Jurong Port

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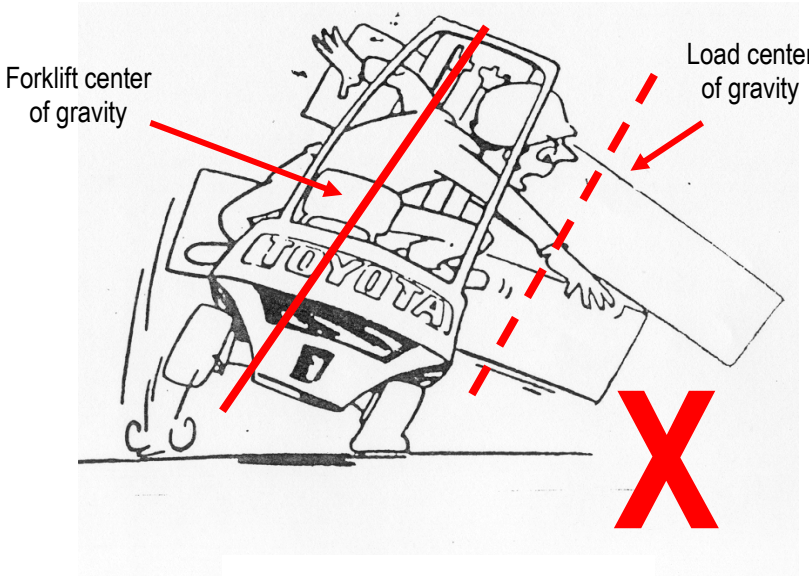
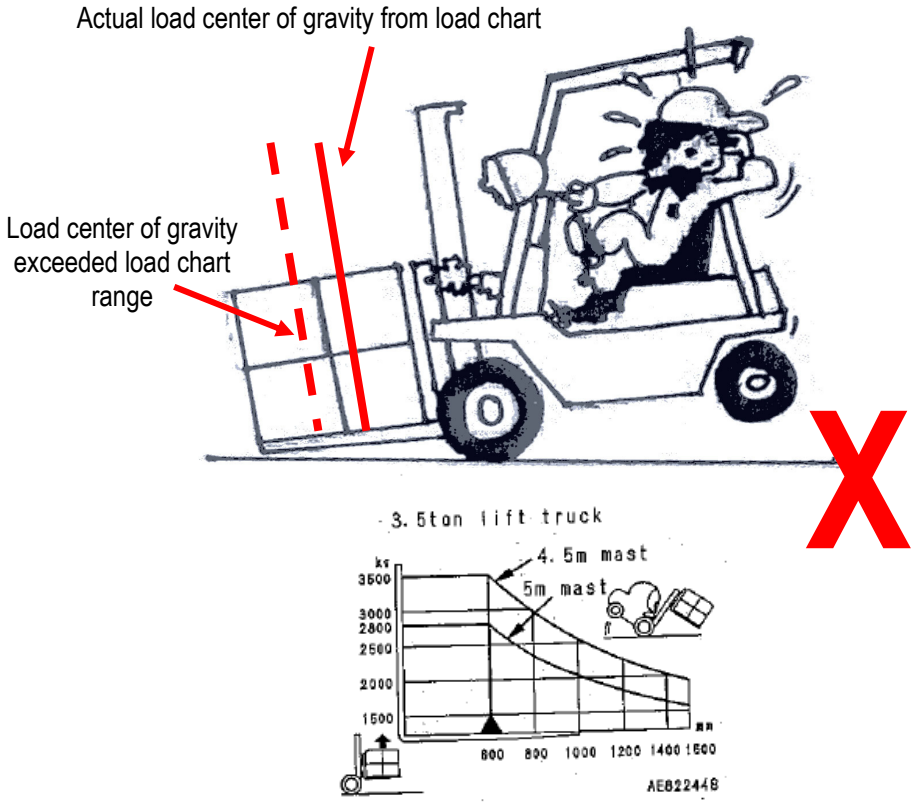
JURONG PORT SAFETY BULLETIN No. 14 – SEPTEMBER 2008
SAFE OPERATIONS OF FORKLIFT: PREVENTION IN FORKLIFT TIPPING

The common causes of forklift tipping during material handling.



Forklift stability triangle. (Figure 2)

The load center of gravity is out of the forklift combined center line of gravity and the stable range. The position of combined center of gravity must be inside the stable range. See figure 2.



Sample of forklift load chart capacity (Figure 3)

The load center of gravity is shifted forward due to oversize or unstable load. The load being lifted should not exceed the load capacity chart of the forklift. See figure 3.

* Picture source : Komatsu forklift operation & maintenance manual

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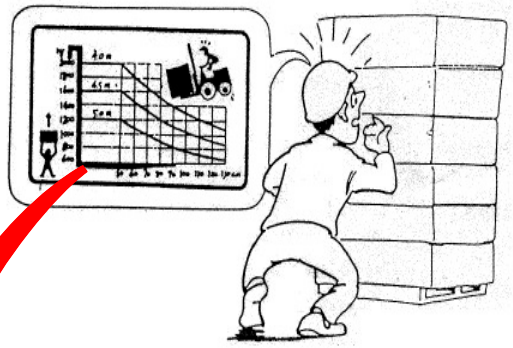
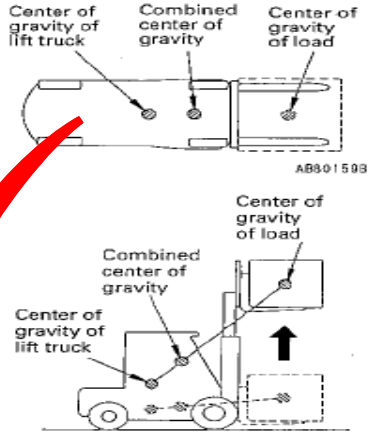
Maintaining stability of forklift and safe working capacity

Forklift operator shall verify load to be carried against forklift load capacity chart for safe operations. Do not exceed the safe working capacity



* Picture source : Komatsu forklift operation & maintenance manual

Forklift operator shall ensure forklift stability by maintaining the combined center of gravity within the forklift lifting capacity range during operation



Center of gravity and stability (Figure 1)

Safety reminders during forklift operations:

1. The stability of the forklift truck is determined by the position of the combined center of gravity resulting from the combination of the centers of gravity of the forklift and load. (See figure 1).
2. The position of the center of gravity of the load changes according to whether the mast is tilted forward or back or whether the mast is raised or lowered, so the position of the combined center of gravity also changes accordingly.
3. The position of the combined center of gravity of the forklift is governed by the following factors:
    a. Size, weight, shape of load
    b. Lifting height
    c. Tilting angle of mast
    d. Inflation pressure of tires
    e. Acceleration, deceleration, turning radius
    f. Condition of road surface, angle of road
    g. Type of attachments
4. Licenced forklift operators should evaluate the above before each operation.
5. Forklift should not be loaded exceeding the load capacity chart and combined center of gravity.
6. Risk Assessment and safe work procedure should be established and communicated to the relevant personnel for the forklift operations.
7. Refer to the Forklift Operation and Maintenance Manual for safe operating instructions. Improper operation and maintenance of forklift can be hazardous and could result in serious injury or death.
8. Forklift operations shall also comply with the Code of Practice for Safe Use Of Powered Counterbalanced Forklifts (CP101:2004).