SM029
FGD20/30.10-BE3

# FORKLIFT TRUCK

**FG20/25/30-8**
**FD20/25/30-8**
**FD20/25/30-10**
**FG20S/25S/30S-4**
**FD20S/25S/30S-4**
**FG20S/25S/30S-5**
**FG20H/25H/30H-8**
**FD20H/25H/30H-8**

# KOMATSU FORKLIFT USA

# SHOP MANUAL

# FG20/25/30-8
# FD20/25/30-8
# FD20/25/30-10
# FG20S/25S/30S-4
# FD20S/25S/30S-4
# FD20S/25S/30S-5
# FG20H/25H/30H-8
# FD20H/25H/30H-8

| MACHINE MODEL | SERIAL NO. |
|---|---|
| FG20/25/30-8 | 130001 and up |
| FD20/25/30-8 | 140001 and up |
| FD20/25/30-10 | 220001 and up |
| FG20S/25S/30S-4 | 170001 and up |
| FD20S/25S/30S-4 | 180001 and up |
| FD20S/25S/30S-5 | 181001 and up |
| FG20H/25H/30H-8 | 200001 and up |
| FD20H/25H/30H-8 | 210001 and up |

KOMATSU FORKLIFT

# FOREWORD

Proper operation, maintenance, troubleshooting and repairs are necessary to preserve the performance of vehicles and engines (engine-powered forklift trucks) over a long period of time and to ensure that fault and breakdowns do not occur.
The object of this Shop Manual is to provide the information necessary especially in connection with the performance of inspections and repairs mainly in the maintenance areas.
For this purpose, it includes sections on "General Specifications", "Checks and Adjustments", "General Disassembly and Assembly", "Disassembly and Assembly of Components" and the "Electrical System".
Maintenance data necessary for the performance of maintenance on the machines is also included, but reference should be made to the Operation and Maintenance Manual for further details.
Reference should also be made to this manual in connection with correct operation of the machine.

The content of the items mentioned above is as follows.

**General and Specifications**
This chapter indicates the name of each part of the machine, and the installation positions of the operating devices and instruments.

**Checks and Adjustments**
This chapter gives the details required for the disassembly and reassembly of machines such as tightening torque, allowances, as well as the wear limits of the parts. However, when necessary, data in line with the procedure mentioned in the following sections, "General Disassembly and Assembly" and "Disassembly and Assembly of Components" is indicated.

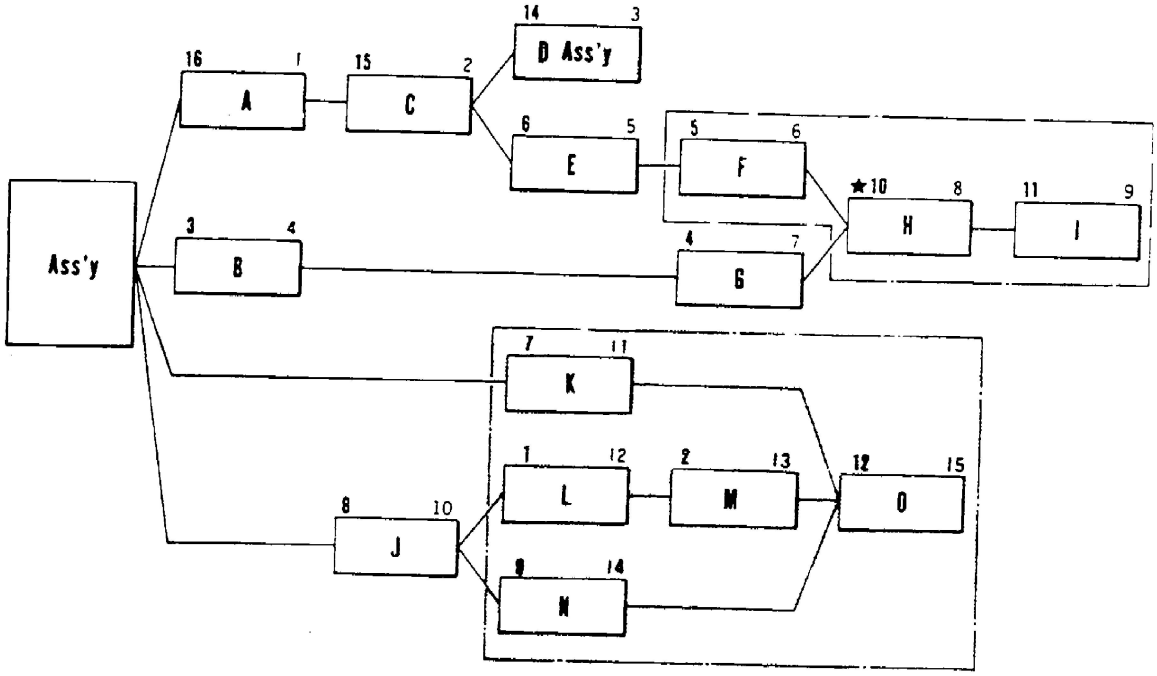
**General Disassembly and Assembly**
The procedure when disassembling a machine comes within one of the two following categories. In the first, the machine, including the frame, is made up roughly of seven component parts, i.e.: a mast section, a cylinder section, a reach leg, a transfer section, a motor section, a pump section and a frame.
This chapter contains details of how to disassemble and assemble these components. The other category of disassembly and assembly is the disassembly and assembly of component parts referred to in the following chapter.

**Disassembly and Assembly of Components**
This chapter provides additional explanation concerning those of the seven component parts, as touched upon in the preceding chapter, whose disassembly procedure is particularly complicated and for which special care is needed when adjusting. Mention is also made of the functions and structures of the component parts.

**Electrical system**
Explanation is provided in this chapter of the electrical parts used inside the machine. Troubleshooting when a breakdown occurs is also described.

Reference should be made to the "General Shop Manual" for safe oprating and working methods which serve as the basis for the performance of repair and inspection works on machines.

# DISASSEMBLY AND ASSEMBLY DIAGRAM



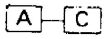

## DISASSEMBLY DIAGRAMS

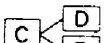
Sequential procedure to be followed when disassembling a machine or its components are illustrated in these manuals in the form of a diagram; no sentential descriptions are provided. Therefore, you are required to be familiar with such diagrams by thoroughly understanding the following descriptions. The disassembling diagrams include the following information:

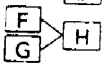
- Sequential procedure to be followed when disassembling a machine or a component thoroughly
- The shortest procedure which requires the minimum number of parts to be removed from the machine prior to removal of a desired component part
- The same as above necessary to remove a desired assembly

## HOW TO READ THE DIAGRAMS

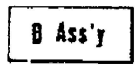
In the diagram shown as an example on the preceding page, the name of machine (or assembly) to be disassembled is shown in the square at far left. All other squares represent parts or sub-assemblies to be removed from the preceding parts or sub-assembly. Mutual relations between the parts (or sub-assembly) can be classified as follows:

- 

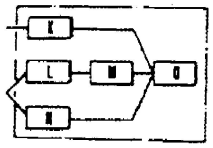
"C" can not be removed unless "A" is removed.
- 

Both "D" and "E" can be removed after "C" is removed.
- 

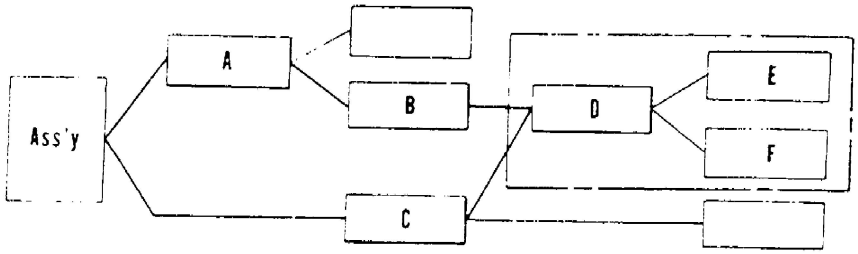
"H" cannot be removed unless both "F" and "G" are removed.
- This indicates an assembly composed of enclosed parts such as "F", "H" and "I". To remove these parts as an assembly, it is necessary to remove previously all parts connected to the lines leading from the left-hand edge of the block.




This is an assembly of which the disassembling procedure is described separately.




This indicates an assembly composed of enclosed parts. All of the enclosed parts may be removed individually according to the procedure shown by this diagram, or may be removed first as an assembly and then divided into individual parts according to the separately illustrated disassembly diagram.




When a part (or an assembly) in the diagram is specified as an object to be removed, trace all paths leading the specified part (or the block of the specified assembly) to the original machine (or assembly) located at the far left of the diagram. The parts arranged in such paths are the minimum parts necessary to be removed. In the diagram above, for example, the part "D" (or an assembly composed of "D", "E" and "F") can be removed after removing only the parts "A", "B" and "C" arranged on the thick lines.

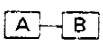
## SYMBOL AND NUMERALS ABOVE A SQUARE

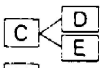
- The mark ★ is a reference to a note describing the precautions to be followed when removing the part.
- The boldface numeral located at the top left of a square corresponds to the index number used in the structural drawing to indicate that part. Only in the disassembly diagram indicating the general disassembly of a machine (or an assembly), however, is another form of numerals such as 12-24 used, **12** corresponds to the item code number used on each page as part of the page numbers, and **24** corresponds to the index number used in the structural drawing.
- The numeral located at the top right of a square indicates the disassembling order recommended by Komatsu.

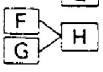
## ASSEMBLY DIAGRAM

The same manner as described above to read the disassembly drawings are also applicable to the assembly drawings. A part (machine chassis, case, etc.) with which the assembling procedure is to be started is indicated in the square located at the far left end in the diagram. All other squares represent parts (or sub-assemblies) to be installed to the preceding parts or sub-assemblies.

In the assembly diagrams, in which all parts are arranged in the sequence of assembly from left to right, the parts have mutual relations with each other as shown in the following:

- 

"B" cannot be installed unless "A" is installed.
- 

Both "D" and "E" can be installed after "C" is installed.
- 

"H" cannot be installed unless both "F" and "G" are installed.

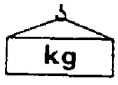
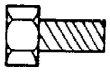
All marks and numerals have the same designations as described for the disassembly diagram.

**PRECAUTIONS WHEN PERFORMING THE SERVICE WORK**

Always pay attention to 'Safety' before starting any work — this is important.
Never attempt any work where danger to yourself or to other persons.
Whenever work requiring safety precautions are described in this manual, a flag mark ⚠ inserted, always make double sure that safety measures are taken.
Other unmarked work, should always be performed after studying and using your common sense to prevent accidents.

# DESCRIPTION OF THE SYMBOLS

The symbols described below are used in this manual for convenience and better understanding.

| Symbol | Item | Description |
|---|---|---|
|  | **Safety** | Special safety precautions are needed to perform the work. |
|  | **Note** | Special technical precautions are needed to perform the work. |
|   | **Tightening Torque** | Fastening parts that require specified tightening force when assembling. |
|   | **Weight** | Weight of parts or systems |
|  | **Coat** | Places to be coated with adhesives, etc. when assembling. |
|  | **Bolt** | Quantity of bolts when disassembling or assembling. |