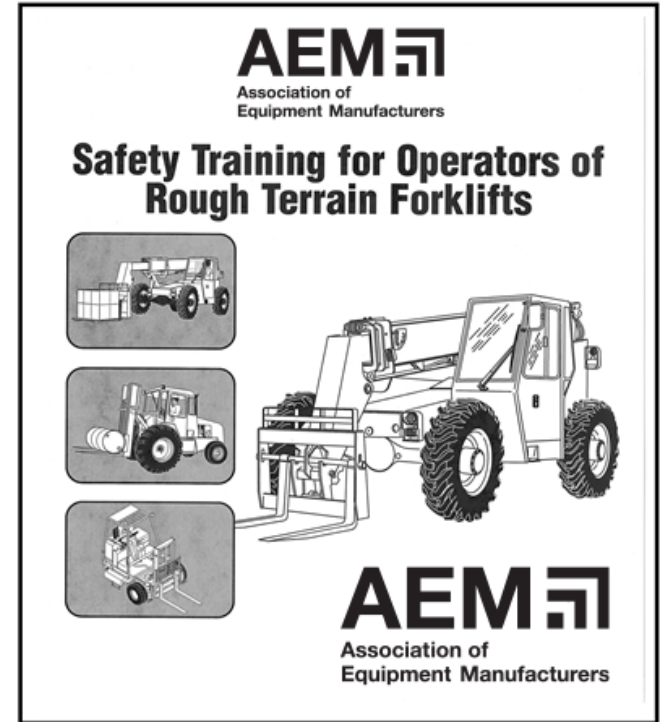




Safety Training for Operators Of Rough Terrain Forklifts

OSHA 1910.178 (I)



Safety Alert Symbol

Signal Words:

- Danger
- Warning
- Caution

DANGER

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.



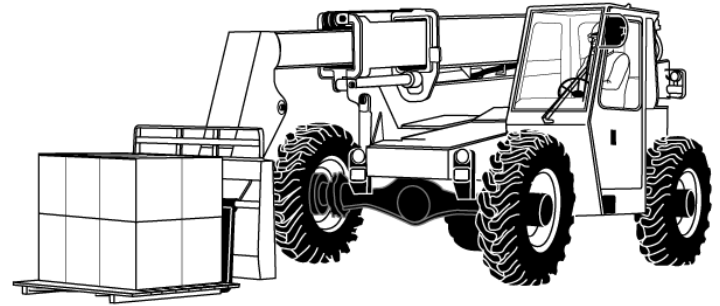
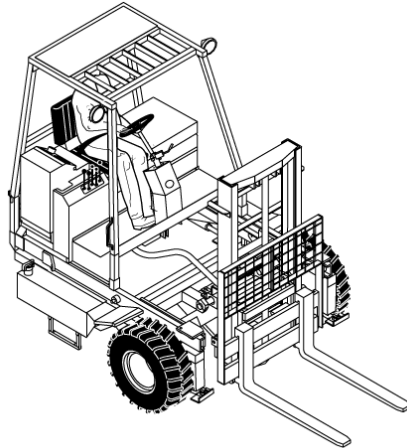
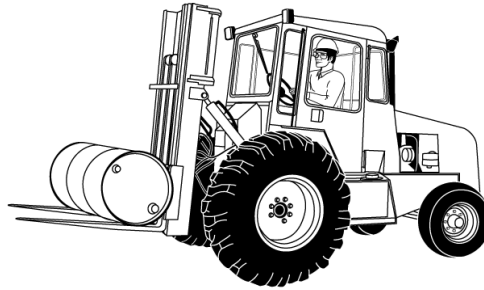
Operator Training

1. Safe Operation
2. Training Program Implementation
3. Training Program Content
4. Refresher Training and Evaluation
5. Avoidance of Duplicate Training



Rough Terrain Forklift Models

1. Vertical Mast RTFL
2. Variable Reach RTFL
3. Truck Mounted RTFL



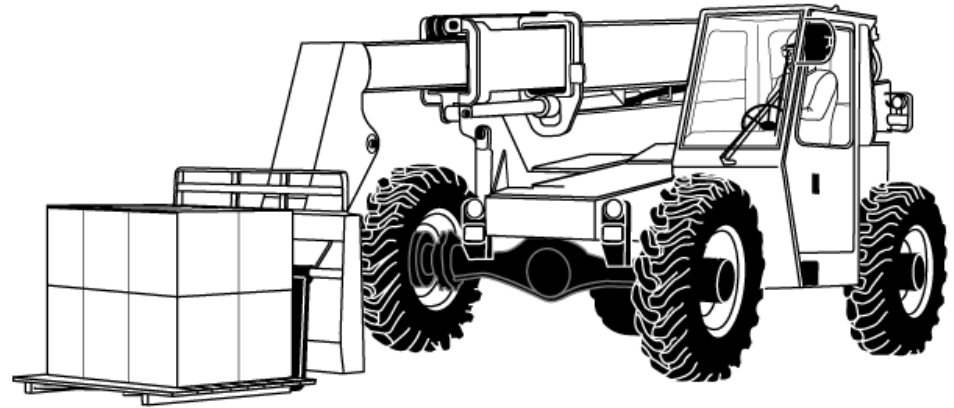
Vertical Mast RTFL

- **Steering Primarily Through Rear Wheels**
- **Mast Tilt Feature**
- **Carriage Shift Feature**
- **Tight Turning Radius**
- **Efficient in Storage Rack Areas**



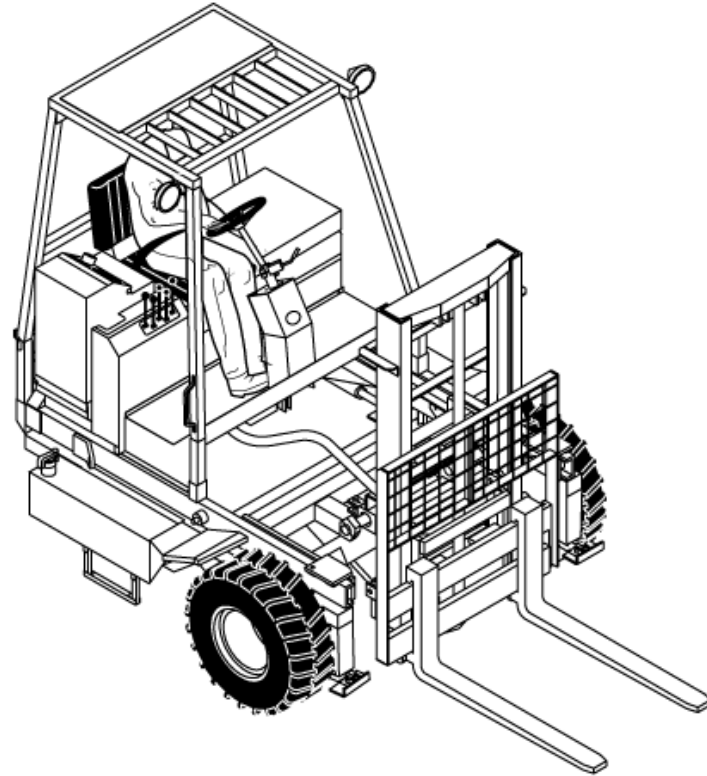
Variable Reach or Telescopic RTFL

- Reaches to Greater Heights
- Adjustable Frame
- Multiple Steering Modes



Truck Mounted RTFL

- Attached to Truck for Delivery of Heavy Loads On-Site
- Extremely Tight Turning Radius



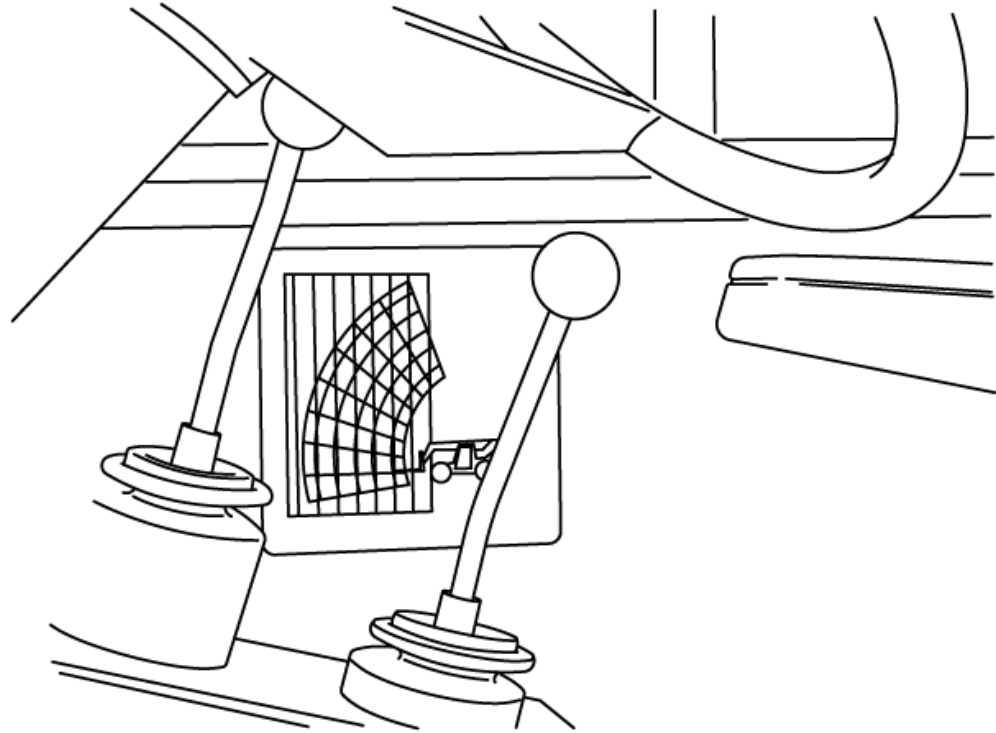
Basic Instruction - General

- **Manufacturer – Supplied Operator’s Manual**
- **Attachment & Option Documentation**
- **Decal Identification & Content**
- **Safety Instructions**



Load Charts

- **Maximum Weight to Reach Limitations**
- **Know the Weight of Objects to Be Picked Up or Deposited**
- **If You Cannot Determine Weight, Ask a Supervisor or Supplier**



Automobile vs. Rough Terrain Forklift

Automobile

- 70+ mph
- Prepared Roads
- Can Carry Passengers
- Relative Comfort
- Maximum Visibility

Rough Terrain Forklift

- Max 10-20 mph
- Rough Terrain-Off Road
- Transport Materials, Operator Only
- Functional Work Station
- Visibility Frequently Obscured



Automobile

- Suspension With Shock Absorbers
- No Hydraulic Lift System
- Front-Wheel Steering
- Stability (Center of Gravity) Is Constant

Rough Terrain Forklift

- Tires Are “Suspension”
- Hydraulic Lift System and Controls
- Various Steering Modes
- Stability (Center of Gravity) Varies with Load



BASIC INSTRUCTION — RTFL Safety

- General Safety
- Proper Clothing
- Site Inspection
- Site-Specific Traffic Rules
- Signs, Flags and Markings
- Traffic and Hand Signal Interpretation
- Pre-Start Checks

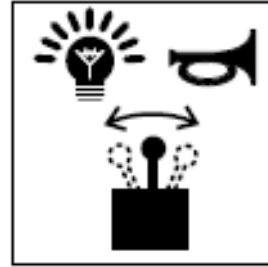


- **General Procedures**
- **Seat Adjustment**
- **Seat Belt**
- **ROPS/FOPS Assembly**
- **Set Controls to Neutral Position**



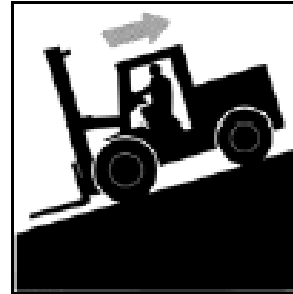
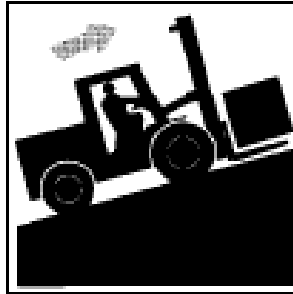
OPERATION — Control Function

- Indicators and Gauges
- Speed/Gear Ranges
- Steering Characteristics
- Braking Characteristics
- Turning Radius & Clearance
- Functional Tests
- Lift / Carriage Shift / Tilt Controls



OPERATION — Restricted View Awareness

- See and Be Seen
- Terrain Considerations
- Soil Condition Hazards
- Water Hazards
- Trees
- Driving Up, Down and Across Sloped Surfaces
- Electric Power Line Hazards

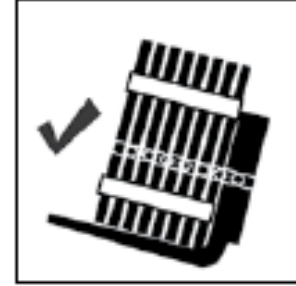


- **Culverts**
- **Obstructed Visibility**
- **Driving in Confined Areas**
- **Line-of-Sight**
- **Speed Considerations**
- **Ability to Turn Considerations**



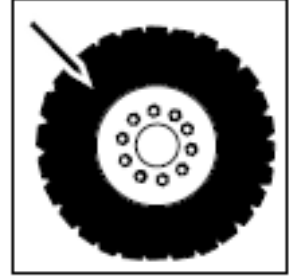
OPERATING TECHNIQUES

- Driving Without a Load
- Center of Gravity Considerations
- The Stability Triangle
- Load Pickup Techniques
- Shift and Tilt
- Driving With a Load
- Load Deposit Techniques
- Parking and Shutting Down the RTFL



MACHINE MAINTENANCE

- RTFL Maintenance
- Preventive Maintenance
- Pre-Service Preparation
- Refueling
- Cooling System
- Oil and Fluids
- Electrical System Checks
- Tire Checks

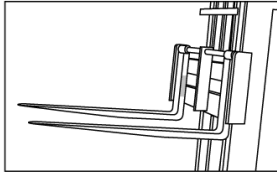


SAFETY IS EVERYONE'S BUSINESS

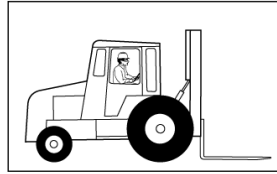
- What is an RTFL Accident?
- The Cost of Accidents
- Site, Company and Manufacturer Rules
- Need for Strict Enforcement of Rules
- Liability
- Safety is YOUR job



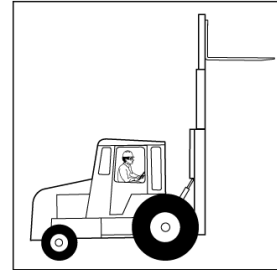
Vertical Mast Rough Terrain Forklift



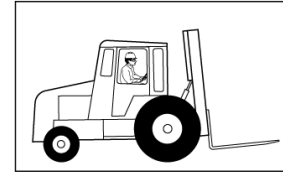
CARRIAGE/FORK ASSEMBLY



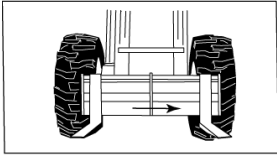
FORKS AT PICKUP/DEPOSIT POSITION



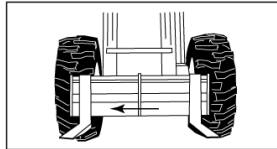
FORKS AT ELEVATED
PICKUP/DEPOSIT POSITION



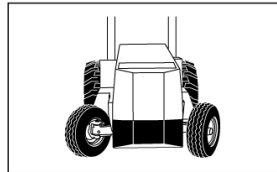
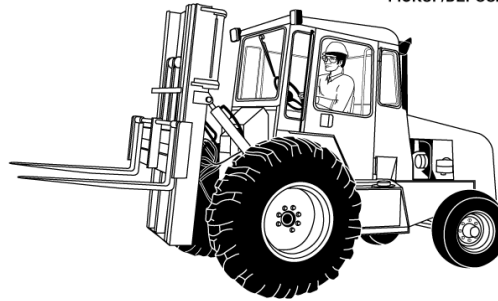
FORKS AT LOW "CRADLE" POSITION



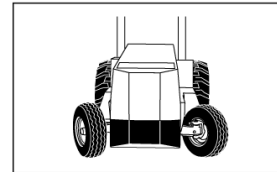
CARRIAGE SHIFT LEFT



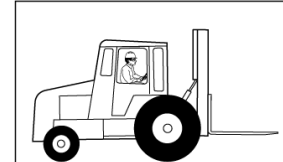
CARRIAGE SHIFT RIGHT



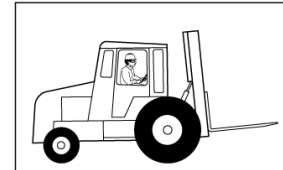
STEERING WHEELS POSITION -
LEFT TURN



STEERING WHEELS POSITION -
RIGHT TURN



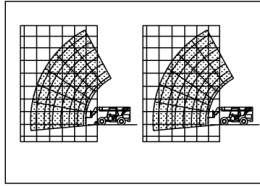
FORKS AT VERTICAL MAST POSITION



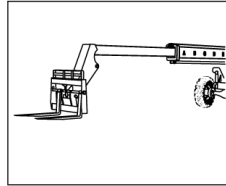
FORKS AT HIGH "CRADLE" POSITION



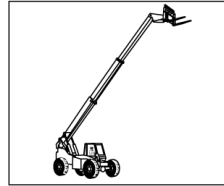
Variable Reach (Telescopic) Rough Terrain Forklift



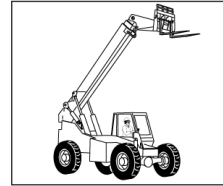
VARIABLE REACH FORKLIFT
LOAD CHART



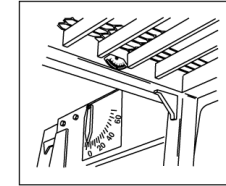
BOOM EXTENDED - HORIZONTAL



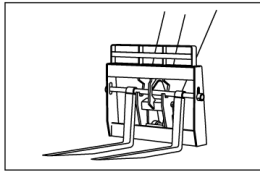
BOOM EXTENDED - ELEVATED



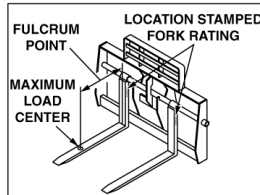
BOOM RETRACTED - ELEVATED



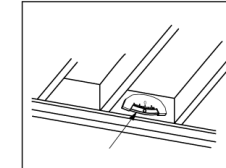
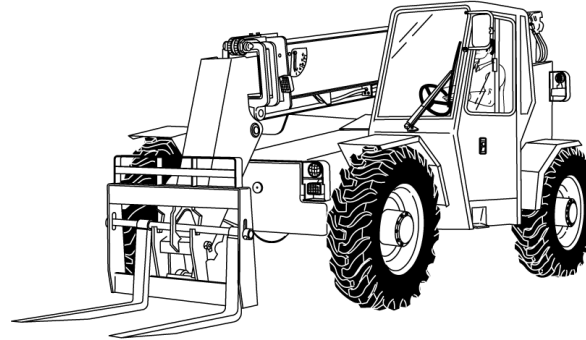
BOOM ANGLE INDICATOR



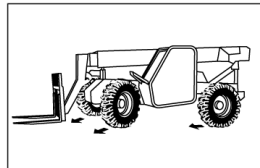
FRAME ADJUSTMENT - LEFT



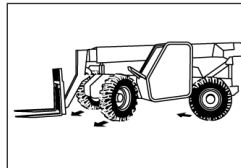
FULCRUM POINT
LOCATION STAMPED
FORK RATING
MAXIMUM
LOAD
CENTER



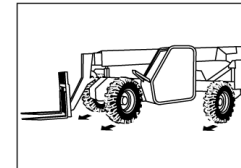
FRAME LEVEL INDICATOR



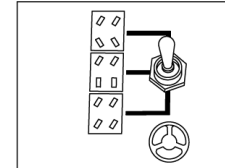
TWO WHEEL STEERING MODE (FRONT)
(MAY ALSO BE REAR)



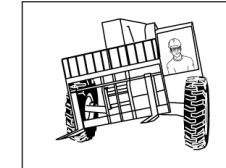
FOUR WHEEL STEERING MODE



CRAB STEERING MODE



STEERING MODE SELECTOR SWITCH

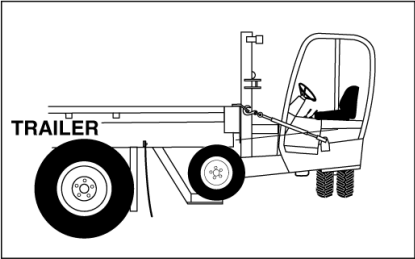


FRAME ADJUSTMENT - RIGHT

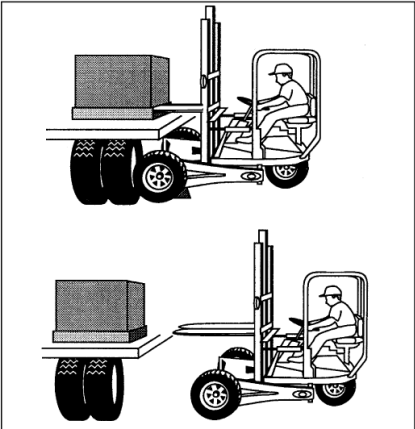
100-1100



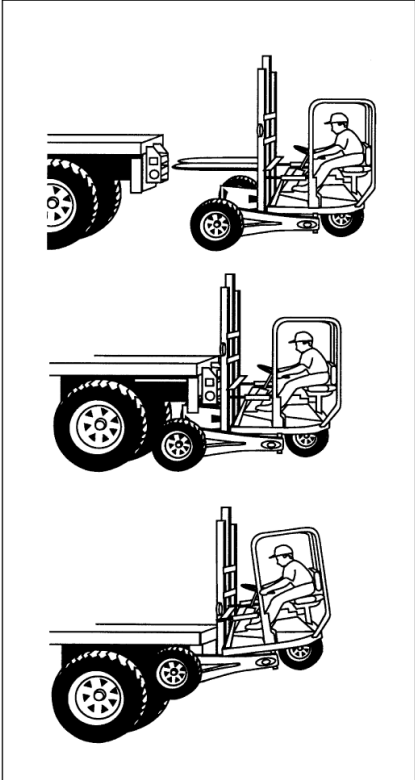
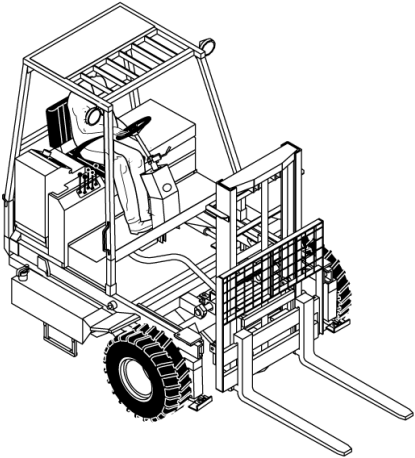
Truck Mounted Rough Terrain Forklift



TRUCK MOUNTED FORKLIFT IN TRUCK/TRAILER MOUNTING



PICKUP/DEPOSIT ON TRUCK/TRAILER



TRUCK MOUNTING PROCEDURES



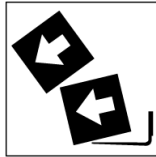
Load Considerations



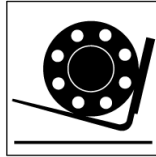
**KNOW
WEIGHT**



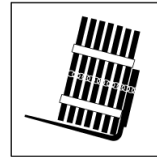
**KNOW
LOAD
CAPACITIES**



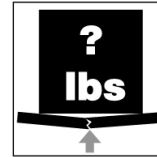
**AVOID
DOUBLE
TIERED
LOADS**



**KEEP
FORKS
TILTED
BACK**



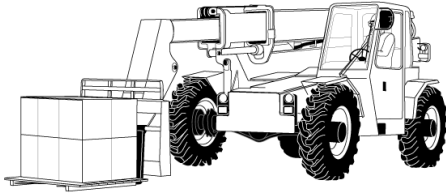
**SECURE
LOOSE
LOADS**



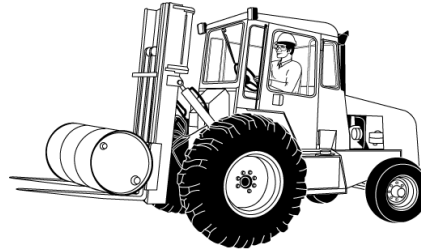
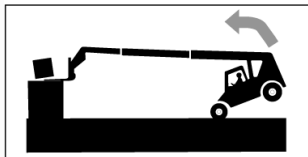
**KNOW
LANDING
WEIGHT
LIMITS**



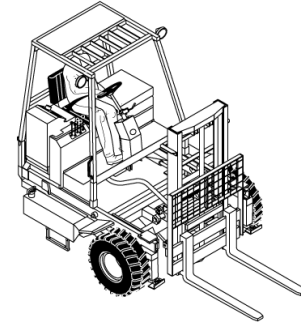
**CHECK
CRACKING
NOISES**



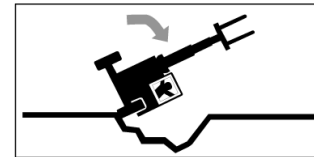
**USE CAUTION
WITH FULL
BOOM EXTENSION**



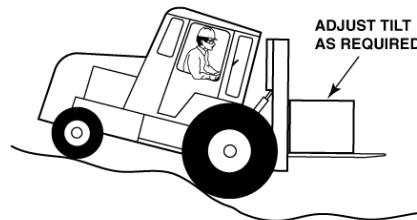
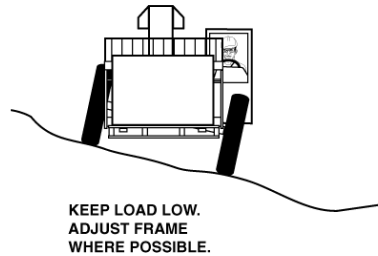
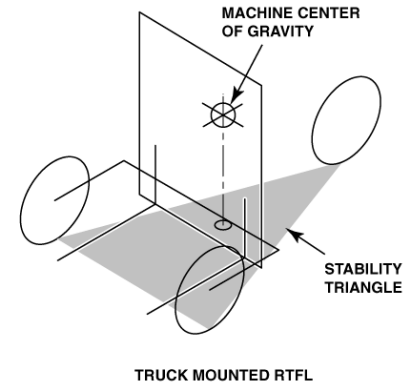
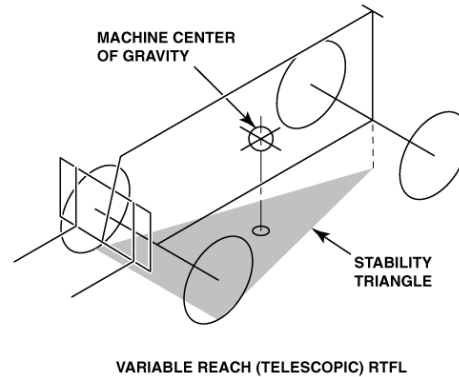
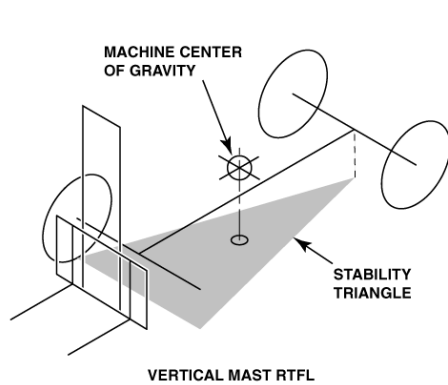
**USE CAUTION
WHEN PLACING LOADS ON HIGH
ELEVATIONS AND DOWNHILL GRADES**



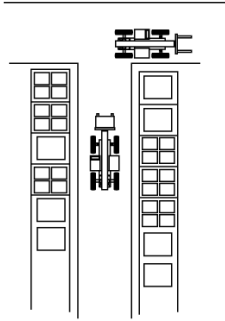
**AVOID
TRAVELING WITH MAST OR
BOOM EXTENDED**



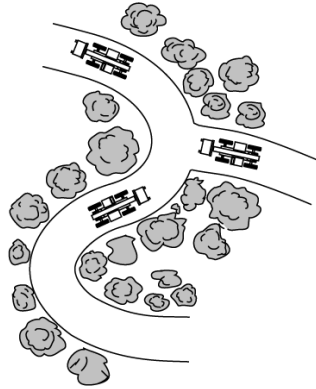
Stability Triangle / Rough Terrain Operation



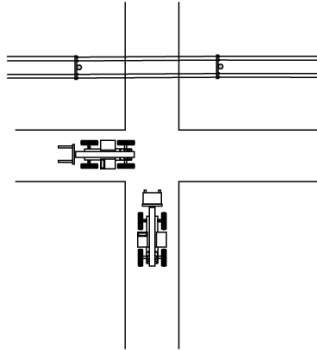
Line of Sight



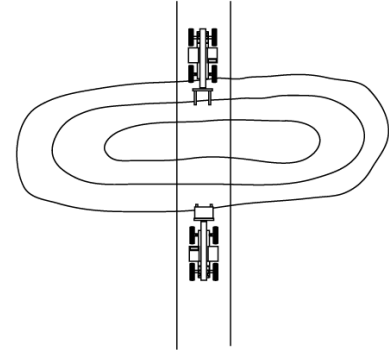
**BLIND AISLE
(TOP VIEW)**



**WOODED TRAIL
(TOP VIEW)**



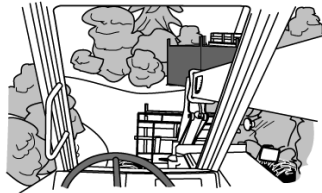
**LOW LINES
(TOP VIEW)**



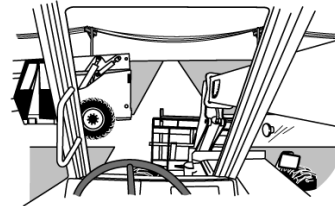
**CRESTING A HILL
(TOP VIEW)**



**BLIND AISLE
(OPERATOR VIEW)**



**WOODED TRAIL
(OPERATOR VIEW)**



**LOW LINES
(OPERATOR VIEW)**



**CRESTING A HILL
(OPERATOR VIEW)**



Hands-On Checklist

Safety Training for Operators of Rough Terrain Forklifts

Hands-On Checklist

Trainee Name: _____

Employer: _____

Date: _____

RTFL Used: _____

	Completed	N/A
Pre-Start Checks		
Checks hydraulics		
Checks ROPS/FOPS		
Checks carriage attachments point		
Checks all plates		
Checks tires		
Checks forks		
Fastens seat belt		
Start Up		
Sets parking brake		
Sets controls to neutral		
Sounds horn		
Checks for personnel		
Starts engine smoothly		
Performs function checks		
Operation		
Acceleration		
Accelerates smoothly		
Limits speeds to conditions		
Turning		
Slows before turns		
Considers balance		
Stays within lane		
Careful of turning radius		
Stopping		
Slows down		
Comes to a full stop		
Sets parking brake		

	Completed	N/A
Load Pick Up		
Aligns forklift with load		
Approaches slowly		
Applies parking brake		
Stops prior to load		
Makes final adjustments		
Positions forks under load		
Lifts load slowly		
Cradles load		
Releases parking brake		
Backs off slowly		
Lowers forks immediately		
Checks load stability		
Transport		
Accelerates slowly		
Keeps load low		
Frequently scans area		
Decelerates for turns		
Exercises caution on hills		
Handles ascent properly		
Handles descent properly		
Load Deposit		
Aligns forklift with load stand		
Approaches slowly		
Applies parking brake		
Stops prior to load stand		
Makes final adjustments		
Positions load above stand		
Levels load		
Deposits load slowly		
Backs off slowly		
Lowers forks immediately		
RTFL Shutdown		
Parks on level area		
Sets parking brake		
Sets controls to neutral		
Turns off engine		





Association of Equipment Manufacturers

Visit safetymaterials.org
view AEM's extensive
catalog of safety materials.

