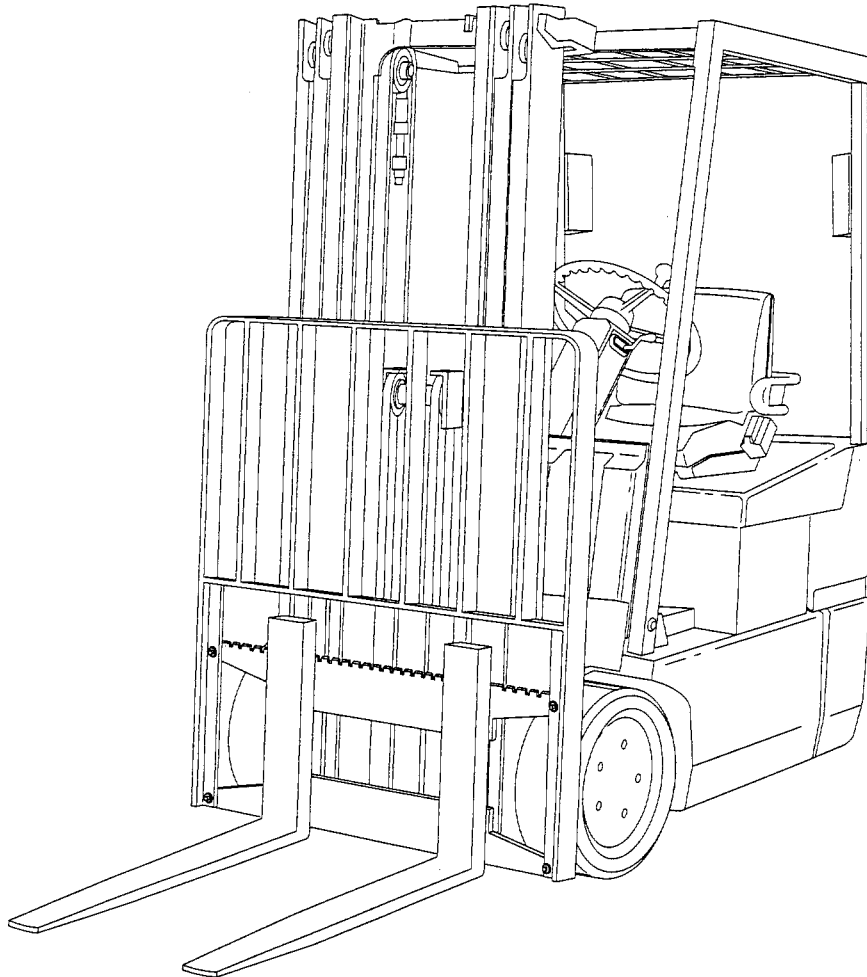


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# WORKSHOP MANUAL

## For Models

## ERP/C16-20ATF



*Copies of this and other publications for this range of lift trucks are available.  
For details contact Your Local Dealer.*

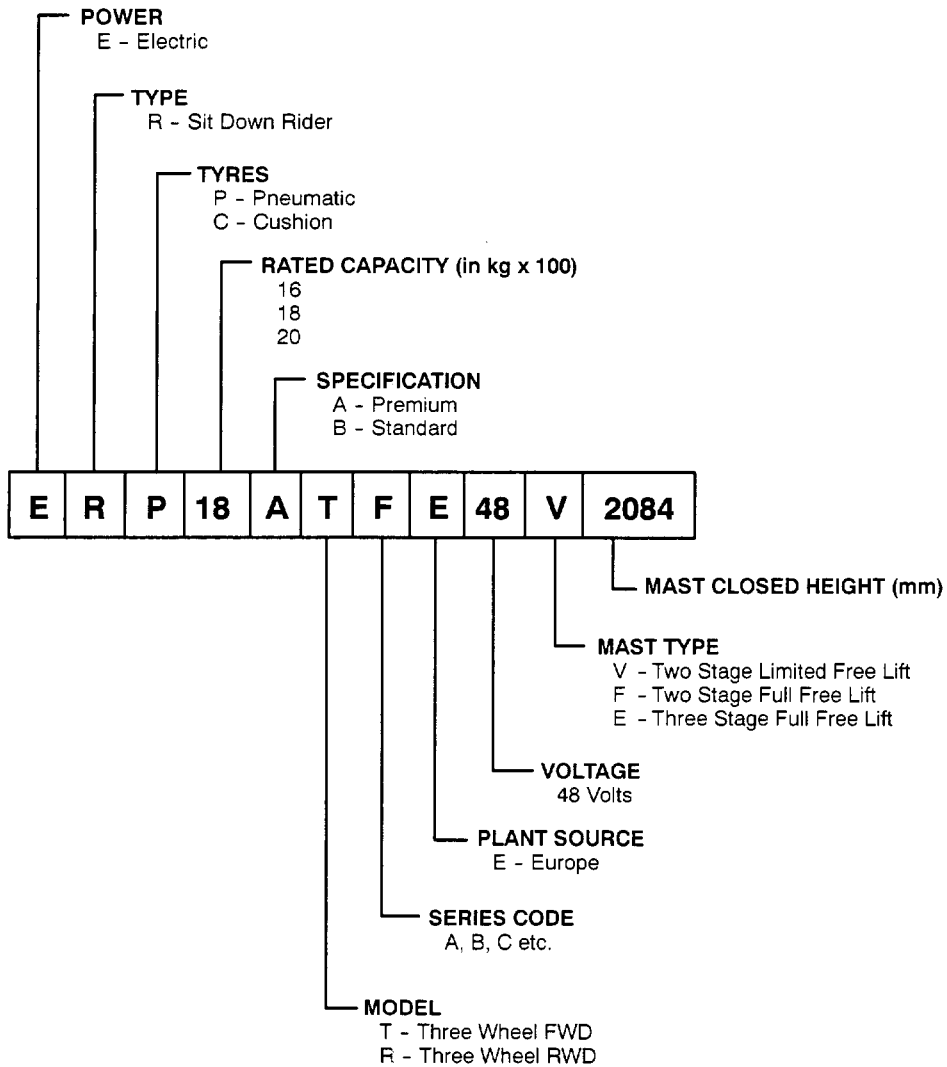
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For Service & Parts-Contact

Authorized Dealer

## EXPLANATION OF TRUCK MODEL CODE



This Maintenance Manual is divided into major sections which are listed on this page. Quick reference to these sections can be made by placing the right thumb on the tab of the desired section, bending the book back and thumbing the pages to the corresponding tab.

## **SECTIONS**

<b>1</b>	<b>OPERATING INSTRUCTIONS</b>
<b>2</b>	<b>GENERAL TRUCK AND LUBRICATION</b>
<b>3</b>	<b>ELECTRICAL SYSTEM</b>
<b>4</b>	<b>DRIVE UNIT</b>
<b>5</b>	<b>BRAKE SYSTEM</b>
<b>6</b>	<b>TRAIL AXLE AND STEERING SYSTEM</b>
<b>7</b>	<b>HYDRAULIC SYSTEM</b>
<b>8</b>	<b>MAST</b>
<b>9</b>	<b>BATTERY AND CHARGING SYSTEM</b>
<b>10</b>	<b>USER SUPPORT INFORMATION</b>
<b>11</b>	<b>ALPHABETICAL INDEX</b>

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## SAFETY PRECAUTIONS MAINTENANCE AND REPAIR

- When lifting parts or assemblies, make sure that all slings, chains, or cables are correctly fastened and that the load being lifted is balanced. Make sure that the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand. Use a lifting mechanism.
- Wear safety glasses.
- **DISCONNECT THE BATTERY CONNECTOR** before doing any maintenance or repair on electric lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See "How to Put the Lift Truck on Blocks" in the **OPERATOR'S MANUAL** or **SECTION 2, GENERAL TRUCK AND LUBRICATION**.
- Keep the unit and working area clean and in order.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use **YALE APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure that all nuts, bolts, circlips, and other fastening devices are removed before using force to remove parts.
- Always fasten a **DO NOT OPERATE** sign to the controls of the unit when making repairs or if the unit needs repairs.
- Make sure you follow the **DANGER, WARNING, and CAUTION** notes in the instructions.
- Wear a rubber apron, gloves, boots, and goggles or a face shield when doing maintenance on batteries.
- Batteries generate hydrogen gas when they are being charged. Keep open fire away from batteries. Do not check the electrolyte level with a match or a lighter. No smoking and do not create sparks. Make sure the area has ventilation. If the battery is charged in the lift truck, open the bonnet.
- Lift batteries correctly with a crane or equipment designed for the job. Always use a spreader bar designed and adjusted for the battery. Move batteries with a lift truck, or a conveyor or rollers designed for that purpose. If the battery does not have a cover, a rubber mat or insulating material must be put over the top of the battery to prevent a short circuit with other equipment. Make sure the lifting equipment has enough capacity for the job. Do not use chain or wire rope slings.
- Never put metal materials or tools on a battery.
- When maintenance on the battery or the battery charger is required, disconnect both the AC and DC power. If new battery connectors must be installed, make sure the positive and negative terminals and cables are kept separate and insulated from each other. Even a momentary short circuit can cause an explosion and damage the battery.
- Keep water readily available to flush spilled electrolyte. Electrolyte in the eyes must be flushed with water immediately and then quickly get medical attention. Special showers and eye wash systems are required in areas where battery maintenance is done.
- If electrolyte is spilled on a work surface or the floor, flush the area with water, use a solution of soda (sodium bicarbonate) to make the acid neutral.
- Only trained persons are permitted to do maintenance on batteries and battery chargers. Make sure that the regulations by government safety agencies, government insurers, private insurers, and private organizations are followed when doing maintenance on batteries.

**NOTE:** The following symbols and words indicate safety information in this manual:



**DANGER:** Indicates a condition that will cause immediate death or injury!



**WARNING:** Indicates a condition that can cause death or injury!



**CAUTION:** Indicates a condition that can cause property damage!

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**GENERAL**

Before attempting to operate this truck, carefully read and understand these operating procedures.

Make sure the truck is in proper operating condition. Be sure all safety devices such as the overhead guard and the load backrest extension are in place and properly secured. Visually inspect the entire truck for any damage that may have occurred during shipment.

**NOTE:** Throughout this manual the terms right, left, front and rear relate to the viewpoint of an operator walking with or riding on the truck.

Familiarise yourself with the information contained on the name plate which is located on the cowl to the left of the steering column. See Figure 1-1 and Figure 1-2. Information on this name plate is as follows:

1. Serial Number - This is an identification number assigned to this particular truck and should be used when ordering service parts or when requesting any information from your Yale Industrial Truck Dealer. The serial number is a six digit number preceded by a letter and is stamped on the truck frame and on the name plate.
2. Model Code - An explanation of the model code is located on the back of the front cover of this manual.

3. Truck Weight - This is the approximate weight of the truck without a load on the forks. This weight plus the weight of the load to be moved must be considered when operating on raised floors, lifts, etc.

4. Capacity Rating - This rating shows the maximum load capacity of this truck with relation to load centres and fork heights (see diagram on name plate). Personal injury and damage to the truck can occur if the capacity rating is exceeded.

Safety and informational labels are located in conspicuous locations on this truck and should be strictly followed. Check the name plate of each truck before operation. These safety and informational labels must be replaced immediately if missing or defaced. Labels will vary with type of truck and equipment installed. Refer to the Parts Manual for part number and location for all labels. The location of the labels is also shown in Section 2, GENERAL TRUCK AND LUBRICATION.

This truck meets all applicable mandatory requirements and safety standards for powered industrial trucks at the time of manufacture.

No additions, omissions or modifications should be made that will affect compliance to the previously stated requirements or in any way minimize the effectiveness of the safety devices.

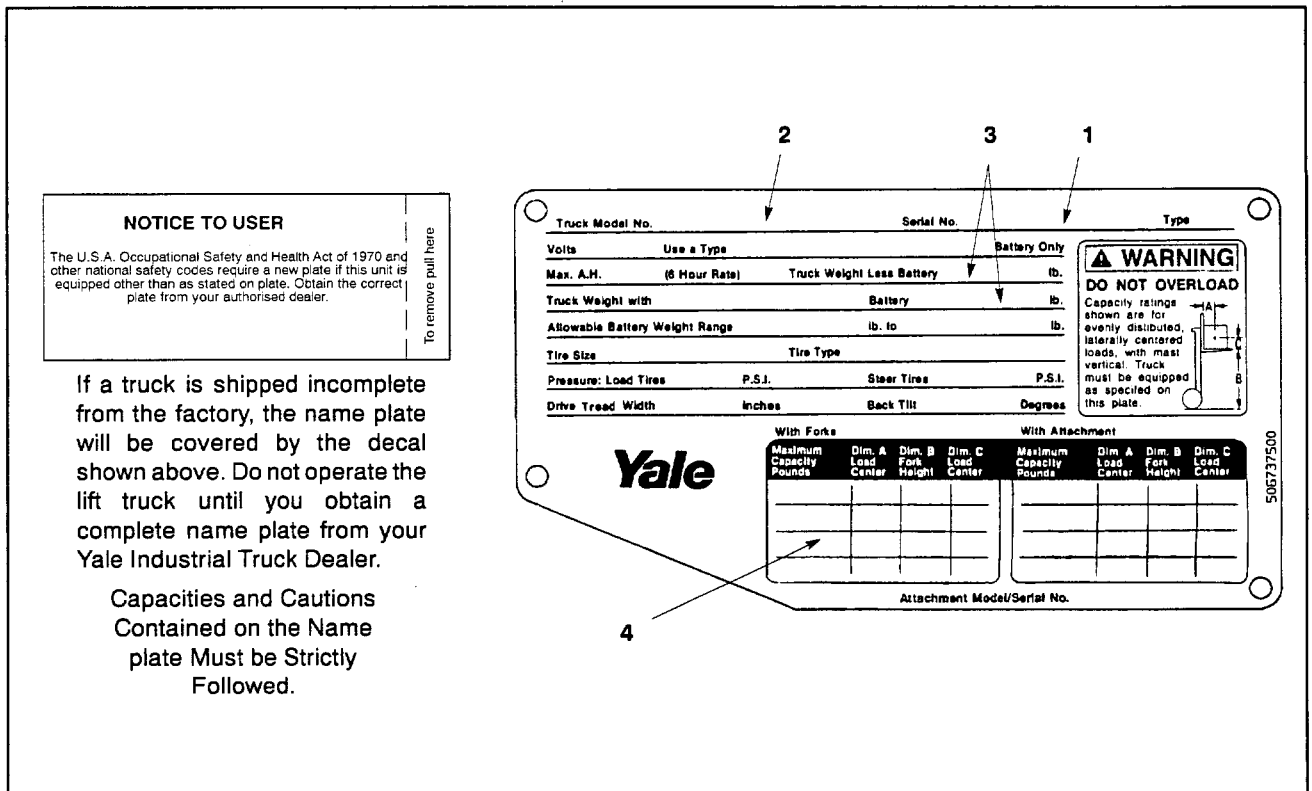


Figure 1-1 - Name Plate

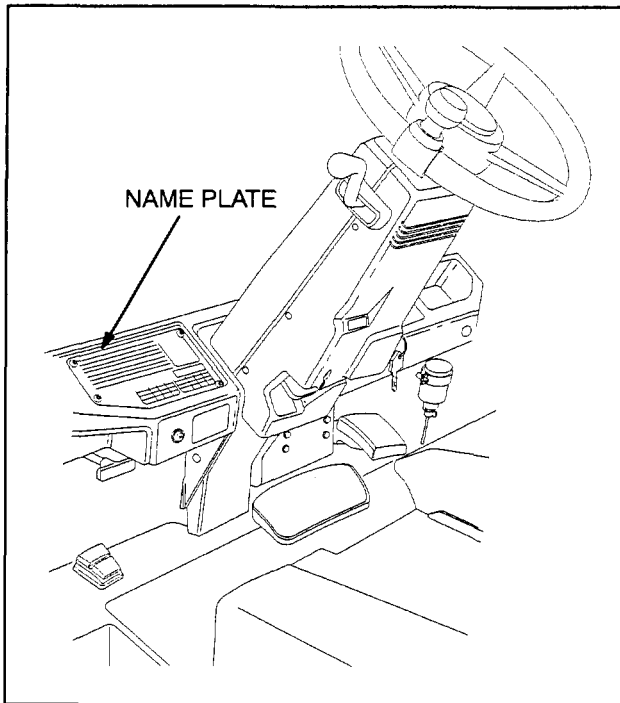
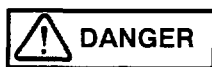


Figure 1-2 - Name Plate Location

**SAFETY AND INFORMATIONAL LABELS**

Safety and informational labels are located in conspicuous locations on this truck and should be strictly adhered to. These safety and informational labels *must be replaced immediately if missing or defaced*. Labels will vary with type of truck and equipment installed. Refer to Parts Manual for part number of labels.

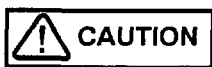
**HAZARD INTENSITY LEVEL**



**DANGER:** Identified by a Red Label, immediate hazards which **WILL** result in severe personal injury or death.



**WARNING:** Identified by an Orange Label, hazards or unsafe practices which **MAY** result in personal injury or death.



**CAUTION:** Identified by a Yellow Label, hazards or unsafe practices which **MAY** result in minor personal injury or product or property damage.

THE READER MAY FIND ANY OR ALL OF THE FOLLOWING LABELS USED IN THIS PUBLICATION. AN UNDERSTANDING OF THEIR USE, AS GIVEN BELOW WILL AID THE READER.

**NOTE**

An advisory procedure, practice, condition, etc., which is essential to emphasize.



Directs attention to hazards or unsafe practices which may result in minor personal injury, product or property damage if the proper precautions are not taken.



Directs attention to unsafe practices which could result in personal injury or death if proper precautions are not taken.



Directs attention to unsafe practices and/or existing hazards which **WILL** result in severe personal injury or death if proper precautions are not taken.

**OPERATOR PRECAUTIONS**

The following precautions have been prepared for your safety and the safety of your fellow workers. Read and understand this information before operating the lift truck.



**WARNING:** Use special care when travelling without a load as **THE RISK OF OVERTURNING IS GREATER** when cornering and at high speed.

Check all gauges and indicator lights for correct operation. Frequent reading of the instrument panel should be a habit.

Follow the Recommended Schedules of Maintenance. Maintain your lift truck for dependable and economical operation.

Report all accidents involving personnel, building structures and equipment to the proper authority.

Before each shift, every 8 hours, it is the operator's responsibility to carry out the following checks and inspections before beginning truck operation. Do not operate truck if it is in need of repair, if it is in an unsafe condition, or might contribute to an unsafe condition. Remove the key and report the condition to the proper authority. If the truck becomes unsafe in any way while you are operating it, **STOP operating the truck and report the matter immediately to the proper authority.**

Basic maintenance information and the Recommended Schedule of Maintenance are in the Operating Manual, located in the document holder on the compartment cover. Also refer to Section 2, GENERAL TRUCK AND LUBRICATION.

1. Make sure overhead guard, load backrest extension, and all other protective equipment is attached.
2. Make sure all capacity, safety and informational plates or labels are attached. This truck is not considered safe to use without a legible, properly filled out name plate. Contact Yale Materials Handling Corporation or your local dealer for Yale industrial trucks if the name plate is not present and legible. See Section 2, GENERAL TRUCK AND LUBRICATION or the Parts Manual for label and plate locations.
3. Inspect truck for any damage that might have occurred during the previous shift.
4. Inspect truck before and after operating, for any signs of external leaking of the battery, steering system, hydraulic system, etc.
5. Check hydraulic hoses for leaking, chafing, cuts or reinforcement showing through the outside of the hose.
6. Check for mistracking of the hoses on the sheaves.
7. Make sure chains are not damaged or kinked.
8. Make sure mast stops and finger guards are in place.
9. Make sure bonnet latches are adjusted (if equipped) and fastened.
10. Operate service and parking brakes, all hydraulic controls, (lift, tilt and auxiliary, if equipped), accelerator, shifting linkages and steering. Make sure they operate freely and return to their proper positions. See section on OPERATING CONTROLS for detailed descriptions.
11. Inspect condition of wheels and tyres.
12. Inspect forks for any damage. Make sure they are properly attached and locking clips are in their proper position.
13. Test horn, lights and all other accessories. Make sure they are properly mounted and in good working order.
14. Operate truck and make sure all gauges and meters are functioning properly.
15. Make sure any unusual noises are investigated immediately.

### OPERATOR PRE-CHECKS AND INSPECTION

1. When attachments are used, extra care should be taken in securing, positioning and transporting the load. Operate trucks equipped with attachments as partially loaded trucks.

2. Watch that your load does not exceed the capacity rating of the truck. The truck capacity is posted on the name plate which is attached to the truck at the factory.
3. Do not handle unstable or loosely stacked loads.
4. Do not start or operate this truck or any of its functions or attachments if you are not in the operator's seat, which is the designated operator's position for this Yale lift truck.
5. Never allow anyone to ride on your truck and never allow anyone other than a qualified professional to operate your truck.
6. Refer to the Maintenance and Lubrication section in this manual for the recommended hourly service intervals. Regular attention at the specified time will pay dividends in maximum efficiency and longer life of the truck.

### OPERATING PROCEDURE

Apply power to the truck by connecting the battery plug to the truck receptacle. Be sure the plug is fully inserted and locked into place so that there is enough pressure at the contact mating surfaces.

Make sure the direction control levers are in the neutral position before operating the truck.

- The operator must sit on the seat to energise the electrical circuit.
- Place foot on the service brake pedal.
- Turn key toward forks (clockwise).
- Release the parking brake.
- Select desired direction.
- Release service brake pedal.
- Depress accelerator pedal to travel.



**CAUTION:** Operating the drive control in a situation where the truck will not move will damage the electric motor.

1. Keep hands, feet and other parts of your body inside the operator's compartment. Parts of your body outside the truck can be injured when passing obstructions.
2. Do not permit passengers to ride on the truck.
3. Observe and comply with instructions concerning floor loadings. Know the weight of your truck and load combined. Truck weight information is located on the name plate.
4. Travel with the lifting mechanism low and where possible, tilted back. Do not elevate the load except during stacking.



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5. The operator can change the direction of travel while the lift truck is moving by moving the direction control lever in the opposite direction. This is called plugging.
6. Look in the direction of travel and keep a clear view of the path of travel.
7. If visibility is impaired by the load, operate truck with the forks trailing and always look in the direction of travel.
8. Start, stop, travel, steer and brake smoothly. Slow down for turns and on uneven or slippery surfaces that could cause truck to overturn or slide.
9. Before entering trucks or trailers, be certain the brakes on the truck or trailer are applied and wheel chock(s) are in place. If trailers are not coupled to a tractor, supports may be needed to prevent upending or corner dipping. Check the flooring of trucks, trailers and railroad cars for breaks and weakness before driving onto them.
10. Before driving over a dock board or bridge plate, be certain that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate and never exceed its rated capacity.
11. Maintain a safe distance from the edge of ramps or platforms. Do not push freight cars while on a raised dock or platform. Do not use this truck for opening or closing freight doors.
12. Watch clearances, especially around forks. The driver must be aware that the forks can sometimes extend beyond the load. This may cause the forks to hit an object or lift another load.
13. Watch out for obstructions, especially overhead. Check clearances.
14. Do not run over objects on the roadway surface as truck stability and steering may be adversely affected.
15. When approaching cross aisles, slow down, sound horn and keep to the right side of aisle.
16. Operate truck under all conditions at a speed that will permit it to be brought to a stop in a safe manner.
17. On sloping surfaces, higher than 5 percent (a 5 ft. rise or drop in 100 ft. of travel), operate loaded truck with the load facing up hill. Do not turn on a slope. For stability reasons, a lift truck must not be driven across a slope.
18. Operate unloaded truck on all grades with the lifting mechanism downhill.
19. Do not push extra loads with the truck.

20. Watch out for pedestrians at all times. Do not drive up to anyone standing in front of an object.



21. Observe all traffic regulations, including authorised plant speed limits. Under normal traffic conditions, keep to the right. Maintain a safe distance from the truck ahead (approximately three truck lengths), and keep the truck under control at all times.
22. Yale lift trucks are not intended for use on public roads.
23. When leaving truck unattended, lower the lifting mechanism, shut off power, remove key and apply parking brake. Chock wheels if truck is parked on an slope.
24. Do not remove overhead guard or load backrest extension unless specifically authorised.
25. Always set the forks as far apart as the load will permit. Make sure that fork length is at least 2/3 of load length.
26. Carry the load flush against the truck.
27. Do not put any part of your body into the mast area or between the mast and truck. Be aware of pinch points on attachments, especially reach mechanisms.
28. Allow no one under or near load or lifting mechanism.
29. If a supplementary platform is used, make sure it is securely fastened to the carriage and forks.

#### SHUT DOWN PROCEDURE

When leaving the truck, fully lower lifting mechanism, ensure controls are in neutral, shut off power, apply the brake, and remove key. If you park the truck on an slope, chock the wheels.

#### FORK ADJUSTMENT

Adjust the forks on the fork carriage. Forks should be spaced as far apart as the load being moved will allow. Both forks should always be the same distance from the centre of the fork carriage.

Check for the presence and condition of studs at each end of the carriage upper fork clip slide. If studs are damaged or missing they should be repaired or replaced before the forks are adjusted.

To adjust the forks, raise them a few inches off the floor. Lift up on the keeper pin and slide the forks along the carriage by pushing them away from you. Do not pull the forks toward you. When the forks are set to the desired position, make sure the keeper pin is down in a slot on the top of the fork carriage plate.

**SAFETY AND OPERATIONAL CHECK LIST**

A "Daily Check List" similar to the one shown on the next page should be used every day before operating the truck.

The check lists are available in tablet form with 50 sheets per tablet and can be obtained from your local Yale Industrial Truck Dealer for a nominal fee.

Both this manual and the Operating Manual contain the Recommended Schedule of Maintenance which should be used as a guide along with the Lubrication Instructions.

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