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PROSPECTS FOR INTEGRATION IN THE WOODWORKING
INDUSTRY OF THE CARIBBEAN COMMUNITY

UC/CAR/86/201

Technical report: The situation in Dominica*

Prepared for the CARICOM Secretariat
by the United Nations Industrial Development Organization

Based on the work of Pietro Borretti, woodworking consultant

Backstopping officer: A. V. Bassili
Industrial Management and Rehabilitation Branch

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1. Introduction

1.1 Title and number of the project under which this country report has been prepared:

Development of integrated industry programme for the woodworking and furniture industry sector in CARICOM - UC/CAR/86/201

1.2 Cooperating Agency:

Caribbean Community Secretariat, Georgetown, Guyana

1.3 UNIDO consultant:

Pietro Borretti, Consultant in Woodworking Industry Sector.

1.4 CARICOM counterpart:

Ivor Carryl, Industrial Economist, Economics and Industry Division.

1.5 Main institutional contact in Dominica:

Dominica Industrial Development Corporation (IDC)

1.6 UNIDO Backstopping officer:

Antoine V. Bassili, Senior Industrial development Officer, Industrial Rehabilitation and Management Branch, IIS

1.7 Period of mission to Dominica:

9 to 15 May 1987

1.8 Terms of reference:

To survey the status and potential of lumber exports from Dominica to the timber-deficit countries of the Caribbean Community, and to review the country's furniture export potential.

1.9 Main activities:

- (a) Visits to selected sawmills to determine their capability to export furniture grade lumber;
- (b) Review of forest resources data;
- (c) Visits to selected furniture/joinery plants;
- (d) Review of shipping links with timber deficit CARICOM islands;
- (e) Providing sawmills with lumber import contacts in Trinidad and Antigua;
- (f) Providing furniture plants with furniture import contact in Antigua.

1.10 Background:

Among the primary aims of the Caribbean Community Secretariat (CARICOM), established in 1973, are the coordination of economic policies and development planning, and setting up of a special regime for its less developed members. In line with these aims, the CARICOM has developed an industrial programme for the industrial development of its 13 member states. The emphasis is on the production of goods and services for the regional market with a view to minimizing costly imports.

The development of the timber industries sector - and in particular the promotion of the supply of wood products from within the Region - has been assigned a priority role by the CARICOM Secretariat, since the Caribbean Community as a whole is heavily dependent on extra regional sources of supply to meet its lumber demand.

A regional project of assistance to CARICOM - entitled 'Development of Integrated Industry Programme for the Woodworking and Furniture Industry Sector in CARICOM' - was undertaken in this connection in 1987 by the UNIDO consultant Pietro Borretti who visited nine of the twelve CARICOM countries together with his counterpart Ivor Carryl.

As a result of the missions the consultant prepared eleven reports to highlight the situation to the CARICOM Secretariat and the authorities of the member states the situation of the sector and its potential. He also recommended certain immediate measures for the development of the sector. This report concerns the mission undertaken by the consultant in Dominica.

1.11 Related reports prepared under project UC/CAR/86/201:

The eleven reports prepared under the project include the following:

- (a) The project's terminal report (reference no. IO/R. 52) entitled 'Prospects for Integration in the Woodworking Industry of the Caribbean Community dealing with the situation in the region as a whole. The report proposes, inter alia, the implementation of three projects of a regional scope:
 - i Study on the establishment of a timber distribution centre in Barbados or Trinidad to facilitate the supply of lumber from within CARICOM;
 - ii Holding a regional WOODTECH course/exhibition of woodworking machinery in Barbados in order to promote the transfer of technology for the small-scale furniture and joinery industry in the Caribbean.

2. Summary

Dominica is with Guyana and Belize one of the CARICOM countries endowed with virgin forests. Commercial forests cover some 16,000 ha of the country's land area with an estimated volume of 200 to 600 m³ per hectare.

The most important of the local species is Gommier, a timber which in Puerto Rico is often utilized stained as Mahogany in furniture making.

The sawmilling sector consists of only two industrial sawmills and 50 to 60 chain-saw and pit-saw operations. The total annual lumber output amounts to about 6 million BM (14,000 m³) per year of which about 10 percent is imported.

One of the two sawmills, The Dominica Timbers Ltd. is possibly the most modern and integrated circular headrig mill in CARICOM. In addition to sawmilling it includes very modern planing and moulding machines, kiln drying facilities and proper tool maintenance equipment among which a sharpener for carbide tipped circular saw blades. The second sawmill, the North Eastern Timbers Sawmill combines sawmilling with prefabricated building facilities and furniture making.

The Superior Timber Products Ltd. is possibly leading in the industrial production of prefabricated building in the CARICOM region. Unlike the North Eastern Timbers Sawmill, which produces building components on a labour intensive basis, the Superior Timber plant is equipped with very modern machinery and has adopted an advanced type of prefabricated system developed in France.

Dominica's furniture and joinery manufacturing sector consists of a great number of small family-type workshops and seven larger workshops. Two of them, the Ogheden Industries Co. and the Charles and Co. are among the most modern and efficiently run small-scale woodworking plants identified in the course of project's travel within the CARICOM region. However, the Ogheden furniture plant has yet to develop appropriate furniture design capabilities.

One of the earliest furniture workshops to be established in Dominica, the Cheapside Store is now planning to expand its operation having obtained a line of credit through the assistance of the Caribbean Project Development Facility (CPDF). Short-term expertise will be required by the company to help introduce appropriate wood-processing methods in connection with the purchasing of new equipment. The main aim of the Cheapside's expansion is to be able to enter the export market.

Some furniture is already being already exported to the nearby islands of Martinique, Guadeloupe and St. Croix by some of the larger furniture plants, but there is a critical need to upgrade existing production facilities so as to enhance the export potential of the sector, with Antigua offering a possible additional outlet in view of its current boom.

Judging from the forest inventory conducted recently, Dominica's lumber export potential appears to be rather modest, as the Gommier forest that existed at the time of the previous inventory in 1962 is now considerably reduced. However the North Eastern Sawmill expressed a keen interest in reserving a good share of its Gommier lumber output (2,000 to 3,000 BM or 4,7 to 7 m³ per day) for CARICOM destinations. Contacts have been established with a major furniture manufacturing plant in Trinidad in this respect, as a direct result of the project.

Main recommendations:

- a) To provide the service of a woodworking expert (6 months) and a volunteer (12 months) to the Cheapside Store Co. to enable its management to acquire the necessary know-how for the efficient operation of the expanded furniture plant. See draft project document in Annex III.
- b) To provide short-term assistance (3 months) to the Furniture Woodworking Co. for the establishment of a Tool Maintenance Servicing Centre. See draft project document in Annex V.
- c) To provide guidance in the introduction of modern and appropriate woodworking equipment, with emphasis on wood-jointing machinery, in order to develop the export capabilities of the furniture manufacturing sector. Equipment specifications in this respect are provided in the ad-hoc report on equipment selection (report No. IO/R. 53).
- d) To carry out a study concerning the expansion of the North Eastern Timber Sawmill as a basis for access to credit facilities. See draft project document in Annex IV, which also includes inputs for improving the utilization of existing machinery in the furniture making unit.

3. Dominica Forest Resources

Beside Guyana and Belize, Dominica is the only other CARICOM country with large virgin forests. According to a 1987 FAO Inventory Report, Dominica's commercial forests are still rich and uniform and cover 16,000 hectares with an estimated volume per hectare of between 200 and 600 m³ (84,760 and 254,280 BM). The forests comprise of a number of species, the most important ones being Gommier (*Dacryodes excelsa*) followed by Carapite (*Amonoa caribala*) and Chataignier (*Sleanea* spp.).

Gommier is a valuable furniture timber which can be found in Puerto Rico and the lesser Antilles, generally in small groups along ridge-tops and upper slopes of the rain forests in Dominica, Saint Lucia, St. Vincent, Grenada, Guadeloupe and St. Kitts. This species is of times reported to resemble Birch (*Betula*), Mahogany and sometimes Yellow Poplar (*Liriodendron*). Gommier is used extensively in Dominica for furniture making as well as construction, and in Puerto Rico is often stained and sold as 'Mahogany'. However, contrary to Mahogany, this species is very susceptible to termite attack. The timber is easy to work with but has a tendency to dull cutters due to its high silica content; therefore it should be processed with carbide-tipped cutters whenever possible.

Forests include reserves and private lands. Timber is however running out in the latter, thus the Government now retains a pre-dominant control in log extraction. Dominica's priority in the utilisation of forests is conservation, but forests are also seen as a valuable source of raw material for low cost houses, employment in the wood processing sector and lumber-import substitution.

4. Lumber Imports and Consumption

An average of 2,000 m³ (847,600 BM) lumber was imported in the period 1981-1985 to complement local lumber supply. Of the amount imported in 1985 (1,799 m³) 79.8 per cent consisted of non-coniferous planed lumber (of which 60 per cent was imported from the USA).

Taking into account local lumber output and imported lumber, the apparent lumber consumption can be estimated at about 6.8 million BM (16,000 m³) per year.

5. Dominica Sawmill Industry

According to the Forestry Division of the Forestry and Parks Service, a sustained annual yield of 6 to 10 million BM (14,157 to 23,600 m³) of sawn timber can be extracted from Dominica's forests. However, the existing sawmilling facilities - including the two sawmills and 50 to 60 chain-saw and pit-saw operations - produce only about 90 per cent of the country's annual lumber requirements.

The combined output of the two sawmills is estimated at about 3 million BM (7,000 m³) per year. According to the Forest Division, an estimated equal amount of lumber is produced by the chain-saw and pit-saw millers, bringing to a total of 6 million BM (14,000 m³) the total local production of sawn timber per year.

6. Lumber Prices

Ex mill prices of Gommier sawn timber are as follows:

- Green lumber: EC\$ 1.90/BM (US\$ 0.70/BM)
- Air-dried lumber: EC\$ 2.00/BM (US\$ 0.74/BM)
- Kiln-dried lumber (14 to 17 per cent MC): EC\$ 2.20/BM (US\$ 0.81/BM).

7. The Dominica Timbers Ltd. Sawmill

Dominica Timbers was registered as a company in 1982, having been first established in 1979 as a timber salvage operation for the processing of timber brought to the ground during a hurricane which had caused an estimated loss of approximately 40 per cent of the forest coverage. The Dominica Government acquired shares in the Company by contributing some of the sawmill equipment from the failed Forest Industries Development Corporation (FIDC).

The mill is the most modern and integrated of the circular-headrig sawmills visited in the CARICOM region in the course of the missions. It is equipped with a headrig of the twin vertical circular saw blade type for the processing of logs up to 38" diameter. The average daily output of the mill is 8,000 BM (18.9 m³) per day, or 2.4 million BM (5,663 m³) per year. Logging is carried out by a contractor, with Dominica Timbers providing skidding equipment and log trucks. Also subcontracted is the forest-road construction work. The mill provides employment to 32 workers.

The sawmill processing unit is integrated with a planing mill for the production of dressed as well as moulded lumber such as flooring boards and wall-panel boards. This section of the complex is equipped with, among others, two heavy duty moulders, one of 4" and the other 12" width capacity, a heavy duty 30" thicknesser, a heavy duty automatic rip saw and a spindle moulder for small batch moulding work. The planing mill is also provided with proper tool maintenance equipment including a universal grinder for the maintenance of carbide-tipped circular saw blades, moulding cutters, etc., and of an automatic knife grinder.

The third component of the Dominica Timbers complex is kiln-drying. The equipment is of the dehumidifier type and includes two chambers, one of 35,000 BM (82.6 m³) and the other of 5,000 BM (11.8 m³). The kiln-drying capacity is to be expanded in the near future with the addition of a third drying chamber.

At present, the near totality of the lumber output of Dominica timber is absorbed by the nearby plant of Superior Timber Products Ltd. which produces prefabricated timber buildings.

8. The North Eastern Timbers Sawmill

Established in 1979, North Eastern Timbers, is an integrated operation including sawmilling, a highly labour intensive prefab house unit and a furniture workshop. The mill has an output of 2,000 to 3,000 BM per day (4.7 m³ to 7.0 m³) corresponding to 600,000 BM to 900,000 BM (1,416 m³ to 2,100 m³) per year. The plant is equipped with a circular saw headrig. The operation provides employment to a total of 58 workers including personnel involved in a logging concession in a forest reserve area. The Company has received technical assistance from two volunteers provided by a Belgian organization. Most of the mill lumber outputs consists of the Gommier species.

The furniture workshop is equipped with a good range of basic woodworking machines as well as tool maintenance equipment. It lacks, however, the necessary technical know-how for attaining an adequate degree of efficiency and productivity. Its plant equipment includes the following machines: radial saw, bandsaw, universal woodworking machine (jointer, thicknesser, spindle moulder and boring/slotting attachment), slot mortiser, turning lathe, planing-knife sharpener, sharpener for carbide-tipped blades, sharpener for narrow bandsaws and circular saw blades.

Recommended inputs required for increasing the efficiency of the furniture unit of the North Eastern Timbers are outlined under the heading "Selected Technical Assistance Requirements" of this report.

9. Dominica's Furniture and Joinery Industry

The furniture and joinery manufacturing sector consists of a great number of small workshops with an average of 4 to 5 workers, and seven larger workshops with a maximum of 25 workers. Of the latter, the following were visited in the course of the mission:

- Cheapside Furniture Store;
- Furniture Woodworking;
- Ogheden Industries;
- North Eastern Timber;
- Raffoul Furniture;
- Charles and Company (door manufacturer).

With the exception of the Ogheden Industries and the door manufacturer Charles and Co., the sector as a whole has yet to benefit of the economics of industrial production through serial production. In particular, the absence of proper wood jointing equipment prevents the attainment of interchangeability of parts in the wood machining process. Moreover, high operating costs are incurred in view of the limited serviceable life of tools resulting from lack of tool maintenance equipment. Local Gommier is the main species used for furniture manufacture lacquered either in natural or stain finishes. Other local timbers used are White Cedar, Red Cedar and Mahogany.

9.1 The Ogheden Furniture Workshop

Established in 1984 by a Swede, the Ogheden plant is equipped with a large range of modern machinery for the manufacture of solid-wood furniture as follows: bandsaw, multiblade rip saw, radial arm saw, swing cross cut saw, combined jointer and slot mortiser, thicknesser, dimension saw, circular saw bench, slot mortiser, chain mortiser, automatic multiboring machine, routing machine, automatic double shaper, edge belt sander, disk sander, stroke belt sander, wide-belt sander (with two belts), multiple overhead drill press, heavy-duty drill press, turning lathe, dust exhaust equipment, spray room, kiln-drying chamber, sharpener for router and boring bits, combined sharpener for planing knives and moulding cutters and butt welder for narrow bandsaw blades. The investment cost in machinery amounts to about EC\$ 0.5 million (US\$ 185,000).

The range of furniture produced by the Company includes dining room, living room and bedroom furniture. The current emphasis is on the production of chairs which are normally produced in small batches of 20 to 50 pieces. At the time of the mission the plant was processing an order for export involving the production of 100 chairs weekly. The operation provides employment for 25 production workers and was expected to engage shortly an overseas production supervisor.

The Company has yet to develop a range of well-designed modern furniture with the exception of a particular design of living room chair, of knock-down type, which incorporates turned legs in keeping with traditional Caribbean market trends.

9.2 Furniture Woodworking Workshop

Established in 1975, the Furniture Woodworking Workshop is typical of small wood processing operations with a dynamic and innovative approach led by younger generation managers. The Company produces standard furniture. Chairs are normally produced in batches of 100 pieces. However, it also deals with furniture made to customer's specifications.

The Workshop is equipped only with the very basic woodworking equipment such as jointer, thicknesser, bandsaw, circular saw bench, mortiser and turning lathe. The operation provides employment for 16 workers and has an intake of about 9,000 BM lumber per month (21 m³). It is already engaged in exporting a few sets of living room furniture and beds to the nearby islands of Martinique and Guadeloupe. The factory manager of Furniture Woodworking has developed an attractive easy chair of light, streamlined design where the traditional feature of turned parts is limited to the front legs.

Technical information required by this Company is listed under the 'Technical Assistance Requirements' heading. Specifications of additional equipment are given in the separate report listed in paragraph 1.11(c). Information on plant layout is given in Annex I. The Company is interested in setting up a tool maintenance unit for the purpose of servicing its own tools as well as providing similar services to other plants on the island.

9.3 Cheapside Furniture Store

The Cheapside Furniture Store started as a one-man enterprise with occasional labour producing household furniture (beds, chairs, dining sets, etc.). It currently has 21 full-time employees and 2 sales outlets, one in Roseau at the factory site, and the other in Portsmouth. According to Cheapside's management, the firm has a 15 per cent share of the local furniture market. It has also exported occasionally individual furniture sets to the nearby islands of Guadeloupe, Martinique and St. Croix. Cheapside has envisaged a lumber intake of 25,000 BM in 1987 consisting mainly of Gommier timber.

The Company has obtained the assistance of the U.S. Government's Caribbean Project Development Facility (CPDF), in obtaining a long-term line of credit of EC\$ 675,000 to expand its production capacity by building a new factory and acquiring additional modern furniture-manufacturing equipment. A study has been prepared in this respect by CPDF indicating that the new plant will be able to attain a furniture export value of US\$ 140,000 by 1990. The Dominica Government supports Cheapside's expansion and has granted the Company tax incentives.

The establishment of the new Cheapside plant could serve as a model for the development of the small-scale furniture industry as a whole. For this to be achieved, however, it would be necessary to expand the currently-envisaged project inputs, as outlined under the heading 'Selected Technical Assistance Requirement' of this report. See also Project Data Sheet in Annex III.

9.4 Raffoul Furniture Co. Ltd

Raffoul operates the only furniture factory in Dominica housed in a proper industrial building with adequate floor space. The plant has a work force of 23 and a monthly lumber input of 10,000 to 15,000 BM (23.6 m³ to 35.4 m³) and is already engaged in exporting Gommier furniture (mainly beds) to Guadeloupe. Its equipment, however, is limited to only a few basic woodworking machines with resulting limited productivity and difficulty in

obtaining precision fitting of furniture components. The plant produces a good range of reasonably priced living-room furniture including a low-cost set of simple design (EC\$ 550 or US\$ 200 for one settee and two chairs) and a traditional spindle-type design (EC\$ 1,600 or US\$ 593 for the same number of pieces). It is equipped with an interesting type of general purpose sharpening machine (LAURENT brand, France) for the maintenance of carbide saws and planing knives.

Information on the selection of a multi-boring machine requested by Raffoul Furniture, is provided in the separate report entitled 'Selection of woodworking equipment for the small-scale furniture/joinery industry in the Caribbean Community' (report No. IO/R.53).

9.5 Superior Timber Products Ltd.

This Company operates what is possibly the most modern prefab building factory in the Caribbean Region. Established with the assistance of the French consulting firm, Parisot, the plant produces building components of modular-type for the requirements of the local market. All the exterior panels as well as truss components are made of Gommier supplied and kiln-dried by Dominica Timber Sawmill located next to the Superior Timber plant. All internal partitioning of the building system consist, however, of imported melamine-faced particle board panels. In 1986, the plant produced an average of 3 standard houses per month, plus a number of institutional buildings; whereas in 1985 it turned out 6 houses per month. The plant is equipped with a set of very modern equipment including, among others fully automatic boring machines.

9.6 E.H. Charles and Co Ltd. (Door Manufacturer)

Established in 1984, the Charles plant can be considered as a model medium-scale door production operation. It is equipped to produce panel doors, flush doors and louvered doors. The plant's investment in imported machinery amounts to EC\$ 480,000 (US\$ 178,000). The equipment includes a set of standard woodworking machines such as a radial saw, a jointer, a thicknesser, a spindle moulder with tenoning attachments, a dimension saw, etc. and four special purpose machines, namely, an automatic 'FESTO' slot mortiser and chamfering machine for the production of louvered doors; a 'JOHANSEN' wide belt sander; a frame press for panel doors and a cold press for the production of 25 flush doors per day. The plant is equipped with an 'AUTOTOOL' universal grinder to handle its tool-sharpening needs. As part of this project, information has been provided to the Company for the purchase of a small moulder which will be utilized for the production of panel-door parts and panelling boards. See separate report on the selection of woodworking equipment for the small-scale furniture/joinery industry in the Caribbean Community (reference IO/R. 53).

**10. Selected Technical Assistance Requirements
of the Furniture Industry Sector**

(a) Requirements by Cheapside Furniture

- i) Assistance by a woodworking expert for 6 months and a volunteer ^{1/} for 12 months in the establishment and operation of its new plant. See Project Data Sheet in Annex III.
- ii) Selection of a semi-automatic round-end tenoner; semi-automatic slot mortiser; automatic planing knives grinder; grinder for narrow bandsaws and circular saws; universal tool grinder. Purchase specifications in this respect are provided in the report on selection of woodworking equipment for the small-scale furniture/joinery industry in the Caribbean Community (report No. IO/R.53).

(b) Requirements by North Eastern Timbers

- i) Feasibility study for the expansion of present sawmilling facilities. See Project Data Sheet in Annex IV.
- ii) Selection of multi-boring machine and round-end single-end tenoner of semi-automatic type^{2/}.
- iii) Assistance of a wood-processing volunteer^{1/} for a period of at least one year with the task of improving the utilisation of the woodworking machines.

(c) Requirements by Furniture Woodworking Ltd.

- i) Selection of round-end tenoner, slot mortiser and tool maintenance equipment. The maintenance machinery would be utilized to provide services to other small-scale woodworking plants^{2/}.
- ii) Assistance by a Tool Maintenance Expert (3 months) for the establishment of a Tool Maintenance Servicing Unit. (See Project Data Sheet in Annex V).
- iii) Space requirements of basic woodworking machines as a basis for re-arranging the flow of wood processing in the plant. See Annex VI.
- iv) Copy of UNIDO's report on specification of solar kilns, prepared for the Forestry Commission in Guyana. Information to be provided by UNIDO upon obtention of clearance from the Guyana Government.

(d) Requirements by Raffoul's Furniture

Selection of multiboring machine and clamp carrier^{2/}.

(e) Requirements by E.H. Charles and Co. Ltd.

Selection of four-side moulder for the production of panel-door parts^{2/}.

^{1/} Should be appointed in conjunction with the assistance proposed under (a)i) and (b)i) above, since UN Volunteers are normally appointed for at least two years.

^{2/} Equipment specifications provided in the report reference No. IO/R.53.

11. Dominica's Lumber Export Potential

The forest inventory carried out in 1987 by the Forestry Department with the assistance of the Food and Agriculture Organization (FAO), determined that the large 'Gommier forest' that existed during the previous 1962 inventory, is now considerably reduced. Moreover, the natural regeneration of Gommier is poor. Therefore, regardless of the sawmilling capacity, some restraint will have to be shown in the exploitation of this particular species.

Perhaps, an emphasis could be placed on increasing production of other local species for the requirements of the local market, while reserving Gommier for the needs of the export-oriented furniture plants and for lumber exports.

Even in the short-term, however, there seems to be a potential for the exports of Gommier due to the interest of both potential suppliers and importers in CARICOM. In fact, in the course of the mission, the management of the North Eastern Timbers expressed interest in reserving for CARICOM destinations a good share of its Gommier lumber production (2,000 to 3,000 BM or 4.7 to 7 m³ per day). On the other hand, few of CARICOM's furniture plants visited, such as, for example, Trinidad's Specialist Furniture Ltd., one of the most modern furniture plants in CARICOM, appeared to be very keen in utilizing Gommier in their production lines.

12. Dominica's Furniture/Joinery Export Potential

Although some furniture has already been exported to the nearby islands of Martinique, Guadeloupe and St. Croix by a few of the larger furniture workshops, the export volume has remained very modest through the years and has mostly been limited to the sale of individual sets of furniture. Moreover Dominica has also been importing furniture as shown in the following table:

Table 1: Dominica's Furniture Export/Import Trends, 1982-1985

		1982	1983	1984	1985
Imports	EC\$	8,500	6,499	55,079	28,775
	US\$	3,148	17,548	20,399	10,657
Exports	EC\$	6,915	n.a.	84,163	11,124
	US\$	2,561	n.a.	33,023	4,120

Source: Dominica Customs Record

However, the export potential of furniture has been enhanced by the emergence of new furniture/joinery enterprises such as, for example, Ogheden, Charles, Furniture Woodworking, Raffoul, etc., and by the keen interest on the part of the Government in the development of this manufacturing sub-sector. Three activities have been undertaken or foreseen in this context:

- (a) UNDP/UNIDO training in wood-drying and kiln maintenance (Project DP/DMI/86/004);
- (b) UNDP/STAS furniture design assistance; and
- (c) Study for the establishment of a new furniture plant (Cheapside Furniture) carried out by the U.S. Government's Caribbean Project Development Facility.

The resulting increase in efficiency of the furniture manufacturing sector is complemented by the access to a valuable local timber species such as Gommier. This places the sector in a favourable position with respect to its export efforts towards Antigua and the neighbouring non-CARICOM islands of Martinique and Guadeloupe.

13. Potential CARICOM Importers of Dominica's Furniture and Joinery

The following companies should be contacted in Antigua and Barbados with a view to exporting to them furniture and doors:

- (a) Plastic Foam and Furniture Co.
(furniture importer)
P.O. Box 1050
Market Street, St. John's
Antigua and Barbuda, W.I.
- (b) Blades and Williams Ltd.
(lumber and joinery importer)
P.O. Box 279, Bridgetown
Barbados
Tel: 80942 or 62691 Telex: 2320

14. Dominica Shipping Links within CARICOM

Dominica is well served by shipping services linking to most of the Caribbean islands. The main services are listed below:

A. Trailer Marine Transport Corporation (TMT) Shipping Agents:

J. Astaphan and Co. Ltd.
P.O. Box 75, Roseau, Dominica
Tel: (809) 448 3221/5
Telex: 8622 ASTA DO Cable: JASTAPHAN

- Type of vessels: They take 20 and 40 ft. containers and flat beds of the roll on/roll off type
- Destinations and freight rates:

Destinations	Freight Rates* US\$	
	20 ft. cont.	40 ft. cont.
Barbados	1 595	2 150
Trinidad and Tobago	1 575	2 955
Grenada	1 080	1 530
St. Vincent	1 360	1 900
Saint Lucia	1 445	1 950
Martinique	1 025	1 455
Guadeloupe	1 025	1 455
Antigua and Barbuda	1 440	1 950
St. Kitts	1 385	1 875
St. Maarten	1 220	1 730
St. Thomas	1 650	2 295
St. Croix	1 650	2 295

* Including loading and unloading charges

- Frequency of service: weekly

Shipments to Dominica-Antigua are handled through San Juan, Puerto Rico, with trans-shipment at the agent's cost. The TMT service offers the possibility of sharing container space (consolidated container).

B. Whitchurch and Co. Ltd

P.O. Box 71, Roseau, Dominica, W.I.

Tel: (809)448 2181 Telex: 8614 WHITCOM DO

Services:

- Coastal vessel 'STELLAR 2' with fortnightly service to Saint Lucia and Barbados. Vessel of 120 tons capacity
- Weekly service: Dominica-St. Maarten
- WISCO services: monthly service with route Dominica-St. Kitts-Jamaica. Once a month with route Dominica-Saint Lucia-St. Vincent-Trinidad

ANNEX I

Persons Met

Mr. C. A. Arris	Development Coordinator, Economic Development Unit, Prime Minister's Office, Roseau
Mr. M. A. Fadelle	Investment Officer, Dominica Industrial Development Corp., (IDC), P. O. Box 293, Roseau
Mr. A. Ebol-Arthur	Projects Officer, IDC.
Mr. F. Gregoire	Director, Forestry Division, Forestry and Parks Service, Botanical Gardens, Roseau
Ms. C. Rolle	Executive Secretary, Dominica Association of Industry & Commerce, P. O. Box 85, Roseau
Ms. S. Charles	Economist, Department of Trade and Tourism, Ministry of Agriculture, Roseau.
Mr. B. Ogheden	Managing Director, Ogheden Industries Limited (Furniture manufacturer).
Ms. H. Ahidore	Manager, The Cheapside Furniture Store, 8 Long Lane, Roseau
Mr. A. H. Raffoul	Managing Director, Raffoul Furniture Co. Ltd., Canefield, P. O. Box 27, Roseau
Mr. A. J. Riviere	Production Manager, Furniture Woodworking Ltd., 14, Long Lane, Roseau
Mr. E. W. Jerome	Manager, North Eastern Timbers (Woodworking Complex), Palm Tree, Woodford Hill
Mr. E. H. Charles	Managing Director, E. H. Charles & Co. Ltd., (panel door and flush door manufacturer), P. O. Box 213, Roseau
Mr. R. Stasia	Production Manager, Superior Timber Products Ltd., (Prefab building manufacturers), P. O. Box 375, Roseau
Mr. U. Pemperton	Operation Manager, Dominica Timbers Ltd. Sawmill, P.O. Box 198, Roseau

ANNEX II

Properties of the Gommier Timber Species

- Scientific name:** Dacryodes excelsa Vahl. D. hexandra (Hamilt. Griseb)
Family: Burseraceae
- Other names:** Gommier blanc, Gommier montagne, (Guadeloupe and Martinique); Tabonuco (Puerto Rico)
- Distribution:** Gommier occurs in Puerto Rico and the Lesser Antilles, generally in small groups along ridge-tops and upper slopes of the rain forests in Dominica, Saint Lucia, St. Vincent, Grenada, Guadeloupe and St. Kitts.
- The tree:** Gommier is a large to very large evergreen tree reaching a height of 36.0 m and a diameter of 1.0 to 1.5 m although mature trees are more commonly 18.0 to 24.0 m tall and 0.5 to 0.75 m in diameter. They are deep rooted, without buttresses, and able to stand up well to the numerous hurricanes of the Caribbean. The boles are straight and well formed.
- The timber:** Gommier is variously reported to resemble birch (Betula), Mahogany, and sometimes Yellow Poplar (Liriodendron). It is perhaps closer in appearance to the botanically associated Gaboon or Okoume (Aucoumea), but harder, heavier and much finer textured.
- The sapwood is narrow, greyish in colour and not clearly demarcated from the heartwood which is uniform pale brown with a purplish cast when freshly cut, turning a pinkish brown when dried, and a lustrous brown on exposure. The grain is sometimes interlocked, producing an attractive ribbon stripe. The lustre is high and often satiny in appearance. The texture is fine to medium and uniform, and in general is somewhat finer textured than Mahogany.
- The wood weighs about 640 kg/m³ when dried.
- Drying:** It dries easily with no appreciable distortion or other defects. Its volumetric shrinkage from green to oven dry is 10.5 percent; tangentially it is 6.4 percent and radially 4.1 percent, which is superior in terms of drying to those values for African and Honduran Mahogany.

- (a) Veneer and Plywood: The interlocked grain persisting throughout the wood caused tearing of rotary cut-stock. Gum streaks were present. Veneers showed a tendency to buckle and in drying the interlocked grain caused splitting both at the ends and middle of the sheets. Plywood showed open end-split, torn grain and gum streaks while distortion was pronounced.
- (b) Plywood: A short log taken from the parcel described in (b) above was examined by a firm of decorative veneer manufacturers, who stated that interlocked grain was present and caused tearing of rotary cut veneer, and that gum streaks were present, thus causing a tendency towards splitting and buckling in the veneer when drying. Nevertheless plywood made up from these veneers and kept under observation for some years has remained flat and shows a fairly decorative appearance. For future plywood manufacture care should be taken to select at source logs which are the most suitable in size and shape, and as far as possible free of the defects mentioned.
- (c) Trials as general purpose furniture: A favourable report was made on a parcel of about 500 cubic feet by a furniture manufacturer. The wood was used for turnings, light articles of furniture, small tables, chairs, mattress sides, couches. It was noted that the condition was very fair and comparable with other commercial empire timbers. Defects and distortion after resawing were not more than 5 percent, which is reasonable. The timber had good 'standing' qualities during manufacture and final assembly.

ANNEX III

Draft Project Document

Country: Dominica

Title of Project: Technical assistance in the establishment of a demonstration small-scale furniture plant in Dominica.

Company address and contact: Cheapside Furniture Store, 8, Long Lane, Roseau, Dominica, Tel.: 4459, (Mr. Hyriam Ahidore, Managing Director).

Government Implementing Agencies: Dominica Industrial Development Corp., P. O. Box 293, Roseau, Dominica, Tel.: 2045 - Telex: DOM IDC DO

Executing Agency: United Nations Industrial Development Organization, (UNIDO)

Duration:

Estimated starting date:

External inputs: US\$ 100,500

Government inputs: In kind

PART I Legal Context

To be indicated in the final project document.

PART II - The project

PART II A - Development Objective

To promote the development of export-oriented furniture manufacturing plants based on the utilization of local forest resources.

PART II B - Immediate Objective:

To enable supervisory staff of the new factory to be set-up by The Cheapside Company, and trainees from other Dominican furniture factories, to acquire critical production know-how for the manufacture of standard furniture for export.

PART II C - Background and Justification:

The Cheapside Furniture Store has obtained the assistance of the U. S. Government's Caribbean Project Development Facility (CPDF), Washington, D. C. in obtaining long-term debt financing of EC \$ 675,000 to expand its production capacity by building a new factory and acquiring additional modern furniture manufacturing equipment. This expansion will help to improve the quality of Cheapside's products, increase its domestic sale and help the penetration of export markets in Martinique, Guadeloupe, St Croix and other nearby West Indian islands. Cheapside's existing factory in Roseau, Dominica's capital, which was established in 1979, is located in an old, cramped, and inadequate rented building in which it cannot achieve its expansion objectives.

According to a study prepared by CPDF on the establishment of the new plant, Cheapside is expected to increase its earnings from EC\$ 30,000 in 1987 to EC\$ 240,000 in 1990 and thereafter to exceed EC\$ 250,000 annually. In particular, Cheapside's exports have been projected to increase from about US\$ 40,000 in 1987 to US\$ 140,000 by 1990. The new project is expected to create direct employment for about 35 people.

The Dominican Government supports Cheapside's expansion plans and has granted the company tax incentives. Cheapside is applying for additional incentives including a 10 year income tax holiday and duty-free entry of equipment and materials.

The project is aimed at providing the necessary expertise to enable Cheapside to operate efficiently its new plant. The experts provided under the project will train under actual production conditions Cheapside's own technical personnel as well as trainees provided by other furniture factories; thus helping extend the transfer of specific wood processing know-how to Dominica's furniture industry as a whole -hence the demonstration asset of the project.

PART II D - Outputs

1. Proper layout of woodworking equipment to provide streamlined flow of production.

2. Six production supervisors trained in organizing and controlling manufacturing activities.
3. Twenty machinists trained in the efficient and safe operation of production equipment for the serial production of standard furniture.
4. Six technicians trained in the maintenance of cutting tools and the preventive maintenance of production equipment.

PART II E - Activities:

Activities to reach output 1:

Two-week mission to Roseau by a production expert to help finalize the plant layout of the new factory, to include floor arrangement of equipment as well as distribution of factory services, such as office space, tool maintenance room, storage space, timber yard, etc. The expert shall also select cutting tools and supplies such as glues, finishing material, etc. required for production activities to be undertaken in the course of the project.

Activities to reach outputs 2 and 3:

Six-month assignment of a production expert assisted by a Volunteer (for 12 months)^{1/} who shall provide training in the (1) operation of all the production equipment, (2) rational flow of production activities, (3) development of production aids, such as machining jigs, templates of standard parts, etc., (4) preparation of basic production reports to serve as a basis for the calculation of production costs.

Activities to reach output 4:

Three-month assignment of a tool maintenance technician who shall (1) organize preventive machine maintenance activities, (2) provide specifications on type of lubricants and frequency of lubrication for each production and maintenance equipment, and (3) train in the proper use of tool-sharpening equipment.

PART II F - Inputs (external contribution):

BL 11	<u>Project personnel</u>	<u>Man months</u>	<u>US \$</u>
11-01	Production expert	6.5	52,000
11-02	Tool maintenance technician	3.0	24,000
14-01	Woodworking volunteer ^{1/}	12.0	14,000
BL 15	Local travel		1,500
BL 42	<u>Expendable equipment</u>		6,000
BL 51	<u>Reporting costs, training handouts and sundries</u>		<u>3,000</u>
	Total external contribution:		100,500

^{1/} The volunteer will also serve 12 months under the project to assist the North Eastern Timbers Integrated Plant. (See Annex IV).

ANNEX IV

Draft Project Document

Country: Dominica

Title of project:	Assistance to the North Eastern Timbers Integrated Woodworking Plant.
Company address and contact:	North Eastern Timbers, Palm Tree, Woolford Hill, Dominica
Government implementing agency:	Dominica Industrial Development Corporation, P. O. Box 293, Roseau.
Executing agency:	United Nations Industrial Development Organization (UNIDO)
Duration:	18 months
Estimated starting date:	
External inputs:	US\$ 73,000
Government inputs:	In kind.

PART I - LEGAL CONTEXT

To be indicated in final project document.

PART II - THE PROJECT

PART II A - Development Objective:

To promote the expansion of industrial sawmilling capacity and the development of integrated woodworking operatives in Dominica.

PART II B - Immediate objectives:

As a direct result of the project, the management of the North Eastern Timbers Company will be able to:

1. Develop a rational basis for the expansion of its sawmilling operation; and
2. Increase the efficiency of its furniture making operation.

PART II C - Background and Justification

Established in 1979, North Eastern Timbers is an integrated woodworking operation including sawmilling, a highly labour intensive prefab building unit and a furniture workshop. The company operates one of the only two industrial sawmills in Dominica whose combined output represents 50 percent of the total sawn timber production in the country; the balance being produced most inefficiently by some 50 chain-saw and pit-saw millers with a recovery factor of about 20 percent.

The North Eastern Timbers Sawmill has an output of 2,000 to 3,000 BM (4.7 to 7 m³) per day. It is equipped with a circular saw headrig and provides employment to a total of 58 workers including those engaged in extracting logs from the company's own forest concession.

The furniture workshop is equipped with a good range of woodworking equipment and tool maintenance machines. It lacks, however, the necessary technical know-how for attaining an adequate degree of efficiency and productivity.

This project proposes to provide technical assistance to the integrated plant towards expanding the sawmilling capacity and upgrading the efficiency of the furniture workshop.

PART II D - Outputs

1. Output to reach objective 1:

Prefeasibility study on the expansion of the existing sawmill, as a basis for seeking credit facilities.

2. Output to reach objective 2:

Six technicians trained in the efficient utilization of existing furniture making machines and tool maintenance equipment.

PART II E - Activities

1. Activities related to output 1:

1.1 To provide a broad review of the main factors that might affect the proposed expansion of the sawmill/logging operation such as:

- a) raw material availability and cost;
- b) market trends and requirements;
- c) man power resources;
- d) infrastructure conditions, and
- e) Government industrial development policies as applied to the timber industry sector.

1.2 To select the appropriate technology and estimate additional output capacity;

1.3 To provide a general estimate of capital investment; and

1.4 To provide, on the basis of the above, a rough estimate on how much return on investment can be expected from the expanded sawmill capacity and measures that may have to be taken.

(This activity will be subcontracted to a specialized consulting engineering firm.)

2. Activities related to output 2:

2.1 Review conditions of existing furniture making machinery and tool maintenance equipment and identify needs for spares, accessories and cutting tools. (Two month field mission by a Furniture Production Consultant).

2.2 Training on the efficient utilization of production and maintenance equipment. (Two months return mission by the Furniture Production Consultant, and twelve months assistance by a Woodworking Volunteer).

PART II F - Inputs

	<u>m/m</u>	<u>US\$</u>
1. <u>External inputs:</u>		
11-01 Services of a Furniture Production Consultant (produce output 2)	2+2	32,000
14-01 Services of a Woodworking Volunteer (produce output 2)	12	14,000
21-00 Services of a consulting firm (to produce output 1)		25,000
51-00 Miscellaneous expenses (reporting costs)		<u>2,000</u>
Total external inputs:		<u>73,000</u>
2. <u>Government inputs:</u>		
2.1 Secretarial services		in kind
2.2 Internal travel		in kind

PART II G - Related activities:

1. **Selection of additional furniture production equipment.**

The selection of a round tenoner and a multi-boring machine is provided in the ad-hoc technical report prepared under UC/CAR/86/201 entitled: "Guidelines for the Selection of Woodworking Equipment of the Small-scale Furniture/Joinery Industries in the Caribbean Community" Report reference No. IO/R.53).

ANNEX V

Draft Project Document

Country: Dominica

Title of project: Assistance to the Furniture Woodworking Ltd. in setting up a tool maintenance servicing centre.

Company address and contact: Mr. A. J. Riviere, Production Manager, Furniture Woodworking Ltd., 14 Long Lane, Roseau, Tel.: (809)445-3207.

Government implementing agency: Dominica Industrial Development Corp., P. O. Box 293, Roseau, Tel.: 82045, Telex: 8642 DOM IDC DO.

Executing Agency: United Nations Industrial Development Organization (UNIDO)

Duration: 3 months

Estimated starting date:

External inputs: US\$ 25,000

Government inputs: In kind.

PART I - LEGAL CONTEXT

To be identified in the final project document.

PART II - THE PROJECT

PART II A - Development Objective:

To promote the operative efficiency of the Furniture and Joinery Industry in Dominica.

PART II B - Immediate Objective:

To enable the Furniture Woodworking Ltd. to acquire the necessary know-how for providing tool maintenance services to the Dominica furniture and joinery industry.

PART II C - Background and Justification:

Dominica's furniture and joinery manufacturing sector consists of a great number of small workshops with an average of 4 to 5 workers, and seven larger workshops with a maximum of 25 workers.

With the exception of the Ogheden Industries and the door manufacturer Charles and Co. the sector as a whole has yet to benefit from the economies of industrial (serial) production. In particular, the absence of proper wood jointing equipment prevents the attainment of interchangeability of parts in the wood machining process. Moreover, high operating costs are incurred in view of the limited serviceable life of tools resulting from lack of tool maintenance equipment. These constraints prevent the development of a meaningful furniture export potential with respect to the nearby islands of Guadeloupe, Martinique and St. Croix.

This project proposes to help establish centralized tool maintenance services for the benefit of the furniture/joinery industry as a whole.

PART II D - Outputs:

1. The tool maintenance equipment purchased for the Tool Maintenance Servicing Centre will be fully commissioned and operational.
2. Three technicians trained in the operation of the equipment.

PART II E - Activities:

1. Preparation of the plant layout of the Maintenance Centre;
2. Supervision and installation and trial operation of the equipment;
3. Calculation of appropriate servicing charges for standard maintenance work;

4. Setting up a simplified costing system to monitor the Centre's expenditure and income; and
5. Training in the operation of the equipment in the process of providing maintenance services.

PART II F - Inputs:

1. <u>External Inputs:</u>	<u>m/m</u>	<u>US\$</u>
11-01 Tool Maintenance expert (split mission)	3	24,000
51-00 Miscellaneous expenses		<u>1,000</u>
Total external inputs:		25,000
2. <u>Government Inputs:</u>		
2.1 Local transport		in kind
2.2 Secretarial services		in kind
2.3 Counterparts		in kind
3. <u>Inputs by Furniture Woodworking Ltd.</u>		
Cost of the tool maintenance equipment.		
Cost of auxiliary equipment consumed.		

PART II G - Related Activities:

Selection of tool maintenance equipment.

The selection of the equipment is provided in the ad-hoc report prepared under the UNIDO project UC/CAR/86/201 entitled "Guidelines on the Selection of Woodworking Equipment for the Small-scale Furniture/Joinery Industry in the Caribbean Community" (Report reference No. IO/R.53).

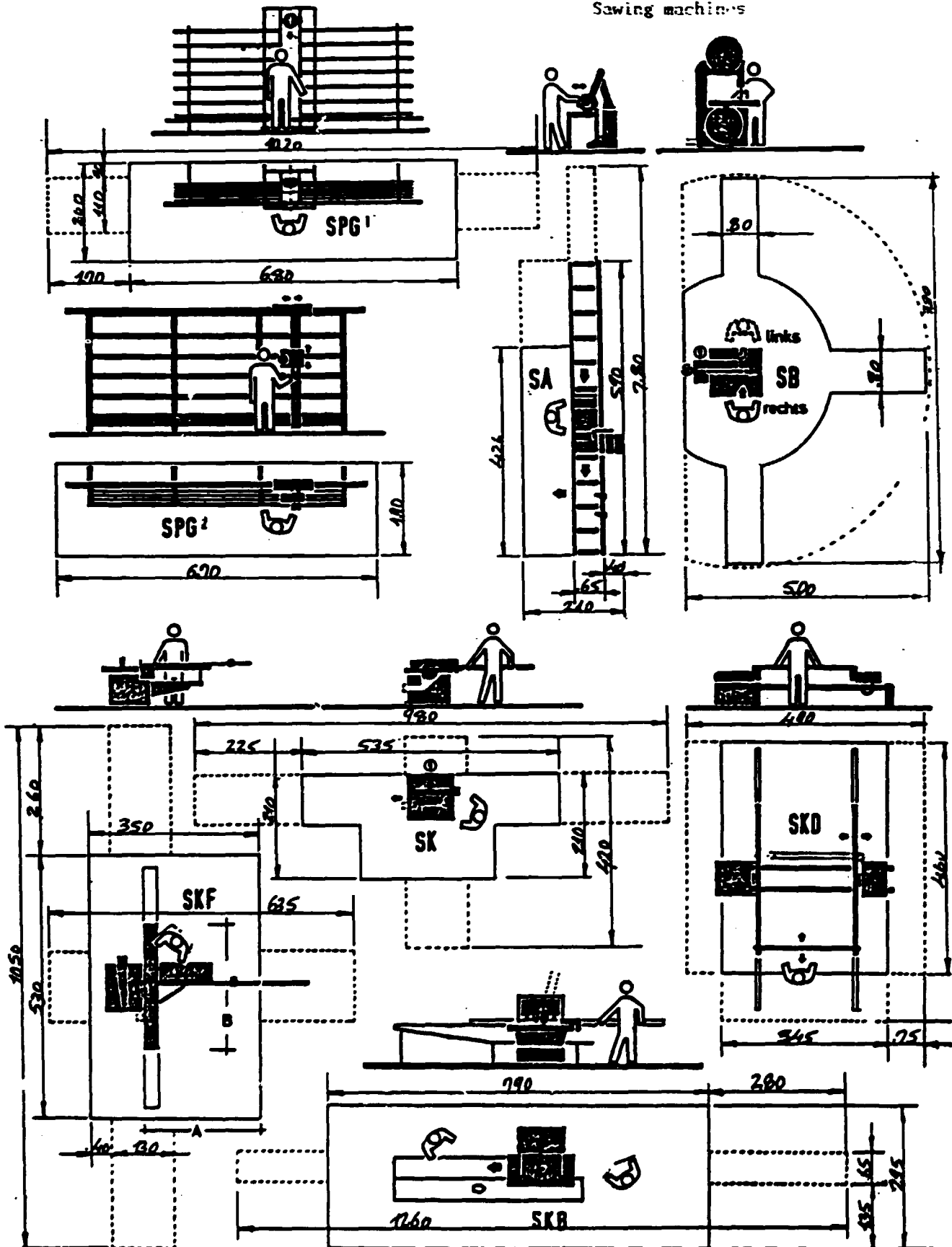
Prior Obligations:

The equipment listed in the above-mentioned report must be purchased before the final approval of this technical assistance project.

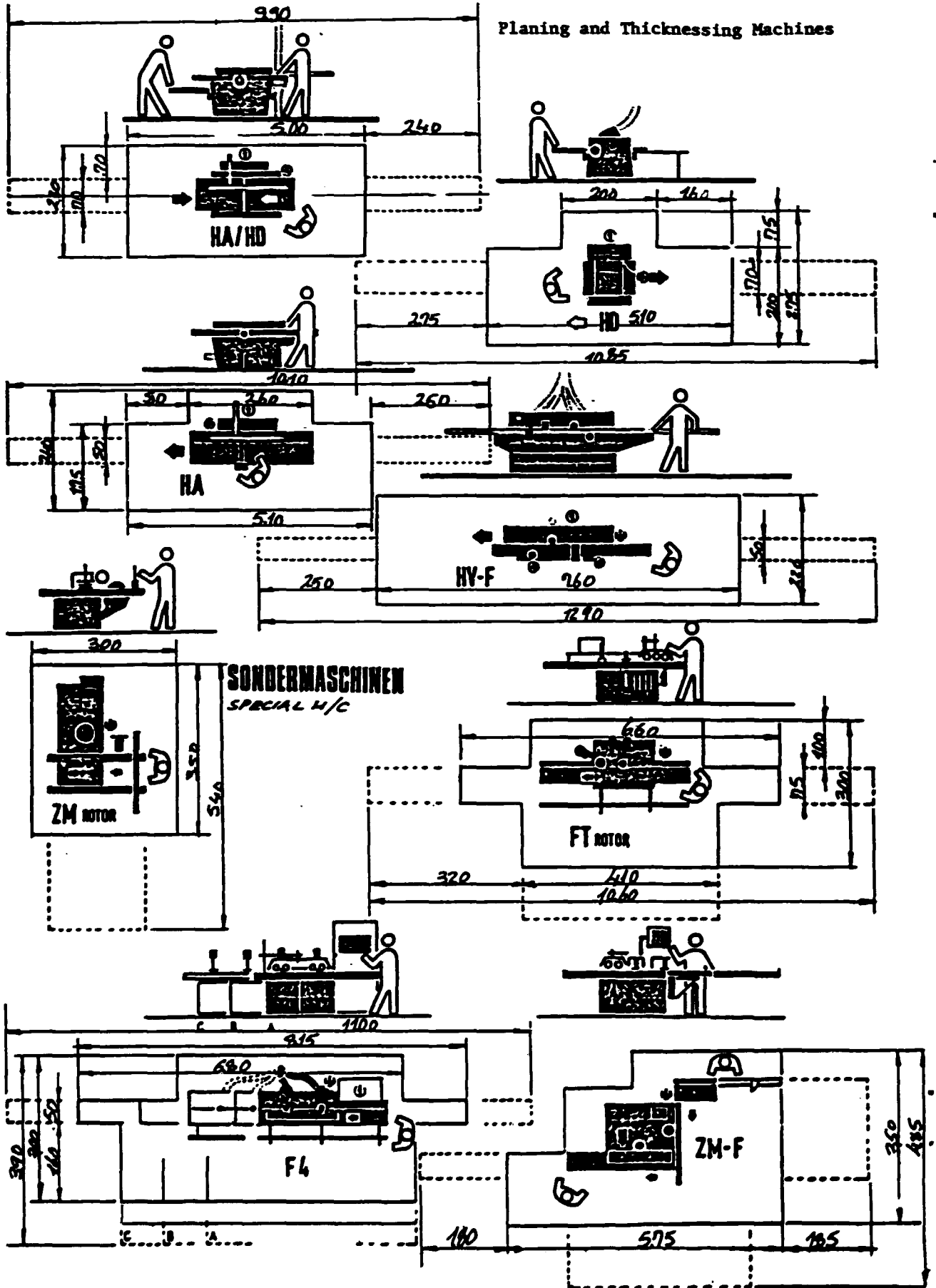
ANNEX VI

WORKING SPACE REQUIREMENTS OF SELECTED WOODWORKING MACHINES

Sawing machines



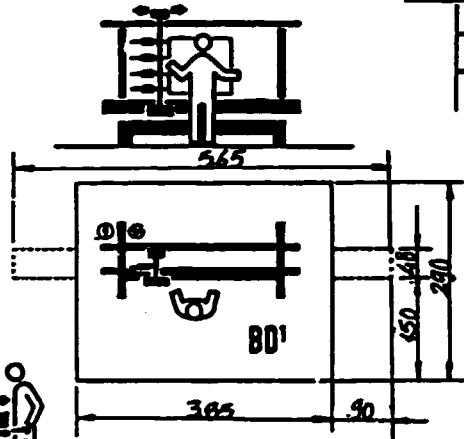
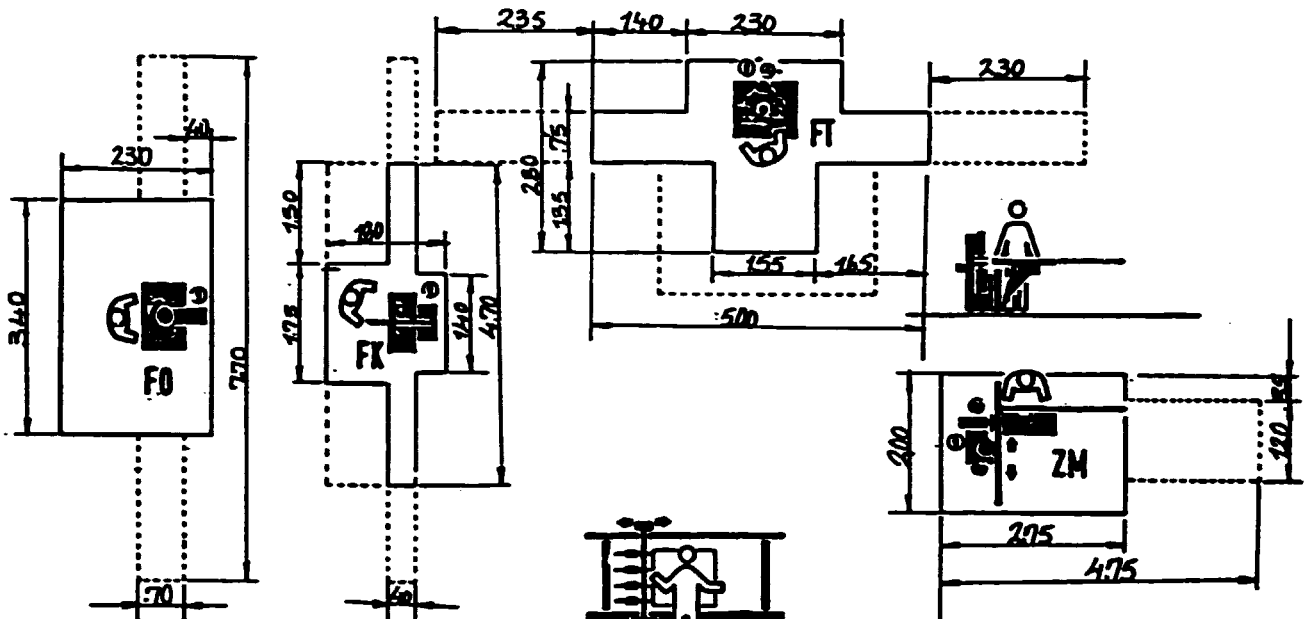
Planing and Thicknessing Machines



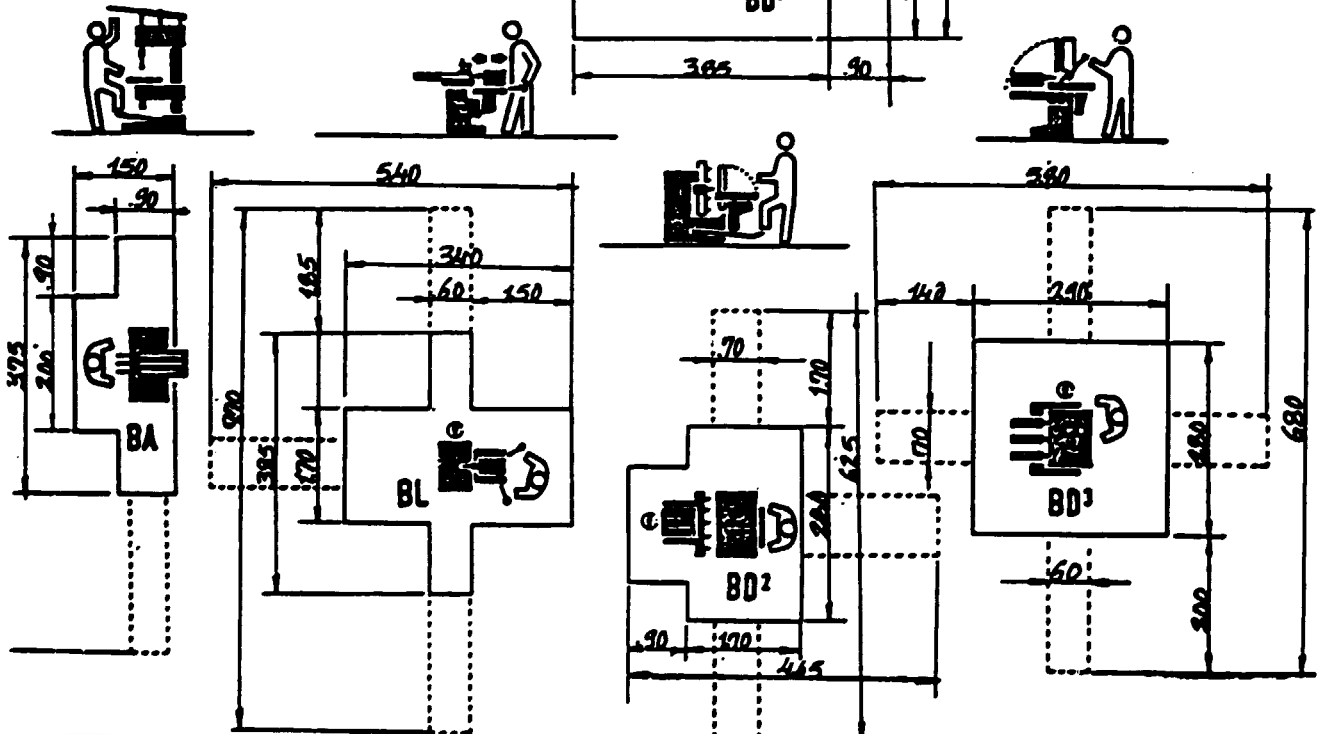
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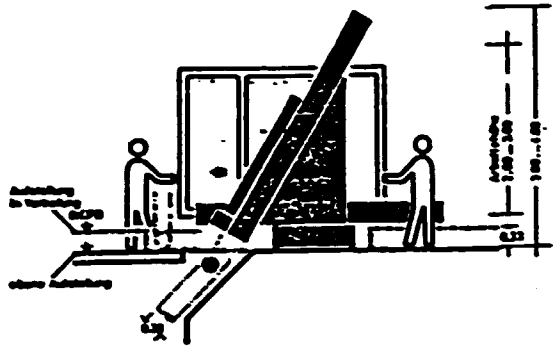
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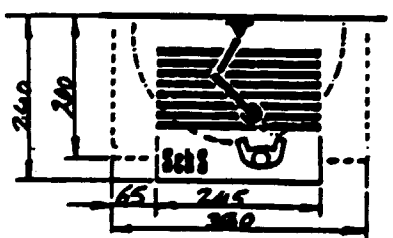
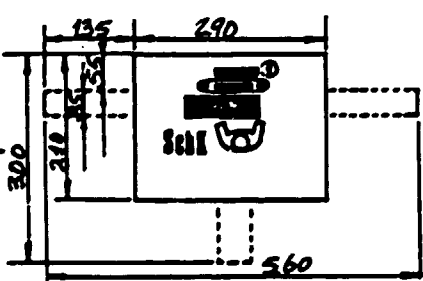
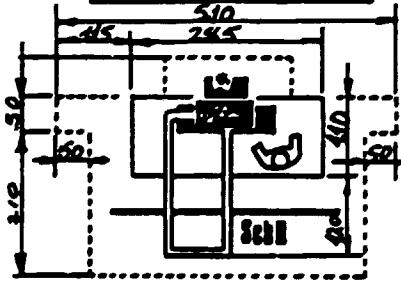
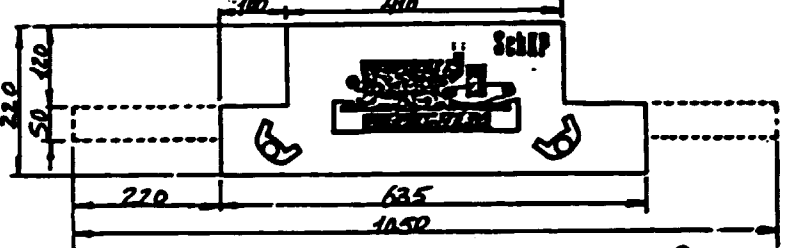
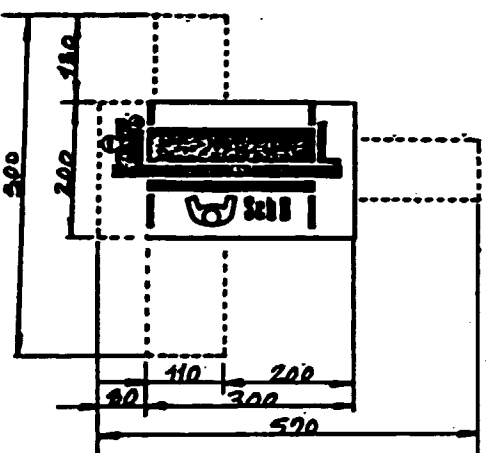
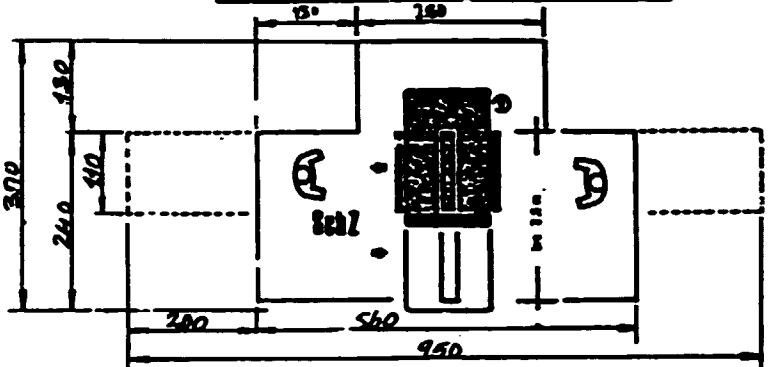
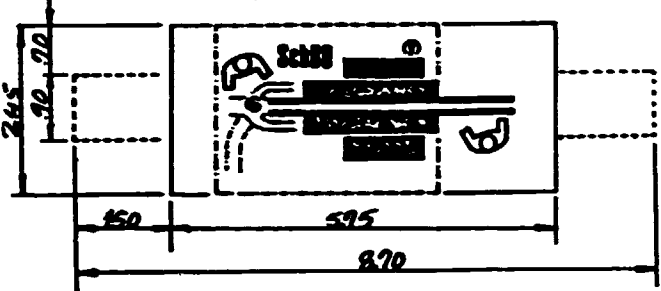
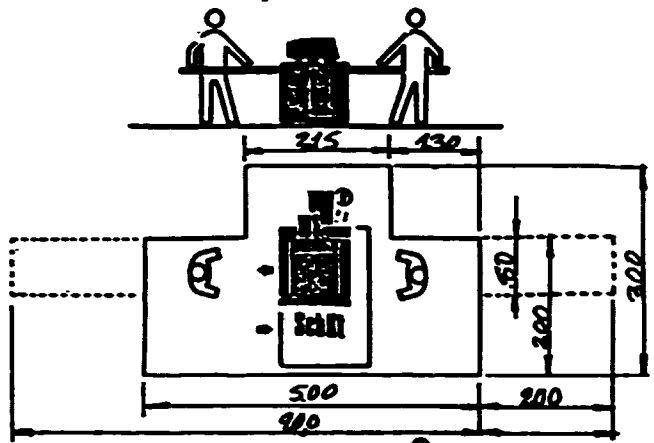
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Sending machines



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