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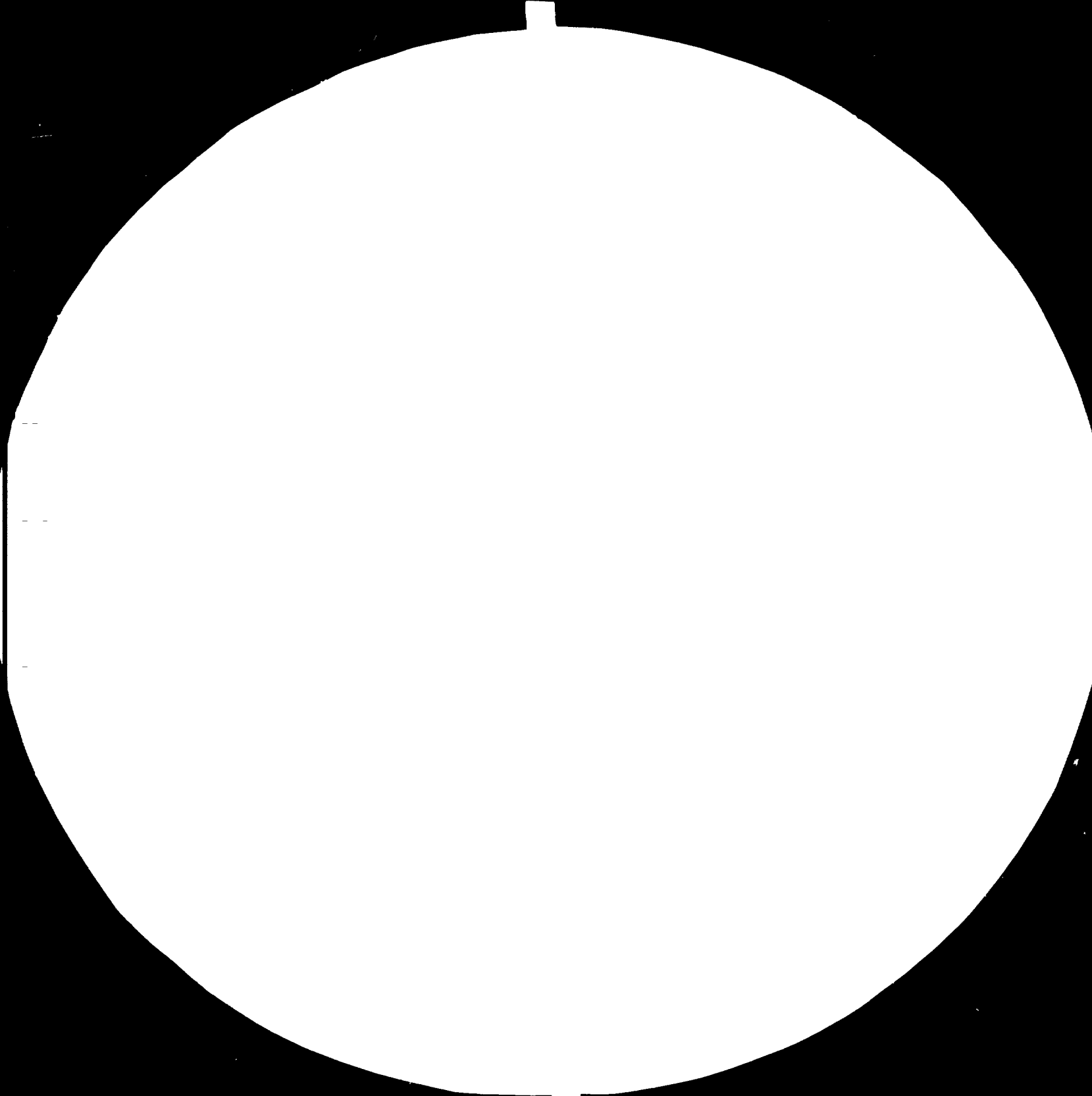

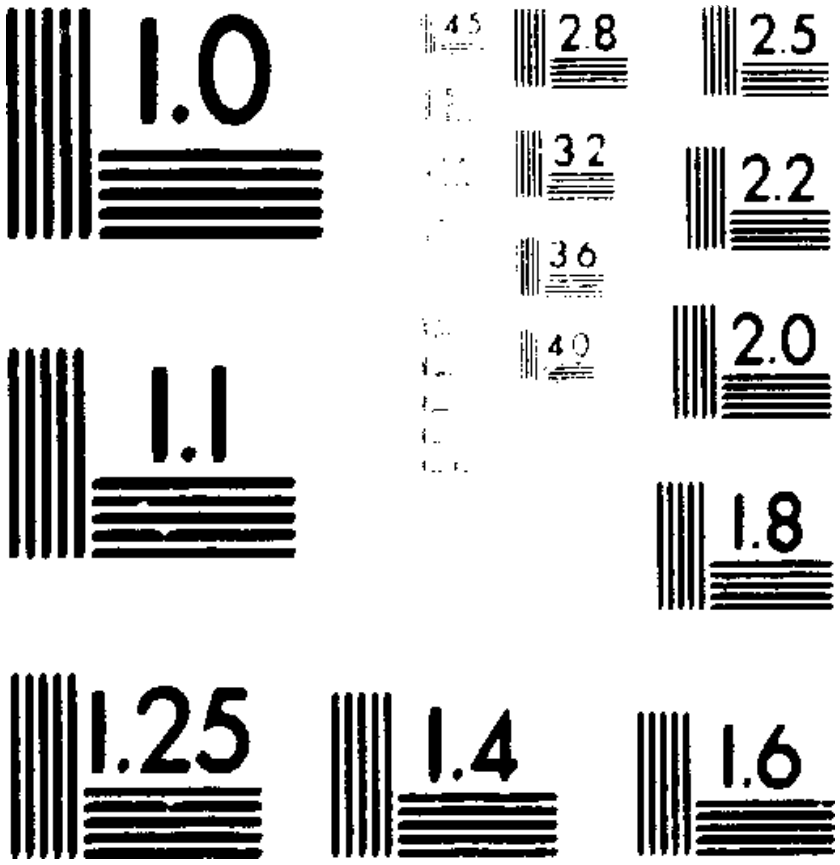

United Nations Industrial Development Organization

(U N I D O)

14267

Project No. DP/INS/78/078

Contract No. : 83/103

D a t e d : January 10, 1984

Indonesia.

SUBCONTRACTING OPPORTUNITIES IN THE AUTOMOTIVE SECTOR TO THE SMALL SCALE INDUSTRIES IN INDONESIA

1984

FINAL REPORT

3083

SUFSIDI PROFESSIONAL CONSULTING OFFICE

Jl. Cililin I/6 Kebayoran Baru

Jakarta Selatan

Phone : 716856

INDONESIA

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PREFACE

After some discussions between the Chief Technical Adviser of UNIDO PROJECT INS/78/078 and SUFSIDI PROFESSIONAL CONSULTING OFFICE in Jakarta during the months of June to September 1983, a proposal concerning the study matter, i.e. The Possibility of Sub-contracting in producing Automotive Parts/Components to Small Scale Industries, had been submitted by the latter on September 16, 1983, finally the contract between those parties had been signed in January 1984, which will complete within 4-months, January up to April 1984.

In accordance with the contract, SUFSIDI PROFESSIONAL CONSULTING OFFICE has composed a study team consisting of 4-consultants including the Team Leader and has planned the working schedule as the following.

- Preparation of work : January 2 - January 15, 1984
- Field and desk survey : January 16 - February 15, 1984
- Data evaluation & analises : February 16 - February 29, 1984
- Report writing (Draft Final Report) : March 1 - March 31, 1984
- Discussion and evaluation : April 1 - April 10, 1984
- Final Report writing : April 11 - April 25, 1984
- Typing and printing (Final Report) : April 26 - April 29, 1984
- Final Report : April 30, 1984.

Some institutions and plants visited for data gathering, are :

- Department of Industry c.q. the Directorate Generals with their Sub Ordinates, especially the Directorates of Controlling and Development (Dit. Pengendalian dan Pengembangan), and MIDC-Bandung.
- Provincial/Regional Industrial Offices of Jakarta, West Java, and East Java.
- Associations of Sole Agents and Assemblers of Motor Cars, Motor-cycles, Heavy Equipments (for small tractors), Automotive Parts and Components Manufacturers.
- Some assembling plants.
- Some Parts & Components Manufacturers.

- Some Small Scale Industries in Automotive Parts/Components in Mini Industrial Estates, Cluster, and Cooperative.

Questionaires had been sent to Sole Agents, Assembling Plants, Parts & Components Manufacturers before the visits, or by request to be returned within 10-days after the receipt.

SUFSIDI PROFESSIONAL CONSULTANT and the Team wish to thank all parties or persons who contributed to this study by supplying data, information, and other relevant inputs.

SUFSIDI PROFESSIONAL CONSULTING OFFICE

LIST OF CONTENTS

--- o0o ---

LIST OF TABLES

— o0o —

LIST OF FIGURES

— o0o —

LIST OF ANNEXES

--- o0o ---

SUMMARY

1. It is not only in Indonesia, but throughout the world, that the small business has been best recognized regarding their major role in the economic development, and hence it is seen how important it has to be developed. Small industries, as one sector of small business, have to be developed and Sub-Contracting is recognized as one of the useful manner to developed them. In this connection, the Automotive Sector is seen as a particularly promising field, and this study is concerned with the "Sub Contracting Opportunities in the Automotive Sector to the Small Scale Industries in Indonesia".

2. In Indonesia these opportunities are encouraged by Ministry of Industry through the deletion programs to increase the local content progressively. But so far, the deletion programs concerns only commercial cars, motor cycles, and hand tractors, but not passenger cars yet.
   As for the commercial cars the Indonesian Government has decided to assign into five categories which are permitted to be produced, i.e. :

   - Category I : Pick-ups with loading capacity between 0.75 to 1.0 Ton
   - Category II : Mini-trucks with loading capacity between 2.0 to 2.5 Ton
   - Category III : Trucks with loading capacity between 3.5 to 5.0 Ton
   - Category IV : Multipurpose vehicles (Jeeps)
   - Category V : Simple constructed commercial motor vehicles with loading capacity as of the Category I.

   The deletion programs concerning commercial cars are valid for those categories permitted to be produced in Indonesia, but deletion programs concerning motor cycles and hand tractors are valid respectively only on:

   - Motor Cycles with displaced volume cylinder between 70 cc to 200 cc.
   - Hand tractors of non simple single shaft.

   while production outside those groups are still allowed.

3. To compute the volume of parts/components which are potentially to be subcontracted to small industries, production forecast in those three groups of automotive has been investigated through the forecast calculated by Department of Industry. But since the forecast seemed to be too optimistic, some corrections based on last year's economic development and the past production volumes have been made.

At the end of Indonesian 4th-Five Years Development Plan in 1988 the production forecast are as follows :

- Passenger Cars = 40,500 units
- Commercial Cars = 246,500 units
- Motor Cycles = 510,000 units
- Hand Tractors = 22,400 units

Summarizing the deletion programs, it can be concluded that commercial cars would be fully manufactured in 1988, while motor cycles and hand tractors would be in 1987.

4. Generally accepted local content obligations for the second an third type of automotive at present are :

   - Commercial cars = 48 % of FOB value
   - Motor cycles = 73 % of FOB value

   There is not any record available for hand tractor due to the very small production during the years.

5. The deleted part/component items for commercial cars that have to be produced by large/medium scale industries can be concluded as :

   - engine - transmission - axle/propeller shaft - steering system - clutch system - brake system - wheelrim - cabin - fuel tank - chassis/frame - tire & tube - paint - shock absorber - leaf spring - safety glass - radiator.

   The deleted part/component items for motor cycles and hand tractors potentially made by large/medium scale industries seem to be limited which related with :

   - engine - gear and transmission - drive chain - shock absorber - paint - tire & tube - battery.

6. Small Scale Industry is defined in this study as an industry with assets in production machinery & equipment less than US$. 150,000.- (Hundred and fifty thousands Dollars). By that definition the liability of small scale industry in producing automotive parts/components is limited to simpler processed parts and components as simple ferrous casting, simple non-ferrous die casting, simple cutting and non-cutting machining, simple heat treatment, thermoplating. By considering those limitions, only a small number of parts/components from the many items can be listed as can be made by small industries as seen in the Annexes C-D and E.

7. The local contents in the assembling of automotives at present are still produced by large/medium scale industries as "in-house" or "out-house" products including those which can be produced by small industries. Willingness to shift the production of certain parts items to small industries has still to be encouraged. Hope is laid on the prospective "Basic Law of Industry" which will, among others, decides reservation of certain products by which only small industries get the permits to produce. Annex - F shows list of large/medium scale industries with their kinds of product and their installed capacities.

8. In view of the production facilities owned by small industries, and the mental attitude of the owners, they are generally not prepared yet to take subcontracting from Sole Agents or Assemblers. Only in body making is something significant that can be found in subcontracting to the small industries given by Dealers.

9. Some small industries producing automotive parts/components have sold their products to parts shops. Non-ferrous casting parts are produced by many cluster of small industries, while ferrous casting is carried on by well developed industrial center in Central Java, the latter also produce wheel/brake drums and cylinder linings. So while there are some other parts which small scale industries can produce, but such critical parts are for the time being assumed as too risky to be produced by small industries and hence are not considered for the present.

10. To give a clear picture about the number of small industries which are matched to the prospective subcontracting in certain parts/components related with the automotive production forecast, certain "product mix" has been indicated as shown in Table - 19. The number of potential small units is derived from the total volume of parts/components required per annum divided by the capacity of each unit. The product mix of a unit consists of several items with more or less similar processing. The capacity is estimated by the kind and number of machinery used in respective unit, but limited to the value of not more than US$. 150,000.-. By that way it can be concluded that an estimated total number of 690 units are required to be established to produce parts/components for commercial cars, motor cycles, and hand tractors in 1988, with a total investment of about US$. 103,500,000.- of which 65 % might be financed by banks as loan.

11. To develop small scale industries, the Department of Industry has established B I P I K, a project organization to develop projects within the Directorate General of Small Scale Industry, to whom UNIDO has given support and assistance. BIPIK DAERAH (REGIONAL BIPIK) is a Sub-Ordinate of BIPIK in the Provincial level has an Executive Management Office PPIK (Center Development of Small Scale Industries) extending technical services through the U P T (Technical Service Unit) and Industrial Extension Services (I E S) to cluster of small units.
On the other hand Department of Industry has also established LIK (Mini Industrial Estate), which also provides C S F (Common Service Facilities) and I E S for small scale industries located in the area of LIK.

12. Beside the institutions within the Directorate General of Small Scale industries, there are other Government as well as private institutions supporting small industries as M I D C (Metal Industries Development Center), Material Research Institute, Vocational Training Center, KADIN (Indonesian Chamber of Industry and Commerce). The latter is expected to give certain financial aids and encourage large/medium industries in promoting Sub-Contracting System.

13. But the weakest point of small scale industries in getting subcontracting from the large/medium scale industries is the absence of institution which is able to link with them directly. Such institution seems necessary to be established, with duties not only making contacts between small and large/medium industries, but also preparing the small to be ready in performing subcontracting. In view of the existing institutions, P P I K is considered as the most suitable one to carry this mission.
For the execution, another section as Sub-Contracting Exchange Section can be formed in the PPIK organisation beside the existing sections.
This section has to work hand in hand with the other sections especially with sections providing the hard ware and the soft ware services.
Cooperation and coordination with the General Manager of L I K is also required in promoting subcontracting with small units locating in LIK.

14. Other support measures in promoting Sub-Contracting System are suggested to be performed by B K P M (Capital Investment Coordinating Agency) and the Government Purchasing Agencies. Investors are requested to shift supplies which potentially can be produced by small industries, and

extend part of the capital invested to small industries producing the supplies as loan for the establishment.
As in the Government purchasing priorities would be given to goods with larger local contents produced by subcontracting to small units.

15. Finally, to make the work of P P I K in promoting subcontracting easier it is recommended that "Project Profiles" for each unit with its product mix would be prepared. Such profiles can be used as guide lines for the Section on Sub-Contracting Exchange in P P I K.

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INTRODUCTION

The fourth-Five Year Development Plan has laid down policies in developing the Sector of Industry, among others as the following :

1. The development in the Sector of Industry in Indonesia has to support the development of National Economy. For that purpose it has to set-up integrated programs supporting each other between the Sector of Industry and other Economical Sectors.
2. The Industry Structure has to be strengthened and intensified. In some cases those efforts involve large scale Industries, but the production activities have to be supported and strengthened by the development of series of small medium scale industries.
3. Small scale industries need to be developed, because this sector will help to solve employment opportunities.

Indeed, the Government of Indonesia strives to reach 9.5 % growth per annum during the next five years period in the Sector of Industry, so that more balanced economical structure can be achieved. In the meantime Indonesia still faces a minimum of 2,000,000 young people looking for job opportunities each year.

Some Government Officials have estimated that about 10 % of them, or 200,000 people, must be absorbed by the small sector of industry.
But Minister of Industry had explained in the Work Meeting of his Department in February 1984 that 800,000 people during the PELITA IV (Fourth Five Years Development Plan), or 160,000 people per year, have to be absorbed by that sector.
The numbers may be debatable, but one is certain that small scale industries have to be developed, and Sub-Contracting is now recognized as one of the useful ways of doing so.

UNIDO experts had defined Sub-Contracting as :

> Subcontracting relationship exists when a company (called a contractor) places an order with another company (called the subcontractor) for the production of parts, components, sub-assemblies or assemblies to be incorporated into a product to be sold by the contractor.

Such order may include the processing, transformation or finishing of materials or parts by the subcontractor at the request of the contractor.

According to these experts, there are 3-types of Subcontracting in practice, they are :

1). Capacity subcontracting. Contractor firms whose existing production capacity is insufficient to meet the normal flow of orders to face a fluctuate peak-load, offer subcontracting up to a fairly fixed percentage of their total output, or the excess load.
On the contrary, if the contractor firms are faced with orders which are either too small or too infrequent to justify internal production, they pass on these orders to subcontractors.

2). Specialized subcontracting. Contractor firms give order to sub - contractors who have specialized machinery and equipment and have developed special techniques and skills in processing/making certain parts or components.

3). Cost saving subcontracting. Contractor firms subcontract processing or manufacturing components mainly because of the subcontractor's considerably cheaper factor prices (labor, machinery, overhead, taxes, power).

In view of the origin of orders, there are vertical and horizontal subcontracting. In most cases vertical subcontracting has the most economical meaning than that of horizontal subcontracting. There can be drawn many mutual benefits from this subcontracting system as the reduction of production costs for the large/medium scale industries on one side, while securing the market outlet for the small scale industries on the other side.
Further deeper illustrations in this subcontracting system will be given in this study.

In connection with this subcontracting system the Automotive Sector is seen as a particularly promising field, and this study is concerned with the "POSSIBILITIES OF SUBCONTRACTING IN PRODUCING PARTS AND COMPONENTS OF AUTOMOTIVE TO THE SMALL SCALE INDUSTRIES IN INDONESIA".
Beside that subcontracting is a common accepted practice all over the world for the automotive manufacturers in getting the supplies of parts, components,

sub assembly, or assembly from the medium and small scale industries, in Indonesia such a relation is encouraged by Ministry of Industry with its deletion programs to progressively increase the local content.
In Japan a recognized automotive manufacturer has a list of 200 to 300 Sub-contractors, while in U.S.A. sometimes exceed 1,000 in number of Subcontractors.
Specifically, the objectives of this study are to :

1). Determine, as realistically as possible, the likely demand in number of parts and components which will be needed by the automotive sector, particularly keeping in mind the "deletion" program of the Government.

2). Examine the specification of such parts and categorise those which can be made viably and to the required degree of precision by units in the small sector.

3). Review the existing production capacities of small industrial units to see whether any spare capacity exists in them to meet the increased demand.

4). Determine the numbers and product-mix of new units that may be needed to meet the requirements in the next five years.

5). Suggest the specific support measures required to be taken by the Government promotional agency which would enable the small units to produce goods of required quality and also encourage a greater volume of subcontracting by the large units.

In this study special meaning with the term of automotive has to be understood i.e. including small or hand-tractors, with power lower than 15 HP, beside the passenger cars, commercial vehicles, multipurpose vehicles, motor cycles, and motorised 3-wheelers.

The Indonesian Government has decided to assign commercial vehicles into five Categories which is permited to be produced in Indonesia, as the following:

- Category I : Pick-ups with loading capacity between 0.75 to 1.0 Ton
- Category II : Mini-trucks with loading capacity between 2.0 to 2.5 Ton
- Category III : Trucks with loading capacity between 3.5 to 5.0 Ton
- Category IV : Multi purpose vehicles (Jeeps)

- Category V : Simple constructed commercial motor vehicles.

Category V has actually the same loading capacity as Category I, but the construction of the vehicle is simpler. The minimum displacement volume of the cylinders must be at least 1,000 cc.

Those categorizing is aimed to make the control of road utilization easier, and economical transport operation by considering the road parttern in Indonesia. This matter will be not discussed further, because this is not relevant to this study.

To achieve the above mentioned objective methodological approach has to be adopted in this study as follows :

The demand of automotive parts and components will be derived from the sales forecast of the automotive vehicles itself, which is investigated by visiting and interviewing the officials of Department of Industry q.q. Directorate of Control (monitoring) and Development, GAAKINDO (Association of Sole Agents and Assemblers of Motor Vehicles Indonesia), PAASMI (Motor Cycles Assemblers Union), PAABI (Association of Heavy Equipment, Indonesia), and some of their company members as P.T. KRAMA-YUDHA TIGA BERLIAN, P.T. TOYOTA ASTRA MOTOR, and P.T. NATIONAL ASSEMBLERS, P.T. DANMOTOR VESPA INDONESIA, P.T. HONDA FEDERAL INC.
Visits are made to officials of GIAMM (Association of Motor Cars and Motor Cycle's Parts Manufacturers) and some company members as P.T. ASAHIMAS JAYA SAFETY GLASS Co. Ltd., P.T. AUTO DIESEL RADIATOR Co. etc.
By analyzing the past volume of sales and considering the production programs adopted by Department of Industry, the respective associations and individual units, and also considering the general economic situation, there can be estimated the production forecast of each type of automotives for the coming years.

The deletion program in terms of specific parts and components combined with the automotive sales forcast lead to the number of parts and components which have to be supplied every year during the five coming years.
Those parts and components are to be supplied by large and medium scale industries as well as by the small scale industries. By investigating the capacities of production of the three sectors of parts and component manufacturers, there can be evaluated the balance of the demand and the potential supply.

If there is an excess demand in certain parts or components, it must be still imported.

There are some parts and components which potentially can be made by small industries but these are produced by large or medium industries, and in the frame of this subcontracting system these must be shifted to the small industries.

Parts and components which potentially can be produced by small industries can be indicated from the material used and the processes to be carried out. Product mix and the capacity of each unit will be estimated.

Even though parts and components items which can be produced by small industries are able to be indicated, but the implementation of the subcontracting system must still be encouraged. Measures to encourage and to promote this subcontracting system will be suggested after considering the existing institutions, the Government as well as the private, but especially by the Government promotional agencies.

The following diagram shows the above methodological approach.

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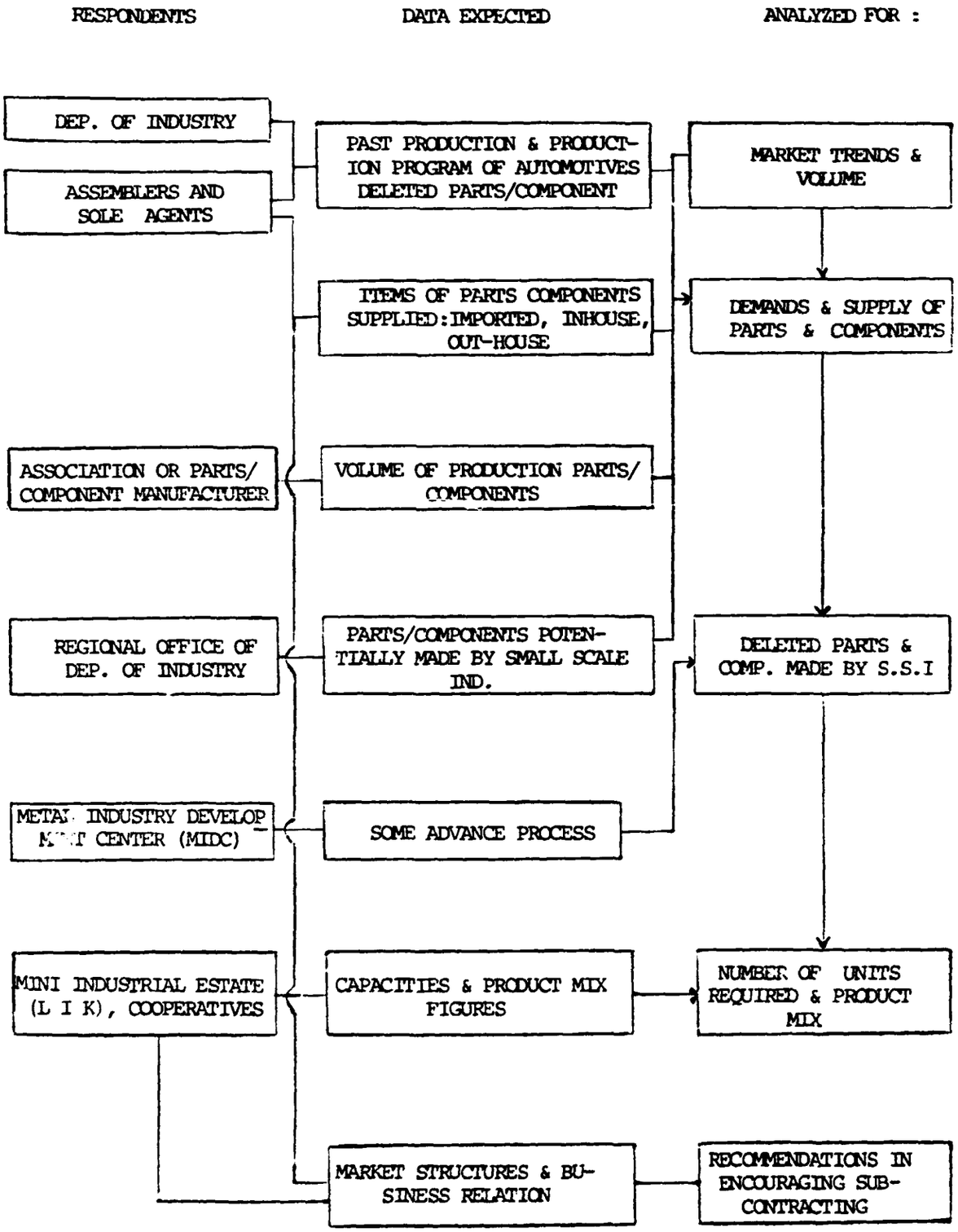
METHODOLOGICAL APPROACH



CHAPTER - I

THE DEMAND OF PARTS AND COMPONENTS IN AUTOMOTIVE PRODUCTION

1.1. THE TRENDS OF AUTOMOTIVE SALES AND SALES FORECAST

In Indonesia there are 22 Sole Agents of motor cars divided into 8-groups, and each of the members has its own relation with the assemblers of which there are 19 in number. Sole Agent and assembler is a seperate company.
The total capacity of assembling plants are 256,000 units per annum by 1-shift operation, consisting of various makes and types.
Annex - A is a list of the Sole Agents and Assembling Plants.
But it must be noted that there are some which are no more in operation.

The development in production since 1970 up to 1983 was enormous: from 4,448 units in 1970 has increased generally and reached the peak by 155,180 units in 1981. The average growth is about 23,13 % per annum.

It is also happened for motor cycles production. There are 10-Sole Agents and some are together as Assemblers, but 1 (one) of which is no more in operation.
Their total capacity in assembling of motor cycles is 750,000 units per annum.
Annex - B is a list of above mentioned Sole Agents.

Their actual production has increased since 1974 by 223,126 units and reached the peak in 1981 by 521,506 units.

The contrary has happened with the hand tractors and minitractors.
The development in this field was not satisfying. The latest production in 1983 was only 116 units in mini tractors and 1,271 units in hand tractors.
But one of the biggest assemblers is still optimistic and has set up better marketing mechanism especially in after sale services.
Department of Industry seems to have the same vision and has planned bigger capacities for assembling and manufacturing plants.

To follow the development of the production of passenger cars, commercial Vehicles Category I-II-III-V, commercial vehicle for multi purpose use or Category IV, is presented Table-1.

TABLE - 1

The Development of the Production of Passenger Cars, Commercial Vehicles Category I-II-III-V, Commercial Vehicle for multi purpose use

Year	Commercial Vehicles Cat.I-II-III-V		Passenger Cars		Multi Purpose		Total	
	Units	+/- %	Units	+/- %	Units	+/- %	Units	+/- %
1970	2,467	-	51	-	1,930	-	4,448	-
1971	11,109	350.30	1,790	3,409.80	4,724	144.76 %	17,623	296.20 %
1972	11,816	6.36	6,125	242.17	4,177	(- 11.57 %)	22,118	25.50 %
1973	19,485	64.90	15,433	151.96	2,041	(- 51.13 %)	36,959	67.09 %
1974	32,729	67.97	24,697	60.02	2,376	16.41 %	59,802	61.80 %
1975	45,022	37.55	30,770	24.59	3,081	29.67 %	78,873	31.89 %
1976	44,517	(- 1.12)	24,298	(- 21.03)	6,759	119.37 %	75,574	(- 4.18 %)
1977	74,333	66.97	12,853	(- 47.10)	6,049	(- 10.50 %)	93,235	23.36 %
1978	84,191	13.26	15,373	19.60	9,103	50.48 %	108,667	16.55 %
1979	77,799	(- 7.59)	15,060	(- 2.03)	9,691	6.45 %	102,550	(- 5.62 %)
1980	133,449	71.53	22,287	47.98	17,561	153.36 %	173,297	68.98 %
1981	146,211	9.56	31,126	39.65	24,554	39.82 %	201,891	16.49 %
1982	133,656	(- 8.58)	29,664	(- 4.69)	25,234	2.76 %	188,554	(- 6.60 %)
1983	112,812	(- 11.96)	24,179	(- 18.49)	11,632	(- 53.90 %)	155,180	(- 17.69 %)

Source : GAAKINDO (Association of Sole Agents and Assemblers of Motor Vehicles Indonesia)

TABLE - 2

Passenger Car Production by Makes

1979 - 1983

Make	1979	1980	1981	1982	1983
Toyota	6,245	10,646	12,031	7,158	5,214
Honda	3,280	5,010	6,033	6,766	7,014
Daihatsu Charade	1,280	2,065	2,383	2,622	1,785
Mitsubishi	1,151	1,660	5,902	6,092	3,145
Marcedes Benz	-	876	-	-	639
Peugeot	-	-	846	2,010	1,292
Datsun	677	-	-	-	-
Ford	-	-	-	887	1,229
Mazda	-	-	-	894	1,035
Holden	-	-	1,386	1,808	914
Cthers	3,104	2,030	2,545	1,427	1,912
Tctal	15,060	22,287	31,126	29,664	24,179

Source : Directorate General for Basic Metal Industries and GAAKINDO.

TABLE - 3

Commercial Car Production by Makes

1979 - 1983

Make	1979	1980	1981	1982	1983
Mitsubishi	31,108	56,375	65,137	46,431	40,994
Toyota	15,570	31.014	40,465	34,530	25,129
Daihatsu	8,290	15,319	15,863	19,997	16,439
Chevrolet Luv	4,934	9,360	880	9,815	7,140 *)
Isuzu	1,559	6,440	6,476	5,699	4,260 *)
Mercedes Benz	2,346	3,666	4,288	2,968	2,180 *)
Datsun	4,559	2,162	-	-	-
Citroen	709	990	717	1,100	-
Volkswagen	-	-	1,906	754	-
Hino	-	-	695	872	1,294
Suzuki	3,660	5,974	8,101	8,614	13,499
Others	5,064	2,149	777	2,876	1,877 *)
Total	77,799	133,449	146,211	133,656	112,812 *)

(Source : Directorate General for Basic Metal Industries and GAAKINDO)

Note : *) estimate.

TABLE - 4

Multipurpose Car Production by Makes

1979 - 1983

Make	1979	1980	1981	1982	1983
Toyota	6,277	8,440	7,992	4,778	1,700
Daihatsu Taft	1,710	3,976	7,356	9,552	2,286
Jeep CJ - 7	-	2,128	3,667	2,459	-
Suzuki Jimmy	-	2,113	5,016	5,960	6,576
Land rover	-	-	-	1,837	-
Others	1,674	902	523	628	1,070
Total	9,691	17,561	24,554	25,234	11,632

Source : Directorate General for Basic Metal Industries and GAAKINDO.

TABLE - 5

Motor Cycle Production Development

1974 - 1983

Y e a r	Total Production	Increase %/(Decrease %)
1974	223,126 unit	-
1975	207,863 unit	(- 6.84 %)
1976	256,278 unit	23.29 %
1977	312,166 unit	21.80 %
1978	220,485 unit	(-29.36 %)
1979	326,209 unit	47.95 %
1980	411,616 unit	26.18 %
1981	521,506 unit	26.69 %
1982	401,210 unit	(-23.09 %)
1983	308,691 unit	(-23.06 %)

Source : PAASMI (Union of Sole Agents and Assemblers of Motor Cyles Indonesia).

TABLE - 6

Motor Cycle Production Development by Make

No.	Year	Scooter/Vespa	Suzuki	Honda	Others	Total
1.	1979	44,193	29,990	78,489	173,537	326,209
2.	1980	57,111	51,905	147,367	155,233	411,616
3.	1981	55,508	64,460	211,683	189,855	521,506
4.	1982	51,466	70,567	257,719	21,458	401,210
5.	1983	32,094	60,869	156,868	58,860	308,691
T O T A L		240,372	277,791	852,126	598,943	1,969,232

Source : PAASMI & Assembling Plants.

Remark : From the others, $\pm$ 80 % is YAMAHA.

Generally the total production of passenger cars, commercial cars in all Categories has decreased in 1982 through 1983 after having reached the peak in 1981, passenger cars by 18.50 %, commercial vehicles Category I-II-III-V together by 11.96 %, and for general purpose car (Jeep) by 53.9 %.

Table - 2 is a list of production volume of passenger cars by make, and Table - 3 is a list of production volume of commercial vehicles Category I-II-III-V also by make, while Table - 4 is of multipurpose or Category IV.
Table - 5 is a list giving the development of motor cycles production and Table - 6 illustrates the same vehicle by make. In the column of others Yamaha has the biggest share of about 80 %.

The sales forecast will be based on numbers calculated by Department of Industry, but by some correction according to our observations in economic development within the last years.
The forecast made by Department of Industry can be found in the book : "PENGEMBANGAN KAPASITAS NASIONAL SEKTOR INDUSTRI 1983-1986, Ringkasan", Edisi 1983, (DEVELOPMENT OF NATIONAL CAPACITY IN THE SECTOR OF INDUSTRY 1983 - 1986, Summary), edition 1983, edited by Bureau of Data and Bureau of Public Relation, as shown in Table - 7 hereunder.

TABLE - 7

Automotive Production Forecast
by Department of Industry

Type of Automotive	1982	1983	1984	1985	1986
Passenger Cars	29,718	34,170	39,290	45,180	51,950
Commercial Cars (All categories)	195,550	226,070	259,940	298,930	343,770
Motor cycles	488,500	529,800	574,300	622,700	675,600
Mini Tractor	116	3,000	4,500	6,000	8,250
Hand Tractor	1,271	3,000	8,000	13,000	18,750

The above mentioned book was edited in 1983, where statistics for 1982 is not ready yet compiled, and the statistics for 1983 does not exist yet. Hence the numbers for 1982 and 1983 were just an estimation, that might be very influenced by the condition of 1981, where the production of every types of automotives had reached the peak.
For example is the passenger cars. Statistics number for 1982 is accidentally nearly the same, i.e. statistic shows 29,664 units, while the forecast is 29,718 units.
But numbers for 1983 have big differences, statistics show 24,179 units, while the forecast is 34,170 units bigger than the peak production in 1981.
By that way, the further forecast would be too optimistic, moreover the increase is exponential.
It also happened for commercial cars and motor cycles.
Hand and mini tractors seem also to be too optimistic.

The world economic recession is in certain extent still continuing, and Indonesia is supposed to be facing hard years during the REPELITA IV (Fourth Five Years Development Plan) 1984 up and to 1988, which surely influences the motor cars and motor cycles production.
We have seen during the last years passenger cars, commercial cars, and motor cycles are advertized in daily papers to be sold on credit.

Passenger cars are usually bought by higher income people, which is less influenced by economic fluctuation. For this reason, passenger cars production might be slightly influenced.
Commercial vehicles are directly related with the economic situation and hence are sensitively influenced.
Motor cycles are sold against a price ranging between Rp. 900,000.- or about US$. 900.- and Rp. 1,750,000.- or US$. 1,750.-, while second hand cars of 1978 are sold at about Rp. 2,500,000.- or US$. 2,500.- with a fairly condition. Motor cars give more safety than motor cycles.
For this reason motor cycles sales tend to be limited to young people only.

To get more realistic production forecast, some corrections have to be made on the forecast calculated by Department of Industry.
Such an opinion is also expressed by officals of Directorate General of Basic Metals and Machinery, Department of Industry.

For the reasons illustrated above, the production forecasts (up to 1986) for passenger cars, commercial cars, motor cycles, mini and hand tractors, in our opinion, may have to be reduced by respectively 25 % - 35 % for passenger cars, 40 % - 45 % for commercial cars, 30 % - 40 % for motor cycles, and 35 % - 45 % for mini and hand tractors.

Forecasts for 1987 and 1988 will be calculated by percentage increase respectively about 5 %/year for passenger cars, about 10 %/year for commercial cars, about 7.5 %/year for motor cycles, and about 25 %/year for mini & hand tractors.

P.T. TOYOTA ASTRA MOTOR, leading Sole Agent for Toyota cars, has more or less the same percentage increments for its sales forecast in those years in passenger cars and commercial cars.

Hence a more realistic production forecast for each of the mentioned groups can be listed in the following table.

TABLE - 8

Automotive Production Forecast

(Deducted from the forecast made by Department of Industry)

Type of Automotive	1984	1985	1986	1987	1988
Passenger cars	29,500	33,750	36,250	38,500	40,500
Commercial cars	156,000	179,000	206,000	226,000	246,000
Motor cycles	344,580	405,000	440,000	475,000	510,000
Mini & Hand Tractors	8,200	11,000	14,800	18,600	22,400

1.2. THE DELETION PROGRAM SET BY THE DEPARTMENT OF INDUSTRY IN AUTOMOTIVE SUB-SECTOR

a. The deletion program in terms of percentage of each vehicles' price value

Self supporting in certain commodities is always the most ideal

achievement of each developing countries.
Indonesia, in automotive sub-sector has first restricted the import of built-up cars and motor cycles and compels the sole agents of each brand to assemble them domestically.
This policy has been followed by series of other policies compelling the use of domestic components within the scheduled time, which policy is known as the "deletion program".

These policies have been laid down by issuing Ministry Decrees as follows :

No. 307/M/SK/8/76, dated August 2, 1976

No. 168/M/SK/9/1979, dated September 6, 1979

No. 371/M/SK/9/1983, dated September 28, 1983

all concerning the commercial vehicles,

No. 08/M/SK/I/1977, dated January 11, 1977

No. 651/M/SK/11/1981, dated November 25, 1981

No. 505/M/SK/12/1983, dated December 27, 1983

all concerning motor cycles and scooters with displaced volume cylinder between 70 cc. up to 200 cc.

No. 199/M/SK/6/1983, dated J u n e 9, 1983

concerning Non Simple Single shaft and Hand Tractor.

So far there is no deletion program as yet (concerning parts and components) for passenger cars except tire & tube, paint, and battery. Of course, by voluntary passenger car assemblers or sole agents can use other local products, usually made by large or medium industries, in the assembling.
As for the 3-wheeler light motor transport, the production had been stopped and there is also not any new record in the Department of Industry i.e. Directorate General of Various Industry.

Distributions of this type of vehicle need Governor's permit in each province, and further it is likely to affect the "becak" (manual driven 3-wheeler) and will create restlessness amongst the drivers.

That is why such a vehicle can only be found in Jakarta to avoid trafic jams in certain region of the city, but increasing the distribution is also no more allowed except for the replacements.

To give a quick p' ture of the deletion program and its targets, it is usually expressed in term of percentage against the F O B value of the respective type/category of vehicle.

At present it is generally accepted that the obligations of local content for certain group or category of commercial vehicles are as follows.

- Commercial vehicles = 48 % of F O B Value
- Motor cycles/scooters = 73 % of F O B Value

The associations of sole agents and assemblers in motor cars and motor cycles, GAAKINDO and PAASMI, and the association of motor car & motor cycle parts and components manufacturers, GIAMM, are not able to express their program yet in matching the deletion programs set by the Department of Industry, or they are still formulating together with the officials of the respective Directorates in the Department of Industry.

But anyhow the Directorate of Monitoring/Control and Development (Direktorat Pengendalian dan Pengembangan) can set-up the targets of the deletion programs in terms of percentage for the next 5-years as follows.

TABLE - 9

Deletion Program in % of FOB Value

Y e a r	1984	1985	1986	1987	1988
Commercial vehicles:					
- Category - I	60 %	89 %	100 %	100 %	100 %
- Category - II	40 %	88 %	100 %	100 %	100 %
- Category - III	44 %	86 %	100 %	100 %	100 %
- Category - IV	40 %	87 %	100 %	100 %	100 %

Y e a r	1984	1985	1986	1987	1988
- Category - V	58 %	92 %	100 %	100 %	100 %
Motor Cycles/Scooters	73 %	79 %	87 %	100 %	100 %
3-Wheel motor transport	-	not produced any longer			
Mini Tractors/Hand Tractors	70 %	90 %	100 %	100 %	100 %

b. The deletion program in terms of parts and components

As mentioned above there is not deletion program yet set up by Department of Industry for passenger cars except tire & tube, paint, and battery, while there are 3-ministry decrees for commercial vehicles.
If it is summarised the deleted components can be listed as the following table (Table - 10).

In that deletion program it is not known yet whether starter motor, alternator, regulator, and ignition coil will belong to the listed engine or will be assumed as seperate components.
At present there are not any part/component manufacturer producing that mentioned product registered except ignition coil. On the other hand there are also no new investment program yet for that product as has been planned for engine, transmission, etc. in relation to the deletion program mentioned.

According to the mentioned ministry decree, the respective Sole Agent or Franchise Holder is responsible for the supply of the components as cabin, rear body, fuel tank, chassis or frame as in-house supplies.
But out-house supplies for that components are not restricted.

As for the motor cycles and scooter, there are three important ministry decrees, concerning the deletion program.

TABLE - 10

Deletion Program for Commercial Vehicle Category I-II-II-III-IV-V

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988
Components Items									
- Engine						x y z p q			
- Transmission							y z p q		
- Axle/Propellar shaft					x q	y z p			
- Steering system							x y z p q		
- Clutch system							x y z p q		
- Brake system						x y z p q			
- Wheelrim	x q	y			z p				
- Cabin	x q	y			z p				
- Rear body	x q	y z p							
- Fuel tank	x q	y z p							
- Chassis/Frame	x q	y			z p				
- Tire & Tube	x y z p q								
- Paint	x y z p q								
- Battery	x y z p q								
- Shock abserber	x y z p q								
- Leaf spring	x y z p q								
- Safety glass	x y z p q								
- Radiators	x y z p q								
- Muffler, tail pipe	x y z p q								
- Plastics & rubber	x y z p q								
- Seat & Seat frame	x y z p q								

x = beginning year of obligation for Category - I
y = beginning year of obligation for Category - II
z = beginning year of obligation for Category - III
p = beginning year of obligation for Category - IV
q = beginning year of obligation for Category - V

Summarizing the deletion program up to 1987 in the sector of motor cycles, the following table reveals the specific components or parts. (Table - 11).

From that deletion programs there can be concluded that commercial vehicles would be fully manufactured in Indonesia within the year 1986, while motor cycles and scooters within the year 1987.

As for the hand tractor (Non Simple Single Hand Tractor) there is only one Ministry Decree deciding deletion program as shown in Table-12 which indicated together the "In-House" and "Out-House" components/parts.

To avoid misunderstanding in the intrepretation of the beginning year of obligation for the essential components stated in the deletion program for commercial vehicles as engine, transmission, axle/propeller shaft, steering system, clutch system, and brake system, it must be understood that it actually begins with assembling. The real complete manufacturing would be within 3 or 4-years later.
But what is stated in the deletion program for motor cycles and scooters, the beginning year of obligation means the real complete manufacturing of the respective essential parts listed.
The local content of parts and components for passenger cars are still fully dependent on the sole agents' policy, except paint - tire & tube - battery, whether they will accept the local product or not.
In practice they use sometimes some local products in components as original equipment manufactured (O E M).

1.3. DELETED PARTS AND COMPONENTS TO BE POTENTIALLY MADE BY LARGE & MEDIUM SCALE INDUSTRIES

Which deleted parts and components are most potentially made by large and medium scale industries depend on certain required conditions.
High technology needed in the processing, highly educated and skilled labor required in the production control, uninterrupted long chain process, and the most importantly large investment capital in machinery and equipment, are reasons that certain parts or components potentially have to be produced by large/medium scale industries.

T A B L E - 11

Summary of Parts and Components of Motor Cycle/Scooter Deleted up to 1987

(In accordance with Ministry Decrees)

1 9 7 9 - 1 9 8 3

1. Center stand/main stand
2. Side stand
3. Front footrest/step bar
4. Rear footrest/Pillion step bar
5. Dual/Single/Double Pillion seat
6. Brake Cable
7. Throtle Cable
8. Starter cable/choke cable
9. Clutch cable/wire cable
10. Tire & Tube
11. Wire harness
12. Battery
13. Front fork/Steering colmn
14. Rear swing arm/Rear arm
15. Rear absorber/Rear cushion
16. Front wheelrim
17. Rear wheelrim
18. Fuel tank
19. Frame right cover/side cover/ Oil tank/battery box
20. Frame left cover/side cover/ Oil tank/tool box
21. Handle/handle bar
22. Chain case
23. Exhaust pipe/muffler
24. Hub, rear & front
25. Frame
26. Front/rear fender
27. Chain adjuster
28. Front & rear axle & nut
29. Oil measuring cup/glass
30. Fuel filter
31. Under seat cover
32. Muffler bracket
33. Pillion footrest rubber
34. Fuel tank side packing
35. Tire flap
36. Front engine hanger
37. Chassis reinforcement
38. Flap packing
39. Ridge for engine Bonnet
40. Front & rear wheel flange
41. Bending for Engine Bonnet
42. Spark plug
43. Front fork side cap
44. Bolts & nuts (selective)
45. Spoke & nipples
46. Mirror
47. Air filter
48. Speedometer cable
49. Tachometer cable
50. Head lamp/light
51. Stopper/Tail lamp/rear combination lamp/Tail light unit/tail light brake.
52. Pilot box lamp/winker/indicator lamp/warning lamp.
53. Flasher/relay/timer switch
54. Switches/main switch/stop lamp switch.
55. Ignition coil
56. Rectifier
57. H o r n

58. Regulator
59. Speedometer assembly
60. Tachometer assembly
61. Lach assembly
62. Fuel tank cap with lock
63. Non critical rubber parts :
    - grommet for air cleaner
    - grommet for wire cleaner
    - grommet for wire cold
    - buffers/cushions
    - center stand rubber/stopper pad.
    - cushion seat supporter
    - hand grip/handle grip
    - front foot-rest rubber/footrest cover/stop rubber
    - bellow for carburator/air cleaner/connecting tube
    - bellow for rear brake
    - band assembly battery rubber
64. Stickers
65. Signal bulb
66. Speedometer/tachometer holder
67. Reflector
68. Tail lamp bracket
69. Brake shoe & lining
70. Seat clamp
71. Air cleaner cap
72. Front lugage carier
73. Frame grip/side grip standing handle
74. Stripping tapes/graphic set
75. Emblem/Name plate
76. Upper cover/handle bar cover/ handle complete/Head lamp housing/ steering handle complete.
77. Fork center cover/Front panel
78. Steering cap/steering dust seal/ steering head dust seal
79. Simple plastic parts :
    - plastic plug
    - rear fender mud guard
    - oil tank
80. Caliper
81. Sprocket
82. Handle under cover/handle bar housing
83. Under bracket/steering stem.
84. Engine assembling
85. Piston
86. Piston ring (I)
87. Piston pin (I)
88. Drive chain
89. Fuel cock
90. Rubber parts (ex engine)
91. Plastics parts (ex engine)
92. Engine bolts & nuts
93. Spring tension

1 9 8 4

1. Crank case cover (I)
2. Cylinder head cover
3. Cylinder head (I)
4. Cylinder sleeve (I)
5. Cylinder block (I)
6. Crank case (I)
7. Oil filter
8. Cam chain
9. Spark advancer
10. Contact breaker
11. Lever & switch
12. G a s k e t

1 9 8 5

1. Crank shaft (I)
2. Connecting rod (I)

3. Gear & transmission (I)
4. Kick Starter complete (I)
5. Camshaft (I)
6. Valves assembly (I)
7. Oil pump
8 Generator
9. Gear shift lever

1 9 8 6

1. Crank case
2. Covers (I)
3. Flywheel (I)
4. Drive chain
5. Bolts & nut high tension
6. Gasket
7. Cam chain tension

1 9 8 7

1. Gear shaft (I)
2. Main shaft (I)
3. Counter shaft (I)
4. Sprocket (I)
5. Crank pin (I)
6. Clutch
7. Generator assembly
8. Magneto coil
9. Electric starter

(I) = manufactured by driving motor industry (in-house).

TABLE - 12

Deletion Program in Parts/Components of Hand Tractor

in accordance with Ministry Decree

No.	Component	Year of Obligation		
		Since Sept. 1, 1983	Since Sept. 1, 1984	Since Sept. 1,1985
1.	Frame and Body	1. Hitch Attachment (O) 2. Front Frame (I) 3. Fender (I) 4. Belt Cover and Accessories (I) 5. Connecting pipe (I) 6. Handle Frame (I) 7. Guide speed change (I) 8. Steering handle (I) 9. Cover handle (I) 10. Stand (I) 11. Front weight (O)		
2.	Engine	1. Engine assy (O)		
3.	Transmission Group		1. Pulley : - Shaft (O) - Main change (O) - Tension (O) 2. Lever : - Stand control (O) - Main change (O) - Steering clutch (O) - Dual shift (O) - Main clutch (O)	1. Transmission assy. assembling.
4.	Wheel and Brake System	1. Wheel complete (O) 2. Tires (O) 3. Brake assy (O)		
5.	Implement	1. Leveller (O) 2. Cage wheel (O) 3. Floating wheel (O) 4. Iron wheel (O) 5. Ridger (O) 6. Harrowing wheel (O) 7. Tail skid (O) 8. Single flow (O)		
6.	Rotary : - Rotary frame - Rotary cover - Rotary blades	9. Rotary frame (I) 10. Rotary cover (I) 11. Rotary blades (I)		1. Rotary Transmission Assembling

Note : (O) = Out-House Manufacturing
(I) = In -House Manufacturing

The following table shows the deleted components of commercial vehicles that potentially have to be produced by large/medium scale industries.

T A B L E - 13

Components of Commercial Vehicles that have to be produced by large/medium scale industries

1. E n g i n e	9. Fuel tank
2. Transmission	10. Chassis/frame
3. Axle/propeller shaft	11. Tire & Tube
4. Steering system	12. P a i n t
5. Clutch system	13. Shock absorber
6. Brake system	14. Leaf spring
7. Wheelrim	15. Safety glass
8. C a b i n	16. Radiator

If those components are potentially have to be made by large/medium scale industries, it does not mean that all parts composing that components have also to be produced by such industries.
There are still possibilities that some parts can be subcontracted to small scale industries. The next paragraph of this study will discuss in detail this matter.
Deleted components for motor cycle and hand tractors most potentially made by large/medium scale industries seem to be limited which relate with engine, gear and transmission, drive chain, shock absorber beside the universal components as paint, tire & tube, and battery.

1.4. PARTS AND COMPONENTS POTENTIALLY MADE BY SMALL SCALE INDUSTRIES/ COOPERATIVES

Small scale industries as defined by Department of Industry have to fulfil 2-conditions :

- The investments in machinery and equipment are not to exceed a value of Rp. 70,000,000.-.
- The investment to labor ratio has to be not more than Rp.625,000.- per labor.

That definition has been adopted in the time before the devaluation of Rupiah against US$. last year.
If such a definition is still to be accepted, it can be immagined that small scale industries must be always labor intensive and only able to perform simple processes. Such a condition can only be found in handicraft business.
The Minister of Industry had explained on many occasions that small scale industries can take the form of modern ones, which are able to perform advanced processes efficiently.
Subcontracting to the small scale industries, especially in manufacturing of automotive parts and components, can only be carried out if they can produce products more economically and where efficiency is the most important thing. Even though there are 3-types of subcontracting,but cost saving subcontracting has more strong basis for such a relation and endures longer.

It is based on such above considerations, the limit of investment in machinery and equipment in small scale industries is being raised up between Rp. 150.- million to Rp. 250.- million, and is nothing to say about the investment to labor ratio.

In pesimistic sense, small scale industries will be limited that the investment in machinery and equipment have not to exceed a value of Rp. 150,000,000.-*)

For further discussions in this study the above limitation will be adopted.

To enable making a list of parts and components potentially made by small scale industries, criteria used are that these will be produced by simpler processing as :

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*) In the meeting between KADIN INDONESIA and DEPARTMENT OF INDUSTRY on February 29, 1984 this limitation has been explained.

- Simple form ferrous or non ferrous casting/die casting;
- Machining with machine tools as turning, planing, milling, pressing, punching, stamping, saw-cutting, boring, grinding, reaming, etc.;
- Metal joining as welding, soldering, brazing, riveting, shrinking;
- Metal forming in plastic state as forging simple workpiece, die hot stamping, etc.
- Simple heat treatment as water hardening, tempering, normalizing, etc.;
- Electroplating as galvanizing, chroming, nickel laminating, etc.;
- Long chain processes have to be performed by more than one unit;
- In case of plastic and rubber parts : mixing, vulcanizing, extruding, moulding, upholstry work, fiber reinforcing plastic (FRP).

Materials used in the production by small scale industries/cooperatives must be standard materials which is available in the market, or in case of special material is required it has to be supplied by the contractor.

Annexes-C, D, and E are list containing parts or components by criteria as mentioned above and assumed as generally used, for commercial vehicles, motor cycles/scooters, mini/hand tractors.
Each type or make of motor cars, motor cycles/scooters, mini tractors, may have deviations with that respective list, and making part or components lists for each type or make is beyond this study.

Number of parts or components required for each unit of car/motor cycle/scooter/mini-hand tractors is also mentioned in that respective list.

1.5. CORRELATED VOLUME OF DEMAND IN PARTS/COMPONENTS POTENTIALLY MADE BY SMALL SCALE INDUSTRIES/COOPERATIVES

In paragraph 1.1. there has been illustrated the demand forecast for each type of motor cars, motor cycles/scooters, mini/hand-tractors.
In the part lists there are also found the required number of each part for one unit of that automotives. By multiplying those two numbers it can be obtained the total volume of demand forecast for 5-years to come for every part.
The next chapter will discuss this matter in more detail.

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CHAPTER - II

THE EXISTING AND PROSPECTIVE PRODUCTION CAPACITIES OF AUTOMOTIVE'S PARTS AND COMPONENTS MANUFACTURERS

2.1. GENERAL CONSIDERATIONS

In paragraph 1.3. of Chapter-I is stated that, since there are no deletion program yet for passenger car, this study will not pay much attention in discussing the supply of parts and components made by large/medium scale industries for these vehicles. Indeed, the answers to distributed questionaires stated that there are not any parts or components, in-house as well as out-house, used in the assembling of passenger cars except tire & tube, paint, and battery. The foreign purchase policies of each motor car manufacturer from its country of origin might be the main reason why subcontracting in parts/components for passenger cars even to medium or large scale industries, does not exist.
Possibility of implementing deletion program for passenger cars will be actually a great opportunity for large and medium scale industries to get a bigger market.

But in practice it is believed that in some extent certain parts/components has been used as for instance spark plug, shock absorber, exhaust pipe/muffler/tail pipe in the assembling of certain marks of passenger car. That is why the local content can reach $\pm$ 10 % of FOB value, including the assembling work.
One thing is certain that stickers as for warning in handling/maintenance of certain component are supplied by small scale industries.

As for commercial vehicles and motor cycles/scooters there are so many items which potentially can be produced by small scale industries, but these are carried out by medium and even large scale industries at present.
Such parts are for instance exhaust pipes, mufflers, tail pipes, body parts etc. For the development of small scale industries during the next five years to come, portion of that mentioned parts have to be transfered to small scale industries.

This point of view is also in relation with the "Basic Law of Industry"

which is now in preparation and will be submitted to the Parliament within short time.
By that "Basic Law of Industry" will be decided among others reservation of certain products by which only small scale industries get the permit to produce.

On the other hand, the development into self reliance in motor cars and motor cycles will open wide chances in producing more complicated automotive parts and components by large and medium scale industries as for instance essential forging parts, complicated casting parts, and others which are still imported at present.

2.2. THE EXISTING PRODUCTION CAPACITIES AND VOLUME OF LARGE/MEDIUM SCALE INDUSTRIES

Even though in the deletion programs for motor cars only 21-items are listed, but actually many of these are composed of many parts, which are produced by large and medium scale industries. These were not specified as for motor cycles, so that what kind of parts one item is composed of, can not be mentioned. There is a possibility that many parts may not belong to the one of that deleted items, but are widely used in the assembling of motor cars and motor cycles.

Annex - F is a list of large and medium scale industries with their potential or licensed capacities and production volume in producing parts and components of motor cars or motor cycles each in their line of production. Some of them are members of G I A M M (Association of Motor Cars and Motor Cycles Equipment Manufacturers), but many others are still independent.

It is also not guaranteed that all the existing manufacturers are already registered in that list, because different sources give different list. But on the other hand, there is also a possibility that some of the manufacturers have stopped their activities. As an example can be mentioned one leafspring manufacturer has stated that his factory works only on 10% capacity and the management intends of stop the production. Such a problem may be also faced by many other plants, many having installed capacities much bigger than the demand, as for instance manufacturers of piston

ring, air filter element, oil filter etc. But of course the replacement market must be also considered as the outlet of these products.

The survey team just found some manufacturers which are not registered yet in G I A M M or in Department of Industry.
But anyhow, if there are some other manufacturers which are not registered yet in that list, it is believed that they would not have much influence.

Difficulties also emerge becaused not all manufacturers listed are known, neither the capacities nor the production volume during the last years. Complete reports on this matter are very hard to find in the respective responsible institutions.

That is why estimation must be made to arrive at total production capacity and volume. The total average production volume of the known capacities will be used as the base in making that estimation.

If we examine the product items produced by these manufacturers we can realize that many of them are actually possible to be produced by modern small scale industries/cooperatives.

Annex - G is a list of the total estimated production capacities and production volumes by types of product.

2.3. THE PROSPECTIVE ADDITIONAL PRODUCT ITEMS AND CAPACITIES OF LARGE/MEDIUM SCALE INDUSTRIES RELATED TO THE DELETION PROGRAM

Table - 9 in paragraph 1.3. shows the deletion program in terms of percentage for commercial vehicles, motor cycles, and hand tractors.

From that table is seen that in 1986 all commercial vehicles must be totally (100 %) manufactured domestically, while for motor-cycles and hand tractor in 1987. To achieve that program, new investments are needed for essential components as well as for increasing production volume of some existing production.

The hereunder list shows the names of new investors for motor cars essential parts/components manufacturing or additional capacities.

T A B L E - 14

List of New Investors for Essential Components and Additional Capacities

Components	Investors	Production Capacities	Status/ Lisence	Activity/Plan
- Engine (Motor Car)	PT STAR ENGINE INDONESIA	15,000 Unit	FI/PL*)	Commercial Prod. 1985
	PT COLT ENGINE INDONESIA	120,000 Unit	FI/PL	Commercial Prod. 1985
	PT MESIN ISUZU INDONESIA	37,900 Unit	FI/PL	Commercial Prod. 1985
	PT TOYOTA ENGINE INDONESIA	108,000 Unit	FI/PL	Commercial Prod. 1985
	PT DAIHATSU ENGINE MFG INDONESIA	108,000 Unit	FI/PL	Commercial Prod. 1985
	PT HINO IND. MFG	10,000 Unit	FI/PL	Commercial Prod. 1985
	PT SUZUKI	63,360 Unit	FI/PL	Commercial Prod. 1985
- Transmission	Automobile Peugeot	?	FI/TL	?
	Zahnrad Fabrieken	?	FI/-	Letter of intent.
- Axle/Propeller Shaft	PT SPICER INDONESIA (DANA)	?	FI/PL	Comm. Prod. M. 1984
	PT INTI GANDA PERDANA (Mitsubishi)	?	DI/TL	Comm. Prod. 1985
- Steering System	-	-		Promotion Stage
- Clutch System	PT TUNAS PERDANA Busindo (Daikin)	?	-	Letter of Intent
- Brake System	PT TRI DHARMA Wisesa (Akebono)	?	-	Comm. Product. 1986
- Cabin/Chassis Frame (Press Product)	PT YUDISTIRA UTAMA	?	DI/PL	Comm. Product. 1984

*) FI = Foreign Investment
PL = Permanent License
DI = Domestic Investment
TL = Temporary License

But for motor cycle essential parts/components, the production is carried out first by the respective motor cycle sole agents as "in house" supplies, and second by undefined investors as "out-house" supplies.

The hereunder tables show the schedules of deletion for "in-house" and "out-houses" motor cycle essential parts/components.

TABLE - 15

Schedule of Deletion for "In-House" Motor Cycle Driving Motor Essential Parts

No.	Component Items	1984	1985	1986	1987
1.	Crank Case Cover	A	M	M + DC	M + DC
2.	Crank Case	A	M	M + DC	M + DC
3.	Cylinder Head	A	M	M + DC	M + DC
4.	Cylinder Block	A	M	M + DC	M + DC
5.	P i s t o n	A	M	M + DC	M + DC
6.	Piston Pin	A	A	M	M + F
7.	Crank Shaft	A	A	M	M + F
8.	Connecting Rod	A	A	M	M + F
9.	Main Gears	A	A	M	M + F
10.	Gear Shaft	A	A	M	M + F
11.	Main Shaft	A	A	M	M + F
12.	Counter Shaft	A	A	M	M + F
13.	Sprocket	A	A	M	M + F
14.	Kick Starter Complete	A	A	M	M + F
15.	Crank Spin	A	A	M	M + F
16.	C o v e r s	A	M	M + DC	M + DC
17.	Counter Gear	A	A	M	M + F
18.	Cylinder Sleeve	A	A	M	M + FC
19.	Cam Shaft	A	A	M	M + F
20.	Valves Assy	A	A	M	M + F
21.	Fly Wheel	A	M	M + DC	M + DC

Remarks : A = Assembling DC = Die Casting F = Forging
M = Machining FC = Ferro Casting

T A B L E - 16

Schedule of Deletion for "Out-House" Motor Cycles Essential Parts

No.	Component Items	1984	1985	1986	1987
1.	Spark Plug	X			
2.	Drive Chain			X	
3.	Rubber Parts		X		
4.	Plastic Parts		X		
5.	C l u t c h				X
6.	Piston Ring		X		
7.	Fuel Cock		X		
8.	Bolts & Nuts (High-Tension)			X	
9.	G a s k e t			X	
10.	Generator Assy				X
11.	Magneto Coil				X
12.	Lever & Switch			X	
13.	Cam Chain			X	
14.	Oil Filters		X		
15.	Cam Chain Tensioners			X	
16.	Screw, Pin, Washer		X		
17.	Contact Breaker			X	
18.	Spark Advancer			X	
19.	Oil Pump				X
20.	Electric Starter				X

X = beginning year of obligation

It is noted that the beginning year of obligation must be intepreted as the latest year of obligation, so that the product items produced before that year must be used in the assembling. Such product items are for instance, piston, spark plug, drive chain, piston ring, and oil filter. But in practice the sole agents mostly refuse using components which do not have Indonesian Industrial Standard yet, while efforts

to get the recognition in fulfilling the required quality/standard from the foreign country of original manufacturers takes time and faces much difficulties.

The following table shows parts or components in automotive sector which have been standardized according Indonesian Industrial Standard (S.I.I.) or just in preparation.

TABLE - 17

Some Automotive Parts/Components Standardized in Indonesian Industrial Standard (S.I.I)

No.	SII No.	Part Items	Remark
185	0190 - 81	Safety glass for inland transportation	
410	0415 - 81	Mufflers	Method of testing
411	0416 - 81	Leaf spring	For Motor Cars
471	0476 - 81	Tire	For Passenger Cars
472	0477 - 81	Tire	For Trucks and Buses
473	0478 - 81	Tire	For Light Trucks
474	0479 - 81	Tire	For Motor Cycles
691	0696 - 82	Commercial Cars	Performance Information
692	0697 - 82	General Purpose Reciprocating Combustion Engine	Testing methode of Power Performance
693	0698 - 82	Combustion Engine for Automotives	Testing methode
694	0699 - 82	Radiator	Testing methode of Heat Release Capacity
916	0921 - 83	Reciprocating Combustion Engine	Terms used
917	0922 - 83	Spark plug, flat base, for Combustion Engine	Measurements and quality
918	0923 - 83	Air Filter for Motor Cars	Informations
919	0924 - 83	Piston Ring	Made of Steel and Cast Iron
		Dry Air Filter for Motor Cars	Testing methode, in preparation

No.	SII No.	Part Items	Remark
		One Service Disposed Lubrication Oil Filter for Ignition Combustion Engine fpr Motor Cars	in preparation
		Brake Lining	in preparation
		Wheelrim for Motor Cars	Circular Profile, in preparation
		Wheelrim for Motor Cars	in preparation
		Telescopic Hydraulic Shock Absorber for Motor Cars	in preparation
		Piston for Internal Combustion Engine	in preparation

2.4. PORTION OF PARTS/COMPONENTS POTENTIALLY MADE BY SMALL SCALE INDUSTRIES COVERED BY LARGE/MEDIUM SCALE INDUSTRIES

If examining the list of parts/components produced by large and medium scale industries it is recognized that some parts/components are potentially/can be made by small scale industries. By the latter must be defined as what has been stated in paragraph 1.4.
The following table is a list of the parts/components that may be made by Small Scale Industries.

TABLE - 18

Parts/Components that can be Made by Small Scale Industries Covered by Large/Medium Scale Industries

Parts/Components Items	Parts/Components Items
a. For Motor Cars	
1. Mufflers & exhaust pipes tail pipes	3. Rubber Parts
2. Plastic Parts	4. Seats & Seat Frames
	5. Brake & Fuel Tubes (tube as raw materials)

Parts/Components Items	Parts/Components Items
6. Air Filters	8. Complete Bodies
7. Oil Filters	9. Pulleys
	10. Lamp Housings

b. For Motor Cycle

1. Stands
2. Foot rest, step bar
3. Seat frame
4. Cables, flexible shaft
5. Wire harness
6. Wheel-rim
7. Fuel tank
8. Covers
9. Boxes
10. Steering stem
11. Handles
12. Chain case
13. Muffler, pipe
14. Fenders
15. Chain adjuster
16. Axles & nuts
17. Oil meas. cup
18. Fuel filter
19. Ridge
20. Flange
21. Spokes & nipples
22. Housing & ring lamps
23. Flasher & relay
24. Horn assy
25. Fuel tank cap
26. Holder tachometer
27. Grips
28. Front lauggage carr.
29. Fuel cock
30. Oil filter
31. Gear shift lever
32. Spindle, kick st.
33. Caps
34. Non critical rubber/plastic parts.
35. Universal parts

c. For Mini/Hand Tractor

Because of the small production up to 1983, there is no report from large/medium scale industries producing parts/components for hand/mini tractor, but some workshops are making gears and other parts/components.

Accessories and attachments as plow, tail skid, ridger, floating wheel, iron wheel etc. are made by some small industries.

2.5. THE EXISTING AND PROSPECTIVE PRODUCTION CAPACITIES OF SMALL SCALE INDUSTRIES/COOPERATIVES RELATED TO THE DELETION PROGRAM

a. The existing capacities of small scale industries

By the field survey in Jakarta, West Java, Central Java, and East Java, it is proved that the role of small scale industries in supplying

automotive parts or components, especially as original equipment manufactured (O E M), is very limited or negligiable.
Some ornamental and non-essential products that can be found directly used in assembling plants are stickers (name plate, Serial No. plate, caution mark, attention mark, direction for use, etc.), simple rubber parts (for footrest, handle & other cushion cap, seal, plug, etc.). wiring harness for motor cycles, small metal parts for frames of motor cycle (stopper step-bar, handle stay, winker setting plate,clamps, etc. the latter with selling price range between Rp. 25.- to Rp.200.- per piece.

Cooperative of Black Smiths "KARYA PUSAKA" in Cisaat, Sukabumi, West Java, was sucoessful in getting subcontracting from PT. Federal Motor Jakarta in producing small parts as mentioned above since 1980.
The subcontracting is on formal contractual basis, but for this year it likely not to be continued due to the very small order they will receive.
This cooperative has 152-members of small forging shops or blacksmiths and nonferrous casting shops owners. There are another 204-blacksmiths working independently. Total tool machines owned by the members are only 10 universal lathes (where of 3 are new) and 1 punching m/c.
Some machines in the central workshops managed by the cooperative are only 1 universal lathe, 1 hydraulic press, 1 milling m/c, 1 machine hammer, and 1-set of heat treatment furnace.
Al those machines are old and didn't work properly except the 3 new small lathes.

Something more significant is body building for minicab, minibus, medium bus, long chassis bus, and also delivery box, but the orders are received from dealers or individuals and not from sole agents or assembling plants. The quality is mostly adequate enough in body building.
The impression is that they have good talent and it is difficult to believe that the quality is the result of so simple machinery as they use.
As examples can be mentioned the small plants owned by "AREMA" and C.V. TUGU JAYA in Tegal, Central Java.

Arema produces minibuses/minicabs, 20-units/month, the complete body

for the original Mitsubishi L-100 (550 cc), Mitsubishi L-300, (1,350 cc) and Daihatsu S-70 (1,000 cc).
Its machinery consist of :

- Manual plate cutting equipment	2-sets
- Electric welder 220 A	4-sets
- Acetylene welder/cutter	10-sets
- Manual Press Machine	1-set
- Compressor	5-sets
- Electric Drilling Machine	6-sets
- Grinding Machine	2-sets
- Sewing Machine	5-sets

Total number of workers are 30, with 3-administrative employees and 1-Director.

C.V. Tugu Jaya produces complete body buses units (2.5 to 5.0 Ton) and Delivery Boxes units, repectively 8-units buses and 5-units boxes per month.
Its machinery consits of :

- Electric welder with transformer (220 A)	12-sets
- Manual cutting machine	3-sets
- Manual pressing machine	2-sets
- Compressor	2-sets
- Diesel generator of 50 KVA (will be replaced by 150 KVA)	1-set
- Sewing machine	10-sets

Total number of workers are 80, with 4-administrative employees and 2-Directors.
All components in carrousery/body making are bought from other manufacturers or from general market as the safety glass for front and rear wind shields, side windows, profile steel, steel plate, hinges, handles, paint, etc.
Some small components are supplied by other small scale industries, as aluminium flanges for pipe-ends, chroming of pipes by thermoplating, etc.

Small scale industries producing automotive parts or components have sold their products to part/component shops (after market sales).

As it is known in these shops are sold many part items imported from many countries, but mostly from Taiwan, beside the genuine parts.
There are some potential small scale industries making good products in automotive parts. They have also adequate machinery and good knowledge in processing or material know-how. But there are many others making very poor quality of product with their poor equipment, and do not realize what accident can happen in making important parts as tierods, and leafspring bolts receiving heavy shearing stress, from low quality of materials as general iron bar, etc.

Ferrous casting is carried on in well developed industrial center in Batur, Regency of Klaten, Central Java, by the help of Department of Industry.
Individual plant owners are united in a cooperative called : KOPERASI PUSAT PERMESINAN INDUSTRI COR LOGAM "BARU JAYA", in 1977.
There are 6-Cupola Furnace, 106-small slantable melting furnaces,213-lathes, 11-planing m/c, 5-milling m/c, 110-drilling m/c, 2-reaming m/c.
Those tool machines seem to be old enough and unable to deliver high degree of precision works except the reaming m/c.
Total production ex casting is about 25,000 Ton/month.
In automotive parts some of their members are producing :

1. Brake Drums for commercial vehicles Category I, II, III, IV, V, delivered as semi-finished products.
2. Cylinder liners for motor cycles, delivered in semi-finished, and finished product.
3. Pulleys for water pumps and others in finished product.

The semi-finished product as brake drums and cylinder liners are orders received from workshops in Jakarta as Cokro Bersaudara, and Chow Brothers.
Finished product of cylinder lining and pulleys are sold to part/component shop mostly in Jakarta, among others are Abdi Karya in Jl. Jayakarta, Candi Naga in Jembatan Lima, Subur Jaya Cawang, Sampurna in Cipinang. Many other buyers are also coming from other cities.
Tensile stress test and hardness test carried out in the laboratory of Gajah Mada University conclude adequate results.

The tensile stress lies between 20.2 - 29.4 Kg/mm2
while the hardness lies between 206.6 - 269 Kg/mm2

For getting better quality they still need other equipment especially for heat treatment and quality control.

Other potential small plant producing motor cycle and scooter parts is found in Tegal, Central Java.
"BAJA INTAN" workshop produces mufflers - wheel rims - front fenders - rear view mirrors - foot steps (additional part) for Vespa scooters, and front & rear fenders of Suzuki motor cycles with a good appearance.
The machinery consist of :

1. Local made hydraulic press	2 - sets
2. Heavy press m/c	1 - set
3. Light press & stamping m/c	2 - sets
4. Vertical milling & drill. m/c	1 - set
5. Spot welders (electric)	2 - sets
6. Electric welder	1 - set
7. Acetylene welder	1 - set
8. Other gas welder	1 - set

The machines tools are old and unable to deliver high degree precision work.
Difficulties faced by this plant are getting high carbon steel sheet as raw material for the wheel rim product, and competition with ex Taiwan import.
On the other hand DAN MOTOR as Vespa assembler and parts/components manufacturer (in-house supply) is well equipped with machinery and has an excess capacity due to the weak market.
By that condition it is impossible for BAJA INTAN to be an O E M supplier of DAN MOTOR.

In East Java, cluster of metal small scale industries are found in Pasuruan and Sidoarjo. Most dominant products of automotive parts in Pasuruan are made of brass by casting and machining. Product items are limited in small automotive parts as nipples, nozzle spray for carburetors, screw-adjusters, etc. for motor cycles. The only parts made of steel are axles, also for motor cycles. Some other non ferrous parts are pulleys which is made of aluminium.

One of the most potential in making such parts is NGEMPLAK MOTOR JAYA in Pasuruan. In Sidoarjo, products of automotive parts are limited in washers, small plate works as for seat frames of motor cycles, and electroplating.

In Jakarta, eventhough there are many small scale workshops scattered over the city, their function are only as job-order workshop and not as an industry producing and selling certain product continuously. Some medium industries give indeed orders for supplying bolts and nuts for their products in automotive parts, but the work load is so small so that it does not influence the figure as job-order workshop.

b. The prospective production capacities of small industries

In Chapter - I it has been analyzed parts/components which are potentially made by small scale industries as shown in Annex - C, D, and E.
Multiplying the number of each part per unit of automotive by the respective automotive sales forecast will be the total demand of each part or component for the coming years.

In Paragraph 2.4. of Chapter-II, there is Table - 18 giving figures of parts or components potentially made by small scale industries but still covered by large/medium scale industries.

This portion will be the competition ground between large/medium scale industries in one side and small scale industries in the other side.
If there is no assistance to the small scale industries, it can be predicted that subcontracting to the latter will not be forth coming.

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C H A P T E R - III

PRODUCT MIX AND NEW UNITS REQUIRED FOR SUBCONTRACTING TO SMALL SCALE INDUSTRIES AND COOPERATIVES

3.1. THE EXISTING AND THE REQUIRED FACILITIES

It has been illustrated in the aforementioned paragraph that in general the small scale industries and cooperatives did not have adequate machinery to produce automotive parts/components with an appropriate degree of quality. Some new machines they installed recently, mostly in their new plants in Mini Industrial Estate, are quantitatively very limited in comparison with the required volume if they have to contribute in certain parts/components supply in the frame work of deletion program.
Therefore investment in additional modern machines is the first requirement for the implementation of subcontracting possibilities, where banks and other credit-insitution have to play important role.

But some facilities have been invested by the Government, i.e. machinery installed in Mini Industrial Estate or in middle of cluster known as the C S F (Common Service Facilities) and the U P T (Technical Service Unit). These facilities can be used to help in the development of the realization of subcontracting system.
Annex - H is a list of the above mentioned installed essentual machinery and equipment in metal working or processing.

To meet the volume of parts/components required for the 5-years forecast of automotive production, new machinery and equipment have to be installed within that years.

3.2. THE PRODUCT MIX

In Annex - C, D, and E it can be found that part items are grouped firstly in certain group and further are specified in certain number of part items.
Product mix of small units would be based on the groups which form complete components and that most of the part items production (about

75 %) can be made by themselves. Other small number of parts or some processes which can not or ought not be performed by themselves as general parts (bolts & nuts, bushes, etc.) must be assumed as "out house" parts and let other units, the general manufacturing units make. Few part items of a group which can be performed by small units will be grouped with other similar processed item and will be performed by units of special process. By this way there would be 2-types of units, "Special Product Units" and "General Manufacturing Units". So this will make a unit as specialist and able to be run efficiently. The production capacities of each unit can be estimated by the number of machine used.
Of course such a unit may not exeed Rp.150,000,000.- in the investment for production equipment. This limitation will lead also to the limitation of the respective production capacities.

3.3. REQUIRED NEW UNITS OF SMALL SCALE INDUSTRIES TO MEET THE DELETION PROGRAM

In the above paragraph is shown how types of units with its capability in producing certain parts/components, as its product mix, with its production capacities can be formed.
Since the prospective production volume of parts/components can be calculated from the forecast of automotive production, then the required number of units for each of its line of production can also be derived by deviding the production volume by the the capacity of the unit.

The following table (Table - 19) is a list of the group of units with its Product Mix and its capacity, the total number of units required, the number of employment/unit, and the total number of employment that can be absorbed.

To make the entrepreneurs of small industry having any idea of the total investment required, especially in machinery and equipment, and the profitability of some units, ANNEX - I represents some "Industrial Fact Sheets of Select Product Groups of Table - 19".

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T A B L E - 19

ESTIMATE OF PRODUCT MIX AND REQUIRED MANUFACTURING UNITS

OF SMALL INDUSTRIES IN 1988

No. of Group	Product Mix of Unit	Normal Cap. of 1-Unit (Pcs/year)	Estimate Demand 1988 (Pcs)	No. of Unit Required	Estimate of M/C Investm. (US$./Unit)	Estimate of Total Inv. (US$.)	Estimate of Employment (People/Unit)	Total of Employment (People)
1	2	3	4	5	6	7	8	9
	A. SPECIAL MFG-UNIT							
1.	- Air cleaner housing	7,100	250,000					
	- Element air cleaner (for c.c.)	7,100	250,000	35	90,000.-	3,150,000.-	50	1,750
	- Air cleaner (m.c.)	14,200	500,000					
	- Protector, clutch control (c.c)	7,100	250,000					
2.	- Pedal: brake c.c.	4,200	250,000					
	clutch c.c.	4,200	250,000					
	gas c.c.	4,200	250,000					
	- Fork : clutch control	4,200	250,000	60	120,000.-	7,200,000.-	75	4,500
	- Spare tire holder	4,200	250,000					
	- Change lever c.c.	4,200	250,000					
	- Wheel replacement tool c.c.	4,200	250,000					
3.	- Stand: main m.c.	10,000	500,000					
	side m.c.							
	- Steps: foot m.c.	20,000	1,000,000	50	100,000.-	5,000,000.-	70	3,500
	pillion m.c.	20,000	1,000,000					
	- Luggage carrier m.c.	5,000	250,000					

1	2	3	4
4.	- Cables: hand brake	8,400	500,000)
	gas m.c.	8,400	500,000)
	choke c.c.	4,200	250,000)
	clutch c.c.	8,400	500,000)
	- Flexible shaft :		)
	speedo meters c.c., m.c.	12,500	750,000)
	tacho meters m.c.	3,400	500,000)
	- Wiring harness	12,500	750,000)
5.	- Housing, lamps	95,000	7,000,000)
	- Tool box, m.c.	6,500	500,000)
	- Battery holder	10,000	750,000)
	- Radiator shroud c.c.	2,000	150,000)
	- Seat frame c.c.	10,000	750,000)
	- Mirror base	25,000	2,000,000)
	- Covers m.c., h.t.	13,000	1,000,000)
6.	- Fenders m.c.	7,500	450,000)
	- Oil filters c.c.	4,200	250,000)
	- Fuel tank m.c.	8,400	500,000)
7.	- Drum brake h.t.	250	22,000)
	- Kick st. spindle m.c.	5,500	500,000)
	- Screw jack c.c.	2,800	250,000)
	- Spindle gear shift m.c.	5,500	500,000)
	- Gear shift lever m.c.	5,500	500,000)
	- Axles/shaft m.c. h.t.	12,000	1,000,000)

5	6	7	8	9
60	60,000.-	3,600,000.-	40	2,400
75	120,000.-	9,000,000.-	80	6,000
60	150,000.-	9,000,000.-	100	6,000
90	150,000.-	13,500,000.-	120	10,800

1	2	3	4	5	6	7	8	9
	- Fuel filter m.c.	5,500	500,000)					
	- Shaft, clutch fork c.c.	2,700	250,000)					
	- Pulleys c.c., h.t.	2,700	275,000)					
8.	- Pipe steering m.c.	17,000	500,000)					
	- Steering stem m.c.	17,000	500,000)	30	50,000.-	1,500,000.-	40	1,200
	- Grip, handle steering m.c.,h.t	35,000	1,000,000)					
9.	- Water pump assembly c.c.	4,200	250,000)					
	- Cooling fan c.c.	4,200	250,000)	60	90,000.-	5,400,000.-	50	3,000
	- Handles m.c.	8,400	500,000)					
	- Fuel cock m.c.	8,400	500,000)					
10.	- Horn/assembly m.c.	16,700	500,000)					
	- Horn/assembly c.c.	16,700	500,000)	30	80,000.-	2,400,000.-	40	1,200
	- Timer switch	8,400	250,000)					
11.	- Wheelrim m.c.	40,000	1,000,000)					
	- Seat frame m.c.	20,000	500,000)					
	- Chain case m.c.	20,000	500,000)	25	150,000.-	3,750,000.-	80	2,000
	- Brake shoes h.t.	900	22,000)					
12.	- Exhaust pipe & muffl. m.c.	25,000	500,000)					
	c.c.	12,500	250,000)	20	60,000.-	1,200,000.-	60	1,200
13.	- Door locking system c.c.	14,250	500,000)					
	- Hard ware for fuel filler lid	7,250	250,000)					
	- Window regulator	14,250	500,000)					

1	2	3	4
	- Wiper (excl. motor)	7,250	250,000
	- Window washer	7,250	250,000
	- Fuel tank cap. c.c.	7,250	250,000
14.	- Seat cover c.c./m.c.	67,000	1,000,000
	- Sun viser c.c.	17,000	250,000
	- Coat hanger c.c.	34,000	500,000
	- Arm rest c.c.	67,000	1,000,000
15.	- Paddling wheel h.t.	2,200	22,000
	- Plowing wheel h.t.	2,200	22,000
	- Plow h.t.	2,200	22,000
	- Ridge h.t.	2,200	22,000
	- Floating wheel h.t.	2,200	22,000
	- Wet field wheel h.t.	2,200	22,000
	- Rake h.t.	2,200	22,000
	- Universal hitch h.t.	2,200	22,000
	- Tail skid h.t.	1,000	10,000
	- Trailer h.t.	500	5,000
	B. GENERAL MFG UNIT		
1.	- Clamps, Hinges, pins, Bushes, Small coil spring, U-bolt, shims, clips, Screws, Bolts nuts, Nipple grease, Catch assy, Packing, levers, Stripes, Handle, Stopper, holders, Brackets for lamps, rod. Brackets	1 lot	20 lot

5	6	7	8	9
35	150,000.-	5,250,000.-	150	5.250
15	50,000.-	750,000.-	80	1,200
10	100,000.-	1,000,000.-	150	1,500
20	150,000.-	3,000,000.-	200	4,000

1	2	3	4	5	6	7	8	9
2.	- Stickers, plate,) - Plates, name emblem,)	1 lot	5 lot	5	50,000.-	250,000.-	75	375
3.	- Non criticl rubber :) Rubber pad,) Dust cover, plug,) grommets, Weather) strip. packing, foot) rest, tire flat, hose) cap, simple plastic) parts) Mud guards, tire flap)	1 lot	10 lot	10	150,000.-	1,500,000.-	250	2,500
T O T A L						76.450,000.-		58,375

R e m a r k :

c.c. = Commercial Cars

m.c. = Motor Cycles

h.t. = Hand Tractors

CHAPTER - IV

SUPPORT MEASURES ENCOURAGING SUBCONTRACTING

4.1. THE EXISTING MARKET STRUCTURE AND BUSINESS RELATION FACED BY SMALL SCALE INDUSTRIES/COOPERATIVES

In the previous Chapters and Paragraphs have been briefly discussed about the problem of small scale industries facing the market.
Direct sale from the small units to the Sole Agents or Assembling Plants can be only found in non-essential parts as stickers, small frame and body parts, wiring/harness, and with small value of sales.
Direct sale to Dealers was found in body making with rather high value of sales.
Among the Sole Agents and Assembling Plants there are 2 (two) kinds of policies adopted in supplying the local contents of parts and components. Some of them adopted the policy that all local parts and components required in the assembling of automotive are arranged and selected by the Sole Agents, while the Assembling Plants receive packets containing all components and parts required for complete assembling and get the fee. Some other adopted the policy that the Assembling Plants have to arrange and select all local parts/components required in the assembling, but with the agreement of the Sole Agents. In selling their products the Small Scale Industries have to contact the Sole Agents or the Assembling Plants depending on which kind of policies they adopt.

But in general, the small units have faced many difficulties in making contact and sell the products directly to the mentioned organizations. First, small unit managers/owners are by nature have to spend much of their time in the workshops to manage the production.
By that reason they are not well informed about the market, and perform the selling of their products by using the services of middlemen.
Second, the Sole Agents of the Assembling Plants are reluctant in handling many Small Units offering their products.

Third, the reliability in qualitity, delevery times, etc. are mostly assumed as doubtful.
By the two last reasons the function of middlemen become more important, and with their wide knowledge of the market situation, usually succeed

to find buyers for small industries products. They negotiate the price, quality, total orders, delivery times, terms of payment, etc. and then they transfer orders to small units.
But these middlemen usually cut the price and press the small units to deliver a much lower prices, which they have to accept due to the scarcity of orders.
To obtain lower prices middlemen sometimes let the small units to compete each other by exploiting the weaknesses as their capital shortage, ineffective cost calculation system. Small entrepreneurs usually forget depreciation of their machinery and equipment and the salary of their own participation to be put in the product costs. The small presumed profit they calculate is sometimes not a profit at all, or it could be that actually they just get a loss. In this way small units do not have any chance to grow.

Sometimes small industries join together in a cooperative and do common activities as the selling of products, getting raw materials, raising funds, etc. As long as they have a strong management all problems may be handled properly, but in practice each member of the board is some time very busy with his own plant so that there is no time left to conduct the cooperative and the management become weaker untill the activities of the members can not be coordinated. On the other hand in most cases the discipline of the members themselves is so poor and will not obey regulations fixed by the cooperative. Especially if they face a scarce market, they are then uncontrollable, compete with each other and cause destructive effects. The role of middlemen sometimes promote the disorderly situation.

Significant direct sales are enjoyed by body builders of small units which middlemen can not play any role. It was becaused of the fewer number units in comparison with other small parts/components manufacturers, that the dealers prefer to contact directly with them. Indeed Sole Agents are selling commercial vehicles to dealers without rear body or in case of trucks chassis just without the whole body. The dealers can give orders to body makers to build according the standard form they want and sell to Sub Dealers, or according to the desire of individual buyers.

In this latter case, the individual buyer prefer to contact directly to the body makers.

Other difficulties small industries have to face is the terms of payment. Those who succeed to sell directly the products to Sole Agents or Assembling Plants get the payment usually once in a month, without any advance payment at the time of ordering. By this way, the small industries must have sufficient working capital. Bad payments are also faced by small body makers, although they have direct relations with the Dealers.
Usually they work without any advance payment and have to finance all expenses for the body making by their own working capital.
After 2-weeks to 1-month one unit will be finished, but they have to wait the payment for at least 2-months later.
When the orders of body making are coming from transportation companies they usually pay 20 % to 25 % advance payment and the remaining would be installed within 5-months after the delivery. But in common practice they extend up to a year or more.
Bank support by extending working capital loan is not so easy to get in practice.

In the frame work of subcontracting in producing parts or components by small scale industries, PT. KUBOTA INDONESIA in Semarang has carried out by signing Basic Agreements with many small units as shown in Annex-J. (translated in English). This company is known as producer of small stationary diesel engines, small marine engines, engines for mini and hand tractors. The latter is known as KUBOTA HAND TRACTOR.
Although this might cover only very limited small units, but it assures the existence of a certain model of subcontracting in Indonesia which is still in force up to present.

A similar basic agreement had been signed between PN TIMAH with the cooperative BATUR JAYA in Ceper, Klaten, but it was not in force any more due to the difficulties in implementations they faced.

P.T. TOYOTA-MOBILINDO in Jakarta has reported that it also has an arrangement with PT. MAHAMOTIN and CV. TEKUN small scale industry, in

Tegal and in Ciraras-Jakarta for the supply of certain parts for chassis and other pressing parts. It arranges the supply of steel plates as raw material, and lend stamping dies. Assistance in machine maintenance and in quality control are also given.

Actually the whole market structure and an interlink of parts/components supply for automotive assembling & free market of parts is as shown in FIG. - I. It is seen that import tax (40 % of FOB) must pe paid for OEM and GSP import, and for OEM which is sold to Free Market as I'SP. Small industries will never get OEM certificate from in-house manufacturers or from sole agents, and have to sell under their own brand and pay import tax for materials. In practice imported parts by the same quality have lower prices. They face very hard competition.

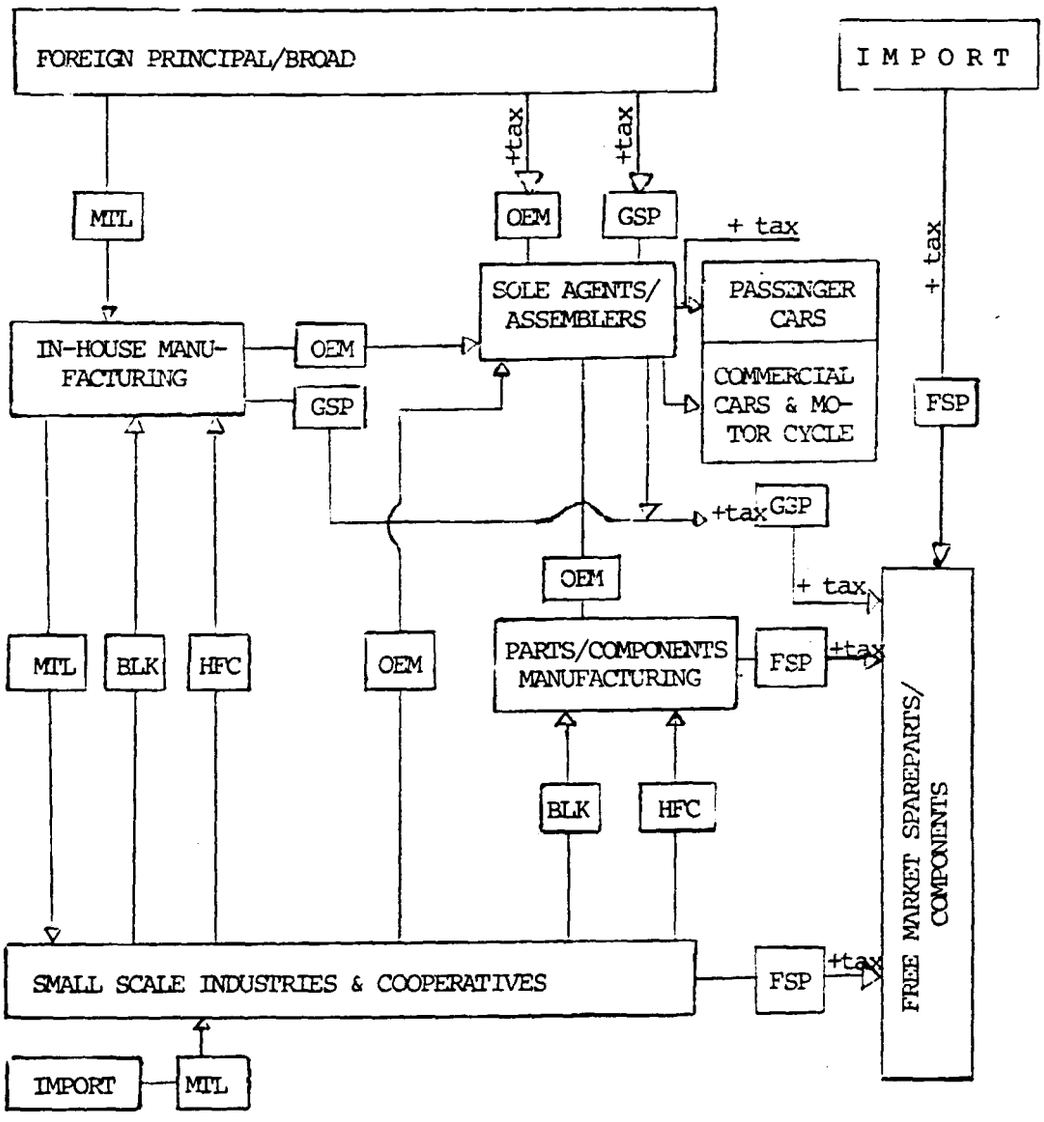
4.2. INSTITUTIONS SUPPORTING THE SMALL SCALE INDUSTRIES/COOPERATIVES

Small entrepreneurs usually do not have much ideas to choose certain line of production. If some one succeeds certain product, the others copy it and make the same product.
That is why it is always found that a certain region, may be the whole village, produce the same commodity for instance, umbrellas, clay-wares, ferrous/non-ferrous casting products, etc. which form cluster of small scale industries. As the development of organization some of them form a group and form a cooperative.
They have sometimes to move due to city planning. Some of them have to be relocated.
Besides, it is also realized that it would be easier to give guidance and facilities to small units if they are located together, and by that reasons estates for small scale industries has been facilitated as what is known as L I K nowaday.

It is realized that such cluster of small scale industries or cooperatives has played important role in the national economy.
We all know that to develop this sector the Department of Industry has formed Directorate General of Small Scale Industries. To carry out this function in the provincies and regencies, the Head of Regional Office and the Head of Regency office of Industrial Administration (KANWIL and

FIG. - I

INTERLINK OF PARTS/COMPONENTS SUPPLY
FOR AUTOMOTIVE ASSEMBLING & FREE MARKET



MTL : MATERIAL

OEM : ORIGINAL EQUIPMENT MANUFACTURED

GSP : GENUINE SPAREPARTS

HFC : HALF FINISHED COMPONENT

BLK : BLANK

FSP : FREE MARKET SPAREPARTS

KANDEP PERINDUSTRIAN) is in charge beside their other duties in administration of industrial matters.

On the other hand, to develop this small scale industries the Department of Industry has also formed Bimbingan dan Pengembangan Industri Kecil (B I P I K), or an Agency for Guiding and Development of Small Scale Industries (S S I), annexed with the Directorate General of Small Scale Industries.
BIPIK has its own organization in the Provincies and Regencies as the P P I K and other offices of service.
Beside the P P I K (Center of Development of Small Industries) under the Management BIPIK DAERAH-I, there are another sub ordinates namely : Bagian Sarana Usaha (Estate Facilities Section) administrating the provision of land, water, electricity, and other utilities for the estates or L I K, and Bagian Bahan/Peralatan (Material and Machinery Section) administrating the provision of machinery and equipment for L I K known as the C S F, and for the U P T (Technical Service Unit).
PPIK is in charge with the operation of these Machinery and Equipment facilities, and the Estate Facilities, or also known as Industrial Extension Service (I E S). So L I K actually consists of CSF and IES.
To manage the L I K and UPT, PPIK has formed LIK MANAGEMENT under the head of General Manager, and UPT MANAGEMENT under the head of Manager.
But one regrets to say that there is not exact guidance yet for the management excecution in L I K as well as in U P T. In many cases every General Manager of L I K or Manager of U P T adopted their own policies and working procedures. Policies and working procedures adopted by the former General Manager of L I K Sukabumi (West Java) is may be the best, while Guidance from PPIK to Manager of U P T in East Java is adequate.

So it is known that the cluster/Cooperative of Small Scale Industries is under the direct management of KANDEP PERINDUSTRIAN which gets a technical service from BIPIK as for L I K and its C S F.

Small Scale Industries/Cooperatives has received services not only from BIPIK, but some other institution as BALAI BESAR PENGEMBANGAN INDUSTRI LOGAM DAN MESIN (B.B.L.M.) or Metal Industries Development Center known as M I D C and BALAI PENELITIAN BAHAN-BAHAN or Materials Research Institute both located in Bandung extend also services.
M I D C has given technological services in metalurgical processes especially in ferrous and non ferrous casting, while Material Research Institute in the raw material used in partial testing of products, as well as the performance test of the whole unit of products.

KADIN INDONESIA supporting small scale industries through its one of the Compartment of Various and Small Scale Industries. New policy of integrating the development of corelated large-medium-small scale entreprises has been decided in the meeting of KADIN INDONESIA on March 1984. But the mechanism to implement that new policy is not fixed yet.

Other support, but indirectly, are also received from Professional Institution as L P P M (Lembaga Pendidikan dan Pembinaan Manajemen), and HITKI (Himpunan Tenaga Konsultan Indonesia) or Association of Indonesian Individual Consultants.
L P P M has trained consultants for small enterprises whithin 13-weeks and 50-weeks. It is regrettable that only a few institution are utilizing these special trained consultants.
H T K I through its Seminar on CONSULTING SERVICES FOR SMALL SCALE INDUSTRIES AND COOPERATIVES held in Jakarta last year concluded that BUSINESS AID CLINICS for small entrepreneurs are needed in developing their businesses. In these clinics can be employed the special trained consultants as mentioned above. But due to the limitation of funds pilot project for such a clinic are not realized yet.

Loan support is formally coming from banks and other Credit Institution through their formal procedures and conditions.

Although financial support from banks are mostly a decisive factor in developing small enterprises, but usually the bank management are not so close with business problems the small enterprises have to face.

FIG. - II shows schematically the above mentioned institution supporting small scale industries.

4.3. SUGGESTIONS ON SUPPORT MEASURES ENCOURAGING SUBCONTRACTING TO SMALL SCALE INDUSTRIES/COOPERATIVES

In the previous Paragraphs has been indicated in general how poor the machinery and equipment owned by small industries, how weak they face the market and making business relations, how difficult they compete with medium and large industries and there are a broken link between small industries and these medium/large industries.
On the other hand from the large/medium industries' side may raise a doubt in the mental attitude of small enterpreneurs, about the awareness of quality, delivery dates, keeping industrial secrets, using provided special tools/dies, also in the capability of managing their plants.

From the viewpoint of the small enterpreneurs, difficulties mostly rise on the terms of payment.

Extension services and other technical support provided by several institution are felt as having lesser meaning, if market outlet is not secured.

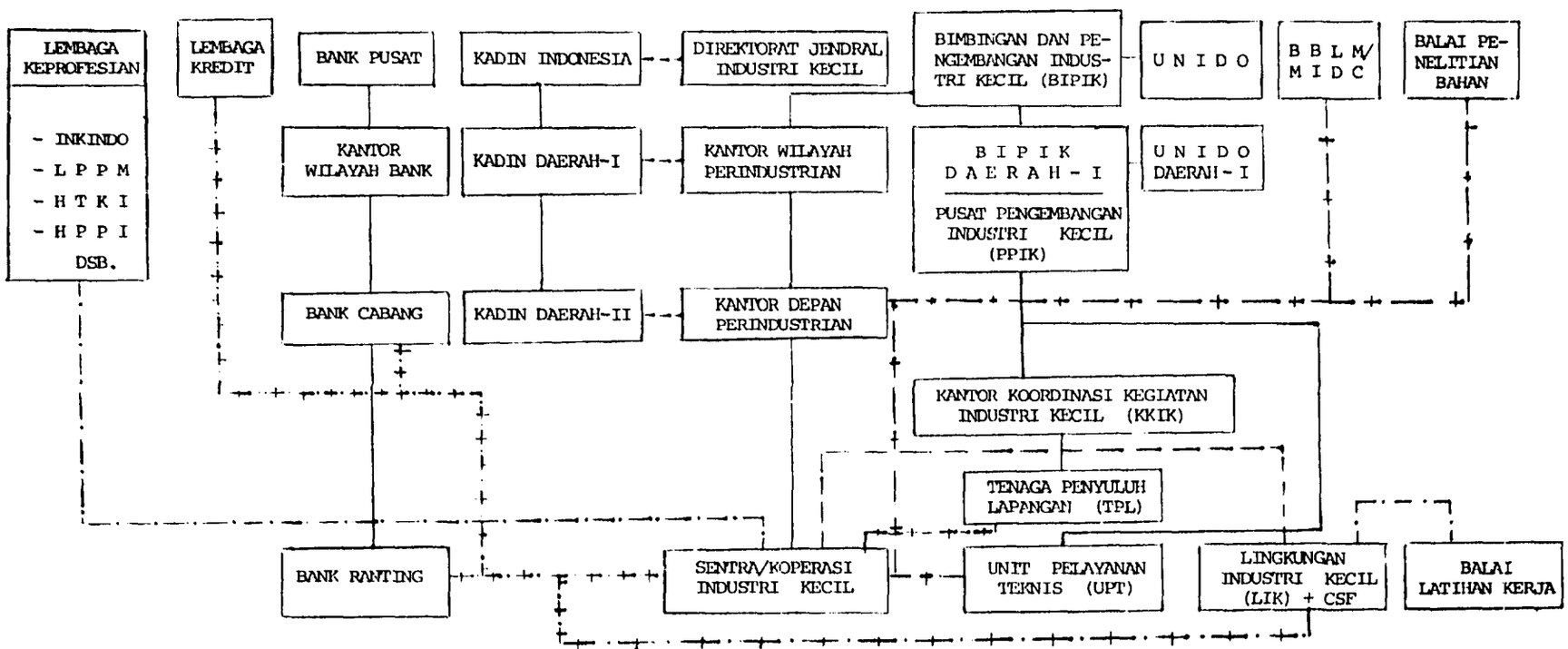
So one thing is certain, they need assistance in bringing them to make a contact with large/medium scale industries and having chances to be their subcontractors.

As it is known, interdependency of many entreprises along several sectors in the economy and also along the scale of firms or from large to medium and small scale industries and reverse, is common practice in modern industrial world. Japan is the most succesful country in practicing this subcontracting system.
In the previous Chapter has been explained the definition of subcontracting as UNIDO's experts has adopted, and the formulation of types of subcontracting.

FIG. - II

SCHEME OF INSTITUTION SUPPORTING

SMALL SCALE INDUSTRIES



——————— = FUNCTIONAL LINE

— — — — — = COORDINATION LINE

+ — + — + — = SERVICE LINE

— · — · — · — = SUPPORT LINE

+ · + · + · + · + = LOAN SUPPORT LINE

DIREKTORAT JENDRAL INDUSTRI KECIL = DIRECTORATE GENERAL OF SMALL SCALE INDUSTRY

KANTOR WILAYAH PERINDUSTRIAN = REGIONAL OFFICE OF INDUSTRIAL ADMINISTRATION

KANTOR DEPAN PERINDUSTRIAN = REGENCY OFFICE OF INDUSTRY ADMINISTRATION

SENTRA/KOPERASI INDUSTRI KECIL = CLUSTER/COOPERATIVE OF SMALL SCALE INDUSTRIES

BIMIMBINGAN DAN PENGEMBANGAN INDUSTRI KECIL (B I P I K)	=	AGENCY OF GUIDING AND DEVELOPMENT OF SMALL SCALE INDUSTRIES (G D S S I)
BIPIK DAERAH-I	=	REGIONAL G D S S I
PUSAT PENGEMBANGAN INDUSTRI KECIL (P P I K)	=	CENTER OF DEVELOPMENT OF SMALL SCALE INDUSTRIES
KANTOR KOORDINASI KEGIATAN INDUSTRI KECIL	=	COORDINATING OFFICE FOR THE ACTIVITIES OF SMALL SCALE INDUSTRIES/COOPERATIVES
TENAGA PENYULUH LAPANGAN	=	FIELD INSTRUCTORS FORCE
UNIT PELAYANAN TEKNIS (U P T)	=	TECHNICAL SERVICE UNITS
LINGKUNGAN INDUSTRI KECIL (L I K)	=	ESTATE FOR SMALL SCALE INDUSTRIES
C S F	=	COMMON SERVICE FACILITIES
BALAI BESAR PENGEMBANGAN INDUSTRI LOGAM DAN MESIN (B B L M)	=	DEVELOPMENT AGENCY FOR METAL AND MACHINERY INDUSTRIES (METAL INDUSTRIES DEVELOPMENT CENTER = M I D C)
BALAI PENELITIAN BAHAN	=	MATERIAL RESEARCH INSTITUTE
KADIN INDONESIA	=	INDONESIA CHAMBER OF INDUSTRY AND COMMERCE
LEMBAGA KEPROFESIAN	=	PROFESSIONAL INSTITUTIONS
BALAI LATIHAN KERJA (B L K)	=	VOCATIONAL TRAINING CENTER

As other agreements subcontracting must give mutual benefits to both parties.

Benefits or advantages to the contractor can be listed hereunder.

1. Lower cost in getting certain parts of components is obtained. This is due to lower labor cost in the subcontractor unit by not giving pension, insurance, lower welfare facilities. etc., lower office expenses, etc.
2. The flexibility of smaller units in changing production programs may help also the flexibility of the larger units/contractors.
3. Specialized parts made by specialized subcontractors are sure a great advantage due to the lower price.
4. In facing higher order than the existing capacity of their own plant large firms tend to shift the excess order to subcontractors, especially when it is of a temporary character.
5. There are many cases that large industries are intentionally planned to have lower capacities than the market share they want to occupy by giving the shortage capacities to subcontractors in facing the conjunction/fluctuation of the market demand.
6. If the large industries face difficulties in getting more spaces for installing new machinery, or avoiding the idle capacities of some of their machines, subcontracting may give the solution.

On the other hand advantages to small industries are as follows.

1. Securing the market, especially when subcontracting is on long term bases.
2. By long term subcontracting, the small industries will obtain bigger profits which enable them to replace older machinery by the modern one and able to be specialized units with their greater efficiency.
3. Subcontractors usually have the chance in getting technical training in the contractor's plant by no charge, getting special tools and borrowing dies, etc.

Of course beside the advantages in subcontracting, there are also some time disadvantages exist. Delayed delivery, misuse of confidential

design and dies borrowed, etc. are some disadvantages faced by contractors, while delayed payments is the most difficult thing in view of subcontractors.

a. Subcontracting Agency

Among the weakness of small industries in getting sub-contracting from large/medium scale industries is the absence of institution linking both parties, and it is assumed to be the weakest point. This is why such institution seems to be very necessary to establish and come into the place of middlemen. The principle character of this organization might be a non profit organization, but it does not mean that all services extended to small industries in assisting of getting subcontracting with all the required preparation are always free of charge. Only in the beginning or early stage such service can be extended, but after they are benifited some charge must be borne. Services would be appreciated only when they have to be paid for. In the long run it is to be hoped that this organization would a able to operate with small subsidy.

On the other hand the existing small industries are generally not in the position and ready to receive subcontracting. Their machinery have to be improved, the management have to be settled, and even the mental attitude of the entrepreneurs itselves have to be prepared. So, promoting of subcontracting in Indonesia is not only a question of linking both parties, the small industries and the large/medium industries, but there are still so many preparation to be carried out.

The Subcontracting Agency has to work hand in hand with the existing service agencies as the BIPIK it self, the P P I K (Development Center of Small Scale Industries), the management of L I K (Mini Industrial Estate), the management of U P T (Technical Service Unit), KADIN (Indonesia Chamber of Industry and Commerce).

For these reasons the Subcontracting Agency has to be attached to one of those institutions, and it is believed that P P I K would be the most suitable one.
But the organization and the working procedures of P P I K itself still also has to be improved.

b. The organization structure

The internal organization structure of the P P I K itself in one region varies in certain extent with the others.
How the whole organization of the P P I K must be set up is actually beyond this study, but the division of Sections, including one Section of Sub-contracting Exchange are suggested as the following :

- The Section of Administration and House Keeping.
- The Section of Organization & General Management Assistance.
- The Section of (Production-Financial-Marketing-Personnel) Management Assistance.
- The Section of Technology Development & UPT (Technical Service Unit) Coordination.
- The Section of Market Promotion.
- The Section of Training
- The Section of Bank Relation Assistance (Account opening, Credit, Bank Guarantee, etc.)
- The Section of Sub-Contracting Exchange

In this way, the whole sub-contracting mission is actually in the first place in the hand of the Head of P P I K himself and be carried out by the Section of Sub-Contracting Exchange by the cooperation with the other sections, especially the Section of Technology Development & U P T, and the Bank Relation Assistance.

The head of P P I K has to secure the coordination and cooperation with the other institutions who also extending services to small industries as KADIN, MIDC, INKINDO, HTKI, LPPM, and etc.

Figure -III shows the suggested Organization Structure within the P P I K, and Figure IV is a typical existing organization scheme of P P I K. It needs to be noted that qualified staffing in knowledge and motivation followed by fairly remuneration are the key points of succes in carrying the sub-contracting mission.

c. The function of the Sub-Contracting Exchange Section

The general function of this section is to prepare small industries (in the first stage in automotive sector) to be ready in receiving sub-contracting from large/medium industries, linking/bringing together and promote sub-contracting.

The jobs in detail are as follows :

- To determine the line of product to be handled for sub-contracting, after having observed the most existing potential small industries in her region.
- To identify and select entrepreneurs liable for sub-contracting by certain creteria as follows :
  + not too old and in good health
  + basic education must be at least a Secondary School
  + having adequately managed small industrial unit in metal or plastics and rubber works, or having sufficient capital to be invested and developed in the small industry
  + having good motivation and aware of quality, delivery times, etc., and be willing to be guided and having good attitudes.
- To arrange and make continuous contact between large/medium scale industries (as Sole Agents, Assemblers in automotives, or parts/components manufacturers) and small industries, to look what parts/components could be subcontracted to the existing or prospective small industries.
- To prepare new units by preparing comprehensive feasibility study, and assisting the project management.

FIG. - III

SUGGESTED ORGANISATION STRUCTURE

OF P P I K

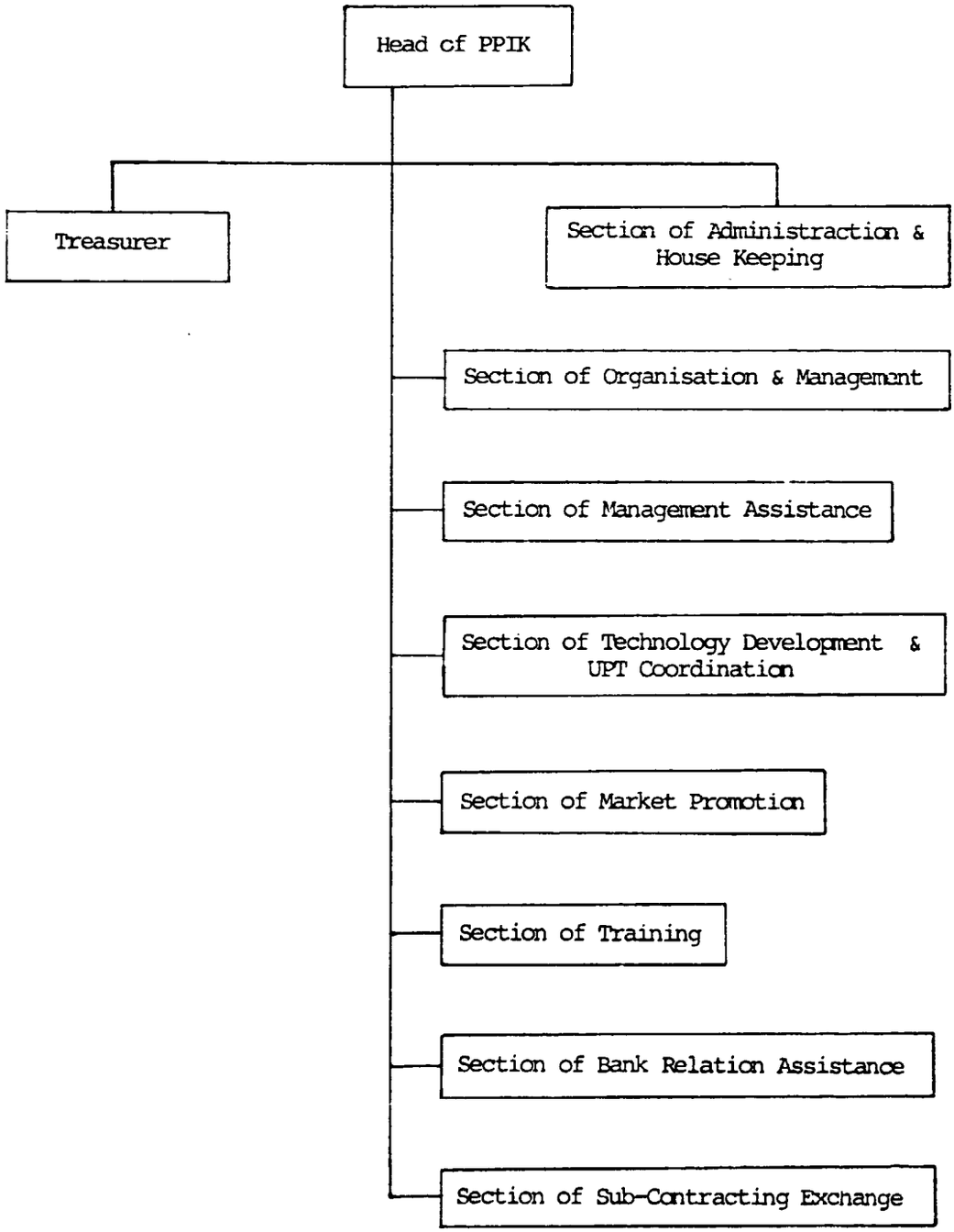
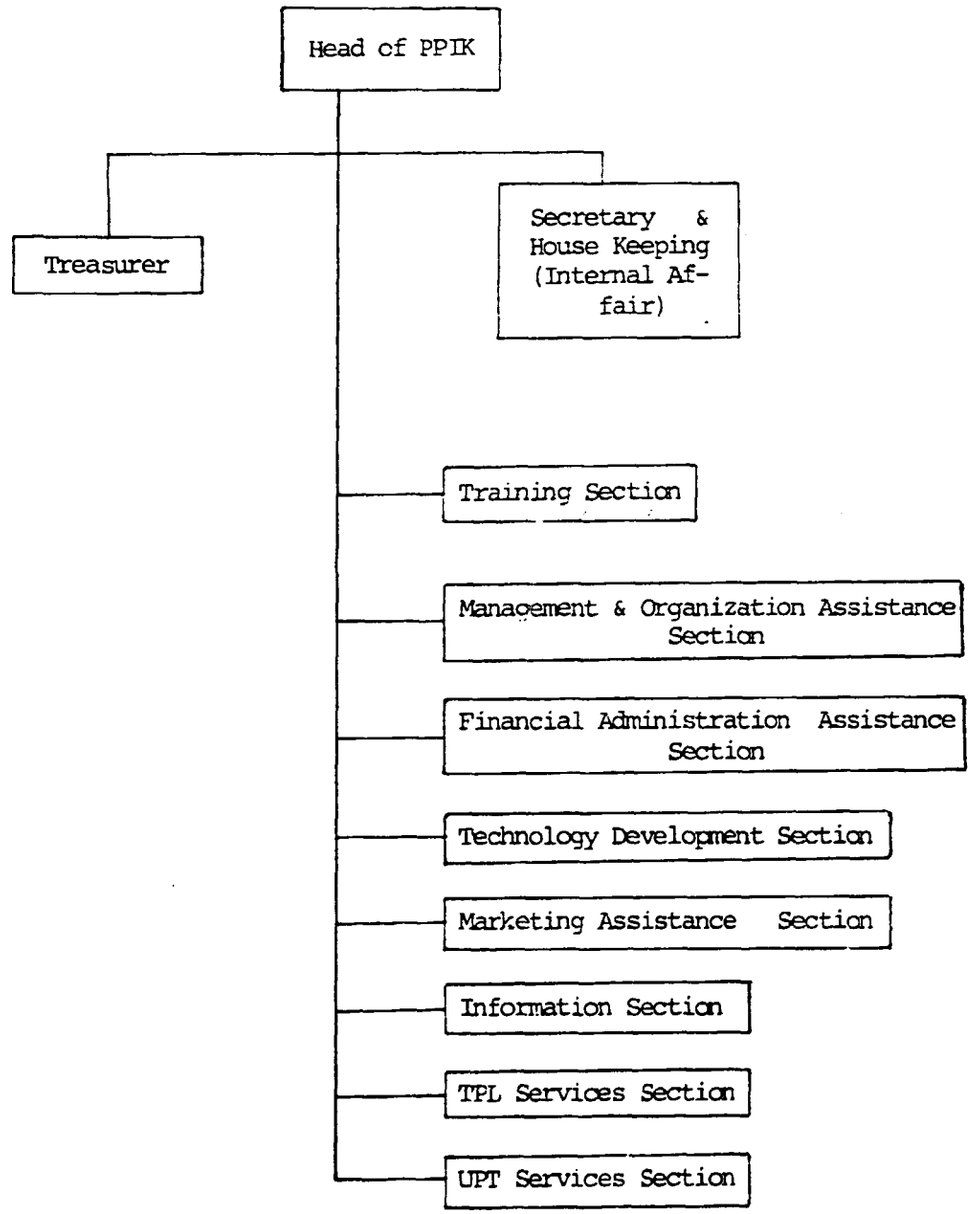


FIG. - IV

TYPICAL ORGANIZATION SCHEME

OF P P I K



- To cooperate with the sections of Technology Development & U P T Coordination and of Bank Relation Assistance, in preparing new units, credit application, and in evaluation of the required complementary or additional machinery for sub-contracting.
- Assisting Sub-Contract Agreement preparation which will include the specifications, volumes, pricing, delivery dates, provision of special tools and dies by contractors, terms of payments, and etc.
- To cooperate with the Section of Management Assistance to check the cost calculation they make, how should the processing be performed, the production planning be prepared, and how should they control the quality of products, and etc.
- If the subcontracting units are found in L I K, the Section of Sub-Contracting Exchange has to cooperate with the General Manager of L I K including the Managers of C S F (Common Service Facilities), I E S (Industrial Extension Service), and other sections giving estate's facilities.
- To cooperate with Regional KADIN especially to encourage the large/medium industries in giving sub-contracting to small industries, to solve emerging problems.

d. Other support measures that can be taken by other Government institutions

d.1. Support measures by L I K

In the aim and function of L I K, it is suggested that :

- LIK will allocate special area for small industries producing special product in the frame work of sub-contracting system.
- IES and CSF from LIK will cooperate with the Section of Sub-Contracting Exchange from PPIK and giving priority in extending services to perform subcontracting by small units found in LIK.

d.2. The utilization of Vocational Training Centers (B L K)

Department of Manpower has Vocational Training Centers spreaded over the whole country.

According to the agreement entered into between KADIN INDONESIA and Department of Manpower, these BLK-s may be utilized for entrepreneurship training. It means that the facilities in BLK can be utilized for training to produce certain product, so that intended small entrepreneurs would be able to operate their own machinery in the near future in producing the same product.
In the frame work of subcontracting program, those facilities can be also requested for labor training in performing certain process in the manufacturing of subcontracted goods.

d.3. Measures involving B K P M

Big investments of foreign capital as well as domestic capital required permits of B K P M (Capital Investment Coordinating Agency). This authority is suggested also to be used in encouraging subcontracting system, especially for automotive parts or components manufacturing.

Investors must show what kinds of parts or components would potentially made by small scale industries. Such kind of parts/components must not be included to be produced by their own establishment, and have to look for Indonesian partners, to establish seperate small industries in the frame work of subcontracting. The Indonesian partners can be suggested by BIPIK or PPIK from the selected existing industries or from the special prepared persons. Part of capital which is actually to be invested to produce those parts/components is suggested to be given as loan for establishing the small industries.
By this way Indonesian partners have only to prepare capital for the land, building, and other facilities, except the machinery and equipment.

d.4. Measures involving Government purchases

Government purchase can be used in encouraging subcontracting system in Indonesia. Suppliers have to report the local contents especially made by small industries. Goods with maximum local content are chosen to be purchased, even if the price 5 % to 10 % higher than the imported one or produced totally by large/medium industries.

By this way, if the goods purchased are for instance commercial cars, assemblers or sole agents will tend to prefer giving sub-contract to small industries.

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CONCLUSIONS

Automotive Sub Sector is indeed a particularly promising field for Subcontracting especially in the manufacturing of commercial vehicles including jeeps, and motor cycles. Passenger cars assembly gives only small possibilities for the time being, since there are not any deletion program yet fixed by Department of Industry. Local contents in commercial vehicles manufacturing by an average of about 48 % would be raised up to 100% actual total manufacturing at the latest time in year 1988, while motor cycles manufacturing from about 73 % would be raised up to 100 % actual manufacturing in 1987.

In the meantime passenger cars production would be only about 15 % of commercial vehicles.

The development of mini and hand tractors manufacturing seems to be still limited. During the last years there are not more than 5,000 units fabricated. Three wheel light motor transports manufacturing had been practically stopped.

At present all deleted parts/components are practically manufactured by large or medium scale industries. It is difficult to make an estimation the percentage of the whole volume of local contents which potentially can be made by small scale industries, but it can be said roughly to be about 40 %.

But at present small scale industries are not ready yet to perform subcontracting, except in body making. In this latter mentioned field, many parts and components are actually made by large and medium industries. Concerning this situation, there would emerge hard competition between small industries on one side and large/medium industries on the other side when subcontracting to small scale industries will be implemented within the near future.

If it is estimated that for the preparation and selection to start implementation of subcontracting will take 1-year time, and further development until the whole 40 % can be recovered by small industries will take the other 4-years, then during that time there is a chance in shifting that portion to small industries while large/medium scale industries have

opportunities to cover the increase of the other 60 % of local content or sell it to the free/replacement market.

In view of the production facilities small industries are not ready yet to take subcontracting from assemblers or sole agents, except only few of them. To accelerate the implementation of this subcontracting system in automotive sub sector, banks would have a very important role.
When according to the calculations made for the product mix. new units are required, it means that for the machinery and equipment only funds of US$. 103,500,000.- are required during 5-years, and 65 % of that volume or US$. 67,275,000.- might be the portion that banks have to extend for loan. Therefore banks must be always involved from the beginning in the implementation of subcontracting system.

Small industries' products which are accepted as Original Equipment Manufactured and used in the assembling plants may not be sold to the free market unless they pay the material import taxes, and may not use brands and packing as these are genuine parts. It is also impossible to get a kind of certificate to be printed in the packing. They have to sell under their own brand.
The only way they guarantee the quality is putting the SII No. (Indonesia Industrial Standard) if it exists, with all the consequences.
Such parts with variation of qualities and without No. of SII are now in circulation in the free (parts) market. Such products are not under the consideration of Subcontracting, and will be beyond this study.

The existing institutions supporting small scale industries and cooperatives are felt not so effective for the implementation of subcontracting system. Therefore certain organisation must be established by taking the existing supporting agencies into consideration.
Such organisation must operate dynamically, but on the other hand the use of funds must be well controlled since it will use public fund through the government. New Section of Subcontracting Exchange attached in PPIK would be the most suitable manner, since there are also other sections in P P I K dealing with soft ware as well as hard ware services. But anyhow coordination and cooperation with other Government service agencies, especially with L I K, must also get the priority.

Solution of subcontracting problems at the national level must be performed by BIPIK.

Involving Vocational Training Centers of Department of Manpower will also be a great help.

Other measures involving B K P M (Capital Investment Coordinating Agency) will help in promoting subcontracting system and also help financial problems.
Also, conditions of the obligation of local content in goods purchased by Government will indeed have a great influence in promoting subcontracting.

New units of small scale industries required as mentioned above are based on rough calculations according to the processes certain parts or components have to be produced and what kind of machinery and equipment have to be used.
Detailed calculations have still to be made. It is recommended that for each. unit with its product mix, a project profile would be made.
Such profile will contain briefly the specification of the investment and its value as land, building, machinery & equipment, installation, utilities, office equipment, etc., financial and economical calculations as the loan required, equity provided, cost calculation, profit and last statement and cash flow.

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Groups of Auto Sole Agent/Franchise Holders and Assemblers

Sole Agent	Assembler	Assembled Car			Annual Capacity
		Make	Model	Category	(one shift)
Group I					
P.T. Djakarta Motor	P.T. I.S.C.	AMC Dodge TATA	CJ Series D.500/ PD600 Advenger 1210	Multi-purpose Passenger III	4,000
P.T. Daha Motor	P.T. I.S.C.	Fiat	131	Passenger	
P.T. IPMC	P.T. I.S.C. P.T. National Assoc.	Ford Ford Ford	DO. 910 Lazer Corina	III Passenger Passenger	
P.T. Java Motor	P.T. National Assoc.	Leyland Landrover Morris	11.OOD Deck Reg.88 Mini 100	III Multi-purpose Passenger	
P.T. National Motor	P.T. National Assoc.	Mazda Hino Suzuki	M.300 323 616 KR/BM Jimmy	II Passenger Passenger III Multi-purpose	15,000
Sub Total					19,000

Sole Agent	Assembler	Assembled Car			Annual Capacity
		Make	Model	Category	(one shift)
Group II					
P.T. Indauda	P.T. Udatin	Holden	Kingswood	Passenger	12,000
			Gemini	Passenger	
			Sunbird	Passenger	
		Isuzu	TLD 54	II	
P.T. Pantja Motor	P.T. Pantja Motor	Isuzu	KAD 51	I	4,200
	P.T. Masayu	Isuzu	TKD 40	III	
P.T. Garmak Motor	P.T. Garmak Motor (Jakarta & Ujung Pandang)	Chevrolet Luv	KB/KBD Series	I	20,000
P.T. Pamos	P.T. Pamos	Steyr	590	III	300
Sub Total					36,500
Group III					
P.T. Imer U.D Motor	P.T. Imer Motor	UD Nissan	CK 106	III	9,040
P.T. Indokaya Nissan Motor	P.T. Zastam	Nissan Datsun	GN. 620	I	
			Patrol	Multi-purpose	
			SENA	Utility	
			120 Y	Passenger	
			180 E	Passenger	
			280 C	Passenger	
Sub Total					9,040

Sole Agent	Assembler	Assembled Car			Annual Capacity
		Make	Model	Category	(one shift)
Group IV					
P.T. Star Motor Indonesia	P.T. German Motor Mfg.	Mercedes	911/051113 200 240 280	III Passenger Passenger Passenger	15,360
P.T. Garuda Mataram Coy.	P.T. German Motor Mfg.	Volks-wagen	Type II Safari Golf S/LS	I Multi-purpose Passenger	
Sub Total					15,360
Group V					
P.T. Toyota Astra Motor	P.T. Multi Astra	Toyota	Hiace DA Land-Cruiser Kijang Corola Corona Crown	I III Multi-purpose Utility Passenger Passenger Passenger	80,000
Sub Total					80,000

Sole Agent	Assembler	Assembled Car			Annual Capacity
		Make	Model	Category	(one shift)
Group VI					
P.T. Kramayudha Berlian Motor	P.T. Kramayudha Berlian Motor	Mitsubishi	GLT L300 F6 101/111	I II	60,000
	P.T. Permorin	Mitsubishi	Colt Mini Car	Utility	3,600
	P.T. ISMAG	Mitsubishi	Galant	Passenger	6,000
	P.T. Kramayudha Majapahit Motor	Mitsubishi Lancer	Fuso BM,FM Lancer	III Passenger	50,000
Sub Total					119,600
Group VII					
P.T. I.M.C.	P.T. I.M.C.	Aro	Aro	Multi-purpose	1,200
P.T. Alun	P.T. Alun Indah	Citroen Berliet	GS Van GX Pallas JP 9	I Passenger III	1,500
P.T. Imora Motor	P.T. Prospect Motor	Honda	Civic Accord	Passenger Passenger	6,000
P.T. Indo Mobil Utama	P.T. Indo Mobil Utama P.T. National Assoc.	Suzuki Suzuki	ST. 20 Jimmy	I Multi-purpose	7,200
P.T. Central Sole Agency	P.T. Ismac	Volvo Mitsubishi	D.610 244 264 Gallant	III Multi-purpose Passenger Passenger	3,500
Sub Total					19,400

Sole Agent	Assembler	Assembled Car			Annual Capacity
		Make	Model	Category	(one shift)
Group VIII					
P.T. Astra Int. Inc.	P.T. Gaya Motor	Daihatsu	S.10P Taft	I	18,000
			Charade	Passenger	
		Peugeot	504	Passenger	
			604	Passenger	
		Renault	18 TL	Passenger	
Sub Total					18,000
T o t a l					256,000

Notes : Category I = Weight 3/4 - 1 ton
Category II = Weight 2 - 2-1/2 tons
Category III = Weight 3-1/2 - 5 tons

(Source : Directorate General of Basic Metal Industries)

ANNEX - B

SOLE AGENTS AND/ OR ASSEMBLERS OF MOTOR CYCLES

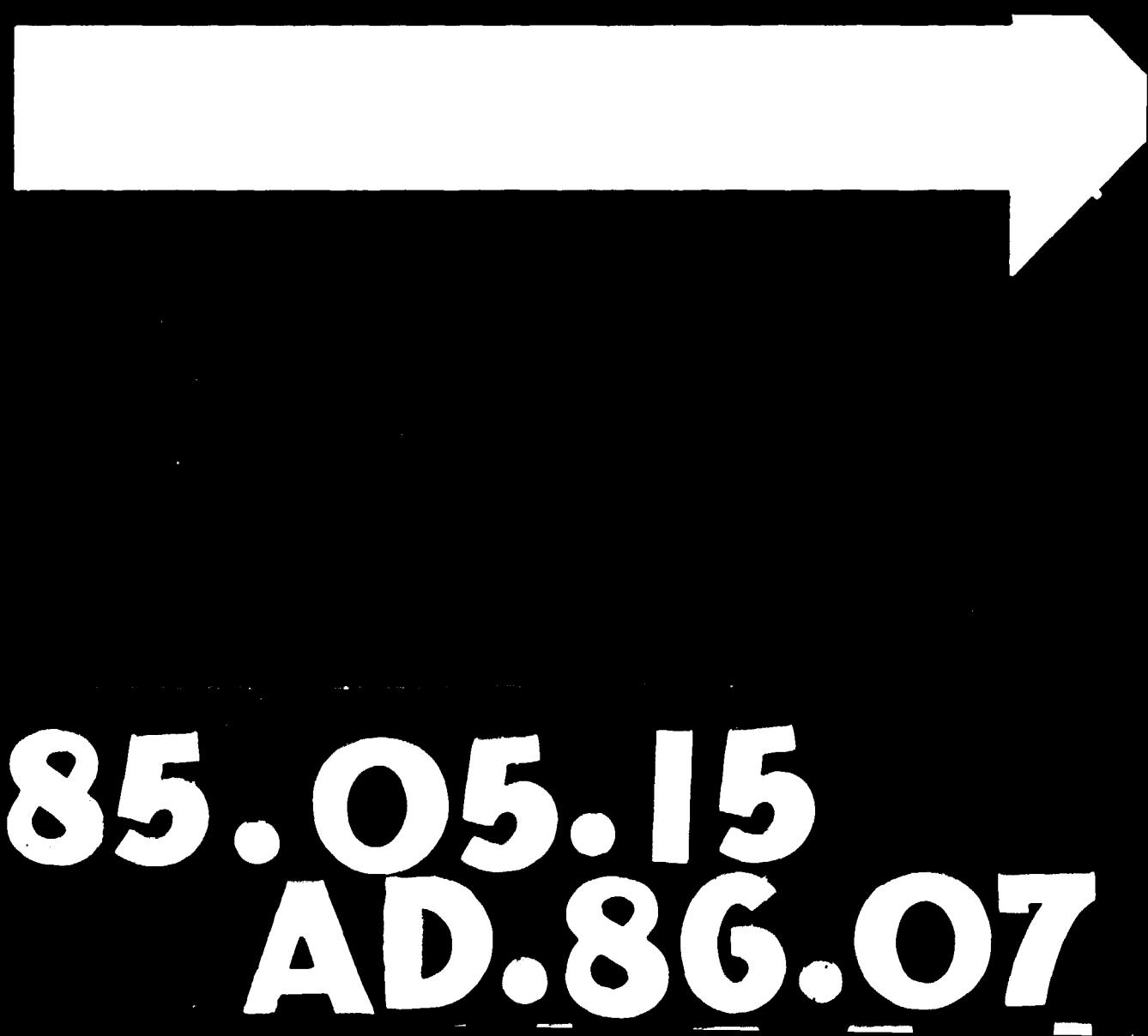
Name of Company	Franchise Holder
1. P.T. Federal Motor	H o n d a
2. P.T. Honda Federal	H o n d a
3. P.T. Dan Motors	V e s p a
4. P.T. Indohero	S u z u k i
5. P.T. Suzuki Indonesia	S u z u k i
6. P.T. Harapan Motor	Y a m a h a
7. P.T. Yamaha Indonesia	Y a m a h a
8. P.T. Insan Appolo	Kawasaki (Inactive)
9. P.T. Tunas Bekasi Motor	Bajaj & Binter (Kawasaki)
10. P.T. Hada Indonesia	H. D. (Harley Davidson)

PARTS AND COMPONENTS ITEMS POTENTIALLY MADE BY SSI (COMMERCIAL VEHICLES)

No.	Name of Parts or Components	No. of Pcs/Unit
1.	Overhaul gasket (engine and etc.)	10
2.	Oil filter assy	1
3.	Fan & water pump	
	- Hose	2
	- F a n	1
	- Pump assy	1
	- Pulley	1
4.	Air cleaner	
	- Housing	1
	- Element	1
	- Hose & tubes	4
5.	T/M Clutch control	
	- Shaft for clutch fork	1
	- Fork	1
6.	Brake and Clutch pedal	
	- Pedal for clutch	1
	- Pedal for brake	1
7.	Operating Hardware	
	- Door locking system	4
	- Fuel filler lid hardware	1
	- Window regulator	4
8.	S e a t	
	- Seat frame	3
	- Seat cover	3
9.	Equipment	
	- Coat hanger	4
	- Sunvisor	2
	- Mirror	3

No.	Name of Parts or Components	No. of Pcs/Unit
	- Arm rest & pull handle	4
	- Mud guard	4
10.	Chassis Electrical	
	- Horn	2
	- Housing for lamps	4
	- Wiper (without motor)	1
	- Window washer	1
	- Wiring attaching parts	1
	- Relay	1
	- Fesher unit	1
11.	Bracket (Engine mounting)	2
12.	Radiator shroud	1
13.	Fuel tank cap	1
14.	Fuel line	
	- Tube (metal)	1
	- Strainer	1
	- Support	4
15.	Exhaust pipe & muffler	
	- Pipe	2
	- Suspender	2
	- Muffler	1
16.	Engine control	
	- Cable for choke	1
	- Lever assy	1
	- Pedal assy	1
17.	Clutch Control	
	- Cable clutch	1
	- Protector (press work)	1
18.	Gear shift control	
	- Knob	1
	- Change lever	1

No.	Name of Parts or Components	No. of Pcs/Unit
	- Bracket	1
	- R o d	1
19.	Center cap for axle	4
20.	Standard tools	
	- Jack assy	1
	- Handle	1
	- Wheel replacement tools	2
21.	Spare tire holder	1
22.	Universal parts	
	- Clamps	10
	- Hinges	10
	- P i n s	1 lot
	- Busher for chassis parts	20
	- Small coil springs	10
	- Washers	1 lot
	- U Bolts	4
	- Shims/plates (arm adjuster)	20
	- Hose clips	4
	- Screws bolts/nut	1 lot
	- Nipple grease	5
	- Catch assy	2
	- Packing	1 lot
23.	Universal Rubber, Plastic parts	
	- Rubber pad, pedal	2
	- Cover dust	4
	- Plugs	1 lot
	- Grommet	4
	- Wheather strips	6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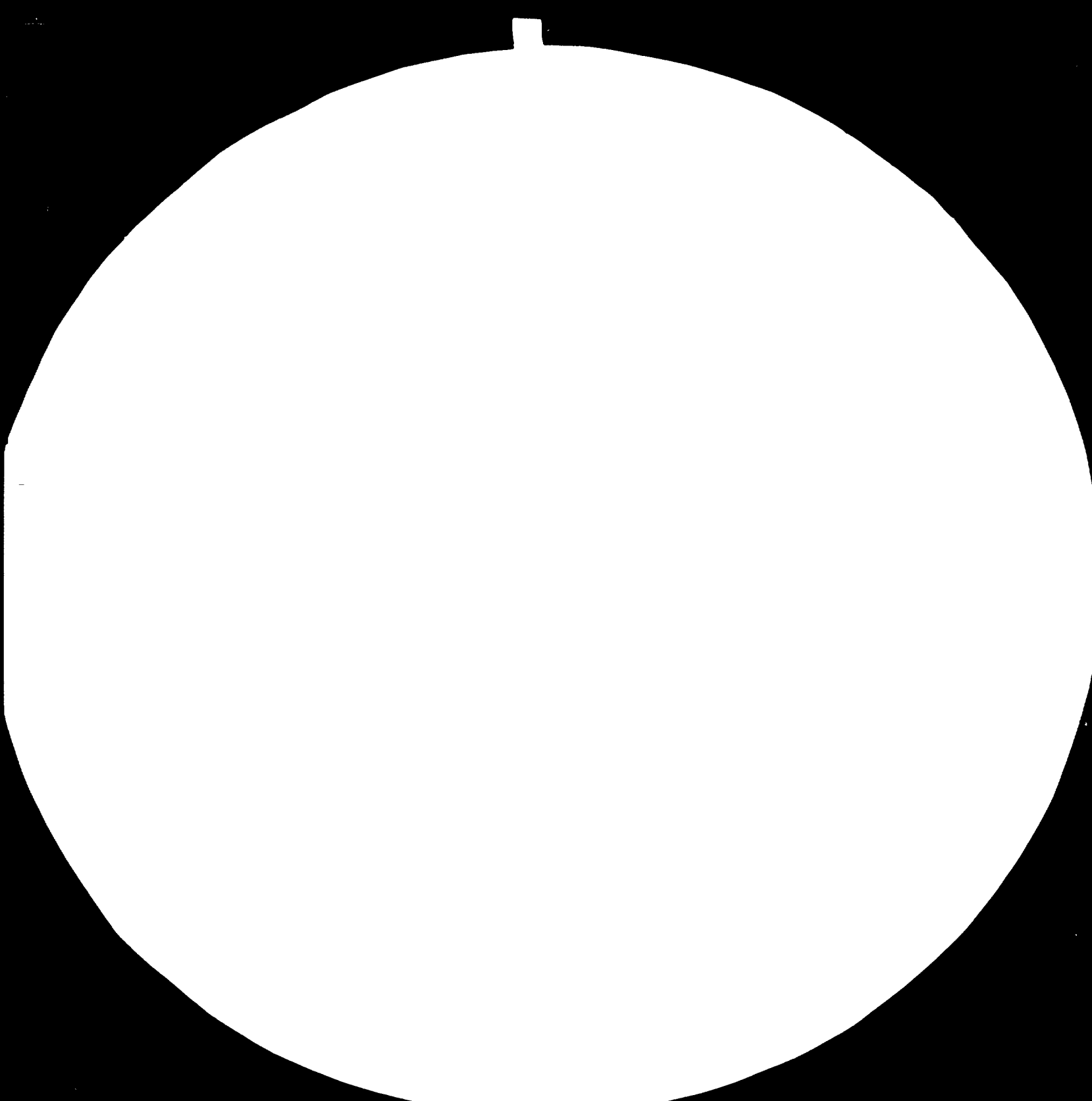

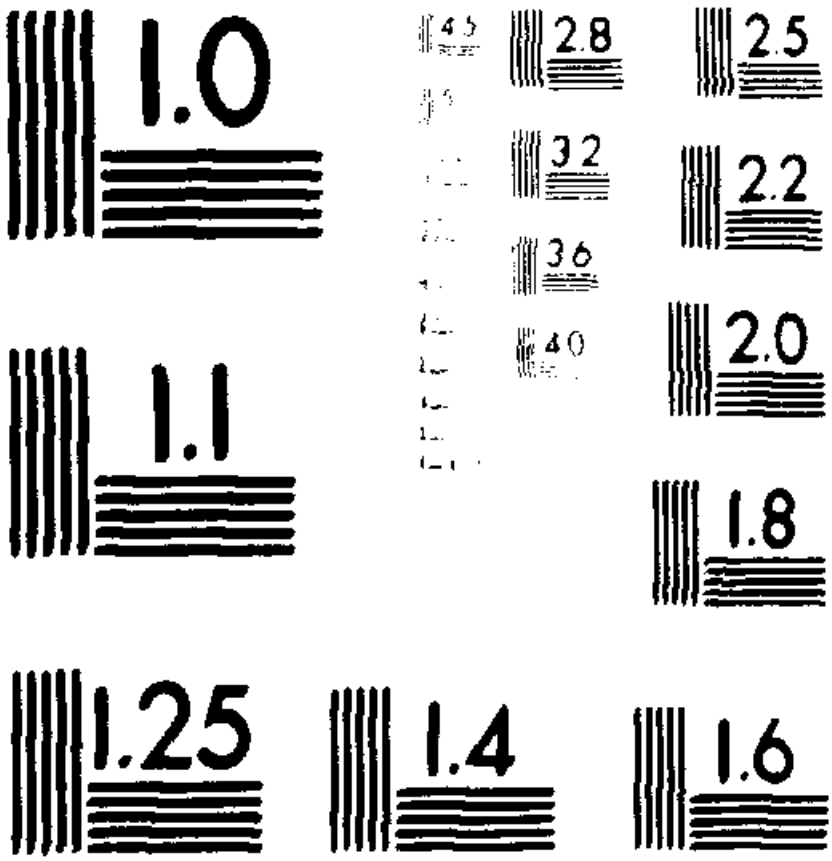

PARTS AND COMPONENTS ITEMS POTENTIALLY MADE BY SMALL SCALE INDUSTRIES (MOTOR CYCLE)

Group	Parts/Components Items	No. of Pcs/Unit
I	- Cables (brake, throttle, choke, starter, clutch)	5
	- Flexible shaft (speedo meter, tachometer)	2
	- Steering stem	1
	- Handle (clutch, brake)	2
	- Fenders	2
	- Mirrors, rear view (housing)	2
	- Lamps, (housing & ring)	6
	- Flasher & relay	2
	- Horn assembly	1
	- Front luggage carrier	1
	- Grips (frame, handle)	2
	- Ridge (engine bonnet)	1
	- Beading (engine bonnet)	1
	- Cap (front fork)	2
II	- Wheel rim	2
	- Axle and nuts	2
	- Flange for wheel	2
	- Spoke & Nipple	64
III	- Fuel tank	1
	- Seat frame	1
	- Cap, fuel tank with lock	1
IV	- Stands (main/side)	1
	- Foot rest/step bar	4
	- Chain case	1
	- Exhaust pipe/muffler & bracket	1

Group	Parts/Components Items	No. of Pcs/Unit
	- Oil filter	1
	- Gear shift lever	1
	- Spindle, kick starter	1
V	- Covers (frame side, under seat)	2
	- Wire harness	1
	- Boxes (oil tank, battery, tools)	3
	- Oil measuring cap	1
	- Fuel filter & cock	2
	- Air filter	1
	- Cap, air cleaner	1
VI	- Non critical rubber/plastic parts : Seat cover, foot rest, mud guard. tire flap, covers, hose, caps, plug.	1 - lot
VII	- Universal parts: (packing, clamps, handles, levers, gaskets, stop-pers, holders, brackets)	1 - lot

PARTS AND COMPONENTS ITEMS POTENTIALLY MADE BY SMALL SCALE INDUSTRIES (HAND TRACTOR)

No.	Name of Parts or Components	No. of pcs/unit
	I. MAIN CLUTCH GROUP	
1.	Pulley, main	1
2.	Cover, clutch pulley	1
3.	Packing	1
4.	Cover, bearing	1
5.	Springs	10
6.	Cover, rubber	1
	II. CHANGE GROUP-1	
1.	Shaft, fork	3
2.	Spring, stopper	3
3.	Pin, split	4
4.	Rod, shift change	1
5.	Packing	1
6.	Band, pipe	1
7.	Assy holder	1
8.	Supporter, holder	2
	III. BRAKE GROUP	
1.	Shoe, brake	2
2.	Spring, shoe return	1
3.	Drum, brake	1
4.	Parking, brake cover	1
5.	Cover, brake	1
	IV. HANDLE GROUP	
1.	Guide plate, clutch	1
2.	Plate, fitting	1

No.	Name of Parts or Components	No. of pcs/unit
3.	Plate, c.s. guide	1
4.	Handle, hand side	2
5.	Grip, handle (rubber)	2
6.	Rubber, handle	2
7.	Band, wire	2
8.	Handle, (auxiliary)	1
	V. LABEL GROUP	
1.	Name plate	3
2.	L a b e l s	6
	VI. FRONT FRAME GROUP	
1.	Hitch	1
2.	Stand	1
3.	Coil spring, stand	1
4.	Protector	1
5.	Magic bar	1
6.	Stopper	2
	VII. TENSION PULLEY GROUP	
1.	Pulley, tension	1
2.	Collar, tension	1
3.	Cover, tension	1
4.	Assy arm, tension	1
5.	Supporting tension	1
6.	Shaft, tension	1
	VIII. SUB CHAIN CASE GROUP	
1.	Rubber, plug	1
2.	Name, plate	1
3.	Packing	1
4.	Tightener	1

No.	Name of Parts or Components	No. of pcs/unit
	IX. ROTARY CASE GROUP	
1.	Packings	5
2.	Cover bearing	1
3.	Cover rotary case	1
4.	Cover, shaft blade	1
5.	Cover, dust proof	2
6.	Collar, blade shaft	2
7.	Spring, tightener	1
8.	Plug, oil filler	1
	X. ROTARY COVER GROUP	
1.	Holder, hitch seat	1
2.	Plug, ridger bracket	1
3.	Assy apron	1
4.	Assy bolt, ridger	1
5.	Plate, fitting	1
6.	Cover, lower	2
7.	Plate, supporting	4
8.	Cover, supporting	2
	XI. SIDE COVER GROUP	
1.	Cover, side	2
2.	Cover, mud guard	2
3.	Cover protecting (rubber)	1
4.	Shaft, fullrum	1
5.	Stay, handle	4
	XII. REAR WHEEL GROUP	
1.	Grip, rear wheel	1
2.	Handle, rear W.	1
3.	Cover	1
4.	Packing	1

No.	Name of Parts or Components	No. of pcs/unit
5.	Collar	1
6.	Screw rod, Rr wheel	1
7.	Rear wheel	1
	XIII. MOUNTING PARTS GROUP	
1.	Wire, release	1
2.	Lever, release	1
3.	Weight	2
4.	Bracket, engines	2
	XIV. ATTACHMENTS	
1.	Puddling wheel	1
2.	Plowing wheel	1
3.	Plow	1
4.	Ridger	1
5.	Floating wheel	1
6.	Wet Field wheel	1
7.	Rake/Leveler	1
8.	Universal Hitch	1
9.	Tail Skid	1
10.	Trailer	1

PRODUCTION CAPACITIES AND PRODUCTION VOLUMES OF LARGE AND MEDIUM SCALE INDUSTRIES PRODUCING PARTS/COMPONENTS OF AUTOMOTIVE

No.	Name & Location of Company	Types of product	Unit	Production Capacity/ annum	Production Volume	
					1983	%
1	2	3	4	5	6	7
1.	PT. Indonesian Service Company (I.S.C.), Jakarta	- pipes - springs - muffler - accessories - pressing - tubing		not in production		
2.	PT. I.M.C. Jakarta	- spark plug - ignition coil - electrical parts - dump truck/body	pcs pcs unit	not in production		
3.	PT. Wijaya Buana, Jakarta			bankrupt		
4.	PT. Superior Ccach Indonesia, Jakarta	- trailer - dump body - flat bed - chassis - tipper body - kijang body - fuel tank	unit unit unit unit unit unit set	Commercial vehicles carrouseries total : 1,200 unit per annum		
5.	PT. Purna Sadhana, Jakarta	- chassis - fuel tank - body - muffler - jig	unit set unit set set	) n.a.) n.a.) n.a. 180,000	n.a.	
6.	PT. Inkoasku Ltd., Manado	- wheelrim - chassis - body	pcs unit unit	1,200,000) n.a.) n.a.	n.a.	
7.	PT. Ionuda, Sidoarjo	- exhaust pipe - shock absorber - muffler/assy - tail pipe - resonator	 unit set 	100,000 36,000) n.a.) n.a.	n.a.	

1	2	3	4	5	6	7
8.	PT. Intryda Sidoarjo	- separator accu - plate	pcs pcs	42,000,000 2,700,000	n.a.	
9.	PT. Mitsubishi Krama Yudha Motors & Mfg. Jakarta	- fuel tank - muffler - cross members) - cowl components) - rear body compon-) ents - chassis components - cabin) - door panel) - rear panel) - front panel) - roof panel) - front floor panel) - instrument panel) - side structure) panel)	pcs set pcs	8,000 30,000 n.a. 5,000 12,000 n.a.	n.a. n.a. n.a. n.a.	
10.	CV. Auto Diesel Radiators Co., Jakarta	- Radiator ADR (mobil & diesel) - fuel tank - muffler & exhaust pipe - filter housing	pcs	60,000 24,000 120,000 n.a.	25,000 15,600 30,000 n.a.	42 65 25
11.	PT. Asahimas Jaya Safety Glass Co. Ltd. Jakarta	- flat tempered) safety glass,) - Bend tempered) safety glass &) - Heat lite-P.)	m2/3 shift	600,000	300,000	50
12.	PT. Baninusa Indonesia, Bandung	- Piston ring (mobil & motor) - Cylinder kit) - Piston kit) - Air clutch) - Multi disc.)		4,500,000 pcs per annum n.a.	2,161,000 n.a.	48
13.	PT. Telaga Herang, Bogor	- Body/carrouseries) - Component body)		n.a.	n.a.	
14.	PT. Kayaba Indonesia	- Shock absorber for automobiles - Front fork & oil cushion unit for motor cycles		1,240,000 180,000 780,000	888,000 80,000 563,000	72 44 72

1	2	3	4	5	6	7
15.	PT. Roda Jaya Spring, Surabaya	- Automotive leaf-spring	pcs	20,000 pcs per annum	3,570	18
16.	PT. Toyota Mobilindo, Jakarta	- Components for Toyota Kijang & Hi - Ace :				
		frame)				
		cabin)body & seat	unit	50,000	27,783	55
		deck)				
		fuel tank	set	50,000	27,920	56
		seat)				
		low side deck)body				
		deckless) &		n.a.	n.a.	
		sub assy)seat				
		seat assy)				
		- Muffler	set	30,000	11,512	38
17.	PT. Nippondenso Indonesia Inc., Jakarta	- Spark plug	pcs	10,000,000		
		- A C	set	10,000		
		- Radiator	set	500,000		
		- Oil filter	pcs	500,000		
		- Air filter element	pcs	500,000		
18.	PT. Showa Indonesia Mfg. Jakarta	- Shock absorber :	set	400,000	172,560	43
		- front fork & oil	set	300,000	34,020	11
		cushion motor cycles				
19.	PT. Boma Bisma Indra, Surabaya	- Cyclinder liner)				
		- Connecting rod)				
		- Fly wheel)				
		- Fly wheel housing)	not	for automotive		
		- Gears)				
		- Rocker arm brackets		n.a.	n.a.	
		- Pulleys)				
		- Diesel motor for)				
		automotive, ships)				
		stationair genset.)				
20.	PT. Imora Honda Inc., Jakarta	- Component motor)				
		cycle ;				
		- Component mobil)				
		- Muffler/silencer)		n.a.	n.a.	
		- Fuel tank)				
		- Air filter housing)				
		complete)				
21.	PT. Pantja Motor, Jakarta	- Dump truck)				
		- Body minibus)		n.a.	n.a.	
		- Fire fighting truck				

1	2	3	4	5	6	7
22.	PT. Sagitarius Sari, Karawang	- Rear/body - Fuel tank - Air, fuel & oil filters - Components Colt-Mitsubishi - Jigs - Seat for truck & pick-up : seat complete) seat front) seat rear)	unit set pcs set	3,000 5,000 1,500,000 n.a. 30,000 n.a.	5,698 269 26,913 n.a. 7,739 n.a.	10 - 1.8 25
23.	PT. Amalga Corp. Ltd. Jakarta	- Body/carrousery) - Component)		n.a.	n.a.	
24.	PT. Meiwa Indonesia, Jakarta	- Seat cover - Mat floor - Head lining - Door trim - Mud guard - Seat frame - Sun visor	pcs pcs pcs pcs pcs pcs pcs	240,000 360,000 360,000 1,200,000 30,000 240,000 15,000		
25.	PT. Tri Satria Utama	- Automotive leaf-spring	pcs	200,000	84,200	-
26.	PT. Indospring	- Automotive leaf-spring	pcs	250,000	172,827	69
27.	PT. NGK Busi Indonesia, Jakarta	- All type of spark plug for combustion engine, except for aircraft and glow-plug	pcs	7,280,000	n.a.	
28.	PT. Megah Ampuh, Surabaya	- Bus body) - Dump truck) - Plat form) - Ambulance) - Lorry) - Cotainer) - Trailer) - Fuel tank) - Minibus) - Tipper body) - Lift motor cycle) - Components :) plate, chassis, jigs, cabin)		n.a.	n.a.	

1	2	3	4	5	6	7
29.	PT. Batarasura Bekasi	- Radiator - Diesel generating set	unit	40,000 unit per annum		
30.	PT. Muaratewe Spring Jakarta	- Automotive leaf-spring	pcs	120,000	60,000	50
31.	PT. Eka Swastya Jakarta	- Brake shoe motor cycle & scooter - Brake disc motor cycle - Brake disc (Toyota Corolla/Corona) - Disc plate	pcs pcs 	780,000 72,000 72,000	n.a. n.a. n.a.	
32.	PT. Cipta Saksama Indonesia, Jakarta	- Muffler) - Exhaust pipe) - Tile pipe complete)	set	3,000	n.a.	
33.	PT. Inoue Rubber Indonesia, Jakarta	- Rubber component) for cars & motor) cycles) - Roll rubber) - Rubber joint ring) etc.)		n.a.	n.a.	
34.	PT. Lippo Tsk (Ind) Ltd. Jakarta	- Cable control : clutch cable tachometer cable throttle cable choke cable brake cable speedometer cable	 pcs pcs pcs	 1,500,000 pcs n.a. 1,500,000 pcs n.a. 1,500,000 pcs n.a.	 n.a. n.a. n.a.	
35.	PT. Nippon Cable System Inc.,	- Choke cable - Bonnet cable	pcs pcs	150,000 pcs 150,000 pcs	n.a. n.a.	
36.	PT. Andni Chandra Automotive Products, Jakarta	- Oil filter) - Air filter/cleaner) - Fuel filter)		n a.	n.a.	
37.	PT. Armada Indah Agung Glass, Magelang	- Tempered safety glass for automobile and architecture.	m2	384,000 2-shifts	86,000	22

1	2	3	4	5	6	7
38.	PT. Sanoh Indonesia, Jakarta	- Brake/fuel tube for automobile : + brake pipe) + wire condenser) + frame pipe) + inner division pipe)	sets	Total 250,000 n.a.	n.a.	
39.	PT. Sinar Lawang Indah Jakarta	- Auto bulb - Auto muffler & pipe - Brake shoe - Oil filter	pcs sets pcs pcs	2,000,000 7,000 30,000 150,000		
40.	PT. Menara Alam Teknik, Jakarta	- Services : + GS battery) + KYB shock absorber) + CHKK leaf spring TSU)		n.a.	n.a.	
41.	PT. M.G. Jaya Bekasi	- Seat for motor cycles & automobiles.) Body shell Switches - Body panels :) + pad instrument) + center panel) + parcy tray) + head lining) + sunvisor) + arm rest) + bumper front) + grille) + moulding) + transmissi cable) + reflector)		n.a.	n.a.	
42.	PT. Purna Kadera, Jakarta	- Seat for automobiles)	pcs	n.a.	n.a.	
43.	PT. Edico Utama Jakarta	- Piston) - Cable)	pcs	n.a.	n.a.	
44.	PT. Bakrie Tosanjaya,, Jakarta	- Pipe fitting & general casting) - Automotive casting: + brake drum) + spring bracket) + exhaust manifold) + wheel hub)		n.a.	n.a.	

1	2	3	4	5	6	7
45.	PT. Pamos Ltd. Ujung Pandang	n.a.		n.a.	n.a.	
46.	PT. Palinda Nasional, Jakarta	- Wheel rim for commercial vehicles Category II & III/a multipurpose	pcs	650,000		
47.	PT. Daihatsu Indonesia Jakarta	- Component Cabin Category I - Chassis - Fuel tank - Exhaust p.& mufflers	unit unit pcs pcs set	16,000 12,000 12,000 2,000		
48.	PT. Bintang Central Cahaya Company, Jakarta	- Component parts commercial vehicles		n.a.	n.a.	
49.	PT. Pamindo Tiga T.	- Muffler) - Fuel tank) - Chassis) - Cabin) - Rear body)		n.a.	n.a.	
50.	PT. Icco Murni Indonesia	- Automotive components (Vespa, Honda, Citroen).	Al die casting (Kg) Tube of brass (bs)	150,000 221,000		
51.	PT. P.I.M.S.F.	- Gear Spare parts : + pully) + nipple) + pen) + shaft) + brake drum) + etc.)		n.a.	n.a.	
52.	PT. Ambarukmo Bulzano Motor, Jakarta	- Exhaust system - Packing - Fuel tank	set pcs set	30,000 n.a. 5,000	)) n.a.)	

1	2	3	4	5	6	7
53.	CV. Suyatin & Co., Jakarta	- Outer cable - Clutch cable - Brake cable - Gear change cable - Speedometer cable		292,000 3,216,000 1,092,000 1,728,000 1,740,000	n.a.	
54.	PT. Utama Raya Motor, Tangerang	- Spion mirror - Platina - Cable - Chain case - Helmet - Starter - Fender - Switches - Sign lamp. (housing) - Brake shoe - Handle - Arm kick starter.		n.a.	n.a.	
55.	PT. Felicity Industrial Jakarta	- Spoke - Nipples	gross gross	185,000 185,000	n.a.	
56.	PT. Inticycle Industry, Jakarta	- Spoke - Nipples	gross gross	175,000 175,000		
57.	PT. First Chemical Industry, Jakarta	- Cover frame - Lamp. assy.		n.a.	n.a.	
58.	PT. Rey Etrika	- Wire harness - Silicon diode	sets unit	60,000 30,000		
59.	PT. Agricon Tambun Jakarta	- Seat frame		n.a.	n.a.	
60.	PT. Budhi Dharma Eng. Surabaya	- Body - Component part		n.a.	n.a.	
61.	PT. Yamaha Indonesia Motor Mfg., Jakarta	- Component parts	pcs	n.a.	n.a.	
62.	PT. Suzuki Indonesia Mfg. Jakarta	- Component parts*)	unit		n.a.	

*) See following list.

Component/Parts made by P.T. SUZUKI INDONESIA Mfg. Jakarta

1.	Body comp muffler	150,000 pcs
2.	Hub set front	150,000 pcs
3.	Hub set rear	156,000 pcs
4.	Panel set front	150,000 pcs
5.	Panel set rear	150,000 pcs
6.	Carrier fron'.	75,000 pcs
7.	Rod carrier	75,000 pcs
8.	Pedal comp brake	150,000 pcs
9.	Handle bar comp	150,000 pcs
10.	Handle pillion sider	150,000 pcs
11.	Pipe comp exhaust	150,000 pcs
12.	Rim wheel front rear	150,000 pcs
13.	Pipe comp buffle	150,000 pcs
14.	Bar pillion footstres	150,000 pcs
15.	Bar pillion footstres	150,000 pcs
16.	Holder pillion footstres	250,000 pcs
17.	Washer pillion footstres	250,000 pcs
18.	Nut pillion footstres	250,000 pcs
19.	Pin pillion footstres	250,000 pcs
20.	Axle front	125,000 pcs
21.	Axle rear	125,000 pcs
22.	Nut axle	125,000 pcs
23.	Chain adjuster, R	125,000 pcs
24.	Chain adjuster, L	125,000 pcs
25.	Front fork assy	75,000 pcs
26.	Fender comp rear	150,000 pcs
27.	Chain case	150,000 pcs
28.	Stand comp center	150,000 pcs
29.	Stand comp prop	150,000 pcs
30.	Bar front footstres	150,000 pcs
31.	Molding seat front	150,000 pcs
32.	Swinging arm	150,000 pcs
33.	Frame comp	150,000 pcs
34.	Fuel tank comp set	150,000 pcs
35.	Bass rear swinging arm	150,000 pcs
36.	Bass brake pedal	150,000 pcs
37.	Dust seal steering upper	150,000 pcs
38.	Gear sprocket rear	150,000 pcs
39.	Fender comp front	150,000 pcs

1	2	3	4	5	6	7
63.	PT. Tunas Bekasi Motor, Jakarta	- Component parts		n.a.	n.a.	
64.	PT. Friendship Auto Spring, Jakarta	- Auto spring		n.a.	n.a.	
65.	PT. Gapura Metal Work Jakarta	- Seat frame		n.a.	n.a.	
66.	PT. German Motor, Jakarta	- Seat frame		n.a.	n.a.	
67.	PT. Icco Murni Indonesia Jakarta	- Component parts		n.a.	n.a.	
68.	PT. Jaya Fiber Glass, Jakarta	- Fibre glass		n.a.	n.a.	
69.	PT. Karya Sarana Kereta Jakarta	- Seat frame		n.a.	n.a.	
70.	PT. Megah Tehnik, Jakarta	- Seat frame		n.a.	n.a.	
71.	NV. Marwa Motor Bandung	- Body component		n.a.	n.a.	
72.	FA. Nofa Surabaya	- Air & oil) - Filters)		n.a.	n.a.	
73.	PT. Sinar Logam Jakarta	- Roll bar) - Fibre glass)		n.a.	n.a.	
74.	PT. Shelby Fibre Glass, Jakarta	- Fibre glass) - Ornament)		n.a.	n.a.	
75.	CV. Safira Jakarta	- Seat frame		n.a.	n.a.	

1	2	3	4	5	6	7
76.	PT. Tunglam Indah, Jakarta	- Brake controle - Cable) - Clutch) - Carburator)	set	1,200,000 n.a.	n.a. n.a.	
77.	PT. United International Plastic, Jakarta	- Plastic parts		n.a.	n.a.	
78.	PT. Venus Fibre Glass, Jakarta	- Fibre glass		n.a.	n.a.	
79.	PT. Zastam Bekasi Motor, Jawa Barat	- Chassis frame	unit	10,000	n.a.	
80.	PT. Asia Storage Battery, Medan	- Battery		n.a.	n.a.	
81.	PT. Andalas Jaya, Medan	- Battery		n.a.	n.a.	
82.	CV. Aneka Warna Jakarta	- Ornament		n.a.	n.a.	
83.	PT. Barata M&E Surabaya	- Jigs) - Brake drum)		n.a.	n.a.	
84.	PT. Bima Aloma	- Auto lamp bulb		n.a.	n.a.	
85.	PT. Brakrie Brothers, Jakarta	- Tail pipe		n.a.	n.a.	
86.	PT. Bonauli Raharjo, Jakarta	- Body component		n.a.	n.a.	
87.	CV. Bintang Mas Medan	- Leaf spring		n.a.	n.a.	
88.	CV. Budi Karya Bandung	- Rubber parts		n.a.	n.a.	
89.	PT. Century Battery Jakarta	- Battery		n.a.	n.a.	

1	2	3	4	5	6	7
90.	PT. Cibinong Indah, Jakarta	- R o o f		not available (n.a.)	not available (n.a.)	
91.	PT. Diamond Sarana, Jakarta	- Auto lamp				
92.	PT. Dartika Glorius Jawa Timur	- Auto lamp				
93.	CV. Damai Jakarta	- Seat cover				
94.	PT. Dana Corp. USA, Jakarta	- Axle - Clutch - Universal - Propeller shaft - Transmission				
95.	PT. Everlite Indonesia, Jakarta	- Auto lamp.				
96.	PT. Eka Indra Utama, Jawa Barat	- Battery				
97.	PT. G.S. Battery, Jakarta	- Battery				
98.	PT. Herber Steel, Jakarta	- Body components				
99.	PT. Industri Karet Deli Medan	- T y r e				
100.	PT. Industrial Contact Battery, Surabaya	- Pot, battery				
101.	PT. Ikemi Jaya Wijaya, Jakarta	- Ornament				

1	2	3	4	5	6	7
102	PT. Djakarta Pantja Ruang Motor, Jakarta	- Box) - Dump truck) - Trailer)		n.a.	n.a.	
103	PT. Krama Yudha Putra, Bogor	- Element cable) - Speedometer) - S e a t) - Muffler & pipe assy - Weather strip) - Bolt & nuts)		n.a.	n.a.	
104	PT. Kartika Indah, Semarang	- Muffler & tail pipe - Ventil		150,000 1,200,000		
105	PT. Spring Medan, Medan	- Leaf spring		n.a.	n.a.	
106	PT. Cahaya Selatan Jakarta	- Muffler		n.a.	n.a.	
107	PT. Aquarius Fibre Glass Bogor	- Hard Top CJ 7		n.a.	n.a.	
108	PT. Medan Spring, Medan	- Leaf spring		n.a.	n.a.	
109	Koperasi Ragam Metal, Purbalingga	- Muffler & tail pipe		n.a.	n.a.	
110	PT. New Armada Magelang	- B o d y		n.a.	n.a.	
111	CV. Karya Logam Jakarta	- Seat frame		n.a.	n.a.	
112	PT. Sumber Urip Malang	- Muffler) - Tail pipe)		n.a.	n.a.	
113	Bengkel Karya Jaya, Jakarta	- Muffler) - Tail pipe)		n.a.	n.a.	
114	PT. Ngagel	- Rubber parts) truck CK 10) - Nissan)		n.a.	n.a.	

1	2	3	4	5	6	7
115	PT. Vita Foam Ind. Jakarta	- Rubber parts		not available (n.a.)	not available (n.a.)	
116	PT. Sinar Stupa Elektro Jakarta	- Battery - Brake lining				
117	PT. I.I.C. Ltd. Japan (PT. Adiasa Sakti, Jakarta	- Electrical component for motor vehicles				
118	PT. Tiger Head Bulb Mfg. Co., Jakarta	- Lamp bulb				
119	PT. Sumber Logam, Bekasi	- Seat frame				
120	PT. Yorita Industry, Tangerang	- Auto lamp.				
121	PT. Union Power Enterprise Co., Jakarta	- Auto lamp.				
122	PT. Harly Asindo, Jakarta	- Comp. part motor HD				
123	PT. Kumala Sentosa, Jakarta	- Battery				
124	PT. K.C.D. Indonesia, Jakarta	- Electric parts				
125	PT. Kumala Shin Kobe Battery, Jakarta	- Battery				
126	PT. Mosinco Bandung	- Body components				

1	2	3	4	5	6	7
127	PT. Nagoya Battery, Bogor	- Battery		not available (n.a.)	not available (n.a.)	
128	PT. Pendawa Sempurna, Jakarta	- Spark plug				
129	PT. Pepindo Bogor	- Pulp separator, battery				
130	PT. Puri Karya Sakti, Jakarta	- Seat frame				
131	PT. Pudji Jakarta	- Bracket battery				
132	PT. Pisca Abadi Jakarta	- Plate ornament				
133	PT. Repro Eng. Part Indonesia, Jakarta	- Piston				
134	PT. Riffi Bandung	- Seat frame				
135	PT. Sinar Auto Lamp Bulb, Medan	- Auto lamp bulb				
136	CV. Sinar Angkasa, Surabaya	- Auto lamp				
137	PT. Sumawa Battery, Jakarta	- Battery				
138	PT. Sumber Bakti, Jakarta	- Battery				
139	PT. Surasaman Surabaya	- Rubber parts				
140	PT. Sigma Jaya Indonesia Jakarta	- Subsidiary material				

1	2	3	4	5	6	7
141	CV. Sujatim Jakarta	- Cable parts		n.a.	n.a.	
142	PT. Telison Mulia, Jakarta	- Shock absorber) - Gasket)		n.a.	n.a.	
143	PT. Tunglam Indah, Jakarta	- Brake controle cable) - Clutch) - Carburator controle F.2/R)		n.a.	n.a.	
144	PT. Teguh Power Industry Jakarta	- Brake lining) - Clutch disc) - Roller lining)	Ton	6,000 n.a.	n.a. n.a.	
145	PT. United Motor Works Indonesia, Jakarta	- Component parts		n.a.	n.a.	
146	Wahyu Tehnik Rubber	- Plastic) - Rubber parts)		n.a.	n.a.	
147	PT. Yuasa Battery, Jakarta	- Battery	unit	n.a.	n.a.	
148	PT. Zelle Bandung	- Battery		n.a.	n.a.	
149	PT. Nikatsu Bandung	- Auto lamps.		n.a.	n.a.	
150	PT. Nagoya Bogor	- Battery		n.a.	n.a.	
151	PT. Nippres Jakarta	- Battery		n.a.	n.a.	
152	PT. Usaha Per Mobil Spring, Medan	- Vehicle spring		n.a.	n.a.	
153	PT. Saudara Jaya Industri, Deli Serdang	- Sprocket - Handle lean - Brake rod - Spring tension	pcs pcs pcs pcs	500,000) 450,000) 240,000) 500,000)	n.a.	

1	2	3	4	5	6	7
154	PT. Agung Serumpun Karya, Medan	- Canvas brake for motor cycle	unit	70,000	n.a.	
155	PT. Cipta Logam Sakti, Jakarta	- Spoke & Nipple - Double seat - Wheelrim	gross pcs pcs	60,000 180,000 360,000	n.a.	
156.	PT. Eka Swasta Jakarta	- Brake lining	pcs	600,000		
157	PT. Amir Hassan Medan	- Motor cycle rim	unit	114,000 unit per annum	n.a.	
158	PT. Y.S.T. International Jakarta	- Insulator connector - Wire harness	pcs pcs	3,000 11,875	n.a.	
159	PT. Indo filter Cirebon	- Air filter	pcs	10,000 pcs per annum	n.a.	
160	PT. Bina Buana Industri, Surabaya	- Motor cycle drive chain	pcs	330,000	n.a.	
161	PT. Honda Federal Inc. Jakarta	- Fuel tank - Fender (front rear)	pcs pcs	78,300 86,400	n.a.	
162	PT. Dwipa Indonesia Denagufta, Semarang	- Drive chain for motor cycle	set	900,000 per annum	n.a.	
163	PT. Gemala Kempa, Jakarta	- C a b i n - Chassis frame	unit	n.a. 97,190	n.a. n.a.	
164	PT. Yudistira Utama, Jakarta	- C a b i n - Chassis frame	unit	n.a.	n.a.	
165	PT. Suzuki Indonesia, Jakarta	- C a b i n - Chassis frame		n.a.	n.a.	
166	PT. Wira Teknik Jakarta	- C a b i n - Chassis frame		n.a.	n.a.	

1	2	3	4	5	6	7
167	PT. Adi Putro Jakarta	- C a b i n) - Chassis frame)		n.a.	n.a.	
168	PT. Logam Bima Jakarta	- C a b i n) - Chassis frame)		n.a.	n.a.	
169	PT. Dian Rasa Dan Meeg. Jakarta	- Electric ignition System uis	unit	18,000 per annum	n.a.	
170	PT. Pamindo Tiga T. Jakarta	- Mufflers	unit	60,000 per annum	n.a.	
171	PT. Warga Sejahtera	- Cables : Front) brake - Throttle -) starter - clutch) dust seal throttle) - speedometer -) tachometer)	set	854,000	n.a.	
172	PT. K.G.D.I. Tangerang	- Housing F & RR Signal - Ignition coil assy - Speedo meter assy - Tachometer assy - Horn assy - Lamp assy rear combination - Head lamp assy - Switch Ignition - Relay assy turn signal - Rectifier assy - Switch assy stop lamp	pcs pcs pcs pcs pcs pcs pcs pcs pcs pcs pcs	576,000) 125,000) 125,000) 125,000) 125,000) 125,000) 125,000) 125,000) 125,000) 125,000) 125,000)	n.a.	
173	PT. F.C.I. Jakarta	- Handle lower, R - Handle lower, L - Fender comp front - Tail seat cover - Battery cover - Oil cover - Housing head lamp - Front fork cover - Rear fender front	pcs pcs pcs pcs pcs pcs pcs pcs pcs	66,000) 66,000) 66,000) 98,000) 125,000) 125,000) 125,000) 65,000) 25,000)	n.a.	

INSTALLED CAPACITIES OF LARGE/MEDIUM SCALE PARTS/COMPONENTS MANUFACTURERS AND THE REQUIRED VOLUMES FOR NEW AUTOMOTIVE PRODUCT

1 9 8 8

No.	Items of Parts/Components	Installed Capacity	Estimated Required Volume for 1988
1.	P i s t o n	250,000	1,500,000
2.	Piston ring	4,500,000	4,000,000
3.	Air filter element	4,850,000	250,000
4.	Spark plug	7,280,000	1,250,000
5.	Ignition coil assy	250,000	750,000
6.	Oil filter	1,150,000	750,000
7.	Radiator	600,000	250,000
8.	Shock absorber	1,740,000	1,000,000
9.	Leaf spring	750,000	500,000
10.	Fuel tank : motor cars	298,000	250,000
	motor cycle	78,300	500,000
	-Hand/mini tractor	?	20,000
11.	Mufflers & pipe	876,600	780,000
12.	Exhaust manifold	24,000	200,000
13.	Wheelrim : -motor cars	1,850,000	1,350,000
	-motor cycles	230,000	1,000,000
14.	Brake shoe : -motor cars	600,000	8,000,000
	-motor cycles	780,000	1,000,000
15.	Brake drum	80,000	1,000,000
16.	Brake disc : -motor cars	72,000	75,000
	-motor cycles	72,000	500,000
17.	Clutch disc	300,000	250,000
18.	Brake & fuel tubes (in sets)	350,000	500,000
19.	Drive chain	1,230,000	500,000
20.	Safety Glass (m2)	1,284,000	1,000,000
21.	Control cables	9,800,000	2,750,000
22.	Spoke & Nipple (in gross)	420,000	225,000
23.	Front fork (motor cycles)	300,000	500,000
24.	Auto lamp bulb	4,500,000	5,000,000
25.	Battery	450,000	750,000
26.	Oil cushion (for motor cycle)	780,000	1,000,000
27.	Housing for lamp	1,500,000	7,000,000

ESSENTIAL ~~CSF-MACHINERY~~

IN LIK 1983/1984

Machine & Equipment	Total Unit	Remarks
I. MEDAN		
1. Hydraulic Guillotine Shear	1 unit	Cutting Capacity : 6 x 3050 mm
2. Spot Welder	1 unit	Rated Capacity : 15 KVA-Depth 400 mm
3. Vertical Hydraulic Surface Grinding machine	1 unit	Table : 1200 x 300 mm
4. Universal Tool and Cutter Grinder	1 unit	
5. LPG (Liquid Petrol Gas) Heat Treatment	1 unit	Maximum temperatur : 750°C
6. Portable Brinnel Hardness Tester	1 unit	
7. Universal Engine Lathe	1 unit	Distance between centre: 1000 mm Swing over bed : 440 mm
8. Universal lathe (Norton head, Withworth and Netric thread, Four tools post).	1 unit	Swing over bed : min. 215 mm Distance betwen center: 2000 mm
9. Universal Milling Machine (With swivelling vertical head, swevelling table)	1 unit	- Working surface: 1000 x 250 mm - Max. travel of table, gross : 200 mm - Max. travel of table, vertical 350 mm
10. Shaping Machine	1 unit	- Max stroke : 500 mm - Swivelling/tilting table - Adjustable ram stroke/minute
11. Milling Cutter	1 unit	
12. Hydraulic Press	1 unit	Rated pressure : 63 ton Table size : 800 x 560 mm Number stroke : 65/85/110 Pressure : 63 mm

Machine & Equipment	Total Unit	Remarks
13. Universal Milling Machine Swivelling Table	1 unit	Working surface : 800 x 200 mm Max. Travel of table, longtitudinal : 500 mm Cross : 200 mm Electromotor : 2.8 KW, 380/440 V 1500 rpms, 50 Hz Arbor with spacer : 25; 27 mm
14. Electroplating	1 unit	
15. Galvanizing Unit -Complete with boiler, hot dipgalvanizing for heat treatment	1 unit	
II. P A D A N G		
1. Universal Lathe	2 unit	
2. Double Read Grinding & Polishing	1 unit	
3. Shaping Machine	1 unit	
4. Metal melting Furnace	1 unit	
5. Multi purpose Grinding m/c	1 unit	
6. Crucible furnace	1 unit	
7. Cutter of well Black	10 sets	
III. S U K A B U M I		
1. Universal Copying Milling Machine	1 unit	Working surface of table : 250 x 1120 mm Spindle bore diameter : 150 mm Spindle travel : 130 mm
2. Shaping Machine	1 unit	Working surface of table : - Top (LxW) : 440 x 360 mm - Side (LxW) : 440 x 360 mm
3. Universal Milling Machine	1 unit	Working surface table: 800x200 mm Max. traverse of table: longitudinal : 500 mm, cross : 160 mm, vertical : 300 mm Max. swivel of table : $\pm$ 45^{o}

Machine & Equipment	Total Unit	Remarks
4. Open Back Inclinable Power Press	1 unit	Matress : 310 x 450 mm
5. Geared Head Lathes	1 unit	Centre distance : 2000 mm Height of centre : 250 mm Swing over bed : 500 mm Swing over gap : 765 mm
6. Combined drilling and milling machine	1 unit	Max. drilling capacity : 32 mm
7. Hacksaw Machine	1 unit	Round bar : Ø 160 mm I beam & U channel : 160 x 125 mm
8. High Speed Cutting Machine	1 unit	Material that can be effeciely cut round steel.
9. Oxygen Automotic High Speed Cutter	1 unit	Messer Crishem-40 W Machine cutting torches with 2-100 mm nozzles, metal faced asbestos beat shield.
10. Surface Grinding Machine	1 unit	- longitudinal : 380 mm - travers : 175 mm - grinding wheel : 203x19x31.7 mm
11. DC & AC TIG WELDER	1 unit	Welding current : 25-190 Amp. Welding Electrodes : 1.5-4 mm.
12. Spot Welder	1 unit	Capacity : 2 + 2 mm
13. Power Hand Angle Grinder		Wheel diameter : 230 mm (9") No load speed : 6500 rpm Input : 750 Watt
14. Test Heating Kiln	1 unit	
15. Heat Treatment Furnace	1 unit	
16. Universal Tool and Cutter Grinder	1 unit	
IV. T E G A L		
1. Universal Milling Machine	1 set	
2. Universal tool and Culter grindes	1 set	

Machine & Equipment	Total Unit	Remarks
3. Universal Excenter Press	1 set	40 ton
4. Universal Lathe	1 set	Destence of centes 2000 mm
5. Shaping Machine	1 set	
6. Pyrodigital (pytometer)	1 set	1,000°C - 1,400°C
7. Measuring Instruments	1 lot	
9. Universal Lathe	1 set	centre distance 88 cm
V. SEMARANG		
1. Power Press Hydraulic	1 unit	Capacity : 100 ton Motor : 3 phase, 220/380 Volt KW = 1,5 AMP = 6.65/3.84
2. Power Press Hydraulic	1 unit	Capacity : 100 ton Motor : 3 phase, 220/380 Volt KW = 1,5 AMP = 6.65/3.84
3. Pons Press	1 unit	Capacity : 10 ton Motor : 3 phase, 220/380 Volt Amp. : 5.39/3.12 Hz ; 50 KW = 1.1 RPM = 930 R/min.
4. Geard Head Lathe	1 unit	Centre dist: 1500 mm Motor : 5 HP & 1/8 HP Amp : 8.3 & 0.3
5. Geared Heac Lathe	1 unit	Centre dist: 850 mm Motor : 5 HP & 1/8 HP Amp : 8.3 & 0.3
6. Hack Saw Machine	1 unit	Cutting capacity : 175 mm stroke : 130 - 190 mm Motor : 1 phase, 220 V.
7. Spot Welder	1 unit	Power : 10 KVA Capacity : 2 + 2 mm
3. Shaping Machine	1 unit	Stroke ram : 350 mm Motor : 3 phase, 220/380 V Amp : 2.7/4.7 KW : 1.1 RPM : 1400 R/min Cos/: 0.78

Machine & Equipment	Total Unit	Remarks
VI. YOGYAKARTA		
1. Universal Engine lathe	1 unit	Distance : 800 mm Swing over bed 300 mm
2. Shaping Machine	1 unit	
VII. S I D O A R J O		
1. Swing press	1 unit	
2. Excenter press	1 unit	Table Size : 70 x 60 MM
3. Universal Vertical and Harizontal Miling Machine * Accessories	1 unit	Working surpace. 900 x 219 MM Traverse x,y, 2.570x440x220 MM Spindle Nose 40 IST
4. Shaping Machine	1 unit	Max : Stroke 350 MM
5. Lathe Machine	1 unit	Capacity : Ø 300 x 800 MM
6. Lathe Machine	1 unit	Capacity : Ø 300 x 500 MM
VIII. UJUNG PANDANG		
1. Lathe	1 unit	Distance between center 1,230 mm
2. Shaping Machine	2 unit	Discance ram to table: 330 mm
IX. PARE-PARE		
1. Universal lathe	1 unit	Distance between center 930 mm
2. Shaping	1 unit	Stroke of ram 350 mm. Distance ram table 220 mm
3. Universal lathe	1 unit	Distance between centre 1230 mm
4. Milling m/c	1 unit	Working area of table 1067x230 mm motor 2 HP

INDUSTRIAL FACT SHEETS OF SELECT PRODUCT GROUPS OF TABLE - 19

GROUP No. 2

I. Items of product mix and their uses

- Pedals for brake, clutch, and gas, are used to control the car speed as to decelerate until into stop, disconnect the power transmission, and to accelerate the speed.
- Fork, is one of the clutch control parts to release the pressure on the clutch disc and so to disconnect the power transmission.
- Change lever is used to shift the transmission gear into one of the other position.
- Spare tire holder, is to hold the spare tire fixed on the chasis.
- Wheel replacement tools is used to unfix or to fix the wheel nuts in replacing the wheel.

II. The total Demand

The total demand will in correspondence to the total demand of commercial car, estimated to a number 250,000 units in 1988.

III. Economic capacity

The economic capacity of 1-unit industry is estimated on 4,200 pcs/year for each item of the products.

IV. Investment required

1. Land and building

- Land about 20 x 15 M2 = 300 m2 @ Rp. 10,000.-	= Rp.	3,000,000.=
(Depends on the location)	(US$.	2,727.=)
- Buildings about 150 m2 @ Rp. 50,000,-	= Rp.	7,500,000.=
	(US$.	6,818.=)
Sub total	= Rp.	10,500,000.=
	(US$.	9,545.=)

2. Machinery and equipment

- Hydraulic press for cutting, etc. 60 Ton	1-unit	= US$.	45,000.=
- Universal lathe 1,000 mm CD	2-unit	= US$.	16,000.=
- Oil fired furnace with blower	1-unit	= US$.	6,000.=
- Bench drilling m/c, 12 mm Ø	2-unit	= US$.	2,000.=
- Hacksaw m/c	1-unit	= US$.	2,000.=
- Grinding m/c	1-unit	= US$.	1,000.=
- Air compressor & painting sprayer	1-set	= US$.	2,000.=
- Electric welding transformer 250 Amp.	1-set	= US$.	2,000.=
- Die cutters	1-lot	= US$.	12,500.=
- Screw tappers	2-set	= US$.	1,000.=
- Screw cutters	2-set	= US$.	1,000.=
- Diesel generator 75 KW, 220/380 V.	1-unit	= US$.	25,000.=
- Tools, equipment, and others	1-lot	= US$.	4,500.=
Sub total		= US$.	120,000.=
		(Rp.	132,000,000.=)

3. Others

- Office equipment, others transport vehicle,	= US$.	10,000.=
	(Rp.	11.000,000.=)
Total investment in fix assets	US$.	139,545.=
	(Rp.	153,500,000.=)

V. Working Capital

Estimated at 20 % of sales revenue	Rp.	34,440,000.=
	(US$.	31,309.=)

VI. Employment

- Director/owner	1 - people @ Rp.300,000.=	= Rp.	300,000.=/mth
- Supervisor	4 - people @ Rp. 90,000.=	= Rp.	360,000.=/mth
- Skilled labor	15 - people @ Rp. 62,500.=	= Rp.	937,500.=/mth
- Semi skilled labor	12 - people @ Rp. 42,500.=	= Rp.	510,000.=/mth
- Helpers	12 - people @ Rp. 30,000.=	= Rp.	360,000.=/mth
- Office staff	8 - people @ Rp. 60,000.=	= Rp.	480,000.=/mth
- Uskilled labor	23 - people @ Rp. 20,000.=	= Rp.	460,000.=/mth
Total	75 - people @	Rp.	3.407,000.=/mth
		(US$.	3,097.=/mth)

VII. Total sales

- Brake pedal	4,200 @ Rp. 6,500.=	= Rp. 27,300,000.=
- Clutch pedal	4,200 @ Rp. 6,500.=	= Rp. 27,300,000.=
- Gas pedal	4,200 @ Rp. 3,000.=	= Rp. 12,600,000.=
- Clutch fork	4,200 @ Rp. 6,500.=	= Rp. 27,300,000.=
- Change lever	4,200 @ Rp. 4,500.=	= Rp. 18,900,000.=
- Spare tire holder	4,200 @ Rp. 6,500.=	= Rp. 27,300,000.=
- Wheel replacement tool	4,200 @ Rp. 7,500.=	= Rp. 31,500,000.=
	Total sales	= Rp. 172,200,000.=
		(US$. 156,545.=)

VIII. Total cost/year

- Raw material	= Rp. 68,880,000.=
- Salary & wages	= Rp. 40,884,000.=
- Fabrication (maintenance, fuel,depreciation), etc.	= Rp. 27,820,000.=
- Office & other	= Rp. 750,000.=
Total cost	= Rp. 138,334,000.=
	(US$. 125,758.=)

IX. Profit before tax

- Profit before tax :	
Rp. 172,000,000.= - Rp.138,334,000.=	= Rp. 33,866,000.=
- Profit ratio on sales	= 19.7 %
- Profit ratio on investment	= 18.0 %

X. Break even point

- Total sales (S)		= Rp. 172,200,000.=
- Variable cost (VC)		
Raw material	Rp. 68,880,000.=	
Salary/wages	Rp. 15,762,000.=	
Fabrication	Rp. 15,750,000.=	
Total VC		= Rp. 100,392,000.=
- Fixed cost (FC)		= Rp. 37,942,000.=
- Break Even Point = FC : (S - VC) x 100 %		= 52.8 %

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GROUP No. 3

I. Items of product mix and their uses

- Main and side stand are used in motorcycles to keep in upright or in standing position when the rider leave it.
- Foot steps are also used in motor cycles to rest the foot of the rider.
- Pillion steps are also used in motor cycles to rest the foot of the man sitting on pillion seat.
- Luggage carrier used in motor cycles to carry luggages of the driver. Only motor cycles suited for girls/women have this carrier.

II. The total demand

It coresponds with the total demand of motor cycle in the range of 500,000 units in 1988. Each motor cycle has one main or side stand so that the total demand in these items are also 500,000 pcs. There are left and right foot steps and pillion steps which makesthe demand doubled in pieces. It is estimated only 50 % of motor cycles using luggage carrier and makes the demand only the half of the motor cycle demand.

III. Economic capacity

The economic capacity of 1-unit industry :

- Side and main stand = 10,000 pcs/year
- Foot and pillion step = 20,000 pcs/year
- Luggage carrier = 5,000 pcs/year

IV. Investment required

1. Land and building

- Land about 10 x 25 m2	= 250 m2 @ Rp. 10,000.=	= Rp.	2,500,000.=
- Building	150 m2 @ Rp. 50,000.=	= Rp.	7,500,000.=
	Sub total	= Rp.	10,000,000.=
		(US$.	9,090.=)

2. Machinery and equipment

- Drop forging hammer 15 HP	2 - unit	= US$.	50,000.=
- Oil fired furnace with blower	1 - unit	= US$.	6,000.=
- Electric welding transformer	2 - unit	= US$.	2,000.=
- Drilling m/c up to 12 mm Ø	2 - unit	= US$.	2,000.=
- Electro plating set	1 - set	= US$.	5,000.=
- Diesel generator 50 KW, 220/380 V	1 - unit	= US$.	15,000.=
- Forging dies	1 - lot	= US$.	15,000.=
- Tools, equipment, instruments,others	1 - lot	= US$.	5,000.=
Sub total		= US$.	100,000.=
		(Rp.	110,000,000.=)

3. Others

- Office equipment, transport vehicle, others	= US$.	10,000.=
	(Rp.	11,000,000.=)
Total investment in fixed assets	= US$.	119,090.=
	(Rp.	131,000,000.=)

V. Working capital

Estimated at about 20 % of sales revenue/year	= US$.	29,545.=
	(Rp.	32,500,000.=)

VI. Employment

- Director/owner	1 - people @ Rp. 250,000.=	= Rp.	250,000.=/mth
- Supervisor	3 - people @ Rp. 90,000.=	= Rp.	270,000.=/mth
- Skilled labour	12 - people @ Rp. 62,500.=	= Rp.	750,000.=/mth
- Semi skilled labor	10 - people @ Rp. 42,500.=	= Rp.	425,000.=/mth
- Helpers	10 - people @ Rp. 30,000.=	= Rp.	300,000.=/mth
- Office staff	8 - people @ Rp. 60,000.=	= Rp.	480,000.=/mth
- Unskilled labor	26 - people @ Rp. 20,000.=	= Rp.	520,000.=/mth
Total	70 - people	Rp.	2,995,000.=/mth
		(US$.	2,723.=/mth)

VII. Total sales/year

- Main & side stands	10,000 pcs @ Rp. 6,000.=	= Rp. 60,000,000.=
- Foot & pillion steps	20,000 pcs @ Rp. 3,000.=	= Rp. 60,000,000.=
- Luggage carrier	5,000 pcs @ Rp. 7,000.=	= Rp. 35,000,000.=
Total sales		= Rp. 155,000,000.=
		(US$. 140,909.=)

VIII. Total cost/year

- Raw material	= Rp. 65,000,000.=
- Salary & wages	= Rp. 35,940,000.=
- Fabrication (maintenance, fuel, depreciation),etc.	= Rp. 20,075,000.=
- Office & others	= Rp. 600,000.=
Total cost	= Rp. 121,615,000.=
	(US$. 110,559.=)

IX. Profit before tax

- Profit before tax :	
Rp. 155,000,000.= - Rp. 121,615,000.=	= Rp. 33,385,000.=
- Profit ratio on sales	= 21.5 %
- Profit ratio on investment	= 20.6 %

X. Break Even Point

- Total sales (S)		= Rp. 155,000,000.=
- Variable cost (VC)		
Raw material	= Rp. 65,000,000.=	
Wages	= Rp. 13,590,000.=	
Fabrication	= Rp. 2,800,000.=	
Total VC		= Rp. 81,390,000.=
- Fixed cost (FC)		= Rp. 40,225,000.=
- Break Even Point = FC : (S - VC) x 100 %		= 54.6 %

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GROUP No. 5

I. Items of product mix and their uses

- Housing for lamp is a base on which the bulb of lamp is fixed and to be covered with plastic to protect from rain water. Lamps are essential for motor cars and motor cycles to find the way, and also to give indications.
- Tool box is used to carry tools is also essential for motor cycles to repaire small troubles.
- Battery holder is used to fix the battery on the frame or chassis.
- Radiator shroud is used to direct the air flow to the radiator to make it more efficient cooling.
- Seat frame is to support the seat and makes more comfortable.
- Mirror base is a base for the mirror glass.
- Covers are used to protect the engine and to give better apperance.

II. The total demand

An average of 9 to 10 pcs lamps per commercial car and motor cycle will require about 7,000,000 pcs/year, including ornamental lamps.
Every motor cycle needs 1-tool box will make a demand 500,000/year (1988).
Every motor cycle and commercial car needs 1-battery holder will have a demand of 750,000 pcs/year (1988).
More than the half of commercial cars need 1-pcs radiator shroud per unit, it will require about 150,000 pcs/year (1988).
A minimum of 3-pcs seat frames per commercial car will need about 750,000 pcs/year (1988).
Commercial cars and motor cycles need spion mirrors. It is estimated that every vehicle will need 2 to 3 pcs, resulting total demand of 2,000,000 pcs/year (1988).
Motor cycle and hand tractor need 2-covers, the left and right side of the engine. It will have a demand of at least 1,000,000 pcs/year (1988).

III. Economic capacity

The economic capacity of 1-unit plant would be :

- Lamp housing	= 95,000 pcs
- Tool box for motor cycle	= 6,500 pcs
- Battery holder	= 10,000 pcs
- Radiator shroud	= 2,000 pcs
- Seat frame	= 10,000 pcs
- Mirror base	= 25,000 pcs
- Cover	= 13,000 pcs

IV. Investment

1. Land and building

- Land	10 x 25 m2 = 250 m2 @ Rp. 10,000.=	= Rp.	2,500,000.=
- Building	150 m2 @ Rp. 50,000.=	= Rp.	7,500,000.=
	Sub total	= Rp.	10,000,000.=
		(US$.	9,090.=)

2. Machinery and equipment

- Geared hand shearing m/c (16 SWG)	1 - unit	= US$.	2,500.=
- Power press m/c 40 Ton	2 - unit	= US$.	70,000.=
- Bench drilling m/c 12 mm Ø	2 - unit	= US$.	2,500.=
- Electro plating set	1 - unit	= US$.	5,000.=
- Compressor & painting equipment	1 - set	= US$.	2,000.=
- Diesel generator 50 KW 220/380V 50Hz	1 - set	= US$.	15,000.=
- Screw tappers	1 - set	= US$.	1,000.=
- Screw cutters	1 - set	= US$.	1,000.=
- Die punches	1 - lot	= US$.	17,500.=
- Tools, instruments, others	1 - lot	= US$.	4,000.=
Sub total		= US$.	120,000.=
		(Rp.	132,000,000.=)

3. Others

- Office equipment, transport, others	= US$.	10,000.=
	(Rp.	11,000,000.=)
Total investment in fixed assets	= US$.	139,090.=
	(Rp.	152,999,000.=)

V. Working capital

Estimated at 20 % of total sales = Rp. 63,500,000.=
(US$. 57,727.=)

VI. Employment

- Director/owner	1 - people @ Rp. 300,000.=	= Rp.	300,000.=/mth
- Supervisor	5 - people @ Rp. 90,000.=	= Rp.	450,000.=/mth
- Skilled labor	15 - people @ Rp. 62,500.=	= Rp.	937,500.=/mth
- Semi skilled labor	15 - people @ Rp. 42,500.=	= Rp.	637,500.=/mth
- Helpers	12 - people @ Rp. 30,000.=	= Rp.	360,000.=/mth
- Office staff	8 - people @ Rp. 60,000.=	= Rp.	480,000.=/mth
- Unskilled labor	24 - people @ Rp. 20,000.=	= Rp.	480,000.=/mth
Total	80 - people	= Rp.	3,645,000.=/mth
		(US$.	3,314.=/mth)

VII. Total sales/year

- Lamp housing	95,000 pcs @ Rp. 2,000.=	= Rp.	190,000,000.=
- Tool box	6,500 pcs @ Rp. 2,000.=	= Rp.	13,000,000.=
- Battery holder	10,000 pcs @ Rp. 1,500.=	= Rp.	15,000,000.=
- Radiator shroud	2,000 pcs @ Rp. 3,000.=	= Rp.	6,000,000.=
- Seat frame	10,000 pcs @ Rp. 3,000.=	= Rp.	30,000,000.=
- Mirror base	25,000 pcs @ Rp. 1,500.=	= Rp.	37,500,000.=
- C o v e r	13,000 pcs @ Rp. 2,000.=	= Rp.	26,000,000.=
Total sales		= Rp.	317,500,000.=
		(US$.	288,636.=)

VIII. Total cost/year

- Raw material	= Rp.	175,000,000.=
- Salary & wages	= Rp.	43,740,000.=
- Fabrication (maintenance, fuel, depreciation,etc.)	= Rp.	38,500,000.=
- Office & others	= Rp.	750,000.=
Total cost	= Rp.	257,990,000.=
	(US$.	234,536.=)

IX. Profit before tax

- Profit before tax :

Rp. 317,500,000.= - Rp. 257,990,000.= = Rp. 59,510,000.=

- Profit ratio on sales = 18.7 %

- Profit ratio on total investment = 27.5 %

X. Break even point

- Total sales (S) = Rp. 317,500,000.=

- Variable cost (VC) : =

Raw material	Rp. 175,000,000.=
Salary & wages	Rp. 17,190,000,=
Fabrication	Rp. 14,430,000.=
Total VC	= Rp. 206,620,000.=

- Fixed cost (FC) = Rp. 51,370,000.=

- Break Even Point = FC : (S - VC) x 100 % = 46.3 %

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GROUP No. 7

I. Items of product mix and their uses

- Brake drum for hand tractor upon which the wheel is fixed, is used to decelerate until into stop by friction between the brake shoes and the inner surface of the drum. Casting is performed in other unit.
- Kick starter spindle is a shaft connecting the kick starter arm to rotate the crank of motor cycle to get the engine on.
- Screw jack is used in commercial car (also in passenger car) to lift car in one side and to change the wheel.
- Spindle gear shift is a spindle connecting the gear shift lever in the motor cycle to shift the gear in a certain position.
- Gear shift lever is actually a pedal to shift the gear in a certain position used in motor cycle.
- Axle/shaft for the front or rear wheel of motor cycle is a shaft or a spindle whereon bearings (ball, roll) are fixed to enable the wheel rotate with minimum friction.
- Fuel filter in the motor cycle is a strainer below the fuel cock to make sure that the gasoline entering the carburator is clean from dirt locking the nozzle.
- Shaft for the clutch fork in commercial car is a shaft whereon the fork to release the pressure is fixed.
- Pulley is a disc with circumference grove(s) to transmit the rotation by means of (V) belt as forinstance the rotation of the crank shaft to the water pump.

II. Total demand

Total demand will in correspondence with the demand of commercial car, motor cycle, and hand tractor for parts relating to the respective vehicle. If 1-unit vehicle needs 2-pcs of part, the demand would be doubled. So is the demand for brake drum minimum 22,000 - pair, kick starter spindle 500,000.- pcs., screw jack 250,000.- pcs, spindle gear shift 500,000.- pcs., Gear shift lever 500,000.- pcs., axle 1,000,000.- pcs.,

fuel filter 500,000.- pcs., shaft for clutch fork 250,000.- pcs., and pulleys for commercial car & hand tractor 275,000.- pcs.

III. Economic capacity

- Brake drum = 250 pcs/year
- Kick starter spindle = 5,500 pcs/year
- Screw jack = 2,800 pcs/year
- Gear shift lever = 5,500 pcs/year
- Fuel filter = 5,500 pcs/year
- Pulley = 2,700 pcs/year
- Spindle gear shift = 5,500 pcs/year
- Axle/shaft = 12,000 pcs/year
- Shaft, clutch fork = 2,700 pcs/year

IV. Fixed investment

1. Land and building

- Land, about 15 x 24 m2 = 360 m2 @ Rp. 10,000.=	= Rp.	3,600,000.=
- Buildings, about 200 m2 @ Rp. 50,000.=	= Rp.	10,000,000.=
Sub total	= Rp.	13,600,000.=
	(US$.	12,364.=)

2. Machinery and equipment

- Universal lathe, 1000 mm C.D.	2 - unit	= US$.	25,000.=
- Excenter press 30 Ton	1 - unit	= US$.	27,500.=
- Horizontal milling m/c 1000 x 250	1 - unit	= US$.	25,000.=
- Oil fired furnace	1 - unit	= US$.	5,000.=
- Galvanizing set w/ blower, hot dip	1 - set	= US$.	10,000.=
- Electric welding transf. 250 Amp.	1 - unit	= US$.	1,000.=
- Collum drilling m/c 20 mm Ø	2 - unit	= US$.	4,000.=
- Diesel generator, 75 KW, 220/380 V	1 - unit	= US$.	25,000.=
- Forging dies	1 - lot	= US$.	10,000.=
- Screw tappers	1 - set	= US$.	1,000.=
- Screw cutting	1 - lot	= US$.	1,000.=
- Tools/instrument, and others	1 - lot	= US$.	15,500.=
Sub total		= US$.	150,000.=
		(Rp.	165,000,000.=)

3. Others

- Office equipment, transport vehicle, others	= US$. 10,000.=
	(Rp. 11,000,000.=)
Total fixed investment	= US$. 172,364.=
	(Rp. 189,600,000.=)

V. Working capital

Estimated at 18 % of total sales	= Rp. 37,600,000.=
	(US$. 34,182.=)

VI. Employment

- Director/owner	1 - people @ Rp. 300,000.=	= Rp.	300,000.=/mth
- Supervisor	5 - people @ Rp. 90,000.=	= Rp.	450,000.=/mth
- Skilled labor	20 - people @ Rp. 62,500.=	= Rp.	1,250,000.=/mth
- Semi skilled	15 - people @ Rp. 42,500.=	= Rp.	637,500.=/mth
- Helpers	15 - people @ Rp. 30,000.=	= Rp.	450,000.=/mth
- Office staff	10 - people @ Rp. 60,000.=	= Rp.	600,000.=/mth
- Unskilled labor	34 - people @ Rp. 20,000.=	= Rp.	680,000.=/mth
Total	100 - people	Rp.	4,367,500.=/mth
		(US$.	3,970.=/mth)

VII. Total sales/year

- Brake drum	250 pair @ Rp. 13,000.=	= Rp.	3,250,000.=
- Kick starter spindle	5,500 pcs @ Rp. 7,000.=	= Rp.	38,500,000.=
- Screw jack	2,800 pcs @ Rp. 13,000.=	= Rp.	35,000,000.=
- Spindle gear shift	5,500 pcs @ Rp. 7,000.=	= Rp.	38,500,000.=
- Axle/shaft	12,000 pcs @ Rp. 3,500.=	= Rp.	42,000,000.=
- Fuel filter	5,500 pcs @ Rp. 2,000.=	= Rp.	11,000,000.=
- Shaft, clutch fork	2,700 pcs @ Rp. 7,000.=	= Rp.	18,900,000.=
- Pulleys	2,700 pcs @ Rp. 7,000.=	= Rp.	18,900,000.=
Total sales		= Rp.	206,050,000.=
		(US$.	187,318.=)

VIII. Total cost/year

- Raw material	= Rp.	70,440,000.=
- Salary & wages	= Rp.	52,410,000.=
- Fabrication (maintenance, fuel, depreciation,etc)	= Rp.	32,360,000.=
- Office & others	= Rp.	780,000.=
Total cost	= Rp.	155,990,000.=
	(US$.	141,809.=)

IX. Profit before tax

- Profit before tax :		
Rp. 206,050,000.= - Rp. 155,999,000.=	= Rp.	50,051,000.=
- Profit ratio on sales	=	24.3 %
- Profit ratio on investment	=	22.0 %

X. Break Even Point

- Total sales (S)	= Rp.	206,050,000.=
- Variable cost (VC) :		
Raw material = Rp. 70,440,000.=		
Wages = Rp. 20,805,000.=		
Fabrication = Rp. 4,410,000.=		
Total variable cost	= Rp.	95,655,000.=
- Fixed cost (FC)	= Rp.	60,335,000.=
- Break Even Point = FC : (S - VC) x 100 %	=	54.6 %

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GROUP No. 9

I. Items of product mix and their uses

- Waterpump assembly is used to circulate the cooling water in the engine of commercial car. It consists of aluminum pressed die cast housing, flange and rotor fixed on shaft rotating by means of bearing and sealing in that die cast housing. Rotor and flange are made of cast iron and produced by other unit as out house half finished product.
- Cooling fan is used to suct air flow through the radiator, and it is fixed on a pulley, and the pulley on the flange of the water pump.
- Handles in the motor cycle are used to release the clutch and to conthe front wheel brake.
- Fuel cock is used to control the gasoline flow from the tank to the carburator.

II. Total demand

The total demand of each item will correspond with the demand of commercial car and motor cycle inwhich they are used, and it would be :

- Water pump assembly = 250,000 unit
- Cooling fan = 250,000 pcs (By neglecting plastic made fans)
- Handles = 1,000,000 pcs (Since there are 2-pcs for each m.c.)
- Fuel cock = 500,000 pcs

III. Economic capacity

- Water pump assy = 4,200 pcs/year
- Cooling fan = 4,200 pcs/year
- Handles = 16,800 pcs/year
- Fuel cock = 8,400 pcs/year

IV. Fixed investment

1. Land and building

- Land, about 12.5 x 20 m2	= 250 m2 @ Rp.10,000.=	= Rp.	2,500,000.=
- Buildings	= 150 m2 @ Rp.50,000.=	= Rp.	7,500,000.=
	Sub total	= Rp.	10,000,000.=
		(US$.	9,091.=)

2. Machinery and equipment

- Pressure die casting m/c, capacity 10 Kg Al-Zn alloy	1 - set	= US$.	15,000.=
- Melting furnace with blower	1 - set	= US$.	5,000.=
- Center lathe, 1000 mm CD	1 - unit	= US$.	15,000.=
- Shaping m/c, stroke 500 mm	1 - unit	= US$.	10,000.=
- Exenter press, 25 Ton	1 - unit	= US$.	15,000.=
- Bench drilling m/c, 12 mm Ø	2 - unit	= US$.	2,000.=
- Column drilling m/c 20 mm Ø	1 - unit	= US$.	3,000.=
- Diesel generator 50 KW, 220/380 V	1 - unit	= US$.	15,000.=
- Casting dies	1 - lot	= US$.	5,000.=
- Rivetting eq., tools, instrum., others	1 - lot	= US$.	5,000.=
Sub total		= US$.	90,000.=
		(Rp.	99,000,000.=)

3. Others

- Office equipment, transport vehicle, others	= US$.	10,000.=
	(Rp.	11,000,000.=)
Total fixed investment	= US$.	109,091.=
	(Rp.	120,000,000.=)

V. Working capital

Estimated at about 20 % of sales	= Rp.	34,860,000.=
	(US$.	31,691.=)

VI. Employment

- Director/owner	1 - people @ Rp. 300,000.=	= Rp.	300,000.=/mth
- Supervisor	3 - people @ Rp. 90,000.=	= Rp.	270,000.=/mth
- Skilled labor	10 - people @ Rp. 62,500.=	= Rp.	625,000.=/mth
- Semi skilled labor	8 - people @ Rp. 42,500.=	= Rp.	340,000.=/mth
- Helpers	8 - people @ Rp. 30,000.=	= Rp.	240,000.=/mth
- Office staff	10 - people @ Rp. 60,000.=	= Rp.	600,000.=/mth
- Unskilled labor	20 - people @ Rp. 20,000.=	= Rp.	400,000.=/mth
Total	60 - people	= Rp.	2.775,000.=/mth
		(US$.	2,523.=/mth)

VII. Total sales/year

- Water pump assy	4,200 pcs @ Rp. 17,500.=	= Rp. 73,500,000.=
- Cooling fan	4,200 pcs @ Rp. 3,000.=	= Rp. 12,600,000.=
- Handles	8,400 pair @ Rp. 6,000.=	= Rp. 50,400,000.=
- Fuel cock	8,400 pcs @ Rp. 4,500.=	= Rp. 37,800,000.=
	T o t a l	= Rp. 174,800,000.=
		(US$. 158,454.=)

VIII. Total cost

- Raw material	= Rp. 69.720,000.=
- Salaries & wages	= Rp. 33,300,000.=
- Fabrication (maintenance, fuel, depreciation,etc)	= Rp. 15,000,000.=
- Office & others	= Rp. 720,000.=
Total cost	= Rp. 118,740,000.=
	(US$. 107,945.=)

IX. Profit before tax

- Profit before tax :

  Rp. 174,300,000.= - Rp. 118,740,000.= = Rp. 55,560,000.=

- Profit ratio on sales = 31.9 %

- Profit ratio on total investment = 35.9 %

X. Break Even Point

- Total sales (S) = Rp. 174,300,000.=

- Variable cost (VC) :

  Raw material = Rp. 69,720,000.=
  Wages = Rp. 11,250,000.=
  Fabrication = Rp. 2,940,000.=

  Total variable cost = Rp. 83,910,000.=

- Fixed cost (FC) = Rp. 34,830,000.=

- Break Even Point = FC : (S - VC) x 100 % = 38.5 %

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GROUP No. 11

I. Items of product mix and their uses

- Wheelrim for motor cycle is a part of a wheel, which tube and tire are put on and connected with the hub by means of spokes and nipples.
- Seat frame for motor cycle is a frame to enforce the seat which is usually connected with the pillion into one frame. On this frame a foam rubber cushion is fixed with imitation leather (plastic) cover.
- Chain case is a cover for the driving chain in the motor cycle to protect from dirt if it is an overal cover, or to protect the driver trouser's sleeve or wear to get catched between the chain and the gear.
- Brake shoe for hand tractor is a brake device uponwhich the ferodo lining is rivetted or glued to get a better friction with rotating drum in decelerating or stopping the speed.

II. Total demand

- Wheel rim has a total demand of 1,000,000 pcs in 1988, since it needs 2-pcs for each motor cycle.
- Seat frame has a total demand of 500,000 pcs in 1988.
- Chain case has a total demand of 500,000 pcs in 1988.
- Brake shoe has only a demand of 22,000 set (4-pcs/set) in 1988.

III. Economic capacity

- Wheel rim = 40,000 pcs/year
- Seat frame = 20,000 pcs/year
- Chain case = 20,000 pcs/year
- Brake shoe = 900 set/year

IV. Fixed investment

1. Land and buildings

- Land, about 15 x 23 m2	= 345 m2 @ Rp.10,000.=	= Rp.	3,450,000.=
- Building	= 200 m2 @ Rp.50,000.=	= Rp.	10,000,000.=
	Sub total	= Rp.	13,450,000.=
		(US$.	12,227.=)

2. Machinery and equipment

- Cutting press, 30 Ton	1 - unit	= US$.	15,000.=
- Rim profile rolling m/c & access.	1 - unit	= US$.	35,000.=
- Rolling m/c for rerolling	1 - unit	= US$.	12,500.=
- Exenter press 7.5 KW, 30 Ton	1 - unit	= US$.	15,000.=
- Punching press 40 Ton	1 - unit	= US$.	17,500.=
- Punching press (nipple & valve holes)	1 - unit	= US$.	5,000.=
- Seam welding transformer 350 Amp.	1 - unit	= US$.	4,000.=
- Electric welding transformer 250 Amp.	1 - unit	= US$.	1,000.=
- Diesel generator, 75 KW,220/380V, 50Hz	1 - set	= US$.	25,000.=
- Polishing m/c	1 - unit	= US$.	1,000.=
- Electro plating, included rotary gear	1 - unit	= US$.	7,500.=
- Bench grinder & accessories	1 - unit	= US$.	1,500.=
- Hand granding m/c	1 - unit	= US$.	1,000.=
- Drilling m/c, 12 mm ø	1 - unit	= US$.	1,000.=
- Tools, instruments, others	1 - lot	= US$.	8,000.=
Sub total		= US$.	150,000.=
		(Rp.	165,000,000.=)

3. Others

- Office equipment, transport, others	= US$.	10,000.=
	(Rp.	11,000,000.=)
Total fixed investment	= US$.	172,227.=
	(Rp.	189,450,000.=)

V. Working capital

Estimated at about 20 % of sales	= Rp.	70,000,000.=
	(US$.	63,636.=)

VI. Employment

- Director/owner	1 - people @ Rp. 300,000.=	= Rp.	300,000.=/mth
- Supervisor	4 - people @ Rp. 90,000.=	= Rp.	360,000.=/mth
- Skilled labor	15 - people @ Rp. 62,500.=	= Rp.	937,500.=/mth
Sub total	20 - people	= Rp.	1,597,500.=/mth

	20 - people		= Rp. 1,597,500.=/mth
- Semi skilled labor	13 - people @ Rp.	42,500.=	= Rp. 552,500.=/mth
- Helpers	13 - people @ Rp.	30,000.=	= Rp. 390,000.=/mth
- Office staff	10 - people @ Rp.	60,000.=	= Rp. 600,000.=/mth
- Unskilled labor	24 - people @ Rp.	20,000.=	= Rp. 480,000.=/mth
Total	80 - people		= Rp. 3,620,000.=/mth
			(US$. 3,291.=/mth)

VII. Total sales

- Wheel rim	40,000 pcs x Rp.	5,000.=	= Rp. 200,000,000.=
- Seat frame	20,000 pcs x Rp.	4,000.=	= Rp. 80,000,000.=
- Chain case	20,000 pcs x Rp.	5,000.=	= Rp. 100,000,000.=
- Brake shoe	900 set x Rp.	8,000.=	= Rp. 7,200,000.=
	Total sales		= Rp. 387,200,000.=
			(US$. 352,000.=)

VIII. Total cost

- Raw material	= Rp. 165,240,000.=
- Salaries & wages	= Rp. 43,440,000.=
- Fabrication (maintenance, fuel, depreciation, others)	= Rp. 35,360,000.=
- Office & others	= Rp. 720,000.=
Total cost	= Rp. 244,760,000.=
	(US$. 221,509.=)

IX. Profit before tax

- Profit before tax :

  Rp. 387,200,000.= - Rp. 244,760,000.= = Rp. 142,440,000.=

- Profit ratio on sales = 36.8 %

- Profit ratio on total investment = 54.9 %

X. Break Even Point

- Total sales (S)		= Rp. 387,200,000.=
- Variable cost (VC) :		
Raw material	= Rp. 165,240,000.=	
Wages	= Rp. 16,320,000.=	
Fabrication	= Rp. 4,410,000.=	
Total VC		= Rp. 185,970,000.=
- Fixed cost (FC)		= Rp. 58,790,000.=
- Break Even Point = FC : (S - VC) x 100 %		= 29.2 %

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GROUP No. 12

I. Items of product mix and their uses

- Exhaust pipe & muffler for commercial car is used to flow the gas resulting from the combustion of fuel in the cylinder to the open air through a silinder drum called the muffler. It consists of a front exhaust pipe, silencer or muffler, and a rear exhaust pipe or a tail pipe.
- Exhaust pipe & muffler for motor cycle has the same function as descriped for commercial car, but some times the pipe and the muffler is welded together to a single part.

II. Total demand

The total demand of each item will in correspondence with the demand of commercial car and motor cycle, and it would be :

- Exhaust pipe & muffler for commercial car = 250,000 set per year
- Exhaust pipe & muffler for motor cycle = 500,000 pcs or set/year

III. Economic capacity

- Exhaust pipe & muffler for commercial car = 12,500 set per year
- Exhaust pipe & muffler for motor cycle = 25,000 pcs or set/year

IV. Fixed investment

1. Land and building

- Land, about 14 x 20 m2	= 280 m2 @ Rp. 10,000.=	= Rp.	2,800,000.=
- Buildings	= 140 m2 @ Rp. 50,000.=	= Rp.	7,000,000.=
	Sub total	= Rp.	9,800,000.=
		(US$.	8,909.=)

2. Machinery and equipment

- Guillotine shearing m/c 3x1500 mm	1 - unit	= US$.	4,000.=
- Excenter press m/c, 30 Ton		= US$.	12,500.=
	Sub total	= US$.	16,500.=

		= US$.	16,500.=
- Hand operated bending m/c 3x1200 mm	1 - unit	= US$.	2,500.=
- Edge folding m/c 1200 mm	1 - unit	= US$.	3,500.=
- Fly pressing m/c	1 - unit	= US$.	5,000.=
- Pipe bending equipment	1 - set	= US$.	3,000.=
- Gas welding equipment	1 - set	= US$.	2,500.=
- Grinding m/c	1 - unit	= US$.	2,000.=
- Electro plating set	1 - set	= US$.	5,000.=
- Diesel generator, 50 KW, 220/380V,	1 - unit	= US$.	15,000.=
- Tools, dies, and others	1 - lot	= US$.	5,000.=
Sub total		= US$.	60,000.=
		(Rp.	66,000,000.=)

3. Others

- Office equipment, transport, others	= US$.	10,000.=
	(Rp.	11,000,000.=)
Total fixed investment	= US$.	78,909.=
	(Rp.	86,800,000.=)

V. Working capital

Estimated at about 20 % of sales	= Rp.	55,000,000.=
	(US$.	50,000.=)

VI. Employment

- Director/owner	1 - people @ Rp. 300,000.=	= Rp.	300,000.=
- Supervisor	3 - people @ Rp. 90,000.=	= Rp.	270,000.=
- Skilled labor	10 - people @ Rp. 62,500.=	= Rp.	625,000.=
- Semi skilled labor	8 - people @ Rp. 42,500.=	= Rp.	340,000.=
- Helpers	8 - people @ Rp. 30,000.=	= Rp.	240,000.=
- Office staff	8 - people @ Rp. 60,000.=	= Rp.	480,000.=
- Unskilled labor	22 - people @ Rp. 20,000.=	= Rp.	440,000.=
Total	60 - people per month	= Rp.	2,695,000.=
		(US$.	2,450.=)

VII. Total sales

- Exhaust pipe & muffler for commercial car :
  = 12,500 x Rp. 8,000.= = Rp. 100,000,000.=
- Exhaust pipe & muffler for motor cycle :
  = 25,000 x Rp. 7,000.= = Rp. 175,000,000.=

Total sales = Rp. 275,000,000.=
(US$. 250,000.=)

VIII. Total cost

- Raw material = Rp. 156,000,000.=
- Salaries & wages = Rp. 32,340,000.=
- Fabrication (maintenance,fuel,depreciation, etc.) = Rp. 15,000,000.=
- Office and others = Rp. 720,000.=

Total cost = Rp. 204,060,000.=
(US$. 185,509.=)

IX. Profit before tax

- Profit before tax :
  Rp. 275,000,000.= - Rp. 204,060,000.= = Rp. 70,940,000.=
- Profit ratio on sales = 25.8 %
- Profit ratio on investment = 50.0 %

X. Break Even Point

- Total sales (S) = Rp. 275,000,000.=
- Variable cost (VC) :
  Raw material = Rp. 156,000,000.=
  Wages = Rp. 11,490,000.=
  Fabrication = Rp. 2,940,000.=

  Total VC = Rp. 170,430,000.=
- Fixed cost (FC) = Rp. 33,630,000.=
- Break Even Point = FC : (S - VC) x 100 % = 32.2 %

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TRANSLATION

BASIC AGREEMENT BETWEEN MOTHER UNIT*)
AND SUBCONTRACTING UNITS

Based on cooperation document entered into between P.T. KUBOTA INDONESIA and Small Scale Metal Works Industrial Units in Central Java Province signed on Monday, dated May 4, 1981, by :

1. ISMANGOEN NOTOSAPOETRO : Director/General Manager P.T. KUBOTA INDONESIA
2. H. ABUSAIRI : Chairman of PANCA KARYA COOPERATIVE

and bewitched by :

1. GITOSEWOYO SH : Director General of Small Scale Industry
2. SOEPARDJO ROESTAM : Governor and Head of Administration of Central Java

As a follow up herewith, on this day, Monday, dated November 28, 1983 in the office of PT. KUBOTA INDONESIA, Semarang, basic agreement is entered into between :

1. Mr. MASAKI WATE : Representing PT. KUBOTA INDONESIA as Mother Unit, hereinafter referred to as the First Party

and

2. Mr. S O E W A R T O : Owner of Metal Casting in Adiwerna, TEGAL hereinafter referred to as the Second Party

the two Parties hereto mutually agree to enter this agreement according the articles as follows :

A R T I C L E - I
Working Order (WO)

Implementation of this agreement is using WO which would be signed by both Parties every time the First Party gives a work order to the Second Party.

*) = Contractor.

A R T I C L E - II

The obligation of the First Party

For this purpose, the First Party has agreed :

1. To buy products by a volume as fixed in the WO, which its specifications and prices are specified.
2. If there are any price increase in raw material, the Second Party have the right to discuss about the prices of the products, which would be accepted by both Parties, at least 3 (three) months after the date of WO issued.
3. All products produced by Second Party will be paid as soon as possible and will not exceed 30 days after the date of delivery.
4. Products delivered by Second Party to the First Party may not be rejected based on unreasonable reasons, rejection can only be done by the First based on lower standard than the specification and quality as has been agreed according to the definition stated in the WO.
5. Rejection of products which are conform to the agreed WO may cause the First Party get a sanction by the Government Institution cq. Department of Industry.

A R T I C L E - III

The obligation of Second Party

The Second Party has agreed to :

1. Deliver products conform to the specification stated in the WO, among others stating the volume, price, design, quality, and delivery time.
2. Neglecting intensionally, not obeying the WO agreement may cause the Second Party get a sanction by the Government cq. Department of Industry.

A R T I C L E - IV

Supply of raw materials

When it is necessary and the First Party has the ability, the First Party will supply raw materials for the production by the request of the Second Party.

The value of raw materials will be fixed through the discussion, and must not exceed the reasonable market price.

A R T I C L E - V

Design and technical drawing

The First Party is able to hand out complete drawing and design of product will be produced by the Second Party. In this case the Second Party will preserve confidentially, while the technical drawings/design are still always as the property of the First Party.

A R T I C L E - VI

C r e d i t s

When it is necessary, the First Party can act as warrant on loan requested to Banks and based on the WO agreement.

A R T I C L E - VII

Samples of Product

WO will be given to the Second Party by the First Party as an evidence of order on a certain product after the Second Party is able to present samples of the mentioned products at least 4-pieces conforming the specifications fixed by the First Party.

Those samples will be used as the following :

1-piece will be used by the Second Party as the Standard of production
1-piece will be used by the Second Party as a reserve
1-piece will be used by the First Party as inspection standard
1-piece will be used by the First Party as reserve.

A sample has to be replaced if it does not meet the requirements in tolerance fixed by the First Party.

A R T I C L E - VIII

I n s p e c t i o n

1. Production goods delivered by the Second Party will be inspected by the

First Party. Every deviation from the agreed specifications (conforming to the WO) has to be declared to the Second Party.

2. When the production goods delivered are not conform to the specifications in the WO, the Second Party has to replace with new products by the same volume within a determined time, or to repair the production goods which are not conform within a determined time too.

3. When the production goods are not inspected by the First Party within a determined time and caused of getting lost/defect will be on the responsibility of the First Party.

A R T I C L E - IX

Relationship between the Second Party and the First Party

(Relation between Subcontractor and the Mother Unit)

Units of Subcontractor (Second Party) can take the form of cooperative undertaking or directly.

A R T I C L E - X

FORCE MAJEUR

Both Parties have the right to rediscuss this agreement when they get a hamper to fulfil the obligation caused by conditions beyond the ability, among others : natural disaster, uproars, strikes, etc.

A R T I C L E - XI

Arbitrages by Department of Industry

When in the excecution of this agreement emerges difference interpretation both Parties have agreed to solve by way of consultation to find solution, but when it fails to get mutual understanding, both Parties pointed out Department of Industry to be the arbitor.
When by way of arbitrage the solution can not still be found yet, both Parties agree to get the solution through the District Court in Semarang.

A R T I C L E - XII

Period of agreement

This agreement is into force for a period of One year since the date of signing and can be prolonged by mutual agreement between both Parties by the possibility that one party propose changes to be agreed by other parties, a least 3-months before this agreement ended.

In witness whereof, this agreement is signed on this day : M O N D A Y dated November 28, 1983 in Semarang.

On behalf of First Party	On behalf of the Second Party
PT. KUBOTA INDONESIA	Owner of Metal Casting Plant
Signature	Signature and Stamp.
MASAKI WATE	
Director