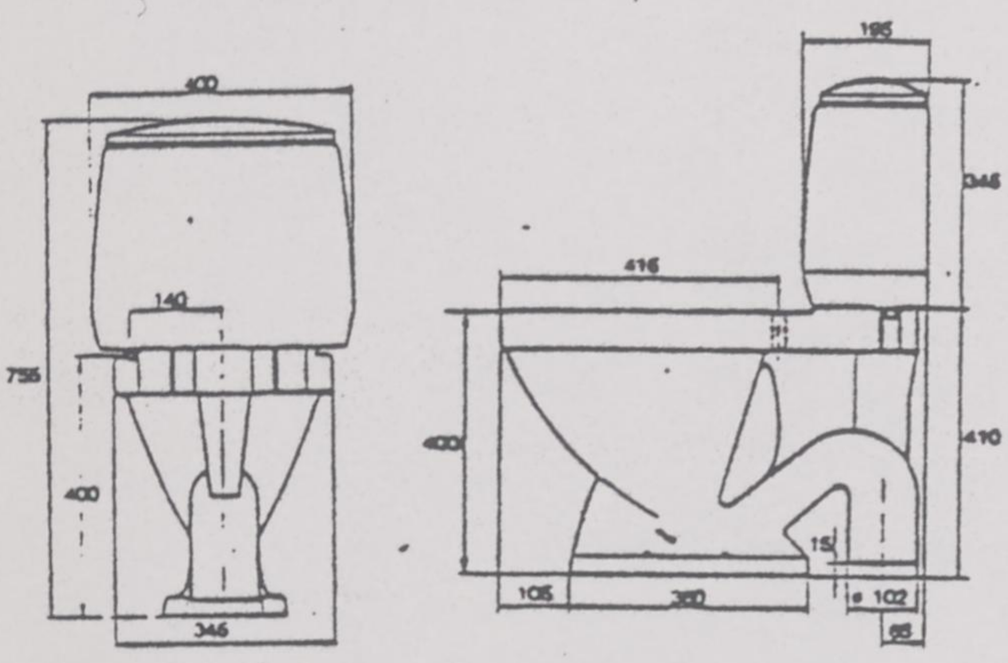
Thorflam s.a.
Zoning industriel
5730 Malonne (Belgique)
Télex : 59345

ARISTON (département sanitaire)
Avenue Guynemer 32-38
94550 Chevilly-Larue (Paris)
Tél. : 1/662.41.66 ■ Télex . 203946

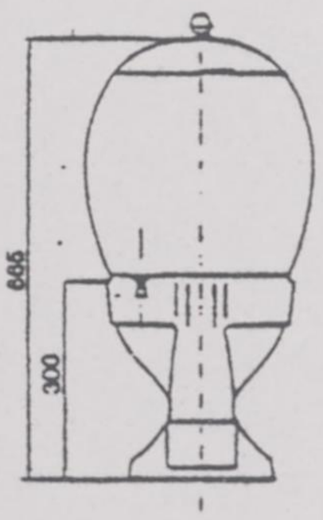


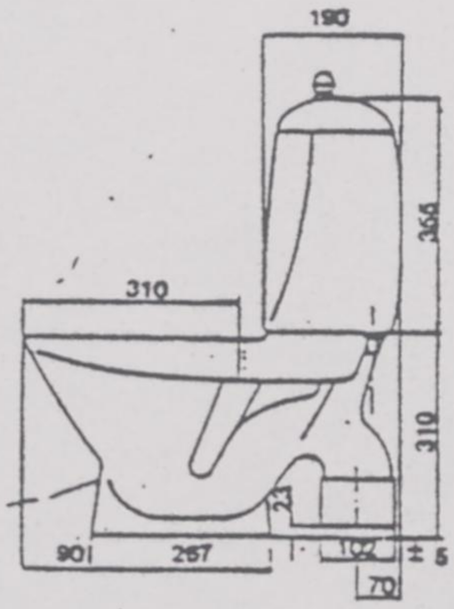
WC-suite
Wärtsilä 31009

WC 31009
WC in modern design. Fills up noiselessly after flow. Kimmo seat in durable and easy to clean polyprophene plastics.









WC for children
Wärtsilä 31022

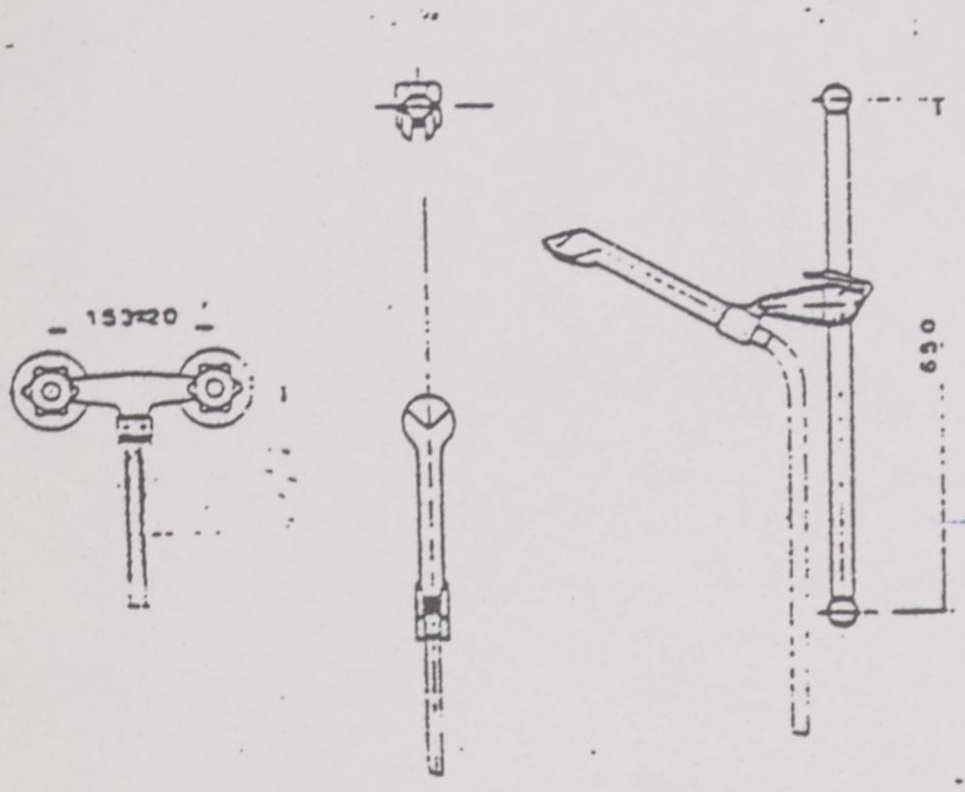
1:20
tol. ± 2 %

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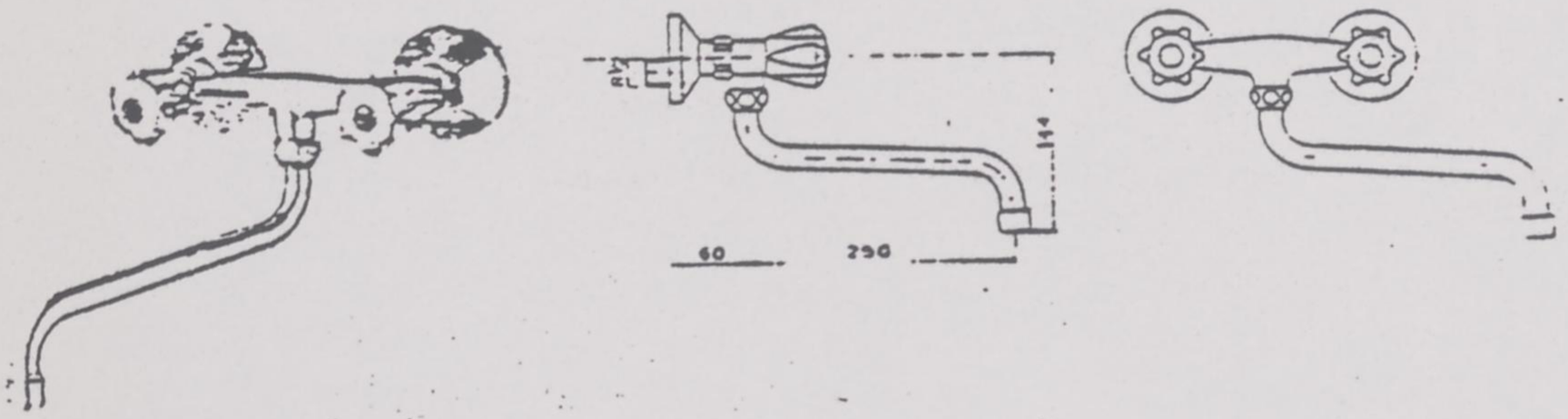
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SHOWER MIXER ORAS 140000

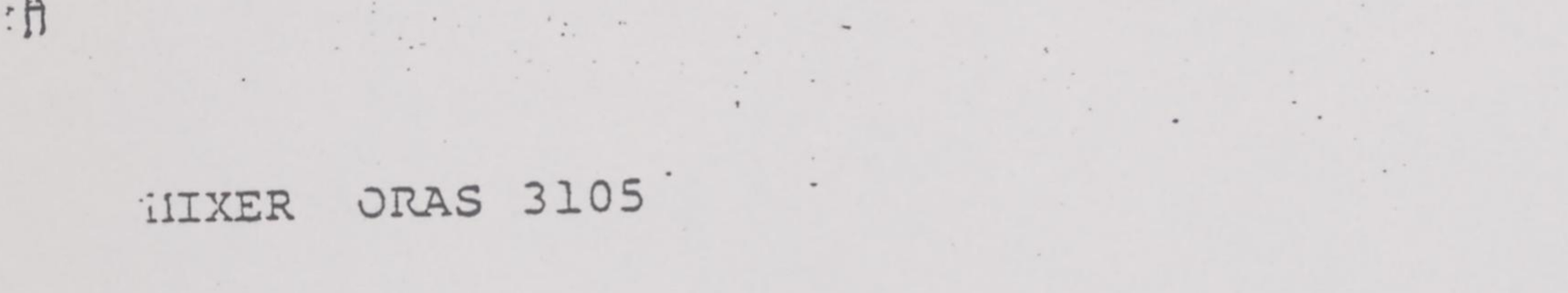


no good

MIXER ORAS 3100



MIXER ORAS 3105

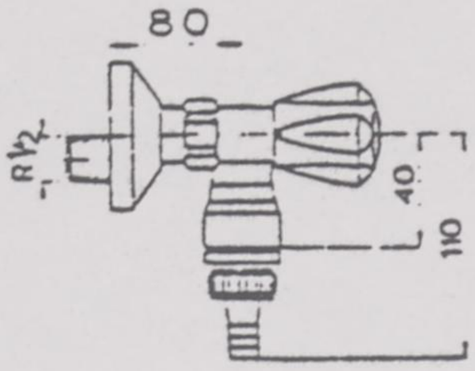


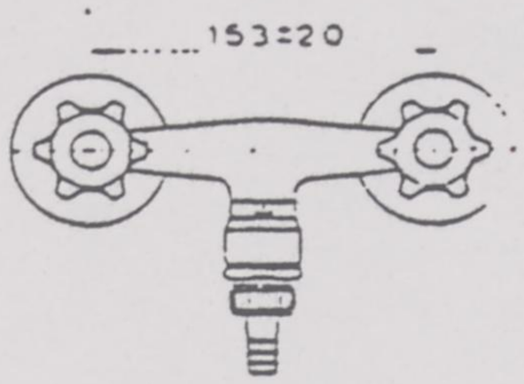
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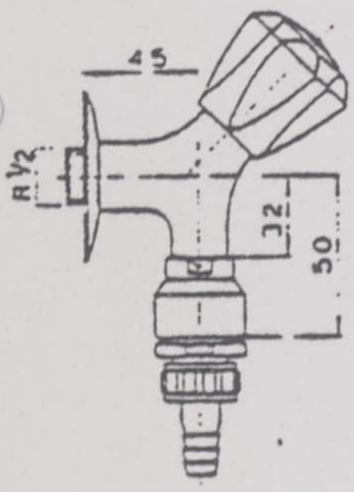
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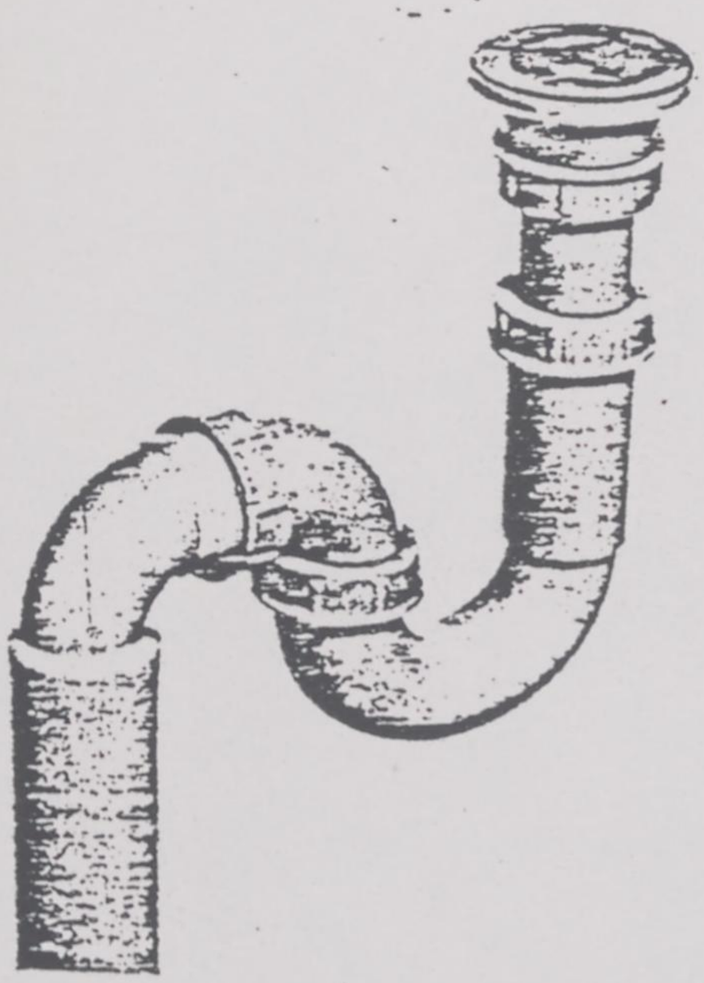


MIXER 3110





TAP 3177



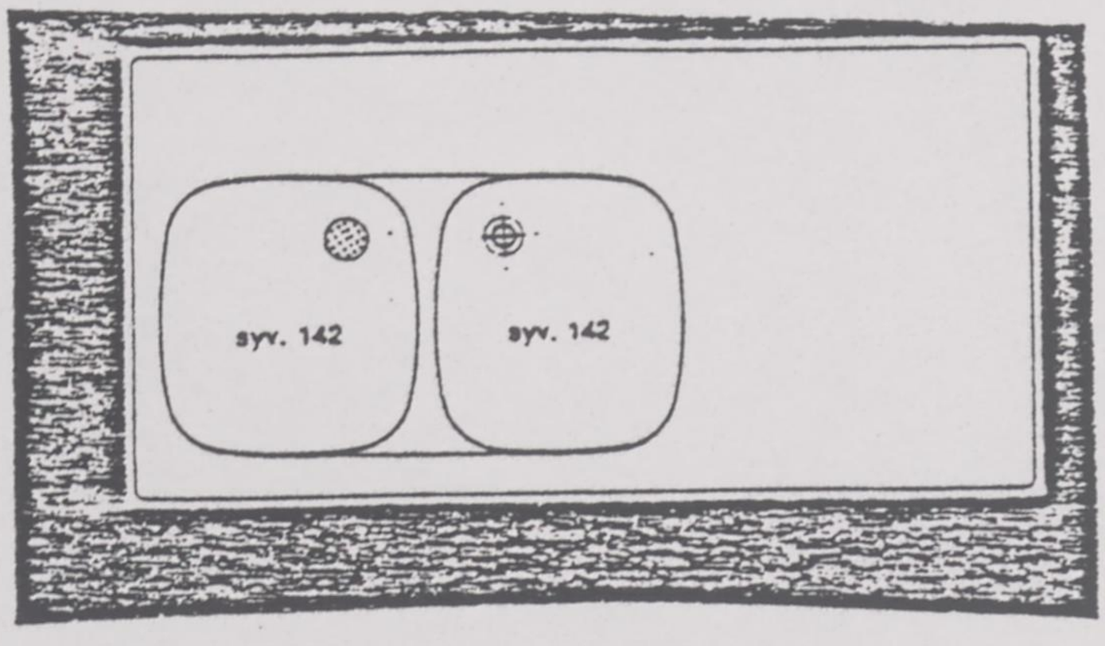
WATER TRAP

SY-445

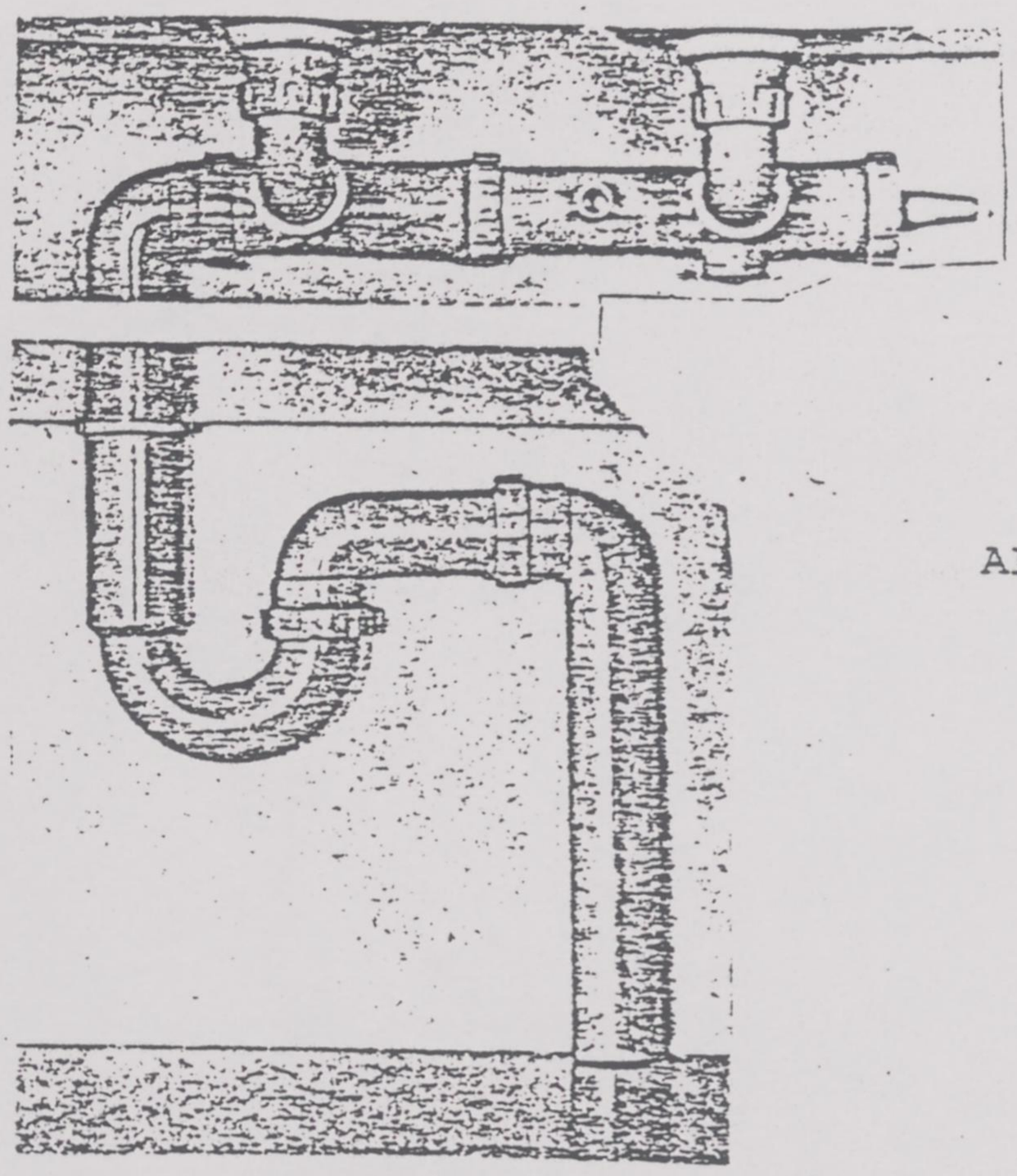
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SINK,stainless steel

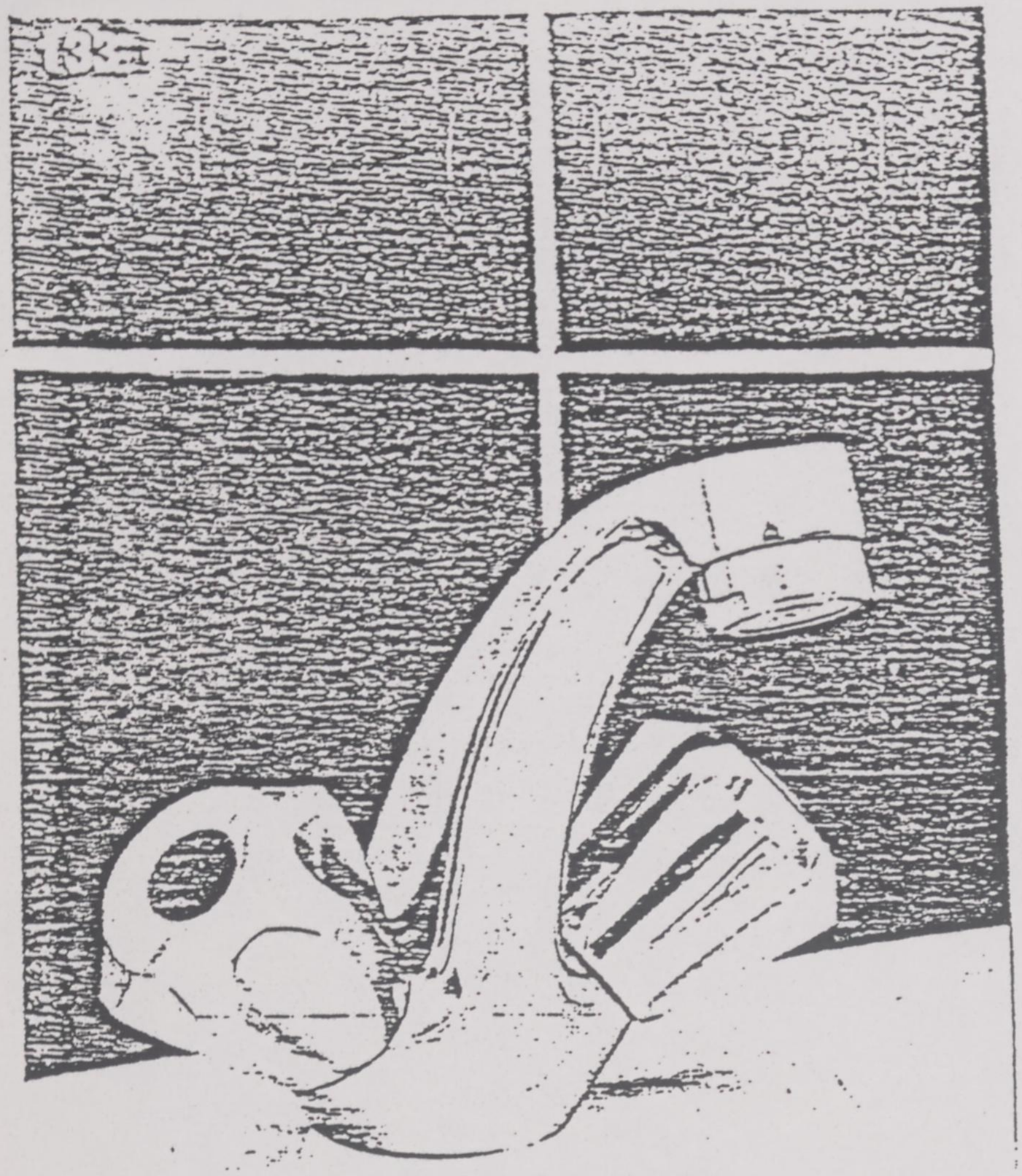


ALLUKKO 2A

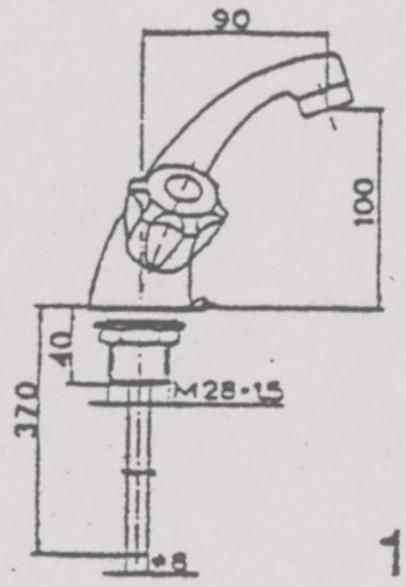
MAKROTALO OY

PIENI ROOBERTINKATU 16 P.O.BOX 197 SF-00121
HELSINKI 12 FINLAND. PUHELIN TELEPHONE
90-642 866. TELEX 12-3354 MAKRO SF

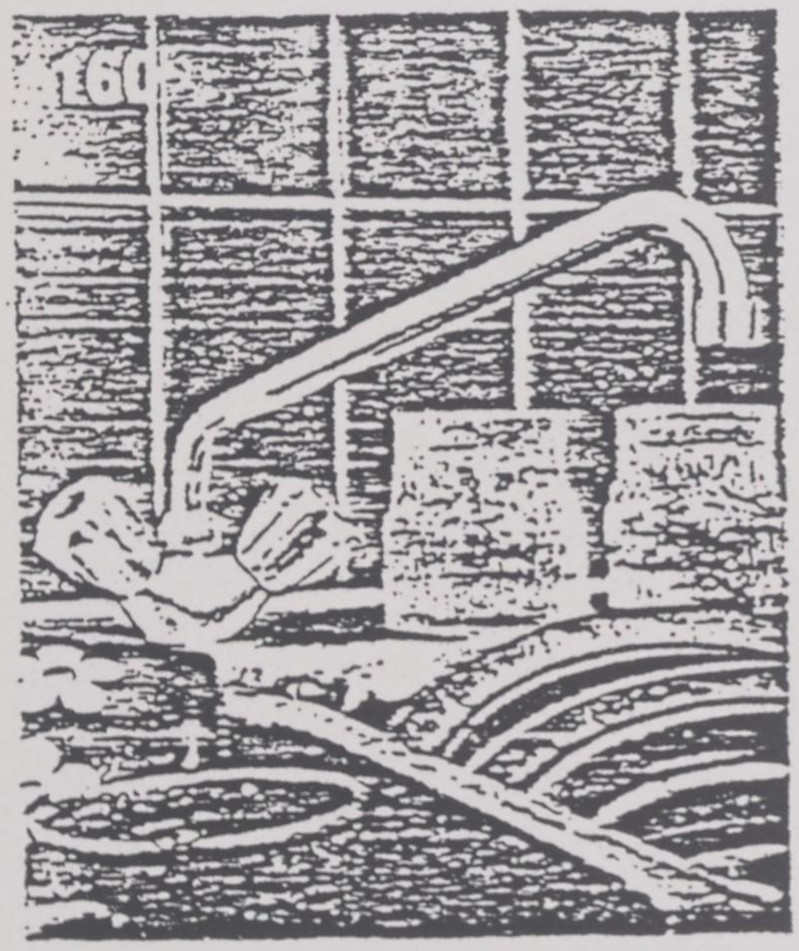
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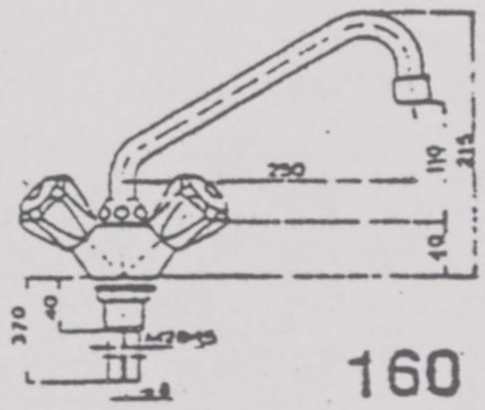
Mixer
ORAS 133



133



Kitchen sink mixer
ORAS 160



160

MAKROTALO OY

PIENI ROOBERTINKATU 16 P.O.BOX 197 SF-00121
HELSINKI 12 FINLAND. PUHELIN TELEPHONE
90-642 866. TELEX 12-3354 MAKRO SF

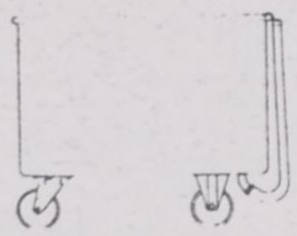
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or copied or communicated to any other person without our written permission.

BYKTVÄTTSTÄLL OCH SKÖLJLÅDOR

No	Nimitys	Pit. mm	Lev. mm	Til. l
5100	Pyykinpesuallas ruostum. terästä seinäkiinnitys	600	450	50
5105	Pyykinpesuallas ruostum. terästä uppoasennus			
5110 5111 5112 5113	Pesukaapisto, allastaso ruostum. terästä kaapin runko polttom. terästä Suorar. allas, ovi terästä Suorar. allas, ovi tammea Vinor. allas, ovi terästä Vinor. allas, ovi tammea	1000	600	50
5305	Pesuallas Valutusritilöin, ruostum. terästä	1300	450	50
5315	Kaksiosainen pesuallas valutusritilöin, ruostumatonta terästä	1725	450	50 + 50
5325	Pesu- ja huuhteluallas valutusritilöin, ruostumatonta terästä	1725	450	60 + 65
5327	Pesu- ja huuhteluallas lasikuituvahvikkeista muovia	1650	550	60 + 80
5328	Matonpesuallas ...sikuituvahvik...sta muovia	1100	725	150

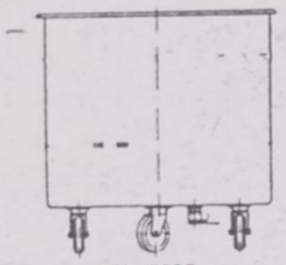
ALLASVAUNUJA TALOPESULOITA VARTEN — BASSÄNGVAGNAR FÖR TVÄTTSTUGOR I FASTIGHETER

SI K 75 — SfB X(75)



Tilavuus 200...240 l

No 5330

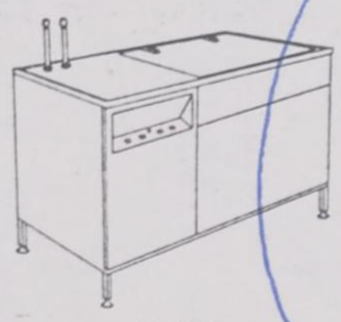


Tilavuus 130...180 l

No 5335

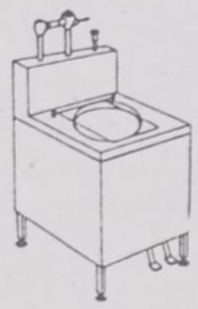
SAIRAALAVARUSTEITA — SJUKHUSUTRUSTNINGAR

SI L 75 — SfB X(78)



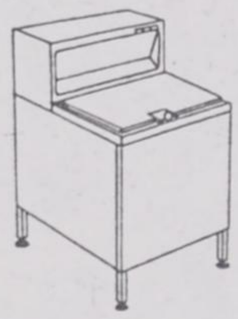
No 7015

Instrumentti- ja astiankeitin. Höyry- tai sähkölämmitteinen Autom.ohjaus.



No 7025

Kaatoklosetti avoin, haponkestävää terästä.



No 7035

Kaatoklosetti suljettu, haponkestävää terästä Autom.ohjaus.

PYYKINPESUKONEITA — TVÄTTMASKINER

SO G 76 — SfB X(75)



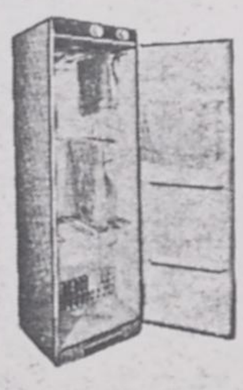
No	Merkki	Til. l	Täytös n. kg
2015	PEKO-matic 7	72	5
	PEKO-matic 10	100	7
	PEKO-matic	140	10



No	Merkki	Til. l	Täytös n. kg
2020	Wascomat 73	71	5
	Wascomat 123	152	10

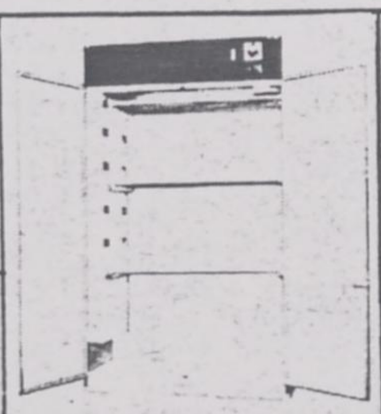
KUIVAUSKAAPPEJA — TORKSKÅP

SO T 76 — SfB X(75)



Sähkölämmitteinen. Kertatäyttö n. 4 kg kuivana punnittua pyykkiä.

No 4010



Kiinteistöihin. Sähköpuhaltimella termostaatilla ja aikakellolla.

Korkeus	2050	mm
Leveys	1195	mm
Syvyys	640	mm
Lämmitysteho	6	kW

No 4020

MAKROTALO OY

CED/Y. Sarkki/rj 15.06.1984

ANC/VIENA/ANGOLA

MECHANICAL EQUIPMENT

ARC 001A, AV 05, a, CLINIC

5 nos	60 x 280 Ss sink
1 nos	60 x 280 s/s table with legs, without bowl
1 nos	S/s sink 60 x 1400
5 nos	WC-suite
6 nos	Washbasin, ss
3 nos	Shower
1 no	Water heater 100 1/2 kW
1 no	Water heater 300 1/3 kW
2 nos	Sluice WC

ARC 004, AV 11, j, ADMINISTRATION

Plumbing:

1 no	Sink 1200 x 60 with legs

ARC 007, AV 10, HOUSE

Plumbing:

2 nos	Wash basin
2 nos	WC
2 nos	Shower
2 nos	Sink
2 nos	Sink (outside house)

Ventilation:

2 nos	Vent. pipes

40.000 1.84 Parno

ARC 008, AV 07, d, DINING HALL/KITCHEN

Ventilation:

1 no	Hood with grease filter
4 nos	Cooling fan (Indola)
1 no	Duct fan Ø 315
10 m	Ø 315 duct
1 no	Ø 315 grille
1 no	Speed control

Plumbing:

7 nos	Washbasin, ss
2 nos	Shower
4 nos	WC
1 no	Urinal
4 nos	Wash basin

ARC 009, AV 09, g, ABLUTION

18 nos	Basin
7 nos	WC
1 no	WC inva (1 basin, 1 WC)
9 nos	Shower
1 no	Urinal
8 nos	Washing sink

ARC 010, AV 03, i, MECHANICAL WORKSHOP

Plumbing:

2 nos	Washbasin, ss
2 nos	WC-suite
2 nos	Shower

ARC 013, AV 04, TAILORING WORKSHOP

1 nos	Washbasin, ss

40.000 1.84 Parno

MAKROTALO OY

14.06.1984

MAKROTALO OY'S

E L E C T R I C A L S P E C I F I C A T I O N

FOR
PROJECT ANC/VIENA/ANGOLA

40.000 1.84 Parno

ANC/VIENA/ANGOLA

ELECTRICAL SPECIFICATION

1.General Makrotalo's delivery consists of the electrical materials, starting from the low voltage terminals of the transformer and planning for the electrification of the houses. The plans and materials are according to the European standards (VDE/IEC).

2. Power station Power station comprises two 40 kVA generators type Masino SK40-DVAL-3M and the main switch board. The main switchboard comprises equipment for connecting either machine A or B to the load.

3. Power distribution network

The power distribution network consists of the rising main cables feeding the houses. Rising main cables will be PVC-insulated underground cables with copper conductors, or PVC-insulated overhead cables with aluminium conductors.

4. Connection boxes

The connection boxes will be installed on the external walls (one/house), where the indoor network is connected to the main distribution network. In the connection boxes there are the main fuses for each house. The protection class of the connection boxes is IP 34. For each connection box will be delivered one handle for fixing the HRC-fuse links.

5. Distribution boards and subcircuits

In the buildings there are one or more distribution boards with circuit breakers and fuses for the over current protection of the subcircuits. Miniatyre circuit breakers are used when the current is 25 A or less, otherwise HRC-fuse links.
The electrical points are connected into groups with 10 or less points in one group. The lighting groups are wired with 1,5 sq.mm wires and protected with 10 A circuit breakers. The socket outlets are connected into 16 A groups and wired with 2,5 sq.mm wires.

6. The way of installation

In general the installations are on surface and conduits in the floor are used only when it is not possible to install the cables on the walls. Light cable trays are used in corridors and near the distribution boards, where there are many cables.

6. Cables The cables are PVC-insulated, PVC-sheated cables with copper-conductors.

40.000 1.84 Parno

8. Lighting fittings

For the public buildings will be provided luminaires for each room so that the following average illumination levels will be reached:

- classroom/offices	150 lx
- ablution	60 lx
- dormitories	40 lx
- dining hall	150 lx
- mechanical workshop	100 lx
- storage	60 lx

9. Installation material

The socket outlets, switches, connection boxes etc. used are made of plastics and they are light coloured.

9. Earthing system

For each metal covered device and socket outlet will be provided a separate earth wire from the distribution board and it will be connected to the cover of the device or to the earth terminal of the device or to the earth terminal of the socket outlet. The earth wires are in the same cables with the other wires and they have the same cross sections with the other wires.

All the internal metal pipes are connected with the earth terminal of the distribution board with a 16 sq.mm copper wire.

40.000 1.84 Parno

VALMET

LINNAVUORI
FINLAND

Diesel Engine 411 CS

Technical Data

3 411 1DM 114

Four stroke, direct injection, water-cooled

Number of cylinders		4
Bore	mm	108
Stroke	mm	120
Displacement, total	cm^3 l	4400 4,4
Compression ratio		16
Max. combustion pressure at continuous output	MPa kp/cm^2	10,8 110
Moment of inertia, total (Flywheel number 8360 17912)	GD^2 kpm^2 J kgm^2	4,6 1.2
Degree of irregularity at continuous output	r/s r.p.m.	1:81/25 | 1:114/30 1:81/1500 | 1:114/1800
Variation in speed, residual, when cutting in and out at continuous output	within %	6—8
Weight (dry)	kg	430
Direction of rotation facing flywheel		counterclockwise
Oil-sump capacity	dm^3	13,0
Specific lubricating oil consumption at continuous output, approx.	g/kWh g/hph	1,36 1,0
Max. speed	r/s r.p.m.	43 2600

Speed	r/s r.p.m.	20 1200	25 1500	30 1800	35 2100	40 2400
Intermittent gross output	kW hp		56 76	68 93	77 105	82 112
Intermittent gross torque	Nm/r/s kpm/r.p.m.	365/26,7 37/1600				
Continuous gross output	kW hp		51 69	62 84	70 95	74 101
Continuous gross torque	Nm/r/s kpm/r.p.m.	325/26,7 33/1600				
Piston speed	m/s		6,00	7,20	8,40	9,60
Specific fuel consumption at continuous output	g/kWh g/hph		223 164	223 164	226 166	231 170
Specific heat flow by radiation and convection at continuous output, air-cooled exhaust manifold	kJ/kWh kcal/hph		560 98	540 95	520 91	510 90
Specific heat flow to cooling water at continuous output, air-cooled exhaust manifold	kJ/kWh kcal/hph		2200 387	2100 369	2100 369	2100 369
Max. permissible back-pressure in exhaust line	kPa mm w.g.	4,90 500				
Specific heat flow to exhaust at continuous output	kJ/kWh kcal/hph		3100 545	3200 560	3300 580	3400 597
Exhaust temperature at continuous output	°C		520	520	515	515
Engine air consumption approx.	m^3/h kg/h		206 253	278 341	339 416	388 476

1978-11-11	KS	May change without notice	

'77 JFO

MARKON

AC generators

B range Series 2
Industrial brushless

for general-purpose, prime and stand-by power

courant à usage général, principal et de secours

für Mehrzweck-, Haupt- und Reserveleistung

MARKON brushless alternators B range Series 2 standard specification

General

The Markon brushless alternator range covers three-phase and single-phase 1500 and 1800 rev/min (50 and 60 Hz) machines at three-phase outputs of 15-1875 kVA at voltages of up to 650 V. The standard alternator has a conventional wound stator and a salient-pole rotating field system, incorporating, on a common shaft, the armature of the a.c. exciter and a three-phase full-wave silicon-diode main field rectifier. The alternator is self-excited from its output terminals through a static automatic voltage regulator; underspeed protection is standard, and both parallel operation compensation and short-circuit current maintenance equipment are available.

Voltage regulation and transient response

The terminal voltage is maintained within ±2% of its set value at any balanced load, at any power factor between unity and 0.8 lagging, inclusive of resistance variation with temperature and of the usual engine speed regulation with load. Closer regulation, to within ±1 ½% or ±1%, is available. The voltage is set by a small panel-mounting hand trimmer. (Frame size B354 machines have a simplified automatic voltage regulator, with no separate trimmer and no provision for parallel operation or fault-current maintenance; the standard comprehensive automatic voltage regulator can be supplied as an extra.)

The fully-laminated excitation system provides an exceptionally rapid response to load changes, and after the sudden application of full rated load at zero power factor the voltage recovers to within the 3% of BS2613 Grades VR2 11—33 within 0.3—0.5 seconds, depending on output and voltage range.

Overload and short-circuit capacity

The short-term overload capacity ensured by the large excitation system margins offers excellent motor-starting capability; most frame sizes can accept twice full load current at a low power factor with a steady-state voltage depression of only some 25%.

To facilitate the operation of protective equipment the optional short-circuit current maintenance unit is designed to sustain a steady-state fault current of up to 2 ½ times full load current, depending on voltage and output.

Parallel operation

Fully-interconnected pole-face damping windings are fitted to facilitate parallel operation and to mitigate the effects of unbalanced and single-phase loads. Satisfactory parallel operation with generally similar or otherwise suitable machines requires only the provision of the optional quadrature-droop compensation equipment.

Voltage build-up

Permanent-magnet poles are used in the smallest exciters to ensure a satisfactory voltage build-up; with the larger machines the residual magnetism is ample. Standard alternators will, if necessary, build up against a permanently connected load.

Waveform

The output voltage waveform is well within the limits specified in BS2613 and BS4999, even for machines of less than the 300kVA BS threshold.

Insulation

All main Stator and Rotor windings are class 'F' (155°C) insulated; exciters are also nominally class 'F', but their size is dictated by the excitation system response rather than by thermal considerations. All windings are suitably impregnated with class 'F' thermosetting insulating varnish for use in tropical climates.

Mechanical construction

All machines are available in both two-bearing and single-bearing construction, the normal drive being by flexible coupling to a prime mover; ball and/or roller bearings are used throughout the range. Adaptors are available for most modern engines. Vee-belt drives can usually be accommodated if required, and optional variants include double shaft extensions. The complete rotor assembly is dynamically balanced to minimise vibration. Ample ventilation is provided by a shaft-mounted cast-aluminium centrifugal fan (suitable for either direction of rotation except in frame size 904) at the drive end. Screen-protected enclosure is standard, and the rotating rectifier and the automatic voltage regulator are readily accessible at the non-drive end.

Torsional analysis

Torsional compatability is the responsibility of the generator set/engine manufacturer. Torsional data are available and will be supplied upon request.

Air filters

Air filters can be fitted as an extra but the kVA rating will be reduced. Consult works for rating.

Alternateurs MARKON sans balais — gamme B Série 2 spécification standard

Généralités

La gamme des alternateurs Markon sans balais comprend des appareils triphasés et monophasés développant 1.500 et 1.800 t/min (50 et 60 Hz) à des sorties triphasées de 15-1875 kVA à une tension allant jusqu'à 650 V. L'alternateur standard est muni d'un stator à enroulement classique et d'un système de champ tournant à pôles saillants qui réunit sur un arbre commun l'induit de l'excitateur c.a. avec un redresseur triphasé du champ principal, à diode en silicium et à période entière. L'alternateur est auto-excité depuis ses bornes de sortie par un régulateur statique automatique de la tension; la protection contre les pertes de vitesse est standard, et l'alternateur est également livrable sur demande avec un dispositif de compensation du fonctionnement en parallèle, ainsi qu'un système de maintien du courant de court-circuit.

Régulation de la tension et réponse transitoire

La tension aux bornes est maintenue à ± 2% près de la valeur de consigne, sous n'importe quelle charge équilibrée, pour n'importe quel facteur de puissance entre l'unité et un retard de 0,8, compte tenu des variations de la résistance en fonction de la température et du réglage normal de la vitesse du moteur selon la charge. Un réglage plus précis, soit à ± 1,5% ou à ± 1% peut être assuré sur demande. La tension est réglée d'avance au moyen d'un petit trimmer à main monté sur un panneau. (Les appareils ayant un bâti de grosseur B354 sont munis d'un régulateur automatique simplifié de la tension, sans trimmer individuel ni système de fonctionnement en parallèle ni de maintien du courant de surcharge; le régulateur automatique complet standard de la tension est livrable moyennant supplément.)

Le système d'excitation entièrement feuilleté réagit avec une rapidité extraordinaire aux variations de charge: la tension se rétablit aux 3% près stipulés par la norme britannique BS 2613, grades VR2 11-33 en 0,3 à 0,5 secondes, suivant le débit et la gamme de tensions, à la suite de l'application subite de la pleine charge nominale au facteur de puissance zéro.

Capacité de surcharge et de court-circuit

La capacité de surcharge à court terme garantie par les marges généreuses du système d'excitation assure une excellente capacité de démarrage-moteur; la plupart des bâtis peuvent soutenir deux fois le courant de pleine charge à un facteur de puissance bas, la baisse de tension stationnaire n'étant que de 25% environ.

Pour faciliter le fonctionnement de l'appareillage de protection, le dispositif facultatif de maintien du courant de court-circuit est conçu pour maintenir une surcharge stationnaire pouvant atteindre 2 ½ fois le courant de pleine charge, selon la tension et la puissance de sortie.

Fonctionnement en parallèle

Des enroulements d'amortissement à face polaire, entièrement interconnectés, sont montés dans le but de faciliter le fonctionnement en parallèle et d'atténuer l'effet des charges déséquilibrées et monophasées. Le fonctionnement satisfaisant en parallèle avec d'autres appareils de type semblable ou adaptés n'exige que le montage du système facultatif de compensation de la chute de quadrature.

Amorçage de la tension

Les plus petits excitateurs emploient des pôles d'aimant permanent pour assurer l'amorçage adéquat de la tension; sur les appareils plus grands, le magnétisme résiduel suffit largement. Les alternateurs standard sont capables, le cas échéant, d'amorcer la tension contre une charge branchée en permanence.

Forme d'onde

La forme d'onde de la tension de sortie est bien conforme aux limites prévues par les normes britanniques BS 2613 et BS 4999, même pour les appareils en-dessous de la limite normale de 300 kVA.

Isolement

Tous les enroulements principaux de stator et rotor ont un isolement de classe "F" (155°C); les excitatrices ont également un isolement nominal de classe "F" mais leur dimension est liée plutôt à la réaction du système d'excitation qu'à des considérations thermiques. Tous les enroulements sont imprégnés comme il convient d'un vernis isolant thermodurcissable de classe "F" prévu pour l'utilisation dans les climats tropicaux.

Construction mécanique

Tous les appareils sont livrables en version à roulement unique ou à deux roulements, et la transmission se fait en général au moyen d'un accouplement flexible vers un premier moteur; toute la

gamme est munie de roulements à billes et/ou à rouleaux. La plupart des moteurs modernes peuvent recevoir un adapteur. Les courroies de transmission en vé sont admises en général, sur demande, et la liste des suppléments facultatifs comprend des rallonges d'arbre doubles. Le bloc entier du rotor est équilibré dynamiquement afin de réduire les vibrations au minimum. Une ventilation largement suffisante est fournie par un ventilateur centrifuge en aluminium moulé, monté sur l'arbre (convient aux deux sens de rotation, à l'exception du bâti 904) du côté de la transmission. L'enceinte est protégée par une grille sur tous les modèles, et le redresseur rotatif et le régulateur automatique de la tension sont d'accès facile à l'extrémité opposée à celle de la transmission.

Analyse de torsion

La compatibilité en matière de torsion incombe au fabricant du groupe électrogène/moteur. Les caractéristiques de torsion sont disponibles et seront fournies sur demande.

Des filtres à air

Des filtres à air peuvent être installés contre un supplément de prix mais la capacité nominale en kVA se trouvera réduite. Pour la capacité nominale s'adresser à l'usine.

MARKON bürstenlose Wechselstromgeneratoren — Baureihe B Typ 2 Normalspezifikation

Allgemeines

Die Reihe der Markon bürstenlosen Wechselstrom-generatoren umfaßt drei- und einphasige Geräte für 1500 und 1800 U/min (50/60 Hz) bei dreiphasigen Ausgangsleistungen von 15-1875 kVA und Spannungen bis 650 V. Der Normalgenerator hat einen herkömmlich gewickelten Ständer und ein Drehfeldsystem mit ausgeprägtem Pol. Der Anker des Wechselstromerregers und ein dreiphasiger Zweiweg-Silizium-dioden-Hauptfeldgleichrichter befinden sich an einer gemeinsamen Welle. Der Generator wird von seinen Ausgangsklemmen über eine statische Spannungsregelautomatik selbst-erregt. Ein Unterdrehzahlschutz gehört zur Normalausrüstung und es können Vorrichtungen für Ausgleich bei Parallelbetrieb und für andauernde Lieferung von Kurzschlußstrom vorgesehen werden.

Spannungsregelung und Einschwingverhalten

Die Klemmenspannung wird bei jeder symmetrischen Belastung und bei jedem Leistungsfaktor zwischen 1 und 0,8 nacheilend innerhalb von ± 2% des Sollwerts erhalten; dies gilt auch für durch Temperaturänderungen bedingte Widerstandsschwankungen und die übliche lastbedingte Regelung der Motordrehzahl. Auch die Möglichkeit zu genauerer Regelung innerhalb von ± 1,5% oder ± 1% ist verfügbar. Die Spannung wird mit Hilfe eines kleinen Schalttafeltrimmers von Hand eingestellt. (Bei Maschinen mit Gehäusen der Größe B354 ist ein vereinfachter automatischer Spannungsregler vorgesehen, und es gibt keinen besonderen Trimmer; noch ist für Parallelbetrieb bzw. die andauernde Lieferung eines Fehlerstroms gesorgt. Die übliche umfassende Spannungsregelauto-matik kann als wahlweise Zusatzeinrichtung geliefert werden.)

Das durchwegs lamellierte Erregersystem gewährleistet außerordentlich schnelle Ansprache auf Laständerungen, und nach plötzlicher Einwirkung der vollen Nennlast bei dem Leistungsfaktor Null erholt sich die Spannung je nach Ausgangs- und Spannungsbereich 0,3—0,5 Sekunden innerhalb der in BS2613 Grades VR211-33 vorgeschriebenen 3%.

Überlastbarkeit und Kurzschlußleistung

Die durch das große Erregersystem gewährleistete kurzfristige Überlastbarkeit bedingt ausgezeichnete Motoranlaßmerkmale. Bei den meisten Gehäusegrößen kann der Strom bei niedrigem Leistungsfaktor bis auf den doppelten Vollastwert erhöht werden, wobei die Spannug im eingeschwungenen Zustand nur um etwa 25% reduziert wird.

Um die Wirkungsweise der Schutzausrüstung zu erleichtern, ist die wahlweise Einrichtung zur andauernden Lieferung von Kurzschlußstrom so beschaffen, daß sie einen konstanten Fehlerstrom liefert, der je nach Spannung und Ausgangsleistung bis 2½ mal so hoch ist wie der Vollaststrom.

Parallelbetrieb

Vollständig gekoppelte Polflächen erleichtern den Parallelbetrieb und schwächen die Wirkungen unsymmetrischer und einphasiger Belastungen ab. Für zufriedenstellenden Parallelbetrieb mit im allgemeinen ähnlichen oder auf andere Weise geeigneten Maschinen ist nur die Anordnung der wahlweisen Einrichtung zum Ausgleich von Quadraturverlusten erforderlich.

Spannungsauflauf

In den kleinsten Erregern sind für zufriedenstellenden Spannungs-auflauf Dauermagnetpole vorgesehen. Bei den größeren Maschinen ist der Restmagnetismus durchaus ausreichend. Falls erforderlich läuft bei Normal-Wechselstromgeneratoren die Spannung in Gegenwart einer permanent angeschlossenen Last auf.

Wellenform

Die Wellenform der Ausgangsspannung liegt einwandfrei innerhalb der in den Normen BS2613 und BS4999 vorgeschriebenen Grenzen. Diese gilt sogar für Maschinen mit einem Normschwellwert von weniger als 300 kVA.

Isolierung

Alle Hauptwicklungen des Ständers und Läufers sind nach Klasse "F" (155°C) isoliert; auch die Erreger haben theoretisch Klasse "F" Isolierung, doch hängt ihre Größe von der Ansprache des Erregersystems ab und nicht von thermischen Erwägungen. Alle Wicklungen sind zum Einsatz unter tropischen Bedingungen entsprechend mit hitzehärtbarem Isolierlack für Klasse "F" imprägniert.

Mechanische Bauweise

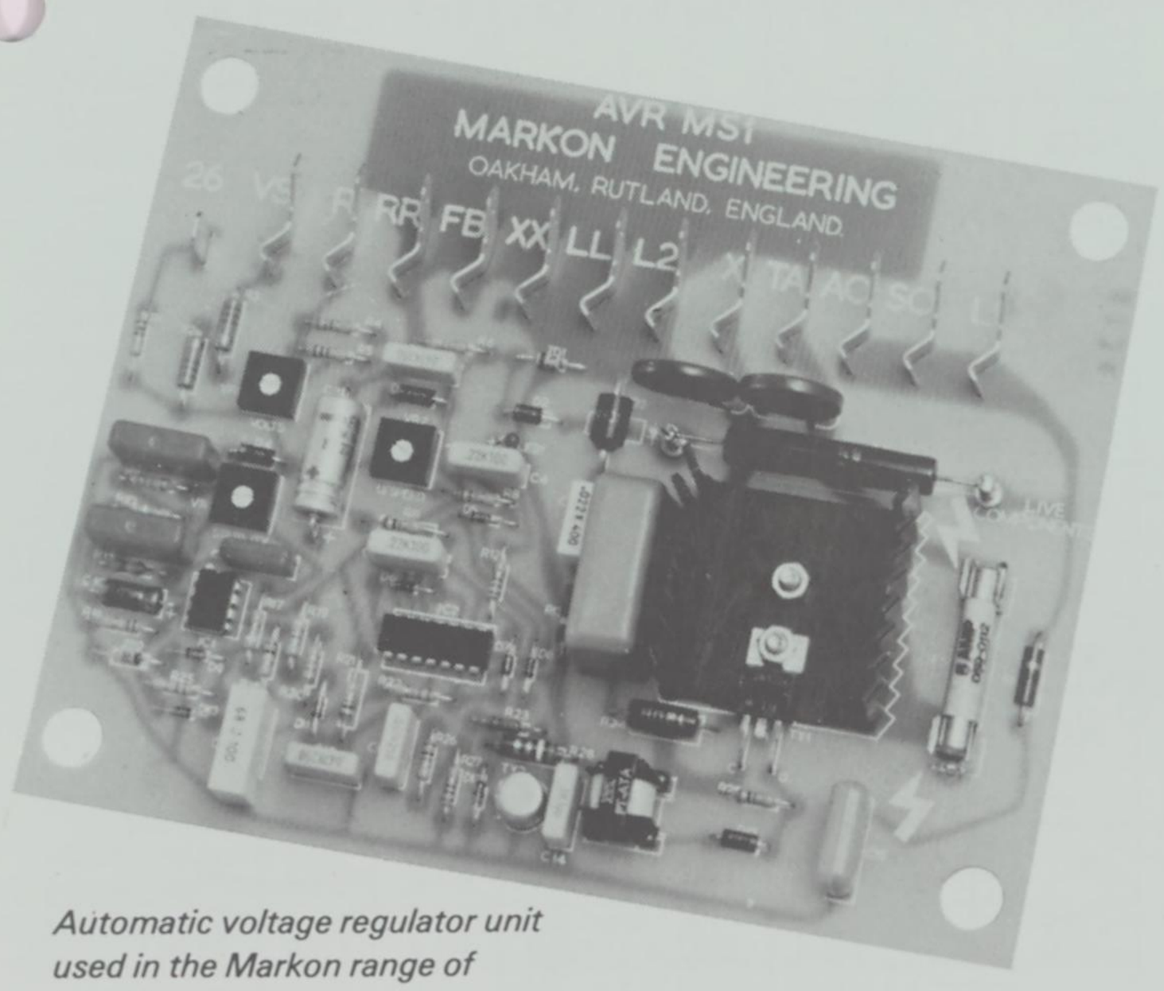
Alle Maschinen sind in Zweilager- sowie in Einlager-Bauweise lieferbar. Sie sind normalerweise durch eine biegsame Kupplung mit einer Antriebsmaschine verbunden. Alle Maschinen dieser Reihe sind mit Kugel- und/oder Rollenlagern ausgestattet. Zum Anschluß der Generatoren an den meisten modernen Antriebsmotoren sind Adapter verfügbar. Falls erforderlich, können in der Regel Keilriemenantriebe vorgesehen werden, und zu den wahlweisen Varianten zählen auch Doppelwellenverlängerungen. Die ganze Läufergruppe ist dynamisch ausgewuchtet, um unerwünschte Schwingungen auf ein Mindestmaß zu reduzieren. Ein Gußaluminium-Zentrifugallüfter am Antriebsende—er ist an einer Welle angeordnet und kann außer bei Gehäusegröße 904 in beiden Richtungen betrieben werden—sorgt für reichliche Lüftung. Ein Gitterschutz gehört zur Normalausrüstung, und der rotierende Gleichrichter sowie der automatische Spannungsregler sind ohne weiteres am nichtantriebsseitigen Ende erreichbar.

Torsionsanalyse

Für torsionstechnische Kompatibilität hat der Hersteller des Generatorsatzes bzw. Motors zu sorgen. Torsionsdaten sind verfügbar und werden auf Wunsch geliefert.

Luftfilter

Luftfilter können zusätzlich angeordnet werden, doch hat dies eine Reduktion des kVA-Nennwerts zur Folge. Erkundigen Sie sich nach dem verringerten Nennwert bei der Fabrik.



Automatic voltage regulator unit used in the Markon range of brushless alternators

Dispositif automatique de régulation de la tension équipant la gamme d'alternateurs sans balais Markon

Automatischer Spannungsregler für Markon bürstenlose Wechselstromgeneratoren

ALTERNATOR OUTPUTS AND EFFICIENCIES AT 0.8 POWER FACTOR AND ROTOR MOMENT OF INERTIA
PUISSANCE DE SORTIE DE L'ALTERNATEUR ET RENDEMENT AU FACTEUR DE PUISSANCE 0,8 ET MOMENT D'INERTIE DU ROTOR
AUSGANGSLEISTUNGEN UND WIRKUNGSGRADE DER WECHSELSTROMGENERATOREN BEI EINEM LEISTUNGSFAKTOR VON 0,8; LÄUFERTRÄGHEITSMOMENTE

Frame Size Encombrement du boîtier Gehäuse-Größe	SINGLE PHASE MONOPHASE EINPHASIG								THREE PHASE TRIPHASE DREIPHASIG								Wr^2
	kVA	kW	Effy %	Input hp	kVA	kW	Effy %	Input hp	kVA	kW	Effy %	Input hp	kVA	kW	Effy %	Input hp	kg-m²
	50 Hz 1500 rev/min				60 Hz 1800 rev/min				50 Hz 1500 rev/min				60 Hz 1800 rev/min				
B354 X	10	8	71.9	14.9	11.25	9	72.9	16.6	15	12	79.3	20.3	18	14.4	80.1	24.1	0.22
A	12.5	10	76.0	17.7	15	12	77.1	20.9	20	16	82.6	26.0	25	20	83.5	32.2	0.24
B	15	12	77.7	20.7	20	16	78.9	27.2	25	20	83.9	32.0	31.25	25	84.9	39.5	0.30
C	20	16	79.4	27.0	25	20	80.4	33.4	31.25	25	85.2	39.4	37.5	30	85.9	46.9	0.39
D	25	20	81.0	33.1	30	24	82.0	39.3	37.5	30	86.4	46.6	47	37.6	87.2	57.9	0.46
B414 X	—	—	—	—	—	—	—	—	40	32	85.9	50.0	50	40	86.2	62.3	0.66
A	30	24	82.1	39.2	40	32	82.6	52.0	50	40	87.0	61.7	62.5	50	87.6	76.6	0.72
B	40	32	83.9	51.2	50	40	84.3	63.6	65	52	88.4	78.9	81.5	65	89.0	98	0.86
C	50	40	84.5	63.5	62.5	50	85.3	78.6	75	60	89.1	90.3	93.75	75	89.6	113	0.99
B464 A	60	48	83.8	76.8	75	60	84.3	95.4	90	72	88.7	109	112.5	90	88.9	136	1.39
B	65	52	84.0	83.0	81.25	65	84.3	104	100	80	88.4	122	125	100	88.9	151	1.51
C	80	64	84.7	102	105	84	85.1	166	125	100	89.1	151	156	125	89.5	188	1.85
B514 F	100	80	84.7	127	120	96	84.7	152	150	120	89.2	181	187.5	150	89.1	226	2.45
G	115	92	86.4	143	143.75	115	86.2	179	175	140	90.4	208	218.75	175	90.3	260	2.84
H	130	104	86.4	162	162.5	130	87.0	201	200	160	90.6	237	250	200	90.8	296	3.15
J	165	132	87.6	202	200	160	88.4	243	250	200	91.3	294	312.5	250	91.7	366	3.67
B604 F	—	—	—	—	—	—	—	—	300	240	89.5	360	375	300	89.6	449	5.86
G	—	—	—	—	—	—	—	—	330	264	90.4	392	406	325	90.3	483	6.32
H	—	—	—	—	—	—	—	—	400	320	91.3	470	500	400	91.2	588	7.39
J	—	—	—	—	—	—	—	—	450	360	91.6	527	562.5	450	91.7	658	8.19
B654 F	—	—	—	—	—	—	—	—	515	412	92.4	598	645	515	92.5	747	12.4
G	—	—	—	—	—	—	—	—	550	440	92.7	637	687.5	550	92.8	795	13.9
H	—	—	—	—	—	—	—	—	600	480	93.2	691	750	600	93.2	863	14.7
J	—	—	—	—	—	—	—	—	630	504	93.2	725	787.5	630	93.2	907	15.5
B704 P	—	—	—	—	—	—	—	—	650	520	92.9	750	812.5	650	93.1	936	18.3
Q	—	—	—	—	—	—	—	—	750	600	93.4	861	937.5	750	93.5	1075	20.0
R	—	—	—	—	—	—	—	—	850	680	94.0	970	1062.5	850	94.1	1211	22.6
S	—	—	—	—	—	—	—	—	1000	800	94.7	1132	1250	1000	94.8	1414	25.8
B904 P	—	—	—	—	—	—	—	—	1100	880	95.1	1240	1375	1100	95.0	1552	39.4
Q	—	—	—	—	—	—	—	—	1250	1000	95.4	1405	1562.5	1250	95.4	1756	43.6
R	—	—	—	—	—	—	—	—	1375	1100	95.5	1544	1718.8	1375	95.3	1934	47.3
S	—	—	—	—	—	—	—	—	1600	1280	95.6	1795	2000	1600	95.6	2243	52.8

STANDARD VOLTAGES TENSIONS STANDARD NORMALSPANNUNGEN

FRAMES B354-B514 **BATIS B354-B514** **GEHÄUSE B354-B514**		VOLTAGE TENSION SPANNUNG											
		WINDING 1 (12-wire) ENROULEMENT 1 (12 fils) WICKLUNG 1 (12 Leiter)				WINDING 2 (12-wire) ENROULEMENT 2 (12 fils) WICKLUNG 2 (12 Leiter)				WINDING 3 (6-wire) ENROULEMENT 3 (6 fils) WICKLUNG 3 (6 Leiter)			
WINDING CONNECTION AND ARRANGEMENT RACCORDEMENT DES ENROULEMENTS ET DISPOSITION WICKLUNGSANSCHLUSS UND –ANORDNUNG	Hz	Line-line Ligne-ligne Leiterspannung		Line-neutral Ligne-neutre Strangspannung		Line-line Ligne-ligne Leiterspannung		Line-neutral Ligne-neutre Strangspannung		Line-line Ligne-ligne Leiterspannung		Line-neutral Ligne-neutre Strangspannung	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
3 phase 4-wire series star Etoile série triphasé 4 fils Dreiphasig, 4 Leiter, Reihenschaltung, Stern	50	346	400	200	230	380	440	220	254	380	415	220	240
	60	415	480	240	277	450	500	260	305	455	500	262	288
3 phase 4-wire parallel star Etoile parallèle triphasé 4 fils Dreiphasig, 4 Leiter, Parallelschaltung, Stern	50	173	200	100	115	190	220	110	127	–	–	–	–
	60	208	240	120	139	230	240	133	139	–	–	–	–
3 phase 4-wire series delta (with centre tap on windings 1 and 2 only) Delta série triphasé 4 fils (avec piquage central sur enroulements nos 1 et 2 seulement) Dreiphasig, 4 Leiter, Reihenschaltung, Delta (mit Mittelpunktanzapfung nur bei Wicklungen 1 und 2)	50	200	230	100	115	220	250	110	125	220	240	–	–
	60	240	277	120	139	–	–	–	–	262	288	–	–
Single phase 2- or 3-wire parallel zig-zag Zig-zag parallèle monophasé 2 ou 3 fils Einphasig, 2 oder 3 Leiter, Parallelschaltung, Zickzack	50	200	230	100	115	220	250	110	125	–	–	–	–
	60	240	277	120	139	–	–	–	–	–	–	–	–

FRAMES B604-B904 **BATIS B604-B904** **GEHÄUSE B604-B904**		WINDING 1 (6-wire) ENROULEMENT 1 (6 fils) WICKLUNG 1 (6 Leiter)				WINDING 2 (6-wire) ENROULEMENT 2 (6 fils) WICKLUNG 2 (6 Leiter)				WINDING 3 (6-wire) ENROULEMENT 3 (6 fils) WICKLUNG 3 (6 Lieter)			
3 phase 4-wire parallel star Etoile parallèle triphasé 4 fils Dreiphasig, 4 Leiter, Parallelschaltung, Stern	50	346	400	200	230	380	440	220	254	380	415	220	240
	60	415	480	240	277	450	480	260	177	455	500	262	288

FRAMES B604 **BATIS B604** **GEHÄUSE B604**		WINDING 4 (12-wire) ENROULEMENT 4 (12 fils) WICKLUNG 4 (12 Leiter)			
3 phase 4-wire series star Etoile série triphasé 4 fils Dreiphasig, 4 Leiter, Reihenschaltung, Stern	50	346	400	200	230
	60	415	480	240	277
3 phase 4-wire parallel star Etoile parallèle triphase 4 fils Dreiphasig, 4 Leiter, Parallelschaltung, Stern	50	173	200	100	115
	60	208	240	120	139

FRAMES B354-B604 **BATIS B354-B604** **GEHÄUSE B354-B604**		*WINDING 5 (12-wire) *ENROULEMENT 5 (12 fils) *WICKLUNG 5 (12 Leiter)			
3 phase 4-wire series star Etoile série triphasé 4 fils Dreiphasig, 4 Leiter, Reihenschaltung, Stern	50	380	415	220	240
	60	440	500	254	288
3 phase parallel star Etoile parallèle triphasé 4 fils Dreiphasig, 4 Leiter, Parallelschaltung, Stern	50	190	208	110	120
	60	220	250	127	144

NOTE
When using winding 5 at 60Hz the kVA rating is limited to 1.2 times the 50Hz kVA rating.

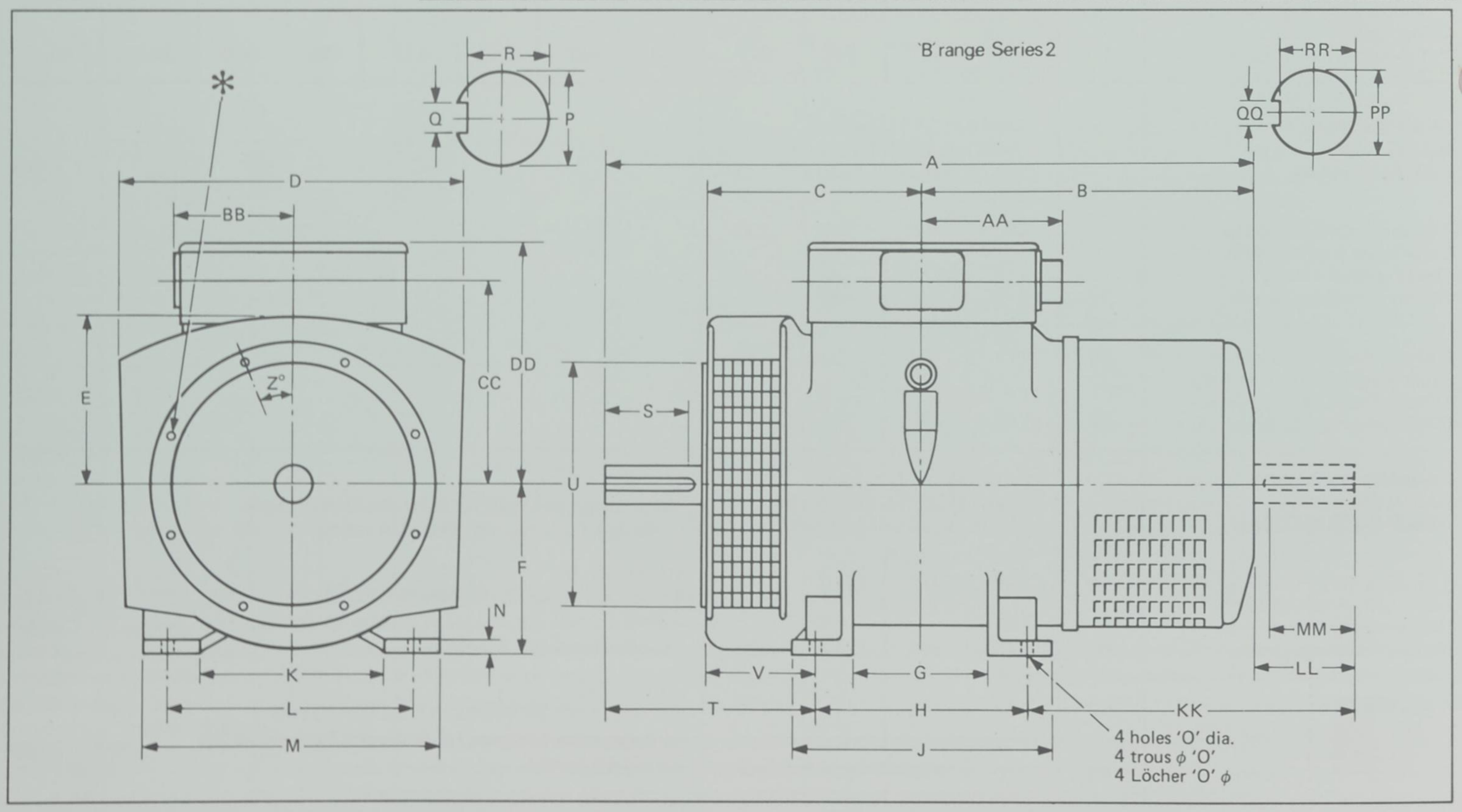
REMARQUE
Lorsqu'on utilise l'enroulement 5 à 60Hz, la capacité nominale en kVA n'est que 1,2 fois la capacité nominale à 50Hz.

ACHTUNG
Bei Gebrauch der Wicklung 5 bei 60Hz ist der kVA-Nennwert auf das 1,2-fache des Nennwerts bei 50HZ beschränkt.

APPROXIMATE DIMENSIONS IN INCHES AND MILLIMETRES
DIMENSIONS APPROXIMATIVES EN POUCES ET EN MILLIMETRES
ANNÄHERNDE ABMESSUNGEN IN ENGLISCHEN UND METRISCHEN MASSEN

Frame Size Encombrement du boîtier Gehäuse-Größe		FRAME BATI GEHÄUSE						FEET PIEDS FUSS							
		A	B	C	D	E	F	G	H	J	K	L	M	N	O
B354	in	32 1/8	16 3/4	10 13/16	17 3/8	8 3/8	8 1/2	7 1/8	11 1/8	13 7/16	9 1/4	12 13/32	15	25/32	9/16
	mm	816	425	274	441	213	216	181	282	341	235	315	381	20	14
B414	in	36 5/16	17 15/16	13 3/8	19 1/4	9 1/4	10	8 9/32	13	15 9/32	11 9/16	14 5/8	17 5/16	1	13/16
	mm	922	455	340	489	235	254	210	330	388	294	372	440	25	21
B464	in	41 1/8	20 13/32	14 9/16	22	10 1/2	11	8 9/32	13 5/8	16 5/32	12 1/4	16	18 1/4	1 1/8	13/16
	mm	1044	518	369	560	267	279	210	346	410	311	406	464	29	21
B514	in	45 1/32	22 3/32	16 7/8	26	12 7/16	13 3/4	8 3/4	14 1/2	17 1/4	13 29/32	18	20 3/4	1 3/8	13/16
	mm	1144	561	428	660	316	349	222	368	438	353	458	528	35	21
B604	in	52 13/16	25 1/4	20 1/4	32 3/4	15 1/2	15.74	11 3/4	18	21 9/16	19 1/2	24 1/2	27 3/8	1 3/8	15/16
	mm	1342	642	515	830	394	400	298	458	548	495	622	694	35	24
B654	in	63 7/16	31 1/16	25 1/8	32 3/4	15 1/2	15.74	20 1/8	26 3/8	29 15/16	21 15/16	27	29 13/16	1 3/8	1 1/8
	mm	1612	789	638	830	394	400	510	670	760	557	686	756	35	28
B704	in	66	31 3/8	25 5/8	39 3/8	18 23/32	19 11/16	20 1/8	26 3/8	29 15/16	21 15/16	27	29 13/16	1 3/4	1 1/8
	mm	1677	797	650	1000	475	500	510	670	760	557	686	756	45	28
B904	in	72 7/16	34 27/32	28 17/32	39 3/8	18 23/32	19.68	25 5/8	31 1/2	37 3/8	27 9/16	33 15/32	37 3/4	1 3/4	1 1/8
	mm	1840	885	725	1000	475	500	650	800	950	700	850	959	45	28

'W' holes tapped 'X' equally spaced on 'Y' PCD
Piquages 'W' intervalles réguliers 'X' sur PCD 'Y'
'W'-Löcher mit Gewinden versehen 'X' in gleichen Abständen auf Teilkreis 'Y' angeordnet



SHAFT ARBRE WELLE					SPIGOT BOUT MALE ANBAUTEIL						TERMINAL BOX BOITIER A BORNES KLEMMENKASTEN				SHAFT EXTENSION NON-DRIVE END RALLONGE D'ARBRE A L'EXTREMITE OPPOSEE A LA TRANSMISSION WELLENVERLÄNGERUNG AM NICHTANTRIEBSSEITIGEN ENDE					
P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	KK	LL	MM	PP	QQ	RR
1.8904 1.8898	.5505 .5488	1.6732 1.6654	$4^{19}/_{32}$	$10^{3}/_{16}$	12 ⅜	5 ¼	8	M10	13 ⅛	22 ½	$5^{11}/_{16}$	$7^{5}/_{32}$	$10^{7}/_{16}$	$12^{27}/_{32}$	$15^{5}/_{16}$	4 ½	4	1.4967 1.4961	.3931 .3917	1.2992 1.2913
48.018 48.002	13.982 13.939	42.5 42.3	117	258.4	314.3	133.4	8	M10	333.3	22 ½	145	182	265	326	389	114	102	38.018 38.002	9.985 9.949	33.00 32.80
2.3634 2.3626	.7079 .7063	2.0866 2.0787	4 ¾	11 ⅞	14 ¼	$6^{29}/_{32}$	12	M10	15	15	$5^{11}/_{16}$	$7^{5}/_{32}$	11 ¾	$14^{3}/_{16}$	$15^{29}/_{32}$	4 ½	4	1.6542 1.6536	.4717 .4700	1.4567 1.4488
60.030 60.011	17.982 17.939	53.0 52.8	121	302	362	175	12	M10	381	15	145	182	299	360	404.3	114	102	42.018 42.002	11.982 11.939	37.00 36.80
2.9539 2.9532	.7865 .7845	2.6575 2.6496	$5^{23}/_{32}$	13 ⅞	16 ⅛	$7^{23}/_{32}$	12	M10	16 ⅞	15	$5^{11}/_{16}$	$7^{5}/_{32}$	$13^{21}/_{32}$	$16^{1}/_{16}$	$18^{15}/_{32}$	4 ¼	3 ⅞	1.6542 1.6536	.4717 .4700	1.4567 1.4488
75.030 75.011	19.978 19.926	67.5 67.3	145	352	410	196	12	M10	429	15	145	182	347	408	470	108	98	42.018 42.002	11.982 11.939	37.00 36.80
3.3478 3.3469	.8653 .8633	2.992 2.984	$5^{21}/_{32}$	14 ¾	17 ⅝	$8^{21}/_{32}$	12	M10	18 ⅜	15	$9^{5}/_{8}$	7 ⅜	$16^{15}/_{16}$	19 ⅞	$20^{1}/_{16}$	4 ¼	3 ⅞	1.8904 1.8898	.5505 .5488	1.6732 1.6654
85.035 85.013	21.978 21.926	76.0 75.8	144	375	448	220	12	M10	467	15	245	187	430	505	509	108	98	48.018 48.002	13.982 13.939	42.50 42.30
3.5446 3.5438	.9833 .9813	3.189 3.181	$6^{11}/_{16}$	$17^{11}/_{16}$	25 ½	$10^{7}/_{16}$	16	M12	26 ¾	11 ¼	$9^{5}/_{8}$	7 ⅜	$19^{11}/_{16}$	22 ⅝	$21^{5}/_{16}$	4 ¼	3 ⅞	2.1665 2.1658	.6292 .6274	1.9291 1.9212
90.035 90.013	24.978 24.926	81.0 80.8	170	450	648	265	16	M12	679	11 ¼	245	187	500	575	542	108	98	55.030 55.011	15.982 15.939	49.00 48.80
3.7415 3.7406	.9833 .9813	3.386 3.378	$6^{11}/_{16}$	$17^{11}/_{16}$	25 ½	$10^{7}/_{16}$	16	M12	26 ¾	11 ¼	$13^{23}/_{32}$	$8^{5}/_{16}$	18 ¼	$23^{11}/_{32}$	$22^{15}/_{32}$	6 ⅛	5 ½	2.9539 2.9532	.7865 .7845	2.6575 2.6496
95.035 95.013	24.978 24.926	86.0 85.8	170	450	648	265	16	M12	679	11 ¼	348	211	464	593	571	155	140	75.030 75.011	19.978 19.926	67.50 67.30
4.332 4.331	1.1015 1.0995	3.937 3.929	$8^{1}/_{16}$	$21^{27}/_{32}$	25 ½	$12^{13}/_{16}$	16	M12	26 ¾	11 ¼	$18^{9}/_{16}$	11⅛	$25^{7}/_{16}$	$32^{5}/_{16}$	$23^{29}/_{32}$	6 ⅛	5 ½	2.9539 2.9532	.7865 .7845	2.6575 2.6496
110.035 110.013	27.978 27.926	100.00 99.80	205	555	648	325	16	M12	679	11 ¼	471	282	645	820	607	155	140	75.030 75.011	19.978 19.926	67.50 67.30
4.332 4.331	1.1015 1.0995	3.937 3.929	$8^{1}/_{16}$	$21^{27}/_{32}$	25 ½	$12^{13}/_{16}$	16	M12	26 ¾	11 ¼	$22^{11}/_{64}$	$10^{11}/_{16}$	$29^{7}/_{32}$	35 ⅝	$25^{3}/_{16}$	6 ⅛	$5^{11}/_{16}$	2.9539 2.9532	.7865 .7845	2.6575 2.6496
110.035 110.013	27.978 27.926	100.00 99.80	205	555	648	325	16	M12	679	11 ¼	563	272	742	905	640	155	145	75.030 75.011	19.978 19.926	67.50 67.30

APPROXIMATE SHIPPING SPECIFICATION SPECIFICATION D'EXPEDITION APPROXIMATIVE ANNÄHERNDE VERSANDDATEN

Frame Size Encombrement du boîtier Gehäuse-Größe		Nett weight Poids net Nettogewicht		Gross weight Poids brut Bruttogewicht		Cubic capacity Capacité cubique Rauminhalt	
		lbs	kgs	lbs	kgs	ft	m^3
B354	X	352	159	402	183	7	0.2
	A	382	173	432	196	7	0.2
	B	422	191	472	214	7	0.2
	C	472	214	522	236	7	0.2
	D	532	242	582	264	7	0.2
B414	X	600	272	670	305	10	0.29
	A	662	300	732	332	10	0.29
	B	767	348	840	380	10	0.29
	C	837	380	910	412	10	0.29
B464	A	920	417	1020	463	14	0.4
	B	970	440	1070	485	14	0.4
	C	1115	505	1215	550	14	0.4
B514	F	1612	730	1762	801	23	0.65
	G	1740	788	1890	859	23	0.65
	H	1838	833	1988	904	23	0.65
	J	1950	883	2100	955	23	0.65

Frame Size Encombrement du boîtier Gehäuse-Größe		Nett weight Poids net Nettogewicht		Gross weight Poids brut Bruttogewicht		Cubic capacity Capacité cubique Rauminhalt	
		lbs	kgs	lbs	kgs	ft	m^3
B604	F	2557	1158	2757	1253	38	1.1
	G	2682	1215	2882	1310	38	1.1
	H	2904	1316	3104	1411	38	1.1
	J	3057	1385	3257	1480	38	1.1
B654	F	4230	1923	4450	2023	47	1.33
	G	4370	1986	4590	2086	47	1.33
	H	4525	2057	4745	2157	47	1.33
	J	4705	2140	4925	2239	47	1.33
B704	P	5484	2488	5733	2601	78	2.2
	Q	5748	2608	5999	2722	78	2.2
	R	5880	2668	6132	2782	78	2.2
	S	6229	2826	6478	2939	78	2.2
B904	P	7519	3418	8008	3640	110	3.1
	Q	8054	3661	8577	3899	110	3.1
	R	8476	3853	9027	4103	110	3.1
	S	9173	4170	9769	4441	110	3.1

High ambient temperature and high altitude correction factor tables
(these are correct only for Class F)

Tableaux de coefficients de correction pour hautes températures ambiantes et hautes altitudes (ne sont valables que pour la catégorie F)

Tafeln der Berichtigungsfaktoren für hohe Lufttemperaturen und große Höhen
(diese beziehen sich nur auf Klasse F)

HIGH AMBIENT TEMPERATURE CORRECTION FACTORS.
COEFFICIENTS DE CORRECTION POUR HAUTES TEMPERATURES AMBIANTES.
BERICHTIGUNGSFAKTOREN FÜR HOHE LUFTTEMPERATUREN.

°C	°F	Factor
40	104	1.0
41	105.75	1.01
42	107.75	1.02
43	109.25	1.03
44	111.0	1.04
45	113.0	1.05
46	114.75	1.06
47	116.5	1.07
48	118.25	1.081
49	120.0	1.09
50	122.0	1.1

When the ambient temperature exceeds 40°C (104°F), correction factors must be used to obtain correct frame size.

Le coefficient de correction doit être employé pour déterminer les dimensions exactes du bâti lorsque la température ambiante est supérieure à 40°C.

Falls die Lufttemperatur 40°C (104°F) übersteigt, müssen die Berichtigungsfaktoren angewandt werden, um die richtige Gehäusegröße zu errechnen.

HIGH ALTITUDE CORRECTION FACTORS.
COEFFICIENTS DE CORRECTION POUR HAUTES ALTITUDES
BERICHTIGUNGSFAKTOREN FÜR GROßE HÖHEN.

Feet	Metres	Factor	Feet	Metres	Factor
3300	1000	1.0	10000	3000	1.13
3500	1100	1.005	10500	3150	1.1375
4000	1200	1.0125	11000	3800	1.1475
4500	1350	1.0225	11500	3450	1.1575
5000	1500	1.0325	12000	3600	1.1675
5500	1650	1.0425	12500	3750	1.175
6000	1800	1.05	13000	3900	1.185
6500	1950	1.06	13500	4050	1.195
7000	2100	1.07	14000	4200	1.205
7500	2250	1.08	14500	4350	1.215
8000	2400	1.09	15000	4500	1.225
8500	2550	1.1	15500	4650	1.235
9000	2700	1.11	16000	4800	1.245
9500	2850	1.12	16500	4950	1.255

When the altitude at which the alternator is to operate exceeds 1,000 metres above sea level, correction factors must be used to obtain correct frame size.

Le coefficient de correction doit être employé pour déterminer les dimensions exactes du bâti lorsque l'emplacement auquel il est destiné se trouve à plus de 1.000 mètres au-dessus du niveau de la mer.

Falls die Einsatzhöhe des Generators 1 000 Meter über dem Meeresspiegel übersteigt, muß zur Errechnung der richtigen Gehäusegröße von dem entsprechenden Berichtigungsfaktor Gebrauch gemacht werden.

All specifications and details are subject to alteration without notice.
Toutes les spécifications et renseignements contenus dans cette brochure peuvent être modifiés sans aucun préavis
Anderungen vorbehalten.

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ANC/VIENA/ANGOLA

FURNITURE & FITTINGS

ADMINISTRATION AV 11, ARC 004

ITEM	TYPE	QTY
Desk 160 x 80 cm	Isku 2100 B/2 + 9	9
Typing table	Isku 2100 E S/2	7
Desk chair with castors, arm rest, height adjustment	Martela 122 EPR	5
Typing chair with castors, no arm rest, height adjustment	Martela 121 E	4
Chairs	Isku 390 IV	26
Easy chair (elements to joint to sofa)	Sope 4500	18
Coffee table Ø 60	Sope 215	1
Coffee table Ø 60	Sope 215	2
Shelving unit (open cabinet)	Sope 444/445	8
Table 180 x 80	Martela 826	2
Worktop 180 x 80 (laminated, movable)		2
Shelves in store room	Sovella	24 rm
Lockable filing cabinets (3 drawers with suspension filing & files)	Martela/GWS 6113/3A	8
Lockable cupboard	Isku HY 50	1
Letter tray		18
Desk lamp	Lival Kitka P 12 B	9
Waste paper basket		10
Pinboard 120 x 180	Koulukaluste 6440	9
Curtains for all the windows		

DORMITORIES (for 2 blocks = 54-81 students) AV 08, ARC 005, 006

Bunker beds (convertible), steel	Konevalmistamo	27 (54 stud.)
Single beds (convertible to bunker beds), steel	"	27 (27 stud.)
Mosquito-net for bed		81
Bed lamp	Lival S 850	81
Cupboard with 60 cm, hanging & shelving (lockable)	Isku	81
Coat hangers, plastic		500
Mirror - one bed room, 40 x 50		18
Pinboard - one per room 120 x 180	Koulukaluste 6440	18
Waste paper basket - one per room		18
Pinboard cupboard for passage		2
Chair, weatherproof polypropylene, stackable (yellow)	Isku 390	81
Curtains for all windows, red		

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STORE ROOMS (4) IN DORMITORY BLOCKS

ITEM	TYPE	QTY
Shelving for suitcases for 27 students per store room		2 store room
Shelving for sports equipment,etc.	Sovella	2 store room

COMMON ROOM

Table 180 x 80	Martela 826	2
Table 180 x 80	Martela 826	2
Chairs, weatherproof, polypropylene, stackable	Isku 390	12 + 10
Easy chair (elements to join to sofa)	Sofa, Sope 4203	1 + 1
	Easy chair, Sope 4500	4 + 4
Coffee table Ø 88	Sope 216	1 + 1
Pinboard 120 x 180	Koulukaluste 6440	2
Cupboards with shelves (80 x 45 approx.)	Sope 444/445/446	2 + 2
Curtains for all windows, red		

ABLUTION BLOCK AV 09, ARC 009

Soap cup	9
Toilet paper holder	8
Towel hook	30
Mirror	19
Pedal waste pin (heavy duty)	10
Pinboard 120 x 120 cm	2
Shelving for store including	
hooks for garden tools	30
hose pipe holder (hanger)	2

CLASSROOM BLOCK (b), AV 06, ARC 003)

Shelving in two storerooms	Sovella	46 RM
Blackboard 240 x 120 cm		2
Pinboard		2
Students desk	Isku 1421-6	40
Teachers desk	Isku 1705	2
Classroom chair	Isku 1066-6	42
Book shelf	Isku Mondo 9069	2
Waste paper basket		2
Curtains (heavy type) for all windows, brown		

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CLASSROOM BLOCK AV 06, ARC 002

ITEM	TYPE	QTY
All as for block (b), ARC 003, but library includes additionally:		
Librarian chair	Martela 122 EPR	1
Desk	Isku 2100 B/2 + 9	1
Table 120 x 70	Martela 826	4
Table 180 x 80	Martela 826	1
Pinboard 180 x 120	Koulukaluste 6440	2
Chairs	Isku 390, brown	22
Desk lamp	Lival Kitka P 12 B	1
Letter tray		2
Waste basket		4
Catalogue cabinet with frame complete with cards		1

SHELVING

Free standing single model W 90 cm H 167.5 depth of shelf 25 cm	GWS Sovella	10
Free standing double model W 90 cm H 167.5 depth of shelf 25 cm	GWS Sovella	5

STORE PHASE 1, AV 02, ARC 014

Chair	Isku 390	2
Desk lamp	Lival Kitka P 12 B	2
Desk 160 x 80	Isku 2100B/2 + 9	2
Typing chair with castors	Martela 121 ER	2
Filing cabinet, 3-drawer suspension, filing with files, lockable	GWS 6113/3A	2

TAILORING WORKSHOP, ARC 013

Cutting table 600 x 160 cm, strong legs + hardboard		1
Table 300 x 100 cm		3
Pressing table 280 x 75 cm		1
Desk	Isku 2100 B/2 + 9	1
Typing table	Isku 2100 ES/2	1
Typing chair with castors	Martela 121 ER	1

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ITEM	TYPE	QTY
Shelving unit approx. 60 cm deep (full height)		9 RM
Shelving unit approx. 120 cm deep (full height)		12 RM
Chair	Isku 390	12
Pinboard 120 x 180 cm	Koulukaluste 6440	3

KITCHEN, DINING HALL, BACKSTAGE AV 07, ARC 008

Table 160 x 75	Martela 826	1
Chairs	Isku 390	6

DINING HALL

Table 120 x 70 cm	Martela 826	40
Dining hall chairs	Isku 390, brown	160
Pinboard	Koulukaluste 6440	

STAGE

Timber stage (60 cm high)	1
Stage curtain rail system appr. 12 m	1
Stage curtain, brown	1
Stage lighting system	1

BACK STAGE

Pinboard 120 x 180	Koulukaluste 6440	6
Table 120 x 70 cm	Martela 826	4
Chair	Isku 390, brown	16
Locker	GWS	30
Bench 480 cm	GWS	2
Towelhook		4
Rail with 8 hooks		2
Mirror 40 x 50		8
Lockable cupboard (shelves inside)	Isku HY 50	1
Open cabinet	Sope 444	2
Pedal waste bin (heavy duty)		2

STORE

Shelving units		11 RM
7 m approx. 60 cm deep	Sovella	
4 m approx. 100 cm deep with adjustable height	Sovella	

WC

Mirror	4
Pedal waste bin (heavy duty)	2
Toilet paper holder	4

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HOUSES AV 10, ARC 007

ITEM	TYPE	QTY
Bedside lamps	Lival P 850	6 x 2
Single bed	Sope 5070	4 x 2
Bunker bed, steel	Konevalmistamo	1 x 2
Wardrobe (100 x 60) x 4 (hanging & shelves) 60 x 60 (2 pcs)	Isku	6 x 2
Bedside table	Sope 5506	5 x 2
Shower with soap cup		1 x 2
Mirror 40 x 50		1 x 2
Towel hooks (bath 7, kitchen 2)		9 x 2
Toilet paper holder		1 x 2
Table 160 x 75 cm	Martela 826	1 x 2
Chairs	Martela 315 A	9 x 2
Easy chair	Sope 4500	4 x 2
Coffee table Ø 60	Sope 215	1 x 2
Book shelf	Sope 444/445/446	1 x 2
Kitchen unit with sink, cooker & fridge		1 x 2
Pinboard	Koulukaluste 6440	1 x 2

Curtain rails & curtains for all windows,
complete set of kitchen utensils, including plates, cups etc. for 6 persons

CLINIC ARC 001a+b

Shelving 60 wide in Pharmacy, stores, clean		60 rm
Desk lamps	P 850	5
Desk	Isku 2100B/2 + 9	4
Typing desk		2
Letter tray		10
Chair	Martela 121 ER	4
Chair	Isku 390	11
4 drawer filing cabinets, lockable, including suspension files	Martela 511AA + 513	3
Bed	Kone	17
Laboratory wall shelves 2 x (2800 x 400)		5,6 rm
Wall cupboards	TA 80	40
Cupboard	HY 50	
Cupboard, lockable	HY 50	7
Cupboard	HY 50	
Bench	L = 1600	4
Pinboard 180 x 120	Koulukaluste 6440	6
Pedal waste bin		5
Mirror		5
Refrigerator	Rosenlew RJV 155	1
Toilet paper holder		5
Soap cup		6
Shower head		3
Towel hook		6

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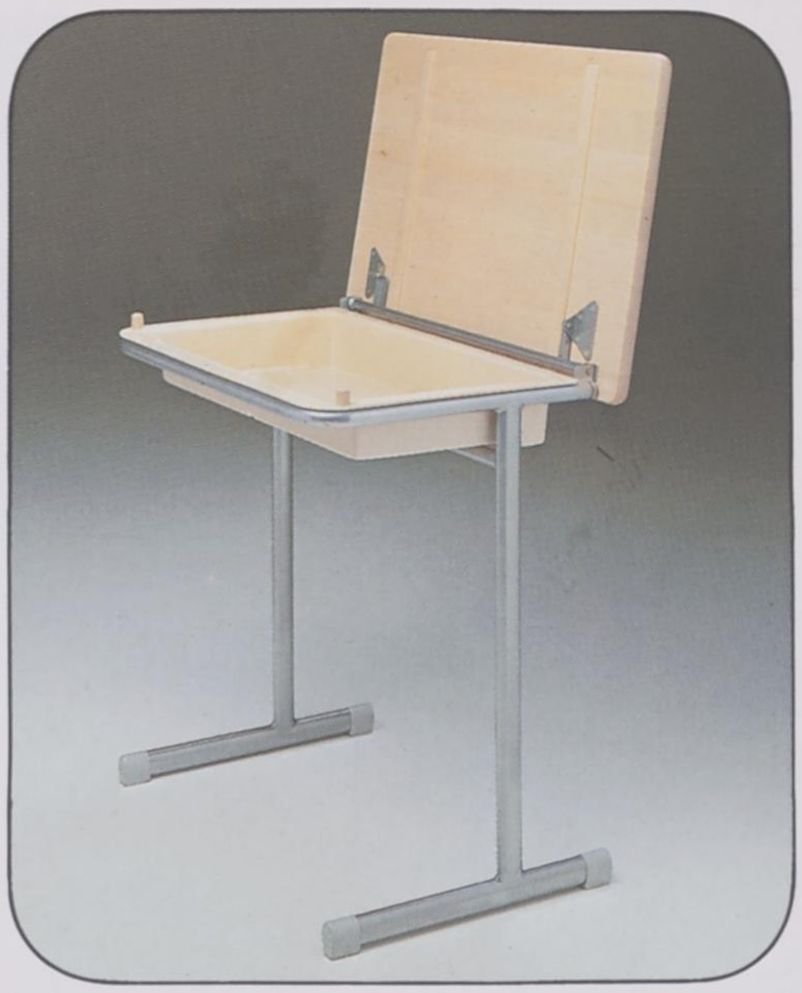
MECHANICAL WORKSHOP AV 03, ARC 010

ITEM	TYPE	QTY
Mirror 40 x 50		1
Desk	Isku 2100 B/2 + 9	1
Typing desk	Isku 2100 ES/2	1
Desk lamp	Lival Kitka P 12 B	1
Letter tray		2
Shelving units depth 60 cm approx. height 250 cm		50 rm

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ISKU

ISKU Koulukalustesarja ABC /ISKU Skolmöbler, ABC-serien



ABC on uusi kalustesarja, jonka suunnittelussa on toteutettu ergonomian ja viihtyvyyden koulukalusteille asettamat vaatimukset. Mitoitukset noudattavat kansainvälistä ISO-standardia. ABC-sarjaan kuuluvat yhden ja kahden oppilaan työpöydät, yleispöydät ja tuolit sekä opettajanpöytäyhdistelmät.

1 OPPILAAN PÖYDÄT

Oppilaspöytä 1411

ABC-oppilaspöytä kiinteällä kannella ilman hyllyä. Kansikoko 70×50 cm. Kannen materiaali umpikoivu tai microlaminaatti.

Tilausn:o	Korkeus
1411-5	70 cm
1411-6	76 cm

Sama pöytä varustettuna microlaminaattikannella 80×60 cm.

Tilausn:o	Korkeus
1411-15	70 cm
1411-16	76 cm

Oppilaspöytä 1421

ABC-oppilaspöytä kiinteällä kannella ja hyllyllä. Kannen koko 70×50 cm.
Kannen materiaali umpikoivu tai microlaminaatti.

Tilausn:o	Korkeus
1421-5	70 cm
1421-6	76 cm

Sama pöytä varustettuna microlaminaattikannella 80×60 cm.

Tilausn:o	Korkeus
1421-15	70 cm
1421-16	76 cm

Oppilaspöytä 1431

ABC-oppilaspöytä kääntyvällä kannella ja säilytyslaatikolla.
Kansikoko 70×50 cm.
Kannen materiaali umpikoivu tai microlaminaatti.

Tilausn:o	Korkeus
1431-3	59 cm
1431-4	65 cm
1431-5	70 cm



ABC-serien är en stark, tålig och flexibel möbelserie. Produkterna i denna grupp är tillverkade med mått enligt internationella ISO-standarden. ABC-serien består av elevbord, gruppbord, stolar och katedrar.

ELEVBORD, ENKEL

Elevbord 1411

ABC-elevbord med fast skiva utan hylla. Mått 70×50 cm. Material massiv björk eller microlaminat.

Art. nr	Höjd
1411-5	70 cm
1411-6	76 cm

Samma bord med miclam-skiva 80×60 cm.

Art. nr	Höjd
1411-15	70 cm
1411-16	76 cm

Elevbord 1421

ABC-elevbord med fast hylla och skiva, mått 70 ×50 cm.
Skivans material massiv björk eller microlaminat.

Art. nr	Höjd
1421-5	70 cm
1421-6	76 cm

Samma bord med miclam-skiva 80×60 cm.

Art. nr	Höjd
1421-15	70 cm
1421-16	76 cm

Elevbord 1431

ABC-elevbord med förvaringslåda och uppfällbar skiva, mått 70×50 cm.
Skivans material massiv björk eller microlaminat.

Art. nr	Höjd
1431-3	59 cm
1431-4	65 cm
1431-5	70 cm









Oppilaspöydän 1431 laatikko on erittäin kestävää ja helposti puhdistettavaa ABS-muovia. Laatikon koko on maksimoitu polvitilan sallimissa puitteissa. Pientarvikkeille on erilliset tilavat lokerot. Lujan saranoinnin ja vankkojen tulppien avulla voidaan kansi turvallisesti säätää 10°:een kaltevuuteen.

ABC-sarjan umpikoivukannet ovat 22 mm paksuja ja vahvistettu alapintaan upotetuin tukipienoin. Microlaminaattikansien reunat ovat valettua kovamuovia ja kulmat on koivukansien tapaan turvallisiksi pyöristetty.

Elevbord 1431 har en stor förvaringslåda med pennfack. Materialet är hållbar ABS-plast som är lätt att rengöras. Steglös snedställning av skiva i 10°.

Massiva björkskivor är 22 mm tjocka och försedda med stödsarger under skivan. Miclamskivornas kanter är gjuten plast och alla hörnor är rundade.









1412

2 OPPILAAN PÖYDÄT

Tarkoitettu erikoisluokkia ja ryhmätyötiloja varten.

Oppilaspöytä 1412

ABC-oppilaspöytä kiinteällä kannella ilman hyllyä. Kannen koko 130×50 cm. Materiaali microlaminaatti kovamuovireunoin.

Tilausn:o	Korkeus
1412-5	70 cm
1412-6	76 cm

Sama pöytä kannella 125×70 cm.

Tilausn:o	Korkeus
1412-15	70 cm
1412-16	76 cm

Sama pöytä kannella 140×70 cm.

Tilausn:o	Korkeus
1412-25	70 cm
1412-26	76 cm

Oppilaspöytä 1422

ABC-oppilaspöytä kiinteällä kannella ja hyllyllä. Kannen koko 130×50 cm. Materiaali microlaminaatti kovamuovireunoin.

Tilausn:o	Korkeus
1422-5	70 cm
1422-6	76 cm

Sama pöytä kannella 125×70 cm.

Tilausn:o	Korkeus
1422-15	70 cm
1422-16	76 cm

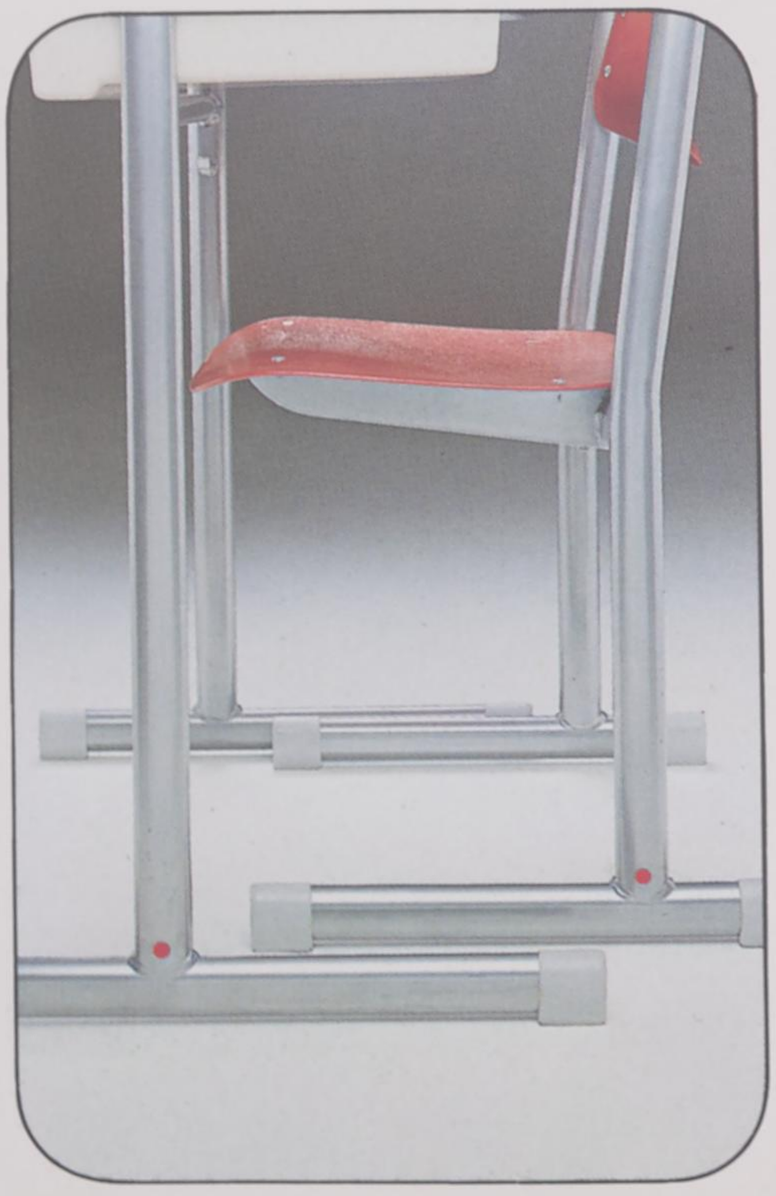
Sama pöytä kannella 140×70 cm.

Tilausn:o	Korkeus
1422-25	70 cm
1422-26	76 cm



1422





DUBBELBORD

Avsedda för specialklassrum och grupparbetsrum.

Elevbord 1412

ABC-elevbord med fast skiva utan hylla. Mått 130×50 cm. Material microlaminat med plastkant.

Art. nr	Höjd
1412-5	70 cm
1412-6	76 cm

Samma bord med skiva 125×70 cm.

Art. nr	Höjd
1412-15	70 cm
1412-16	76 cm

Samma bord med skiva 140×70 cm.

Art. nr	Höjd
1412-25	70 cm
1412-26	76 cm

Elevbord 1422

ABC-elevbord med hylla och fast skiva, mått 130×50 cm.
Skivans material är microlaminat med plastkant.

Art. nr	Höjd
1422-5	70 cm
1422-6	76 cm

Samma bord med skiva 125×70 cm.

Art. nr	Höjd
1422-15	70 cm
1422-16	76 cm

Samma bord med skiva 140×70 cm.

Art. nr	Höjd
1422-25	70 cm
1422-26	76 cm

Eri korkeudet merkitään metallirunkoihin ISO-standardin mukaisin väritunnuksin.

Olika höjder skall märkas med färgtecken i metallstomme enligt ISO-standarden.

Oppilaspöydän työtason korkeus cm Elevbordets totalhöjd cm	Oppilastuolin istuinkorkeus cm Elevstolens sitthöjd cm	ISO koot ISO-koder
59	34	3
65	38	4
70	42	5
76	46	6



ABC-OPPILASTUOLIT

Oppilastuoli on ergonomisesti oikein muotoiltu ja mitoitettu ISO-standardia noudattaen. Istuin ja selkä propylen-muovia tai koivua.

Muoviväri:
beige
terracotta
ruskea
vihreä
tummansininen

Tilausn:o	Korkeus
1066-3	34 cm
1066-4	38 cm
1066-5	42 cm
1066-6	46 cm

Siivoustyön helpottamiseksi tuoli voidaan ripustaa pöydän päälle. Oppilastuoli 1066 on päällekkäin pinoutuva.



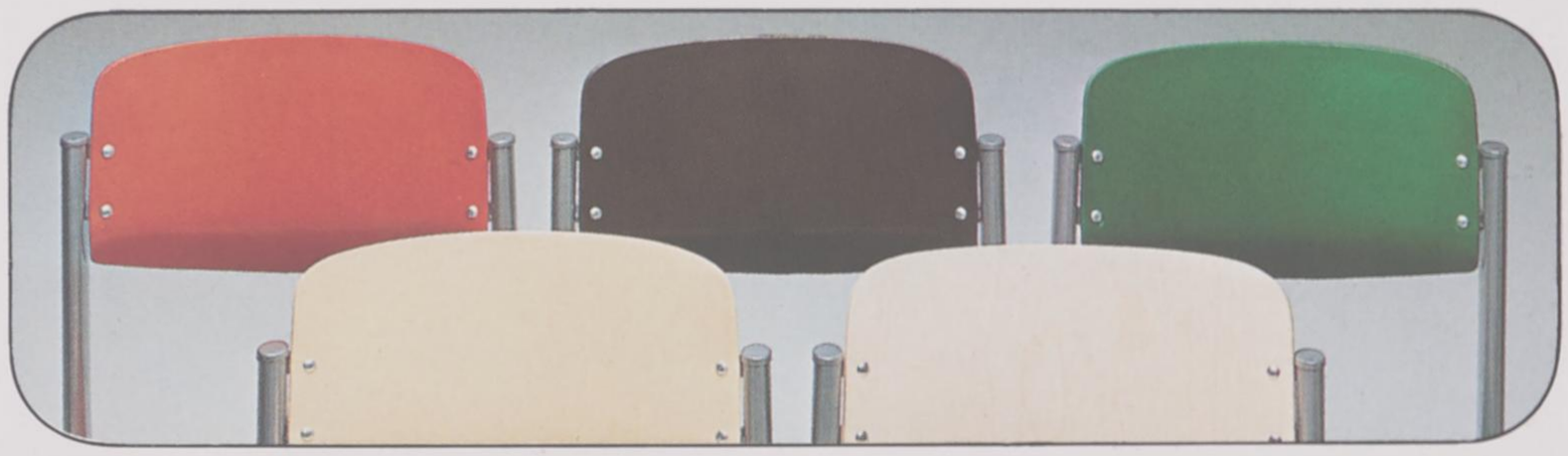
ABC-ELEVSTOLAR

Elevstolen har ergonomisk och tidsenlig formgivning samt mått enligt ISO-standarden. Sits och rygg polypropylén eller björk.

Plastfärger:
beige
terracotta
brun
grön
mörkblå

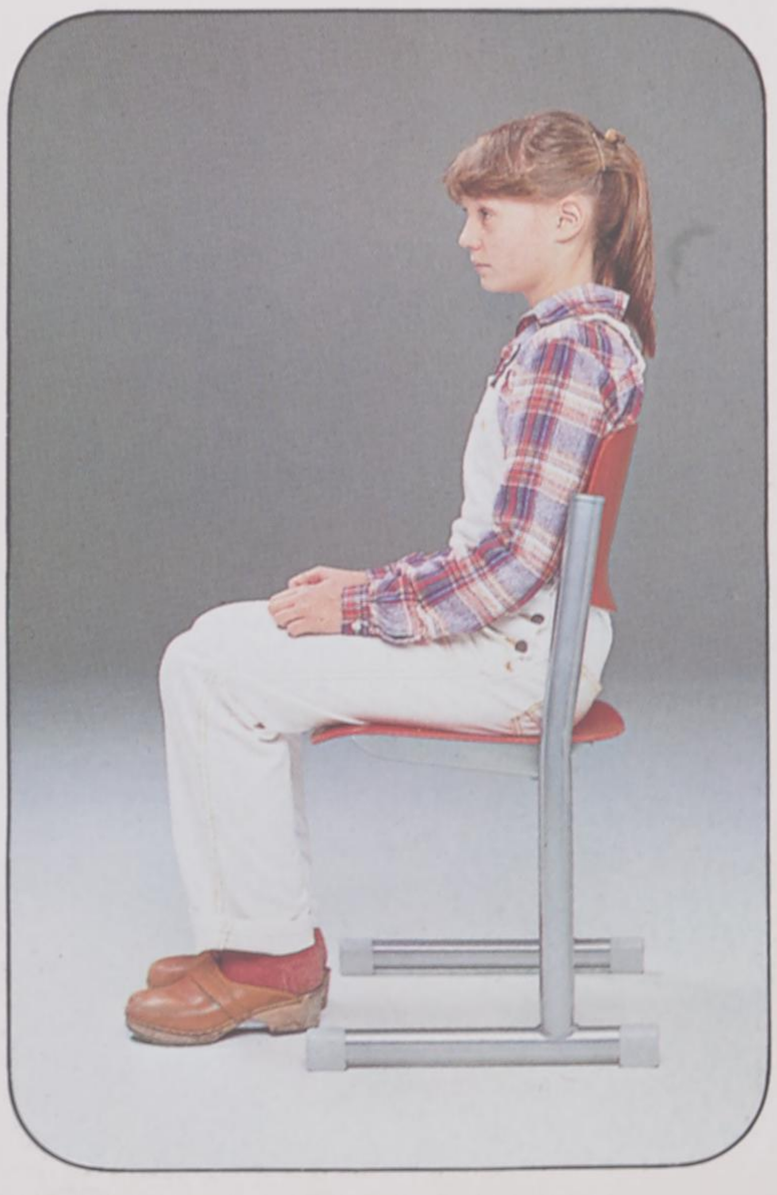
Art. nr	Höjd
1066-3	34 cm
1066-4	38 cm
1066-5	42 cm
1066-6	46 cm

Stolarna kan upphängas på bordet för att underlätta städning. Stapelbara.









ABC-YLEISPÖYDÄT

Kannet microlaminaattia kovamuovireunoin.

Koot ja tilausmerkinnät:
1800/125×70 cm
1800/140×70 cm
1800/170×70 cm

Pöytien korkeus 73 cm.

Pöytä on tarkoitettu ruokaloita, kuvaamataidon ym. erikoisluokkia varten. Ruokalatilojen siivouksen helpottamiseksi pöydät voidaan varustaa tuolien tai jakkaroiden ripustinlaitteilla.



Tuoli 390
Stol

1800/125 × 70

ABC-BORD

Skivor av microlaminat med plastkant.

Art. nr och mått:
1800/125×70 cm
1800/140×70 cm
1800/170×70 cm

Bordshöjd 73 cm.

Avsedda för matsalar och olika specialklassrum. Borden kan förses med upphängningsbeslag för stolar och pallar för att underlätta städning.



Tuoli 3120-1
Stol

1800/170 × 70



1800/170 × 70

Jakkara 457
Pall





1705



1707

ABC-OPETTAJANPÖYTÄ-YHDISTELMÄT

Opettajanpöytä 1705

Kansi 110×62 cm microlaminaattia kovamuovireunoin. Korkeus 74 cm. Etulevy ja sivut melamiinipinnoitettu. Lukittava laatikko maalattu.

AV-yksikkö 1706

Kansi 62×62 cm.
Piirtoheitinaukko 46×46 cm.
Korkeus 69 cm.

Materiaali kuten edellä. Hyllyn korkeus säädettävä. Lukittava laatikko maalattu. Varustettu pyörin.

AV-yksikkö 1707

Mitat ja materiaalit kuten edellä. Kansi yhtenäinen. Kaksi lukittavaa laatikkoa. Varustettu pyörin.

ABC-KATEDRAR

Kateder 1705

Skiva 110×62 cm av microlaminat med plastkant. Höjd 74 cm. Frontpanel och gavlar av melamin. Låsbar låda lackerad.

AV-bord 1706

Skiva 62×62 cm.
Brunn 46×46 cm.
Höjd. 69 cm.

Material lika ovan. Hylla höj- och sänkbar. Låsbar låda lackerad. Med hjul.

AV-bord 1707

Mått och material lika ovan. Två låsbara lådor. Med hjul.



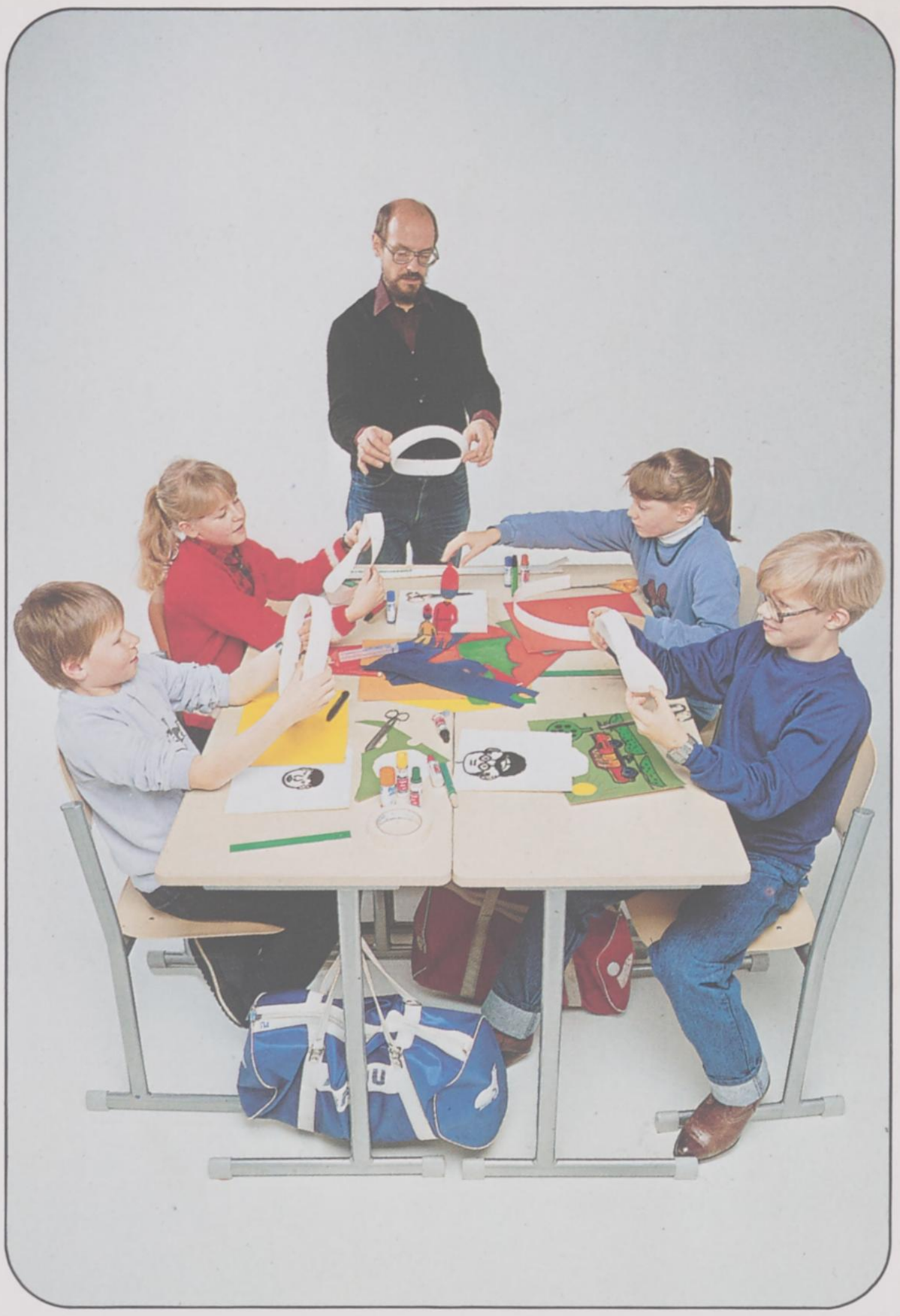
1706



3017-4

Iskun uuden ABC-koulukalustesarjan suunnittelussa on entistä paremmin otettu huomioon kasvavan lapsen ja koulun henkilökunnan tarpeet sekä viihtyisyyden lisääminen. Pohjoismaiden suurimpana koulujen kalustajana Iskulla on tuotannolliset edellytykset tarjota monipuolisia, kestäviä ja toimivia kalusteita kaikille kouluyhteisön jäsenille. Jokainen työvaihe tehdään omilla tehtailla ja markkinoidaan suoraan kuluttajille, mikä näkyy hinnoissa. Isku on maamme suurin julkisten tilojen kalustaja, joten mallistomme kattaa monipuolisesti myös koulujen hallintotilat.

Den nya ABC-serien är en stark, tålig och flexibel möbelserie. I formgivning har man tagit hänsyn till att studiemiljön måste idag göra en väl fungerande och utvecklingsbar helhet. Isku, som är den största skolmöbeltillverkare i Norden, har den erfarenhet och resurser som behövs. Var och en produkt tillverkas på egen fabrik. Tack vare vår stora tillverkningskapacitet och långa serier kan vi hålla hög kvalitet till låga priser. Isku tillverkar kompletta sortiment också för kontor, bibliotek och övrig offentlig miljö.





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Esan Kirjapaino Oy Lahti 2/84/3000

Hyllystökorkeudet
Hyllhöjder
Heights



Kirjasto-Mondo

Kirjaston vaativaan käyttöön kehitetyssä Mondo-hyllystöjärjestelmässä on huomioitu kestävyyden ohella myös muut käyttökohdevaatimukset.
Hyllystökorkeudet ovat 150 ja 214 cm, syvyydet 25 ja 30 cm.
Hyllypituudet ovat 46 ja 80 cm.
Lisäksi on korkeus 99 cm, jolloin syvyys on 30 cm.
Sivut ja ovet ovat valkeaa tai koivukuvioitua Iskumel-levyä. Hyllyt ovat erikoisrakenteista, laminoimalla jäykistettyä Miclam-levyä, jonka rasituskestävyys on erittäin suuri. Taustat ovat valkeaksi maalatut.
Hyllyt, myös sidehyllyt, ovat säädettävissä 32 mm:n välein. Tämän johdosta hyllyvälit saa halutun korkuisiksi. 150 ja 214 cm korkeiden hyllystöjen taustat 9069-162, -163, -166 ja -167 sisältävät keskimmäisten ns. sidehyllyjen sideraudat.
Äärimmäisten sivujen ulkopinnoissa ei ole hyllynkannattimien reikiä.
Sivujen alapäissä on tasaussäätötallat.

Mondo-Bibliotek

Mondo bokhyll-serie är speciellt konstruerad för att uppfylla de höga krav, som ställs på inredning av dagens bibliotek.
Bokhyllans mått: höjd 150 cm och 214 cm
djup 25 cm och 30 cm
inre bredd 46 cm och 80 cm
Dessutom finns en lägre höjd, 99 cm, med djup 30 cm.
Gavlar och dörrar är belagda med melamin, i färg vit eller björkmönster. Hyllorna är tillverkade av en speciell miclamskiva, som medger mycket hög belastning. Ryggarna är lackerade i vit färg.
Hyllplanen är flyttbara med 32 mm intervall i höjdled. Detta medger en stor flexibilitet.
De förborrade hålen för hyllbärarna är ej synliga på gavlarnas utsida.
Gavlarna kan justeras i höjd med ställskruvar.


BÜHLER
LESKOV
TOLSTOI
SUURI KEITTOKIRJA

Olli

315AZ

315ABCZ

315ACZ

315A

315/2 Martela





Olli-tuolit voidaan kytkeä riviin tai sijoittaa kiinteästi erilaisiin katsomorakenteisiin.

Olli stolen är kopplingsbar i sidled. Sitsdelen är anpassad för montage på gradäng på åskådarläktare och motsvarande.

The Olli chairs can also be hooked together or fixed into place.

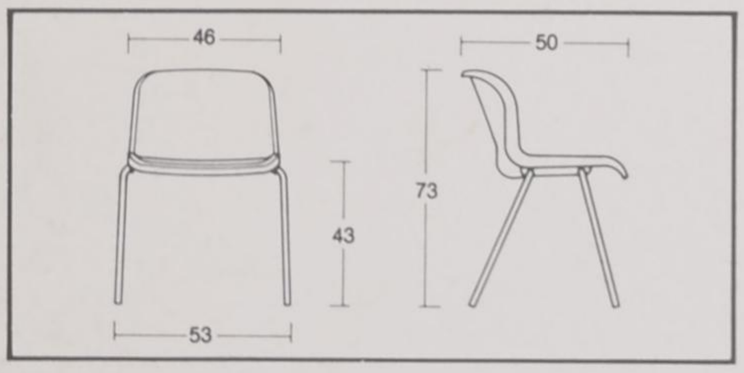


315 Olli
Istuin: säänvaihtelut kestävää polypropeenimuovia. Varastovärit: valkoinen, ruskea ja punainen.

315A	perusmalli	
315AC	—"—	+ istuintyyny
315ABC	—"—	+ istuin- ja selkätyyny
315AZ	—"—	rivikytkentälaittein

315 Olli
Sits: av väderbeständig polypropylenplast. Färger: lagerstandard vit, brun och röd.

315A	basmodell
315AC	315A med sitsdyna
315ABC	315A med sits- och ryggdyna
315AZ	basmodell med radkopplingsbeslag



315 Olli
Shell: manufactured in weatherproof polypropylene. Standard colours: white, brown and red.

315A	basic model
315AC	basic model with seat pad
315ABC	basic model with seat and back pad
315AZ	basic model with ganging device

Tuolipino on tiukka. Myös rivikytkentälaittein varustetut tuolit voidaan pinota.

Även stolar försedda med radkopplingsbeslag kan staplas.

Also the chairs with the ganging equipment stack tightly.



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Hallituskatu 30
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20720 TURKU 72
(921) 424 111

Ylätori C
65100 VAASA 10
(961) 116 979
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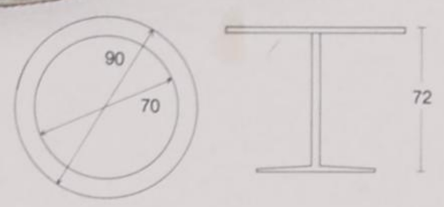
Tables



838
Top: oak, off-white (23) or sandbeige (34) laminate, Ø 120 cm.
Base: chrome plated steel tubing Ø 60 cm, height 72 cm.

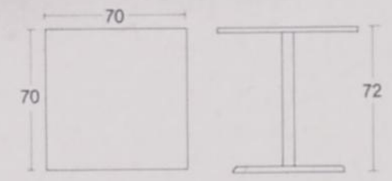


837
Top: off-white laminate (23).
Base: chrome plated steel tubing
Ø 50 cm.



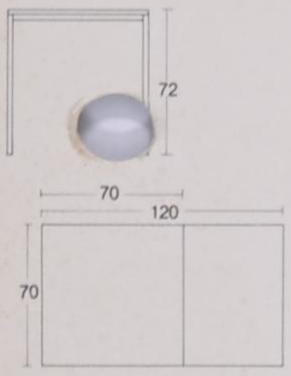


822
Top: oak or off-white laminate (23).
Base: steel tubing epoxy painted
in brown.



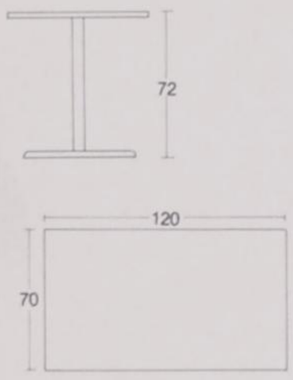
591
Top: oak or off-white laminate (23), size 120 × 70 cm also available in birch.
Base: chrome plated steel tubing or epoxy bainted in aluminium colour.





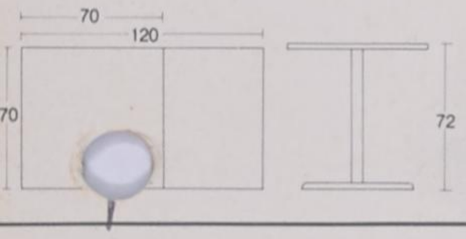
826
Top: oak, birch or off-white laminate (23).
Base: steel tubing epoxy painted in brown.



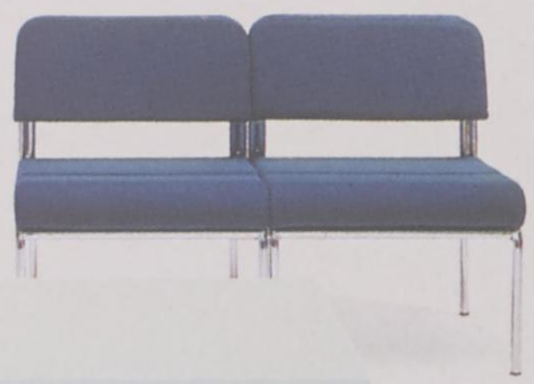


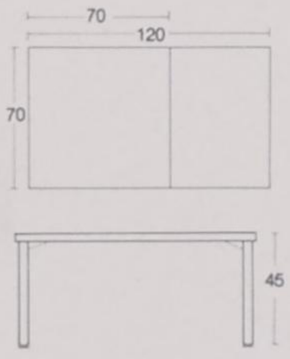
828
Top: oak or off-white laminate (23), size 120 × 70 cm also available in birch.
Base: frame of steel tubing epoxy painted in brown, feet of polished aluminium.

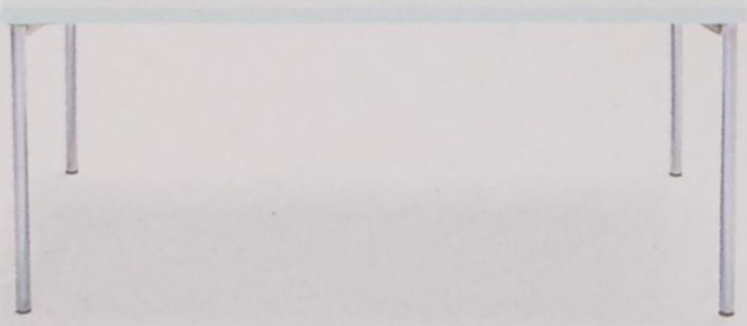




811
Top: sandbeige laminate (34).
Base: chrome plated steel tubing.









812C
Top: sandbeige laminate (34).
Base: chrome plated steel tubing.



812B
Magazine box in brown plastic.
Base: chrome plated steel tubing.



812A
Flower box in brown plastic.
Base: chrome plated steel tubing.

Other materials and sizes on tops also available as special work.

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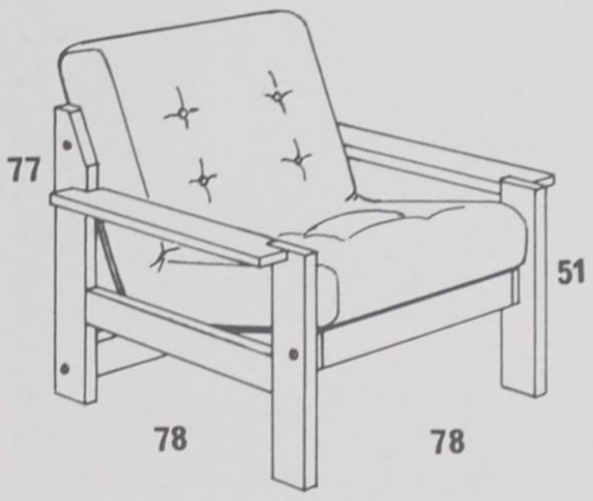
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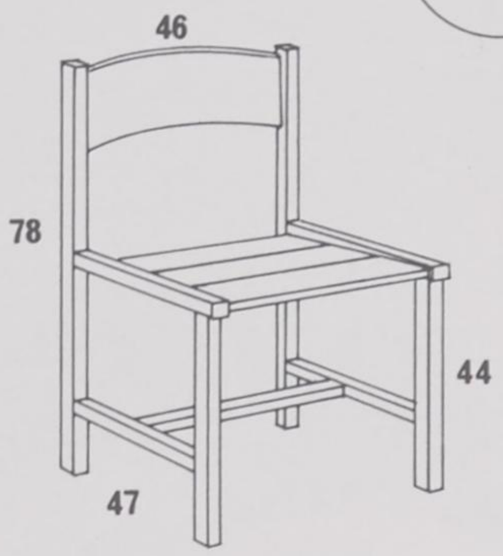


project

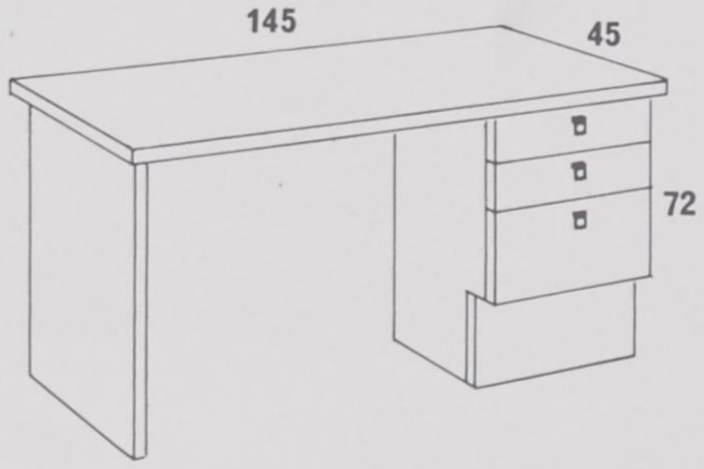
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160



5516

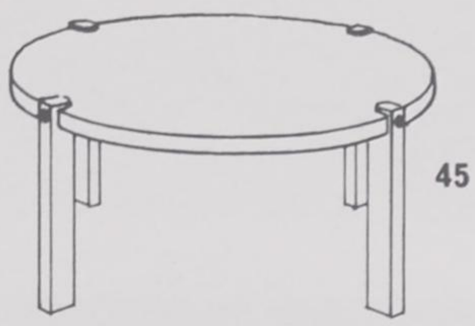


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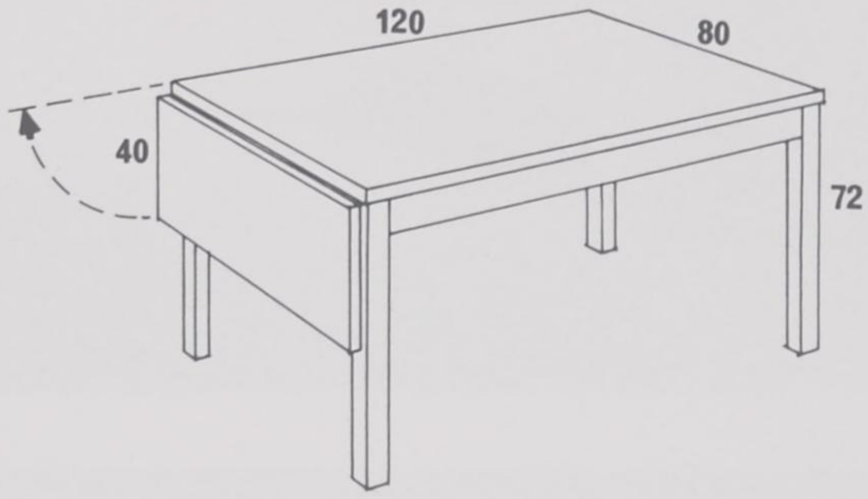


215 ⌀ 60

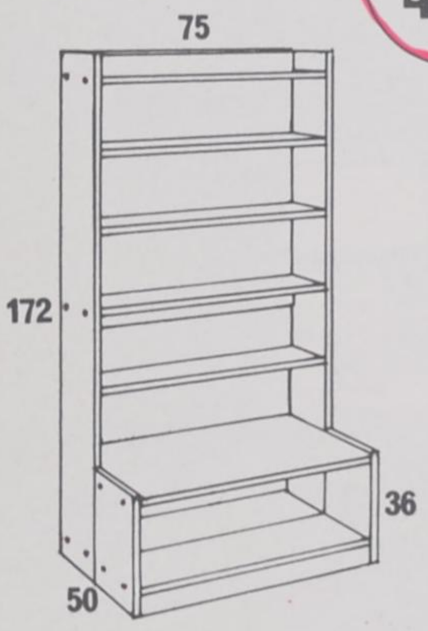
216 ⌀ 88



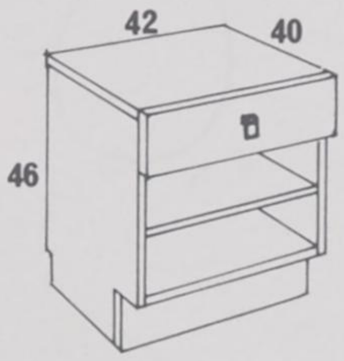
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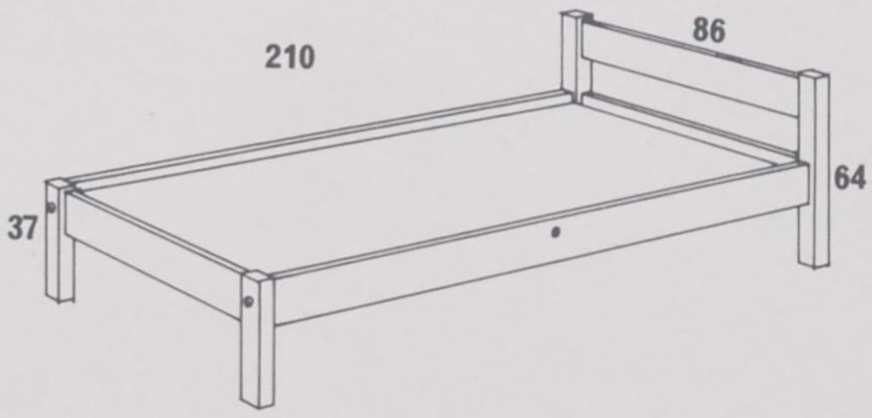
444 445



5506



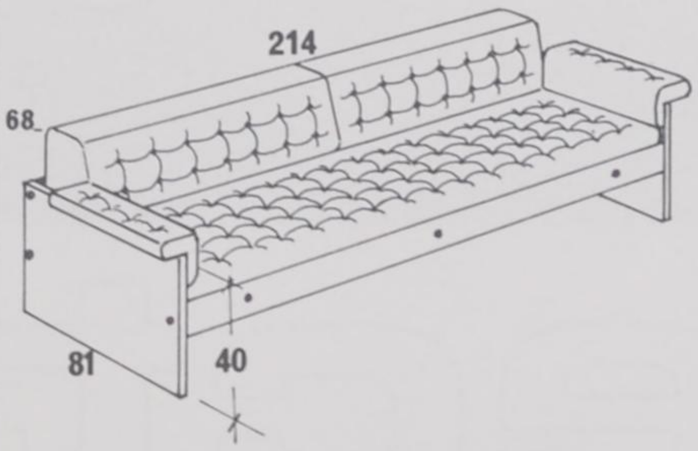
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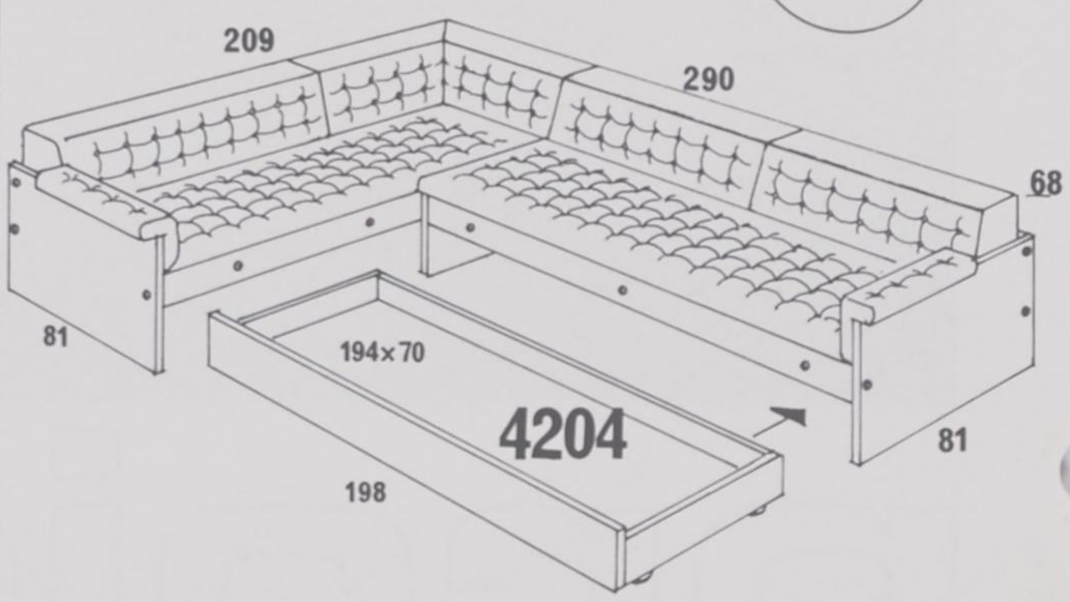
444 445 446



4203



4201





ISKU

Sarja/Serie/Range 2100

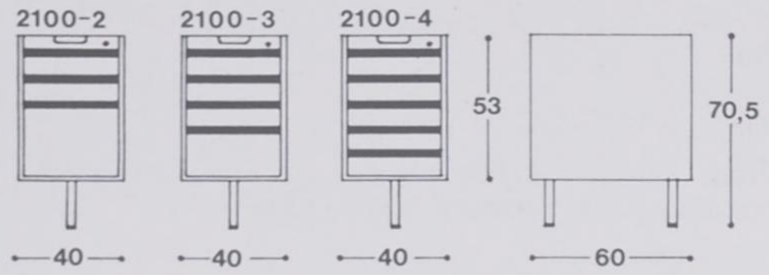


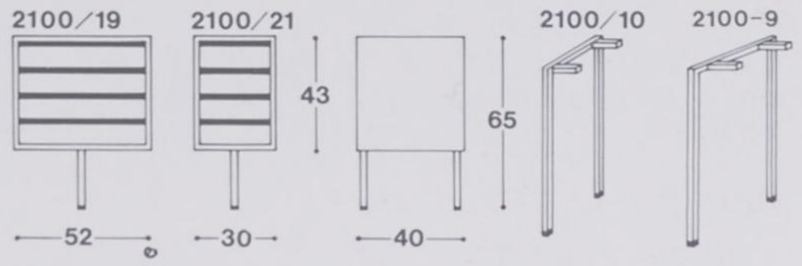
2100 B/2 + 4 POMO 3058

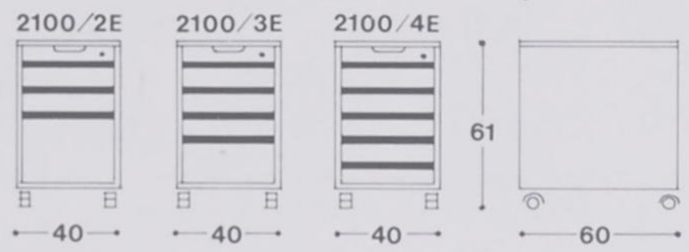
Sarja 2100 on metallijalkainen kirjoituspöytäsarja aputasoineen ja erikoislaatikostoineen. Puulajit ovat koivu ja tammi. Laatikostoja 2, 3 ja 21 toimitetaan myös tammi- ja koivukuvioidusta Iskumel-levystä valmistettuna.

2100-serien består av skrivsbord, avlastningsbord och hurtsad. Underrede av metall. Träslag björk eller ek. Hurtsar 2, 3 och 21 erhålles också i Iskumelamin ek och björkimitation.

This range consists of desks, subsidiary tables and drawer units on castors. Metal legs. Made in birch or oak. Drawer units 2, 3 and 21 available also in Iskumelamine oak and birch imitation.







Kannet / Skivor / Tops

	koivu björk birch	tammi ek oak	miclam-111 (valkea)	miclam-118 (tammikuvioitu)
L 125×70	●	●	●	
B 160×75	●	●		●
V 160×80			●	
E 180×80	●	●	●	
P 160×43	●	●		
S 120×43	●	●	●	●



2100 ES/2 + 21/9 v.

Kirjoituspöytä 2100

Kansilevyt ja laatikostot ovat kaavioiden mukaiset. Laatikostoissa 2, 3 ja 4 on vetolevyt ja keskussulkijat. Kokonaiskorkeus 73 cm.

Vetolevy ja laatikot:

— muovisessa vetolevyssä on tarvikelokerot
— laatikoston 2 alin laatikko on riippukansioille
— laatikoston 3 alin laatikko on ns. kortistolaatikko, johon on saatavissa muovisia lomakelokeroita 2908 lisävarusteena.

Aputasosovellutus

Pöydän toinen laatikosto voidaan korvata aputasolla S tai P. Tason toisessa päässä voi olla laatikosto 19 tai 21 tai parijalka 10. Aputason voi asettaa pöydän oikealle tai vasemmalle puolelle.

Erikoislaatikostot

Sarjan 2100 yhteydessä tai täysin erillisenä voidaan käyttää liikuteltavia erikoislaatikostoja E.



Skrivbord 2100

Bordskivor och hurtsar enligt plan. Hurtsar 2, 3 och 4 försedda med utdragsskiva, penninsats och centrallås.

Utdragsskiva och lådor:

— utdragsskiva med pennfack
— hurts 2100/2 nedre låda för hängmappar
— hurts 2100/3 nedre låda kan förses med kortback 2908 på beställning.

Skrivbord och avlastningsbord

Avlastningsbord kan placeras på höger eller vänster. Vinkelskivor P eller S kan förses med benpar 10 eller hurtsar 19 och 21.
Rullhurtsar
Med skrivbordserie 2100 eller separat kan levereras rullhurtsar. Se på bild.



Desk 2100

Tops and drawer units according to the diagram. Drawer units are equipped with central lock and pull-out with pencil tray.

Details for drawers and pull-outs:

— pull-out with pencil tray
— 2100/2 lower drawer for hanging files
— 2100/3 lower drawer can be equipped with storage unit 2908, available at special request.

Desk 2100 with subsidiary table

Working unit tops can be placed either on left or right hand side. Tops S or P can be provided with drawer unit 19 and 21 or pedestal No. 10.

Mobile pedestal

With range 2100 or separately can be delivered drawer units on castors as shown in the picture.



Konekirjoituspöytä 2100

Kansilevy S tai P, laatikosto 19 tai 21, parijalka 10. Laatikostot ovat ilman lukkoja ja vetolevyjä ja ne voidaan asettaa kumpaan päähän kantta tahansa. Toisessa päässä parijalka 10.
Kokonaiskorkeus 68 cm.

Sarjan 2100 laatikostoja toimitetaan myös viereisen kuvan mukaisiin väreihin maalattuna.

Maskinskrivningsbord 2100

Består av skiva S eller P, benpar 10 och hurts 19 eller 21. Hurtsar utan lås och utdragsskiva. Kan monteras till höger eller vänster.
Bordshöjd 68 cm.

2100-hurtsar levereras också lackerade i bildenliga färger.

Typing desk 2100

Desks can be supplied with tops S or P, drawer units 19 or 21 and pedestal No. 10. Drawers are without locks and pull-outs and they can be placed at either end of the top.
Table height 68 cm.

Drawer units 2100 can be delivered also lacquered in colours as shown in the picture.



2100 S/10 + 21

2100 P/10 + 19



I—64 I—61 I—32 I—60



2100 E/2 + 3

2100 ES/2 + 21/9 v.

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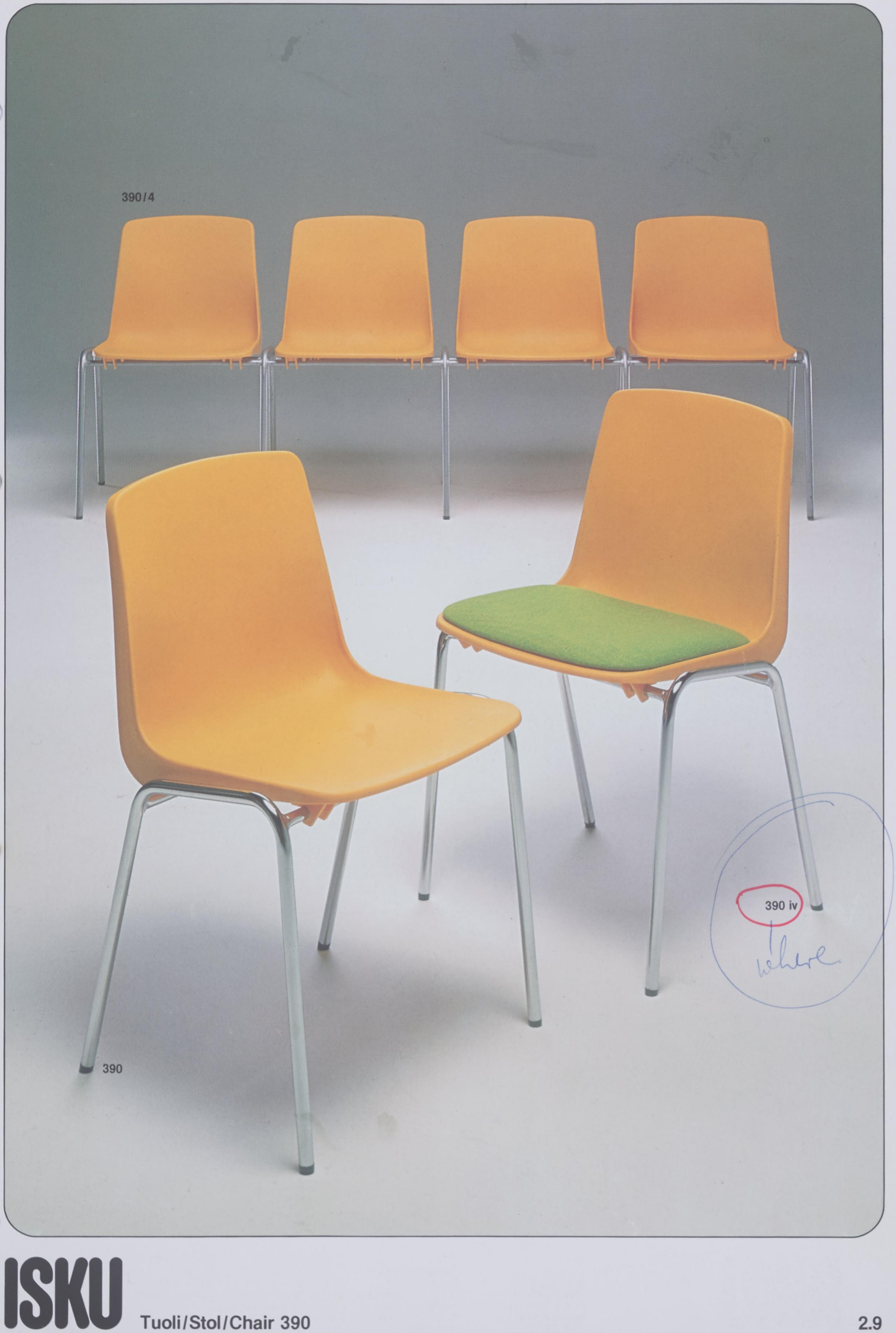
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Esan Kirjapaino Oy Lahti 4/83/10 000



ISKU

Tuoli/Stol/Chair 390



390

Tuoli 390

Istuinosa on polypropyleenia, värit oranssi, vihreä, ruskea ja keltainen. Jalkaosa on maalattua tai kromattua teräsputkea. Tuoli on pinottava ja voidaan varustaa rivikytkentälenkein.

390 iv — istuin verhoiltu, päällismenekki 0,25 m.

390/4 — neljän istuimen kiinteä rivituoliryhmä. Kaikki vaihtoehdot ovat pinottavia.

Stol 390

Sits/rygg polypropylen i orange, grön, brun och gul. Underrede brännlack eller krom. Stolen är stapelbar och kan förses med radkopplare.

390 iv — sitsen har klädd dyna, tygåtgång 0.25 m.

390/4 — fast grupp av stolar i rad. Alla variationer stapelbara.



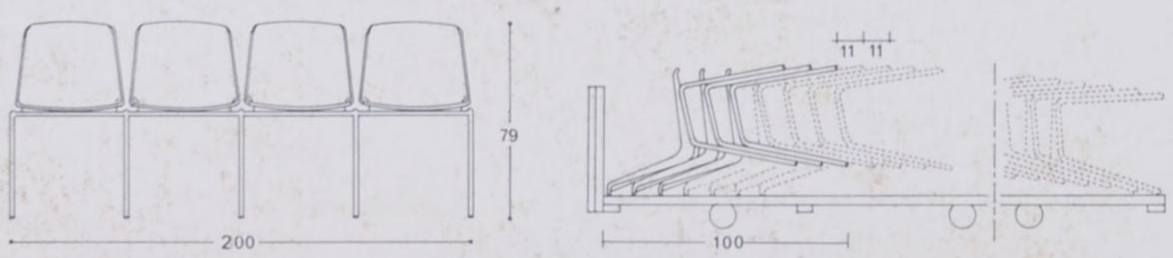
390 iv

Chair 390

Shell of polypropylene in orange, green, brown and yellow. Base in round steel tubing, stove enamelled or chromed. Chair is stackable. Available with linking device.

390 iv — seat covered, fabric requirement 0.25 m.

390/4 — unit of 4 chairs. All variations of chair 390 are stackable.







ISKU

Valmistaja
Isku Oy
LAHTI

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Tarjousmyynti
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Telex 16177

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Eteläesplanadi 20
00130 HELSINKI 13
Puh. 90-647 202
Muut Isku-myymälät
kautta maan.

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Telex 16177 isku-sf

Esan Kirjapaino Oy Lahti 2/84/7000

120



120/1


121EU


121EU


121EXY

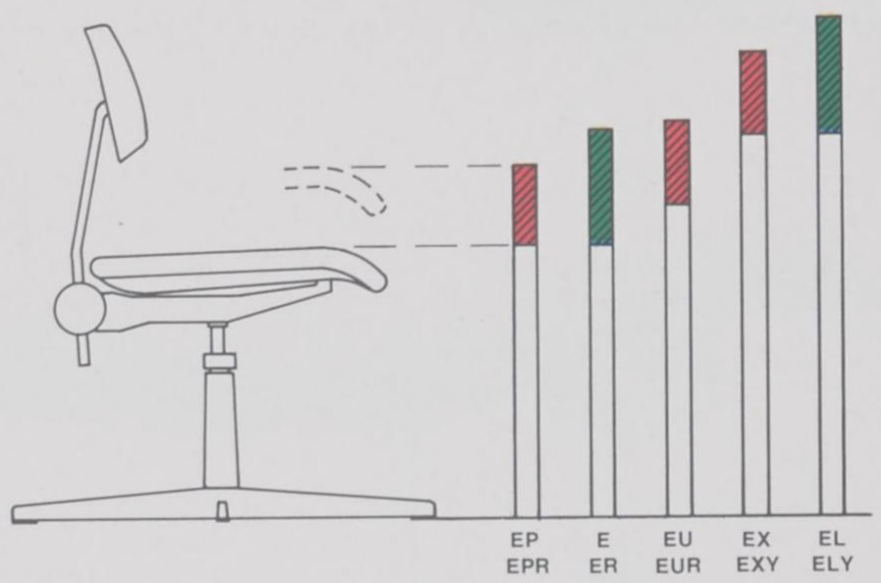
Tilausohje/ Beställningskoder/ Ordering codes/ Образец заказа
Tuolitunnus/ Stolbeteckning/ Chair code/ Тип стула
121 = tukituoli/ stödstol/ typist chair/ Рабочий стул Техо
122 = sama käsinojin/ samma med armstöd/ same with armrests/ Рабочий стул Техо с подлокотниками

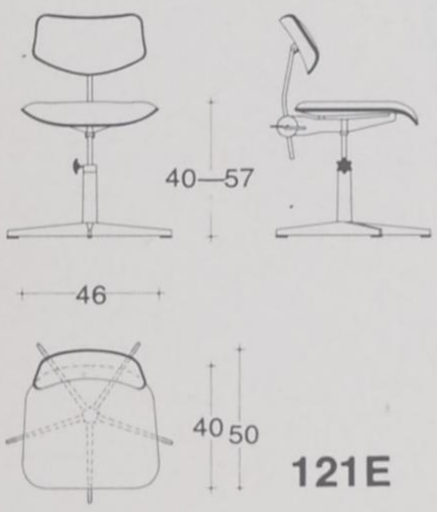
Säätöalueet/ Höjdreglering/ Height adjustment codes/ Регулировочный диапозон см

EP = 40—52 cm	EPR = 45,5—57,5 cm
E = 40—57 cm	ER = 45,5—62,5 cm
EU = 46—58 cm	EUR = 51,5—63,5 cm
EX = 56—68 cm	EXY = 56—68 cm
EL = 56—73 cm	ELY = 56—73 cm

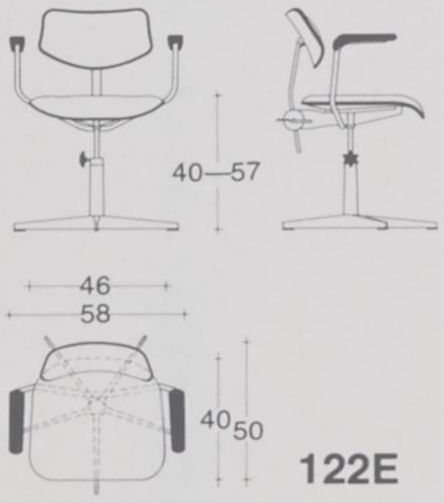
Lisäosat/Tilläggsdelar/ Optional equipment/ Добавочные части
R = rullat/ hjul/ castors/ Ролики
Y = jalkarengas/ fotring/ footring/ Опорное кольцо для ног

- Kaasujousi
  Justerbar höjd med tryckluftsreglage
  Pneumatic height adjustment
  Пневматическая регулировка высоты
- Kiilaura
  Justerbar höjd, manuell
  Manual height adjustment
  Механическая регулировка высоты





121E



122E

121, 122 Pirkko-stödstol

Sits och ryggstöd: formpressat kryssfanér
Stoppning: formgjuten polyurethan
Klädsel: textil, läder eller konstläder med PVC kantförstärkning
Armstöd: förkromat stål och integralplast Ryggstödets höjd och lutning reglerbara.
Stativ: gjutet i aluminium, blankpolerat, sitsbäraren förkromad, justerbar höjd manuell eller med tryckluftsreglage, med glidknappar eller hjul. Förhöjt stativ med eller utan fotring.

121, 122 Typist chair

Seat and back: form-pressed plywood
Cushioning: moulded polyurethane
Upholstery: fabric, leather or vinyl, PVC-wear-and-tear protection strip on all upholstery edges
Armrests: chrome plated steel tube and integral plastic.
Back rest adjustable for height and rake.
Base: of cast polished aluminium, spider chrome plated, swivelling, manual or pneumatic height adjustment, glides or castors. Higher base with or without footring.

121, 122 Teho-tukituoli

Runko: muotoon puristettua vaneria
Pehmuste: muotoon valettua PUR-vaahtoa
Verhoilu: kankaalla, nahalla tai tekonahalla, vahvisteena tere
Käsinojat: kromattua terästä ja integraalimuovia.
Säädöt: selkänojan korkeus ja kaltevuus, istuinkorkeus säädettävissä kiilauralla tai kaasujousella.
Jalusta: kiillotettua alumiinivalua, ristikko kromattu, pyörivä, liukunastat tai rullat. Korotettuun jalustaan voidaan kiinnittää jalkarengas.

121, 122 Рабочий стул Техо

Каркас: В форму запресованная фанера
Подушка: В форму отлитый пенопласт ПУР
Обивка: Ткань, кожа или кожзаменитель, края укреплены лентой ПВХ.
Подлокотники: хромированная сталь и интегральный пластик Спинка регулируется по высоте и наклонности.
Ножка: цельнолитый шлифованный алюминий, крестовина хромированная, вращающаяся, высота сидения регулируется механически или пневматически, на скользящих штифтах или роликах. Вариант с удлинённой ножкой позволяет установить опорное кольцо для ног.

Martela Oy

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telex 121358 tehka sf

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England
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телекс 121358

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(90) 55 63 11
121358 tehka sf

Kauppakatu 40
70100 KUOPIO 10
(971) 12 67 77
(971) 12 67 78

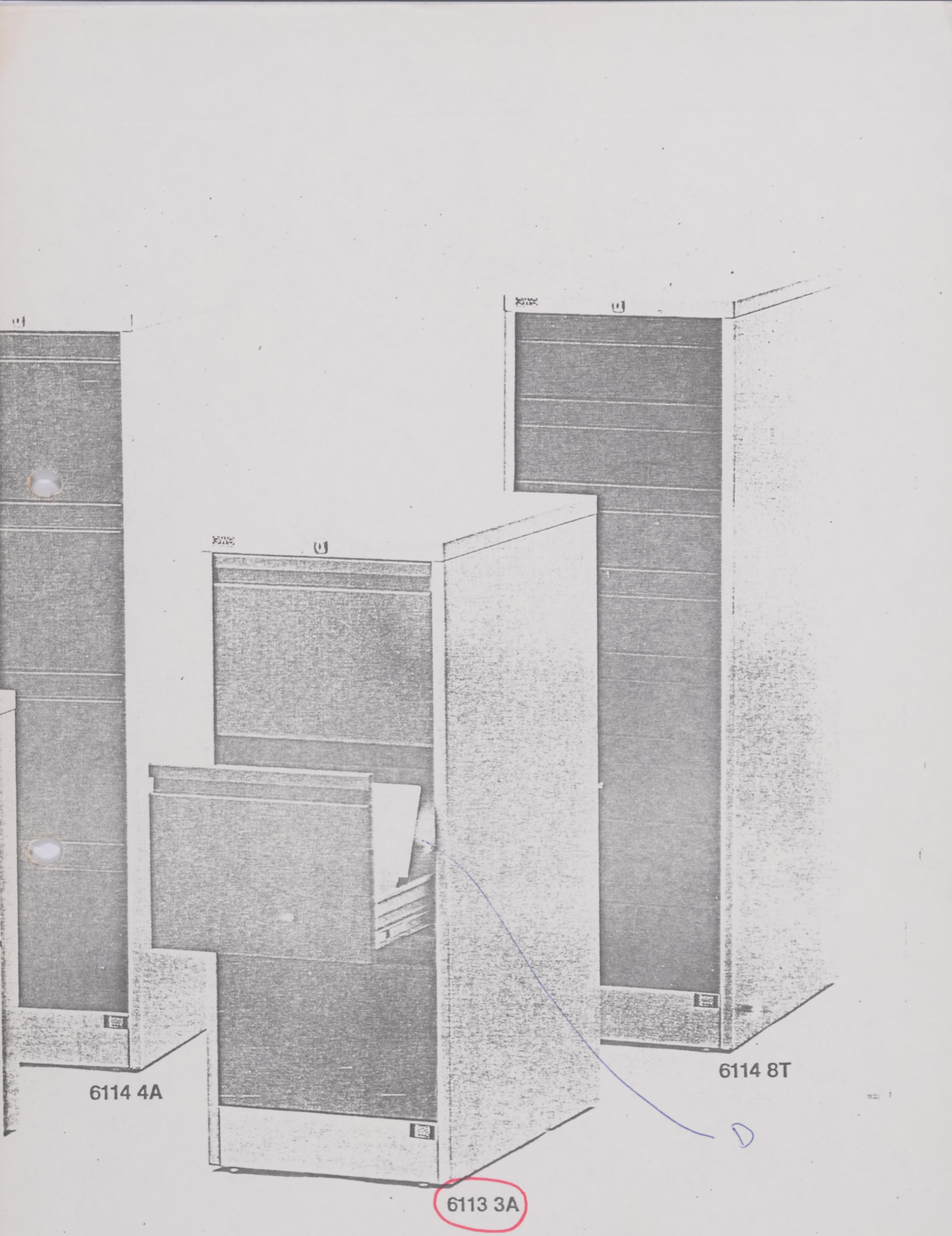
Raatimiehenkatu 18
53100 LAPPEENRANTA 10
(953) 18450

Hallituskatu 30
90100 OULU 10
(981) 22 13 19
(981) 22 13 49

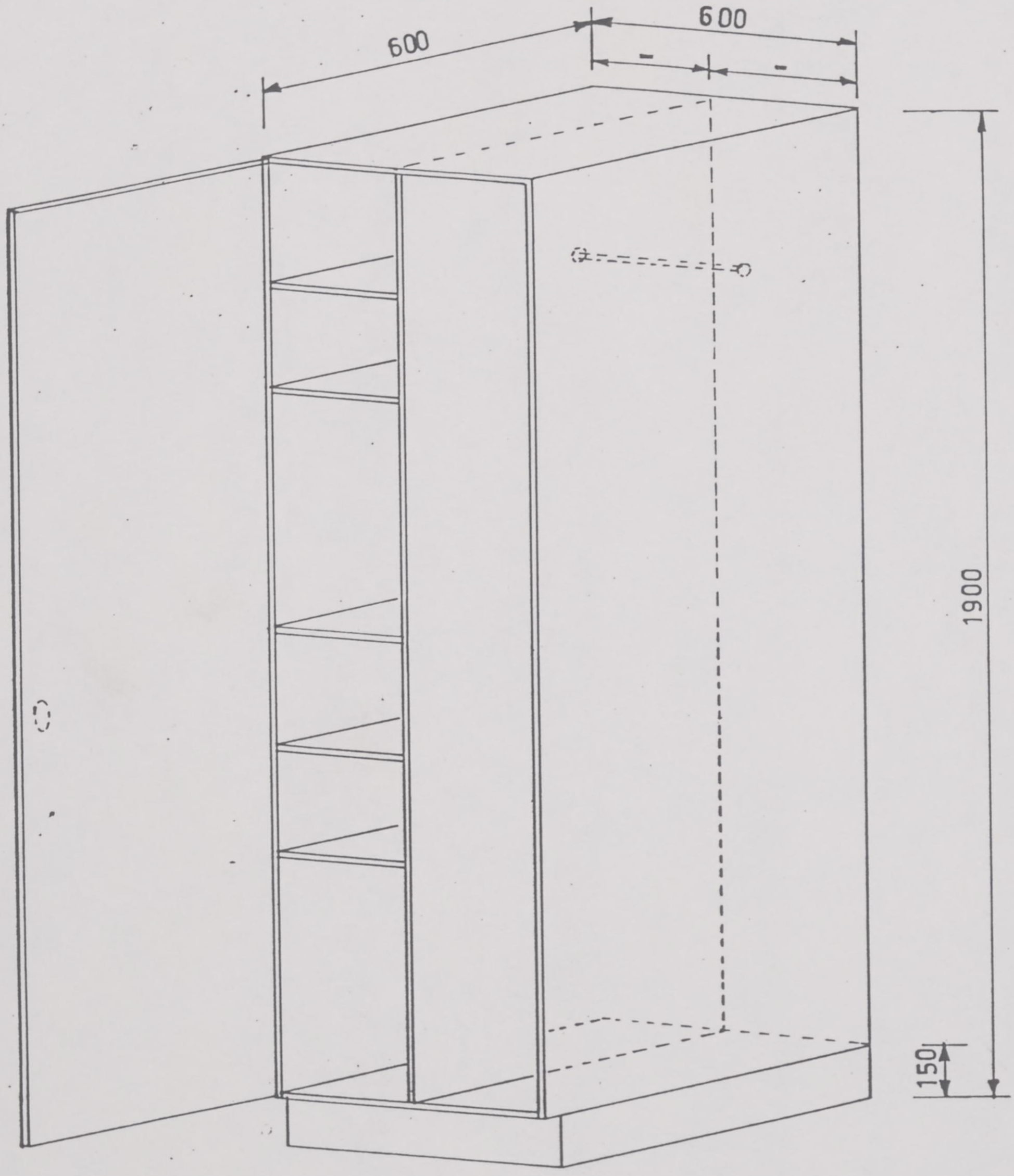
Hämeenkatu 26 A
33200 TAMPERE 20
(931) 30 00 1
(931) 23 317
22251 tehta sf

Nahkurinkatu 6
20110 TURKU 11
(921) 33 75 70
62168 tehtu sf

Ylätori C
65100 VAASA 10
(961) 11 69 79
(961) 12 26 32


6114 4A
6113 3A
6114 8T

WARDROBE CUPBOARD



1 SKU

MAKROTALO OY

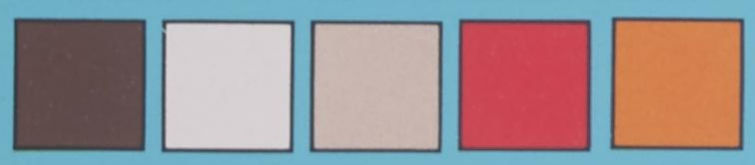
PIENI ROOBERTINKATU 16 A,
ISO ROOBERTINKATU 20–22 A
P O BOX 167, SF-00121 HKI 12, FINLAND
PUH 90-17311 TEL +358-0-17311
TELEX 123354, 125288 MAKRO SF

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Kitka



Kitka P 12 B





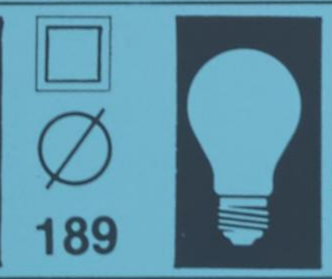
Friktionsled
Friction joint
Reibungsgelenk
Joint de friction



Optional
B 100 4 kg

V 100





189

max 60W
E27





195x460x110



max 970



C 100
Metal
↕ max 37 mm

OY LIVAL AB
PL 31 04131 Nikkilä Finland
☎ 90-232122 Telex 12-2731





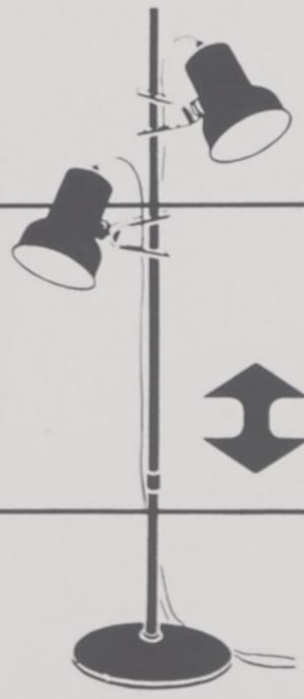
FOCUS

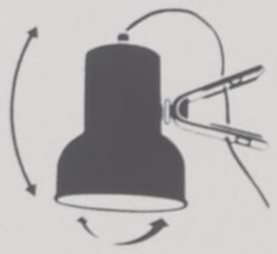
S 850 S 851

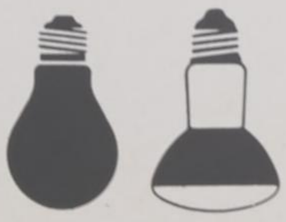
P 850 G 855/ -2











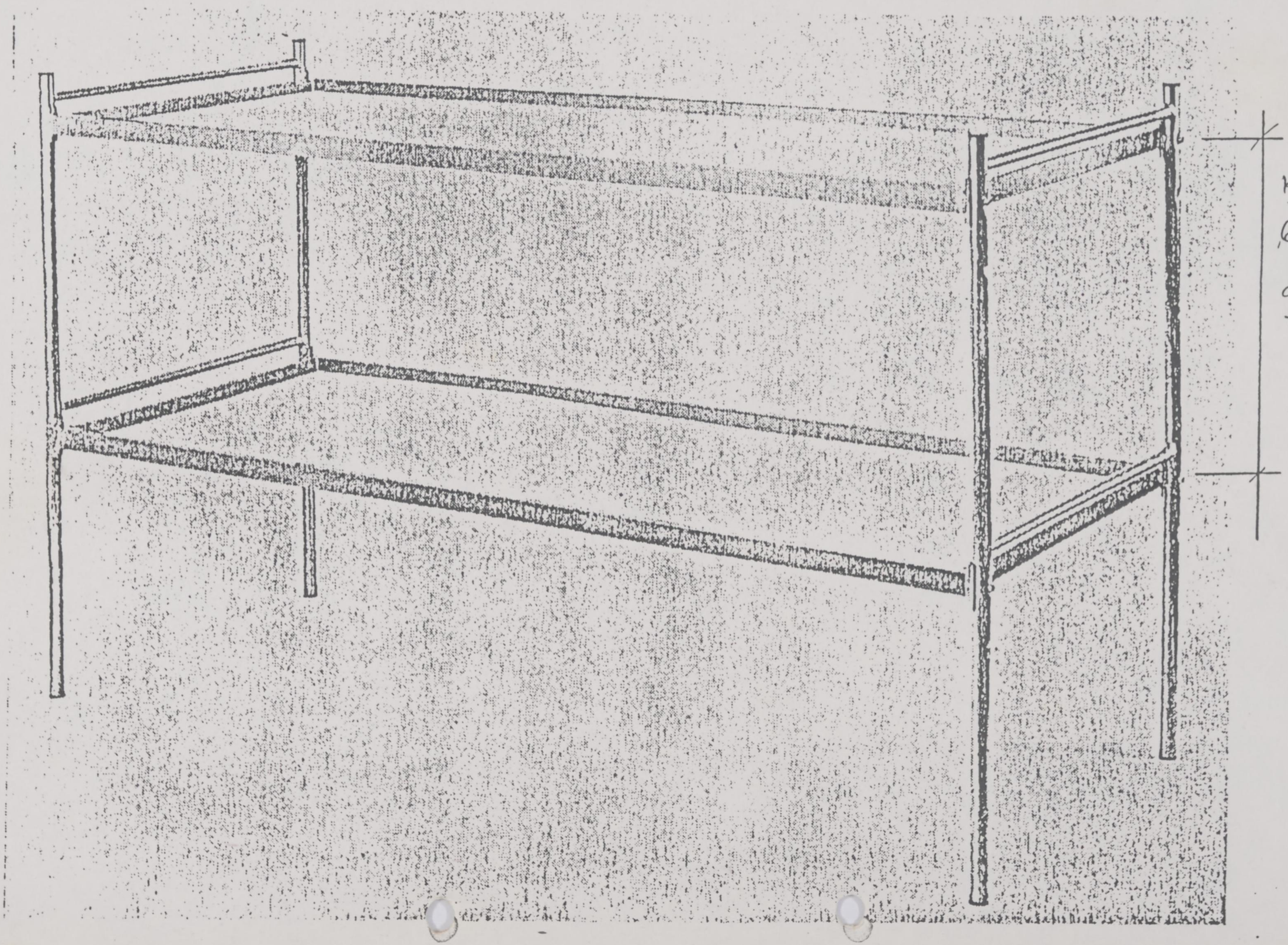
115 mm ∅

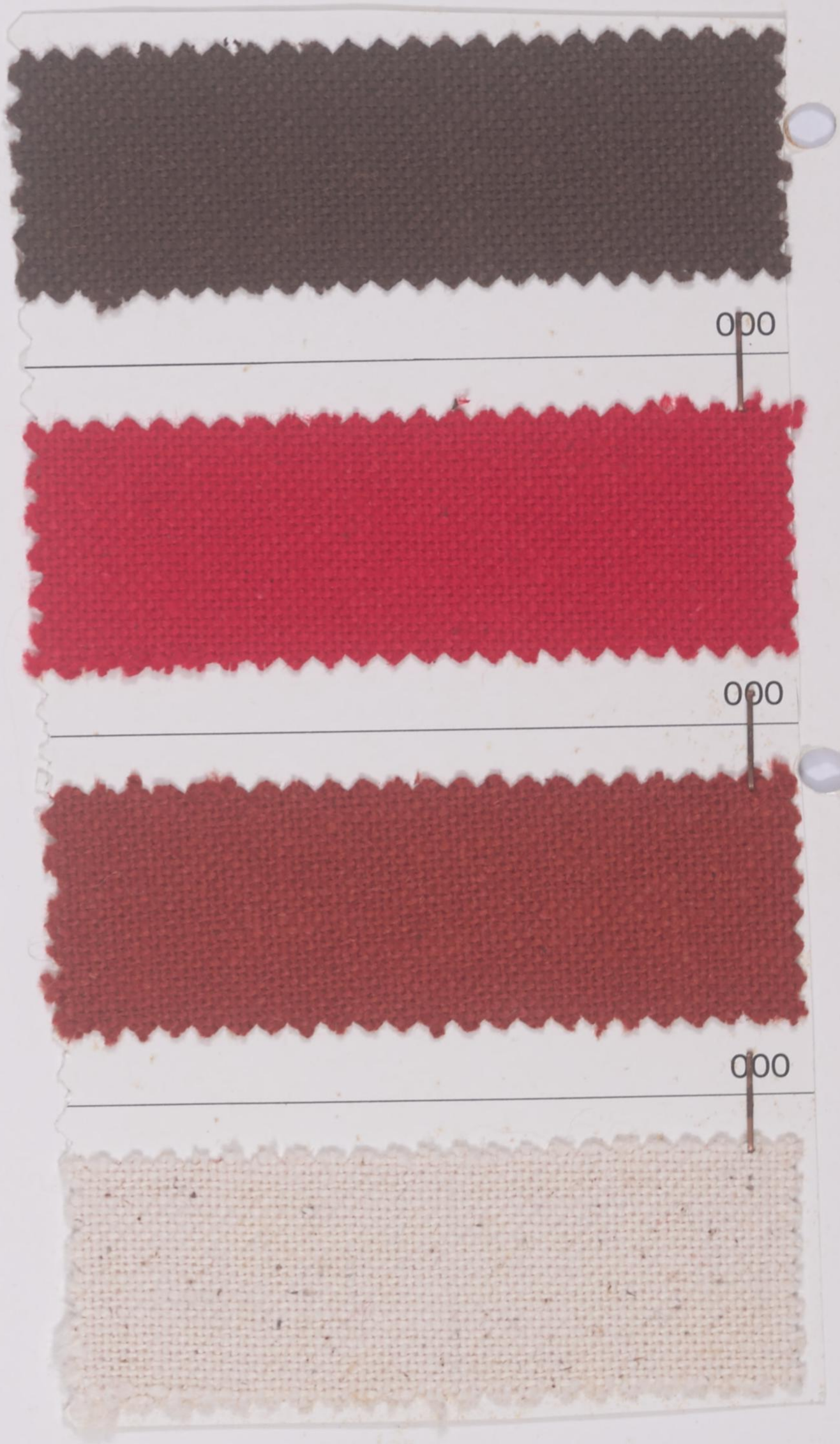
400

1280

max 60W
E 27

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Korotetaa
650mm
↓
950mm


000
000
000





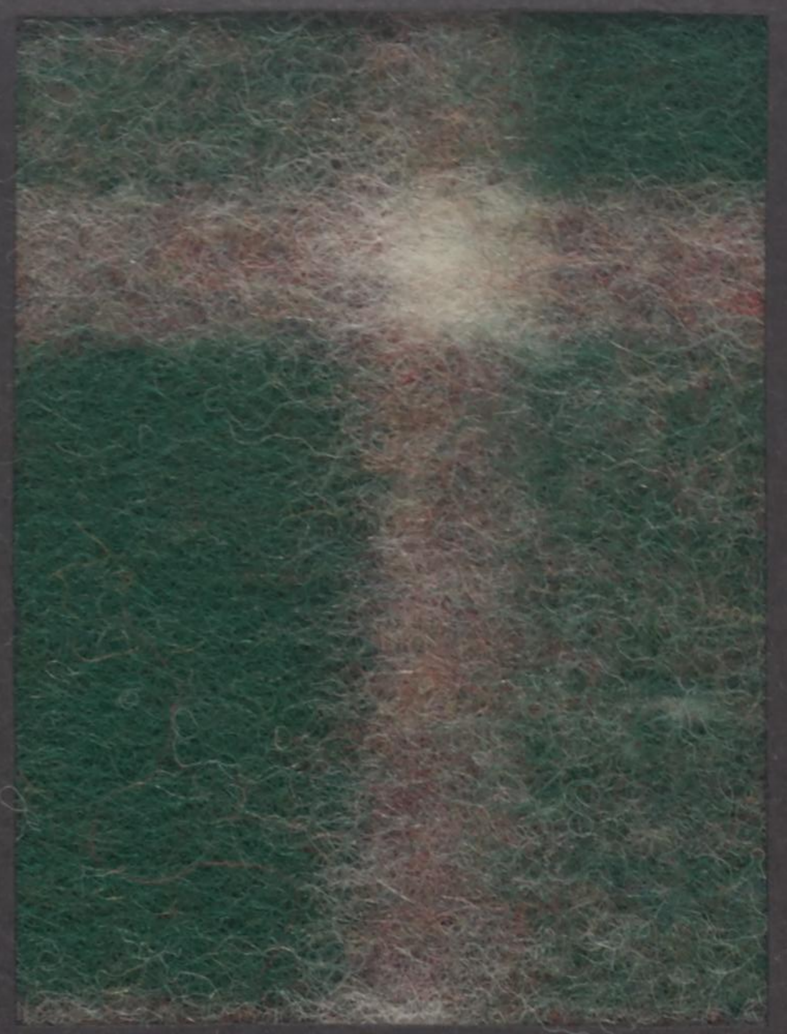
4



3



2



1











A



4

Huopa Kiva

Kude: 100 % kudinvillaa
Loimi: puuvillaa
Koko: 140/145x200 cm

UUVI OY
SF 23500 UUSIKAUPUNKI FINLAND ☎ 922-3782 Int. +358 22 3782 TLX 62 467 UUVI SF

"VOCATIONAL TRAINING AND SELF RELIANCE CENTRE"
KITCHEN AV 07

Pos.	Qty	
1	1	Boiling pan group VIKING 4412 CS
2	3	Floor drain with frame Dimensions: 600 x 500 mm
3		Accessories for boiling pans:
	1	Measure stick for model VIKING 12 CS
	1	Measure stick for model VIKING 4 CS
	1	Vegetable basket serie (3 pcs of baskets each 12 l)
	1	Vegetable basket serie (1 pcs of baskets each 14 l)
	1	Strainer for VIKING 12 CS
	2	Strainer for VIKING 4 CS
4	1	Frying table FINNPRINCE 660
	1	Floor drain with frame
5	1	Convection oven KL-101 with stand
	1	Trolley for convection oven KL-101
	8	Container GN 1/1-65
6	1	Water boiler HAATO 140/9
7	1	Refrigerator ACK-656
8	1	Carbage can CIPAX with cart Capacity 100 litres
9	1	Carbage can JV-65
10	4	Cuttlery basket METOS 415 with 16 cuttlery cylinders
11	6	Cup/glass basket METOS 330
12	2	Dishwashing trolleys KV-85 R/3
13	1	S/S sink unit 2400 x 700 x 900mm with 2 bowls 600 x 500 x 300 mm with bucket strainer on each bowl Mixer, shut-off valve and trays with drain connection stand with undershelf

"VOCATIONAL TRAINING AND SELF RELIANCE CENTRE"
KITCHEN AV 07

14	1	S/S sink unit 2000 x 650 x 900 mm with bowl 600 x 500 x 300 mm, mixer, shut-off valve and trap with drain connection stand with undershelf
15	1	S/S sink unit 2800 x 700 x 900 mm with bowl 500 x 400 x 300 mm, mixer, shut-off valve and trap with drain connection stand with drawer and undershelf
16	1	S/S sink unit 2400 x 700 x 900 mm with 2 bowls 600 x 500 x 250 mm with bucket strainer on each bowl mixer, shut-off valve and trap with drain connection stand with drawer
17	2	S/S table 2400 x 620 x 900 mm with undershelf
18	1	Floor scale DV-312
19	1	Table scale SALTER
20	1	Duct fan NOT INCLUDED IN OFFER
21	2	Insect-o-cutor INO-10
22	4	Thermocontainer ANIMO CL-20
23	2	Drip tray for thermocontainer
24	1	Water cooler SIAPA FO-2P
26	1	set of dry strorage shelving total length 9000 mm depth 500 mm 5-tier
27	1	S/S freestanding gridd shelf unit Dimensions: 2000 x 500 x 1500 mm 4-tier
28	1	Butchers block with plastic top Dimensions: 600 x 500 x 800 mm
29	6	Chair

"VOCATIONAL TRAINING AND SELF RELIANCE CENTRE"
KITCHEN AV 07

COLD STORES

30	1	Freezer COOL FN-70 A
31	1	Cold room COOL RN-70 A

Spare part for 5 year need

MAKROTALO OY

CED/I. Korhonen/rj 15.06.1984

ANC/VIENA/ANGOLA

TEXTILES AND FITTINGS	**UNITS/HOUSE**						
	001 A +						
	001 B	002	003	004	005	006	007
Curtain 140 x 150	88	-	18	21	22	22	16
Sheet 150 x 250	34	-	-	-	54	108	24
Pillow 45 x 55	17	-	-	-	27	54	12
Pillow case 50 x 60	34	-	-	-	27	54	12
Bed cover 250 x 140	17	-	-	-	27	54	8
Bedcover 250 x 225	-	-	-	-	-	-	2
Blanket 140 x 200	34	-	-	-	54	108	26
Towel 70 x 135, frotee	17	-	-	-	-	-	-
Towel 50 x 70, frotee	17	-	-	-	54	108	26
Mattress 75 x 195 x 6	17	-	-	-	27	54	12

40.000 1.84 Parno

MAKROTALO OY

CED/I. Korhonen/rj 27.04.1984

ANC/VIENA

HOUSEHOLD SUPPLIES/HOUSE UNITS/HOUSE

ARC 007 + 012

ITEM	NOS
Dustpan and brus h	-
Dish brush	2
Toilet brush	-
Frying pan	2
Casserole 2,0 litres	2
Coffee pot 1,5 l	2
Glass salad bowl Ø 22	2
Soup ladle	2
Frying knife	2
Tray for serving, plast.	4
Mixing bowl	4
Milk jug	4
Trash basket	-
Ironing board	2
Iron, Rowenta	2
Cleaning knife	2
Cup opener	2
Kitchen scissors	2
Plate Ø 24	24
Plate Ø 17	24
Soup plate	24
Glass 33 cl	24
Glass 22 cl	24
Table knife	24
Table fork	24
Table spoon	24
Mug, plastic	24
Tea mug	24
Coffee cup	24
Coffee spoon	24
Cheese grater	4
Salt sprinkler	4
Sugar basin and cream jug	4
Ash tray	8

40.000 1.84 Parno

stainless steel

STALA

COMMERCIAL KITCHEN INTERIORS

Sinks and work-tables for

1. **A** KK-008 Cupboard with doors
B TR Work top of stainless steel
C RT-708 Grate 70×80 cm
D LA-404 Drawer unit
E KJ-404 Cupboard with support brackets
F SP-004 Castors
G PP-728 Sink 70×280 cm
H Cover plate
I Drain trap

2. **A** KP-108 Cupboard unit with shelves and doors
B Open space
C LG-404 Drawers for Gastronorm-containers
D TP-628 Work-table 62×280 cm
E LA-104 Drawer

The work tops of the sinks and work-tables are made of stainless steel 18/8, thickness 1.0—1.2 mm. The feet are made of 35×35 mm stainless steel tubes. The height of the worktables is 850 or 900 mm. The legs are fitted with adjustable feet of specially strong plastic. The adjustment margin is about 50 mm.

The handles of the cupboards and drawers are inlaid in the front plate — easy to handle and to keep clean.

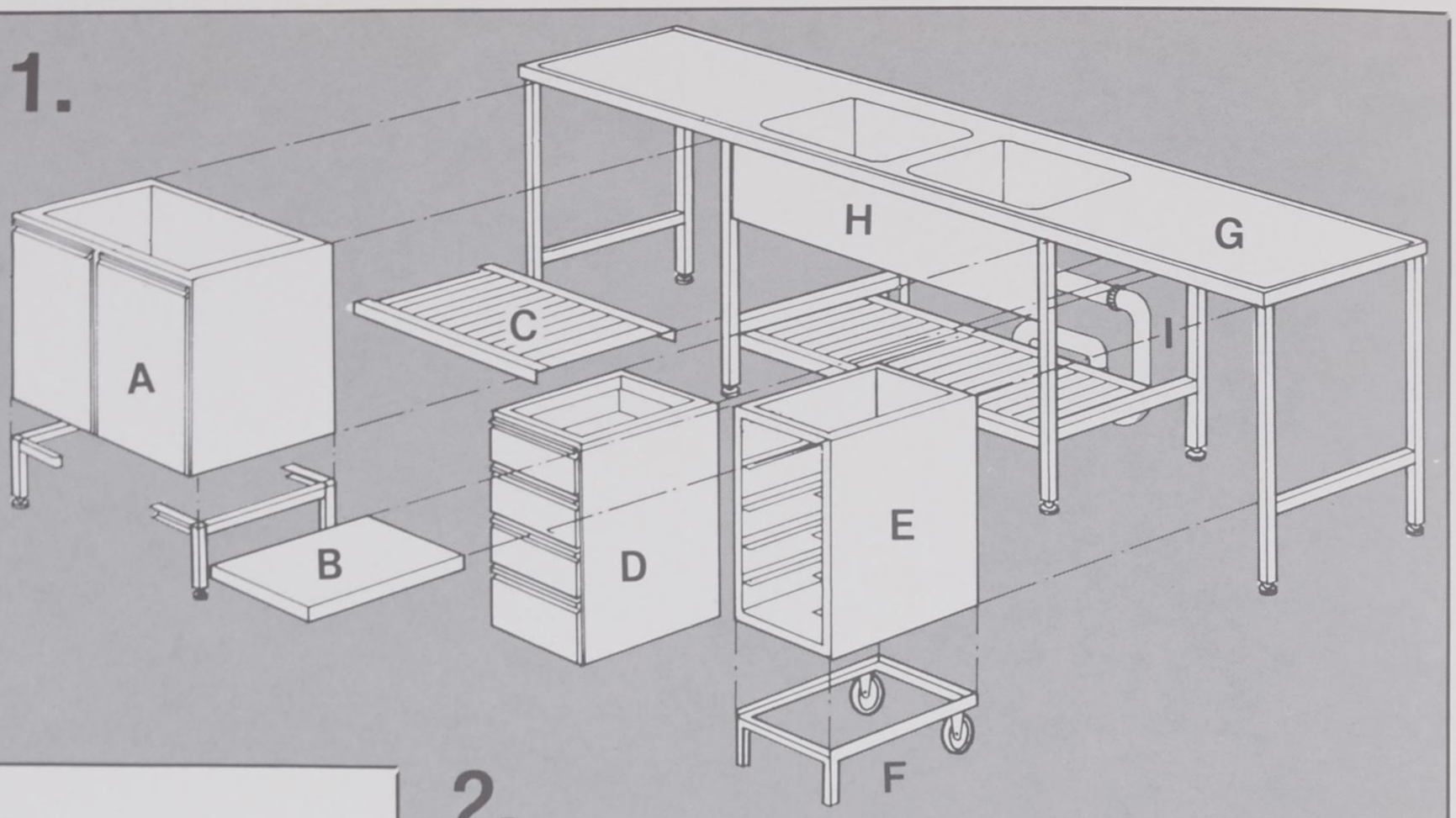
The structure of the Gastronorm module makes it possible to rearrange the fittings should their purpose change.

3. The support structure of the work top

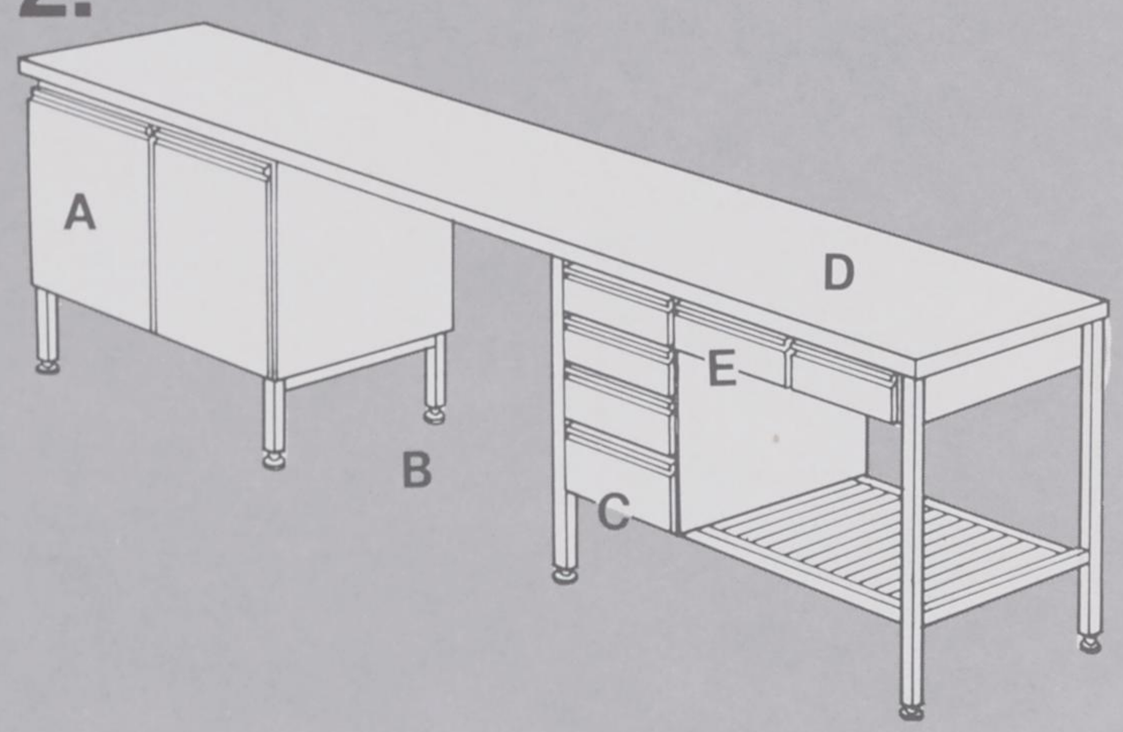
Due to the special structure the support of the work tops is very stable and it is soundinsulated. The supporting steel structure is coated with zinc. There are no impractical wooden structures.

4. Profiles of the sinks and work-tables

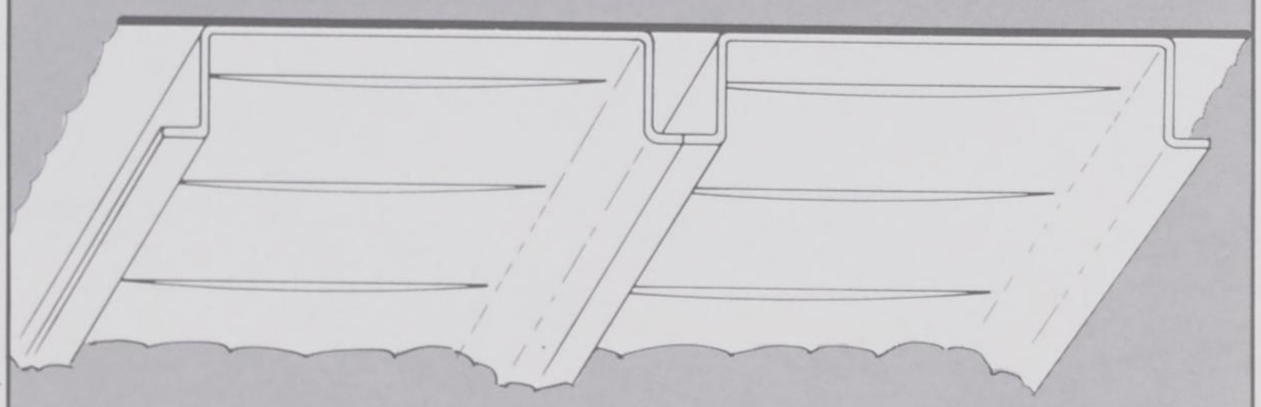
1.



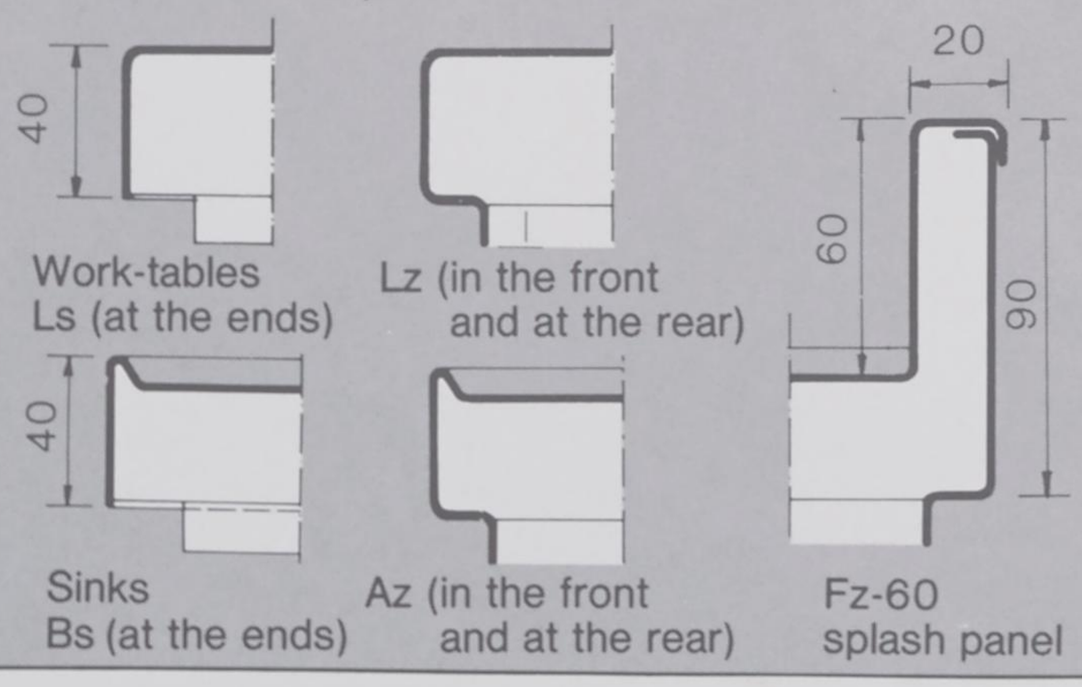
2.



3.



4.



catering trade

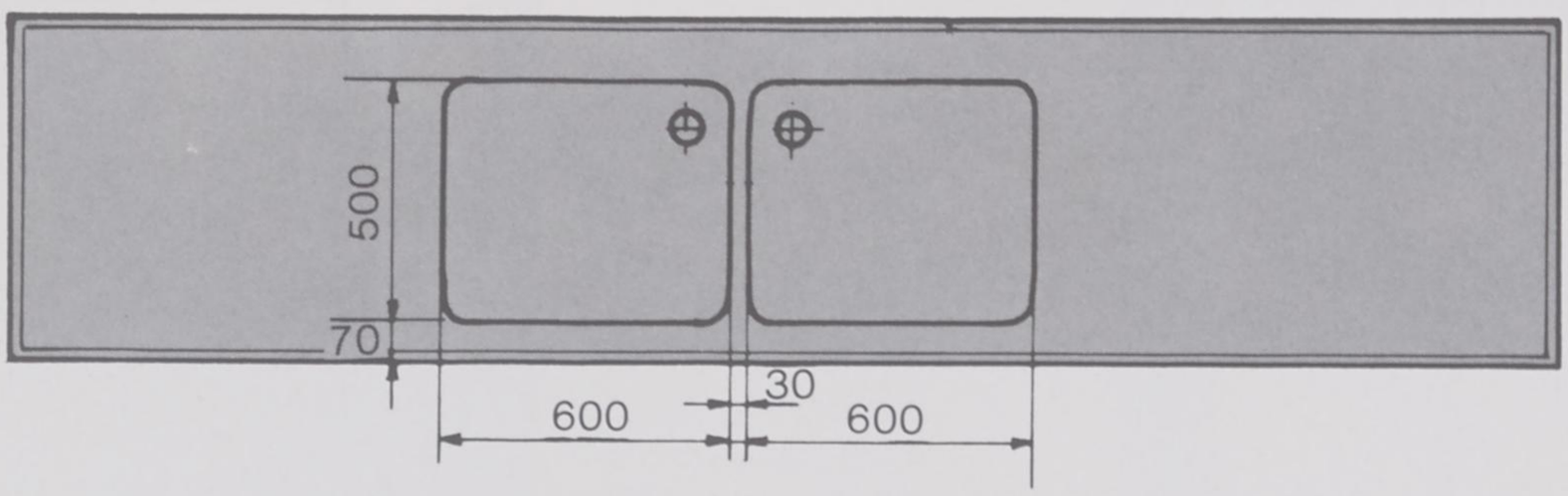
stainless steel

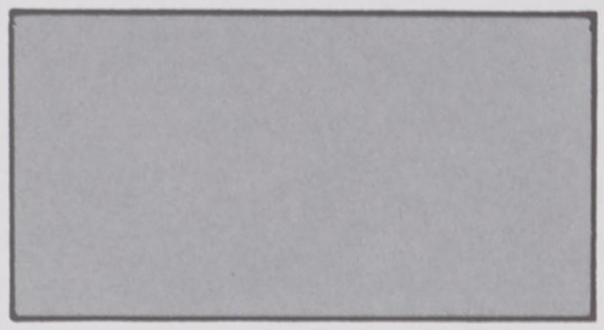
Work tops of sinks and work-tables

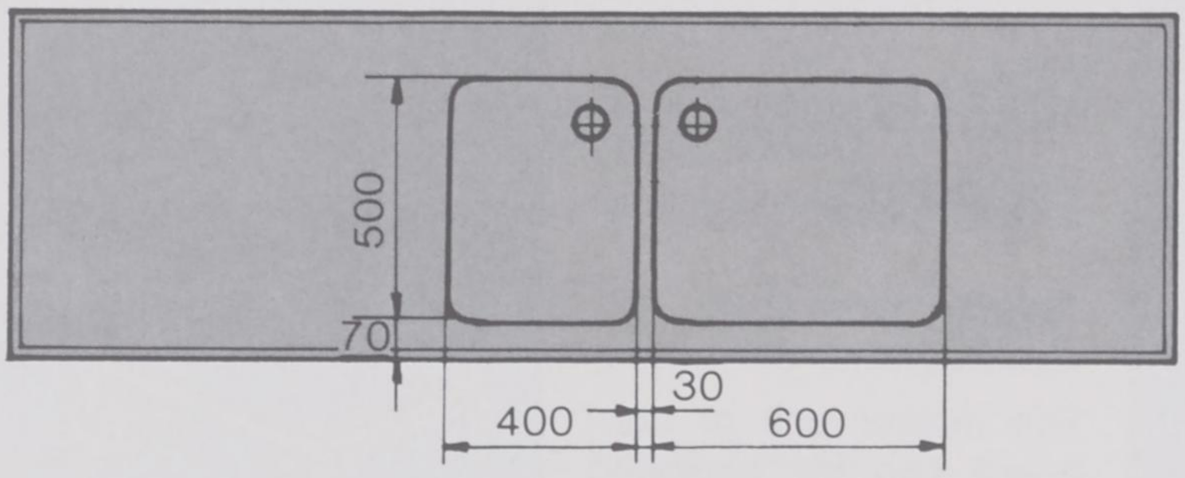
The work top is made of stainless steel 18/8, thickness 1.0—1.2 mm. The work top is fastened by a special glue.

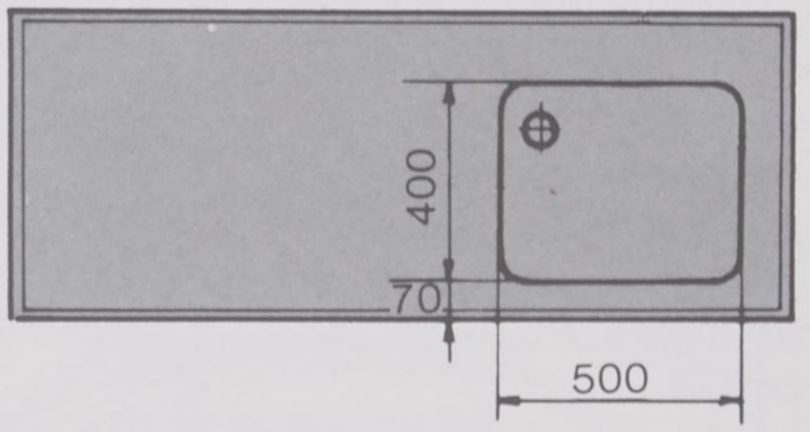
Standard dimensions:

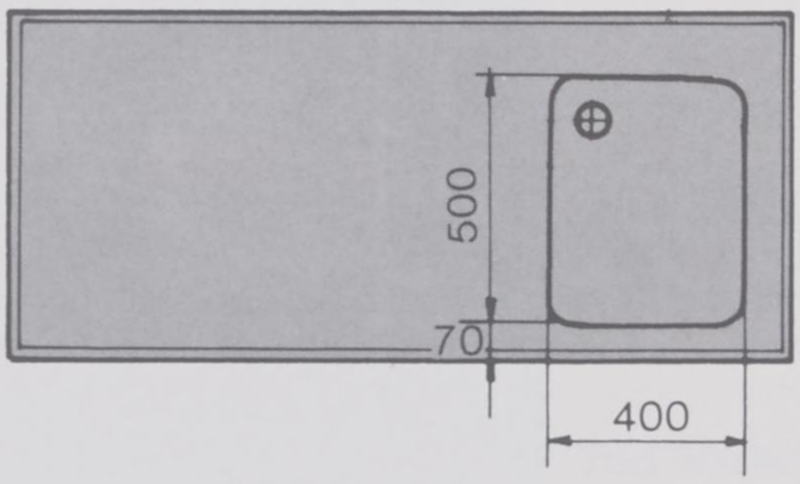
— width of the work tops 62 or 70 cm
— depth of the bowls are 200, 250 or 300 mm
— length of the table 80—290 cm

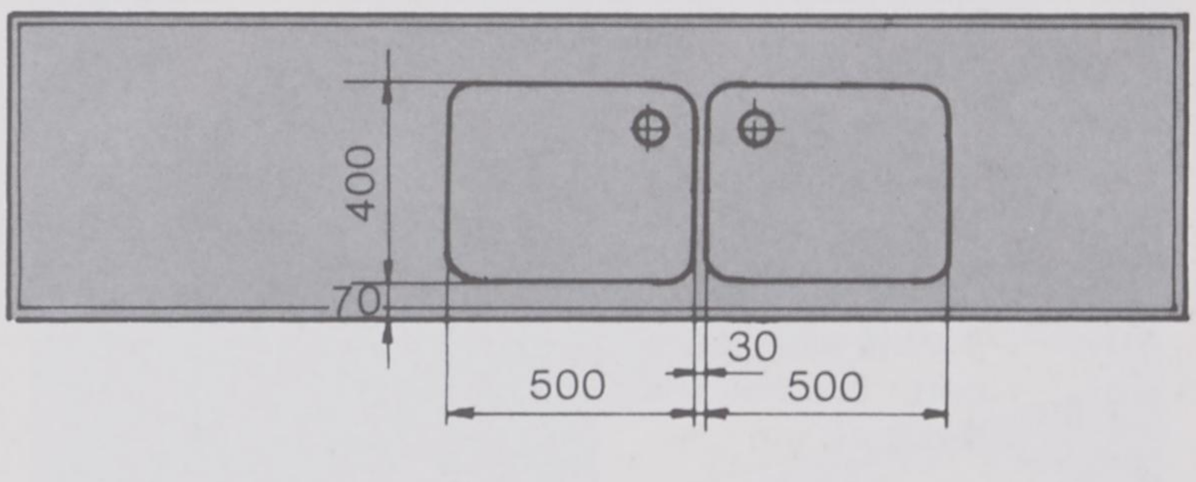


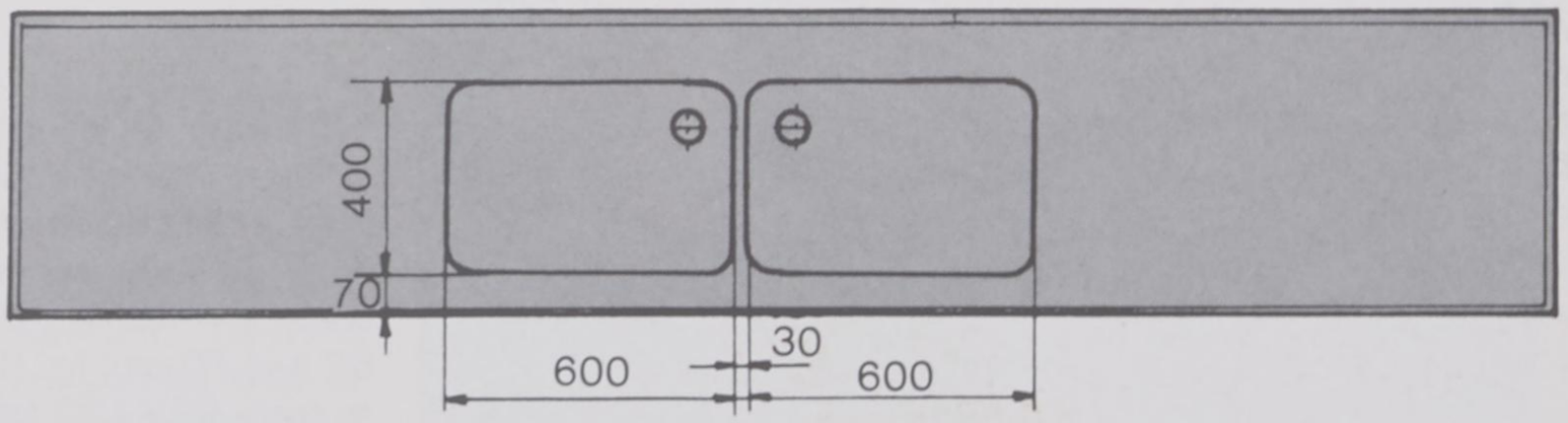












Cupboard and drawer units

Cupboard units

The cupboards are dimensioned for Gastronorm and are made of stainless steel 18/8. The hinge and lock pieces are very stable.

The standard widths of the cupboards are 40, 60 or 80 cm. In the one-door cupboard the left or right handed alternative is indicated at the end of the type marking: /O = right-handed and /V = left-handed.

The level of the equipment can be chosen from the following alternatives:

KA Cupboard
KK One-door cupboard
KH Cupboard with shelves
KJ Cupboard with support brackets
KL Cupboard with support brackets and doors
KP Cupboard with shelves and 2 doors

In the standard cupboards with support brackets there are 4 pairs of brackets per cabinet.

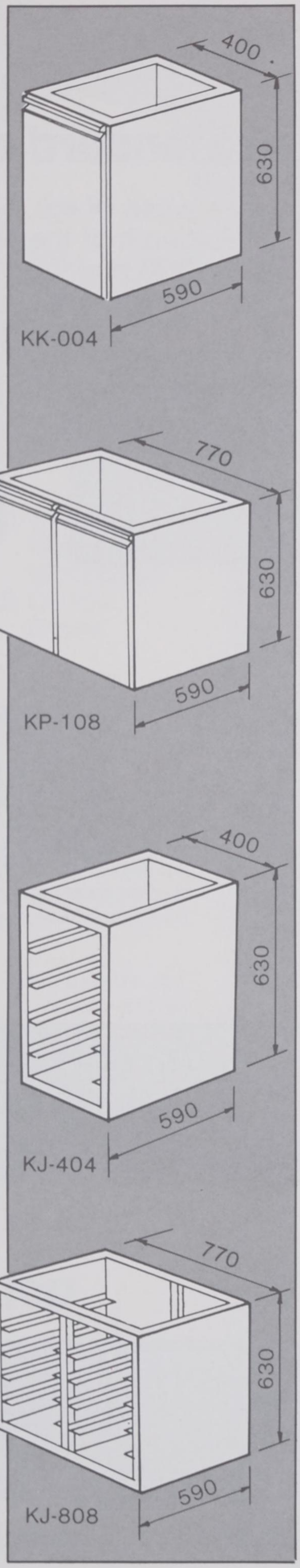
Examples:

KK-004 = One-door cupboard, width 40 cm

KP-108 = Cupboard with 2 doors and one shelf, width 80 cm

KJ-404 = Cupboard with 4 pairs of support bracket, width 40 cm

The first figure in the product marking indicates the amount of the extra equipment, ig. the number of shelves, and the last figure the width (dm).



Drawer units

The frame and drawers are made of stainless steel 18/8. Owing to the bearing slide bars the drawers are easily movable. The width of the standard model is 40 cm.

LA-104 Drawer, height 100 mm
LA-304 Drawer unit with three drawers, height 150 mm
LA-404 Drawer unit with four drawers, of which three are 100 mm and one 150 mm high
LG-404 Drawer unit with supporting guide bars (4) which can be drawn out and loaded with Gastronorm containers.

Equipment

Transfer base with castors, SP

The drawer unit or cupboard can be equipped with castors. Standard model is SP-004.

Flat TR

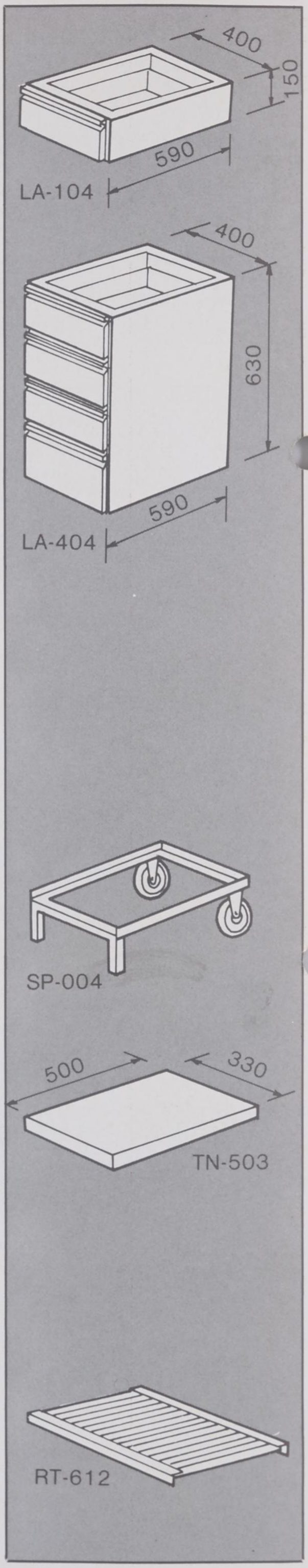
The transfer units can be equipped with a top of stainless steel. Ig. TR-604 = 62×40 cm top of stainless steel.

Flat TN

A plastic top which can also be stored between the support brackets. Standard model is TN-503.

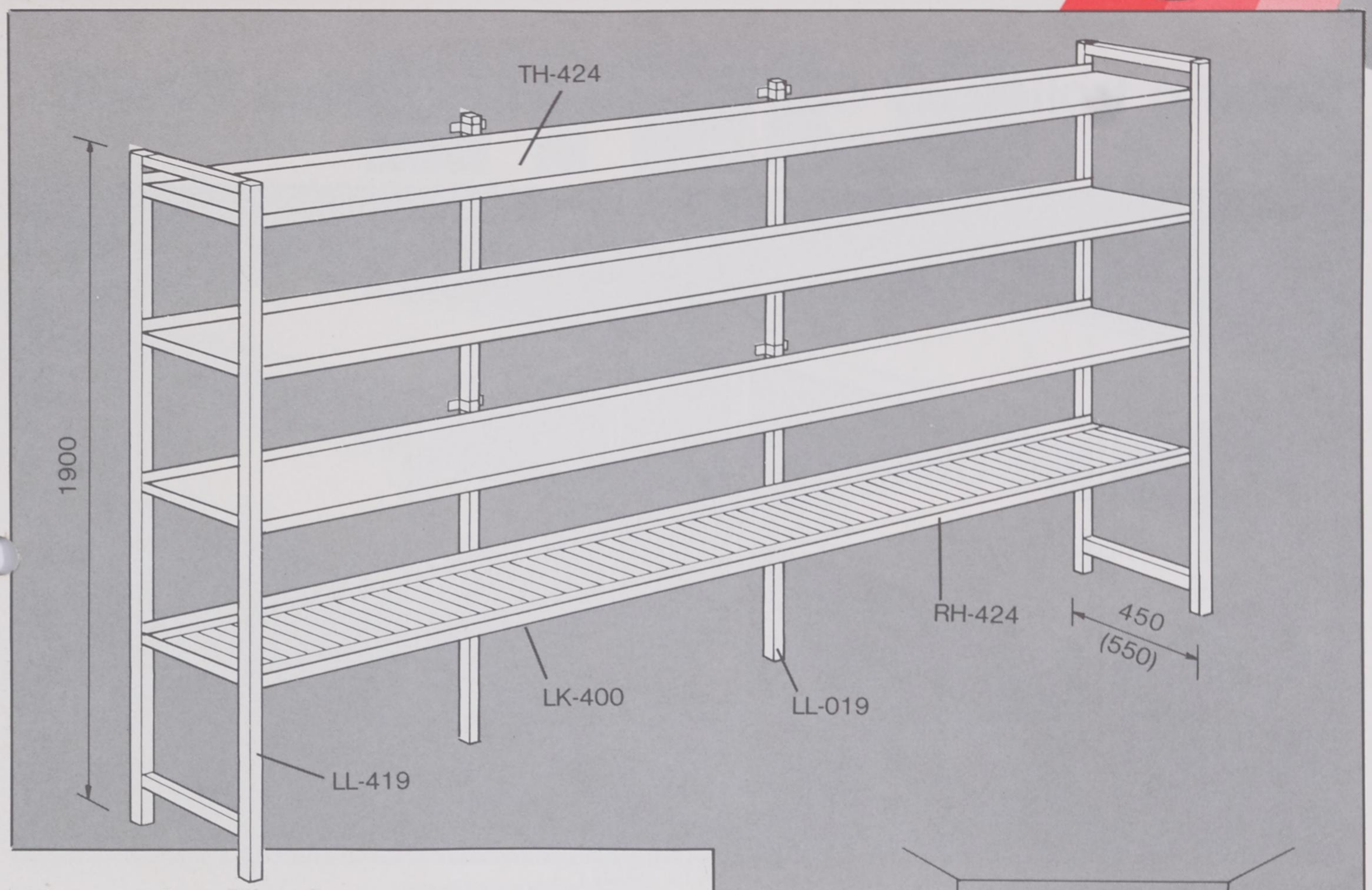
Grates

Shelf grates made of stainless steel for work-table units of which the width is 62 and 70 cm. Ig. RT-612 = grate 62×120 cm.



The shelf elements

stainless steel



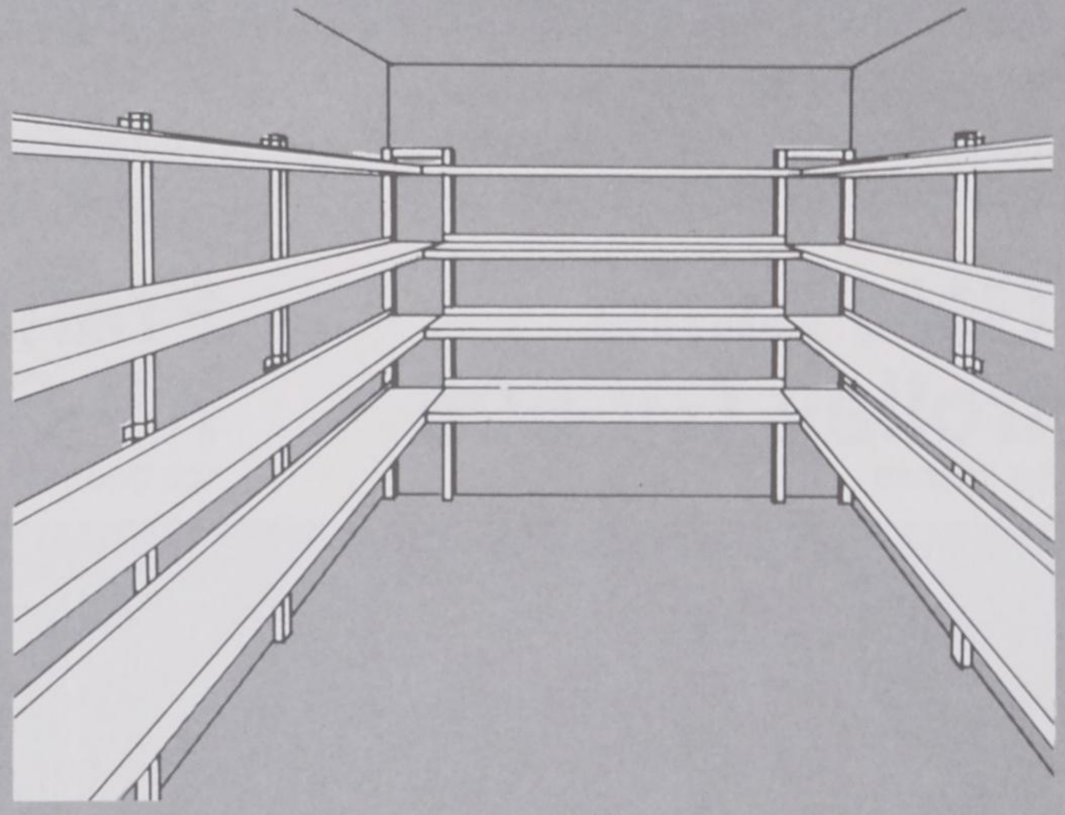
The shelf elements

The standard width of the shelves and grates is 40 and 50 cm.

I.g.

HLL-424 = Shelf unit, width of shelves 40 cm, the total length 240 cm
TH-424 = Shelf, width 40 cm, length 240 cm
RH-424 = Grate, width 40 cm, length 240 cm
LL-419 = Tube frame
LL-019 = Supporting foot
LK-400 = Support bracket

The maximum load capacity of one shelf is 100 kg/m.



The wall shelf elements

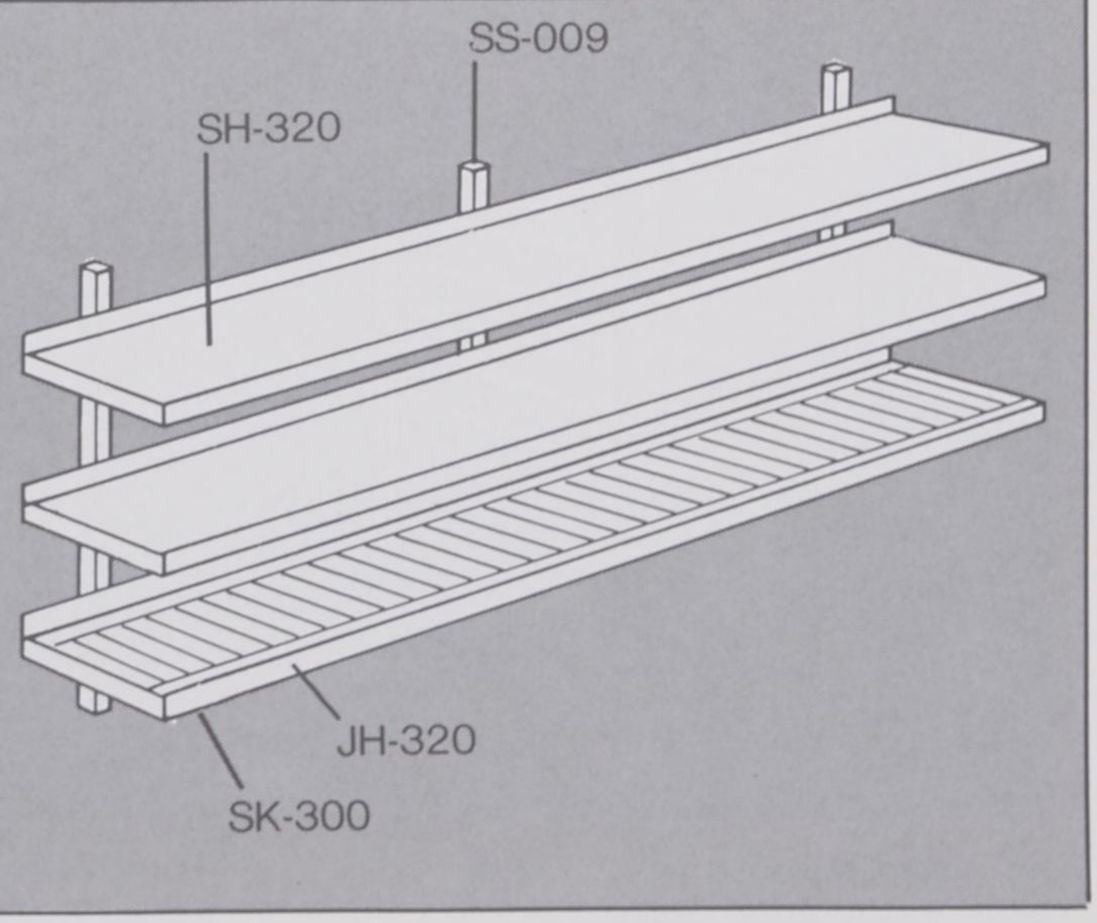
The standard width of shelves and grates is 30 cm and 40 cm.

I.g.

HSS-320 = Wall shelf unit, width of shelves 30 cm, length 200 cm
SH-320 = Shelf
JH-320 = Grate
SS-009 = Wall bar
SK-300 = Wall support bracket

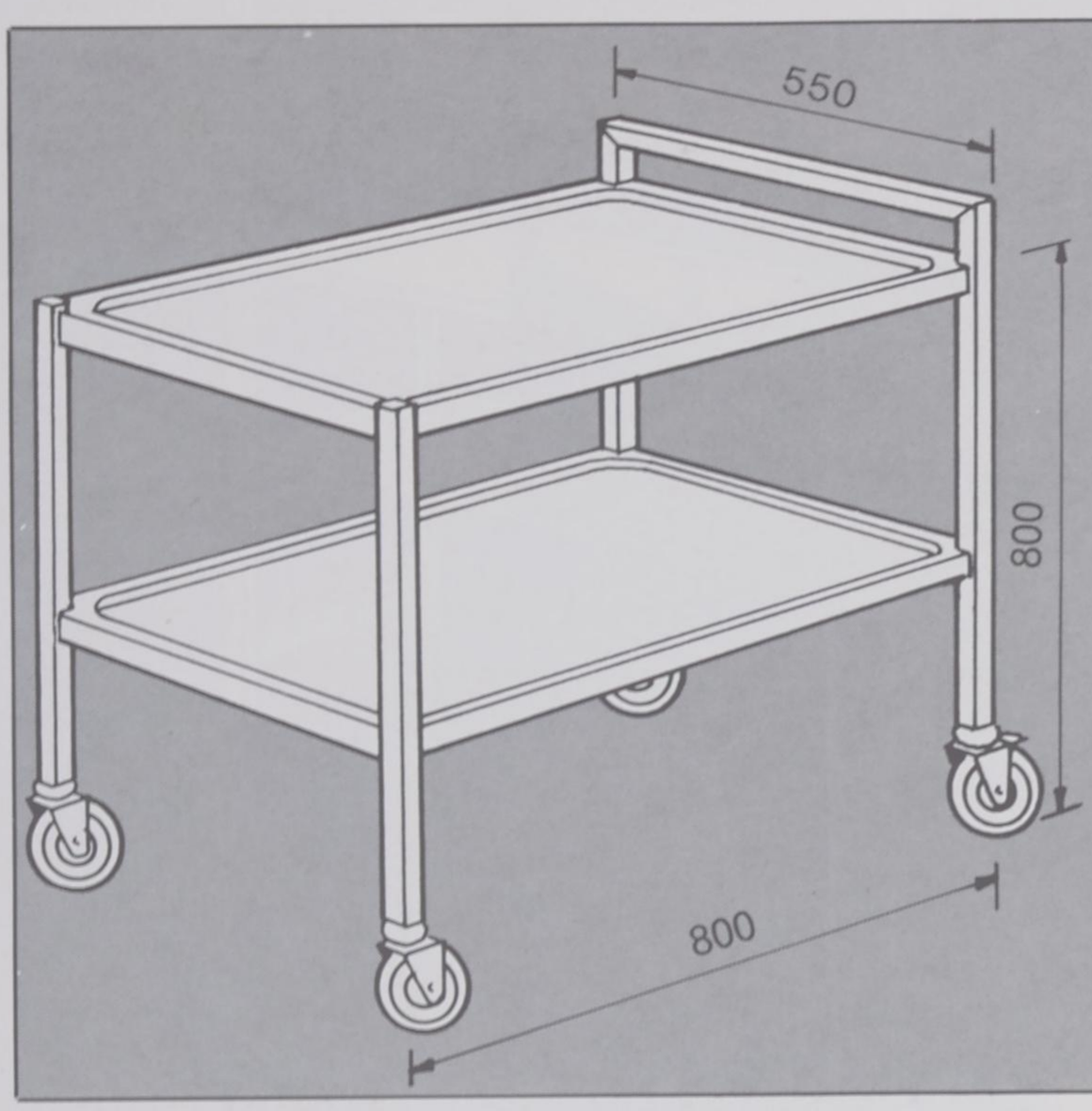
The maximum load capacity of one shelf is about 100 kg/m when the space between support brackets is max. 70 cm.

The design of the shelves has taken into account their loading and unloading with mechanical vehicles. The front of the shelves is free, the feet tubes are placed only at the rear of the unit. The shelves are maid of stainless steel 18/8 and adapted for damp rooms.



Trolleys

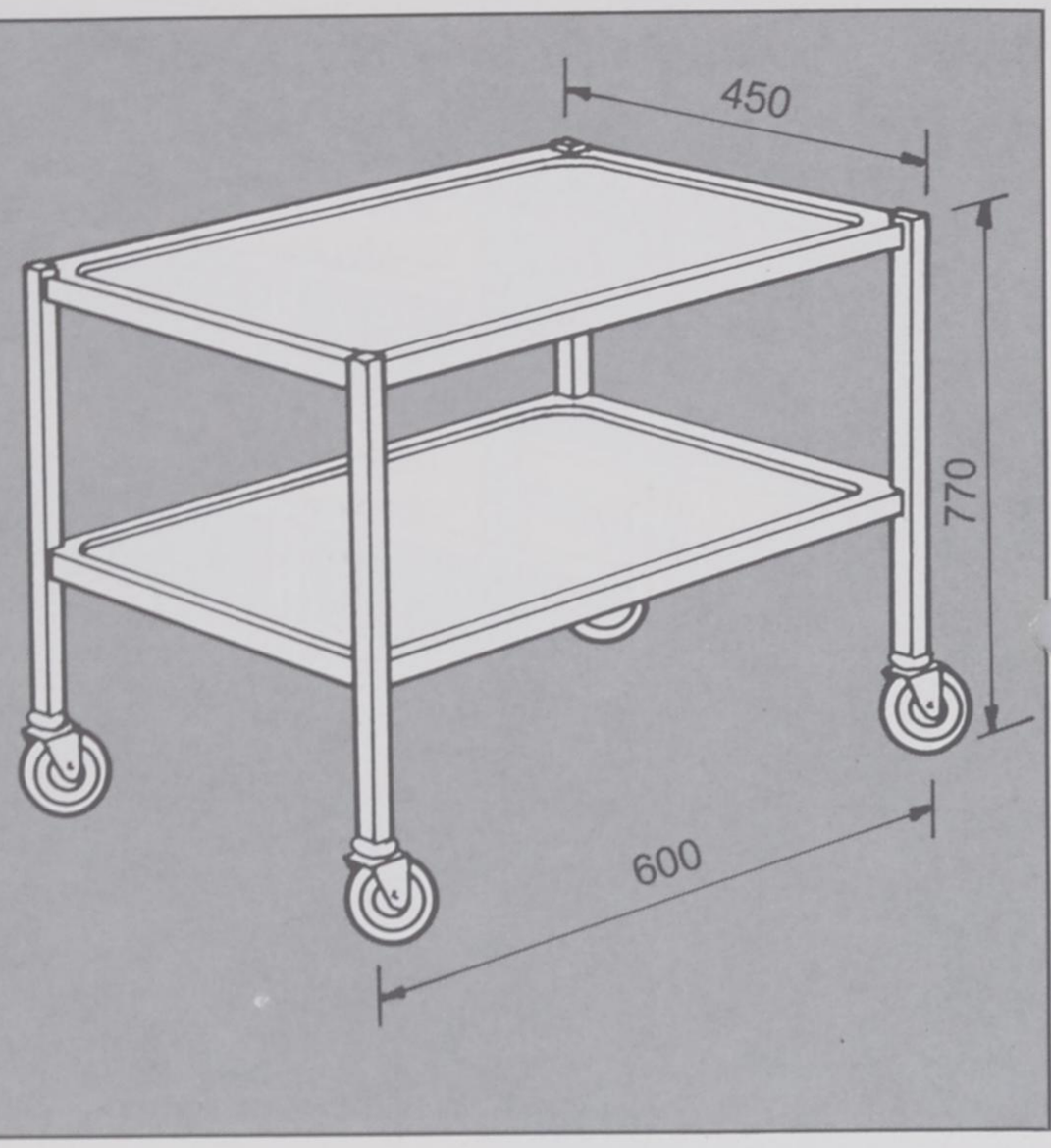
Serving trolley TV-508



550×800×800 mm

Castors ø 125 mm. Extra outfit: Drawer, push handle, brakes on two castors, third shelf.

Serving trolley TV-406



450×600×770 mm

Castors ø 100 mm. Extra outfit: Drawer, push handle, brakes on two castors, third shelf.

GN-Frame trolley GV-606

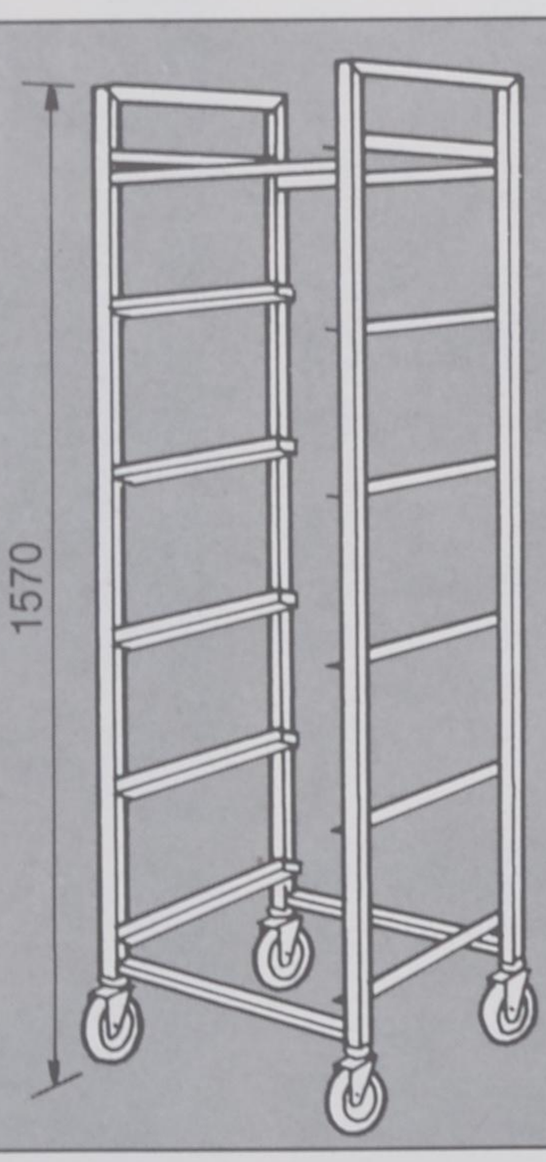
for dishes



19 leader pairs for GN 2/1 and 1/1 dish. Extra outfit: brake.

Frame trolley KV-505

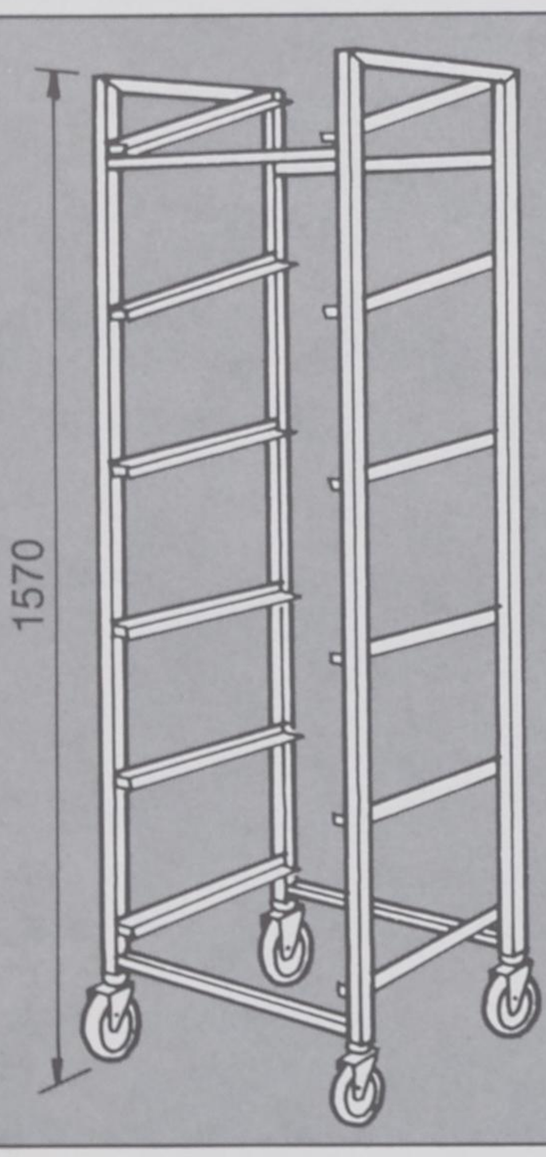
for baskets



For 500×500 mm baskets, six leader pairs. Extra outfit: brake.

Frame trolley VV-505

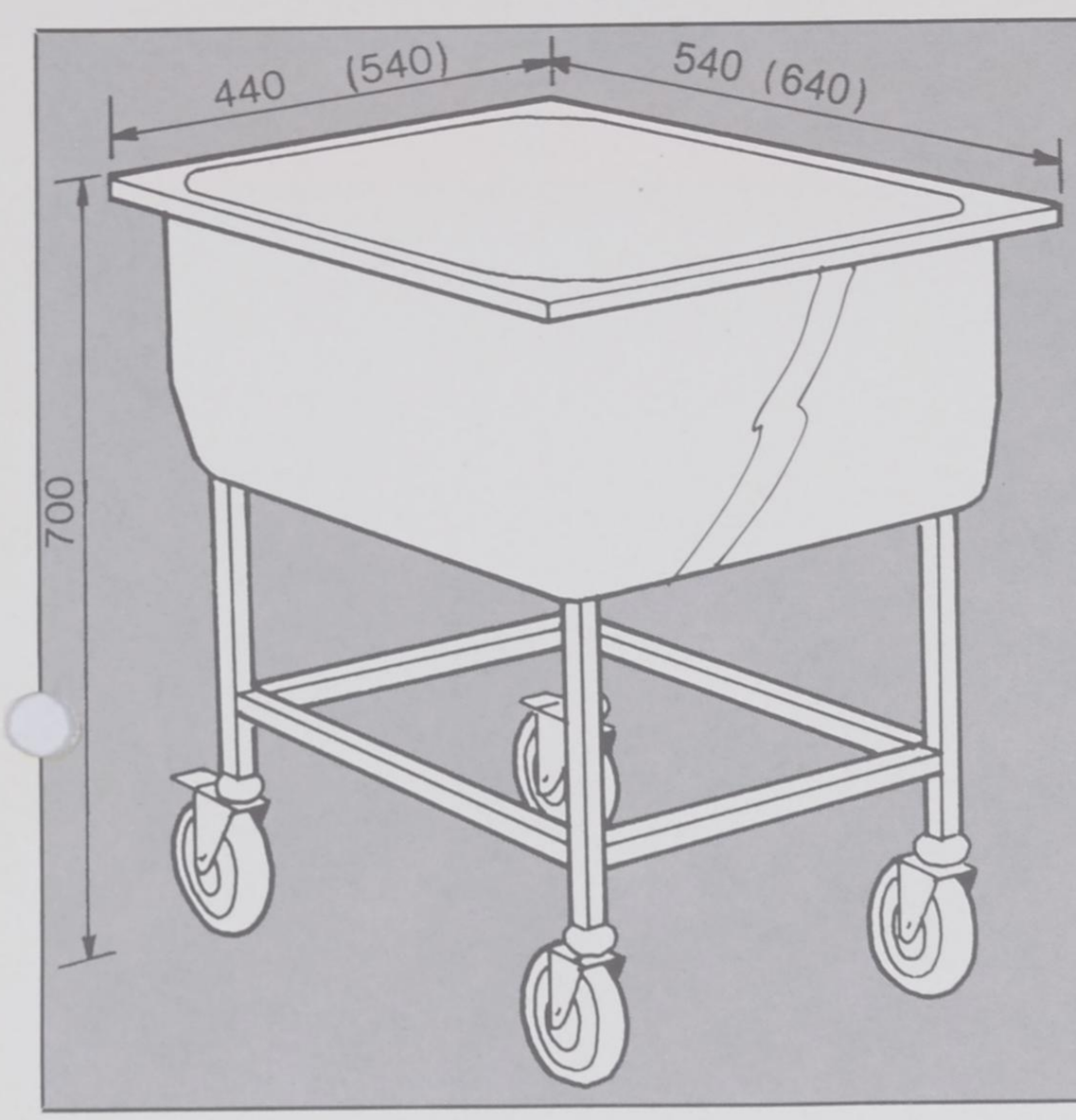
for serving line



For 500×500 mm baskets, six leader pairs, of which top three sloped. Extra outfit: brake.

Trolleys

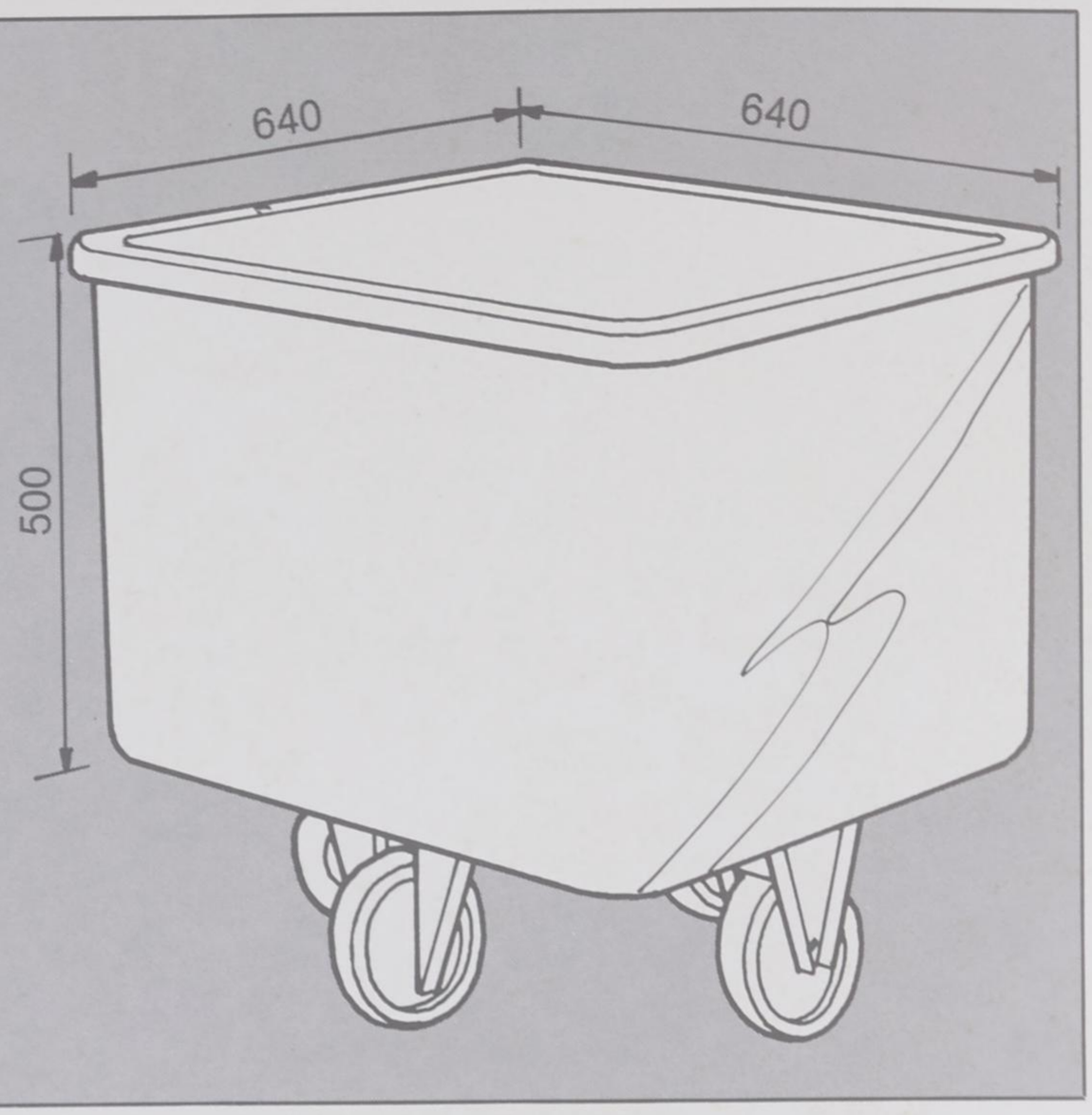
Basin trolley AV-405 AV-506



50 litres (basin 400×500×300 mm)
75 litres (basin 500×600×275 mm)

Made of stainless steel 1.0 mm, castors ø 125 mm, extra outfit: bottom valve or globe valve.

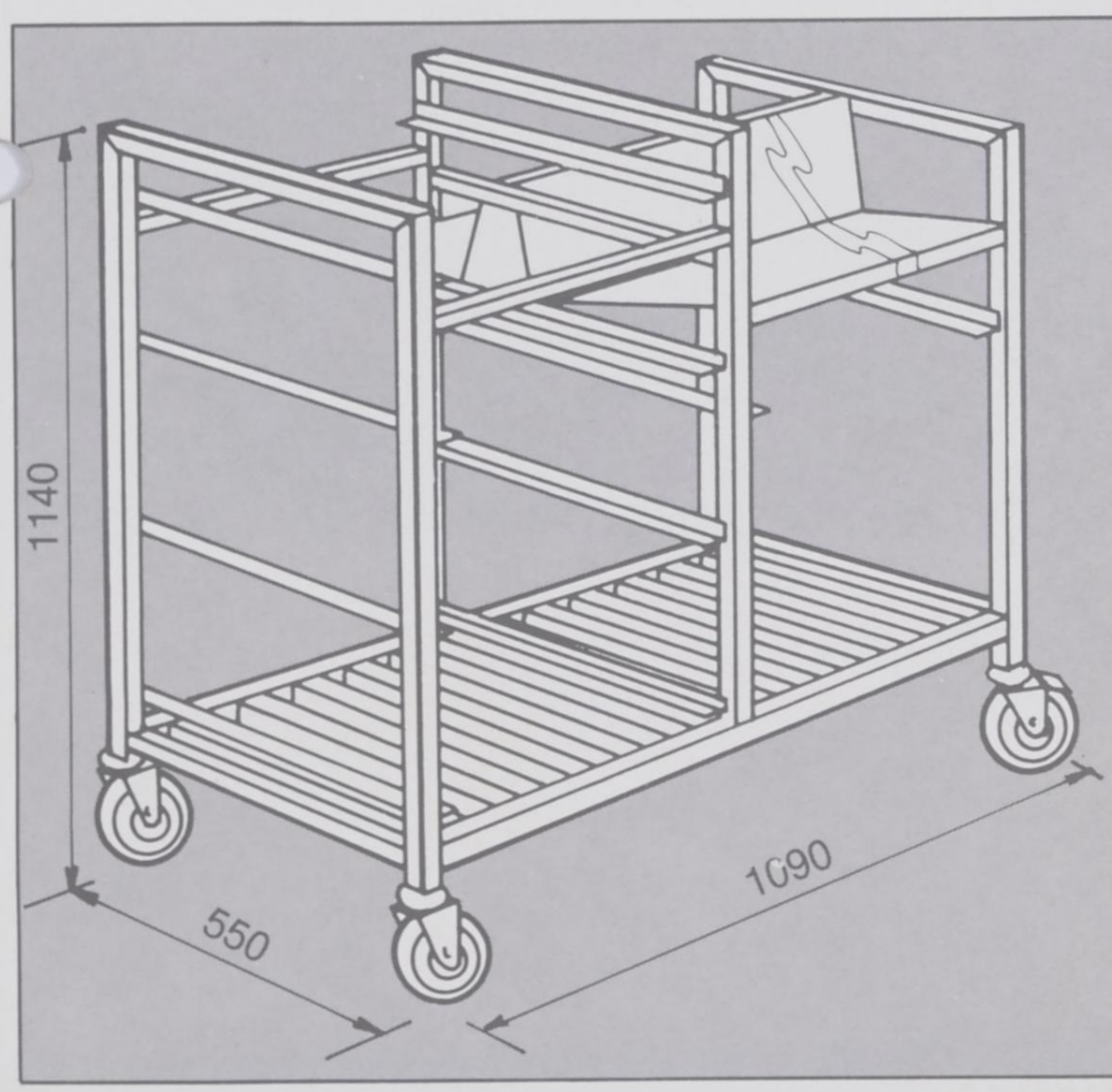
Basin trolley AV-606



200 litres (basin 640×640×500 mm)

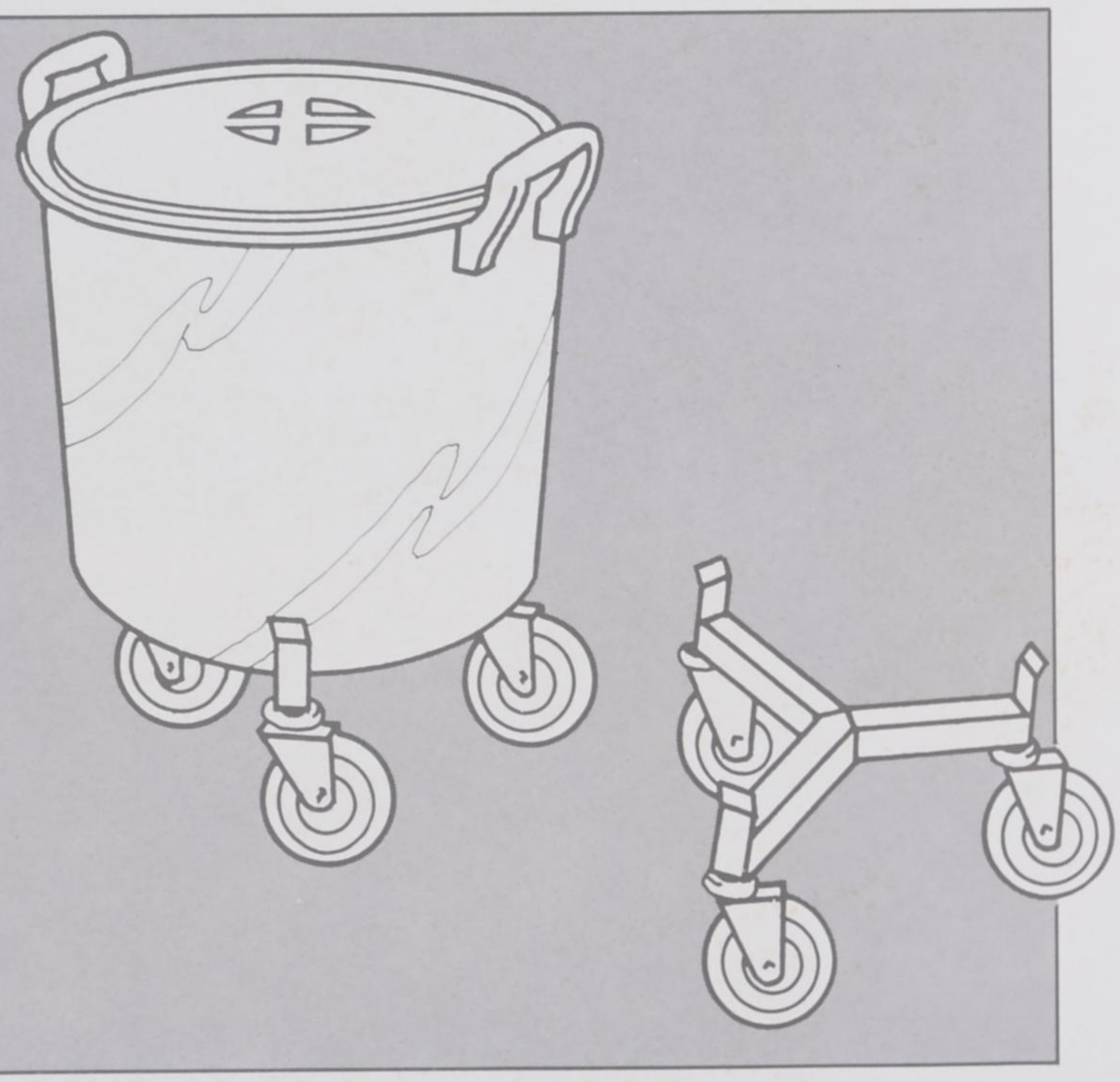
Made of stainless steel 2.0 mm or 1.2 mm, castors ø 160 mm, extra outfit: bottom valve or globe valve.

Clearing trolley KV-611



Five leader pairs for dish baskets, castors ø 100 mm.
Extra outfit:
— drop basin
— waste basin 30 litres or two waste basins of 8 litres

Waste trolley JV-65 JV-45



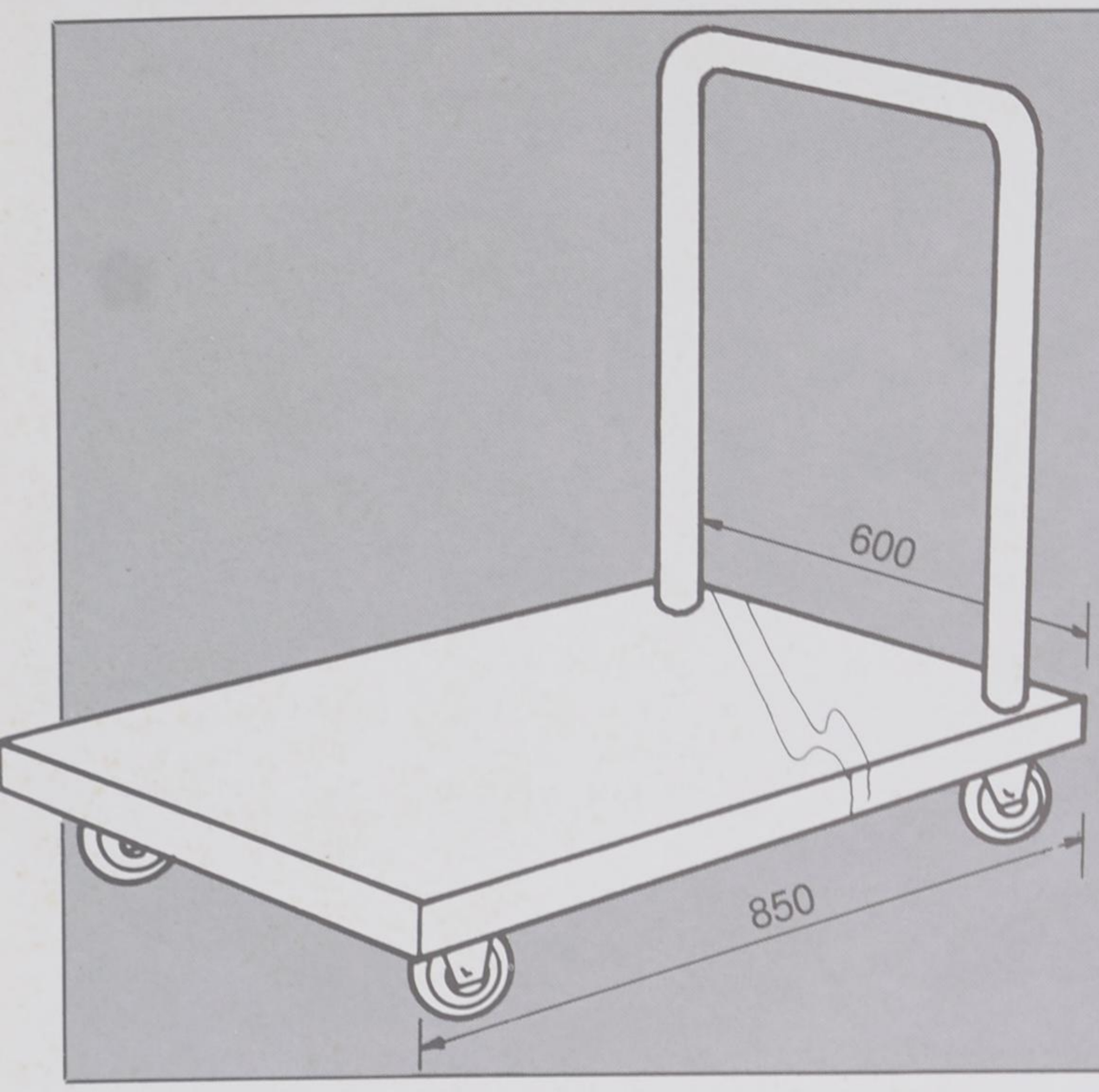
65 litres, ø 580 mm, height 600 mm
45 litres, ø 460 mm, height 550 mm

Body of stainless steel, plastic wastecontainer, castors ø 100 mm.

Trolleys

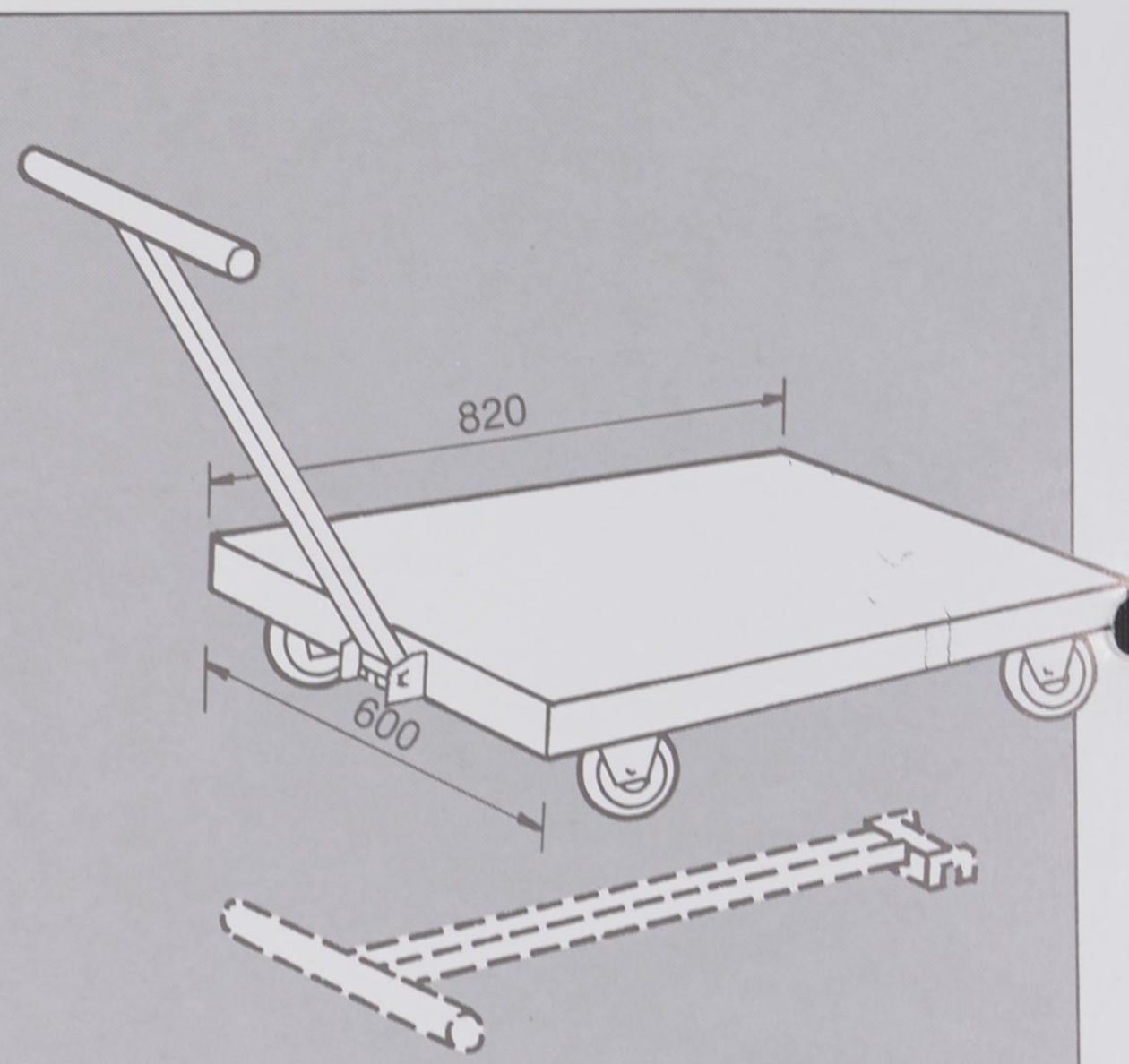
stainless steel

Platform trolley LV-608



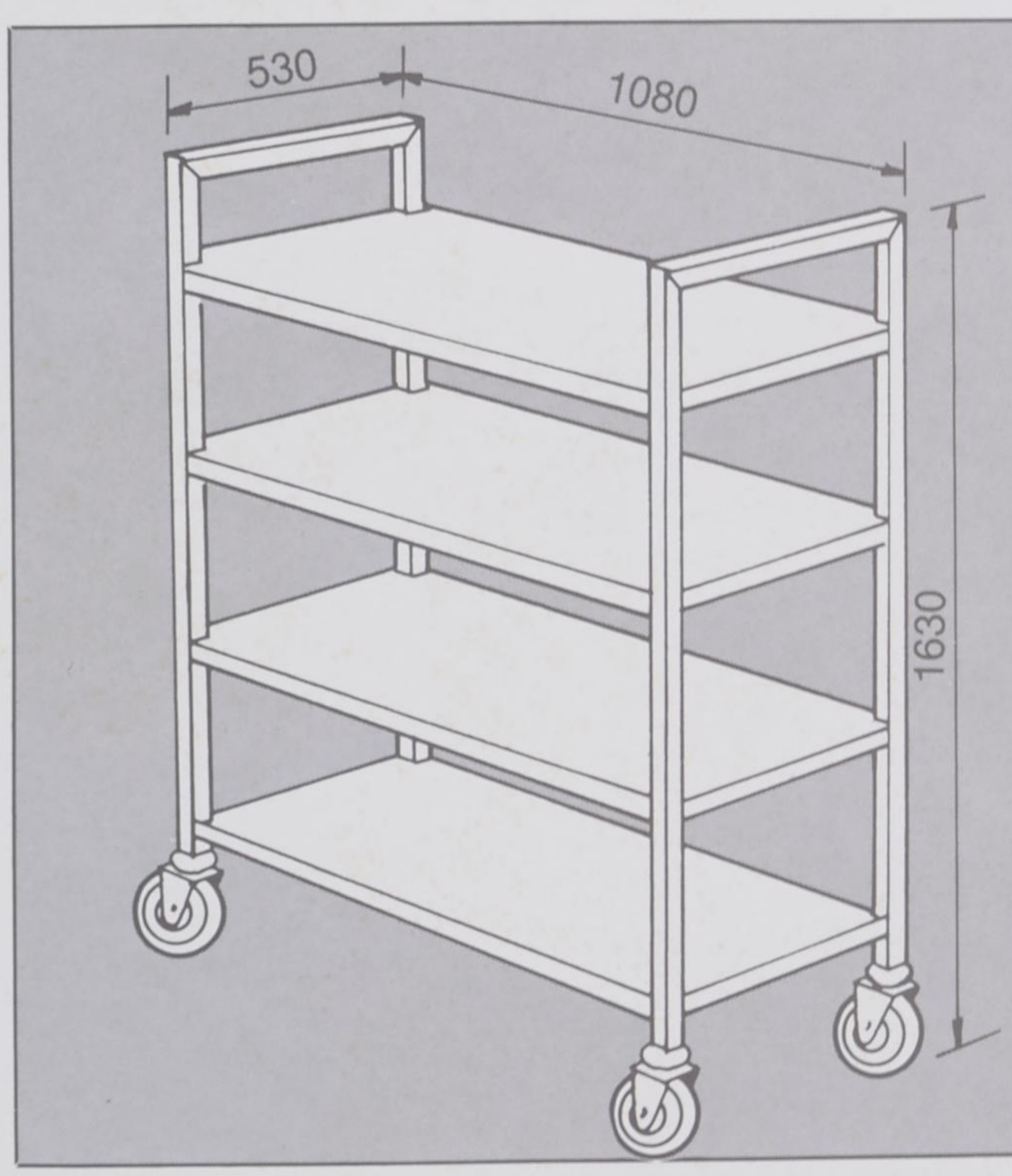
Push handle, castors ø 100 mm.
Capacity 200 kg.

Platform trolley PV-808



Pulling shaft, castors ø 100 mm.

Storage trolley HV-511



4 shelves of stainless steel plates,
castors ø 125 mm.

Storage trolley RV-511



4 grizzly shelves,
castors ø 125 mm.

STALA

PRODUCTION

WASHING SINKS AND SINK UNITS

COMMERCIAL KITCHEN INTERIORS

SINKS AND WORK-TABLES
CUPBOARD UNITS
DRAWER UNITS
SHELF ELEMENT
TROLLEYS

STAINLESS STEEL TUBES AISI 304 AND AISI 316

NOT POLISHED AND
POLISHED GRIT 220—500

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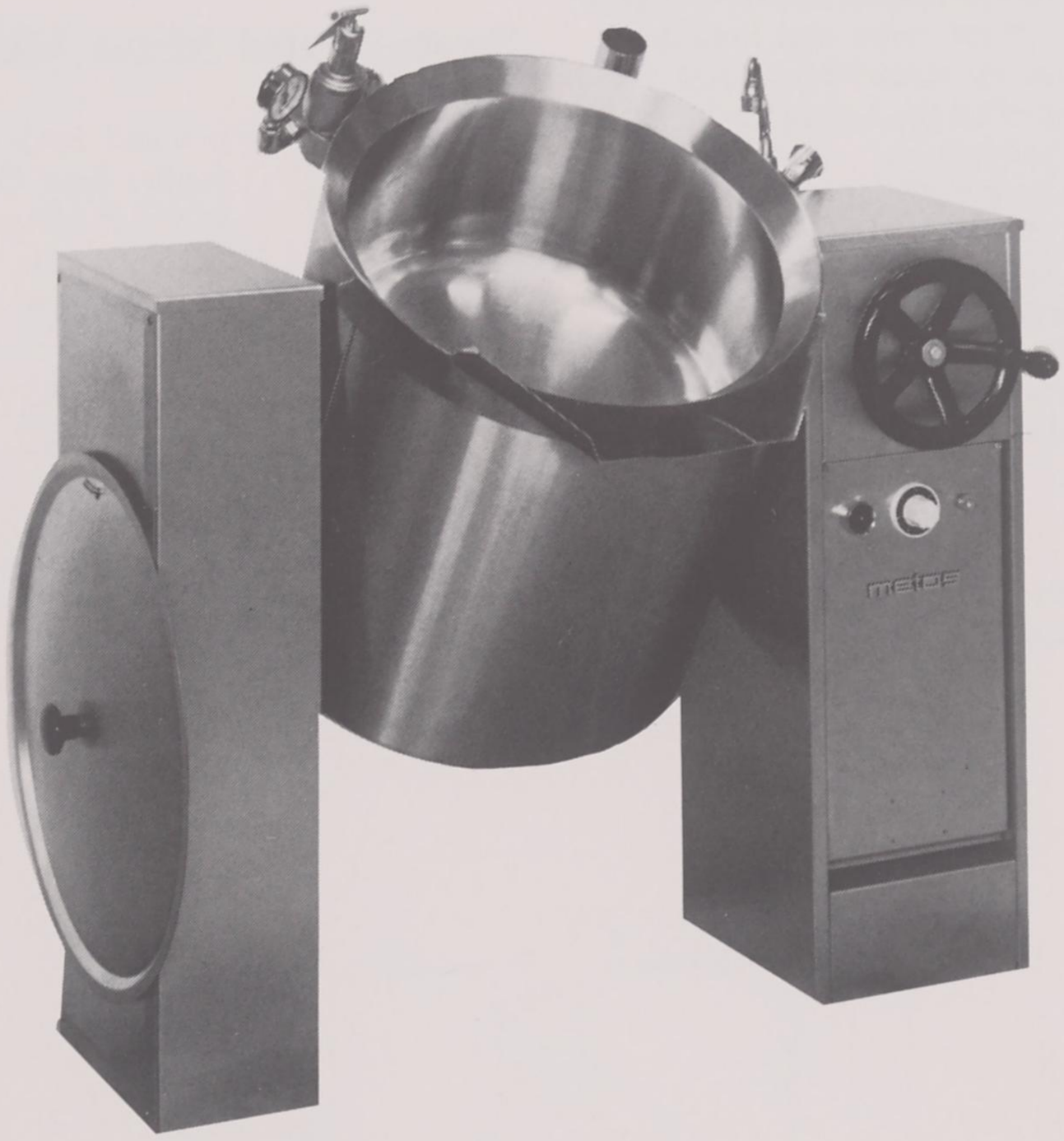
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TELEX
16 127 STALA SF

Printed in Finland/Esan Kirjapaino Oy Lahti 1982

metos

Metos Viking 4C, 6C & 8C



POS.
1

Metos Viking tilting kettle models 4 C, 6 C & 8 C

Energy saving
Because each unit has its own integral steam generator and triple casing the Metos Viking C range of tilting kettles are high in efficiency and low in energy consumption.

Flexibility
The Metos Viking C range of tilting kettles are available in 40, 60 and 80 litre sizes and can be supplied as single units or in groups of two or more. They can also be combined with the 120 litre model.

Fast
Short preheating time. For 6C-type tilting kettle (volyme 60 litres) the preheating time is only 34 minutes (from +19°C to +100°C).

Safety
- Metos Viking kettles are triple cased resulting in very low surface temperature.
- A self-locking worm gear in the wheel operating tilting mechanism makes the tilting operation both easy and safe.
- The electrically heated kettles (suffix S) incorporate an overheat protection which automatically switches off electric supply to elements when kettle is tilted. This device also operates when there is an insufficient amount of water in the steam generator.

Materials
The Metos Viking C range of kettles are constructed of stainless steel (AISI 304). This includes the cooking vessel, steam jacket, outer casing, collar, lid and pillars. In the electrically heated version (suffix S) the steam generators are also of stainless steel (AISI 304).

Controls
- A stepless simmerstat control switch and pilot light is provided for each electrically heated kettle.
- The electrically heated units also incorporate a safety valve/pressure gauge combinated with an automatic vacuum valve and automatic overheat protection of steam generator.
- All kettles are provided with a tilting mechanism incorporating a self-locking worm gear with a handwheel.
- Each kettle has a mixer tap with connection for hot and cold water which is located in a position to allow filling of both cooking vessel and steam generator.

Optional extras
Baskets for potatoes, vegetables etc.
Lifting handles
Strainer plate
Measuring rod
Hinged lid

Technical data

Metos Viking tilting kettle C

Metos Viking tilting kettle C
Electrically heated model (S)
Steam heated model (H)
Tilting with self-locking worm gear.

Volumes: 40, 60 or 80 litres.
Controls: Safety valve/pressure gauge combined with an automatic vacuum valve, stepless simmerstat control switch and pilot light (S), steam valve and pressure gauge with air screw (H). Mixer tap with connection for hot and cold water, lid, and handwheel.
To facilitate installation the delivery includes a separate foundation frame.
Materials: Cooking vessel, steam jacket, outer casing, collar, lid, pillars and in the electrically heated version (S) the steam generator are also of stainless steel (AISI 304).
Kettle dimensions: Inner dia. 450 mm.
Outer dia. 520 mm.
Working pressure: 100 kPa.
Installation: The foundation frame is cemented in 70 mm depth to the floor.

Electrically heated Metos Viking CS;

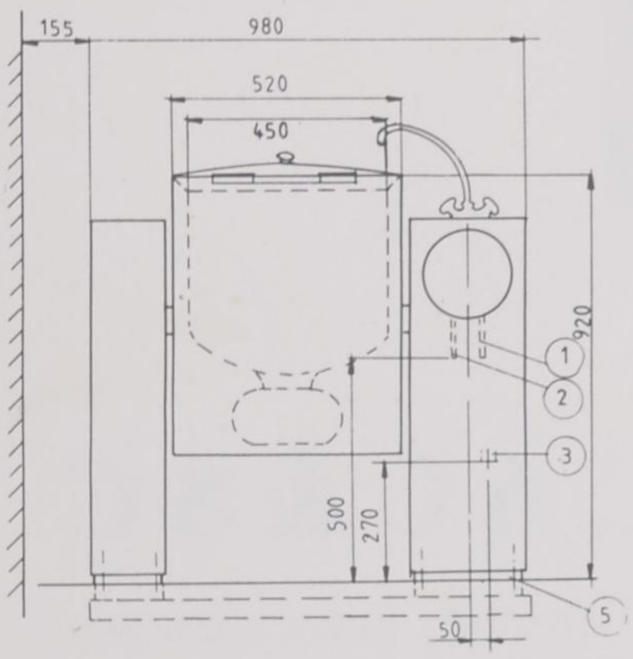
Water connection: hot and cold water copper pipe O.D. 8 mm.
Voltage: to be specified when ordering.

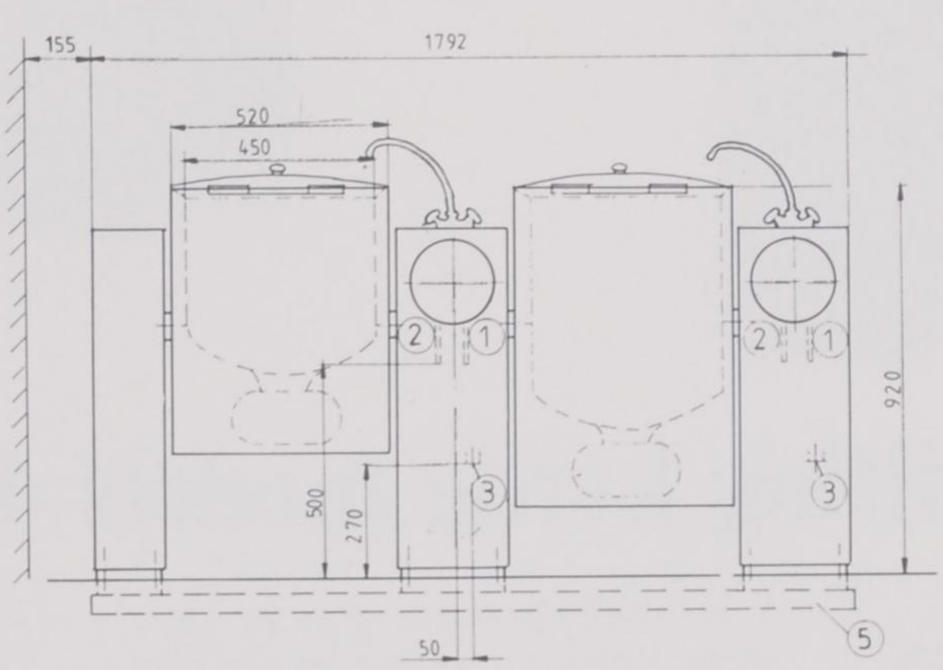
	4 CS	6 CS	8 CS
Electric loading	9 kW	10,5 kW	12 kW
Weight:	75 kg	80 kg	85 kg.

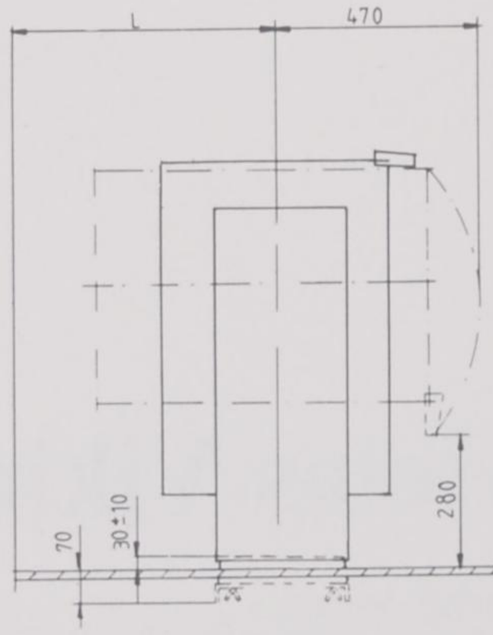
Steam heated Metos Viking CH;

Water connection: hot and cold water copper pipe O.D. 8 mm.
Steam pipe: to steam network max. 100 kPa pressure O.D. 15 mm.
Condensate pipe: O.D. 15 mm.

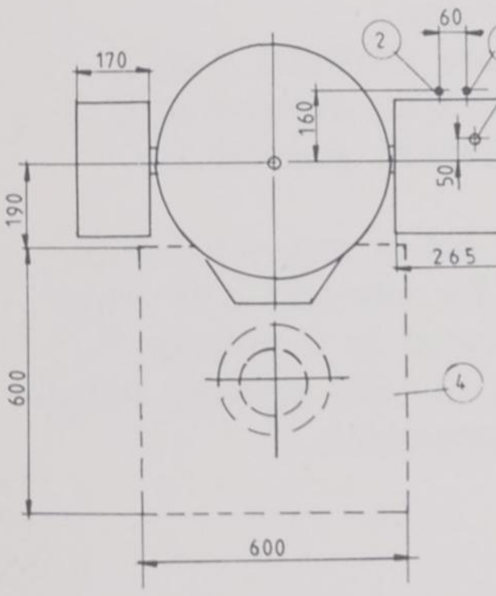
	4 CH	6 CH	8 CH
Steam consumption	approx. 15 kg/h	approx. 17 kg/h	approx. 20 kg/h.
Weight:	65 kg	70 kg	75 kg.



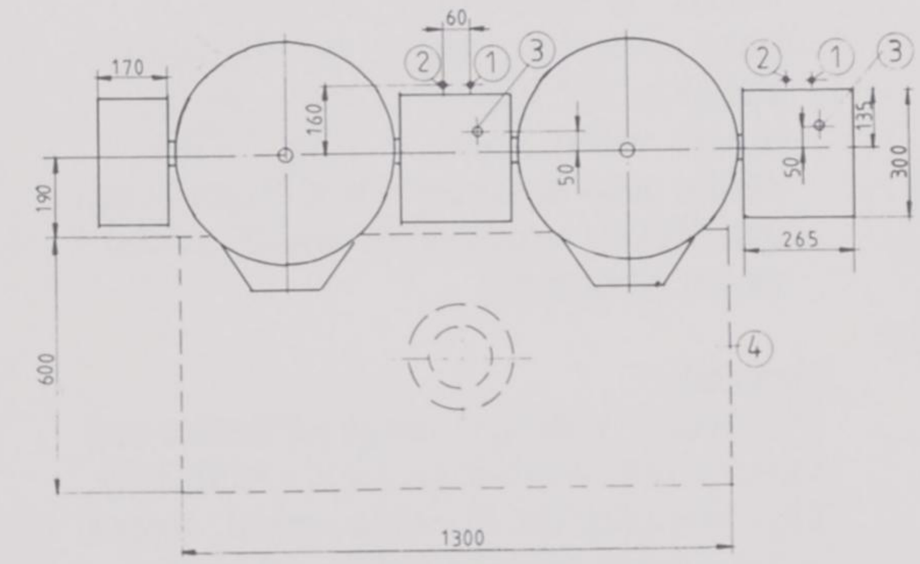




	4 C	6 C	8 C
Lmm	400	500	600



single kettle



group of two kettles

1. Cold water inlet, O.D. 8 mm copper without shut-off valve
2. Hot water inlet, O.D. 8 mm copper without shut-off valve
3. Electric connection with one incoming cable
4. Floor drain, min. 160/70, not included in the delivery
5. Foundation frame is cemented horizontally in 70 mm depth

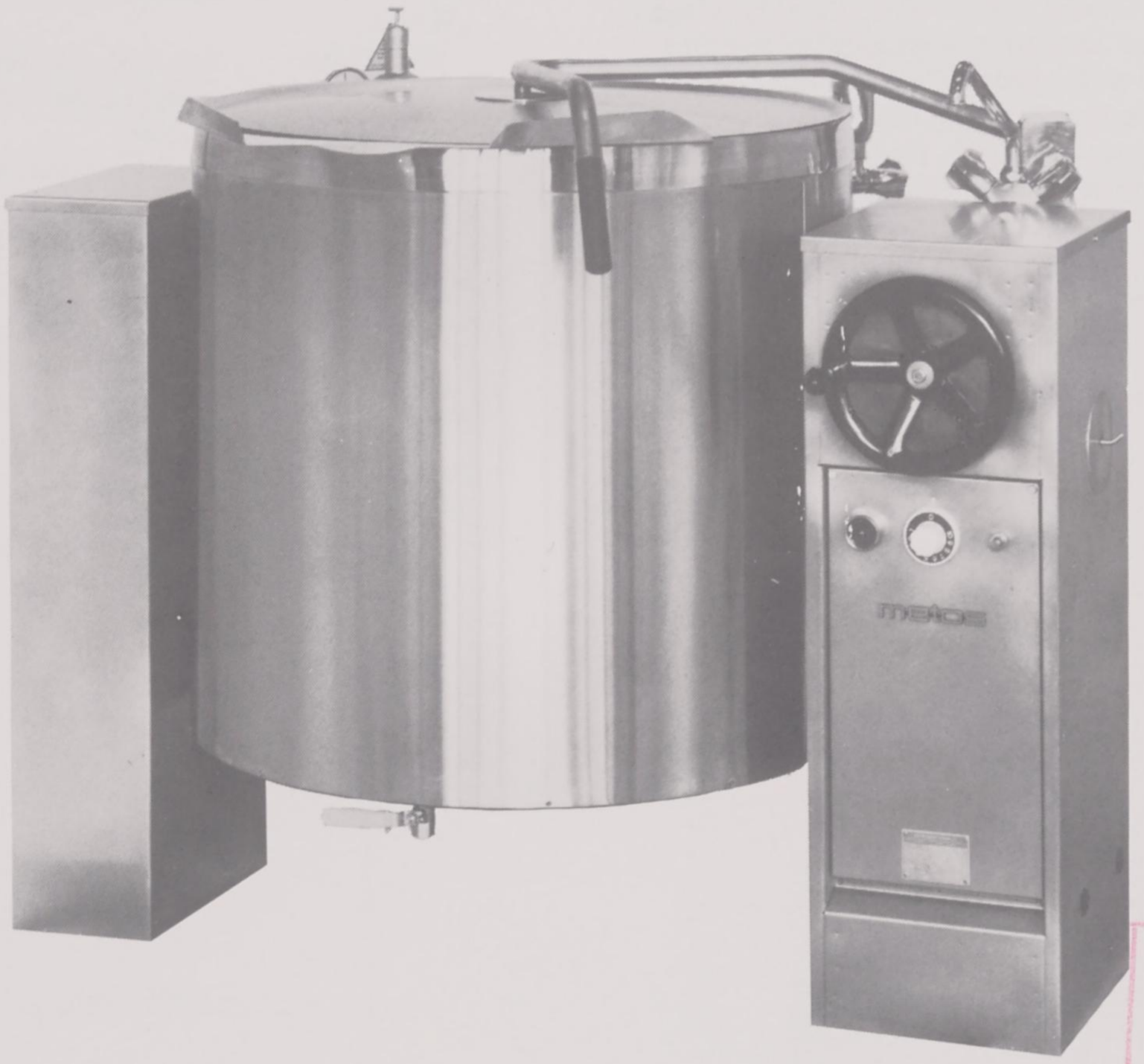
metos

Instrumentarium Oy Metos Division
04220 Kerava 2, Finland
Tel. 358-0-248 088
Telex: 121935 metos sf

UKP 2.03.84

metos

Metos Viking 12 C



POS. 1

Metos Viking tilting kettle model 12 C

Energy saving
Because the unit has its own integral steam generator and triple casing the Metos Viking 12 C tilting kettle is high in efficiency and low in energy consumption.

Flexibility
The Metos Viking 120 litre kettle can be supplied as single unit or combined with the 40, 60 and 80 litre sizes in groups of two or more.

Safety
- Metos Viking 12 C is triple cased resulting in very low surface temperature.
- A self-locking worm gear in the wheel operated tilting mechanism makes the tilting operation both easy and safe.
- The electrically heated kettle (suffix S) incorporates an overheat protection which automatically switches off electric supply to elements when kettle is tilted. This device also operates when there is an insufficient amount of water in the steam generator.

Materials
The Metos Viking 12 C is constructed in 18/8 stainless steel. — This includes the cooking vessel, steam jacket, outer casing, collar, hinged lid and pillars. In the electrically heated version (suffix S) the steam generators are also in 18/8 stainless steel.

Controls
- A stepless simmerstat control switch and pilot light is provided for each electrically heated kettle.
- The electrically heated units also incorporate a safety valve/pressure gauge combinated with an automatic vacuum valve and automatic overheat protection of steam generator.
- All kettles are provided with a tilting mechanism incorporating a self-locking worm gear with a generous handwheel.
- Each kettle has a mixer tap with connection for hot and cold water which is located in a position to allow filling of both cooking vessel and steam generator.

Optional extras
Baskets for potatoes, vegetables etc.
Lifting handles
Strainer plate
Measuring rod

Technical data

Metos Viking tilting kettle model 12 C

Electrically heated model (S)
Steam heated model (H)
Tilting with self-locking worm gear.

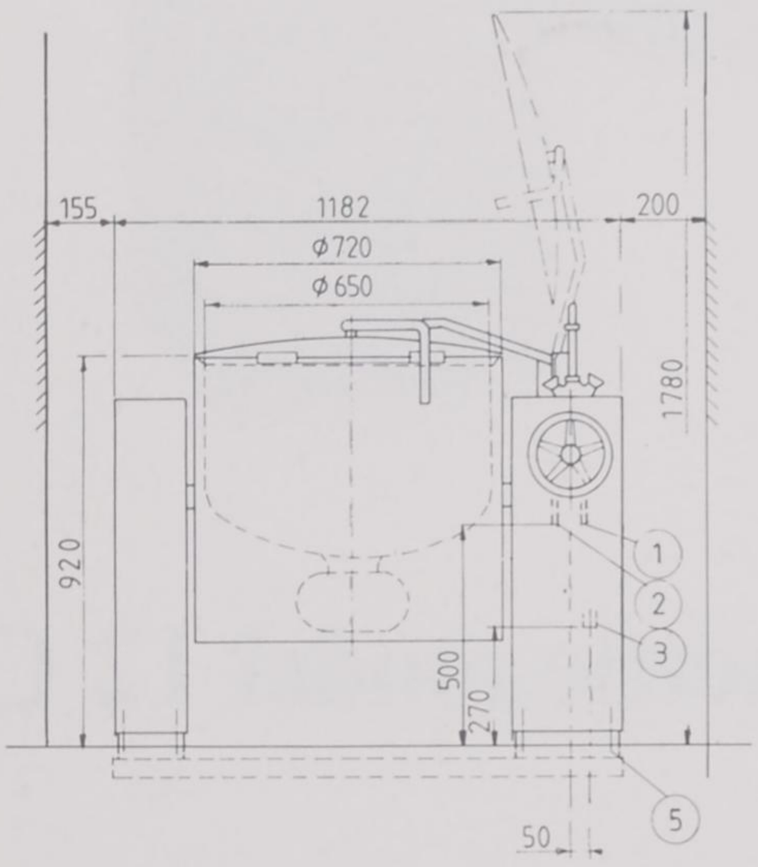
Volume:	120 litres.
Controls:	Safety valve/pressure gauge combinated with an automatic vacuum valve, stepless simmerstat control switch and pilot light, mixer tap with connection for hot and cold water, hinged lid, and handwheel. To facilitate installation the delivery includes a separate foundation frame.
Materials:	Cooking vessel, steam jacket, outer casing, collar, hinged lid, pillars and in the electrically heated version (S) the steam generator are also in 18/8 stainless steel.
Kettle dimensions:	Inner dia. 650 mm Outer dia. 720 mm.
Outer dimensions:	Width 1182 mm Depth 800/1150 mm Height 920/1780 mm.
Working pressure:	100 kPa.
Net weight:	120 kg.
Installation:	The foundation frame is cemented in 70 mm depth to the floor.

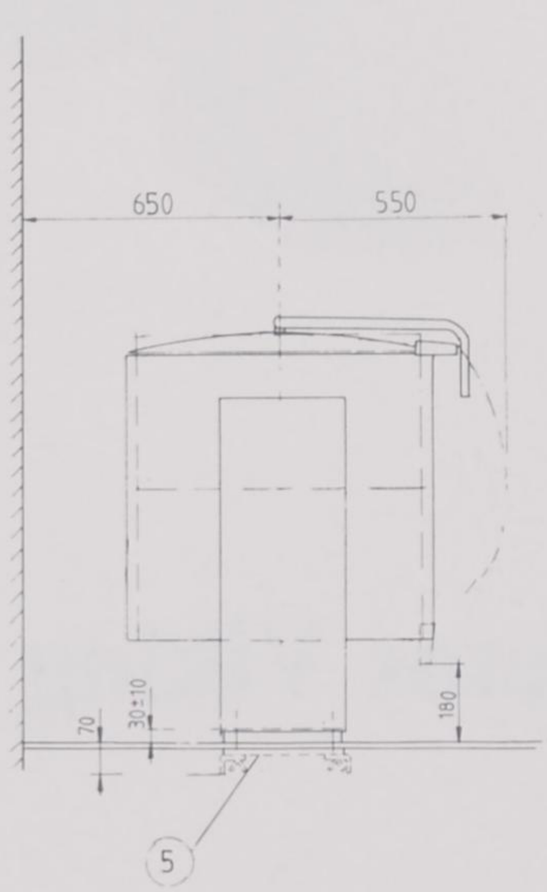
Electrically heated Metos Viking 12 CS;

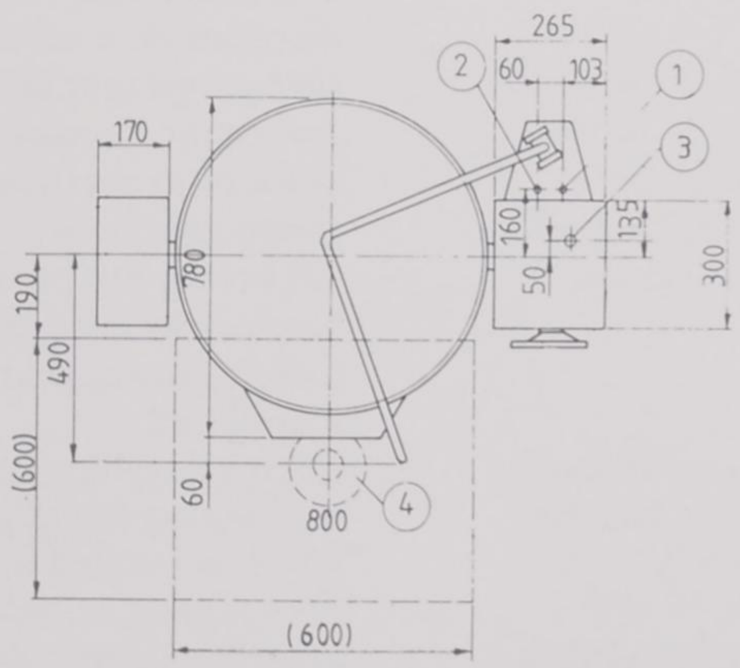
Water connection:	hot and cold water copper pipe o/d 8 mm.
Electric loading:	24 kW.
Voltage:	to be specified when ordering.

Steam heated Metos Viking 12 CH;

Water connection:	hot and cold water copper pipe o/d 8 mm.
Steam pipe:	to steam network max. 100 kPa pressure o/d 15 mm.
Condense pipe:	o/d 15 mm.
Steam consumption:	approx. 35 kg/h.







1. Cold water inlet, o/d 8 mm copper without shut-off valve
2. Hot water inlet, o/d 8 mm copper without shut-off valve
3. Electric connection with one incoming cable
4. Floor drain, min. 160/70, not included in the delivery
5. Foundation frame is cemented horizontally in 70 mm depth

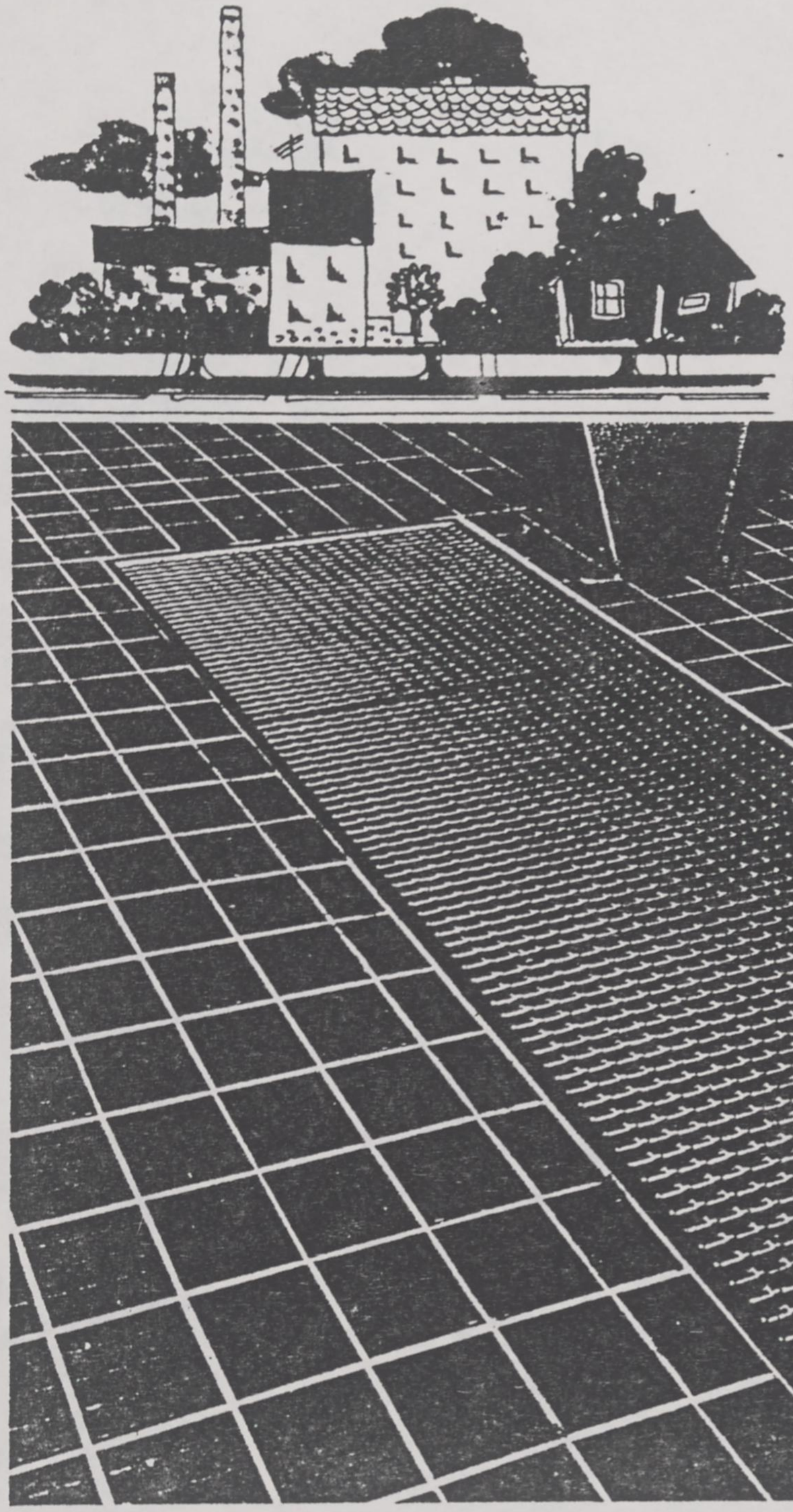
metos

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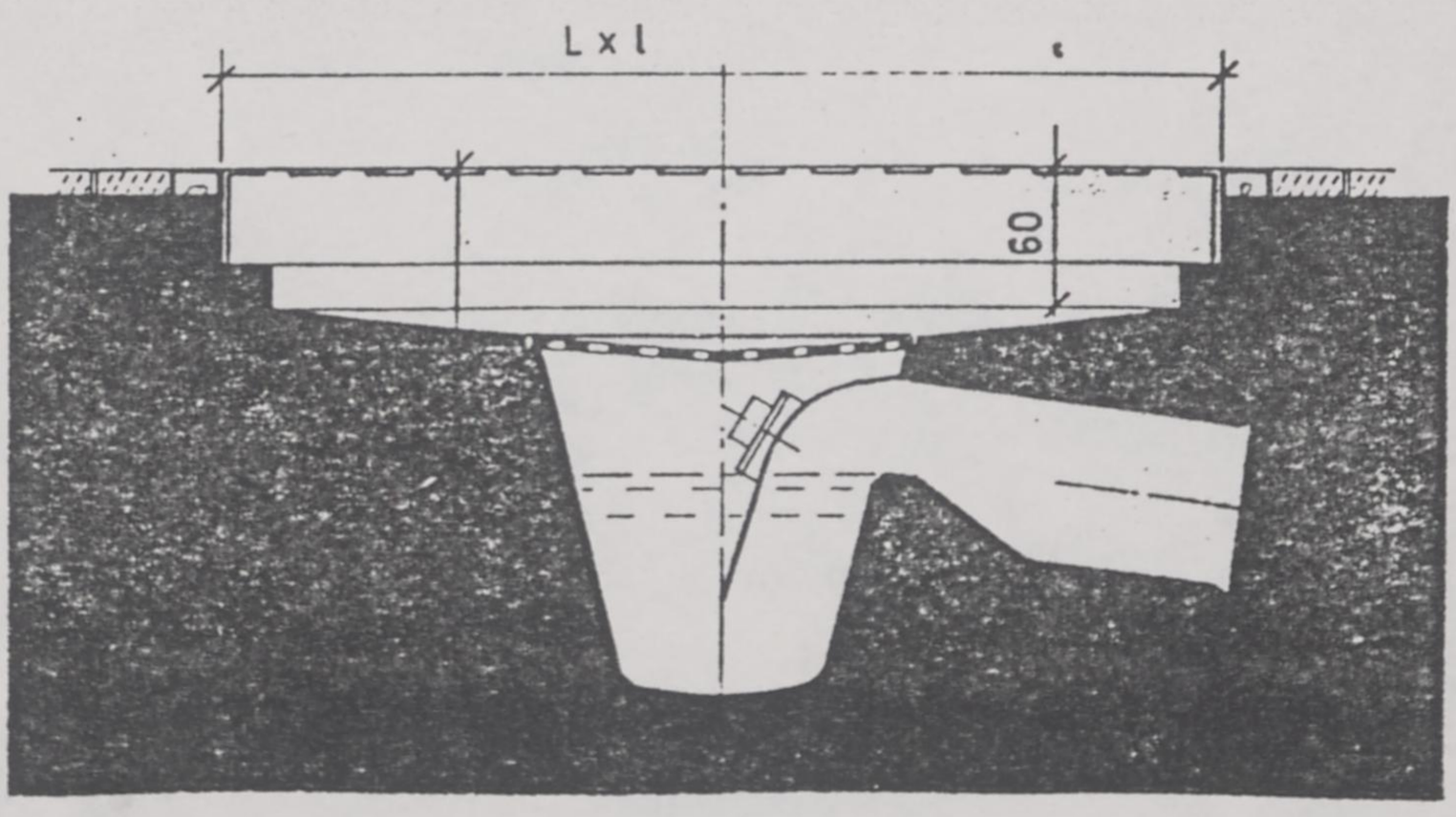
UKP 2.10.83

Vaahto SEWAGE

POS.
2

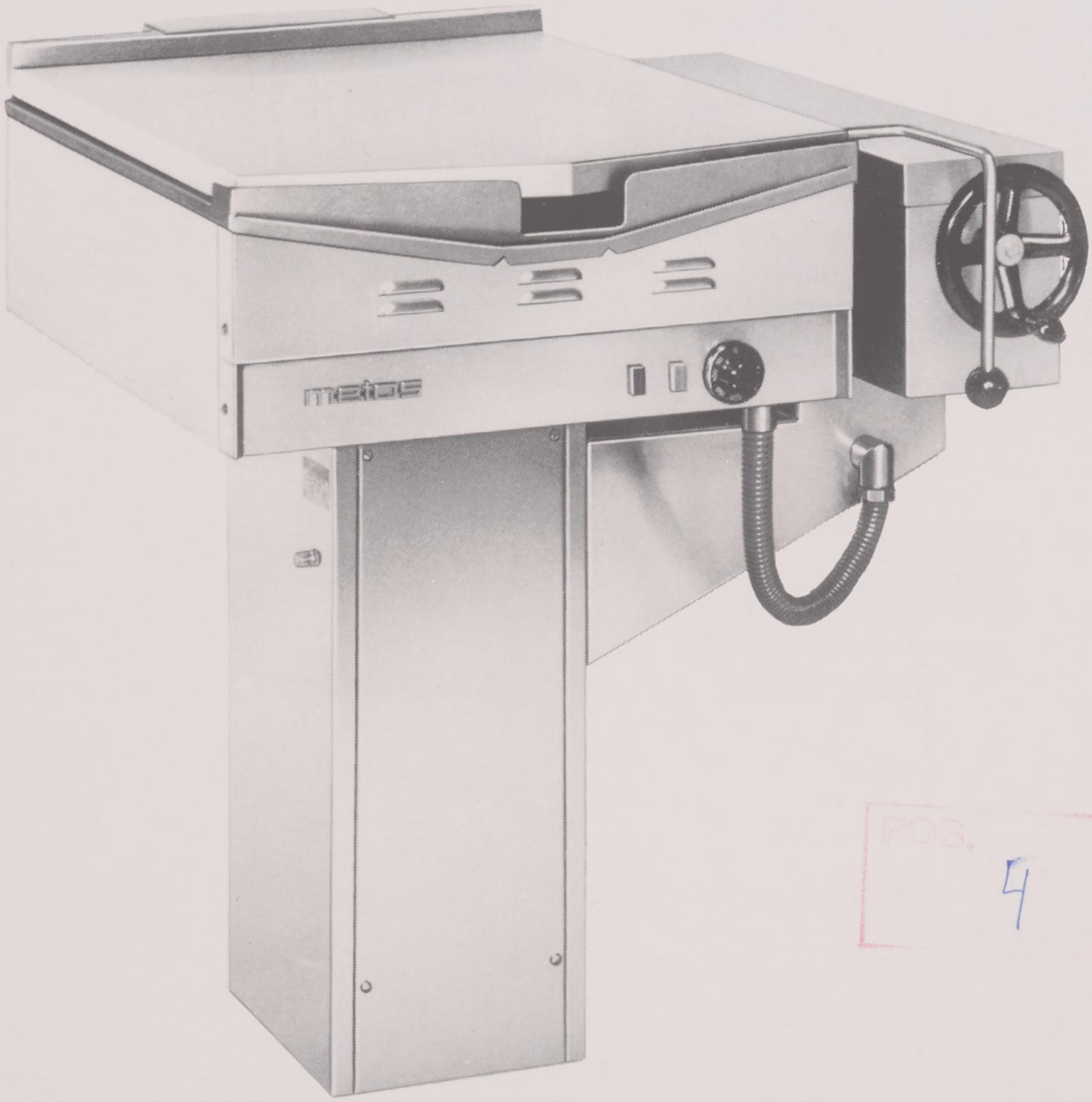


In many great kitchens of schools and restaurants are handled big amounts of water to the cleaning of devices and rooms. For the collection and re moval of this sewage-water we have developed the system that fills all the same quality and use claims as proper devices and that is naturally of stainless quality.



metos

Metos Prince



POS
4

Metos Prince frying pan with shorter warm-up time, improved responsiveness and manual tilting

Warm-up time
Technical improvements in the Metos Prince frying pans have reduced the warming-up time to only 11 minutes (+200° C). The power consumption is also reduced compared with earlier models.

Responsiveness
The thermostat of the Metos Prince can be set to any temperature in the range of 50-250° C. The purpose of the thermostat is to limit the maximum temperature of the pan, but quite large temperature variations can occur in the course of frying. For this reason the location of the thermostat bulb has been solved in a new way which has considerably imporoved responsiveness to heat.

Tilting with hand wheel
Tilting is effected with self-locking worm gear. When tilting is interrupted the pan is immediately locked in position. The pan cannot be tilted while the lid is closed.

Lid
The stainless lid of the Metos Prince frying pans is strong and sturdy. The inside bottom edge of the lid directs all condensate from inside the into the pan.

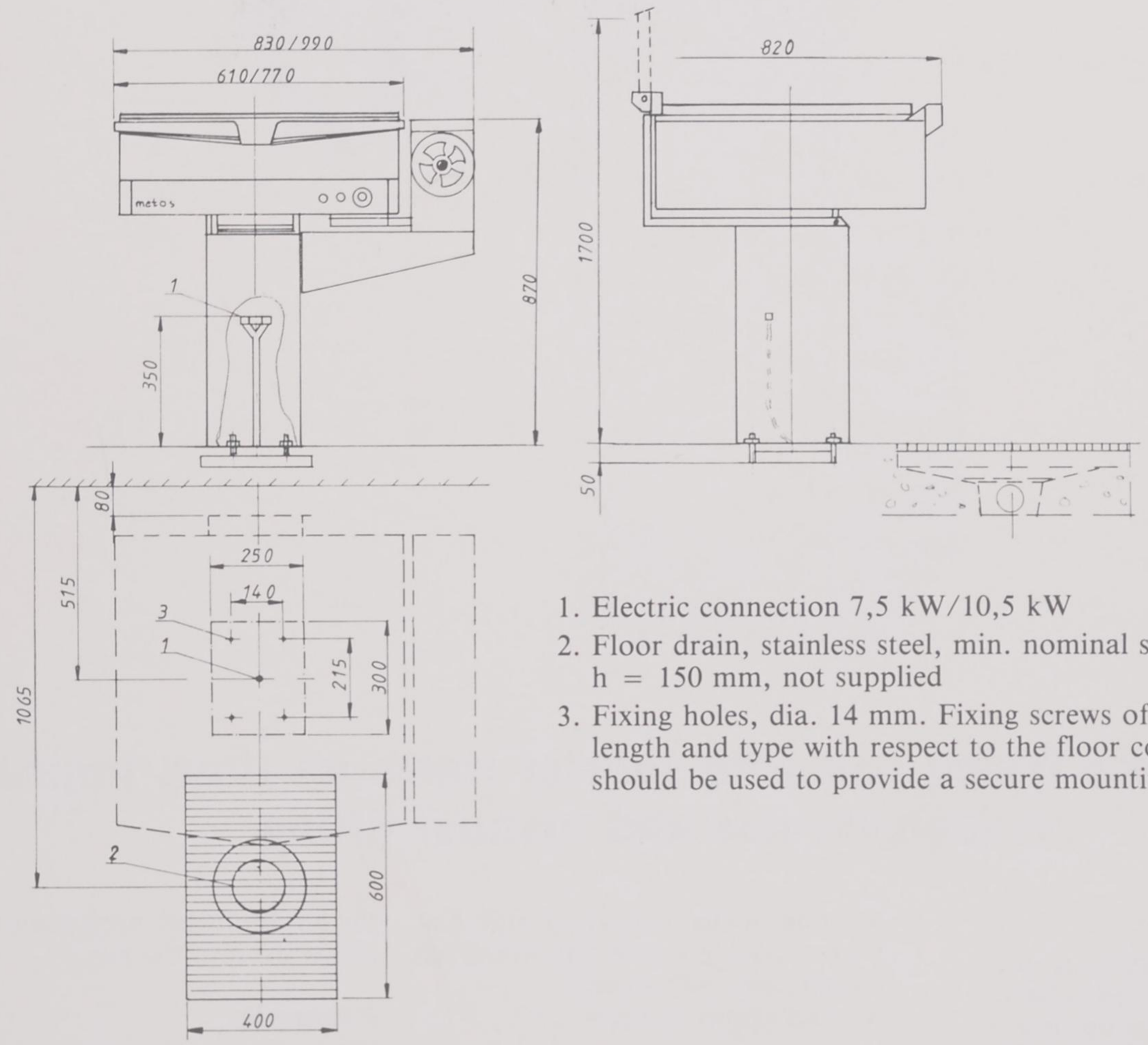
Pouring lip
The pan has a sloping front edge with pouring lip to direct the liquid into a container.

Control panel
The thermostat knob on the control panel also acts as an on/off switch. A signal lamp shows when the pan is switched on. There is a separate signal lamp for the thermostat to show when the set temperature has been reached.

Metos Prince 500 and 660

Technical data

	Metos Prince 500	Metos Prince 660	
Load:	7,5 kW	10,5 kW	
Voltage:	380 V 3 N 50 Hz	380 V 3 N 50 Hz	
Width:	830 mm	990 mm	
Depth:	820 mm	820 mm	**Optional accessories:**
Height:	900 mm	900 mm	Foundation frame,
Frying area:	500 × 540 mm	660 × 540 mm	steel griddle plates
Depth of pan:	130 mm	130 mm	for small pancakes,
Weight:	95 kg	100 kg	lifting hooks.



1. Electric connection 7,5 kW/10,5 kW
2. Floor drain, stainless steel, min. nominal size 70 mm h = 150 mm, not supplied
3. Fixing holes, dia. 14 mm. Fixing screws of suitable length and type with respect to the floor construction should be used to provide a secure mounting.

Specifications subject to change without notice

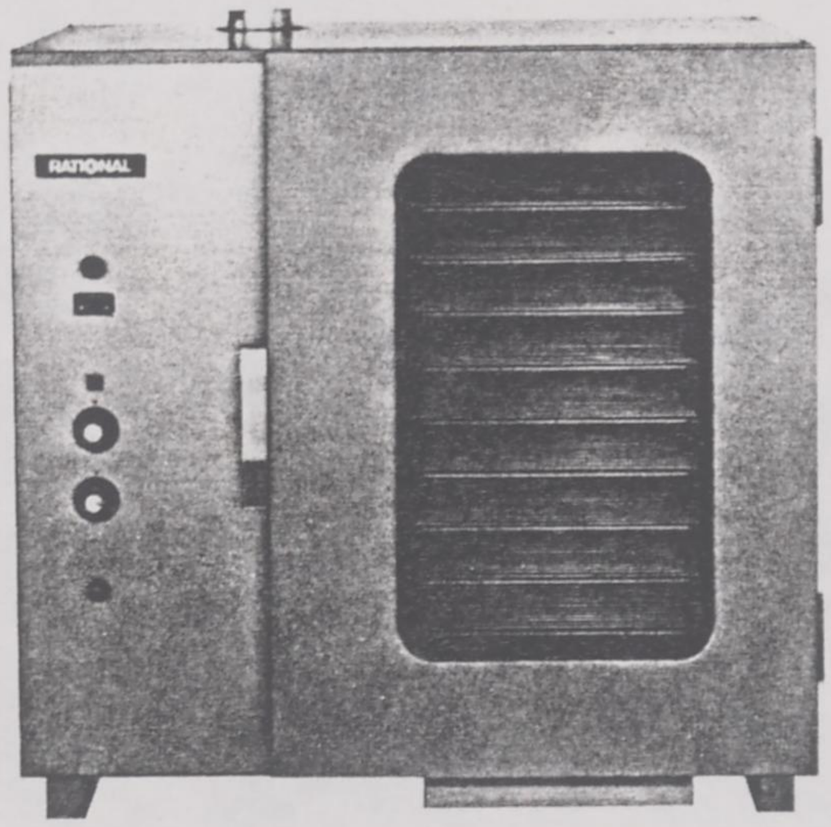
metos

Instrumentarium Oy, Metos Division
04220 Kerava, Finland
Tel 358-0-248 088
Telex 121935 metos sf

KpMHky 3.03.84

Heißluftautomat KL 101

Damit Sie mit weniger Aufwand mehr Gewinn machen können.



Der schnelle, preisgünstige Heißluftautomat mit der mittleren Kapazität. Sie können mit ihm braten, grillen, backen, auftauen und regenerieren. Saftiges bleibt schön saftig und es gibt nur geringe Gewichtsverluste. Mit dem KL 101 sind pro Mahlzeit mühelos 60 bis 100 Essen »zu schaffen«. Damit ist er der kostensparende Mittelpunkt der Gewerbeküche der kleinen und mittleren Gastronomie, in Pensionen, Heimen und Hotels. Wer mit ihm sein à-la-carte-Geschäft bestreitet, kann zugleich gesunde Diät-Kost bieten: Im Heißluftautomat KL 101 wird alles ohne Fett zubereitet!

Technische Daten:	
Abmessungen:	Länge = 890 mm, Tiefe = 715 mm, Höhe = 875 mm (+ 30 mm Abluftstutzen)
Anschlußwert:	wahlweise 12,16 oder 18,16 kW
Spannung:	220/380 V – Drehstrom
Heizung:	12 oder 18 kW
Motor:	0,16 kW
Temperaturbereich:	50–300°C
Heizkörper:	Rohrheizkörper aus Edelstahl rostfrei
Fassungsvermögen:	10 Roste bzw. Bleche 1/1 Gastronorm
Rostabstand:	60 mm
Beschickung:	Hordengestell, fahrbar, mit Einschubleisten für 10 Roste bzw. Bleche 1/1 Gastronorm
Schwadenerzeuger:	mit Magnetventil, Bedienung frontseitig mit Druckknopftaste
Wasseranschluß:	1/2 Zoll
Wrasenabzug:	stufenlos regulierbar, Abluftstutzen 80 mm ø
Klimasteuerung:	durch Frischluftzufuhr
Ausführung:	Tischgerät, wahlweise mit Voll- oder Glastür, rechts angeschlagen
Material:	• außen und innen Edelstahl rostfrei
Arbeitsablauf:	automatisch gesteuert mit akustischem Signal, Heizungskontrollampe und Störungsanzeige
Umluftfilterung:	Fettfilter Edelstahl rostfrei

Kapazitäten – Garzeiten:		
Frikadellen	150 Stück	14–15 Minuten
Koteletts	90 Stück	8–12 Minuten
Schnitzel	90 Stück	8–12 Minuten
Steaks	90 Stück	5– 8 Minuten
Kalbsbraten	30 kg	60–90 Minuten
Roastbeef	30 kg	25–30 Minuten
Schweinebraten	30 kg	45–90 Minuten
Hähnchen, ganz	25 Stück	20–25 Minuten
Haxen	30 Stück	60–90 Minuten
Fischfilets	90 Stück	12–15 Minuten
Toast Hawaii	125 Stück	4– 6 Minuten
Apfelstrudel	35 Stück	15–20 Minuten
Nußhörnchen	125 Stück	12–15 Minuten
Pizzas	20 Stück	5– 8 Minuten

Technische Änderungen vorbehalten.

POS 5

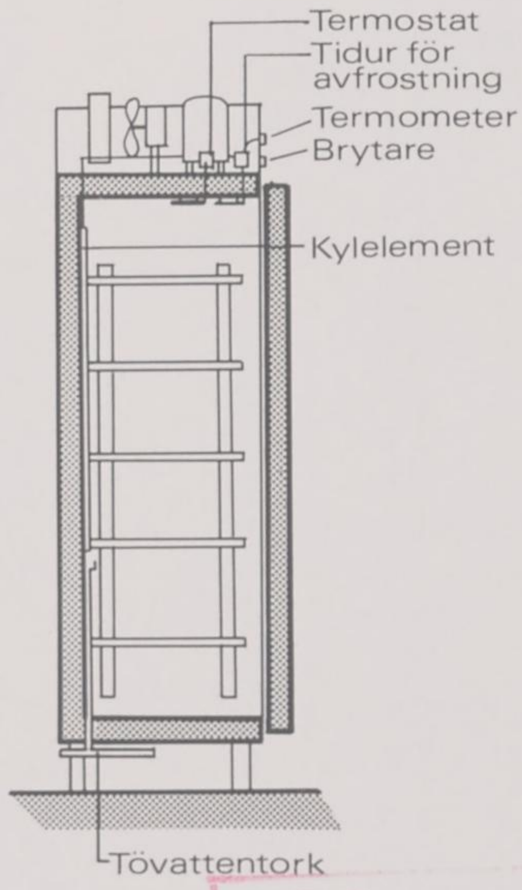
RATIONAL

RATIONAL Großküchentechnik GmbH, Iglinger Straße 62, 8910 Landsberg
Telefon 0 81 91/40 01
Telex 527 223

metos

Kylskåp ACK





- Används till kylförvaring av mat
- Kapacitet enligt specifikation på baksidan
- Samtliga storlekar kan levereras gastronormanpassade
- Utvändiga sidor, rygg, dörr, front och invändig botten av slipad rostfri plåt
- Innersidor av kraftig aluminiumplåt
- Isolering av högvärdig polystyrenskumplast
- Utvändig termometer och huvudströmbrytare med signallampa
- Termostatstyrning av temperaturen
- Tidurskontrollerad avfrostning med inbyggd tövattentork
- Kylaggregatet luftkylt
- Statiskt kylelement
- Kylmedium Freon 12
- Avlyftbara dörrar
- Låsbart, kraftigt handtag
- Lätt att rengöra genom släta ytor
- Finnes även för anslutning till centralkyla
- Tillbehör: 5 par gejdrar och 5 hårdförkromade gallerhyllor för varje heldörr
- Extra tillbehör: rostfria gallerhyllor, hårdförkromade gallerhyllor, halvdörrar, invändig belysning och fotpedal

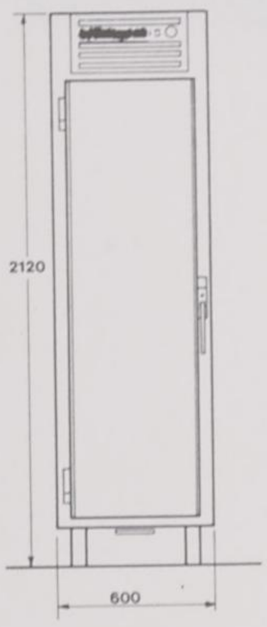
POS. 7

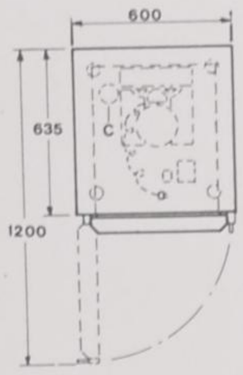
metos®

Kylskåp

Kylskåp ACK Skala 1:50

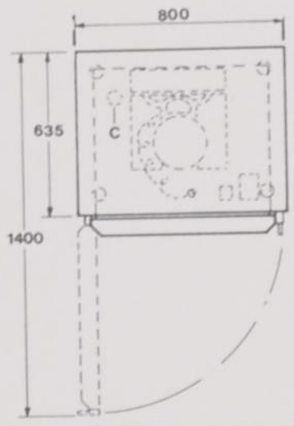
ACK 466



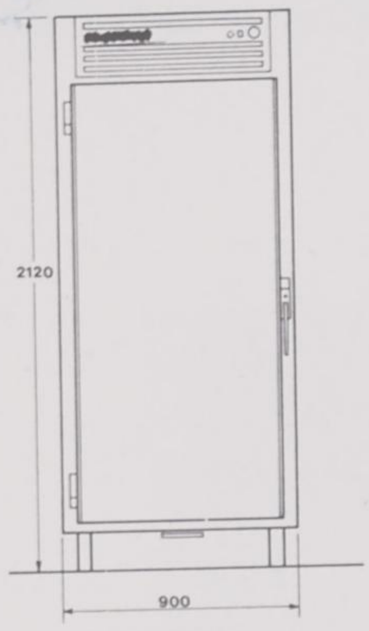


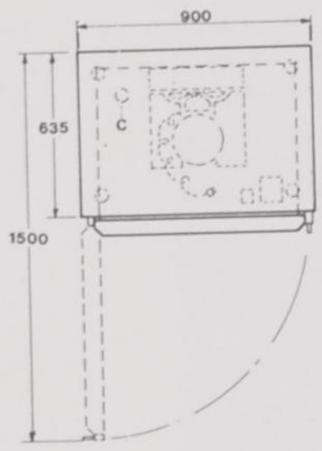
ACK 656



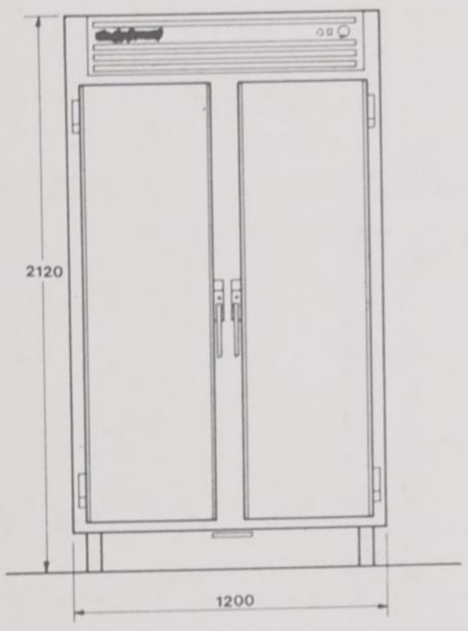


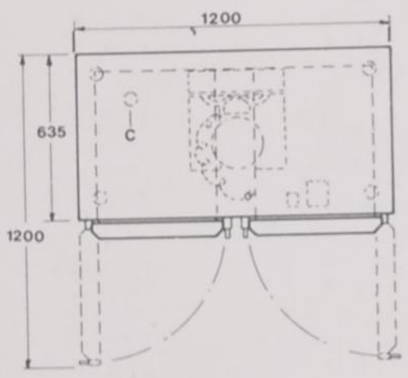
ACK 751



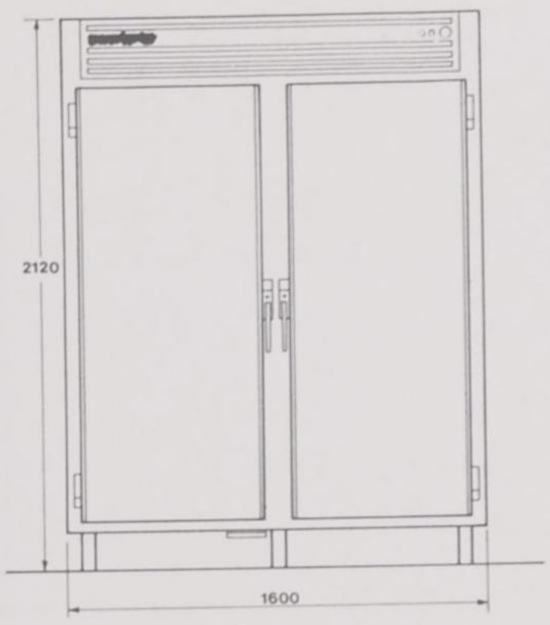


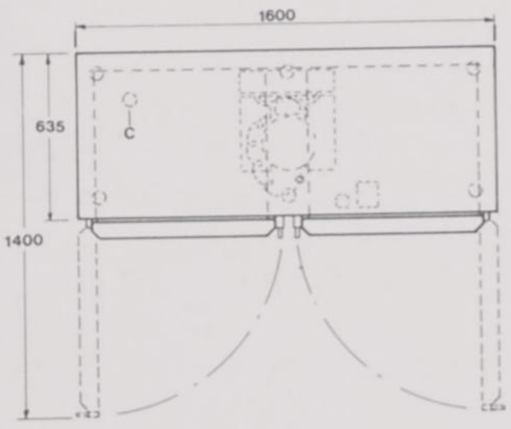
ACK 1036

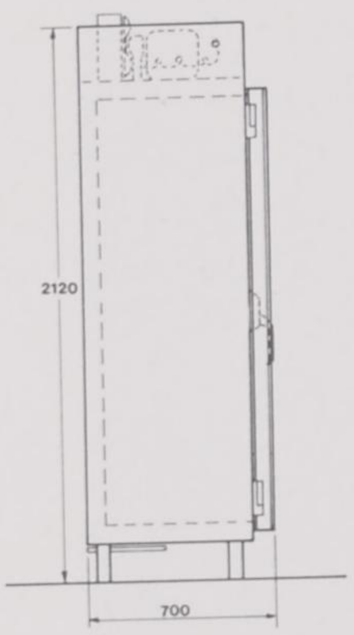




ACK 1400







Typ	Yttermått B x D x H mm	Volym liter	Innermått B x D x H mm	Säkring A	Effekt kW	Kylbehov i kcal/h vid —10°C förångning	Avgiven värme vid full effekt kW	Vikt netto kg
ACK 466	600 x 700 x 2120	466	490 x 580 x 1640	10 trög	0,3	270	0,46	120
ACK 656	800 x 700 x 2120	656	690 x 590 x 1640	10 trög	0,35	400	0,65	150
ACK 751	900 x 700 x 2120	751	790 x 580 x 1640	10 trög	0,35	400	0,65	160
ACK 1036	1200 x 700 x 2120	1036	1090 x 580 x 1640	10 trög	0,4	450	0,76	210
ACK 1400	1600 x 700 x 2120	1400	1490 x 580 x 1690	10 trög	0,4	520	0,85	260

Andra storlekar levereras efter förfrågan.
El-anslutning i jordat vägg-urtag för 1-fas 220 V.
Monterat 2000 mm över golv. 3 meter kabel med stickpropp medföljer skåpet.
Skåpen måste monteras i våg.

Metos Storkök AB

Huvudkontor
STOCKHOLM
Ankdammsgatan 24 A
Box 1181
17123 SOLNA
Tel 08-730 06 90
Telex METOS 134 45

Avd.kontor
GÖTEBORG
Sankt Pauligatan 32
416 60 GÖTEBORG
Tel 031-151609

MALMÖ
Krusegatan 36
21225 MALMÖ
Tel 040-937000

Fabrik
Metos-Accord
670 24 KLÄSSBOL
Tel 0570-60200
Telex 5778

Telegram metosabe
STOCKHOLM
Bankgiro 513-9407
Postgiro 58132-2

UKP 2.11.83

08:10

metos
Instrumentarium Oy

1900

METOS ACK REFRIGERATORS

- ACK refrigerators are used as cold storage for foodstuffs.
- Capacity according to specification below.
- Gastronorm dimensioned ACK 656G and ACK 1400G for GN 2/1, 1/1, 2/3, 1/2 and 1/3 trays without extra shelves.
- Door, front panel and cabinet floor of stainless steel. Outside sheathing of zinc coated white enamelled plate. Inside lining of hard aluminium.
- Insulation of high quality polystyrene foam plastic.
- External thermometer and main switch with pilot light.
- Thermostatic temperature control.
- Defrosting timer with vaporization of water.
- Air-cooled refrigerating machinery.
- Static evaporator.
- Refrigerant Freon 12.
- Removable doors.
- Solid lockable handle.
- Easy to clean because of smooth surfaces.
- Also available for connection to central refrigeration system.
- Accessories: 5 pairs of guides and 5 chromium plated wire mesh shelves for each full-size door.
- Optional accessories: stainless steel wire mesh shelves, chromium plated wire mesh shelves, guides and half-size doors.

Model	External dimensions W x D x H mm	Volume litres	Internal dimensions W x D x H mm	Fuse A	Input kW	Net weight kg
ACK 466	600x700x2120	466	490x580x1640	10 slow	0,3	120
ACK 656	800x700x2120	656	690x580x1640	10 slow	0,35	150
ACK 751	900x700x2120	751	790x580x1640	10 slow	0,35	160
ACK 1036	1200x700x2120	1036	1090x580x1640	10 slow	0,4	210
ACK 1400	1600x700x2120	1400	1490x580x1690	10 slow	0,4	260

Other sizes available on request. Electric connection: 220 V single phase earthed plug, installed 2000 mm above floor level, with 3 m cable included in the delivery.

1010 5000 10.80 LP

metos marine

WASTE BOXES AND SACK HOLDERS

TRASH CARRIER METOS 8-823

FOR all kind of waste.

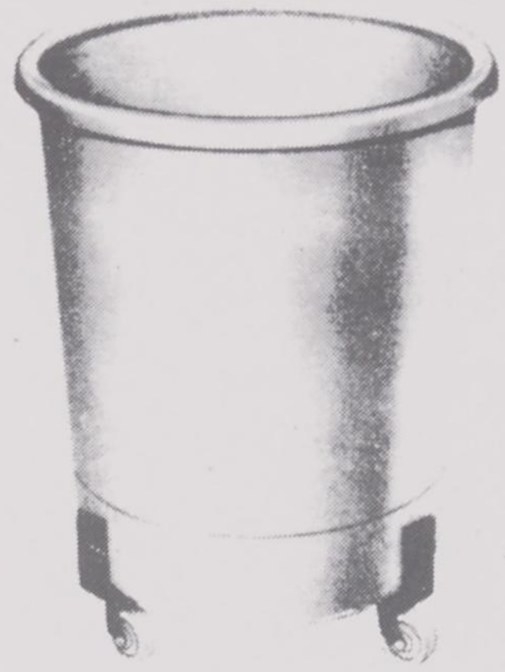
VOLUME 75 litres.

REMOVABLE trash basin and lid in plastic.

BASIN equipped with lifting handles.

FOUR swivel wheels.

DIMENSIONS: diameter 520 mm
height 620 mm.



POS. 8

WASTE BOX TIIKERi

FOR all kind of waste.

EXTERIOR and interior in galvanised steel.

VOLUME 50 litres.

EQUIPPED with lid and lifting handles.

THREE feet.

DIMENSIONS: diameter 365 mm
height 560 mm.



WASTE SACK HOLDER TIIKERI

FOR waste sacks.

ALL in galvanised steel.

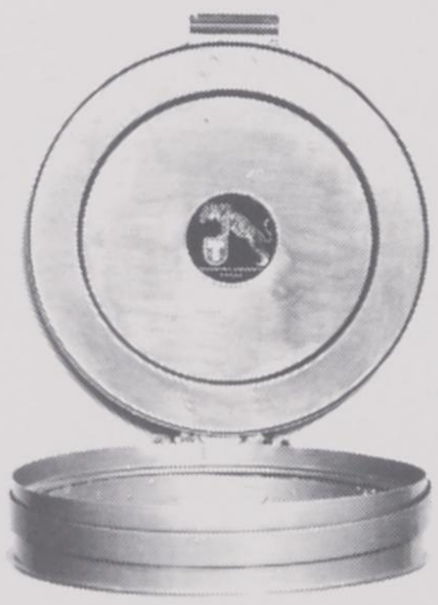
SUITABLE for: 100 or 150 litres' plastic sacks.
150 or 200 litres' paper sacks.

EQUIPPED with lid.

WALL mounted type.

DIMENSIONS: diameter 425 mm
max total depth from wall 600 mm.

RECOMMENDED height from deck 1200 mm.



All specifications are subject to change without notice.

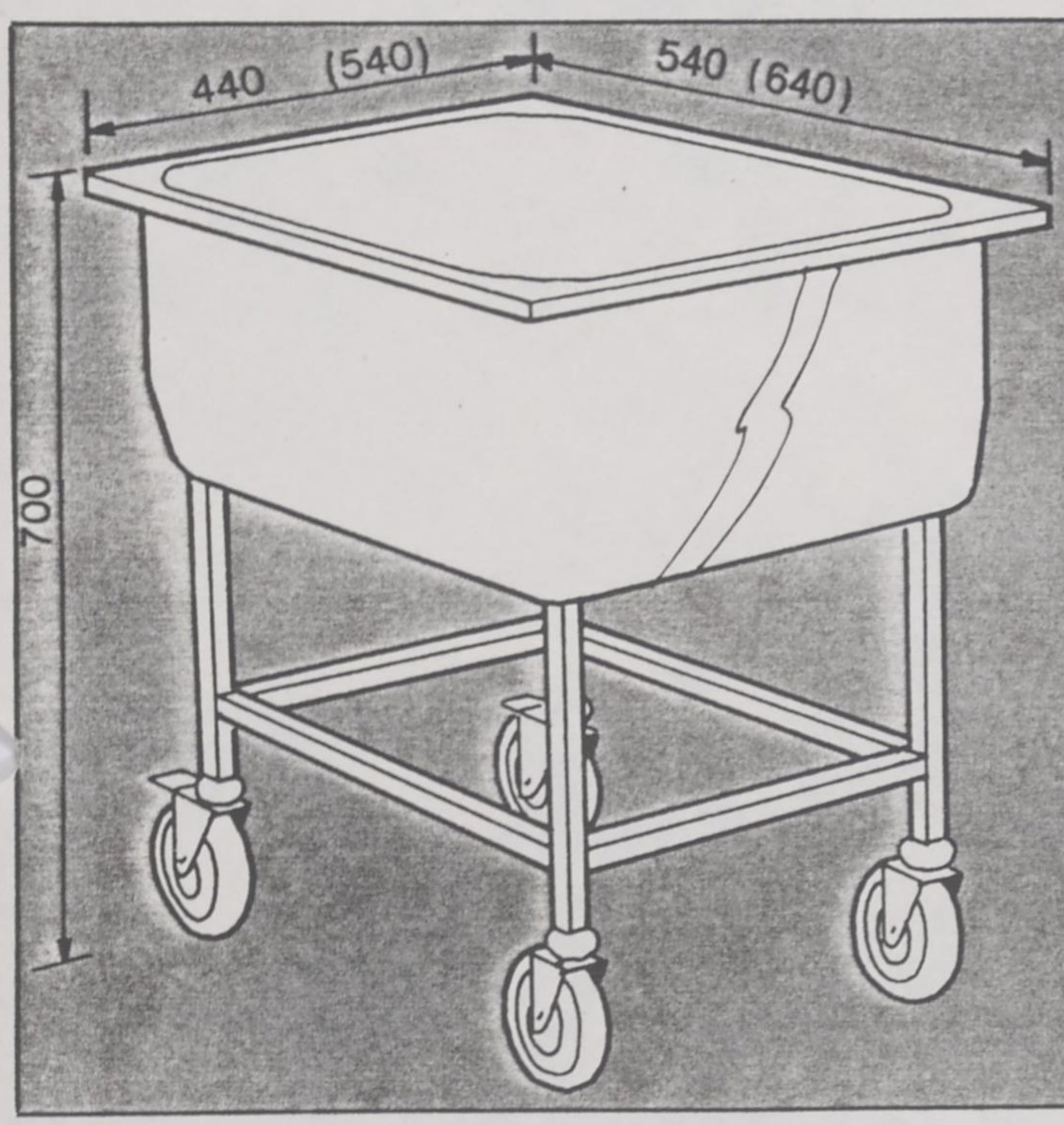
INSTRUMENTARIUM Oy
METOS-MARINE
TEL 90-248 088
TELEX 12-1935

ADDRESS:
04220 KERAVA 2
FINLAND

2.09.83

Trolleys

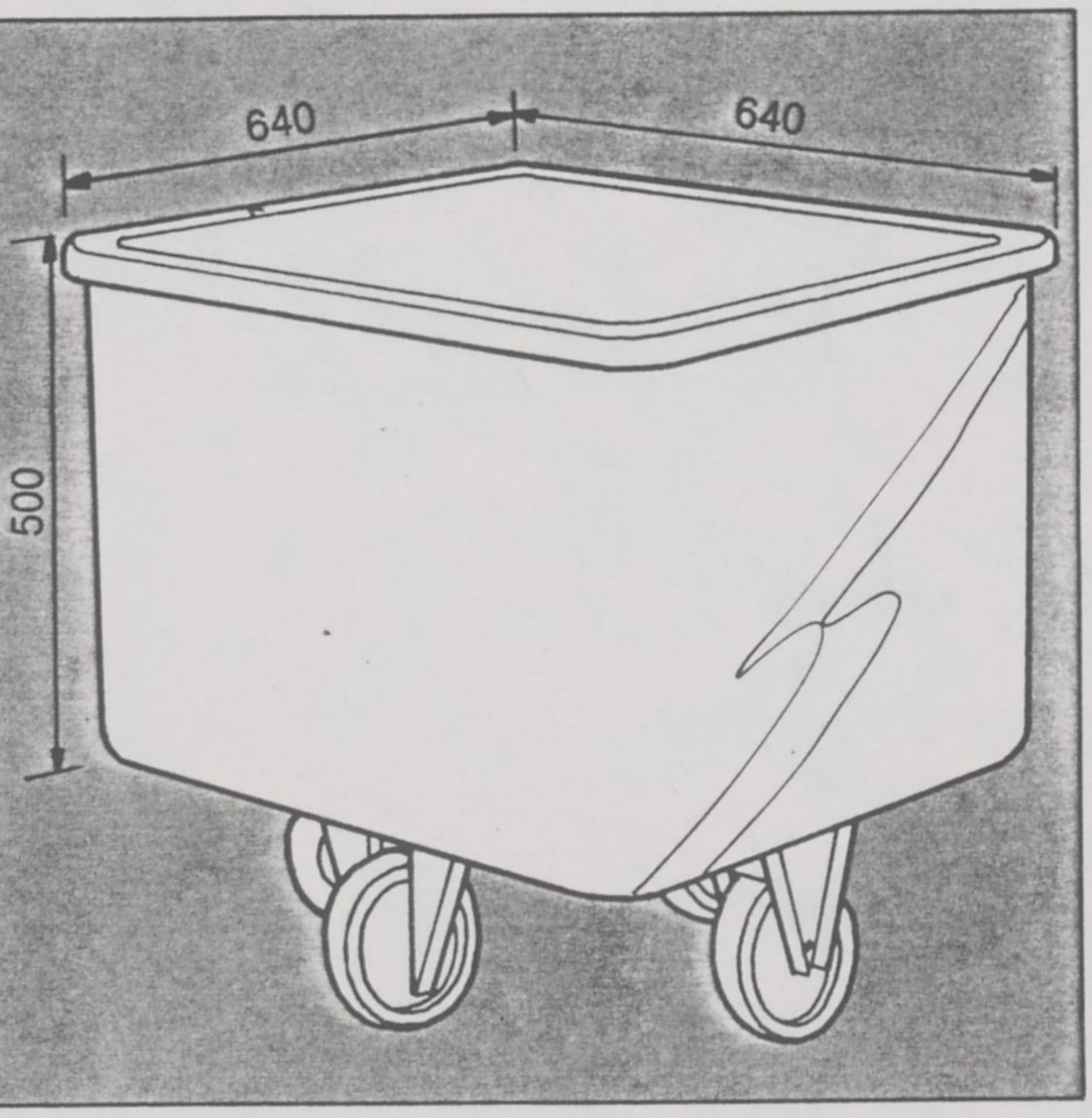
Basin trolley AV-405 AV-506



50 litres (basin 400×500×300 mm)
75 litres (basin 500×600×275 mm)

Made of stainless steel 1.0 mm, castors ø 125 mm, extra outfit: bottom valve or globe valve.

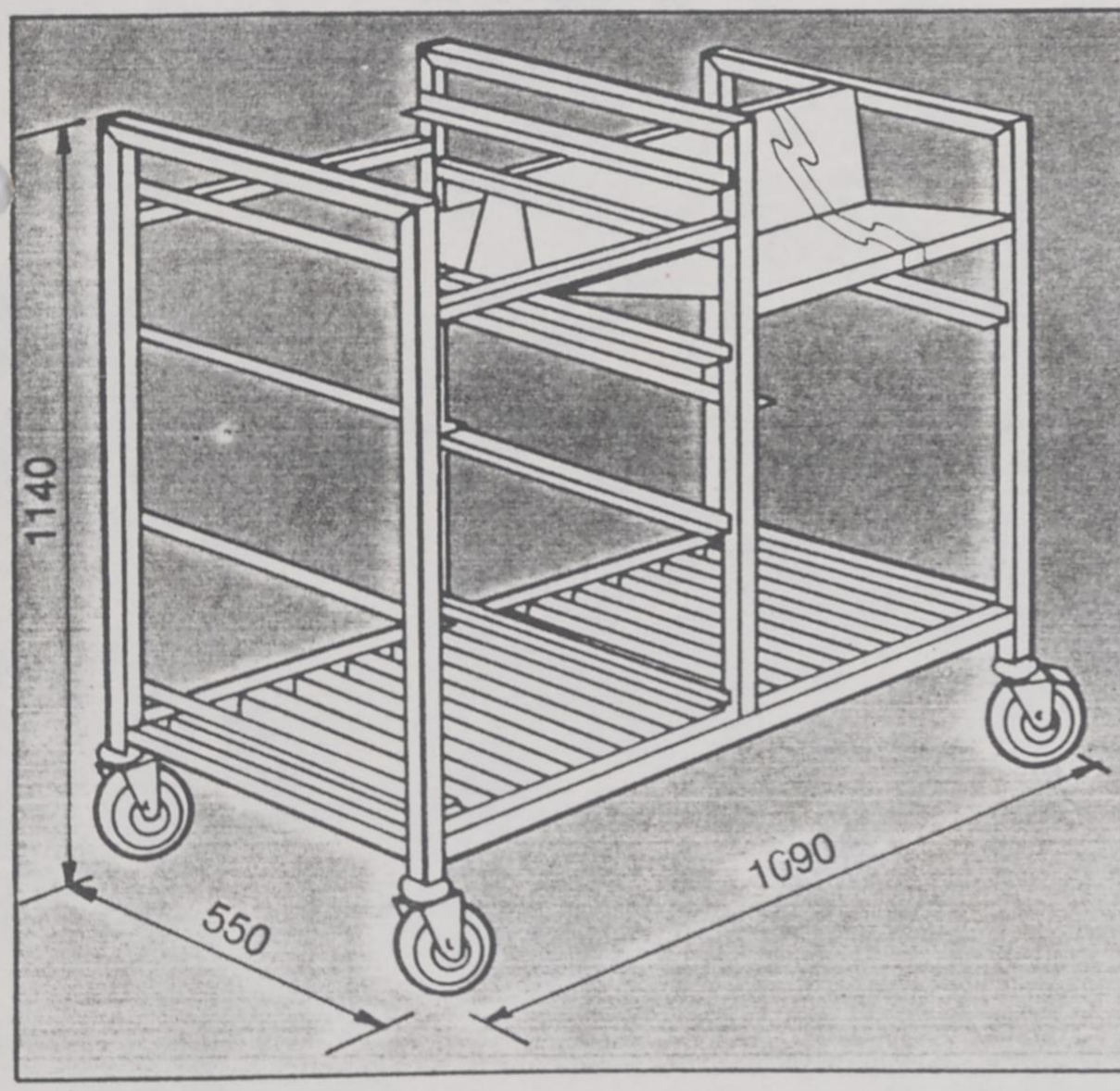
Basin trolley AV-606



200 litres (basin 640×640×500 mm)

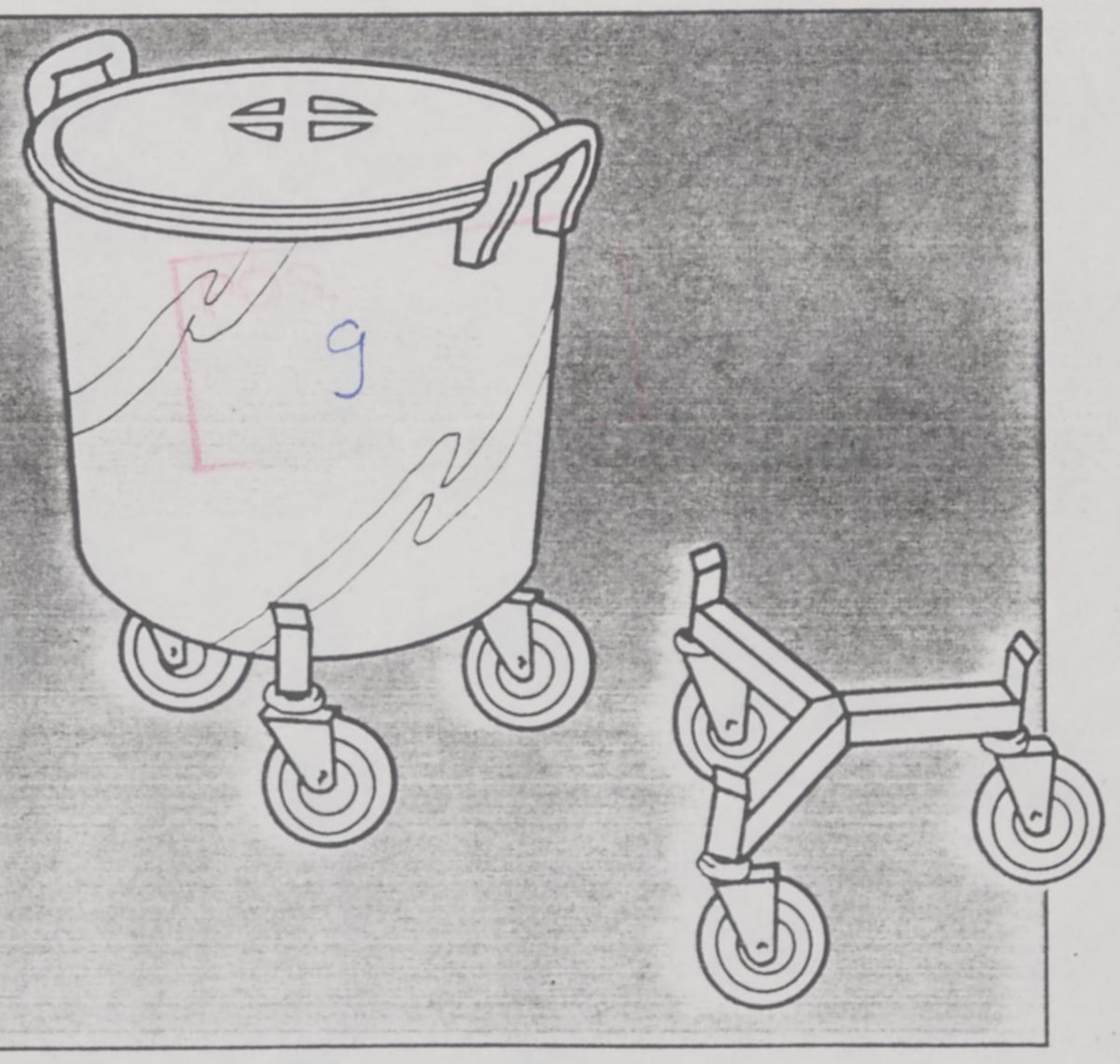
Made of stainless steel 2.0 mm or 1.2 mm, castors ø 160 mm, extra outfit: bottom valve or globe valve.

Clearing trolley KV-611



Five leader pairs for dish baskets, castors ø 100 mm.
Extra outfit:
— drop basin
— waste basin 30 litres or two waste basins of 8 litres

Waste trolley JV-65 JV-45



65 litres, ø 580 mm, height 600 mm
45 litres, ø 460 mm, height 550 mm

Body of stainless steel, plastic wastecontainer, castors ø 100 mm.

metos

Metos dishwashing racks

Metos-Geschirrkörbe



POS.
10 + 11

Light, hygienic METOS racks for large-scale dishwashing

Construction: High quality polypropylene plastic. Ideal material for institutional dishwashing. Light-weight, high detergent and temperature resistance. Eliminates noise and saves china and glassware.

Ladders in a cross on the center and on the four sides allow the rack to be driven in whatever direction and to be used in various types of dishwashing machines.

Open side and bottom construction provide easy water accessibility.

The racks can be stacked in high or low position.
Grips on four sides to facilitate handling.

Special features: Each rack type has a different colour:

Metos plate rack	390 — dark brown
Metos cup rack	330 — beige
Metos general purpose rack	415 — medium brown

Rack size: 500 × 500 mm.

Leichte, hygienische METOS-Geschirrkörbe für die gewerbliche Geschirrspülung

Ausführung: Die Metos Geschirrspülkörbe sind aus erstklassigem Polypropylen. Ein Material das stosssicher ist und sehr hohe Temperaturen während des Spülvorganges aushält. Ein Korb der stärkster Beanspruchung standhält und auch gegen agressive Spülmittel resistent ist.

Konstruktion: Der Korb ist stapelbar, die Handgriffe an allen vier Seiten ermöglichen eine rationelle Beförderung in jeder Lage.

Die am Korbboden und an jeder Seite befindlichen Trasportstege erleichtern die Einführung in jede Schubrichtung und ermöglichen die Verwendung des Korbes in den verschiedensten Spülmaschinenmodellen.

Die grosse Perforation an den Seiten und am Boden des Korbes garantieren eine sehr gute Zirkulation des Spülwassers und dadurch hygienisches Waschen.

Kennzeichen: Jeder Korbtyp hat seine eigene Farbe:

Metos Tellerkorb	dunkelbraun Typ	390
Metos Tassenkorb	beige	330
Metos Allzweckkorn	mittelbraun	415

Korbmasse: 500 × 500 mm.

Metos dishwashing racks
Metos Geschirrkörbe



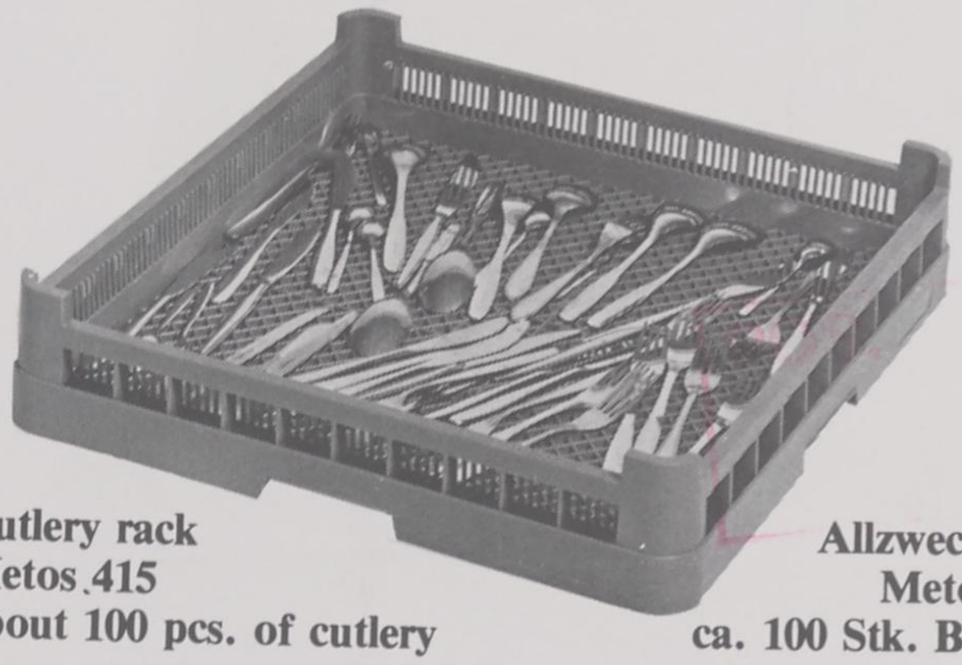
Plate rack Metos 390
16 or 18 plates

Tellerkorb Metos 390
16 oder 18 Teller



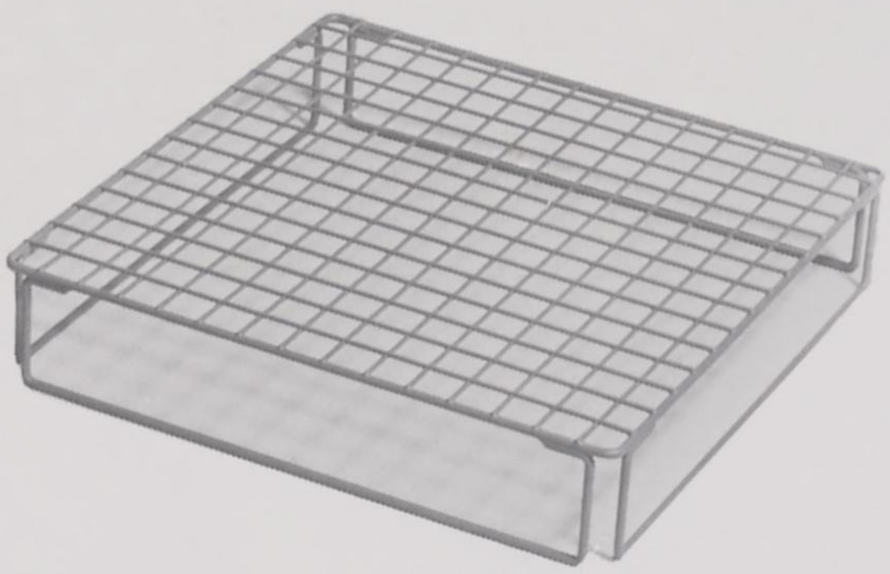
Cup rack
Metos 330
about 36 coffee cups
or glasses

Tassenkorb
Metos 330
ca. 36 Tassen oder Gläser



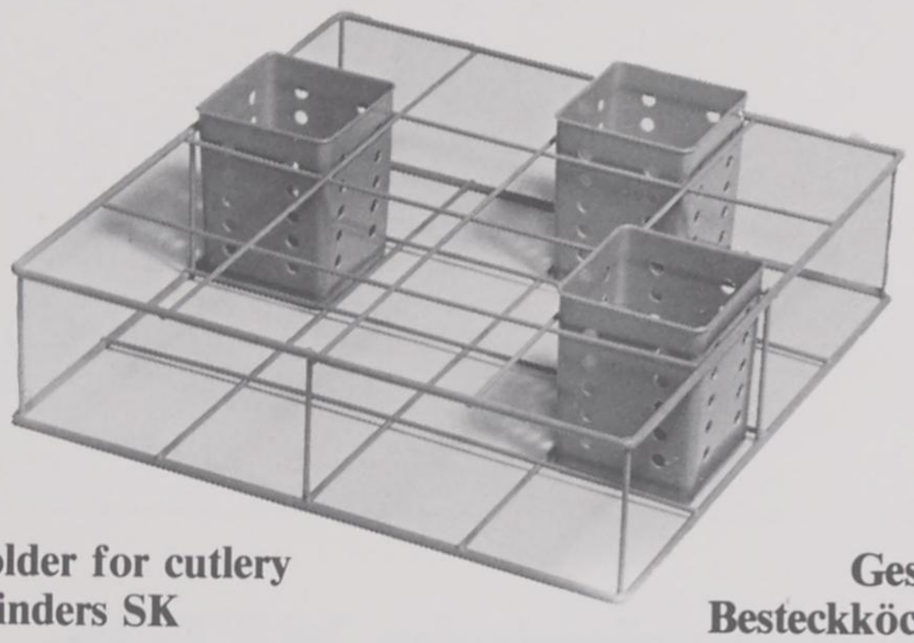
Cutlery rack
Metos 415
about 100 pcs. of cutlery

Allzweckkorb
Metos 415
ca. 100 Stk. Besteck



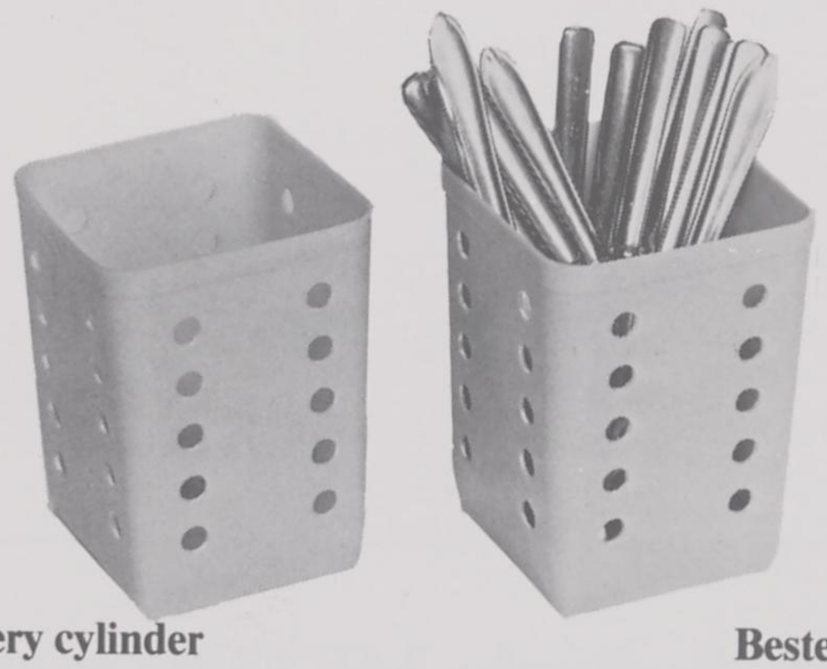
Wire net PV

Korbdeckel PV



Holder for cutlery
cylinders SK

Gestell für
Besteckköcher SK



Cutlery cylinder

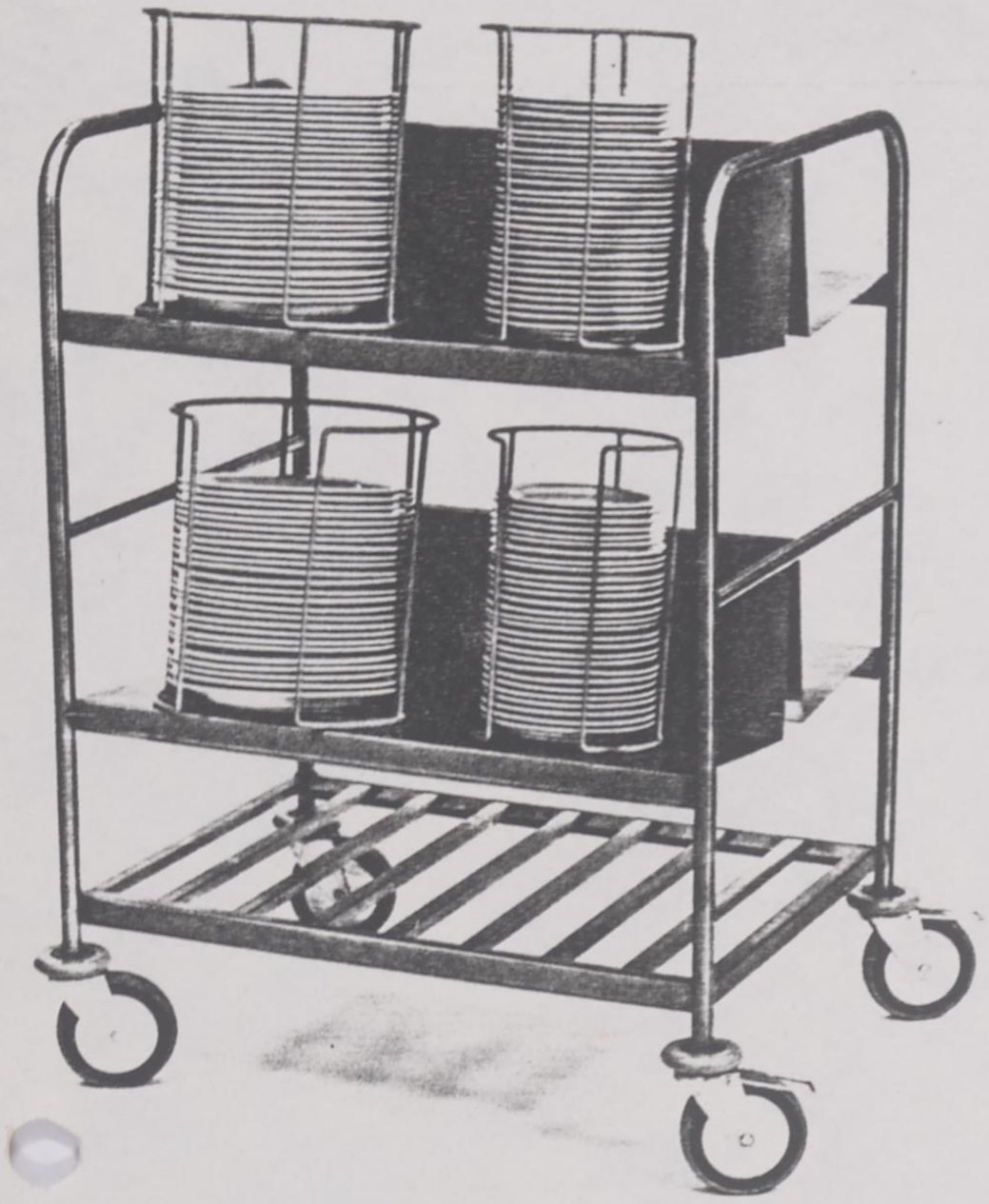
Besteckköcher

metos

Instrumentarium Oy
SF - 04220 Kerava 2
Finland
Tel. 358 0 248 088
Telex 121935 metos sf



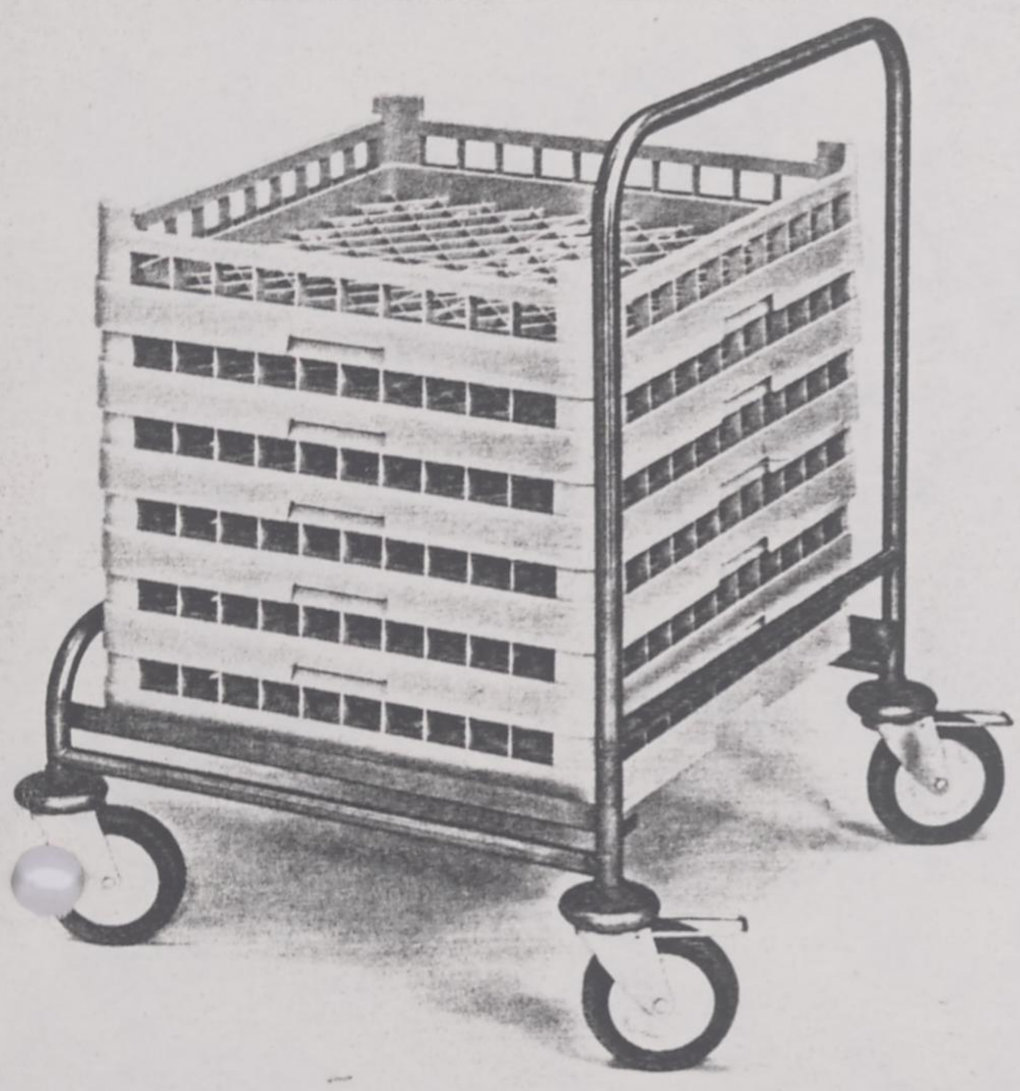
Kiriprintti Oy 2.05.83



TROLLEY FOR PLATE HOLDERS METOS LT-1 R

4 slanting shelves for plate holders.
Capacity 240 plates dia 240 mm or 360 plates dia 170 mm.

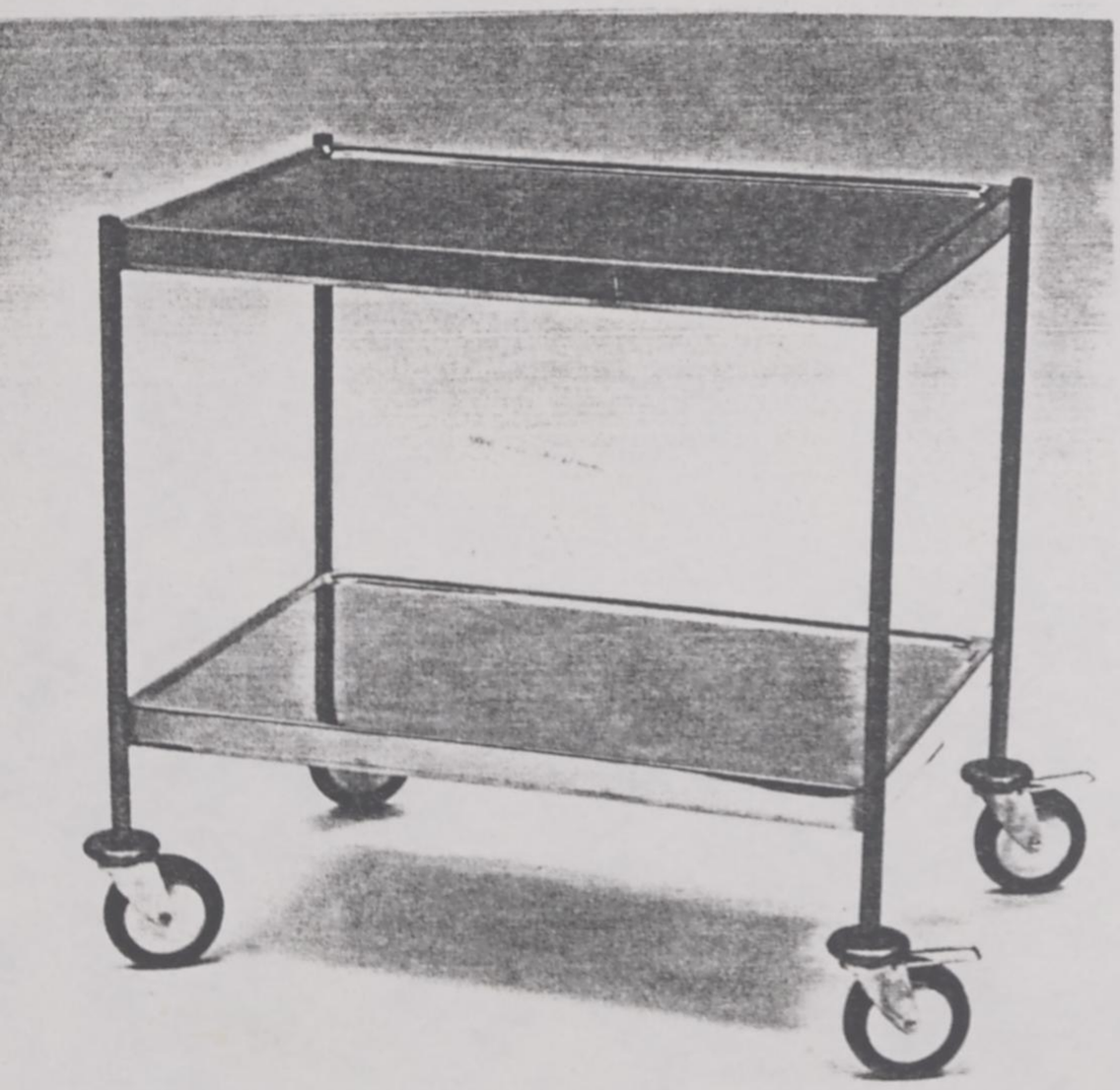
Construction:	frame (dia. 22 mm) and shelves of stainless steel 18/8. 4 swivelling rubber castors with protective ring buffers, dia. 125 mm, two lockable.
Main dimensions:	W 765, D 615, H 1140 mm.



BASKET TRANSPORT TROLLEY METOS KS-6 R

For 6 stackable dish racks (500 x 500 mm).

Construction:	stainless steel 18/8. 4 rubber castors with protective ring buffers, dia 125 mm, two lockable.
Main dimensions:	W 615, D 680, H 780 mm. Height of guide rails from floor 185 mm.



KITCHEN TROLLEY METOS KV-85 R

POS. 12

Trolley with two shelves.
Spacing between shelves 500 mm.

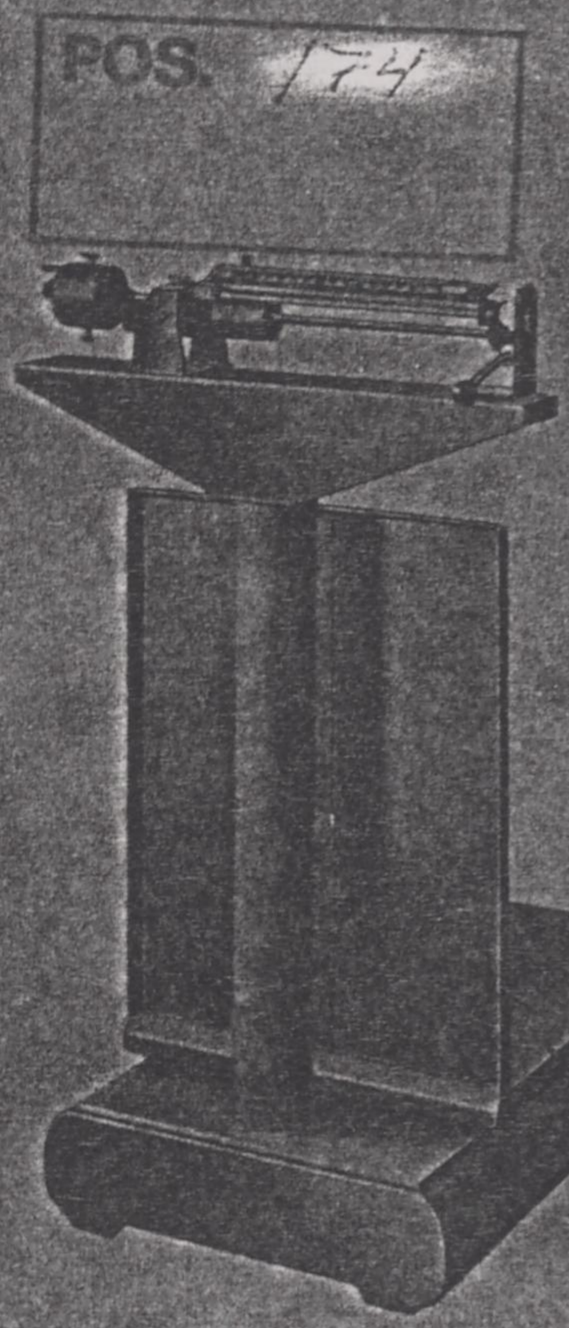
Construction:	frame (dia 22 mm) and shelves stainless steel 18/8. 4 swivel rubber castors with protective ring buffers, dia 125 mm, two lockable.
Main dimensions:	W 880, D 630, H 800 mm.

DAYTON VAAKA OSAKEYHTIÖ

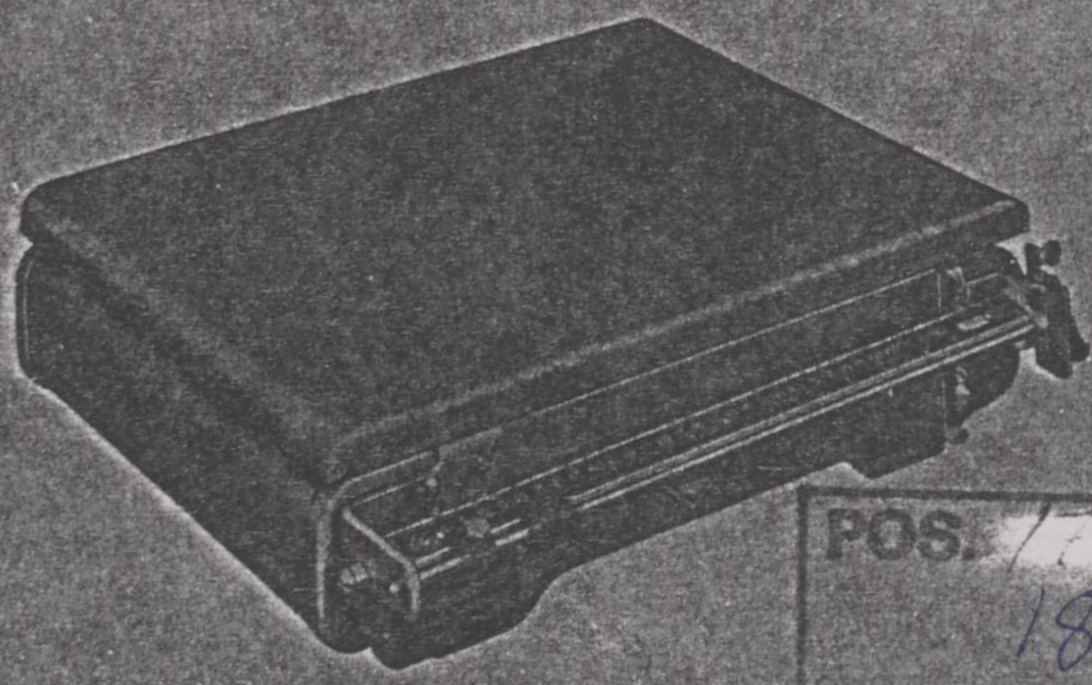
02610 Espoo 61, Kilo Puhelin 90-594 144 Telex 12-1882 limit sf

SIIRTOPAINOVAA'AT

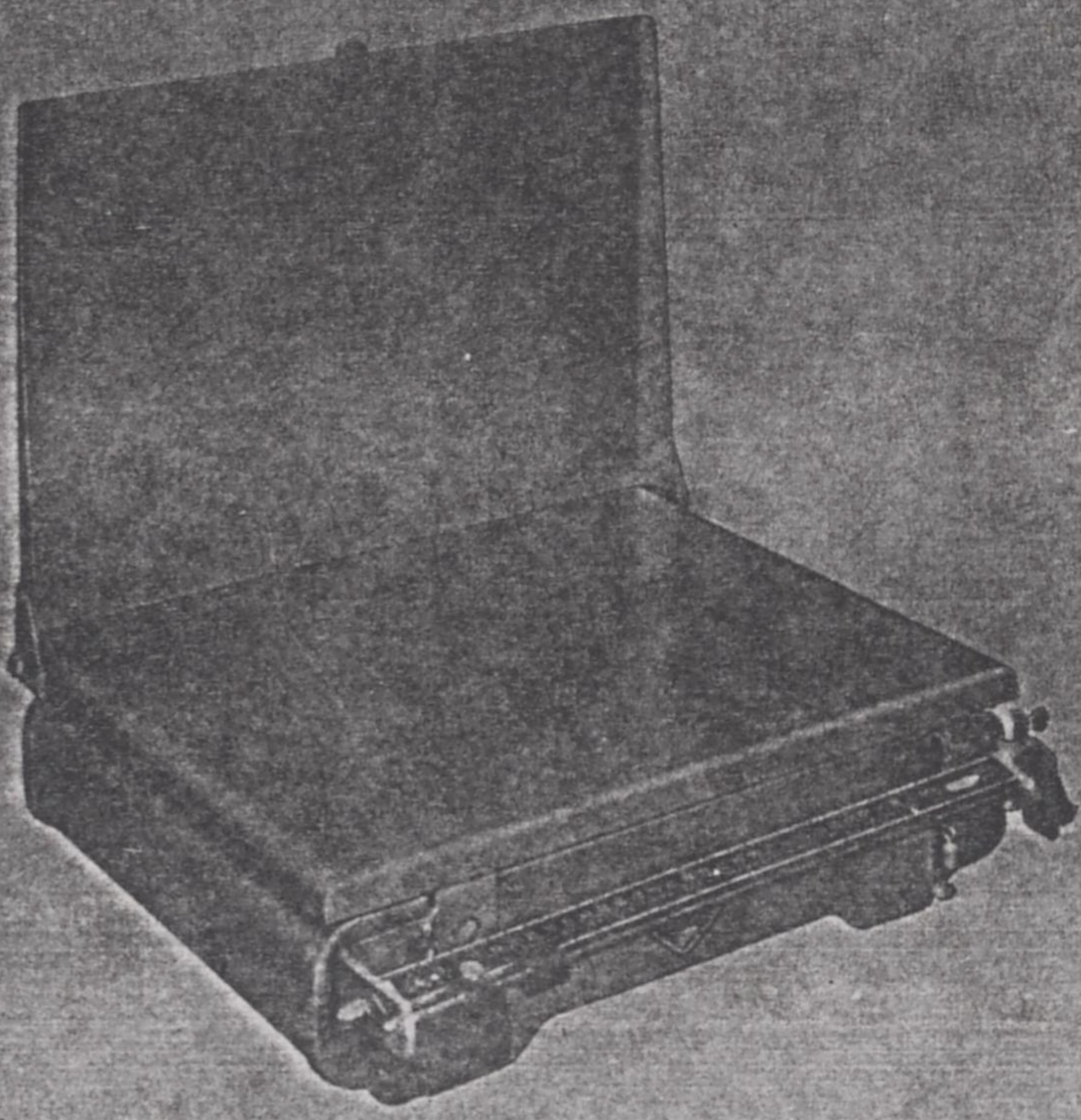
DV 300 - 312



Mallit DV 311 — DV 312
Kuormitusrajat 150 kg ja 250 kg



Mallit DV 300 — DV 302
Kuormitusrajat 27 kg, 55 kg ja 155 kg



Mallit DV 300 T — DV 302 T
Kuormitusrajat 27 kg, 55 kg ja 155 kg

Suosittelemme erikoisesti:

- jakeluautokäyttöön
- maatalouskäyttöön
- pesulakäyttöön
- postitukseen
- torikäyttöön
- varastokäyttöön

E 02/03

metos
Instrumentarium Oy

SLIDING-WEIGHT SCALES DV 300-312

Technical data

Construction	- sliding weight scale
Body	- of steel plate
Scale	- anodized

Type	DV 300 table mod.	DV 301 table mod.	DV 302 table mod.	DV 311 floor mod.	DV 312 floor mod.
Scale	25 kg	50 kg	150 kg	150 kg	250 kg
Tare	2 kg	5 kg	5 kg	-	-
Load	27 kg	55 kg	155 kg	150 kg	250 kg
Graduation	10 g	20 g	100 g	100 g	100 g
Platform size	440x320 mm	550x420 mm	550x420 mm	415x510 mm	560x600 mm
Dimensions					
- length	440 mm	555 mm	555 mm	665 mm	560 mm
- width	400 mm	500 mm	500 mm	430 mm	780 mm
- height	130 mm	150 mm	150 mm	920 mm	920 mm
- weight approx.	11,4 kg	16,5 kg	16,5 kg	35 kg	45 kg

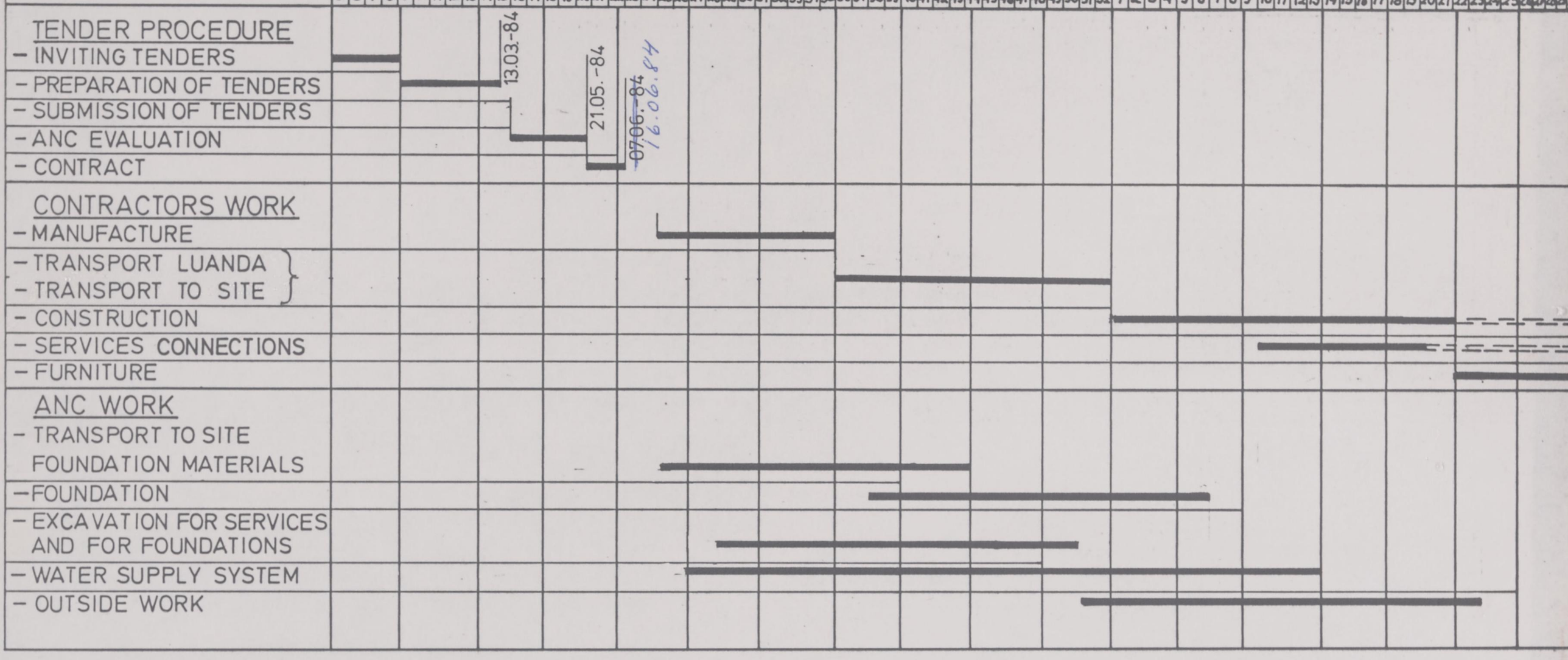
Outer finish	- enamelled
Colour	- grey hammer finish

Accessories
- locking device
- goods support types DV 300 T, DV 301 T and DV 302 T
- stainless steel platform
- special platforms at request

Accessories for floor models only
- rubber castors
- meat hooks

JIH/ma
1.2.1982

TIMETABLE; PHASE I
VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE, VIENA



DELIVERY + 2611.6 sq.m
DELIVERY 1465.7 sq.m

THE TOTAL TIMETABLE IS EXTENDED BY TWO WEEKS.
16.06.84

05.06.1984

MAKROTALO OY

TOWEL SAMPLES

WATER HEATERS

— Haato water heaters function completely automatically.

— Automatic temperature regulation and temperature limiting switch keep the water at a constant temperature at all times.

— As hot water is taken off it is replaced by cold water from the mains supply so that the heater always remains full.

— Approved structural pressure 1 MPa (10 bar).

— Water proof construction.

— 3-phase heaters furnished with built-in contactor.

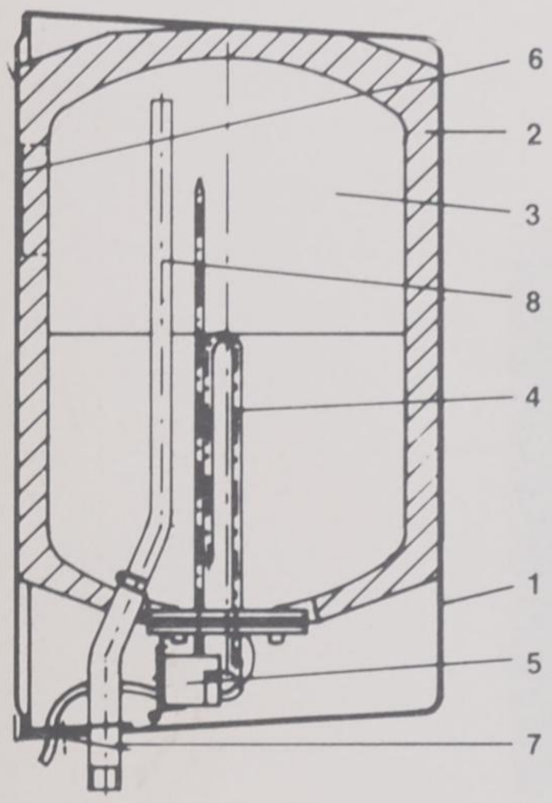
— Container of acid resistant special steel.

— Thermal insulation of polyurethane foam.

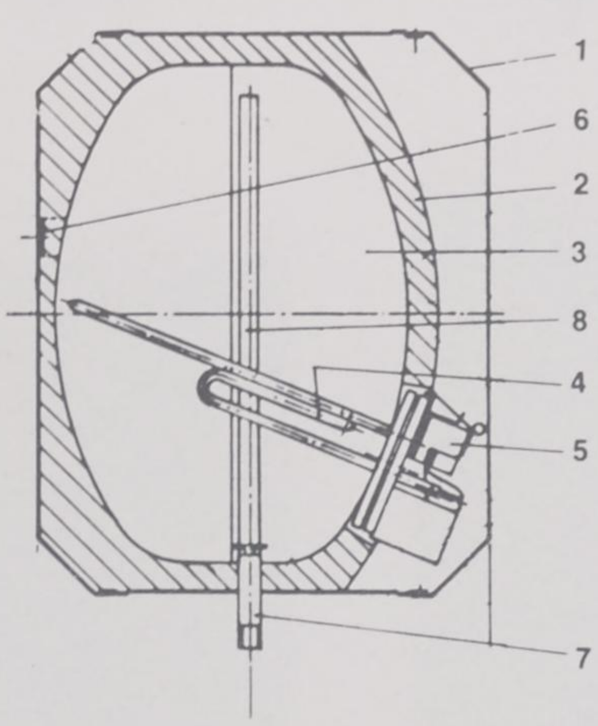
— In models HA 15, HA 35, HA 65, HA 100 and HA 140 pipe couplings are R 1/2 in.

— In models HA 220 and HA 300 pipe couplings are R 3/4 in.

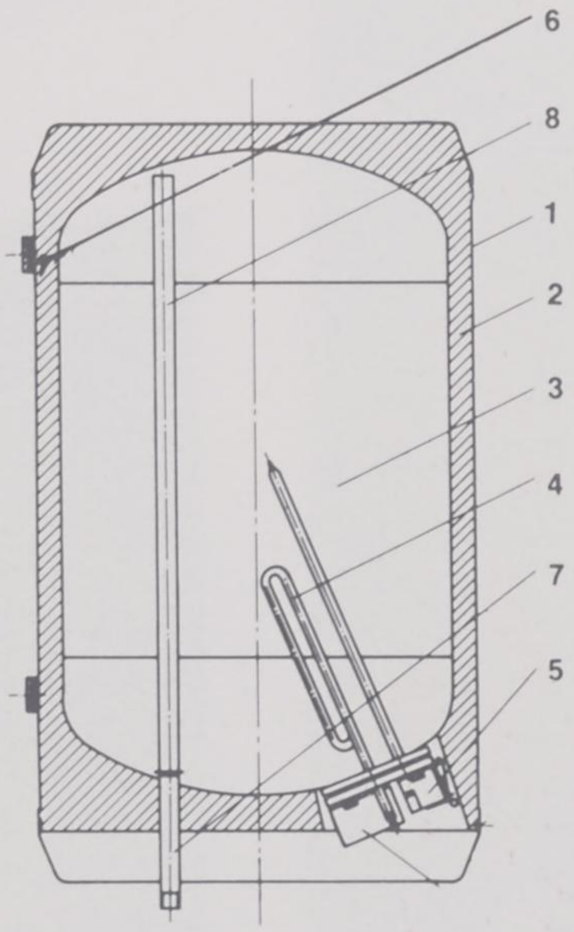
HA 15 L



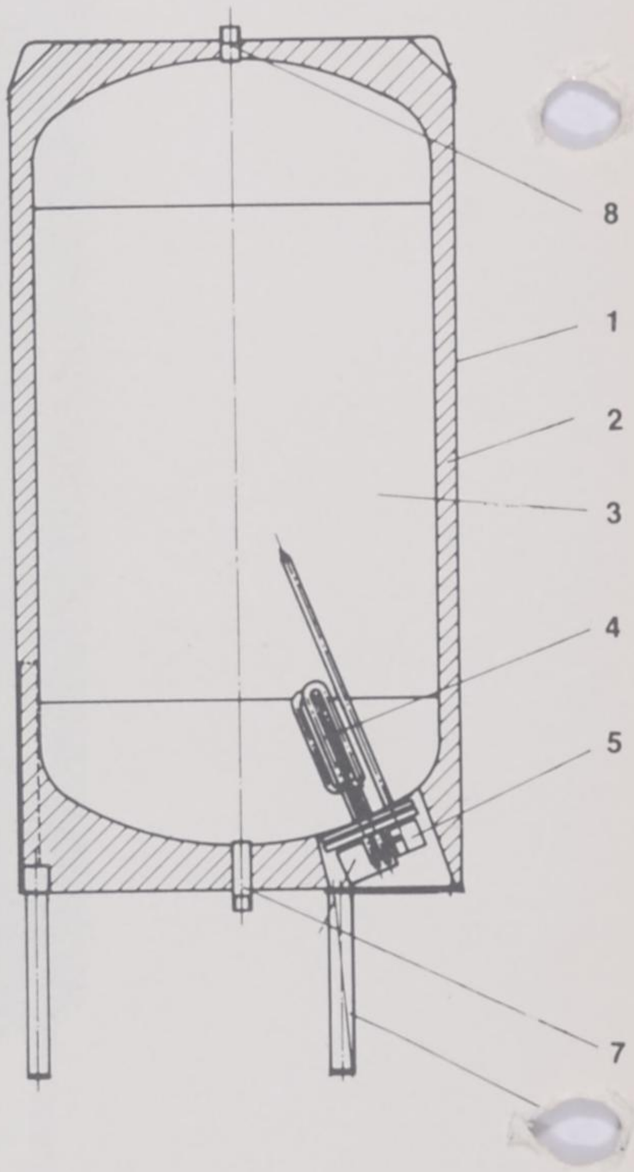
HA 35 P and HA 65 P



HA 100 P



HA 140 P, HA 220 P and HA 300 P



1. Cover
2. Thermal insulation
3. Container
4. Immersion element
5. Thermostat
6. Wall bracket/ Adjustable leg
7. Cold water pipe
8. Hot water pipe

Model	Volume l	Input power kW	Voltage	Weight without water kg	Preheating time h 30—85°C	Height mm	Width mm	Depth mm
HA15—L1	15	1,5	220 V 1 ~	8	3/4	495	300	283
HA35—P2	35	2,0	220 V 1 ~	20	1 1/4	Ø 500		395
HA65—P2	65	2,0	220 V 1 ~	25	2 1/4	Ø 600		475
HA65—P3	65	3,0	380 V 3 ~	25	1 1/2			
HA65—P5	65	4,5	380 V 3 ~	25	1			
HA100—P2	100	2,0	220 V 1 ~	35	3 1/2	860	Ø 500	
HA100—P3	100	3,0	380 V 3 ~	35	2 1/3			
HA100—P5	100	4,5	380 V 3 ~	35	1 1/2			
HA140—P2	140	2,0	220 V 1 ~	40	4 3/4	1340	Ø 500	
HA140—P3	140	3,0	380 V 3 ~	40	3 1/4			
HA140—P5	140	4,5	380 V 3 ~	40	2			
HA220—P2	220	2,0	220 V 1 ~	61	7 1/2	1400	Ø 600	
HA220—P3	220	3,0	380 V 3 ~	61	5			
HA220—P5	220	4,5	380 V 3 ~	61	3 1/3			
HA300—P3	300	3,0	380 V 3 ~	78	7	1740	Ø 600	
HA300—P5	300	4,5	380 V 3 ~	78	4 1/2			
HA300—P9	300	9,0	380 V 3 ~	78	2 1/3			

Hot water always on tap with a Finnish Haato heater



POS.
6

Everywhere that cold running water and electricity are available

- detached houses
- semi-detached houses
- industrial establishments
- institutional kitchens

Haato-tuote oy

Pohjantähdentie 17, 01450 VANTAA 45 Finland
phone 90-872 6011 telex 124593

1981

metos

Metos Cool



POS.
30 + 31

The Metos Cool series of prefabricated walk-in coolers and freezers are powerful, reliable units for profesional use supplied as a set of prefabricated elements and machinery ready for immediate assembling. They can be used either as coolers or freezers depending on the condensing unit selected. The element construction permits the store to be dimensioned to meet the user's requirements. The Metos Cool range provides a flexible and economic solution to the cold storage needs of hotels, restaurants, schools, hospitals, laboratories, pharmacies etc.

Metos Cool coolers

The cooler units are suitable for storage of fresh produce such as milk, yoghurt, cheese, butter, wines, beer, soft-drinks, meat, sausages and fish.

Metos Cool freezers

The freezer units are suitable for storage of frozen products and produce such as ice-cream, ready-to-warm meals, frozen vegetables, soft fruit, fish, meat, poultry etc.

Easy to install

The elements are accurately made for fast and trouble-free installation and assembly. Special fast operating locks secure the elements tightly to each other. The self-contained condensing unit can be plugged in and switched on straight away.

Powerful condensing unit

The condensing unit is dimensioned for high ambient temperatures and professional use.

Fully equipped

Standard equipment includes strong, adjustable steel panel shelves, interor light with door-operated switch, and a thermometer on the external control panel.

Plug-in electrical connection

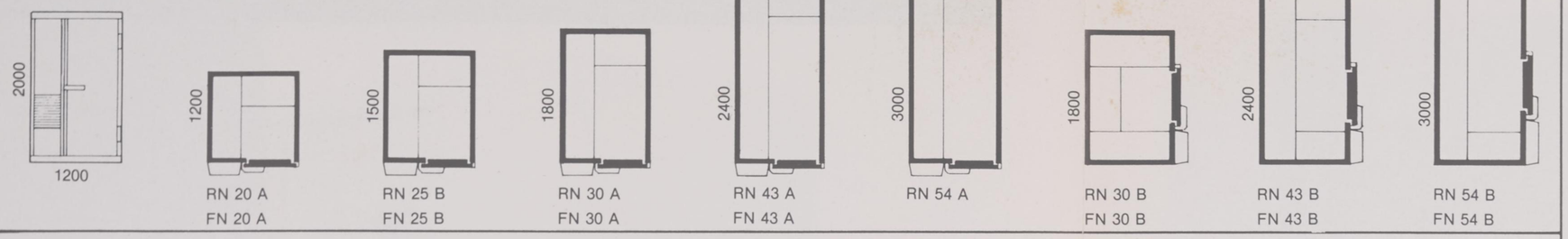
The condensing unit can be plugged in to a standard 3-phase or single phase socket outlet. Automatic defrosting and condensate vaporizer.

Energy saving

The 80 mm polyurethane insulation of the elements and the tightly sealed joints between them ensure low running costs.

Lockable door

The door can be locked from the outside and is fitted with inside safety release.



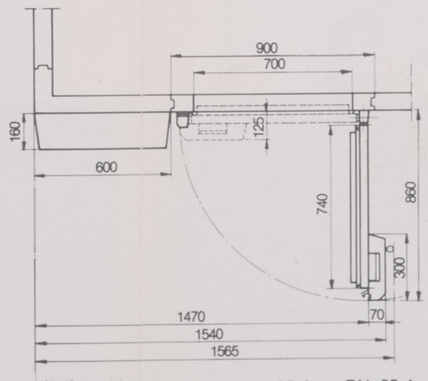
Technical Data	RN20A	FN20A	RN25B	FN25B	RN30A	FN30A	RN43A	FN43A	RN54A	RN30B	FN30B	RN43B	FN43B	RN54B	FN54B	RN25A	FN25A	RN35A	FN35A	RN40A	FN40A	RN55A	RN70A	RN40B	FN40B	RN55B	FN55B	RN70B	FN70B	RN50A	FN50A	RN65A	FN65A	RN85A	FN85A	RN65B	FN65B	RN85B	FN85B
External dimensions mm W	1200	1200	1200	1200	1200	1200	1200	1200	1200	1800	1800	2400	2400	3000	3000	1500	1500	1500	1500	1500	1500	1500	1500	1800	1800	2400	2400	3000	3000	1800	1800	1800	1800	1800	1800	2400	2400	3000	3000
D	1200	1200	1500	1500	1800	1800	2400	2400	3000	1200	1200	1200	1200	1200	1200	1200	1200	1500	1500	1800	1800	2400	3000	1500	1500	1500	1500	1500	1500	1800	1800	2400	2400	3000	3000	1800	1800	1800	1800
H	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Internal dimensions mm W	1040	1040	1040	1040	1040	1040	1040	1040	1040	1640	1640	2240	2240	2840	2840	1340	1340	1340	1340	1340	1340	1340	1340	1640	1640	2240	2240	2840	2840	1640	1640	1640	1640	1640	1640	2240	2240	2840	2840
D	1040	1040	1340	1340	1640	1640	2240	2240	2840	1040	1040	1040	1040	1040	1040	1040	1040	1340	1340	1640	1640	2240	2840	1340	1340	1340	1340	1340	1340	1640	1640	2240	2240	2840	2840	1640	1640	1640	1640
H	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840	1840
Capasity — litre	1800	1800	2500	2500	3100	3100	4300	4300	5400	3100	3100	4300	4300	5400	5400	2500	2500	3500	3500	4000	4000	5500	7000	4000	4000	5500	5500	7000	7000	5000	5000	6700	6700	8500	8500	6700	6700	8500	8500
Shelf area m²	2,5+L	2,5+L	3,8+L	3,8+L	3,7+L	3,7+L	4,7+L	4,7+L	5,6+L	4,7+L	4,7+L	5,7+L	5,7+L	6,6+L	6,6+L	3,8+L	3,8+L	3,6+L	3,6+L	4,2+L	4,2+L	5,1+L	6,1+L	5,7+L	5,7+L	6,6+L	6,6+L	7,6+L	7,6+L	6,8+L	6,8+L	8,7+L	8,7+L	10,6+L	10,6+L	7,7+L	7,7+L	8,6+I	8,6+L
Number of elements	3	3	4	4	4	4	4	4	5	4	4	4	4	5	5	4	4	4	4	4	4	5	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5
weight kg	310	360	330	350	350	400	430	450	480	350	400	430	450	500	530	330	350	350	400	400	400	480	540	380	400	500	530	560	590	450	480	540	570	580	610	540	570	580	610
Condensing unit	R910	F810	R910	F810	R910	F810	R910	F810	R910	R910	F810	R910	F810	R910	F1110	R910	F810	R910	F810	R910	F810	R910	R910	R910	F810	R910	F1110	R1210	F1110	R1210	F1110	R1210	F1110	R1210	F1110	R1210	F1110	R1210	F1110

L = floor
R = cold storage +2°...+6°C
F = storage for frozen products —18°...—22°C

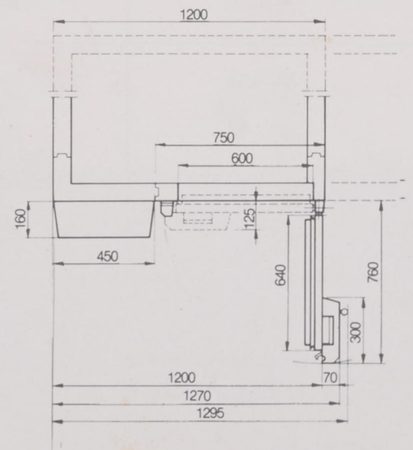
Technical characteristics of condensing units	R910	R1210	F810	F1110
Power rating kW	0,7 1-phase	0,9 1-phase	0,9 1-phase	1,2 3-phase
Electricity supply	to be specified when ordering			
Storage temperature range °C	+2°....+6°	+2°....+6°	—18°....—22°	—18°....—22°
Compressor	hermetically sealed with air-cooled condenser			
Evaporator	fan evaporator			
Defrosting of the evaporator	automatic			
Vaporation of melt water	automatic			
Front panel projection of condensing unit casing	125 mm			

Continuous improvements to design make specifications liable to modification

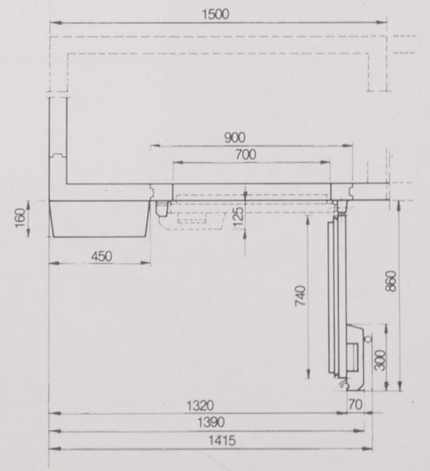
Dimensions of the machinery elements and the door



RN 50 A
FN 50 A
RN 54 B
FN 54 B
RN 55 B
FN 55 B
RN 65 A
FN 65 A
FN 65 A
FN 65 B
FN 70 B
FN 70 B
RN 85 A
FN 85 A
RN 85 B
FN 85 B



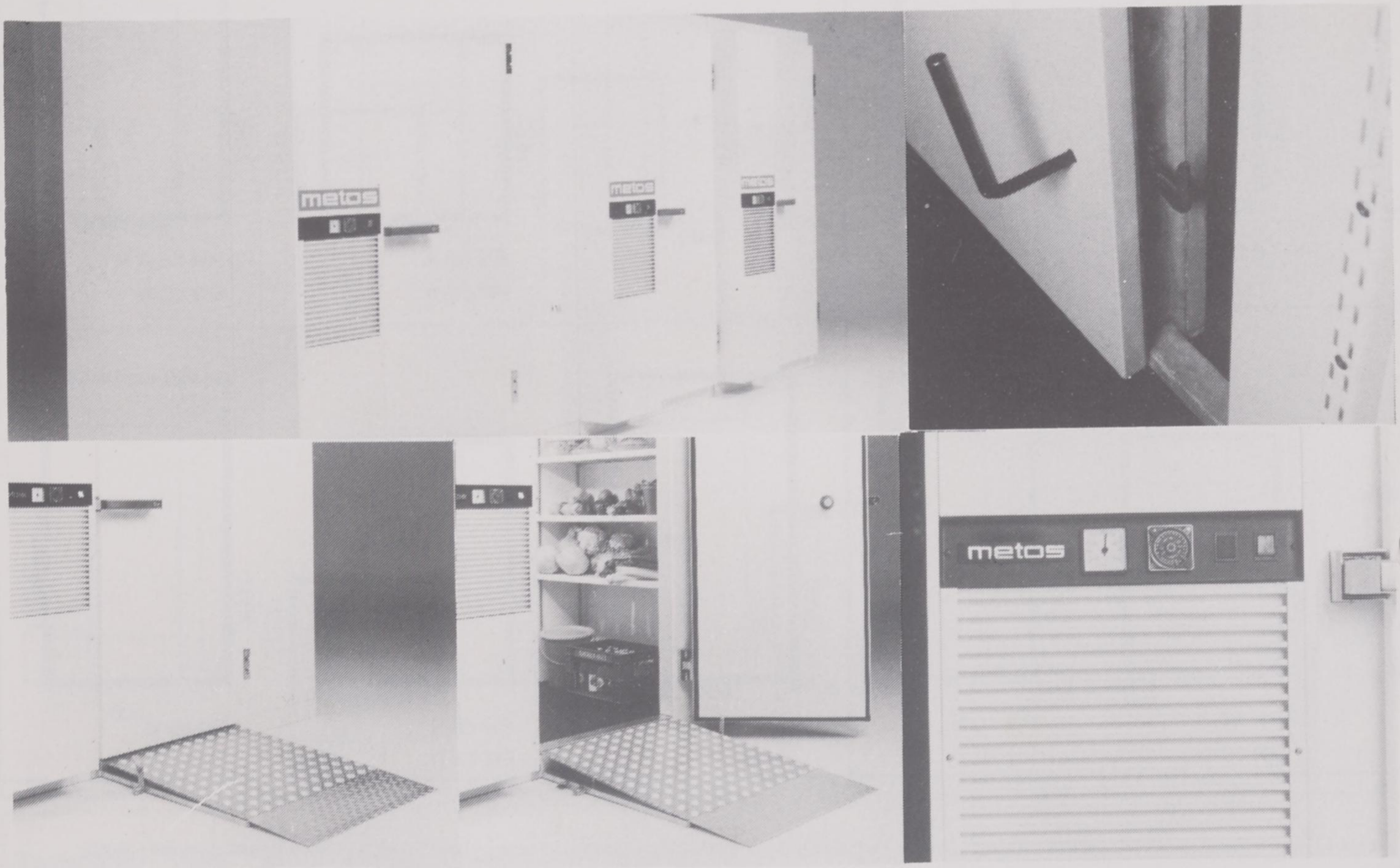
RN 20 A
FN 20 A
RN 25 B
FN 25 B
RN 30 A
FN 30 A
RN 43 A
FN 43 A
RN 54 A



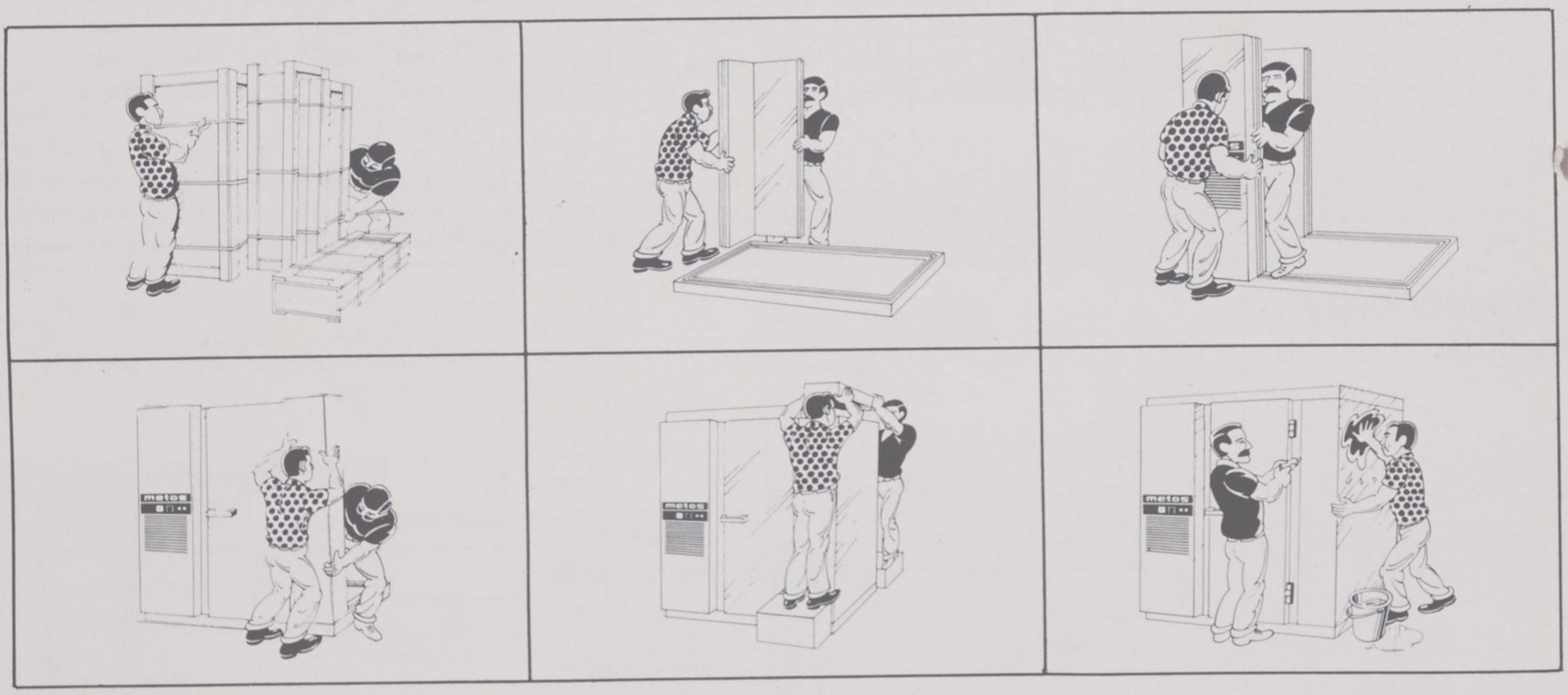
RN 25 A
FN 25 A
RN 30 B
FN 30 B
RN 35 A
FN 35 A
RN 40 A
FN 40 B
FN 40 B
FN 43 B
RN 55 A
RN 70 A

Metos Cool - Walk-in Freezers and Coolers

Carefull Designed Details



Easy erection and installation

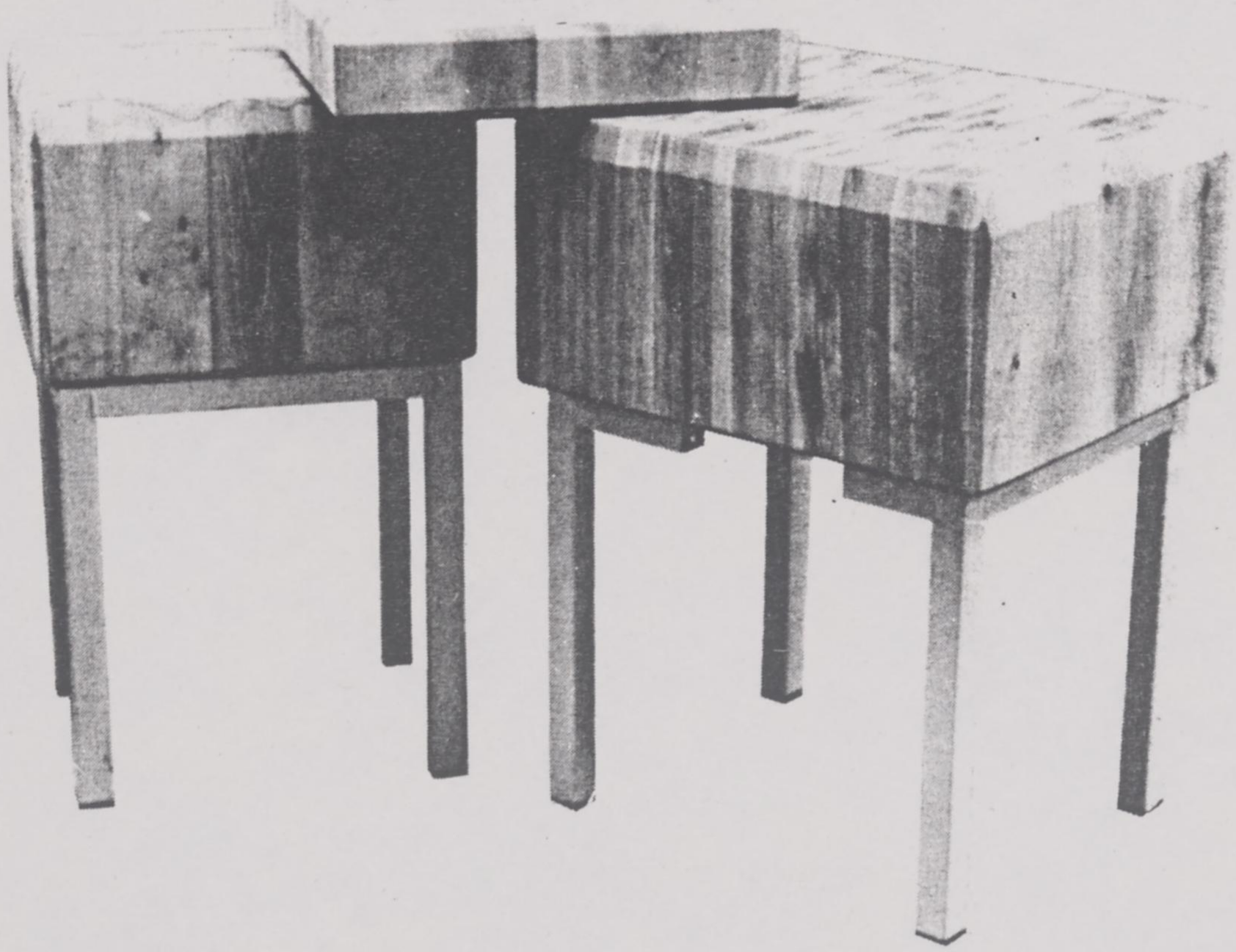


metos
Instrumentarium Oy
04220 Kerava 2
Finland
Telephone 358-0-248 088
Telex 121 935 metos sf

KpMHky 2.11.83

metos

Instrumentarium Oy



METOS MEAT BLOCKS AND CUTTING BOARDS -

MEAT BLOCK

Square model with stand.

Standard sizes:	400 x 500 mm
	600 x 500 mm
	700 x 500 mm
	800 x 500 mm
	800 x 600 mm
	1000 x 600 mm
	1000 x 800 mm
Block thickness:	300 mm
Total heigth with stand:	800 mm

Made of selected kiln-dried beech wood.
Stand of painted steel.

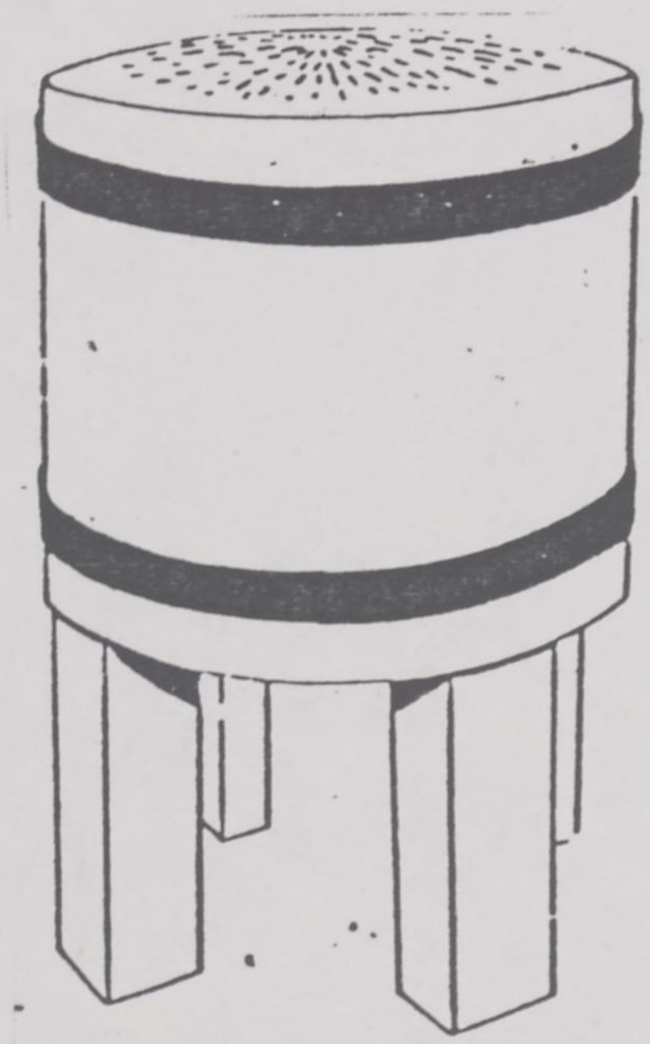
POS 28

CUTTING BOARD

Reversible model.

Standard sizes:	400 x 500 x 150 (thickness) mm
	400 x 500 x 100 (thickness) mm
	240 x 290 x 60 (thickness) mm

Made of selected kiln-dried beech wood.



MEAT BLOCK

Round model with stand.

Standard sizes: diameter	400	mm
"	500	mm
"	600	mm
Total height with stand	800	mm.

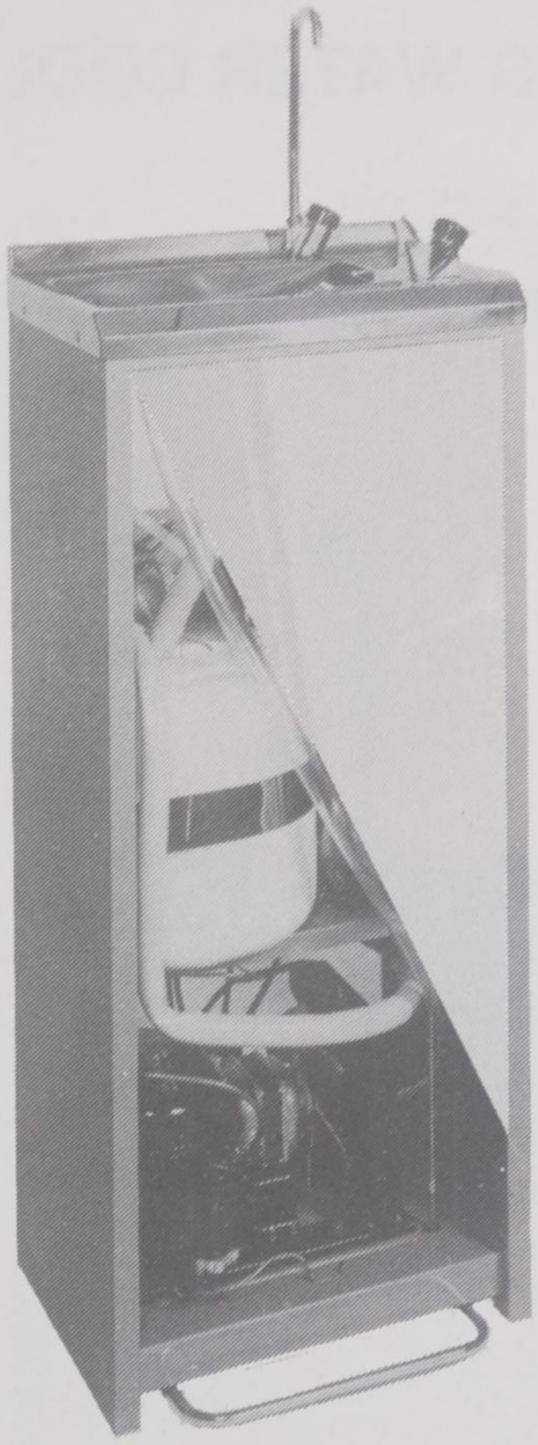
Made of selected kiln-dried beech wood.

MAINTENANCE

Clean daily by planing slightly. Once a week, in connection with planing, apply clean paraffin oil and leave it at least for 12 hours. Paraffin oil protects the meat block against absorption of humidity and does not cause taste or smell defects.

metos

Instrumentarium Oy
04220 Kerava 2 Finland
Tel. 90-248 088
International +358-0-248088
Telex 121935 metos sf



ELECTRICAL DATA

Type	FO2P	
Voltage V	220	110
Frequency Hz	50 / 60	60
Current A	2 A	4 A
Power kW	0,2	0,2

PACKING DIMENSIONS

Type	FO2P
Breadth × Depth × Height mm	480 × 375 × 1335
Weight gross/net kg	50 / 30
Shipping volyme m³	0,24

INSTALLATION DIMENSIONS

1 Waterconnection, plastic pipe (0,5 m) ⌀8mm shut-off-valve not included in delivery
2 El. connection
3 Drain R 1". 1,5m plastic tube ⌀ 22 mm.
4 Bolting hole ⌀ 14 mm.

- to be placed horizontally

All specifications are subject to change without notice.

1.84 Tuusulan Offsetpaino Oy

FREE STANDING WATER COOLER

MARINE SIAPA FO2P

FOR water cooling.

FREE standing model.

CAPACITY approx. 200 glasses +10° C cold water/hour, i.e. approx. 40 litres/hour.

BENT head glass filler and dual-control

HAND and foot pedal — push button bubbler with flow control.

COMPRESSOR 1/6 HP hermetic system with fan cooled condenser.

REGULATIONS assured by thermostat.

POLISHED stainless steel anti-splash deep drawn basin.

EXTERIOR and interior all painted steel.

WATER refrigeration assured in stainless steel tank 18/8.

COOLING MEDIUM: freon 12

STAINLESS steel cooling coil.

EASY to install.

ECONOMICAL and safe in use.

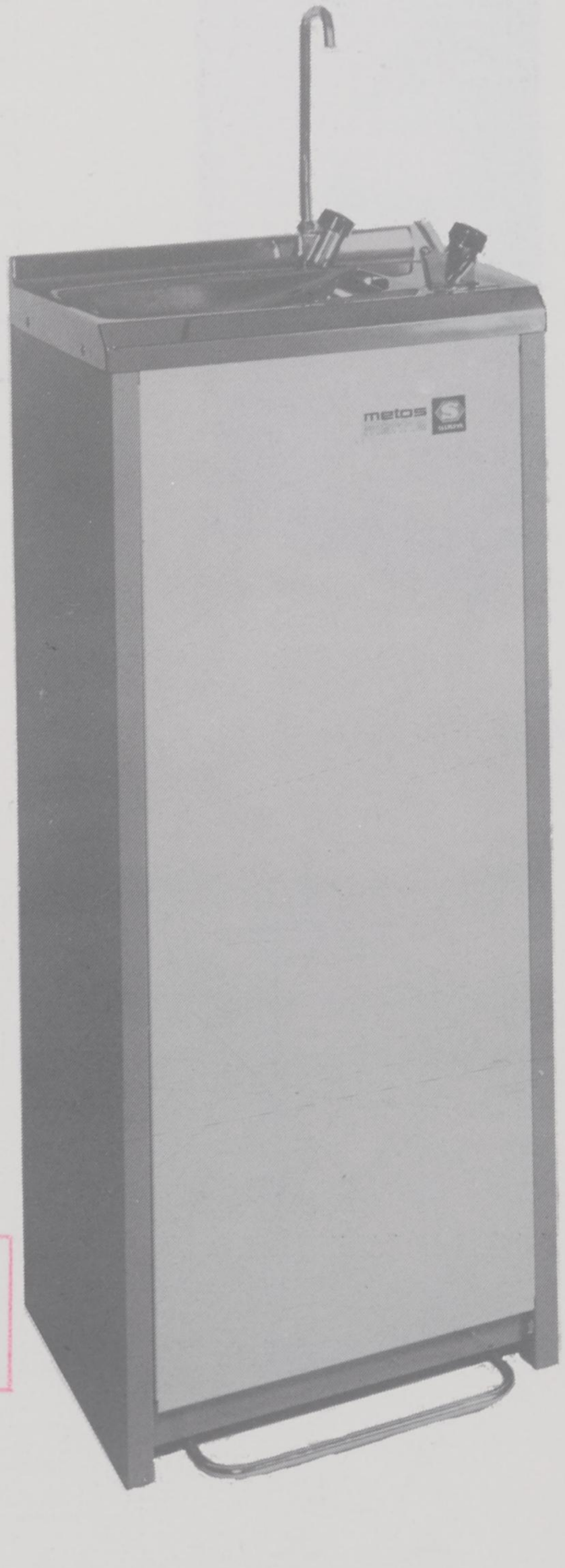
SPECIALLY developed for Marine use.

EASY to clean.

COMPACT design.

MAINTENANCE easily carried out from the front.

GUARANTEE 12 months' material guarantee.



POS. 24

OPTIONAL extras:
- — Water filter
- — Shut-off valve for water.
- — Water pressure regulator.

INSTRUMENTARIUM Oy

METOS-MARINE
TEL +358 (9)0 248 088
TELEX 121935 metos sf

ADDRESS:

04220 KERAVA 2
FINLAND

Coffeefilterappliances type DE and WME and Containers

- are double walled and made of matt-finish stainless steel 18/8, with seamless welds.

Appliances DE and WME and Containers CE

- are provided with electrical heating and a thermostat, which keeps the coffee at an ideal temperature of ± 85° C. Complete with loose hose.

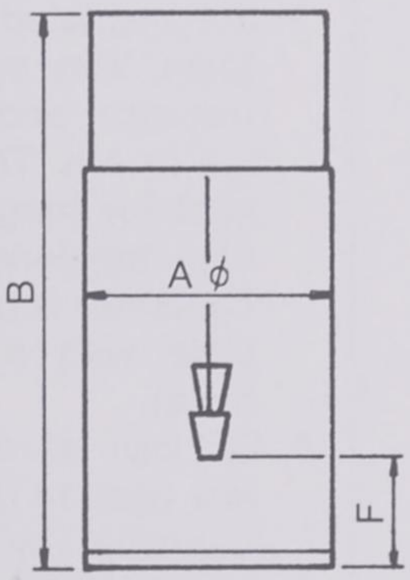
Appliances DE and WME

- have a gauge glass showing precise contents
- are supplied with a filter and an automatic blender which gives the coffee a uniform quality and assures that the coffee is not left open to the air when the filter is taken off.
- can always be combined easily with water boilers WKI and DWI and they are easy to move from place to place.

Appliances WME

- are exceptional because the heating of the inner pot is carried out by a hot water jacket.





Filterappliance type	DE 5	DE 10	DE 15	DE 20	DE 30	DE 40	DE 60
contents	5 l	10 l	15 l	20 l	30 l	40 l	60 l
power	150 W.	250 W.	250 W.	250 W.	250 W.	350 W.	350 W.
Ø (A) x h (B)	200 x 560	270 x 600	270 x 700	340 x 700	340 x 855	450 x 725	450 x 910
outlet height (F)	115	145	125	170	125	75	40

Filterappliance type	WME 5	WME 10	WME 20
contents	5 l	10 l	20 l
power	1000 W.	1000 W.	1000 W.
Ø (A) x h (B)	224 x 560	270 x 600	340 x 700
outlet height (F)	110	128	128

Open filter type OF, closed filter type GF

Ø x h	190 x 155	260 x 180	260 x 180	330 x 180	330 x 180	440 x 200	440 x 260
usable contents	2,5 l	6 l	6 l	12 l	12 l	28 l	37 l
min. brew quant.	2,5 l	5 l	5 l	10 l	10 l	20 l	20 l

Open combifilter type OCF, closed combifilter GCF

Ø x h	260 x 170	330 x 185	330 x 185
contents	6 l	12 l	12 l
min. brew quant.	4 l	10 l	10 l

Teafilter type	57003	57005	57005	57006	57006	57007	57007

A water supply pipe must be used to correct the height difference between an appliance with and without filter.

Animo

Modifications reserved.

coffee and tea making appliances for every organisation

Animo

Filterappliances and Containers

Filters and Combifilters

These are round with an open or closed water distribution cover. Closed water distributors are applied in combination with continuous flow water heaters DWI, open water distributors with bulk water heaters WKI.
The filtering takes place through flat filter papers leaving the coffee completely free of any sediment.
These filters extract the coffee in an efficient and stringent manner and consequently offer a maximum in cost saving.

Filters

That have a contents that is half the contents of the related filter appliance, 5-10-20 or 40 litres. This makes it easy, when the water boilers WKI ase used, to control the dosing of the water.



Combifilters

have a contents of 6 to 12 litres. Filled completely, a lot of coffee can be made very quickly in the relevant filterappliance or container.

Containers type CE

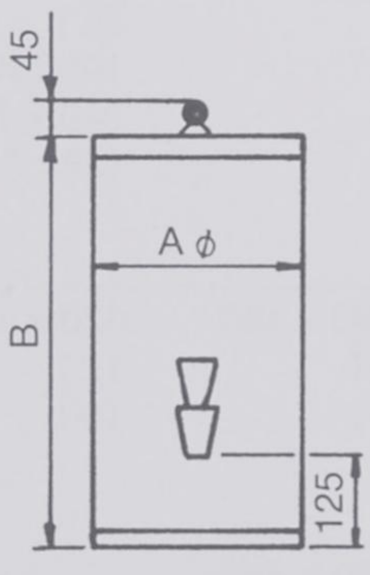
- are also suitable, with combifilters and blenders, for distributing bulk coffee in an easy and quick manner.

Coffee- and tea containers type CI

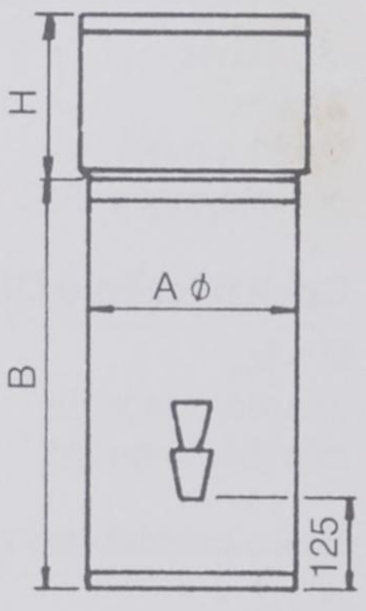
- are insulated with polyurethane foam. Very suitable for both the transport and the serving of coffee or tea. The contents can be kept for long periods at a very high temperature, providing the container is quickly filled (if possible with a filling cover and hose).
- tea can be quickly prepared in any desired quantity in insulated containers with filters (with water boilers WKI).

POS. 22









Containers - electrically heated type CE, insulated type CI

contents	4 l	6 l	8 l	10 l	12 l	16 l	20 l	25 l
power CE	150 W.	150 W.	150 W.	250 W.	250 W.	250 W.	250 W.	250 W.
Ø (A) x h (B)	225 x 340	225 x 400	250 x 430	250 x 483	305 x 414	305 x 489	305 x 564	305 x 645
weight	5,5 kg	6 kg	7 kg	8 kg	9 kg	10 kg	11 kg	12 kg
temp. loss/hr* CI	6° C	5° C	4° C	4° C	4° C	4° C	4° C	4° C

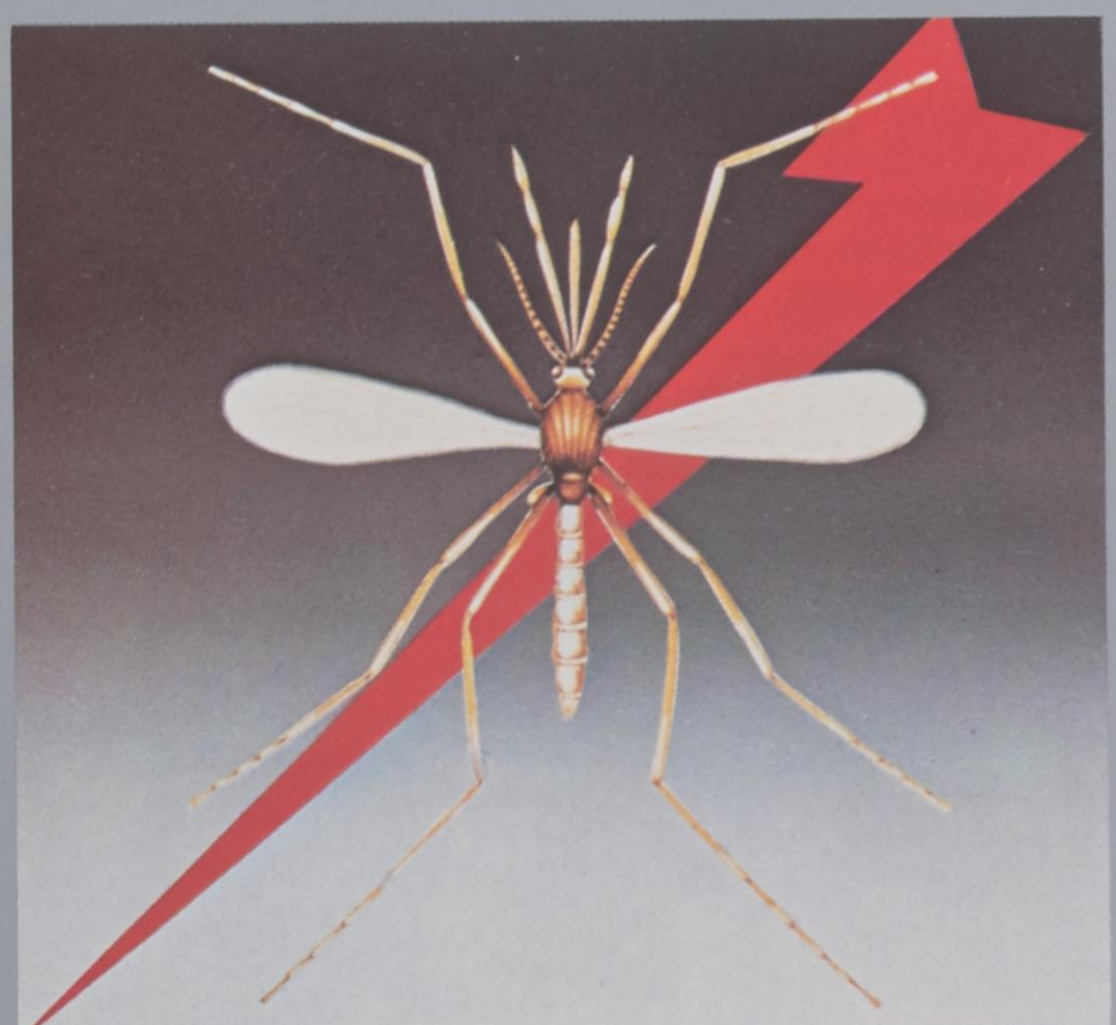
Open combifilter type OCF, closed combifilter GCF

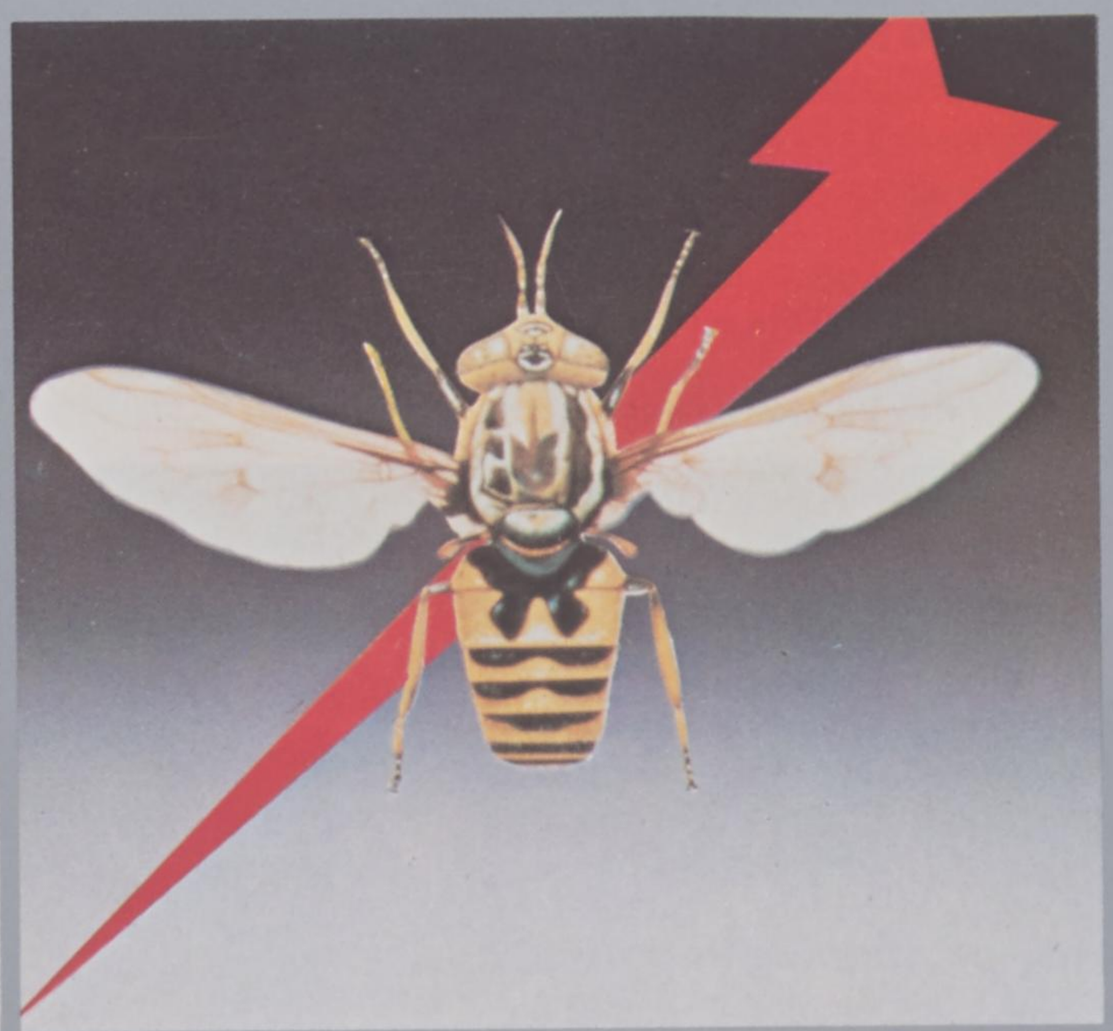
Ø x h (H)	260 x 170	260 x 170			330 x 185	330 x 185	330 x 185	
usable contents	6 l	6 l			12 l	12 l	12 l	
min. brew quant.	4 l	4 l			10 l	10 l	10 l	
Tea filter type	**57003**	**57003**	**57004**	**57004**	**57005**	**57005**	**57005**	**57005**

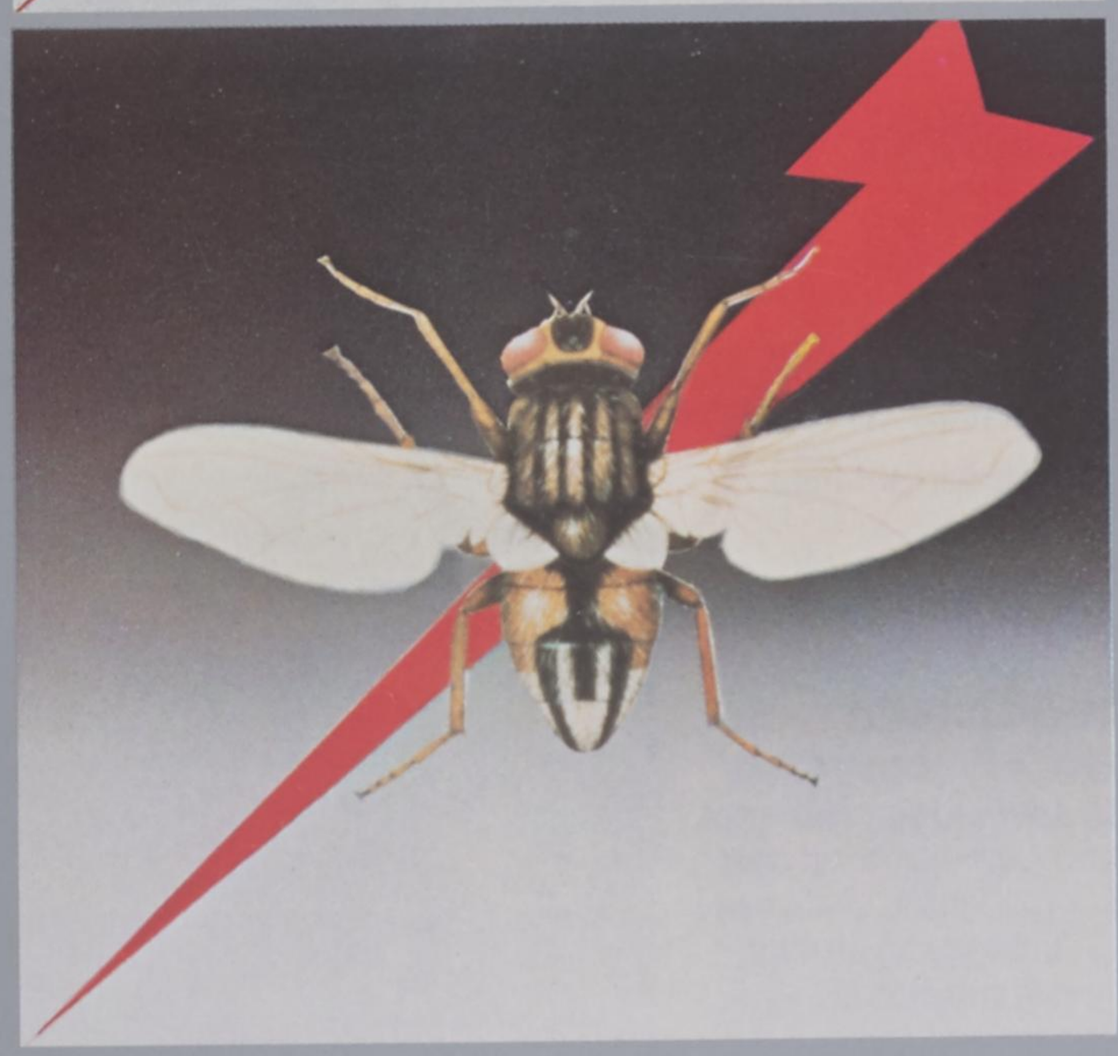
* estimated from an unheated container filled with water at 90°, and measured over 3 hours

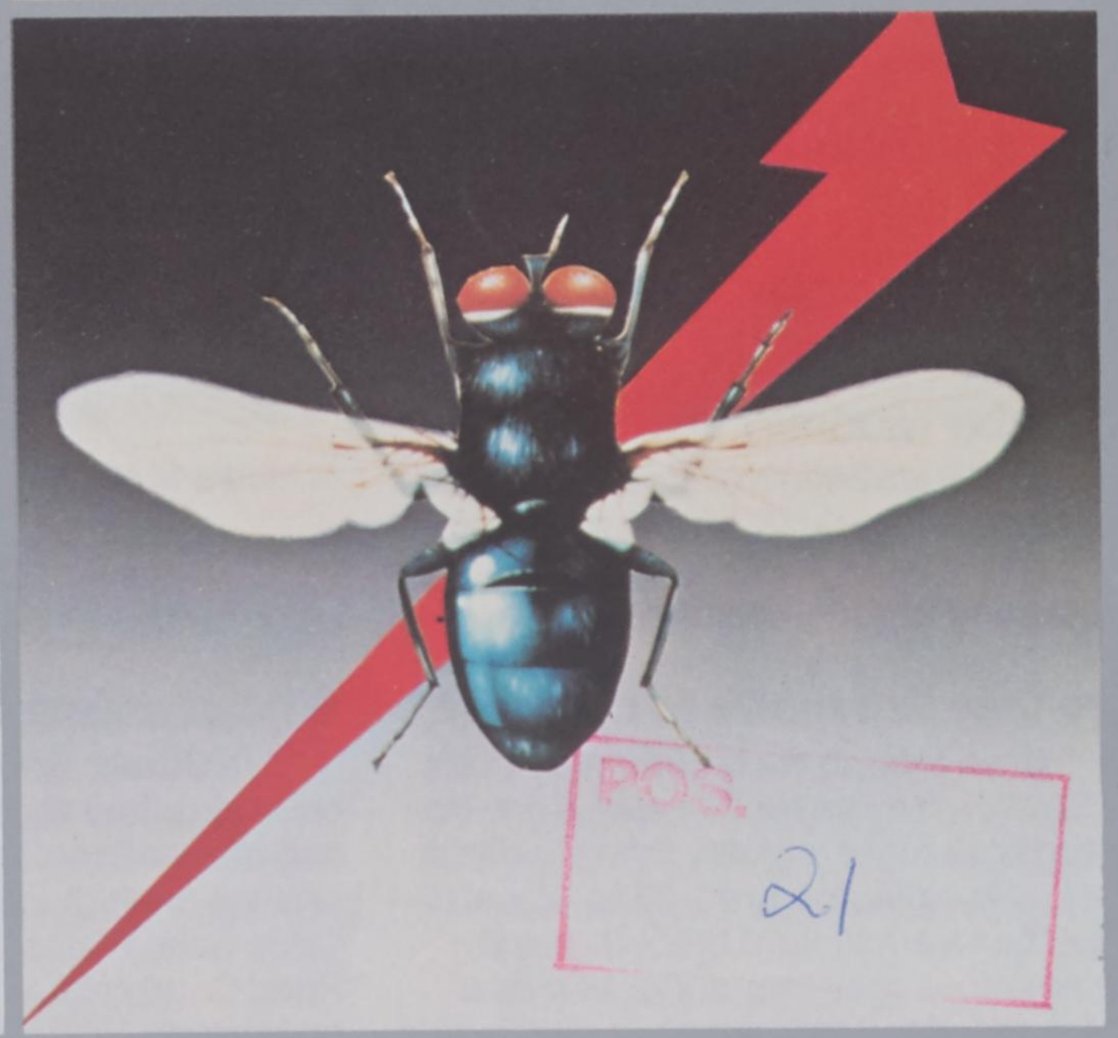
INSECT-O-CUTOR



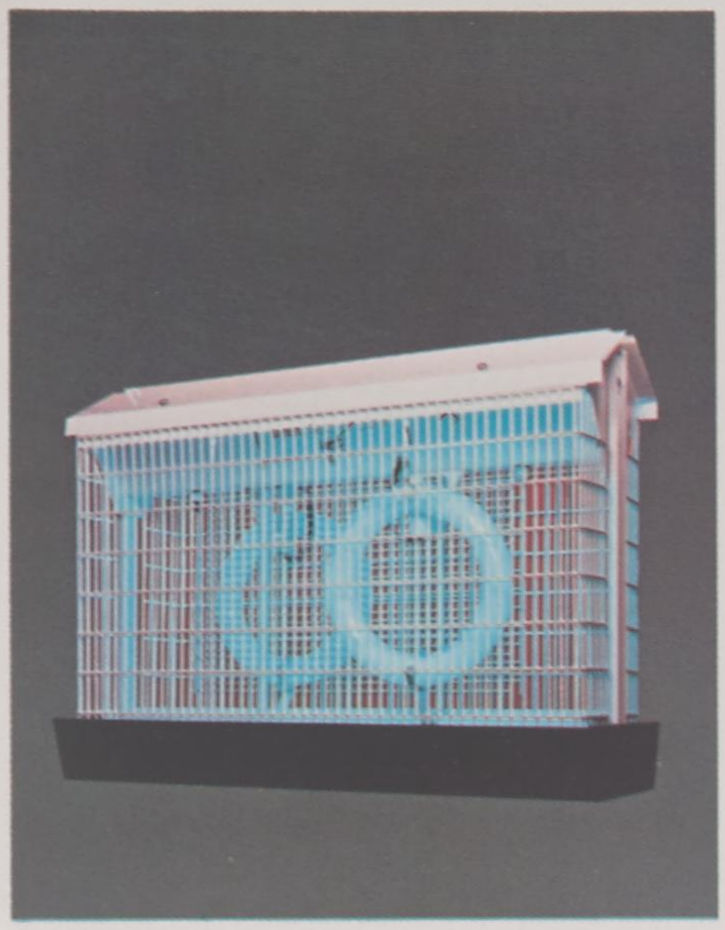








P.O.S.
21



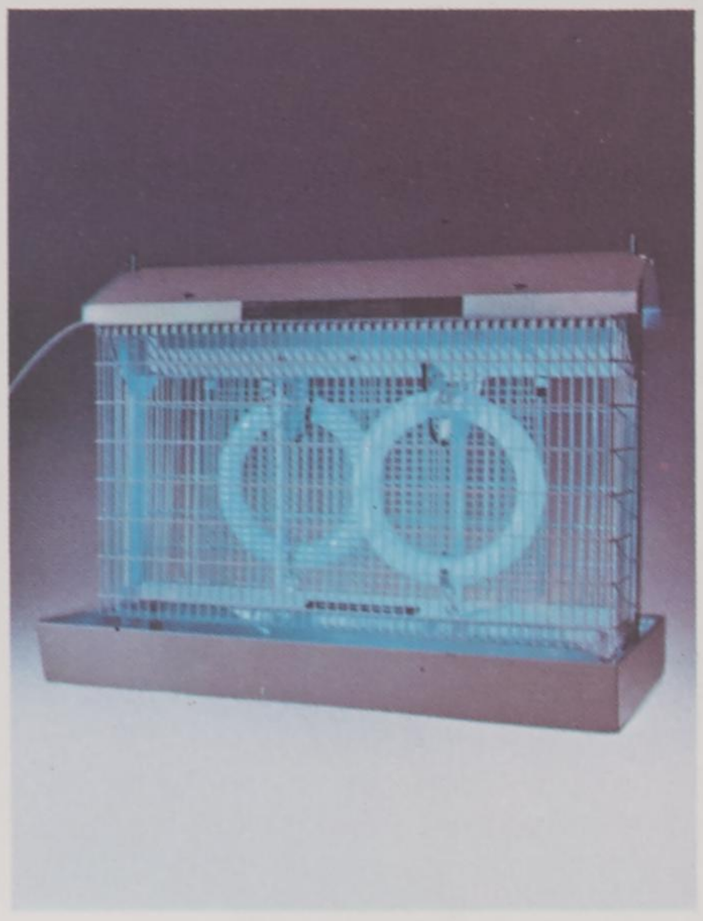
Model 25 – 8

Powerful 44 watt ceiling mounted Model giving 360° protection where its attractive design is appreciated.



Model 50

Industrial Model. 2 x 20 watt tubes. Suspended or attached to vertical surfaces. Waterproofed version also available. Large capacity tray.



Model 25 – 8

Industrial and agricultural model with extra large tray, ideal where ceiling height is restricted. 2 x 22 watt tubes. Suspended or attached to horizontal surfaces.

Why use the Insect-O-Cutor instead of spraying?

Chemical sprays, thermal vapourisers, and fly strips are basically pollutants (certain types are even banned in some countries). Their side effects are not always known and may not show themselves in this generation. Furthermore, it is possible for some insects to become immune to the effects of some chemicals in time.

Is the risk of pollution worth taking? Insects affected by these toxic chemicals do not always die instantly but do so later, perhaps where their ''corpses'' are not welcome!



Over 300 Model 50's are installed at Manama Market, Bahrain.

CYPRUS AIRWAYS have 12 Model 25's in their Larnaca Catering Department.



Are there cheaper copies of the Insect-O-Cutor?

Of course there are. We have however, yet to find a competitor's unit which is as safe, as attractively designed, technically up-to-date and backed by the same after-sales service as the Insect-O-Cutor. The use of better quality materials of construction gives Insect-O-Cutors a very long life, making our product the least expensive in the long run, yet the only type which is really effective in dealing with your fly problem.

INSECT-O-CUTOR

INSECT-O-CUTOR

It is a scientific fact that virtually all flying insects are irresistably attracted by a certain wavelength of light known as Near- Ultra Violet light, Woods light or "BLACKLIGHT". The Insect-O-Cutor uses special fluorescent tubes emitting "BLACKLIGHT" and an electrified grid, beneath which is a tray.

For twenty years under our registered trade mark Insect-O-Cutor we have supplied a range of models to cater for any fly infestation situation. Over a quarter of a million have been sold.



Model 10–8

Wall mounted. 22 watt Circline tube.
For smaller premises and the home.
Pleasing appearance.



Model 20–8

Wall mounted. 2 x 22 watt tubes.
For medium sized locations.

How does the Insect-O-Cutor work?

Fixed in a position and at a height which we advise, the Insect-O-Cutor:—

Attracts flying insects from a wide area.
Kills them when they touch or come close to the electrified grid.
Collects them, safely and cleanly in a tray beneath the unit.

Is it safe?

The component electrical parts, developed and manufactured specially for us, ensure that the grid can discharge the high voltage necessary but at a low current which is harmless to all humans. The glass used to make our tubes will not pass radiation which is in any way injurious to human health.

Is the positioning important?

Very. All Insect-O-Cutor Sales Engineers and overseas Distributors are trained to survey your premises, advising on choice of model, where to position and at what height. Alternatively, we will advise on receipt of a dimensioned sketch of your premises noting the positions of windows, doors, fans, food odours and draughts

Why five models?

Each has been designed to meet specific applications. There are models for wall mounting and ceiling suspension, protecting varying floor areas.



A Model 10A shown in a modern kitchen.

Are they expensive to operate?

Even though we recommend them to be switched on for 24 hours a day (to catch both night and day flying insects) they only consume from, 22 to 44 watts—less than a small light bulb! In some applications they may serve also as a night security light, and are a visible sign, to your clients, of your concern for hygiene.

Who uses Insect-O-Cutors?

In Britain, and in many overseas countries, just about every major national and international food manufacturer and retailer, (including Heinz, Tesco, Safeway, Coca-Cola, Wall's, Guinness, Kentucky Fried Chicken) and most hotel and restaurant chains. They are approved by Environmental Health & Safety Executive inspectors and by every authority interested, as you are, in the protection of the products, the premises, and the employees from disease-carrying flying insects.



INSECT-O-CUTOR

Which Model of Insect-O-Cutor?

The table lists the five models, their dimensions and the area they will "protect" under average conditions.

What about after sales service?

In the unlikely event that your Insect-O-Cutor needs attention or should you wish to take advantage of our servicing scheme, we have a nationwide service network in the UK and many overseas territories.

How quickly can I buy one and from where?

We almost always deliver from stock and our world wide network of Distributors holds stocks of most models for a variety of electricity supplies.

Contact them or us, have a free survey and take positive steps to eliminate insect nuisance and danger NOW and FOREVER!

MODEL	10 - 8	20 - 8	25 - 8	50	25 - 8 large tray
Attraction: Circumference	160°	160°	360°	360°	360°
Minimum Area Protected **sq. metres approx.** (sq. ft. approx)	**25** (250)	**50** (500)	**100** (1000)	**100 to 200** (1000 to 2000)	**100 to 200** (1000 to 2000)
Height: **mms** (Inches)	**398** (15.7)	**507** (19.9)	**465** (18.3)	**840** (33)	**510** (20)
Length: **mms** (Inches)	**325** (12.8)	**590** (23.2)	**630** (24.8)	**650** (26)	**770** (30)
Depth: **mms** (Inches)	**134** (5.3)	**206** (8.1)	**220** (8.6)	**560** (22)	**380** (15)
Weight: **kgs** (lbs)	**7.3** (16.1)	**14.5** (32)	**11.0** (24.3)	**15.4** (34)	**12.7** (28)
"Blacklight" Tube	22w	2 x 22w	2 x 22w	2 x 20w	2 x 22w

INSECT-O-CUTOR

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Bird Hall Lane, Stockport
Cheshire, England SK3 0SD

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Telex: 667664 SHARET

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AFRICAN NATIONAL CONGRESS

CONSTRUCTION OF A VOCATIONAL TRAINING AND SELF-RELIANCE CENTRE AT VIENA, PEOPLES REPUBLIC OF ANGOLA, FOR THE AFRICAN NATIONAL CONGRESS

CONSTRUCTION PROGRAMME

PHASE I

GUIDELINES FOR THE SUBMISSION OF TENDERS BY CONTRACTORS

February 1984

1. INTRODUCTION

2. GENERAL CONDITIONS

3. THE CONSTRUCTION WORKS

3.1 Site aspects
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3.3 Schedule of works
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3.6 Fire protection
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3.8 Insurance

4. EQUIPMENT, FURNITURE AND HOUSEHOLD ITEMS

5. THE ANC INPUTS

6. IMPLEMENTATION

7. CONTRACTORS TENDER

8. LIST OF ANNEXES

CHAPTER I - INTRODUCTION

1.1 The African National Congress of South Africa, with the financial assistance from the Norwegian People's Relief Association. United Nations High Comissioner for Refugees UNHCR and the Finnish Africa Committee, will execute a project called a Vocational Training and Self-relianc Centre at Viena, in the Peoples Republic of Angola.

1.2 The works included in the scope of the project, hereinafter called "the Construction works" are described in Chapter 3 and include a health training center, a mechanical workshop and other buildings.

1.3 The ANC intends to hire one Contractor to provide the services described hereinafter. The present document provides the guidelines to be followed for the submission of tenders by interested contractors.

1.4. The ANC has mandated the Finnsolidarity, a technical sub-committee of the Finnish Africa Committee, to co-ordinate the tenderin procedure on its behalf. All communication by the Contractor prior signing of the contract should be directed to the Finnsolidarity (P.O. Box 146, 00531 Helsinki 53, Finland, tel 358-0-701 4114, telex 125885 fisol sf).

1.5 The Construction works Phase I will be executed as a "Turnkey project", the Contractor being responsible for the manifacture, transport, construction and assembly of all buildings and related works as defined in Chapter 3.

CHAPTER II - GENERAL CONDITIONS

2.1 All communications, including technical documents, specification etc., between the Contractor and the Finnsolidarity shall be done in English.

2.2 A Contract Draft is attached as Annex I to the present guideline

2.3 The Contract defines the general conditions for the execution of the construction works and covers the following chapters:

1. Contract documents
2. The project
3. Staff
4. Reports
5. Visits to the Contractor
6. General
7. Prices and payment terms
8. Suspension of the contractor's services
9. Termination of contract
10. Liquidated damages in the event of delays in delivery
11. Disputes
12. Third Parties an insurances
13. Modification of the contract
14. Force Majeure
15. Performance security and warranty
16. Contract period

2.4 The tenderers submitting a tender shall be deemed to have read and accepted the conditions set forth in the present document and in particular in the Contract Draft.

2.5 The tenderer may inspect and examine the construction site and the surroundings and shall satisfy himself, before submitting his tender, as to the form and nature of the site, the quantities and nature of the works and the means of acces to the site, the accomodation he may require, and in general the tenderer shall obtain all necessary information as to risk contingencies and other circumstances like regulations applicable in the country.

2.6 The informations provided in the present document are informative only and the ANC declines any responsibility arising from the use of this information by the tenderer in preparing his tender.

CHAPTER III - THE CONSTRUCTION WORK

3.1 Site aspect

3.1.1 Location

The site is located at Viena, approximately 20 km from the centre of Luanda and lies about 5 km from the main road to Dondo.

3.1.2 Roads

The 15 km stretch of road from Luanda to Dondo is bitumen surfaced and in good condition. The remaining 5 km is dirt road but is easily accesible at all times of the year.

3.1.3 Topography

The land is generally flat with a gentle slope. A topographical survey will be made by the ANC and will be given to the tenderer by request.

3.1.4 Soil conditions

No soil analysis or geotechnical investigation has been carried out. From a visual examination, the soil appers to be sandy with good permeability. No foudation problems are envisaged for singlestorey buildings. The site must be considered as good from a construction point of view.

3.1.5 Vegetation

The site lies in an area set aside for urban development and has very little vegetation.

3.1.6 Climate

The annual average temperature is 24, 2 C. In March it is 26, 9 C and in July 20, 2 C. The maximum daytime temperature is about 36 C in March, dropping to about 14 C in July at night.

The annual average rainfall is 367 mm. In April the average rainfall is 124 mm, in June and July it is not raining at all. Annually there is about 32 rainy days only.

The sun is shining 2301 hours a year. May is the sunniest and July the least sunny month.

Wind is usually from the West and the average speed is 11-15 km/h.

The annual average relative humidity is at 9.00 a.m 82 % and at 3.00 p.m 79 %.

3.1.7 Existing buildings

One storage building and one dormitory have been constructed by the ANC and it may be possible for the Contractor to use part of the storage during the construction period.

3.2 Site layout and site works

3.2.1 Site plan for the centre

The Vocational Training and Self-Reliance Centre will be built on a plot according to layout of the site plan attached as Annex II. A topographical survey will be available at the end of March.

3.2.2 Sewerage and drainage

The sewerage and drainage system will not be included in the contract. Nevertheless, the contractor shall supply and install the connections to the sewers and drainages up to a distance of one metre outside the foundation perimeter. WC outlet pipes should be 4 inches PVC.

3.2.3 Water supply

The water supply and distribution system will not be included in the contract. Nevertheless, the contractor shall supply

and install all internal plumbing and the water connections to the main supply up to a distance of one metre outside the foundation perimeter.

3.2.4 Emergency power plant

The construction of the power plant building will not be included in the contract. The contractor shall supply two 40 KWA generators as per technical specifications of Annex III. The contractor shall provide the construction drawings for the power plant building. This building will be built by the ANC using locally available materials. The buildings will have foundations consisting of reinforced concrete slabs, cement block walls, sheet metal roof and metallic roof structure. The contractor will supply roof sheets only to match the other structures provided.

3.2.5 Transformer station

Main electricity will be supplied by the ANC to the transformer station on the site but it is unlikely to be available during the erection period.

3.2.6 Electrical connections

The wiring connections and materials between the transformer and the different buildings and between the emergency power plant, clinic and the administration block are to be included in the contract. A sketch diagram attached as Annex IV is subject to modification.

3.3 Schedule of works

3.3.1 The project construction work Phase I will have:

a) Clinic	AV 05	306 SQ.M.
b) Classroom block	AV 06	114 "
c) Classroom/library block	AV 06	162 "
d) Dining hall/kitchen/WCs	AV 07	461 "
e) Dormitory block	AV 08	205 "

f) Dormitory block	AV 08	205 SQ.M
g) Ablution block	AV 09	81 "
h) 1 detached house	AV 10	65 "
i) Mechanics workshop	AV 03	792 "
j) Administration block	AV 11	130 "
		2 521 SQ.M.

Furthermore tenderers are requested to tender for the following additional works which may be also be included in Phase I of the project:

k) Truck parking		243 SQ.M.
l) 4 houses	AV 10	260 "
m) Tailoring workshop	AV 04	153 "
n) 1 Storage block	AV 02	936 "
		1 592 SQ.M.

3.3.2 The final construction programme will be established according to tender results.

3.3.3 The general layout and concept of the buildings are shown in the sketch scheme -AV 02 - AV 13 - attached as Annex V.

These plans may be slightly modified to suit the contractors standard product provided that the basic concepts and specifications are adhered to.

PLEASE NOTE. Additional special notes appear on the sketch drawings and these take precedence over the following general specifications.

3.4 Type of construction and general building specifications

3.4.1 The construction of the buildings is foreseen with imported prefabricated elements corresponding to a standard production.

3.4.2 The standard of design and construction shall be governed by:

- climatic suitability
- functional suitability
- ease of erection
- strength and durability
- ease of maintenance.

3.4.3 Wind resistance

The buildings shall be calculated to withstand a wind velocity of 50 m/s.

3.4.4 Natural ventilation

The buildings are oriented to reduce heat gain from solar radiation and to catch the breeze. Cross ventilation should be the aim troughout with a maximum of window openings possible unless otherwise specified. A minimum ceiling height of 2, 50 m is required in ordinary habitable room. Other ceiling heights are specified on the drawings.

3.4.5 Foundations

The ANC will undertake all concrete foundation work including supply of materials to completion of the concrete slab in accordance with the contractors drawings and specification. The contractor will supply the mechanical installations includingall pipes, conduits, sanitary fittings. etc., necessary for the completion of this work.

3.4.6 Floor finishes

The concrete slab undertaken by the ANC shall be finished by the contractor with a sand/cement screed or similarly approved levelling agent finished to a smooth surface in all rooms and covered with vinyl tiles or carpet including a 10 cm skirting at walls (ecxepting mechanics workshop, turck parking and stores).

3.4.7 External walls

The following section is proposed for external wall panels:

From outside to inside:

- external wall finnish: trapezoidal corrugated hot dip galvanished steel sheets with plastic PVF 2 coating
- damp proof course: plastic film
- thermal insulation: with u-value = 0,40 w/m2/C

- internal wall finish: sheets of fibre reinforced cement board, smooth structure acrylic paint
- frames, bottom channels, closure strips etc.: hot dip galvanished steel, termite resistant sealing compound.

Alternative external wall panels can be proposed by contractors.

External wall finish can be sheets of fibre reinforced cement boards, corrugated plastic coated aluminium strip profiles. External wall panels must be easy to transprot, assemble and maintain. Furthermore, the panels must be non-combustible and shock resistant.

3.4.8 Internal walls

The following section is proposed for internal wall panels:

- wall finish: fibre reinforced cement-board or 13 mm gypsum board, on both sides of sound insulation material, smooth structure acrylic paint
- sound insulation: high density material (min. sound reduction 36 dB)
- frames, bottom channels, closure strios etc.: hot dip galvanised steel or aluminium, foam rubber sealant strips

Alternative internal wall panels may be proposed by contractors. Proposed panels must possess the same qualities as external walls: easy transport, erection etc.

3.4.9 All internal wall panels in wet areas should be of film faced plywood or PVF 2 coated galvanised steel.

3.4.10 Roofs

A double-pitched roof with an inclination of 22 degrees is chosen for all buildings. The double-pitched roof gives good shading from the roof eaves, which should extend at least 1 m from the walls. The structure suggested to be of steel.

The roofing is proposed to be made of trapezoidal corrugated hot dip steel sheets with PVF 2 coating or bright trapezoidal corrugated aluminium. The colour of each side of the sheet must be chosen in order to minimise radiation of heat to the attic.

Alternative roofing sheets may be proposed by contractors. The roofing materials must be maintenance-free, non-combustible, weather resistant and dimensioned to resist a wind velocity as mentioned in article 3.4.3.

The space between roof and ceiling shall be well ventilated for climatic reasons. Openings between the roof and the external walls shall be covered by aluminium coffee tray wire and be completely rat proofed.

3.4.11 Geilings

Geilings shall be provided in all rooms except for the ablution block, storage block, mechanics workshop and truck parking. Ceilings shall be made of trapezoidal corrugated hot dip galvanised steel sheets with plastic coating with sound absorbent and thermal infill.

Alternatives may be proposed such as 2 skins hardboard with thermal and sound insulated infill.

Alternatively insulation to the ceilings may be omitted if adequate ventilation to the roof space is provided, for example by 30 cm high ventilation along complete facade. In this case openings should be completely rat proofed.

3.4.12 Windows and wall openings

Adjustable louvre windows in a frame of hardwood or aluminium shall be used in all buildings. Windows must be complete with aluminium mosquito net on the outside.

3.4.13 Doors

Doors shall generally be flush plywood type, gloss painted. In exposed external locations, solid wood, tongued and groved or anodised and insulated aluminium doors shall be used. An oiled finish is preferred to a varnish, which frequently blisters and flakes off.

If anodised aluminium is used it should preferably be coloured brown.

3.4.14 Door locks

Locks shall generally be cylinder type with a latch on the inside and the type proposed shall be subject to approval. Locks shall be supplied in a master key system to be agreed with the ANC. Bathroom locks may be of on special type.

3.4.15 Colour

The contractor shall supply samples of colours possible and the final choice shall be made by the ANC prior to fabrication.

3.4.16 Technical Services - General

The contractor shall undertake to deliver and install all piping, sewerage, cold water and electrical installations necessary to connect all sanitary fittings, equipment, etc. The scope of work for the water and sanitary (sewer) connections is indicated in articles 3.2.2 and 3.2.3.

3.4.17 Sanitary fittings

Washbasins and surrounding benches shall be of stainless steel. The toilets shall be of European type and should be durably constructed to minimise maintenance.

3.4.18 Sewage disposal

Above ground sewer piping shall be of plastic, meeting the requirements of the international I.S.U. standards, with rubber ring sealed joints.

3.4.19 Water supply

Gold water pipes shall be of copper. All water pipes shall be exposed (face mounted).

Generally hot water will not be supplied except in the main kitchen where it should be supplied to all outlets.

All taps, drains, control valves, etc. above floor levels are to be included for. All taps. etc. shall have chrome finish.

3.5 Electricity

3.5.1 An emergency power plant shall be built by the ANC within the Centre. The size will be about 5, 00 x 6,00 meters, with a room height of 3.00 meters. The detailed dimensions of the building shall be given by the contractor conforming to the offered diesel generator equipment.

3.5.2 The power plant shall be equipped with two generators and will supply the clinic and the administration block. The generator specifications are given in Annex III.

3.5.3 The power plant shall have a fuel tank of 2000 litres.

3.5.4 The generators, switchboard panels and fuel tank, the underground an overhead distribution system inside and between the buildings, shall be delivered by the contractor. The contractor shall be responsible for the detailed planning of the all works arriving at a complete and functioning system, to the satisfaction of the ANC.

3.5.5 All visible cables and accessories shall be white. Artificial internal lighting shall generally be of fluorescent type mounted at ceiling level. Fluorescent fittings shall be manufactured of sheet steel, which shall be phosphatised chromated and electrostatically enameled white. The diffuser shall be clear acryl and prismatic patterned with linear sided prismas.

The contractor shall also supply lighting on covered verandas which should be incandescent. Lighting in the houses should also be incandescent.

Alternative models for lighting fittings may be proposed.

The following lighting levels shall be observed:

Space	Lighting level
Offices, classrooms	120 - 150 lux
Dining hall	120 - 150 "
Dormitories, corridors	30 - 40 "
Ablution block	40 - 60 "
Mechanics workshop	80 - 100 "
Storage	80 - 100 "

3.6 Fire protection

Fire protection equipment will be provided by the ANC, and must not be included in the tender.

3.7 Transport and erection of the building

The contractor shall transport and assemble the buildings at the site at Viena. The contractor is responsible for transport to Angola and for transport within Angola. Customs duty shall not be included in the tender.

3.8 Insurance

The tenderer shall take into account the insurance requirements mentioned in article 12 of the contract draft.

CHAPTER IV - EQUIPMENT, FURNITURE AND HOUSEHOLD ITEMS

4.1 Criteria

The criteria on which the selection of equipment and furniture shall be baser are:

- strenght
- resistance to wear and hard use
- functional design
- ease of maintenance and cleaning
- cost
- suitability to climate

4.2 Standardisation

Items shall be standardised and reduced to as few different types as possible to allow interchange flexibility of function.

4.3 Furniture list

Furniture lists, showing the responsibility of the contractor. are included in Annex VI including a approximate list of kitchen equipment which may be subject for modification according to final design.

CHAPTER V - THE ANC INPUTS

5.1 The ANC will execute the following works:

a) all earth movement works such as excavations, trenches, fillings etc.
b) All foundation work to completed slab
c) generators building, as per contractors specifications
d) sewage and water system from one metre outside the foundations perimeter

5.2 The ANC shall supply the machinery and equipment needed for the execution of the works mentioned in article 5.1.

5.3 The ANC shall provide the following personnel:

- one Project Manager
- one senior electrician
- one sanitary technician

5.4 In addition to that, the ANC will make available at no cost to the contractor up to twelve skilled workers in building, carpentry, joinery, plumbing and electrical installation trades as well as additional labor.

CHAPTER VI - IMPLEMENTATION

6.1 Aim

The aim shall be to achieve as early a completion date as possible for the buildings.

6.2 Action plan

The proposed implementation process is illustrated by means of an Action Plan (Annex VII).

6.3 Design responsibility

The selected contractor will be responsible for the final design of the prefabricated buildings as well as for the final design of the foundations. The final design will be approver by the ANC prior to commencement of fabrication.

6.4 Monitoring of the project

6.4.1 The ANC is the Executing Agensy. The ANC Technical Department will assure the leadership of the project and will delegate certain responsibilities to the Finnsolidarity.

6.4.2 The contractor shall have on the site during the erection period one project leader. This person will act as liaison between the contractor and the ANC and therefore shall be fully conversant in English.

6.4.3 The contractor shall nominate at his headquarters a person who will act as contact between the contractor and the ANC.

6.4.4 The day-to-day supervison of the operations and the general monitoring of the project will be assured by the ANC team leader.

6.4.5 Weekly monitoring meeting will be held with the ANC and the contractor during the erection period. Reports on work progress will be transmitted to the ANC Technical Department, Mazimbu, Tanzania through the ANC team leader.

6.4.6 The ANC Technical Department will undertake fiel missions during and after the construction period, in order to control the work.

CHAPTER VII - CONTRACTORS TENDER

7.1 The contractor shall submit a tender for the delivery of the goods and services described in Chapter 3. The tender will describe the way and means that the contractor intends to use, and will include the documents mentioned in articles 7.1.1 to 7.1.5.

7.1.1 General

- Documents attesting to its legal status (constitution, by-laws, incorporation, etc.)
- All relevant evidence that candidate is technically and financially capable of carrying out the work (Bank references audited balance, etc).
- All relevant references in major projects of a similar nature, completed or currently in progress.

7.1.2 Staff and cost

- C.v. of the project leader mentioned in article 6.4.2.

7.1.3 Time schedule

Detailed time schedule for the delivery of the required services as described under Chapter 3.

7.1.4 List of drawings and documents

The contractor must submit with his tender the drawings, and sketches permitting the ANC to evaluate his offer. A complete list of the drawings, specifications he intends to produce as a part of his services after the contracts' signing must be provided.

7.1.5 Technical proposals and materials

Technical proposals for the construction with indication and specifications of all the materials to be used.

Two samples of wall elements, ceilings and roof sheets should be sent with the tender.

7.1.6 Furniture

Proposals for furniture should be illustrated by photos, sketches and samples of fabrics etc.

7.2 Prices

7.2.1 The contractor should offer a fixed contract price covering all goods and services included in the construction work.

7.2.2 The total price shall be devided as follows:

1. For each individual building (from a - n)
   - construction materials FOB
   - furniture FOB

2. For buildings a - h combined
   - CIF Luanda
   - transport Luanda - site

3. For buildings i - j combined
   - CIF Luand
   - transport Luanda - site

4. For building k
   - CIF Luanda

5. For building l
   - CIF Luanda

6. For building m
   - CIF Luanda

7. For building n
   - CIF Luanda

8. Transport for buildings k - n
   - Luanda - site

Please supply estimated transport volumes for

- buildings a - h
- buildings i - j
- buildings k - n

9. Electricity
   - emergency power plant (Annex II), FOB and CIF Luanda
   - installation from the transformer to the buildings, Luanda

10. Erection
   - erection of buildings with reference to ANC inputs
     a) as a fixed price for buildings a - h
     b) as a fixed price for buildings i - j
     c) as a fixed price for buildings k - n
     d) a monthly supervision raite

Note: The contractor is responsible for its own staffs boarding, lodging and transport

7.3 Reception and evaluation of contractors tender

7.3.1 The tender submitted to the Finnsolidarity by the contractor shall be evaluated on the basis of the following criteria:

a) experiance and performance of the firm in similar work
b) suitability of the proposed way and means of execution, and general approach to the delivery of services
c) technical aspects of the tender, such as architectural approach to the delivery of services
d) qualifications and experiance of the personnel to be assigned to do the work
e) time schedule under article 7.1.3
f) total price

7.3.2 The ANC shall be solely responsible for the selection of the contractor and it reserves the right to decline any or all tenders if it so decides without having to justify its decision.

CHAPTER VII - LIST OF ANNEXES

Annex I	Contract Draft
Annex II	Site palan scale 1:400
Annex III	Generator Specifications
Annex IV	Sketch diagram
Annex V	Building sketches AV 01-12
Annex VI	Furniture list
Annex VII	Action plan

PROTOCOL OF ACCEPTANCE

INSPECTION NO 1

The Client: Finnsolidarity, Address: P.O. Box 146, 00530 HELSINKI 53, Finland

The Contractor Makrotalo Oy, Address: Pieni Roobertinkatu 16, 00120 HELSINKI 12, Finland

The Project: Vocational Training and Selfreliance Centre, Viana, Peoples Republic of Angola

The Contract: Signed on behalf of Makrotalo Oy 16.6.1984

Signed on behalf of the Finnsolidarity 16.6.1984.

Part of the contract to be inspected/
Buildings to be inspected:

Inspectors

Project Manager
on behalf of the Client

The Representative of the ANC
Technical Committee

Resident Engineer on behalf
of Makrotalo Oy

Structural/constructional works

Mechanical works

Electrical works

Painting works

Building: Faults and Remarks

Contractor is obliged to correct the faults and remarks noticed within the erection period stated in the Contract.

For other parts the Client accepts the inspected part of the Contract/the inspected buildings and receives it/them.

Date:

Project Manager
on behalf of the Client

Resident Engineer
on behalf of Makrotalo Oy

The Representative of the ANC
Technical Committee

PROTOCOL OF ACCEPTANCE

INSPECTION NO 2

The Client: Finnsolidarity, Address: P.O. Box 146, 00530 HELSINKI 53, Finland

The Contractor Makrotalo Oy, Address: Pieni Roobertinkatu 16, 00120 HELSINKI 12, Finland

The Project: Vocational Training and Selfreliance Centre, Viana, Peoples Republic of Angola

The Contract: Signed on behalf of Makrotalo Oy 16.6.1984

Signed on behalf of the Finnsolidarity 16.6.1984.

Part of the contract to be inspected/
Buildings to be inspected:

Inspectors

Project Manager
on behalf of the Client

The Representative of the ANC
Technical Committee

Resident Engineer on behalf
of Makrotalo Oy

Structural/constructional works

Mechanical works

Electrical works

Painting works

Building: Faults and Remarks

Contractor is obliged to correct the faults and remarks noticed within 3 weeks time from the date of the above protocol.

For other parts the Client accepts the inspected part of the Contract/the inspected buildings and receives it/them.

Date:

Project Manager
on behalf of the Client

Resident Engineer
on behalf of Makrotalo Oy

The Representative of the ANC
Technical Committee

CERTIFICATE OF COMPLETION OF THE ERECTION

The Project: Vocational Training and Selfreliance Centre, Viana, Peoples Republic of Angola

The Contract: Signed on behalf of Makrotalo Oy 16.6.1984
Signed of behalf of The Finnsolidarity 16.6.1984.

The Client: The Finnsolidarity, Address: P.O. Box 146, 00530 HELSINKI 53, Finland

The Contractor:
Makrotalo Oy, Address: Pieni Roobertinkatu 16, 00120 HELSINKI 12, Finland

1
Time

2
Place

3
Participants

Representative of the Client
Representatives of the Contractor

4
Completion of the erection

This is to certify that the completion of the erection has been accepted by the Client.

5
Contract Price

The Contract price has been accepted payable in total.

6
Other matters

7
Signing of the Protocol

Signed on behalf of the Client

to union bank of Switzerland, geneve, Switzerland
from postibank, Helsinki, Finland

Foreign guarantees

Please issue on our risk and responsibility and against our counter guarantee no the following performance bond:

quote

You have concluded a contract dd
in Helsinki with Makrotalo Oy, Helsinki, Finland for the delivery of the agreed buildings of for . As security for the due performance of the delivery, and indemnity by a bank shall be furnished.

At the request of Makrotalo Oy, we herewith irrevocable undertake to pay you on first demand, waiving all rights of objection and defense arising from said contract, any amount up to FIM (Finnish marks only) upon receipt of your written request for payment and your written confirmation that Makrotalo Oy has failed to deliver the ordered merchandise or not delivered such merchandise as specified in the above mentioned contract and that as a consequence you have suffered a loss equalling the amount requested under this performance bond.

For the purpose of identification, your request for payment and your confirmation thereunder have to be presented through the intermediary of a first rate bank confirming that the signatures thereon are legally binding upon your firm.

Our indemnity is valid until and expires in full and automatically if your written request for payment and your written confirmation are not in our possession on or before that date.

This performance bond is governed by law.

In consideration of your issuing the aforementioned performance bond we confirm by this our counter guaraantee no. that eventual claims under the guarantee are payable on the first demand without condition or restriction and despite any contestation between beneficiaries and our principals. We also grant you 15 days grace period for submission of claims received during the validity of the above guarantee. This counter guarantee is issued in accordance with the exchange control regulations of the bank of Finland.

When your guarantee has been released, confirmation thereof should be sent to our bank without delay.

Postibank

MODEL

URAKKA-/HANKINTATAKAUS
(työaikainen)

Takaus n:o 591

Rakennuttaja/tilaaja

Makrotalo Oy

Pieni Roobertinkatu 16, 00120 Helsinki 12

Urakoitsija/hankkija

Valo & Majanen Oy

03100 Nummela

Sopimuksessa mainittu työ tai hankinta

As. Oy. Härköilänrinne, I-vaihe

Nummenselkä 9, 03100 Nummela

Sopimuksen päivämäärä	Urakkasumma/hankintahinta	Takauksen eräpäivä
02.08.1982	mk 245 000,-	30.08.1983

Pankin takausvastuun enimmäismäärä

Kaksikymmentäneljätuhattaviisisataa (24 500) markkaa

Allekirjoittanut pankki sitoutuu urakoitsijan/hankkijan rakennus-/työaikaisia sitoumuksia koskevaan omavelkaiseen takaukseen sen määrän maksamisesta rakennuttajalle/tilaajalle, jonka suorittamiseen urakoitsija/hankkija edellä mainitun sopimuksen nojalla mahdollisesti velvoitetaan. Tämän takauksen perusteella on pankin kokonaisvastuu enintään yllä mainittu enimmäismäärä.

Kaikki tähän takaukseen perustuvat vaatimukset on kirjallisesti tehtävä suoraan pankille viimeistään yllä mainittuna eräpäivänä uhalla, että pankki muuten vapautuu takauksestaan.

Takaussitoumuksen rauettua se on palautettava pankille.

Nummelassa 13 pnä elokuuta 1982

VIHDIN SÄÄSTÖPANKKI

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