

SAM WALKER

# MC-9 CRUSADER II



# MAINTENANCE MANUAL

January 1989

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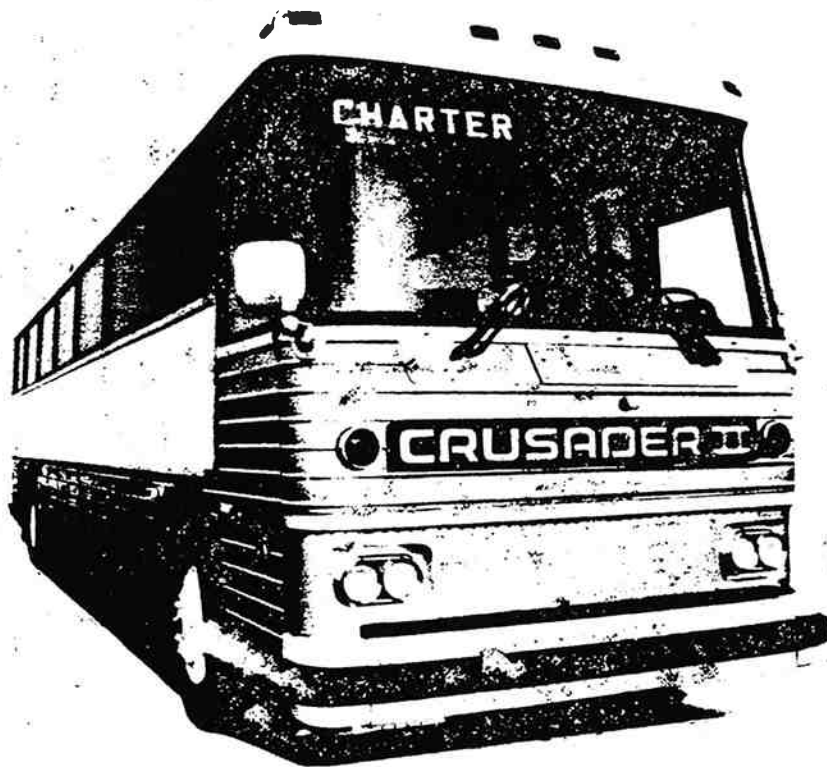
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## MAINTENANCE MANUAL

January 1989



**MOTOR COACH INDUSTRIES INC.**  
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MANUFACTURERS OF INTERCITY COACHES



**TRANSPORTATION MANUFACTURING CORPORATION**  
ROSWELL, NEW MEXICO, U.S.A. 88202-6670  
MANUFACTURERS OF INTERCITY COACHES, TRANSIT BUSES & ROBOTIC TRAILERS

*Power Steering Oil =  
10W-40 Engine Oil*

*740 OIL  
= Detroit 11*

*Oil Types  
= page 10-3*



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# MC-9 MAINTENANCE MANUAL

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# MC-9 MAINTENANCE MANUAL

## INTRODUCTION

This manual contains operation, maintenance and overhaul information on MC-9 Model Coach. Information in this manual pertains to standard and commonly used optional equipment.

Vehicle operation from the driver's standpoint is contained in a separate operator's manual. Detroit Diesel engine information is found in a separate service manual. Allison transmission information is contained in the appropriate vendor service manual which, like the engine manual, is supplied separately.

*All information contained in this manual is based on the latest product information available at time of publication. We reserve the right to make publication changes at any time.*

## HOW TO USE THIS MANUAL

This manual is divided into major sections in the sequence shown on the section index. All major sections are divided into sub-sections containing descriptions, operation, maintenance, replacement, overhaul and specification information on related systems and components. A section index appears on the first page of each major section.

## PAGE AND ILLUSTRATION NUMBER

Manual pages and illustrations are numbered consecutively within each major section.

## SPECIFICATIONS

Service data, torque limits and tolerances are listed at the end of most sections under the heading "Specifications." Manufacturer's model or part numbers are provided where applicable for component identification. Detail service part numbers must be obtained from the MC-9 Model Parts Manual.

## SERVICE INFORMATION BULLETINS

Service Bulletins are issued, when required, to supplement or supersede information in this manual. Information in the bulletins should be noted and filed for future use.

## CUSTOMER SERVICE

Universal Coach Parts of Northlake, IL and Motor Coach Industries, Ltd., Service Parts Division of Canada, know your coach best and are interested in your complete satisfaction. Both offer genuine factory parts for this MC-9 Model and all other TMC/MCI Coach Models.

Service departments in both Roswell, N.M. (U.S. service) and in Winnipeg, Canada (all Canadian service) stand ready to serve you. Their addresses are:

Transportation Manufacturing Corporation  
Service Department  
P.O. Box 5670 (R.I.A.C.)  
Roswell, N.M. 88202-5670

Motor Coach Industries, Ltd.  
Service Parts Division of Canada  
1149 St. Matthews Ave.  
Winnipeg, Manitoba, Canada R3G0J8

**Proper maintenance is important to the safe and reliable operation of the MC-9 Model coach. The service procedures recommended and described in this manual are effective methods for performing service operations. In some instances, the use of special tools is recommended. These tools should be used when and as recommended.**

**Various WARNINGS, CAUTIONS and NOTICES are contained in this manual. They should be read carefully to minimize the risk of personal injury or the possibility that improper service methods may be used which could damage the coach and render it unsafe. It is important to note that these cautions and notices are not all inclusive. We could not evaluate and advise users of all conceivable ways in which service may be done or of the possible hazardous consequences of each way. We have not attempted to do this. Therefore, anyone who uses a service procedure or tool not recommended by the manufacturer should first satisfy himself that neither his safety nor vehicle safety will be jeopardized by the particular method he selects. REFER TO PAGE ii FOR CAUTIONARY INFORMATION PERTAINING TO WELDING.**

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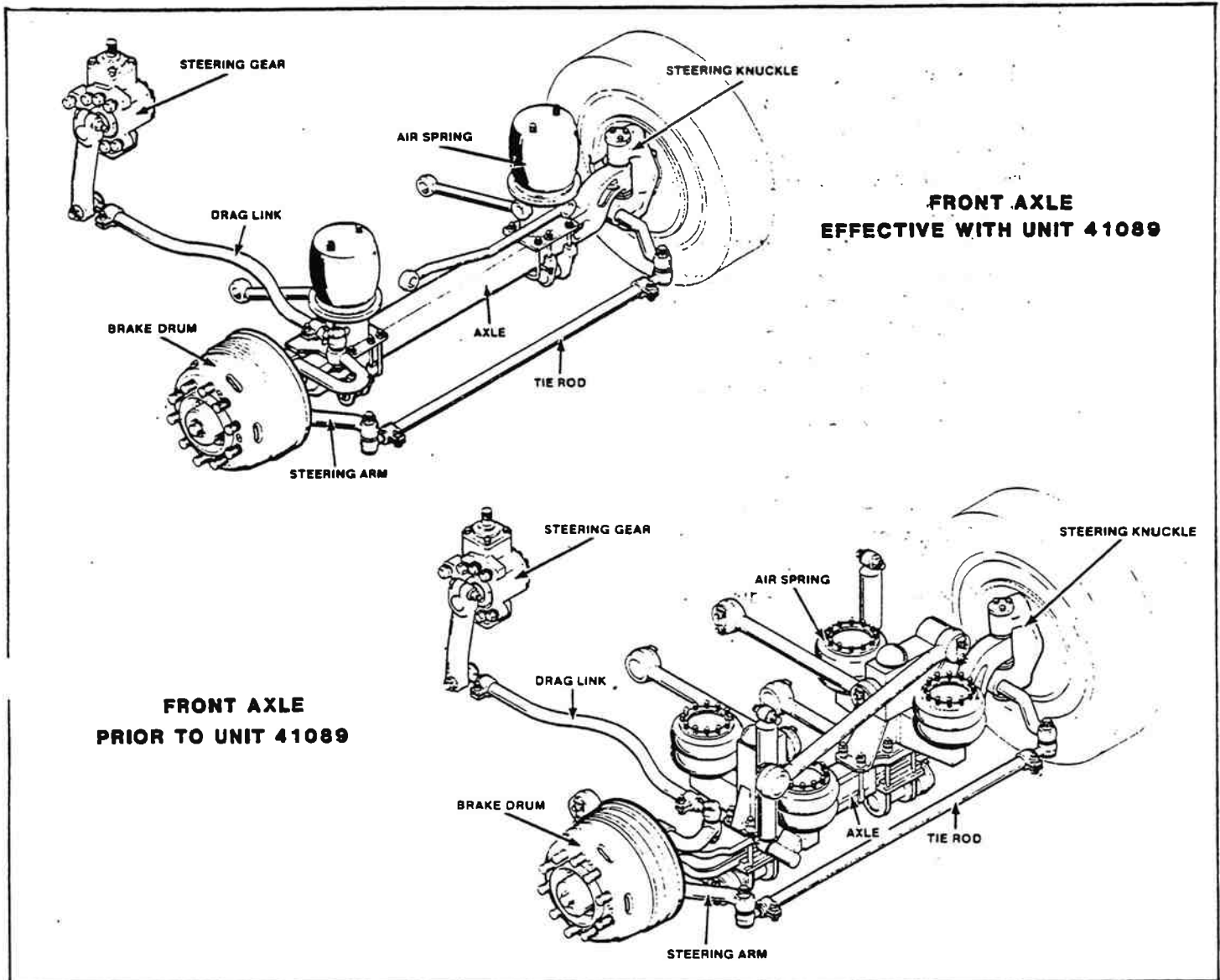


Figure 1-1. Front Axle Assemblies.

## FRONT AXLE ASSEMBLY

### DESCRIPTION

Effective with unit 41089 the front axle assembly is a tubular type of Reversed Elliot design. Axle construction consists of a tempered seamless steel tube with forged steel king pin ends. On units prior to 41089, the front axle is a forged steel drop center I-beam type. King pin ends are integral parts of the axle center. See figure 1-1.

Steering knuckles have grease fittings in both king pin bosses for lubrication of the knuckle bushings. The bushings are of the "Steer" type on all models after September 1986. Prior to that, the bushings are bronze. Covers and plugs prevent dust and moisture from entering bushings and serve as seals.

The brake shoe spider is doweled and bolted to the steering knuckle. Dowel pins are also used to locate air suspension mountings.

The two steering knuckle assemblies are connected to each other by a tie rod. Tie rod is threaded at each end and held in position by clamp bolts. Right-hand and left-hand threads are provided on the tie rod to facilitate toe-in adjustment. Stop screws installed at each end of axle center limit turning angle of front wheels.

On the tubular style axles, to detect development of fatigue cracks, approximately two quarts of diesel fuel are installed in the hollow tube section. Any axle which leaks should be replaced.

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## WELDING CAUTION

Since welding is a procedure which may be carried out either as allowed (explicitly or implicitly) by instructions in this manual or carried out by an independent decision of the coach owner/operator, the following information pertaining to welding should be read before beginning any welding procedure. The prohibitions and requirements contained therein must be followed during the welding procedure.

1. Welding must be done only by a qualified and experienced person.
2. Adequate ground contacts and barriers must be positioned as required to protect components (wiring, brake lines, hydraulic lines, etc.) from damage due to heat, contact by weld splatter arcing or other potentially damaging events associated with welding.
3. On any coach, turn battery switch to "OFF."
4. For coaches equipped with a battery equalizer, after performing step 3 above:
  - a. Disconnect the ground at the equalizer.
  - b. Disconnect the battery leads.
5. If coach has ATEC or DDEC, remove the ATEC/DDEC power control fuses.
6. Any applicable welding instructions or prohibitions given by a procedure must be heeded.