



# Service Manual

## Chassis & Mast

MC/FC

<b>FD40N</b>	EF12B-00011-up
<b>FD45N</b>	EF19D-50001-up
<b>FD50CN</b>	EF19D-80001-up
<b>FD50N</b>	EF28C-50001-up
<b>FD55N</b>	EF28C-80001-up

<b>FG40N</b>	EF40-00011-up
<b>FG45N</b>	EF29D-50001-up
<b>FG50CN</b>	EF29D-80001-up
<b>FG50N</b>	EF33C-50001-up
<b>FG55N</b>	EF33C-80001-up

# FOREWORD

This service manual is a guide for servicing Mitsubishi Forklift Trucks. For your convenience the instructions are grouped by systems as a ready reference.

The long productive life of your lift truck(s) depends on regular and proper servicing. Servicing consistent with what you will learn by reading this service manual.

Read the respective sections of this manual carefully and familiarize yourself with all of the components before attempting to start a test, repair or rebuild job.

The descriptions, illustrations and specifications contained in this manual are for trucks with serial numbers in effect at the time of printing.

Mitsubishi Forklift Trucks reserves the right to change specifications or designs without notice and without incurring obligations.

The trucks listed in this manual are powered by TB45 gasoline engines or S6S diesel engines.

For engine servicing, please refer to the applicable engine service manual.

TB45	Gasoline engine
S6S	Diesel engine

## <Safety Related Signs>



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or damage to your machine.

**NOTE**

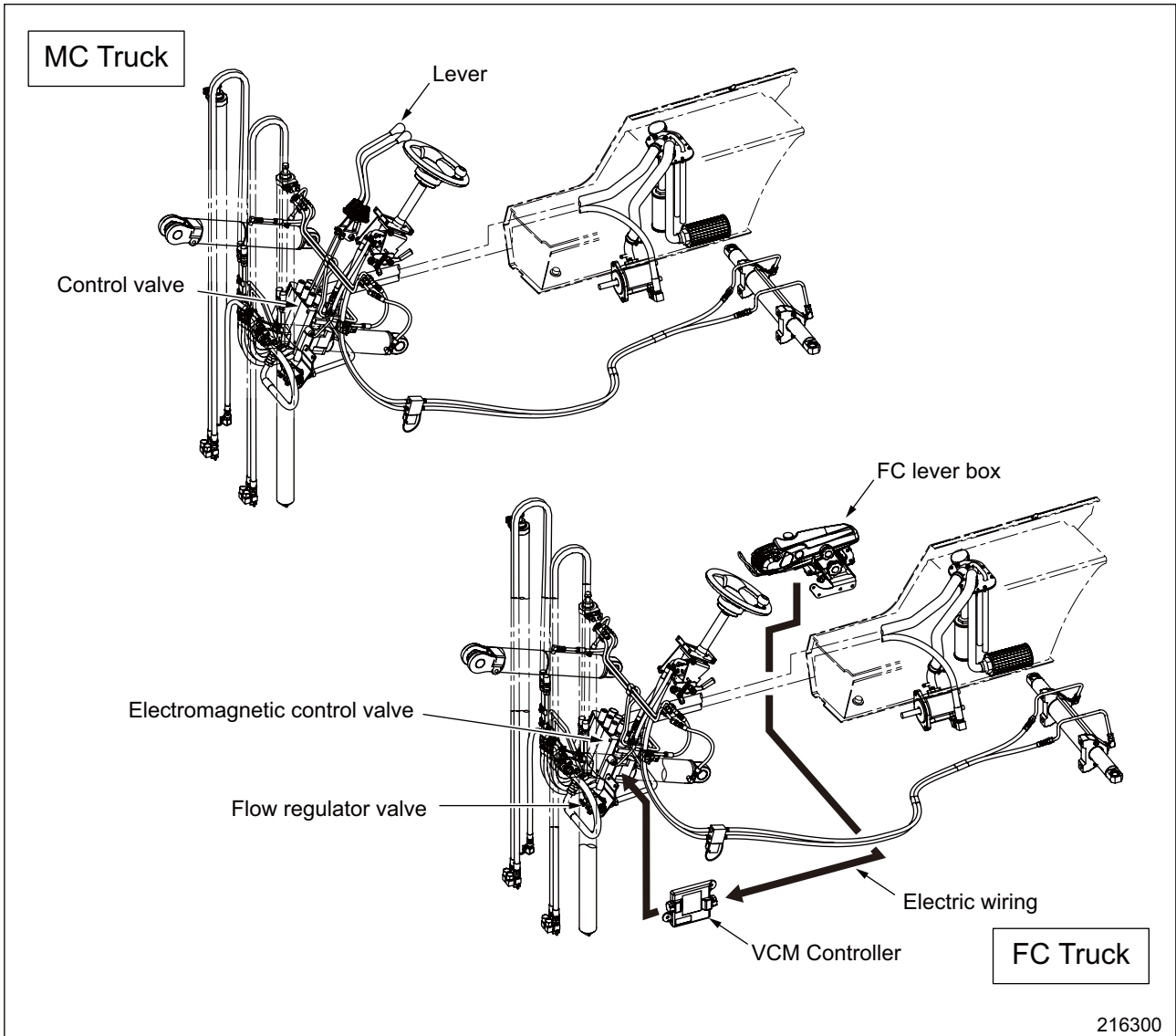
Indicates a condition that can cause damage to, or shorten service life of, the machine.

- (13) Before starting to work on truck, hang "Do not Operate" tag in the Operator's Compartment.
- (14) Repairs, which require welding, should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and knowledgeable in welding procedures. Determine type of metal being welded and select correct welding procedure and electrodes, rods or wire to provide a weld metal strength equivalent at least to that of parent metal.
- (15) Do not damage wiring during removal operations. Reinstall the wiring so it is not damaged nor will it be damaged in operation by contacting sharp corners, or by rubbing against some object or hot surface. Place wiring away from oil pipe.
- (16) Be sure all protective devices including guards and shields are properly installed and functioning correctly before starting a repair. If a guard or shield must be removed to perform the repair work, use extra caution.
- (17) Always support the mast and carriage to keep carriage or attachments raised when maintenance or repair work is performed, which requires the mast in the raised position.
- (18) Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses could cause fires. Do not bend or strike high pressure lines or install ones which have been bent or damaged. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Pin hole (very small) leaks could result in a high velocity oil stream that will be invisible close to the hose. This oil could penetrate the skin and cause personal injury. Use cardboard or paper to locate pin hole leaks.
- (19) Tighten connections to the correct torque. Make sure that all heat shields, clamps and guards are installed correctly to avoid excessive heat, vibration or rubbing against other parts during operation. Shields that protect against oil spray onto hot exhaust components in event of a line, tube or seal failure, must be installed correctly.
- (20) Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always make sure all raised components are blocked correctly and be alert for possible pressure when disconnecting any device from a system that utilizes pressure.
- (21) Do not operate a truck if any rotating part is damaged or contacts any other part during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.

# HOW TO USE THIS MANUAL

## Lift truck model covered in this manual

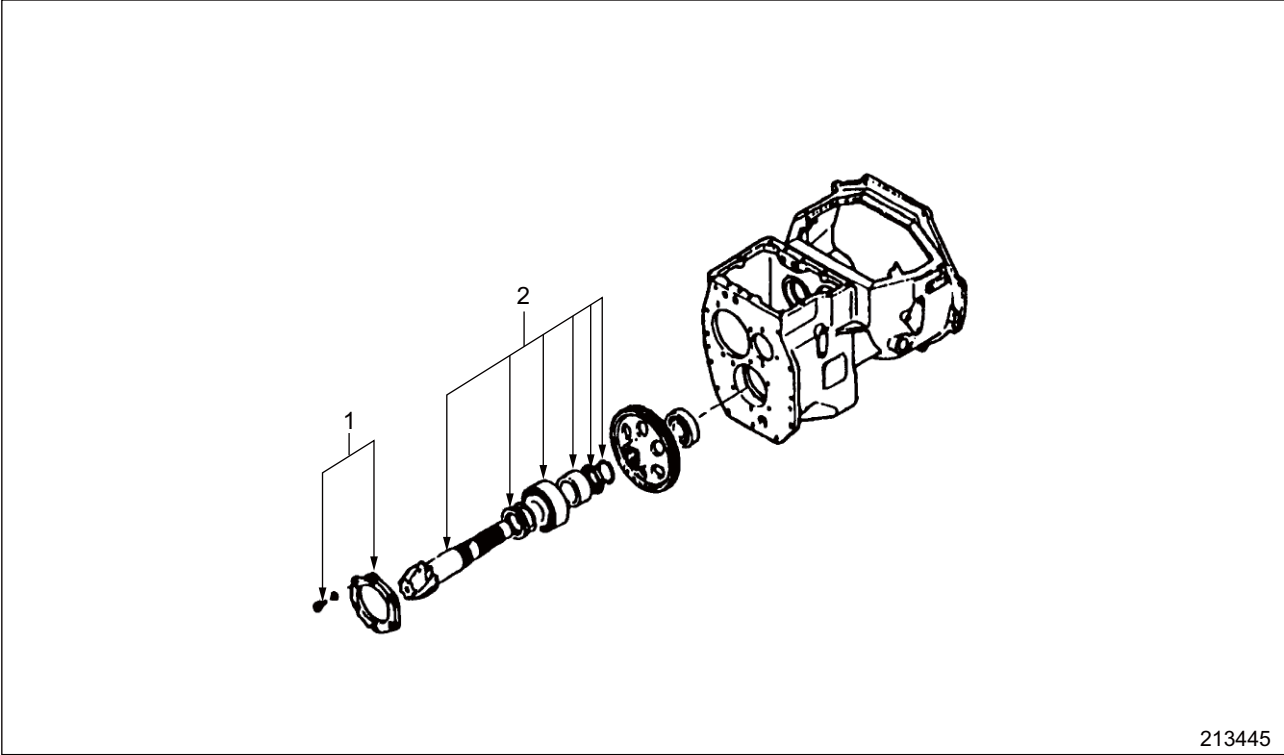
- MC Truck (Mechanical Control System)  
Mechanically controlled hydraulic system (conventional lever system)
- FC Truck (Finger-tip Control System)  
Electronically controlled hydraulic system



- Gasoline-Engine Trucks (FG)..... Trucks Equipped with TB45 Gasoline Engine
- Diesel-Engine Trucks (FD) ..... Trucks Equipped with S6S Diesel Engine
- Powershift Trucks..... Trucks Equipped with Powershift Transmission

# HOW TO USE THIS MANUAL(continued)

## Disassembly diagram(example)



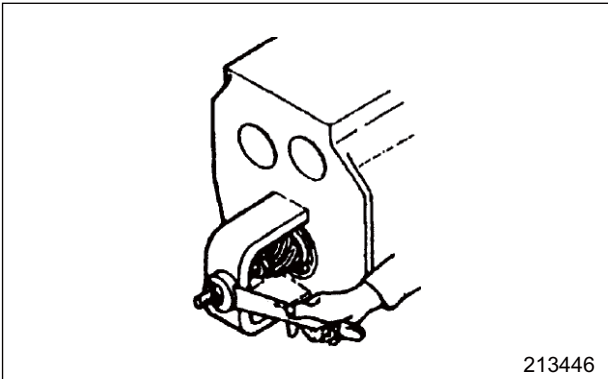
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**Sequence**

- 1 Cover, Bolt, Washer (part name)
- 2 Out put shaft assembly (part name)

**Suggestions for Disassembly  
Output shaft, Removing**

Remove output shaft using a special tool.



213446

**Service Data**

Unit:mm(in.)

Gear Backlash	A	0.11 to 0.28 (0.004 to 0.011)
	B	0.5 (0.012)

A: Standard value B: Repair or Service Limit

## Symbols and abbreviations

OP	Option
R1/4	Taper pipe thread (external) 1/4 inch (formerly PT1/4)
RC1/8	Taper pipe thread (external) 1/4 inch (formerly PT1/8)
G1/4A	Straight pipe thread (external) 1/4 inch (formerly PF1/4-A)
Rp1/8	Straight pipe thread (internal) 1/8 inch (formerly PS1/8)

## Units

- (1) SI Units are used in this manual.
- (2) The following table shows the conversion of SI unit and customary unit.

Item	SI unit	Customary unit
Force	1 N	0.102 kgf
	1 lbf	0.4536 kgf
Pressure	1 kPa	0.0102 kgf/cm <sup>2</sup>
	1 psi	0.0703 kgf/cm <sup>2</sup>
Torque	1 N·m	0.102 kgf·m
	1 lbf·ft	0.1383 kgf·m

# CHAPTER INDEX

CHAPTER INDEX	Items
<b>GENERAL INFORMATION</b>	Truck Models Covered, Serial Number Locations, Dimensions, Technical Data
<b>COOLING SYSTEM</b>	Fan Belt Removal and Installation, Fan Belt Tension
<b>ELECTRICAL SYSTEM</b>	Console Box, Chassis Electrical Devices, Battery Maintenance, Electrical Schematic
<b>CONTROLLERS</b>	Main Functions of Controller, Input/Output Monitor, Error Codes and Troubleshooting
<b>POWER TRAIN</b>	Removal and Installation of Power Line
<b>POWERSHIFT TRANSMISSION</b>	Torque Converter, Single Speed Powershift Transmission Control Valve, Automatic Two-Speed Transmission
<b>FRONT AXLE AND REDUCTION DIFFERENTIAL</b>	Front Tire, Front Axle, Reduction, Differential
<b>REAR AXLE</b>	Rear Axle, Rear Tire
<b>BRAKE SYSTEM</b>	Master Cylinder, Wheel Brake, Brake Booster
<b>STEERING SYSTEM</b>	Steering Gear, Power Cylinder, Flow Divider
<b>HYDRAULIC SYSTEM</b>	Tank, Pump, Control Valve, Lift and Tilt Cylinders, Flow Regulator Valve, Down Safety Valve
<b>MAST AND FORKS</b>	Simplex and Duplex Masts, Triplex Mast
<b>SERVICE DATA</b>	Maintenance Standard, Maintenance Schedule, Periodic Replacement Parts, Lubrication Instruction, Special Tool Needed

1

2

3

4

5

6

7

8

9

10

11

12

13

# Chapter 1 GENERAL INFORMATION

1. Model View.....	1-1
2. Lift Truck Models Covered .....	1-2
3. Serial Number Locations.....	1-3
4. Dimensions.....	1-4
5. Technical Data.....	1-5
6. Performance .....	1-6



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