

5.4 燃料・タイヤ管理

5.4.1 燃料管理

燃料管理には、品質管理、在庫量過不足管理と使用実績の統計管理がある。

- (1) 北及び南ターミナルに給油スタンドがあり、そこには給油係が待機しており、使用の都度カギをあけて給油する。(写真57)

補給量は一定量(50ℓ)と定められており、それを運転士が申告することになっている。

- (2) 車両毎の毎日の燃料オイル使用量及び走行料を記入し、15日毎に集計している。

(表11)

更に月間車両別燃料、オイル消費量一覧表もある(表12)が、記録を残しているだけで、データの活用が行われていない。今後、データをもとにして定期点検整備を実施し、燃料消費率の改善や噴射ポンプ等機器の状態の確認をはかる必要がある。

5.4.2 タイヤ管理

タイヤは、員数管理の他に標準空気圧の測定とか、取付位置のローテーションを実施することにより、タイヤの寿命が延伸できるので、指導・教育が必要である。

- (1) フロント用タイヤは1000本(500両分)の在庫があるが、長期の保管は劣化を招くことになるので、使用数量を把握し計画的な購入を実施する必要がある。

一方、管理状態が悪く、修理可能車にもかかわらず廃品ブレーキドラムを台にしてタイヤを外している(写真58)とか、廃車同様の放置車両に新品ラジアルタイヤを取付けており、くもの巣がはっている車両もある(写真59)。

- (2) 再生用の台タイヤとして、

多量のタイヤが屋外に置かれているが、まだ充分使える程度の残溝のタイヤも見受けられる(写真60)。

逆に稼動車に溝なしのひと目で危険と思われるタイヤを装着している(写真61)。溝なしタイヤはスリップしやすく思わぬ事故を招くことになるので、タイヤ管理の重要性を再認識させる教育が必要である。



写真57. 給油スタンド

表 1 1. 走行距離記録表

MERTO MANILA TRANSIT CORPORATION
North Avenue, Diliman, Quezon City

MONTHLY
KILOMETER READING

Bus No.

Month

Day	Trips	Odometer Reading	Engine Oil	Km. Run. Miles	Km.	Fuel	Km/Lt.	Rev. Km.	REMARKS
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
		TOTAL:							

16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
		TOTAL:							

NOTE: Use only Columns Applicable
Use Km. from Revenue if ODOMETER
REV. Km. Kilometer taken from Revenue.

Collator
/bert 12887

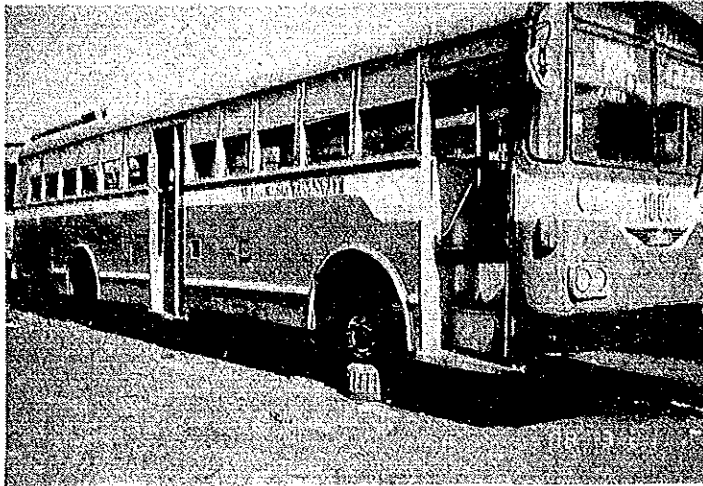


写真58. ブレーキドラム
を利用した台

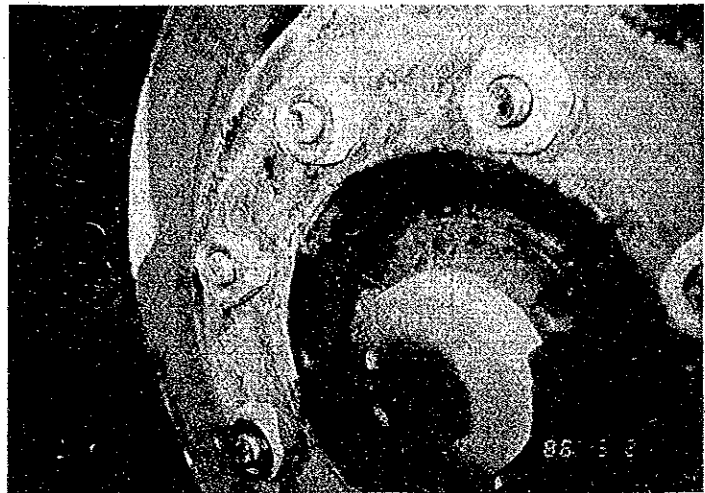


写真59. 新品タイヤ
にもくもの巣



写真60. 残溝タイヤ
も見られる

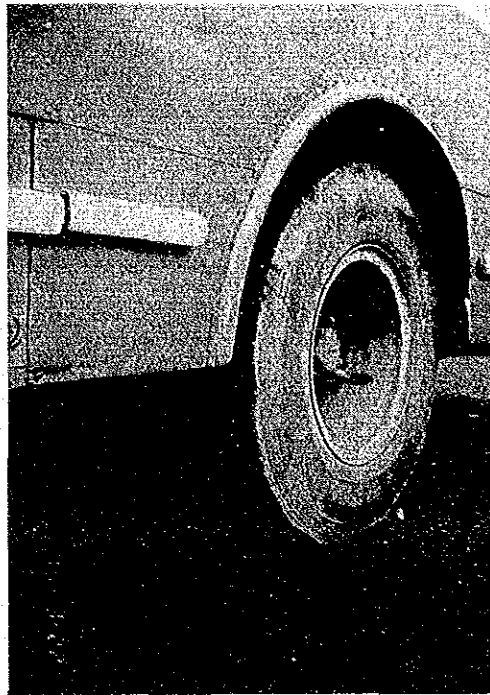


写真 6 1. 稼働車の溝なしタイヤ

5.5 技術管理

整備員の定着率の低さが技術力の向上を妨げており日常の整備に支障をきたしている。

5.5.1 整備員の技術レベル

(1) リヤホーシング Assy 交換作業

ボディをフレームスタンドで支え、シャックルピンを抜くことが標準作業であるが、現状では、シャシスプリングに荷重がかかった状態のまま作業を行っているのでシャックルピンを抜くのが困難である。(写真 6 2)

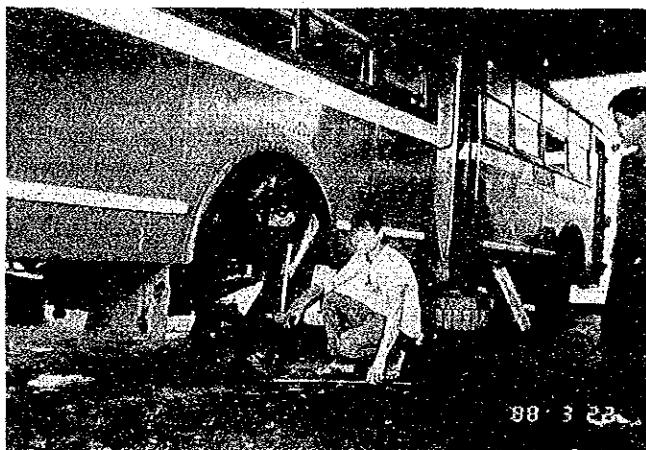


写真 6 2. シャックルピン抜き作業

(2) ライニング交換作業

リベッターが設置されているにもかかわらず、ハンマーとポンチでライニングリベットをかしめている（写真63）。ライニングの張り替えは重要な作業であるので、必ずリベッターを使用し均一にリベットをかしめるという確実な作業方法で行なう必要がある。

(3) タイヤ交換作業

インパクトレンチが備付けられているにもかかわらず使用しないことが実態である。手作業で行うためホイール・ナットがゆるまず、ガスで溶断したり、ホイールを分解するなど無駄な作業を実施せざるをえない状態である。どこでも、誰でもインパクトレンチを使用できるよう指導・教育が必要である。



写真63. ライニング交換作業

(4) 重要保安部品再生

摩耗したため取外したスプリング・ピンをアーク溶接で肉盛りし，旋盤で仕上げてい
る（写真 6 4）。

重要保安部品の加工・修正は，硬度や強度の低下を招く恐れもあるので，正規の部品
を使用するよう指導・教育が必要である。



写真 6 4. 重要保安部品再生

5.5.2 整備要員の技術教育

整備技術の向上に関しては，計画的に教育することが望ましいが，現状では上級者クラ
スのみ PHI および P I M A S C O に委託して行っている。従って一般整備員の整備技術
教育は行われていないのが現状である。

6. 技術協力のあり方

マニラ首都圏の交通事情は、自動車が老朽化し、また、殆ど整備されないまま使用に供されているため、路上故障に伴う頻繁な車両渋滞、車両未整備に起因するディーゼルスモークによる大気汚染等が激化しており、これがマニラ首都圏における大きな社会問題となっている。

特に、公共輸送機関として重要な役割を果たしているバス輸送は、車両の甚だしい老朽化及び遊休化、未整備車両の運行、エンジン、シャシ等の補給部品の不足並びにその補給体制の不備、管理体制の不備、整備者の技術レベルの低さ等の原因によりバス輸送力が極めて低下しているのが実情である。

そのため、公共輸送を最大の使命とし、かつ、民間バス会社を指導・監督できる立場にあるMMTCに対しこれら諸問題を解決若しくは低減させるため、バス車両整備・運行の包括的技術協力を緊急に実施する必要がある。

今後のMMTCに対するバス再活性化、早急に実施すべき項目と計画的に実施すべき項目とに区分される。

早急に技術協力を実施すべき項目

- (1) MMTCのバス車両の整備・保守の実施
- (2) 上記分野を補完的に実施させるための整備機械の導入
- (3) 資材・部品在庫管理の確立

計画的に実施すべき項目

- (1) バス整備士育成・訓練計画の策定並びに実施
- (2) バス運行管理及び車両管理体制の確立
- (3) バス運転士の採用及び教育・訓練の充実
- (4) バス車両の購入に当たっての計画的方策の策定

6.1 専門家の派遣

MMTCの事業形態からみて、北・南ターミナルにそれぞれ次の専門家を派遣する必要がある。

専門家の分野	北ターミナル	南ターミナル
総合管理(団長)	1名	—
整備管理(副団長)	—	1名
運行管理	1名	—
資材及び部品管理	1名	—
整備技術者	2名	3名
コーディネータ	1名	—
合計	6名	4名
	10名	

6.2 整備用機器の供与

整備用機器の供与に当っては、MMTCの整備要員数、技術レベル及び整備内容を勘案し、車両検査機器を含む(表13)機器類を供与する必要がある。

表13. 整備機器一覧表

(項 目)	(個 数)
1. ブレーキ・テスタ	1
2. 速度計試験機	1
3. サイドスリップ・テスタ	1
4. 黒煙測定器	2
5. ディーゼル回転計	2
6. ノズルテスタ	2
7. ブレーキシューリベッタ	2
8. オンランドタイプ水中ポンプ	2
9. エア・コンプレッサー	4
10. 温水洗車機	4
11. パイプベンダーセット	2
12. メカニックキット	20
13. ツールスタンドキット	20
14. ツールスタンド	2
15. トルクレンチ(920, 2800, 4200, 10,000 kg/cm ²)	1セット
16. エア・インパクトレンチ(能力ボルト径9, 16, 38 mm)	6セット
17. 電動式チェーンブロック	1
18. チェーンブロック	2
19. シヤシルブリケータ	8
20. ギャルブリケータ	4
21. ミグ溶接機	1
22. ガレージジャッキ	20
23. エア・ジャッキ	4
24. エア・ホースリール	20
25. コードリール	20
26. ガレージランプ	20
27. キャスタ	100

(項 目)	(個 数)
28. スチールカッタ(直線用)	2
29. " (曲線用)	2
30. 万 力	5
31. 定 盤	1
32. ハンマー	10
33. エア・バルブラッパ	2
34. 部品皿	40
35. 部品洗浄台	4
36. フロンテストゲージ	2
37. エアコンバキュームポンプ	2
38. 測定用器具セット	1セット
シリンダーゲージ	
ダイヤルゲージセット	
鋼製スコイヤー	
コンベックスルール	
Vブロック	
マイクロメータセット	
スチールルール	
直定規	
鋼製巻尺	

6.3 整備用補給部品の供与

車両の状態から判断し、エンジン及びシャシ部品を含む整備用補給部品を選定して供与する必要がある。

6.4 技術移転

派遣された専門家は各々の分野において、下記項目の問題点の抽出と改善案をまとめ、集合教育と日常業務を通じて技術移転をおこなう。

6.4.1 総合管理

再活性化のための中・長期計画の策定

6.4.2 運行管理関係

(1) 運行実態と車両の使用方法の改善

(2) 運転士による車両点検制度の見直しと点検励行の指導

(3) 運転士による車両故障の事前感知教育

6.4.3 車両・整備管理関係

(1) 車両の使用状況と状態の確実な把握

(2) 車両整備計画の確立

(3) 中・長期的観点からの整備計画の策定と推進，計画整備の完全履行

(4) 整備体制の見直し

(5) 整備作業方法の改善（効率化，工程管理）

6.4.4 資材・部品管理関係

(1) オーダシステムの確立

(2) 在庫管理システムの確立

(3) 出庫管理システムの確立

6.4.5 整備施設・機器関係

(1) 整備施設の保守管理方法の改善

(2) 整備機器の取扱い及び保守管理の指導

6.4.6 整備要員の教育

(1) 整備体制の重要性の認識

(2) 整備技術水準向上のための教育

(3) 安全作業の認識と作業方法の指導

7. ま と め

我が国が開発途上国に対して実施してきた経済協力、特に資金協力（円借款及び無償資金協力）は、新しい施設の建設、機材等の供与が主体であったが、開発途上国の中にはこれらの施設や機材等の維持管理技術の低さ及び保守管理体制の不備等により本来の機能が十分発揮されていない場合も多い。これらの問題に対処するためには、当該国の技術者自らが供与機材等を維持管理できるよう技術の向上を図る必要がある。

今回調査を行った比国MMTCにおいても例外ではなく、車両（バス）の約50%が非稼動状態になっており、公共輸送機関としての役割を果たすのに大きな支障をきたしているのが現状である。

この問題に対処するため、我が国は2回にわたって調査団をMMTCに派遣し、車両、補修部品、整備設備の現状と管理体制並びに整備要員の技術レベル等について詳細に調査を行い、バス再活性化協力について比国側と協議の結果、別添「討議議事録」（ミニッツ）のとおり合意した。

今回の技術協力は、非稼動状態にある供与車両を再活性化し、MMTC職員自らの手でこれを維持管理できるよう必要な補修部品及び整備機材を供与し、かつ、運行管理、車両管理、部品在庫管理、整備設備管理並びに整備士育成等に係る我が国の専門家10名を派遣し、技術移転を図ろうというものである。

技術協力に当たっては、MMTC整備工場の現場作業者に対して技術指導を行うのみならず、ゼネラルマネージャーをはじめ工場の幹部に対しても総合管理、工程管理、技術管理及び資材管理等整備工場運営全般にわたって指導を行うこととなっており、その協力効果が期待できるものと思われる。

なお、今回の技術協力は、今後のこの種の案件に対する技術協力の一つのテストケースでもあり、これを成功させるためには外務省、運輸省、JICAをはじめ、国内バス会社等関係各機関との十分な協議と密接な連携が必要である。

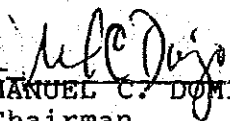
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1. ミニッツ	67
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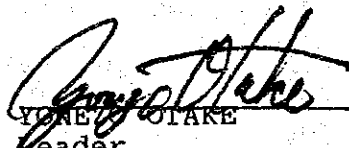
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MINUTES OF DISCUSSIONS
BETWEEN
THE JAPANESE SURVEY TEAM
AND
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF
THE PHILIPPINES
ON
THE TECHNICAL COOPERATION
FOR THE
MAINTENANCE OF MMTC BUSES

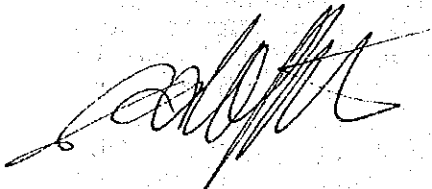
MANILA, MARCH 24, 1988

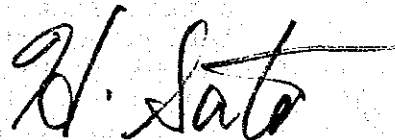


MANUEL C. DOMINGO
Chairman
MMTC, Management Committee



YONEJI OTAKE
Leader
Japanese Survey Team





MINUTES OF DISCUSSIONS
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The Japanese Survey Team, organized by Japan International Cooperation Agency (JICA), headed by Mr. Yonezo Otake, visited the Republic of the Philippines from 17th to 25th, March 1988, and had a series of discussions with the officials of the Department of Transportation and Communications (hereinafter referred to as "DOTC") and the Metro Manila Transit Corporation (hereinafter referred to as "MMTC"), headed by Undersecretary Manuel C. Domingo, on the subject of the Technical Cooperation for the Maintenance of Buses of MMTC (hereinafter referred to as "this cooperation").

As a result of the discussions, both parties agreed that the basic items of this cooperation to be recommended to their respective governments for necessary measures to implement the same, are as follows:

1. MMTC upgrades the bus maintenance system in its North and South Maintenance Shops. Japanese government implements a technical cooperation aimed at improving the above-mentioned maintenance system.
2. The purpose of this cooperation is technology transfer to the staff members engaged in the maintenance system of MMTC: shop's managers, foremen, inspectors, storekeepers, mechanics and other maintenance personnel. The term of this cooperation is basically one year.
3. Likewise, the preparation of a rehabilitation program for MMTC buses shall be included in this cooperation.
4. For this cooperation, the Japanese government will dispatch experts in the fields of management and maintenance skills, and supply equipment and tools including some spare parts of buses, which are indispensable for the technology transfer, within the limit of the budget of Japanese side. The Japanese team investigates the necessary worker

Medina
AS

N.S.

skill, equipment, tools and spare parts to enable an effective technology transfer. The dispatch of experts and supply of equipment will be implemented by JICA in response to the request from the Government of the Philippines. Details of the experts to be dispatched are shown in ANNEX I.

5. As mentioned in Item 2, the purpose of this cooperation is to transfer technology to the staff members of MMTC, therefore, MMTC will assign appropriate counterpart personnel for each Japanese expert. Schedule of "on-the-job training" program will be prepared by Japanese experts in coordination with MMTC counterpart personnel.
6. The tentative schedule of this cooperation is shown in ANNEX II. In order to start this cooperation immediately, Philippines side will submit official request form for dispatching experts (A-1 Form) and supplying equipment (A-4 Form) as soon as possible, and make necessary arrangements for accepting and handling of equipment supplied by Japanese side when they arrive in the Philippines.
7. MMTC will bear local costs which are necessary to carry out this cooperation. The local costs include conveniences for Japanese experts such as providing office rooms with air conditioning, desks, lockers and telephones for executing their duties, and to bear expenses which are necessary for handling, inland transportation and installation of equipment, supplied by Japanese side. MMTC will facilitate the early installation of the equipment.
8. If MMTC is privatized during the effectivity of this cooperation, this agreement shall be reconsidered by both governments.

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ANNEX I Details of the Experts to be dispatched

1. North Maintenance Shop

Leader (General Control) -----	1
Operation Control -----	1
Spare Parts, Stock Control -----	1
Mechanical Engineer (Trouble-Shooter) -----	2

Sub Total	5

2. South Maintenance Shop

Sub Leader (Process Control) -----	1
Mechanical Engineer -----	3

Sub Total	4

3. Coordination

Coordinator -----	1

Total	10

M. J. J.
J. J.
W. S.

ANNEX II Tentative Schedule

	1	2	3	4	5	6	7	8		16	17	18
Procurement of equipment												
Shipping and delivery												
Expert I												
Expert II												

Meeting
[Signature]
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D.S.

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA

APPLICATION FOR EXPERT

By the Government of the Philippines the Government of Japan
for an expert in Maintenance of Bus

- Notes— (a) This form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical assistance required. Full and accurate completion of this application form will avoid much reference back and lead to speedier action.
- (b) The requisite number of copies of the Form A 1 including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

<p>1. Background Information This section should show as precisely as possible the general nature of the project for which the expert is required, stating whether it comes within the Government's development programme. It is important to indicate whether the project is a new enterprise or whether it was started previously. In the latter case, any assistance received under other technical co-operation programmes (e.g. under United Nations auspices) should be stated. With regard to industrial enterprises, some impression of the size is important and the output and number of workers to be employed are useful indications. The type of process, make and age of industrial or scientific equipment with which the expert will be concerned should be specified. In the case of academic establishments, it is an advantage to know the number of annual intake of students, their level of attainment, numbers and status of existing staff and details of any research facilities and the level of research being undertaken (Copies of brochures, annual reports, financial statements, calendars, syllabus of instruction etc. should be attached where applicable).</p>	<p>Metro Manila Transit Corporation (MMTC) under the supervision of the Department of Transportation and Communications (DOTC) makes every effort to stabilize the transportation by buses in Metropolitan Manila. Existing number of the buses belonging to MMTC is 513 units including 400 units thru the OECF loan contracted in 1980. Almost all units are confronted with overhauling situation and in fact about 30% of these units are out of order. With these circumstances we would like to request the Government of Japan to dispatch experts to MMTC for the bus rehabilitation by means of "on the job training."</p>
<p>2. Specification for the post.* (a) post title (b) duties for which the expert will be responsible. These should preferably be listed, and it is important to give as much detail as possible. (c) authority to whom expert will be responsible (d) Qualification and experience required and approximate age limits (e) number of personnel required.</p>	<p>Engineer of bus maintenance and coordinator.</p> <p>Technical advice on general control (administration), operational control, stock (spare parts), engine overhaul body repairs, bus air conditioning system, maintenance system, etc.</p> <p>The General Manager of Metro Manila Transit Corporation.</p> <p>Experts are required to have experiences of more than ten (10) years in their own field and be able to communicate in English Ten (10) persons: for detail see attachment.</p>
<p>3. In the case of continuous projects, give name and particulars of understudy or counterpart who is to work with the expert</p>	<p>Refer to the attachment.</p>
<p>4. Terms and condition of appointment: (a) duration (b) actual place of employment, nearest town and post office (c) if living accommodation to be provided, state whether furnished or unfurnished, and whether suitable for married man with family: (i) daily allowance for food if accommodation only provided (ii) daily rate for accommodation and food if neither are provided in kind</p>	<p>Three (3) persons for administration: Fifteen (15) months Seven (7) persons for shops : Twelve (12) months</p> <p>MMTC North Terminal, Quezon City and South Terminal, Tagig</p> <p>According to the rules and regulations of Japan International Cooperation Agency (JICA) provides.</p> <p style="text-align: center;">- ditto -</p> <p style="text-align: center;">- ditto -</p>

* It is essential that full particulars should be given. If the space provided is inadequate, they should be given on a separate sheet.

4. Terms and conditions of appointment (Cont'd.)	
(d) daily and nightly rates of subsistence payable when away from base on duty	To be paid by the Japanese Government.
(e) are costs of internal travel paid or car provided?	Transportation Allowance will be paid.
(f) what leave arrangements are suggested?	All kinds of leave which will be approved by JICA.
(g) extent to which free hospital and medical treatment is to be provided for the expert and his accompanying dependents, if any	The experts will be given the same treatment as MRTC staffs.
(h) is expert free from income tax?	Yes
(i) will personal effects imported on first arrival be cleared free of custom duty?	Yes
(j) does host government undertake to indemnify expert in respect of damages awarded against him for actions performed in the course of his official duties?	yes
(k) approximate date on which the expert is required to arrive in receiving country	June 1988 (3 persons), September 1988 (7 persons)
(l) any other information	-
5. Proposals for apportionment of costs of salary and allowance and passages	None
6. Previous steps, if any, to fill the post: If any previous attempt has been made to fill the post under the Colombo Plan (including ICA) or from any external source (UN, Specialised Agency or other) please indicate:	None
(a) to whom application was addressed, with date	None
(b) result or present stage of negotiations	None
(c) are other experts working in this area in associated projects or have there been reports by these experts working in this field previously? If so, are any available?	Minutes of discussions between the Japanese Survey Team and authorities concerned of the Government of the Philippines on the Technical Cooperation of Maintenance of Buses.
7. Correspondence: Name, postal and telegraphic address of official to whom correspondence regarding this application should be forwarded	Mr. Conrado K. Tolentino General Manager, Metro Manila Transit Corporation North Avenue, Quezon City, Philippines

Signed 

on behalf of the Government of the Philippines

Date: 24 March 1988

For use only by Donor Governments

Application accepted/rejected/withdrawn

on behalf of the Department of

Date:

ANNEX I. Details of the Experts to be dispatched

1.	North Maintenance Shop	
	Leader (General Control) -----	1
	Operation Control -----	1
	Spare parts, Stock Control -----	1
	Mechanical Engineer (Trouble-Shooter) -----	2
	<hr/>	
	Sub Total	5
2.	South Maintenance Shop	
	Sub Leader (Process Control)-----	1
	Mechanical Engineer -----	3
	<hr/>	
	Sub Total	4
3.	Coordination	
	Coordinator -----	1
	<hr/>	
	Total	10

Counterpart who is to work with the experts

1. North Maintenance Shop
 - Leader (General Control) - Conrado K. Tolentino (General Manager)
 - Operation Control - Tomas J. Perfecto (Maintenance Dept. Manager)
 - Spare parts, Stock Control - Vittorio C. Carpio (Supply and Storage Div. Manager)
 - Mechanical Engineer - Ramon A. Generoso (Engineering Div. Manager)
Emilio Garcia (Technical Assistant)
2. South Maintenance Shop
 - Sub Leader - Lorenzo C. Rivera (Maintenance Div. Manager)
 - Mechanical Engineers - Amado Azur (general Foreman)
Rolando Padama (Auto Repair Foreman)
Valentino Nool (Auto Repair Foreman)
3. Coordination
 - Coordinator - Luisito S. Suarez (Adm. Div. Manager)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
Equipment for Training or Research Institutes and for Equipment accompanying Experts

APPLICATION

By the Government of the Republic of the Philippines to the Government of Japan
from on supply of equipment for technology transfer of Bus Maintenance
(Country)

- Notes:—(a) This Form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical cooperation required. The careful completion of this application form will avoid much reference back and lead to speedier action. Separate forms A 4 should be used for requests for equipment for each individual institute or project.
- (b) The requisite number of copies of the Form A 4, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Background Information

Please describe as concisely as possible the general outlines of the project for which the equipment is required, indicating whether the latter is (a) for use by an expert in the performance of his duties (b) for a training scheme of institution or (c) for a research institution. If either (b) or (c) please say whether the equipment is for the establishment of a new institution or the expansion or re-organisation of an existing one (e.g., by the provision of a new department, &c.). The name and exact location of the institution, its approximate cost and the authority responsible for it should be stated. Where appropriate details should be given of the availability of any services required for the operation of the equipment. This would include operation by electricity (i.e. type of current, periodicity, voltage and any variations, phases, frequency etc. and if D.C. is the only current available please give full details), water reticulation or steam gas etc. Details of similar equipment already in use should be given.

Metro Manila Transit Corporation (MMTC) under the supervision of the Department of Transportation and Communications (DOTC) makes every effort to stabilize the transportation by buses in Metropolitan Manila.

Existing number of the buses belonging to MMTC is 513 units including 400 units thru the OECF loan contracted 1980. Almost all units are confronted with overhauling situation and in fact about 30% of these units are out of order. With these circumstances we would like to request the Government of Japan to dispatch experts to MMTC for the bus rehabilitation by means of "on the job training". For the effective implementation of this project the Government of the Philippines requests the supply of spare parts, equipment and tools necessary to conduct "on the job training" in MMTC.

2. Description of equipment required.

Please give a full description of each item and general specifications where possible. The manufacturer and estimated cost of each item if known together with details of the proposed end use of item should be given. Where applicable, give details of any special packing or tropic proofing required and indicate whether handbooks or instruction data supplied in English will suffice. If appropriate, please indicate any required priorities or phasing of deliveries and advise whether adequate facilities exist for maintenance and servicing of the type of equipment requested. (If lengthy, detailed lists should be annexed: it would be convenient to have separate annexures for (a) films, (b) books and (c) other equipment.)

Refer to the attachments

3. Has this equipment request already been directed to any other Agency of Colombo Plan country and if so to whom was it addressed and with what result?

None

4. Has the list of equipment already been discussed with representatives of the supplying country/ies? If so, please indicate what stage the discussions have reached.

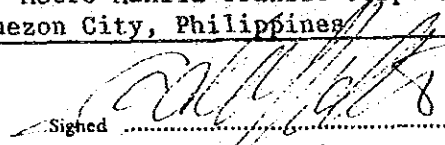
Yes, discussed with the Japanese Survey Team dispatched by Japan International Cooperation Agency (JICA).

5. Furnish full particulars in respect of—
(a) Consignees;
(b) Official to receive documents and enquiries; and
(c) Clearing agent at port of entry.

- (a) General Manager, Metro Manila Transit Corporation (MMTC)
(b) General Manager, Metro Manila Transit Corporation (MMTC)
(c) Manila

(2)

<p>6. Where equipment is required for use by an expert Please indicate—</p> <p>(a) The country or agency from which the expert has been requested or obtained.</p> <p>(b) His duties and length of secondment (a reference to the relative Form A. 1 will suffice when the expert is being provided by the country to whom the equipment request is addressed).</p> <p>(c) What use is proposed for the equipment when the expert's period of secondment terminates?</p> <p>(d) By what date is the equipment required?</p>	<p>(a) Japan International Cooperation Agency (JICA), the Government of Japan.</p> <p>(b) Technology transfer at the workshops for one year.</p> <p>(c) All the equipment should be provided for use at the workshops.</p> <p>(d) September, 1988</p>
<p>7. Where equipment is required for Training or Research Institutions Please indicate—</p> <p>(a) Nature and standard of training or research to be undertaken</p> <p>(b) Total number of students to be accommodated from within the country or from elsewhere in the Region, the qualifications for admission, the duration of courses, and the annual output of trainees</p> <p>(c) Whether there is already a similar institute(s) in existence in the country. If so, please give details</p> <p>(d) Whether buildings are already available. If not has construction started and when is it expected to be completed?</p> <p>(e) Whether qualified staff to handle the equipment has been recruited or is proposed to be recruited locally. If not is it proposed:—</p> <p>(i) to recruit foreigners under aid-programmes?</p> <p>(ii) to train locally recruited personnel abroad in handling equipment? (the reference numbers of any Forms A. 1 or A. 2 relating to such requests should be quoted)</p> <p>(f) Taking into account the answers to (d) and (e) above, what is the date by which the equipment is required and the date on which training or research work is to commence.</p> <p>(g) Whether any assistance in drawing up the Scheme has been obtained from outside experts? (Any specialist reports or Government surveys (e.g., Educational Committee Reports, etc.), bearing on the request should be provided if possible)</p>	<p>(a) On the job training for the maintenance of buses. Training kits, such as handouts, pamphlets, illustration charts, pictures, films, slides, etc. are requested for facility of training.</p> <p>(b) Relevant number of skilled workers in accordance with experts training schedule.</p> <p>(c) none</p> <p>(d) Available</p> <p>(e) Already recruited</p> <p>(f) as soon as the experts for shops arrive in Manila.</p> <p>(g) none</p>
<p>8. Correspondence Name, Postal and Telegraphic Address of official to whom correspondence regarding this proposal is to be forwarded</p>	<p>Mr. Conrado K. Tolentino General Manager, Metro Manila Transit Corporation North Avenue, Quezon City, Philippines</p>

Signed  on behalf of the Government of the Philippines

Date: 24 March 1988

For use only by Donor Government
Proposal accepted/rejected/withdrawn

on behalf of the Department of

Date:

LIST OF EQUIPMENT

DESCRIPTION	QUANTITY
1. Brake Tester	1
2. Speedometer Tester	1
3. Side Slip Tester	1
4. Diesel Smoke Meter	2
5. Diesel Tachometer	2
6. Nozzle Tester	2
7. Brake Shoe Riveter	2
8. On - land Type Submersible Pump	2
9. Air Compressor	4
10. Hot Water Car Washer	4
11. Pipe Bender w/accessories (3/8"-1-1/4")	2
12. Mechanic kit	20
13. Tool Stand kit	20
14. Tool Stand	2
15. Tpoque Wrench (10,000, 4,200, 2,900, 1,000)	1
16. Air Impact Wrench (325, 135, 95)	6
17. Electric Chain Block (2 ton)	1
18. Chain Block (1.5 ton)	2
19. Chassis Lubricator	8
20/ Gear Lubricator	4
21. CO ₂ Welder w/accessories	1
22. Garage Jack (10 ton)	20
23. Air Jack (Frane lift)	4
24. Air Hose Reel	20
25. Cord Reel	20
26. Garage Lamp	20
27. Caster	100
28. Steel Cuttler Straight	2
29. Steel Round	2
30. Pa Rallel Bench Vise	5
31. Surface Plate (1,800 x 1,000)	1
32. Hammer	10

33. Air Valve lapper	2
34. Tool Tray	40
35. Parts Washing Stand	4
36. Freon Test Gauge	
37. Aircon Vacuum Pump Set	2 set
38. Measuring Instruments	1
Cylinder Gauge	1
Dial Gauge Set	1
Steel Square (300)	1
Convex Rule (3.5 M)	1
V Block (125)	1
Micrometer Set	1
Steel Rule (300, 600)	1
Straight edge (540)	1
Steel Measuring Tape (20 M)	1

SPARE PARTS (ASSY.)

DESCRIPTION	PART NO.	QTY.
1. STARTER ASSY.	28100-1310	50
2. PROPELLER ASSY.	37120-5321	50
3. POWER STEERING PUMP ASSY	44310-1080	50
	44310-1540	
4. POWER STEERING BOOSTER ASSY.	44270-1560	25
	44270-1580	
5. AIR BRAKE VALVE ASSY. (FOOT VALVE)	47160-1550	25
6. DOOR ENGINE ASSY. (DOOR BOOSTER)	TR8GIR	25
7. CLUTCH BOOSTER ASSY.	32210-1051	50
	32210-1052	
8. CLUTCH MASTER ASSY.	31420-1351	50
	31420-1352	
9. FAN DRIVE SYSTEM (WHOLE ASSY.)		25
10. OIL PUMP ASSY.	15110-1041	25
	15110-1042	
11. AIR COMPRESSOR ASSY.	29100-1320	25
12. WIPER MOTOR ASSY.	*ES440M	25
13. (WATER PUMP ASSY.) PUMP COOLANT ASSY.	16100-1350	10
	16100-1351	
14. OIL COOLER ASSY.	15710-1190	10
15. GEAR ASSY. (STEERING W/ PITMAN ARM)	45310-1830	10
	45411-1910	
16. DIFFERENTIAL ASSY.	41110-4031	5
17. METER ASSY. COMB. (CLUSTER INSTRUMENT)	83100-2460	10
18. TRANSMISSION ASSY.	33020-3190	10
	33020-3290	
19. CLUTCH DISC ASSY.	31250-2350	50
20. CLUTCH COVER ASSY.	31210-1210	10
21. DISC WHEEL	42611-1480	50
	-1650	
	-1730	
22. AIR CONDITIONER UNIT (SPLIT TYPE)		5

- | | | |
|------|---|---------|
| I. | Engine Spare Parts for LR-200 | 50 sets |
| II. | Underchassis Spare Parts for RC-421 | 50 sets |
| III. | body Parts for RC-421 | 50 sets |
| IV. | Air Conditioner Parts for Model 188T/188T | 50 sets |



SAMPLE ONLY

CYLINDER HEAD

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY/UNIT</u>
11115-1211	GASKET, CYL. HEAD	2
11213-1140	GASKET, CYL. HEAD COVER	2
11110-2381	HEAD ASSY. CYL.	2

CYLINDER BLOCK

11273-1030	GASKET, CYL. BLOCK SIDE COVER	1
11383-1050	GASKET, OIL SEAL RETAINER	1
11380-1030	RETAINER ASSY OIL SEAL	1
9828-01168	SEAL, OIL	1
9002-33107	HOSE, AIR	7
11461-1020	LINER, CYL.	6
12151-1240	GASKET, OIL PAN	1
9851-25106	O-RING	2
9851-16101	O-RING	1

TIMING GEAR COVER AND FLYWHEEL HSG.

11351-1771	HOUSING, FLYWHEEL	1
11320-1160	COVER ASSY, T/G CASE	1
11321-1120	CASE, T/G	1
11328-1010	GASKET, T/G CASE	1
11329-1160	GASKET, T/G CASE COVER	1
9669-22101	GASKET, FLANGE	1
9828-80105	SEAL, OIL	1
9851-39101	O-RING	1
9851-46101	O-RING	2
9851-54101	O-RING	1

MAIN MOVING PARTS

13541-1170	FLYWHEEL	1
13453-1021	GEAR, FLYWHEEL RING	1
13455-1160	BOLT, FLYWHEEL	8
9401-10300	BOLT	9
9209-42103	NUT	1
13471-2170	PULLEY CRANKSHAFT	1
13407-1121	DAMPER, SUB ASSY CRANKSHAFT	1
13260-1360	ROD ASSY CONNECTING	6
13211-1592	PISTON STD.	6
13212-1181	PISTON STD. O/S .025	6
13213-1411	PISTON STD. O/S .025	6
13214-1381	PISTON STD. O/S .025	6
13215-1411	PISTON O/S .100	6
13011-1770	RING SET, PISTON STD.	1
13012-1280	RING SET, PISTON O/S .025	1
13013-1530	RING SET, PISTON O/S .050	1
13014-1520	RING SET, PISTON O/S .075	1
13015-1570	RING SET, PISTON O/S .100	1
13251-1160	PIN PISTON STD	6
9819-48102	MNG. RETAINER	12
11701-1491	BRG. SET CRANKSHAFT STD.	1
11703-1491	BRG. SET CRANKSHAFT U.S. 0.25	1
11704-1491	BRG. SET CRANKSHAFT U.S. 0.50	1
11705-1491	BRG. SET CRANKSHAFT U.S. 0.75	1
11706-1491	BRG. SET CRANKSHAFT U.S. 1.00	1
11708-1011/1021	BRG. SET CRANKSHAFT O/S	1

AIR INTAKE AND EXHAUST SYSTEM

PART NUMBER	DESCRIPTION	QTY/UNIT
17141-2140	MANIFOLD EXH.	1
17141-2130	MANIFOLD EXH.	1
17155-1100	SEAL RING	2
17173-1220	GASKET, E.H. MFLD.	12
17171-1090	GASKET, I TAKE MFLD.	6
11471-1070	GASKET, C L. LINER	1

EXHAUST BRAKE CYL.

17470-1290	BRAKE ASSY EXH.	1
17490-1380	CYL. ASSY CONTROL	1
17485-1040	GASKET, EXH. BRAKE	1

LUBRICATING SYSTEM

15712-1100	ELEMENT, OIL COOLER	1
15711-1130	CASE, OIL COOLER	1
15710-1190	COOLER ASSY OIL	1
15717-1040	GASKET, OIL COOLER ELEM.	2
15715-1050	GASKET, OIL COOLER CASE	1
9851-31109	O-RING	1
9851-35105	O-RING	1
9851-26103	O-RING ELEM. OIL COOLER	2
9851-25103	O-RING	9
9851-31103	O-RING	1
15110-1041	PUMP ASSY, OIL	1
15122-1060	GEAR, OIL PUMP DRIVER	1

FILTER OIL

6071-21015-0	ELEMENT ASSY	1
15607-1040	ELEM. SET	1
15607-1010	ELEM. SET OIL	1

FUEL SYSTEM

13610-1130	SHAFT ASSY INJ. PUMP	1
23640-1160	NOZZLE ASSY	6
23711-1160	PIPE INJ. NO. 1	1
23712-1160	PIPE INJ. NO. 2	1
23713-1140	PIPE INJ. NO. 3	1
23714-1140	PIPE INJ. NO. 4	1
23715-1140	PIPE INJ. NO. 5	1
23716-1140	PIPE INJ. NO. 6	1
23781-1490	PIPE FUEL	1
23806-2960	HOSE, SUB ASSY FUEL	1
23806-2970	HOSE, SUB ASSY FUEL	1
23092-1012	PIPE, SUB ASSY FUEL	1
23401-1020	ELEM. SET FUEL FILTER	1
22560-1160	PUMP ASSY FUEL FEED	1

COOLING SYSTEM

16100-1350	PUMP ASSY, COOLANT	1
9002-34136	HOSE, WATER	1
9764-05020	CLAMP	2
9001-15123	GASKET	1
9002-34140	HOSE, WATER	1

PART NUMBER	DESCRIPTION	QTY/UNIT
16104-1021	SEAL, SUB ASSY, COOLANT PUMP	1
990-063040	BEARING, BALL	1
9828-35105	SEAL, OIL	1
ENGINE CONTROL SYSTEM		
78250-1020	JOINT ASSY LINK ROD	2
78250-1060	JOINT ASSY LINK ROD	1
9560-30200	ROD LINK	1
9560-30110	ROD LINK	1
AIR COMP. AND STEERING OIL PUMP		
29100-1320	COMP. ASSY AIR	1
16188-1010	SEAT, COOLANT COCK SPG.	1
16185-1110	BODY, COOLANT COCK	1
9019-18156	BOLT	2
9019-24105	BOLT	1
29110-1320	HEAD, ASSY. CYL.	1
9851-99101	O-RING	1
ELECTRICAL PARTS		
28100-1310	STARTER ASSY	1
28150-1080	SWITCH ASSY START MAGNETS	1
28115-1140	HOUSING START DRIVE	1
27020-1330	ALTERNATOR ASSY	1
27420-1200	PULLEY ASSY ALT. W/ FAN	1
12503-1010	SHAFT, GEN. BKT.	1
83520-1021	GAGE ASSY, OIL PRESS SENDER	1
83420-1060	GAGE ASSY, WATER TEMP. SENDER	1
83530-1080	SW. ASSY OIL PRESS	1
9001-49144	V-BELT SET	1
28550-1050	CONTROLLER ASSY, GLOW PLUG	1
27700-1210	REGULATOR ASSY GEN.	1
INTAKE AIR HEATER SYSTEM		
23806-1080	HOSE SUB ASSY FUEL	1
23806-2980	HOSE SUB ASSY FUEL	1
FUEL TANK		
83320-1100	GAGE ASSY, FUEL SENDER	1
83361-1030	GASKET, FUEL SENDER GAGE	1
77320-1040	CAP. ASSY, FUEL TANK	1
9739-10122	ELBOW	2
9739-10128	ELBOW	2
3360-2003-1	PLUG SUB ASSY; FUEL DRAIN	1
RADIATOR		
9001-44166	HOSE, RAD.	1
16507-1031	PIPE SUB ASSY SUCTION	1
9001-44262	HOSE RAD.	1
9765-06820	CLAMP	1
16087-1041	PIPE SUB ASSY COOLANT BYPASS	1
16681-1030	GASKET, WATER LEVEL SW	1
83460-1110	SW ASSY LEVEL WARNING	1
9001-44261	HOSE RADIATOR	1
9001-44276	HOSE RADIATOR	1

EXHAUST PIPE

PART NUMBER	DESCRIPTION	QTY/UNIT
17401-1310	PIPE SUB ASSY EXH.	1
17401-5270	PIPE SUB ASSY EXH.	1
17485-1040	GASKET, E.H. BRAKE	2
17405-2761	PIPE, SUB ASSY TAIL	1

AIR CLEANER

17801-1150	ELEMENT SUB ASSY A/C FILTER	1
9002-33406	HOSE, AIR	

ELECTRICAL PARTS

82051-4650	HARNESS SUB ASSY	1
82055-1571	HARNESS SUB ASSY RR	1
82040-3480	HARNESS ASSY INTERMEDIATE	1
81270-1020	LAMP ASSY LICENSE PLATE	1
84310-1320	SW ASSY TURN SIGNAL	1
81980-1190	FLASHER ASSY TURN SIGNAL	1
81990-1020	FLASHER ASSY HAZARD WARNING SIGNAL	1
82600-1130	BLOCK ASSY FUSE W/ FUSE	1
81110-1370	HEADLAMP ASSY RH	1
81150-1360	HEADLAMP ASSY LH	1
81510-1080	LAMP ASSY FRNT. TURN SIGNAL RH	1
81520-1070	LAMP ASSY FRNT. TURN SIGNAL LH	1
84330-1060	SUB ASSY HAZARD WARNING SIGNAL	1
84410-1101	SUB ASSY BATTERY	1
84160-1010	SW ASSY FOG LAMP	1
84650-1020	SW ASSY W/S WIPER	1
84110-1050	SW ASSY LIGHT CONTROL	1
84510-1120	SW ASSY START	1
84512-1120	KEY SW START	1
84280-1100	SW ASSY GENERAL USE	1
84280-1050	SW ASSY GENERAL USE	1
84280-1090	SW ASSY GENERAL USE	1
85920-1020	RELAY ASSY	1
86650-1100	BUZZER ASSY	1
81511-1130	LENS, LH	1
81521-1050		
9008-21101	SEALED BEAM UNIT	1
9008-21103	SEALED BEAM UNIT	1
31251-1100	DISC, CLUTCH	2
31250-1290	DISC ASSY, CLUTCH	1
31242-1060	BEARING, CLUTCH THROW OUT	1
31231-1030	HUB, CLUTCH RELEASE BRG.	1
31931-1060	LEVER, RELEASE FORK STAFF	1
31110-1060	HOUSING ASSY CLUTCH	1
9867-13101	BUSHING	8
9871-06106	SPRING, COMPRESSION	12
9559-12128	CLEVIS	1
31921-1030	ROD, PUSH	1
9873-03136	SPRING, TENSION	1
32210-1051	BOOSTER ASSY. CLUTCH	1
9881-30106	BEARING BALL	1
9881-30120	BEARING BALL	
9881-30121	BEARING BALL	

CLUTCH PEDAL CONTROL

PART NUMBER	DESCRIPTION	QTY/UNIT
31321-1030	PAD, PEDAL	1
9873-02113	SPRING TENSION	1
31420-1351	CYL. ASSY MASTER	1
46702-1500	HOSE, SUB ASSY AIR	1
9004-72145	HOSE, OIL BRAKE	1
GEAR SHIFT HOUSING		
33122-1130	GASKET, T/M CASE	1
84210-1030	SW ASSY BACK UP LAMP	1
33501-1140	SHAFT SUB ASSY CONTROL LEVER SPG.	1
TRANSMISSION CONTROL		
33520-1780	LEVER ASSY GEAR CONTROL	1
33504-1080	KNOB SUB ASSY, SHIFT LEVER	1
33541-1920	LEVER SHIFT	1
PROPELLER SHAFT		
9802-10102	FITTING, LUBRICATION	2
9802-10100	FITTING, LUBRICATION	1
9201-14110	NUT	8
37401-1080	SPIDER SUB ASSY U-JOINT	2
37315-1100	YOKE, U-JOINT	2
37120-5331	SHAFT, ASSY, PROP. RR	1
BRAKE PIPING		
44550-1030	VALVE ASSY QUICK RELEASE	1
47160-1550	VALVE ASSY AIR BRAKE	1
9729-10125	CONNECTOR	2
9729-12116	CONNECTOR	3
86500-1020	HORN ASSY	1
46701-8650	HOSE SUB ASSY AIR	1
83380-1010	SW. ASSY PRESS	2
44530-1160	REGULATOR ASSY AIR PRESS	1
44850-1030	COCK ASSY DRAIN	1
47138-1090	COVER BRAKE PEDAL DUST	1
44510-1090	VALVE ASSY CHECK	1
44510-1050	VALVE ASSY CHECK	1
44520-1010	VALVE ASSY DOUBLE CHECK	1
44540-1020	VALVE ASSY RELAY	1
47940-1010	VALVE ASSY RELEASE	1
44780-1020	VALVE ASSY SAFETY	1
47930-1070	VALVE ASSY BRAKE CONTROL	1
PARKING BRAKE		
9873-02109	SPRING TENSION	1
9873-02116	SPRING TENSION	1
FRONT SPRING		
48441-1070	SHACKLE FRONT SPR.	2
48112-1550	LEAF FRONT SPR. NO. 2	2
48101-1370	LEAF SUB ASSY FRT. SPR NO. 1	2
9993-12102	BUSHING	4
48113-1441	LEAF, FRT. SPRG. NO. 3	2
48115-1440	LEAF, FRT. SPRG. NO. 5	2

PART NUMBER	DESCRIPTION	QTY/UNIT
48116-1440	LEAF, FRT. SPRG. NO. 6	2
48118-1370	LEAF, FRT. SPRG. NO. 8	2
9019-12184	BOLT	2
9222-12120	NUT	2
48500-1040	SHOCK ABSORBER ASSY FRT	2
9004-483107	WASHER, S. ABS CUSHION	4
9210-27120	NUT, LOCK	6
9004-484256/57	U-BOLT, LEAF SPRG.	2
49780-1060	LINKAGE ASSY	1
48500-1040	SHOCK ABSORBER ASSY FRT.	1
48500-1080	SHOCK ABSORBER ASSY FRT.	1
9004-81104	CUSHION S/ABS.	8
9004-81105		

REAR SPRING

48201-1230	LEAF SUB ASSY RR SPG.	2
999312-03	BUSHING	4
9222-16160	NUT	2
999-305319	BOLT, CENTER	2
48224-1070	LEAF, RR SPG. NO. 13	2
48223-1090	LEAF, RR SPG. NO. 12	2
48221-1360	LEAF, RR SPG. NO. 10	2
48219-1510	LEAF, RR SPG. NO. 9	2
48218-1610	LEAF, RR SPG. NO. 8	2
48217-1620	LEAF, RR SPG. NO. 7	2
48216-1650	LEAF, RR SPG. NO. 6	2
48214-1700	LEAF, RR SPG. NO. 4	2
48213-1740	LEAF, RR SPG. NO. 3	2
48212-1680	LEAF, RR SPG. NO. 2	2
48423-1500	PIN SPG.	6
9210-30120	NUT, LOCK	6
999311-233	U-BOLT NO. 6	4
999311-235	U-BOLT NO. 6	
9222-24350	NUT	8
48442-1040	SHACKLE RR SPG.	2
48530-1190	SHOCK ABSORBER ASSY., RR	2
9004-81110	CUSHION; S/ABS.	4

METER

76112-1030	BEZEL, HEADLAMP, LH	2
57041-1080	BRACKET SUB ASSY HEADLAMP	2
53962-1010	SEAL FIXTURES	2
81830-1021	LAMP ASSY COMB. INDICATOR	1
83110-1120	SPEEDO METER ASSY.	1
83100-2460	METER ASSY COMB.	1
83490-1090	GAGE ASSY AIR PRESS.	1
84314-1020	COVER, TURN SIGNAL SW	1
84314-1030	COVER, TURN SIGNAL SW	1
83510-1070	GAGE ASSY OIL PRESS.	1
83710-4150	CABLE ASSY SPEEDO DMVE	1

ENGINE CONTROL

78405-1410	KNOB SUB ASSY ENG. STOP BUTTON	1
78403-1250	KNOB SUB ASSY THROTTLE BUTTON	1
9873-01123	SPRING TENSION	2
78250-1060	JOINT ASSY, LINK ROD	7

PART NUMBER	DESCRIPTION	QTY/UNIT
78024-1190	ROD SUB ASSY ACCEL.	1
78015-2251	CABLE SUB ASSY, ACCEL.	1
9560-37680	ROD, LINK	1
9560-37680	ROD, LINK	1
78015-1261	CABLE SUB ASSY ACCEL.	1
STEERING GEAR AND LINKAGE		
45100-1013	WHEEL ASSY STRG.	1
55380-1020	BRACKET ASSY STRG.	1
45299-1040	GASKET STRG. COLUMN	1
45387-1020	COVER, BIRFIELD JOINT DUST	1
45310-1830	GEAR ASSY, STRG.	1
45440-2490	LINK ASSY, STRG. DRAG	1
45440-3160	LINK ASSY, STRG. DRAG	1
44270-1580	BOOSTER ASSY. P.5	1
44250+1580	ROD ASSY CONNECTING	1
44310-1080	PUMP ASSY P.5	1
FRONT AXLE		
47480-1450	SPIDER ASSY BRAKE	2
47480-1480	ADJUSTER ASSY WHEEL BRAKE SLACK RH	1
47490-7040	ADJUSTER ASSY WHEEL BRAKE SLACK LH	1
47881-1220	CAMSHAFT, AIR BRAKE	1
47882-1220	CAMSHAFT, AIR BRAKE	1
47410-1080	SHOE ASSY	1
47430-1020	SHOE ASSY	1
47660-1080	SPRING ASSY	2
47451-1010	PIN, SHOE ANCHOR	4
43512-1750	DRUM BRAKE	2
9389-10106	SCREW SET	4
47830-1210	CHAMBER ASSY AIR BRAKE	1
47830-1200	CHAMBER ASSY AIR BRAKE	1
9867-38108	BUSHING	2
47420-1080	SHOE, ASSY SECONDARY	1
47440-1020	SHOE, ASSY SECONDARY	1
47459-1170	COVER, BRAKE SHOE RETRACTING SPG.	2
47483-1080	PIN, SHOE RETRACTING SPG.	4
9819-16102	MNG, RETAINER	4
47895-1010	PIN, AIR BRAKE SHOE ROLLER	4
47092-1040	ROLLER SET, AIR BRAKE SHOE	4
47441-3180	LINING, BRAKE SHOE STD.	4
47442-2730	LINING, BRAKE SHOE SECONDARY STD.	4
9867-30106	BUSHING	4
47401-1192	SHOE SUB ASSY	4
45430-1091	END ASSY TIE ROD, LH	1
45420-1091	END ASSY TIE ROD, RH	1
43214-1030	GUIDE OIL SEAL	2
9828-01112/01165	SEAL, OIL	2
9884-65102	BEARING, TAPERED ROLLER	2
9209-22104	NUT	16
43511-1880	HUB, FRNT. AXLE	2
9884-50114	BEARING, TAPERED ROLLER	2
9279-39107	WASHER, COCK	2
9212-9109	NUT	2
9181-06160	BOLT	6
9004-36109	PLATE LOCK	2
9003-21102	GASKET	2

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY/UNIT</u>
43514-1030	CAP FRF. HUB	2
04043-2006	KIT, KING PIN	2
900726-120	BOLT, HUB, LH	8
900425-136	BOLT, HUB, RH	8
900421-114	NUT, HUB, RH	8
900422-106	NUT, HUB, LH	8
9400-10160	BOLT	12
ADJUSTER, WHEEL BRAKE SLACK		
47480-1480	ADJUSTER ASSY, WHEEL BRAKE SLACK LH	
47490-1040	ADJUSTER ASSY, WHEEL BRAKE SLACK LH	
REAR AXLE AND WHEEL BRAKE		
47401-1211	SHOE SUB ASSY	4
9867-30106	BUSHING	4
47441-2940	LINING, BRAKE SHOE STD	4
47651-1760	LINING, BRAKE SHOE 0.50 OS	4
47653-1780	LINING, BRAKE SHOE 1.00	4
47654-1660	LINING, BRAKE SHOE 1.50	4
47442-2640	LINING, BRAKE SHOE SECONDARY STD.	4
47655-1750	LINING, BRAKE SHOE SECONDARY 0.50	4
47657-1770	LINING, BRAKE SHOE SECONDARY 1.00	4
47658-1720	LINING, BRAKE SHOE SECONDARY 1.50	4
47483-1140	PIN, SHOE RETRACTING SPG.	2
9819-16102	RING, RETAINER	2
47895-1020	PIN, AIR BRAKE SHOE ROLLER	4
47890-1040	ROLLER ASSY AIR BRAKE	4
47091-1050	ROLLER ASSY AIR BRAKE 1.4	4
47091-1050	ROLLER ASSY AIR BRAKE 2.8	4
47093-1040	ROLLER ASSY AIR BRAKE 4.00	4
47896-1040	PIN PIVOT	2
47405-1010	HANGER SUB ASSY SHOE RETRACTING SPG	2
9003-14120	COLLAR	2
47480-1010	ADJUSTER ASSY WHEEL BRK SLACK	2
47830-1680	CHAMBER ASSY AIR BRAKE	2
47460-1220	SPIDER ASSY BRAKE	2
47451-1010	PIN, SHOE ANCHOR	4
9389-10106	SCREW SET	4
47882-1280/1330	CAMSHAFT, AIR BRAKE	1
47881-1280/1330	CAMSHAFT, AIR BRAKE	1
9873-06105	SPRING TENSION	2
47660-1090	SPRING ASSY	2
47483-1060	PIN, SHOE RETRACTING SPG.	2
43512-1700	DRUM, REAR BRAKE	2
9319-14102/03/04	STUD	16
9003-26103	COLLAR TAPPER	16
9201-14110	NUT	30
9181-06160	BOLT	16
9004-36113	PLATE LOCK	2
9219-85108	NUT	2
9004-3646	PLATE LOCK	2
9884-90107	BEARING TAPERED ROLLER	2
90114		
993-322170	BEARING TAPERED ROLLER	2
24211-1670	HUB, REAR AXLE	2
9209-22104	NUT	16
9004-26124	BOLT HUB LH	8

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY/UNIT</u>
9004-25142	BOLT HUB RH	8
9004-24101	NUT, HUB INNER LH	8
9004-23101	NUT, HUB INNER RH	8
9004-22104	NUT, HUB LH	8
9004-21112	NUT, HUB RH	8
9884-85104	BEARING TAPERED ROLLER	2
9828-01107	SEAL OIL	2
01110		
01128		
42321-1470	GASKET AXLE	1
	DIFF'L. CARRIER	
9828-75117	SEAL, OIL	1
9885-010		
2-305-6970-10/20	BEARING, NEEDLE ROLLER	1
41110-4031/4010	CARRIER ASSY DIFF'L.	1

METRO MANILA TRANSIT CORPORATION
North Avenue, Quezon City

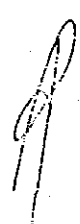
PARTS NEEDED FOR 2J TOYOTA ENGINE

cylinder liner (STD) Tp or NPR
piston (STD) Isumi
piston ring (STD) Tp or NPR
overhauling gasket Cp or KeK
main bearing (STD) Daido
main bearing 0.25 Daido
main bearing 0.50 Daido
connecting rod bearing STD daido
connecting rod bearing 0.25 Daido
connecting rod bearing 0.50 Daido
thrust washer STD
damper pulley
crankshaft STD brand new
cylinder head Brand new
water pump Brand new
intake valve Tokoro
valve spring
valve lock
nozzle tips
valve guide

METRO MANILA TRANSIT CORPORATION
North Avenue, Quezon City

PARTS NEEDED FOR AIR CONDITION UNIT
MODEL 187T, 189T

<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY./ UNIT</u>
041100-0430	Condenser assy w/ Shroud	1
053410-1030	Solenoid assy.	2
043500-1012	Compressor assy.	1
140000-0091	Shaft assy.	1
140000-0320	Shaft assy.	1
140400-0560	Unit assy. cooling	1 set
041200-0251	Condenser assy.	1
122100-0620	Radiator assy.	1
041800-0060	Drier	1
041280-0070	Super cooler assy.	1
041820-0020	Desiccant (200g./can)	1



JICA