2W2
INTRODUCTION

This manual has been assembled to assist the authorized service technician to service, maintain and repair, if required, the units covered.

This manual covers the 2W2 end controlled walkie rider truck manufactured from October 2007.

We have made every effort to distinguish between the models, so the authorized service technician will be working with the correct service specifications.

All schematics and part numbers included in this manual are for standard units. These are subject to change. Please reference the units specific parts manual for correct information, schematics and possible options.

Edition: December 2007
Revised: May 2008
Publication No.: SM2W2-MAINT

WARNING SYMBOLS & LEVELS

Always follow the warnings given in this Service Manual and any located on the truck to avoid accidents and/or injuries from occurring.

Warning Levels

Warning texts are given in three levels and provide information on the risks, describe the consequences, and instruct how to avoid accidents.

DANGER:

- **Warns that an accident will occur if you do not follow the instructions.**
- **The consequences are serious personal injury or possibly death, and/or extremely large material damage.**

WARNING:

- **Warns that an accident can occur if the instructions are not followed.**
- **The consequences are serious personal injury or possibly death, and/or large material damage.**

CAUTION:

- **Warns that an accident can occur if the instructions are not followed.**
- **The consequences are possible personal injury and/or material damage.**

SERVICE NOTE: Marks the risk of a breakdown and/or material damage if the instructions are not followed. Also may define a service procedure.

CONVERSION FACTORS

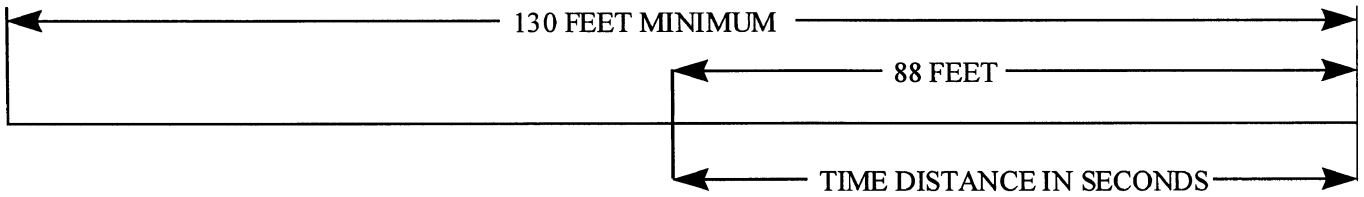
To Convert From	To	Multiply By
bar	psig	14.5
C°	F°	(C° x 1.8) - 32
gal/h	oz/h	128
g/h	oz/h	.03527
g/kWh	oz/BHPh	.0263
g/m	U.S. gal/1000 cu. ft.	.0091
J/1	BHP/100 cfm	.0683
kg	lb.	2.205
kgm	1b/ ft	23.730
kg/h	U.S. gal/h	.32
kW	Bhp	1.341
1	gal (U.S.)	.2642
1/s	cfm	2.119
1/s	U.S. gal/min	15.85
m	ft	3.281
m K/w	btu/h/F°/ft	5.678
mg/m	oz/cu. ft.	1 x 10
mm.	in.	.0394
Nm	lb. ft.	.738

STANDARD SPEED AND LIFT TEST

DANGER:

All tests should be carried out in a safe area away from normal operational traffic. Follow all plant safety regulations when performing tests.

Speed Test Track



60 divided by Time = mph

Example:

60 divided by 10 seconds = 6 mph

60 divided by 18 seconds = 3.3 mph

Lift Speed Test

$$\frac{\text{Mast Height (inches)}}{12} = \text{Distance}$$

$$\frac{\text{Lift Speed Time (seconds)}}{60} = \text{Time}$$

$$\frac{D}{T} = \text{Feet/min.}$$

Example:

12 divided by 270 = .04

60 divided by 14 sec. = 4.2

4.2 divided by .04 = 105 ft./min.

BATTERY CARE AND SERVICE

The motive power industrial battery is the lifeblood of an electric lift truck. The battery supplies energy so that the truck can do productive work. When the battery is charged and maintained in top condition the load gets moved, material stored, paper stacked and rail cars and trailers filled and emptied. The service technician, operator and company president all depend on the electric lift truck for their livelihood. If the battery fails on the job people are out of work, the down time means lost money.

The battery for your lift truck represents a sizable investment. It makes good sense to purchase the correct battery for the job. Taking care of that investment in the best possible way makes even more sense.

The textbook tells how to select the correct battery and how to take care of it. It also explains how that battery works. If you understand the mechanics of something you are better able to take care of it.

Some material presented in the text is not new. We have gathered information from the people who manufacture batteries and related equipment. It is presented here to help you, the service technician, understand and take care of batteries.

⚠ WARNING:

When working with any battery always wear protective equipment, as in rubber gloves, rubber apron and protective face shield. No smoking at any time when working near a battery area.

Theory and Construction of Lead-Acid Storage Batteries

Storage batteries do not actually store electrical energy. Instead they accept the electrical energy delivered to them during charging periods and convert it into chemical energy. A battery in use is said to be discharging. During discharging the chemical energy in the battery is converted into usable electrical energy.

Battery Construction

The internal construction of a lead-acid industrial motive power battery is similar to that of the common automobile battery. The interior is divided into cells. Each cell contains a set of alternating positive and negative plates called "electrodes" (See Fig. 1). There is always one more negative plate - one on each end. Separators are placed between each plate for insulation and the set is immersed in an electrolyte such as a sulfuric acid solution. An automotive battery has the same type of cells, however industrial cells are much larger and more rugged to give longer life and increased capacity since their work load is greater.

CLASS 2 & 3 SERVICE BULLETIN

Nissan Forklift Corporation
240 North Prospect Street; Marengo, IL 60152

Date: March 1, 2010

To: All Dealer Principals
All Service Managers
All Warranty Managers
All Warranty Administrators

From: Customer Quality Service Department

Subject: Diagnostic Report Forms

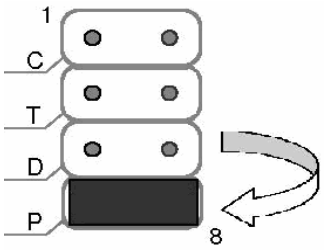
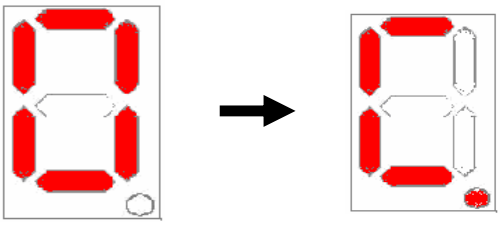
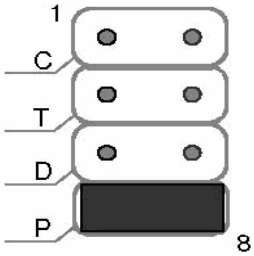
Applied Model: 1W and 2W Series

To assist in providing service and/or in support of a warranty claim, please complete these Diagnostic Reports in their entirety. When complete, submit to NFC's CQD E-mail: service@nfcna.com. Please note NFC will require these forms to be provided for all warranty claims that are submitted for MUX Boards and Controllers.

Please insert a copy of this bulletin into your Dealership's copy of the 1W1/1W2, 1W3/1W4 and 2W2 Service Manuals behind Tab Labeled ES.

Please contact the Customer Quality Service Department at 815-568-1487 if you have any questions.

Phone: 815-568-1487
Fax: 815-568-0187

STEP 21		**WITH THE KEY SWITCH IN THE ON POSITION AND BATTERY CONNECTED** **MOVE THE MODE SELECT JUMPER FROM THE (D)IAGNOSE POSITION TO THE (P)ARKING POSITION**
STEP 22	**VERIFY LED CHANGES AS DISPLAYED** 	**VER 1.2** **"C." WILL DISPLAY ON FIRST KEY ON AFTER PLACING THE PARK POSITION.** **VER 1.3** **UPON MOVING JUMPER LED WILL DISPLAY "0" FOR 3 SECONDS FOLLOWED BY "C." FOR 2 SECONDS**
STEP 23		**TURN THE KEY SWITCH TO THE OFF POSITION AND DISCONNECT THE BATTERY** **JUMPER SHOULD BE PLACED IN THE (P)ARKING MODE PRIOR TO REASSEMBLY** **REASSEMBLE THE HANDLE ASSEMBLY PER PUBLICATION SM2W2-MAINT PAGE ST 4-1.**

THIS COMPLETES THE REMA -CAN PCB 84680-60 VER 1.2 OR 1.3 TEST PROCEDURE

9. Teach procedure is completed.

10. Switch OFF the key switch.

11. The Multiplexer (PCB) board is ready for operation.

12. Switch on unit and verify operation of Multiplexer (PCB) board.

13. If unit does not operator Repeat steps 1 - 12.

14. Reassemble per Publication SM2W2-MAINT Page ST 4-1.

15. Upon successful test operation and reassembly of control handle lower the unit to the floor and test operate.

Please insert a copy of this bulletin into your Dealership's copy of the 2W2 Service Manual behind Tab Labeled ES. Please ensure that your service personnel receive a copy of this bulletin.

Should you have any questions, please contact NFC's Customer Quality Service Department at (815)568-1487.

Best Regards,
Nissan Forklift Corporation

INTRODUCTION

The COMBI AC1 inverter has been developed to perform all the electric functions that are usually presents in walkie trucks. The controller can perform the following functions:

- Controller for AC motors.
- Pump controller for series wounded DC motors.
- Drivers for ON/OFF lowering valve, brake, and horn.
- Can bus interface
- Interface for can bus tiller.
- Sensorless control
- Double microcontroller (one for main tasks, one for safety related tasks)

OPERATIONAL FEATURES

- Speed control.
- Optimum behavior on a slope if the speed feedback is used:
- The motor speed follows the accelerator, starting a regenerative braking if the speed overtakes the speed set-point
- Stable speed in every position of the accelerator.
- Regenerative release braking based upon deceleration ramps.
- Regenerative braking when the accelerator pedal is partially released (deceleration).
- Direction inversion with regenerative braking based upon deceleration ramp.
- Regenerative braking and direction inversion without contactors: only the main contactor is present.
- Optimum sensitivity at low speeds.
- Voltage boost at the start and with overload to obtain more torque (with current control).
- The inverter can drive an electromechanical brake.
- High efficiency of motor and battery due to high frequency commutations.
- Modification of parameters through the programming hand set.
- Internal hour-meter with values that can be displayed on the hand set.
- Memory of the last five alarms with relative hour-meter and temperature displayed on the hand set.
- Test function within hand set for checking main parameters.
- Direct communication between traction AC inverter and pump DC chopper.

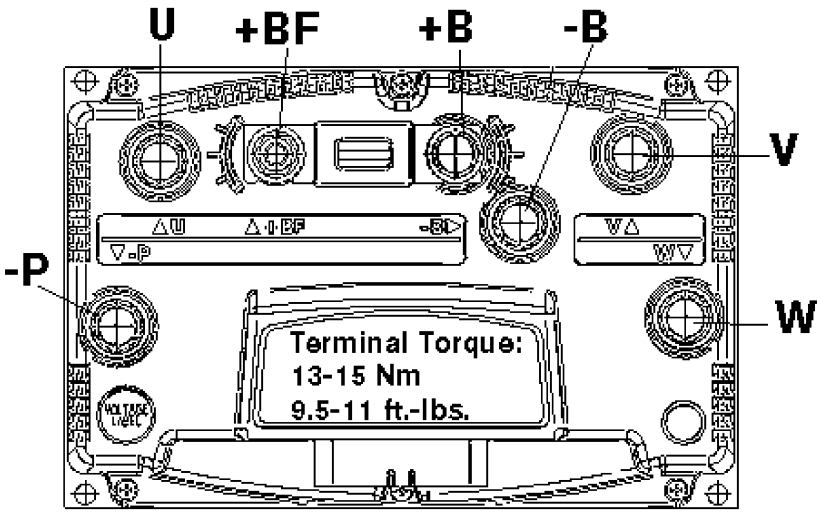
Diagnosis

The microcontrollers continually monitor the inverter and the chopper and carry out diagnostic procedures on the main functions.

The diagnosis is made in 4 points:

1. Diagnosis at start-up that checks: watch-dog, Current Sensors, Capacitor charging, phase's voltages, pump motor output, contactor drivers, can-bus interface, presence of a start requirement, connection with the Can Tiller.
2. Standby Diagnosis that checks: watch-dog, phase's voltages, pump motor output, Contactor Drivers, Current Sensors, can-bus interface.
3. Driving diagnosis that checks: Watchdog, Current sensors, Contactor(s), can-bus interface.
4. Continuous Diagnosis that checks: power stage temperature, motor temperature, Battery Voltage.
   Error codes are provided in two ways. The digital handset can be used, which gives a detailed information about the failure; the failure code is also sent on the Can-Bus.

DESCRIPTION OF THE CONNECTIONS



-B	Negative of the battery.
+B	Positive of the battery.
+BF	Positive of the battery, before the fuse.
-P	Output of the Pump Motor.
U; V; W	Connection bars of the three motor phases; follow this sequence and the indication on the motor.

CAUTION:

Exceeding these specifications could damage the bus bars' internal threads, resulting in loose connections.

CAUTION:

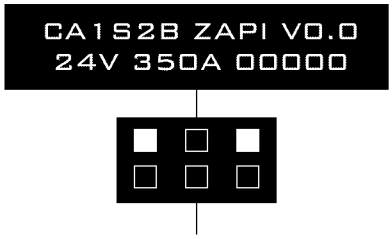
The order of phase cables UVW will effect the operation of forward and reverse. Confirm the operation of direction control with drive tire off of floor.

Config Menu "ADJUSTMENTS" Functions List

To enter the CONFIG MENU it is necessary to push in the same time the right side top and left side top buttons. Then roll until the ADJUSTMENTS item appears on the hand set display. Push the ENTER button.

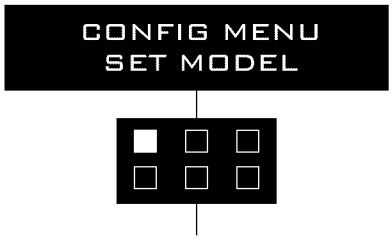
Opening Zapi Menu

Press Top Left & Right Buttons to enter CONFIG MENU



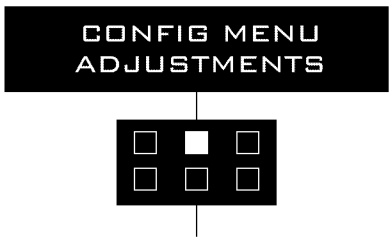
The Display will show: SET MODEL

Press ROLL UP button until ADJUSTMENTS MENU appears



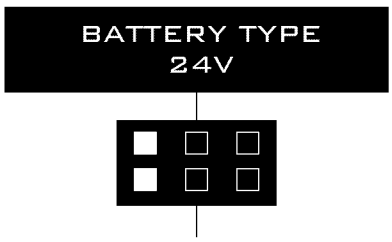
ADJUSTMENTS appears on the display

Press ENTER to go into the ADJUSTMENTS MENU



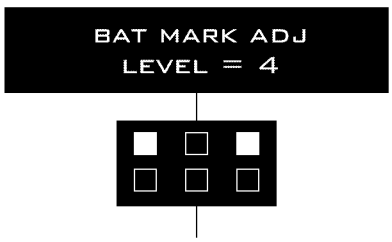
The display will show: SET BATTERY TYPE

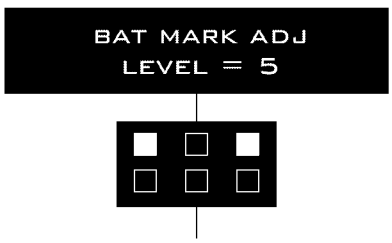
Press ROLL UP or ROLL DOWN button until the desired parameter is reached



The desired parameter appears

Press SET UP or SET DOWN button to modify the adjustment





Function Configuration (SLAVE)

Config Menu "SET OPTIONS" Functions List

1) HOUR COUNTER

- Factory Setting DO NOT ADJUST

2) EVP TYPE

- Factory Setting DO NOT ADJUST

3) EV1 TYPE

- Factory Setting DO NOT ADJUST

4) HORN ON LOW BATT

ON/OFF: choose to determine if the horn sounds an alert with travel commands to indicate a low battery condition.

5) CHARGE FOR HORN

%: Sets the battery discharge level used to sound the horn alert for low battery condition.

6) SET TEMPERATURE

- Factory Setting DO NOT ADJUST

7) TRAVEL ALARM

OPTION1/OPTION2: OPTION 1 turns on the travel alarm when the truck is travelling in reverse.
OPTION 2 turns on the travel alarm when in forward or reverse.

Config Menu "ADJUSTMENTS" Functions List

1) HOUR METER TIME

- Factory Setting DO NOT ADJUST

2) FAN TEMPERATURE

- Factory Setting DO NOT ADJUST

Config menu "PARAMETER CHANGE" functions list

When the slave controls pump motor and pump functions, we have these parameters:

1) PUMP IMAX

- Factory Setting DO NOT ADJUST

2) SPEED LIMIT

- Factory Setting DO NOT ADJUST

3) CREEP SPEED

- Factory Setting DO NOT ADJUST

4) COMPENSATION

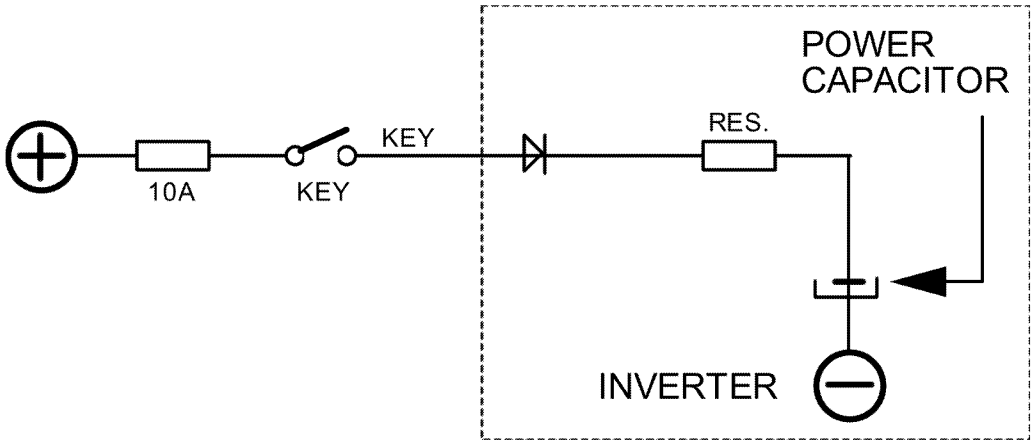
- Factory Setting DO NOT ADJUST

Analysis and troubleshooting of Master microcontroller alarms

To Enter the MAIN MENU' push the Enter button at the Home Page of the hand set display and Roll for the ALARMS item. Here is the ALARMS list:

1) AL60 "CAPACITOR CHARGE"

Monitors the capacitor bank pre-charging system:



When the key is switched ON, the inverter tries to charge the power capacitors through a power resistance, and check if the capacitors are charged within a timeout. If they do not charge, an alarm is signaled; the main contactor is not closed.

Troubleshooting:

A) There is an external load in parallel to capacitor bank, which sinks current from the controller capacitors pre-charging circuit, thus preventing the caps from charging. Check if a lamp or a dc/dc converter or an auxiliary load is placed in parallel to capacitor bank (+B => -B).

B) The charging resistance is opened; insert a power resistance across line contactor power terminals; if the alarm disappears, it means the controller internal charging resistance is damaged.

C) The charging circuit has a failure, inside the controller.

D) There is a problem in the controller power section.

2) AL72 "VMN LOW"

Cause 1: start-up test.

Before switching the LC on, the software checks the power bridge: it turns on alternatively the High side Power Mosfets and expects the phases' voltage to increase toward the capacitor's voltage. If the phases' voltage does not increase, this alarm occurs.

Cause 2:

Motor running test. When the motor is running, the power bridge is ON, the motor voltage feedback is tested; if it is lower than commanded value, fault status is entered.

Troubleshooting:

A) If the problem occurs at start up (the LC does not close at all), check:

- Motor internal connections (ohmic continuity)
- Motor power cables connections are correct and tight
- If motor phases windings/cables have leakages towards truck frame

If the motor connections are OK, the problem is inside the controller

B) If the alarm occurs during motor running, check:

- Motor connections
- If motor phases windings/cables have leakages towards truck frame
- That the LC power contact closes properly, with a good contact
- If no problems are found on the motors or contactor, the problem is inside the controller.

10) AL81 "PLT-COAST MISMATCH"

Cause:
KW2 Only. A mismatch between the platform input and coast input.

Troubleshooting:
Verify connections to the controller.

11) AL77 "TILLER ERROR"

Cause:
Alarm is communicated from the Tiller handle.

Troubleshooting:
See Tiller Documentation.

12) HAND SET ONLY"END TEACH OK"

Cause:
Confirms that teaching of the thumbwheel is successful.

13) HAND SET ONLY"END TEACH ERROR"

Cause:
Indicates the teaching of the thumbwheel was not successful.

Troubleshooting:
Attempt teach again. If alarm is persistent, check the Tiller handle.

14) HAND SET ONLY"TEACH ERROR"

Cause:
Indicate an error during the teaching of the thumbwheel.

Troubleshooting:
Attempt teach again. If alarm is persistent, check the Tiller handle.

15) HAND SET ONLY"WAITING FOR NODE"

Cause:
Slave microcontroller is in alarm. Master is waiting for resolution.

Troubleshooting:
Clear the alarm on the Slave.

11) AL90 "INCORRECT START"

Cause:
This is a warning for an incorrect starting sequence.

Troubleshooting:
The possible reasons for this alarm are (use the readings in the TESTER to facilitate the troubleshooting):

A) A hydraulic function demand active at key on

B) Deadman sensor active at key on

Check the wirings. Check the microswitches. It could be also an error sequence made by the operator. A failure in the logic is possible too; so when all of the above conditions were checked and nothing was found, replace the controller.

12) AL88 "RAM WARNING"

Cause:
Checksum of the ram failed.

Troubleshooting:
This fault is not related to external components.

13) AL87 "EEP WARNING"

Cause:
Eeprom checksum failed

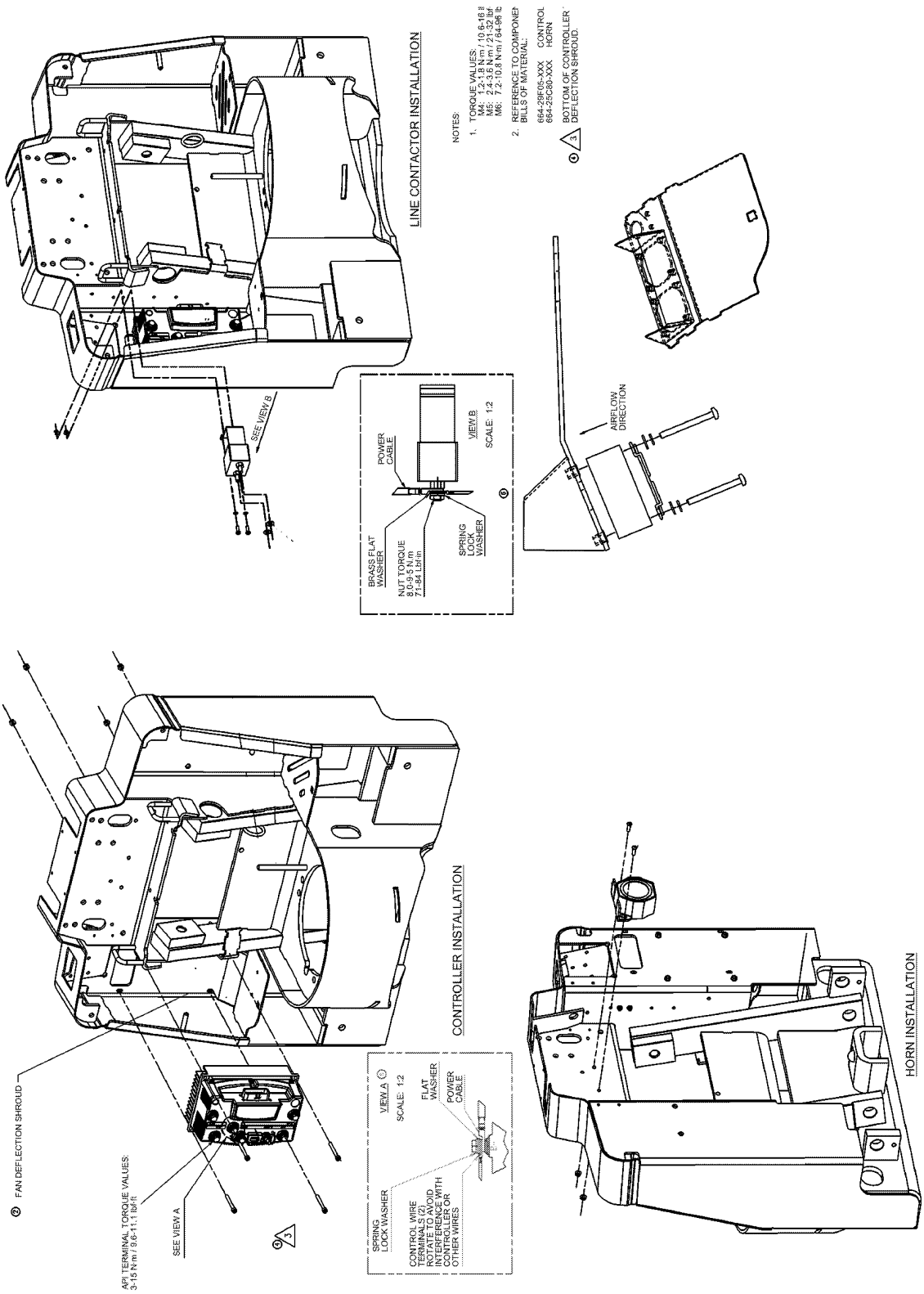
Troubleshooting:
Try to execute a CLEAR EEPROM operation (refer to Hand set manual). Switch the key off and on to check the result. If the alarm occurs permanently, it is necessary to replace the controller. If the alarm disappears, the previously stored parameters will have been replaced by the default parameters.

14) "LIFT + LOWER"

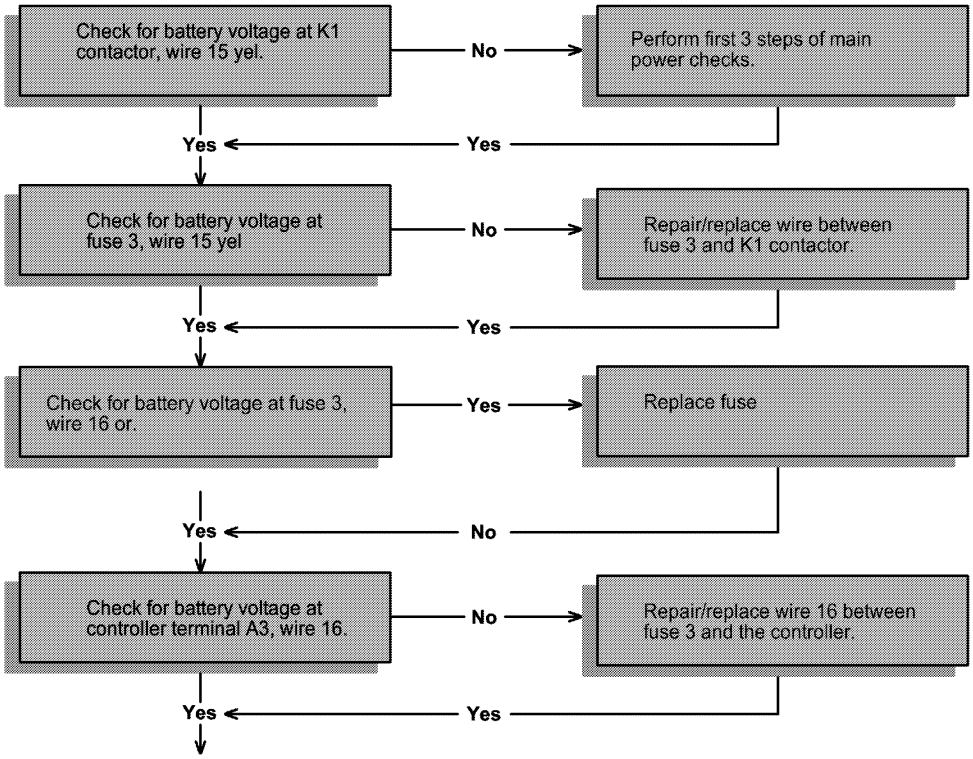
Cause:
This alarm occurs when both forks movement requests (Lift + Lower) are active at the same time.

Troubleshooting:
Check the wiring of the Lift and lower inputs (use the readings in the TESTER to facilitate the troubleshooting). Check the micro switches for failures.

A failure in the logic is possible too. So, when you have verified the travel demand switches are fine working and the wiring is right, it is necessary to replace the controller.

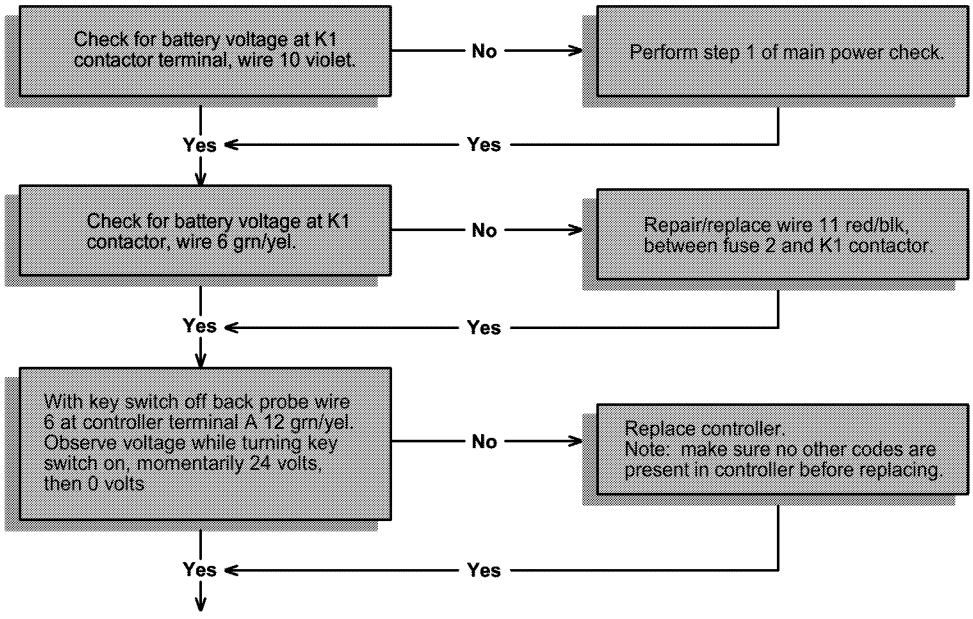

LINE CONTACTOR INSTALLATION
NOTES:
1. TORQUE VALUES:
M4: 1.2-1.8 N·m / 10.6-16.0
M5: 2.4-3.6 N·m / 21-32 lbf
M6: 7.2-10.8 N·m / 64-96 lb
2. REFERENCE TO COMPONEN
BILLS OF MATERIAL:
664-29F05-XXX CONTROL
664-25C80-XXX HORN
BOTTOM OF CONTROLLER
DEFLECTION SHROUD.
SEE VIEW B
VIEW B
SCALE: 1:2
POWER CABLE
BRASS FLAT WASHER
NUT TORQUE 8.0-9.5 N·m 71-84 Lbf·in
SPRING LOCK WASHER
AIRFLOW DIRECTION
FAN DEFLECTION SHROUD
API TERMINAL TORQUE VALUES:
3-15 N·m / 9.6-11.1 lbf·ft
SEE VIEW A
CONTROLLER INSTALLATION
VIEW A
SCALE: 1:2
SPRING LOCK WASHER
CONTROL WIRE TERMINALS (2) ROTATE TO AVOID INTERFERENCE WITH CONTROLLER OR OTHER WIRES
FLAT WASHER
POWER CABLE
HORN INSTALLATION

FUSE 3 CHECKS



Fuse 3 Power Checks to Controller Complete.

K1 CONTACTOR CIRCUIT

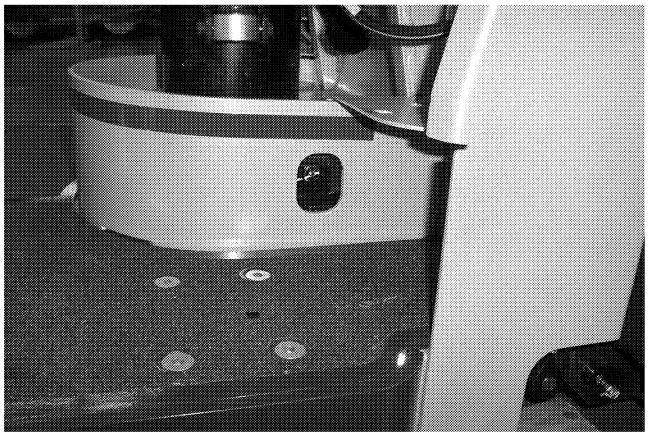


K1 Contactor Checks Complete

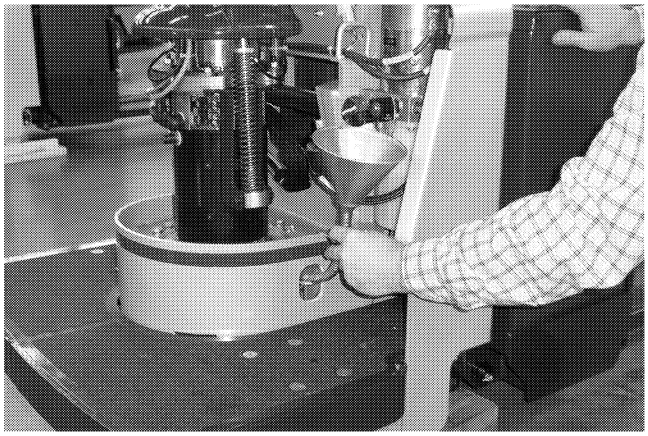
Planned Maintenance (cont'd)

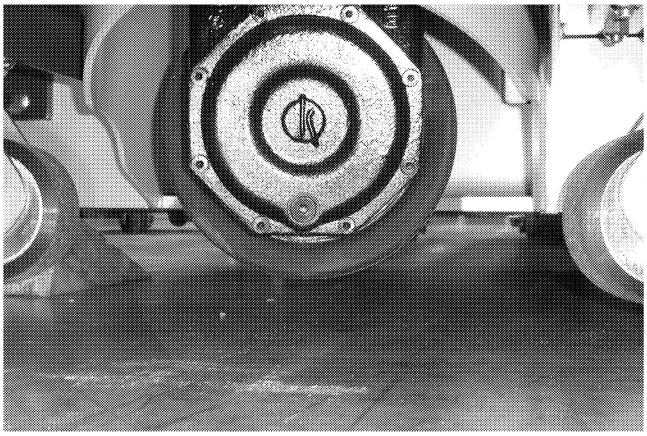
Transmission Gear Fluid

Every 30 days or 200 hours check oil level.



After the first 200 hours of operation, and then once a year, drain and replace gear oil (use SAE 80/90 approximately 3.5 pints.





ASSEMBLY

Tools

5mm Allen Wrench	6mm Allen Wrench
24mm Impact Socket	30mm Impact Socket
½ Inch Air Impact	Pin Punch
Brass Drift	Hammer
Mallet/Dead Blow Hammer	Propane Torch
Scraper	Press
250 ft/lbs. Torque Wrench	Inch Pound Beam or Dial Type Torque Wrench

Parts

O-ring - Motor	O-ring - Side Cover
Lock Nut Pinion	Loctite/574 Sealer
Loctite 603	Axle Seal
Shim Pinion Shaft, if needed	Shim Pinion Position, if needed
Shim Axle Shaft, if needed	Shim Ring Gear Position, if needed

1. Clean up and inspect all parts. Clean up all sealing surfaces of sealant and internal/external threads of Loctite.
2. Do not install axle seal, Loctite pinion nut, or ring gear bolt until all adjustments and checks have been made.
3. Pre lube axle and pinion bearings with a light oil. Install pinion shaft, shims/spacers and reduction gear. Install pinion nut and torque to 170 Nm (125 ft/lbs.). Rotate the pinion shaft, as the nut is to seat the bearings properly.

DC DRIVE MOTOR

Testing and Repair (Cont'd)

DEFINITIONS

Electrical Terms and Definitions

Circuit: A complete path provided by conductors (usually wires) for the electric current to flow. Current only flows when a circuit is complete.

Generator: A device that transforms nonelectrical energy (such as mechanical, thermal, etc.) into electrical energy.

Voltage: A unit of electromotive force. It is a force which if applied to a circuit will produce a current in the conductor. Volts are generally produced or supplied from storage batteries or electrical generators.

Current: The flow of electrons which occurs when a difference in voltage exists between opposite sides (ends) of the circuit.

Ampere: The rate at which the electrons flow through a circuit over a given period of time. Amperes can be measured with an ampmeter connected in the circuit.

Electric Motor: A device that changes electrical energy into mechanical energy to do work.

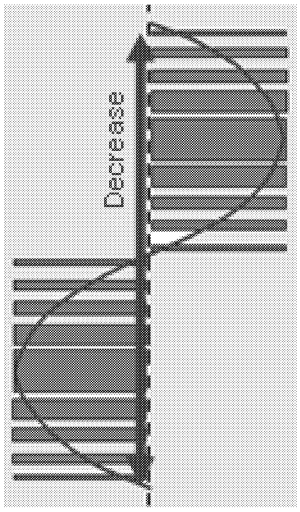
Resistance: Opposition to the flow of current in a circuit. The unit of electrical resistance is the OHM. The lower the resistance, the greater the current flow for a given voltage.

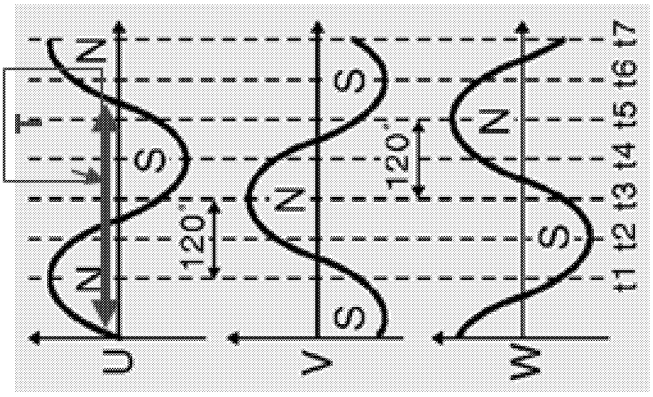
OHM's law states that..."Current flow varies directly with voltage and inversely with the resistance in a circuit."

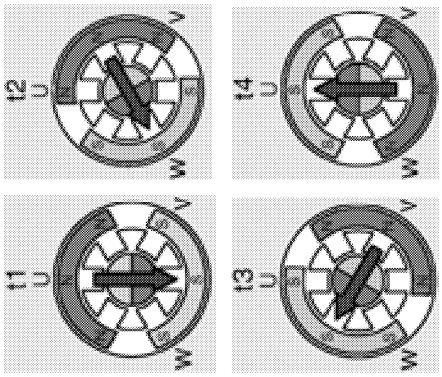
$$\text{CURRENT} = \frac{\text{VOLTAGE}}{\text{RESISTANCE}}$$

Traction control AC cont'd

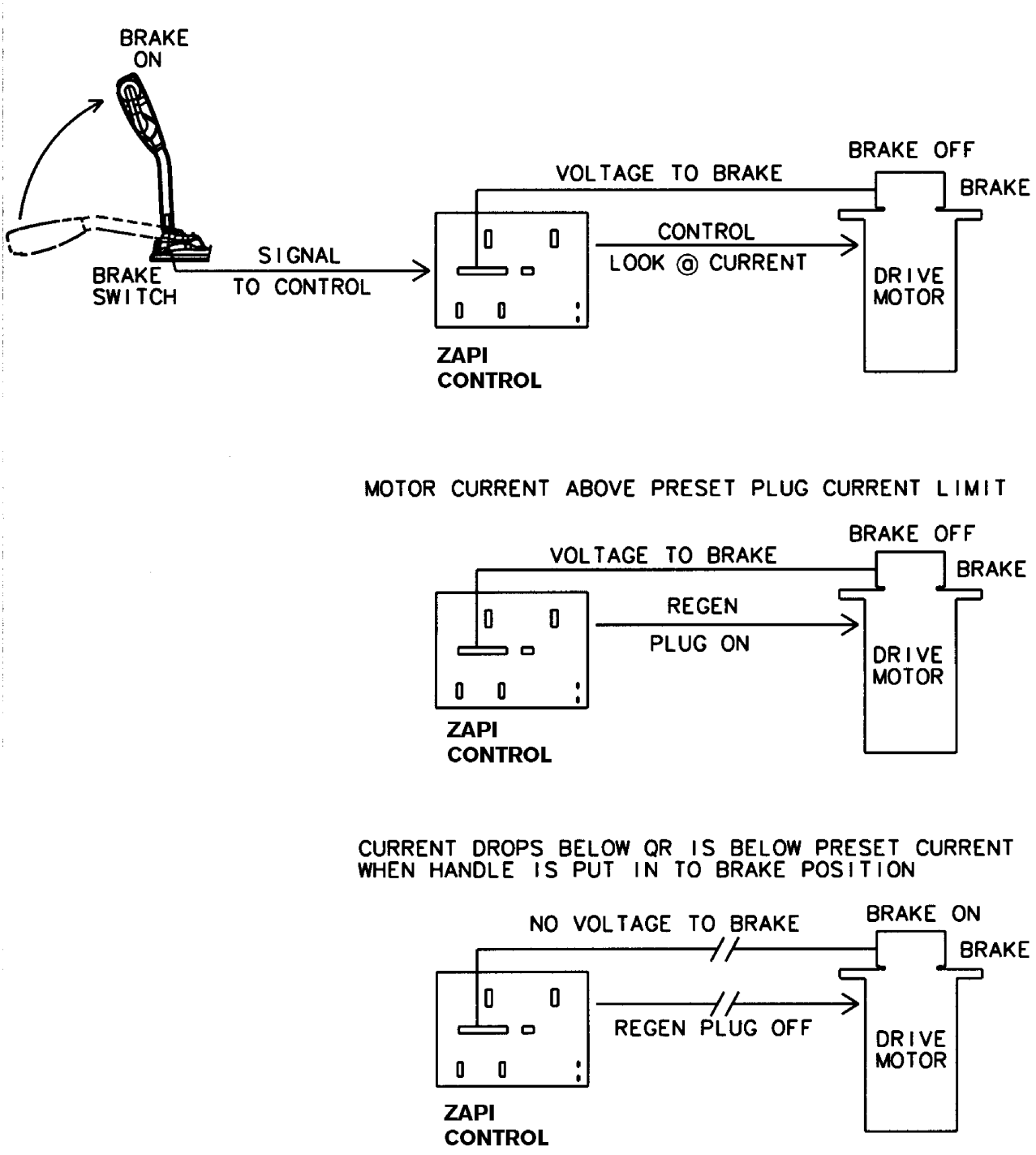
How to increase motor rotation?







If the motor controller sees drive motor amps are above a preset level, the motor will go into brake regen or plug mode, slowing the motor down electrically before removing electric voltage from the electric magnet in the brake assembly, as shown below:



A) Once the electromagnetic is deenergized (voltage off)
B) the springs inside the brake
C) will apply against the armature plate,
D) which closes down on the floating friction disc to stop the drive motor/transmission.

1W3/1W4

Min .010” air gap between lever and steer head cover.

1W1/1W2/2W2

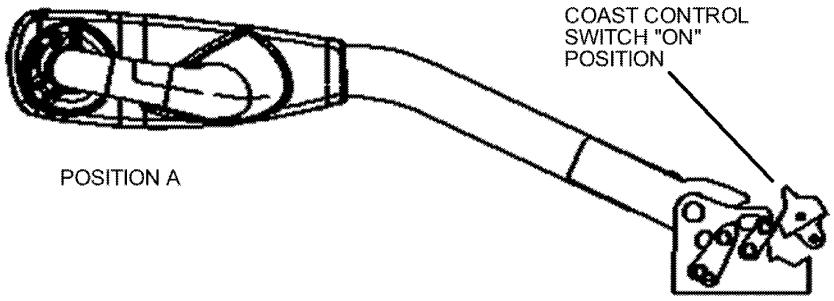
Min. 1/16” air gap between handle bar and thumb control

These control levers should move freely and should be clean of all debris. The minimum air gap between the sidetrack levers and the steer head cover should not be less than .010”/0.254mm.

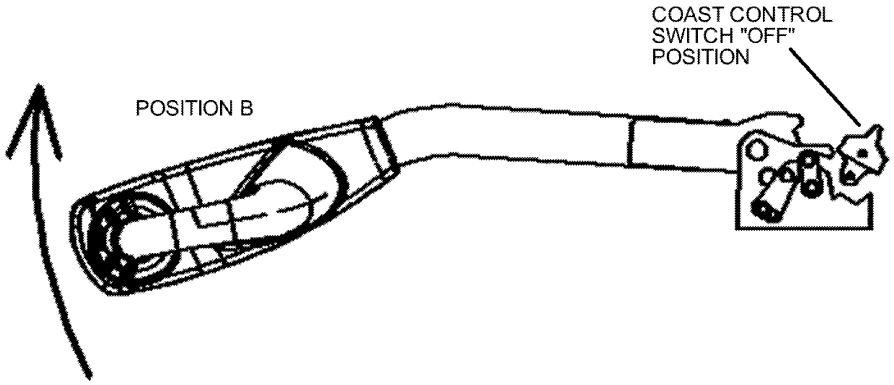
The minimum air gap clearance between the thumb control and the steer head cover is 1/16”/1.6mm. If the controls do not operate freely they should be repaired before the unit is allowed to return to operation.

COAST CONTROL ADJUSTMENT TEST
MANUAL AND ELECTRIC

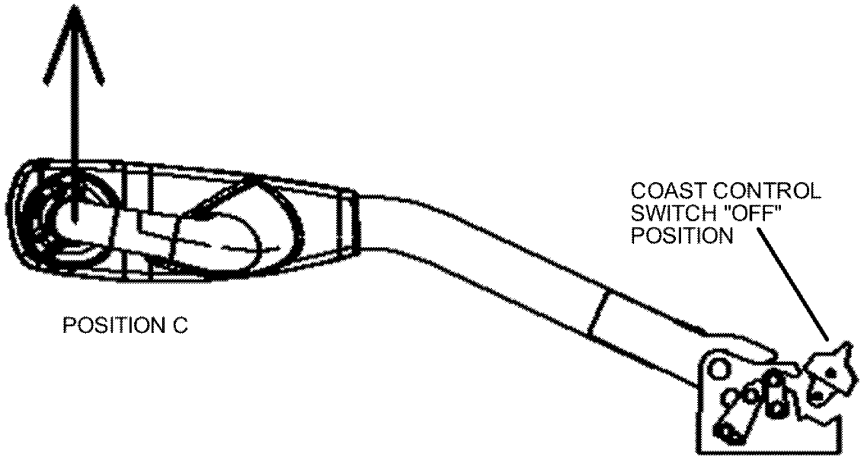
When the steer tiller is placed in position A and the coast switch is on, the tiller should remain in the run position.



When the tiller is lowered to the braking position and released, the force of the return spring should overcome the coast control. Returning the tiller to the upright or park position.



The coast control can also be deactivated by pulling on the tiller manually.

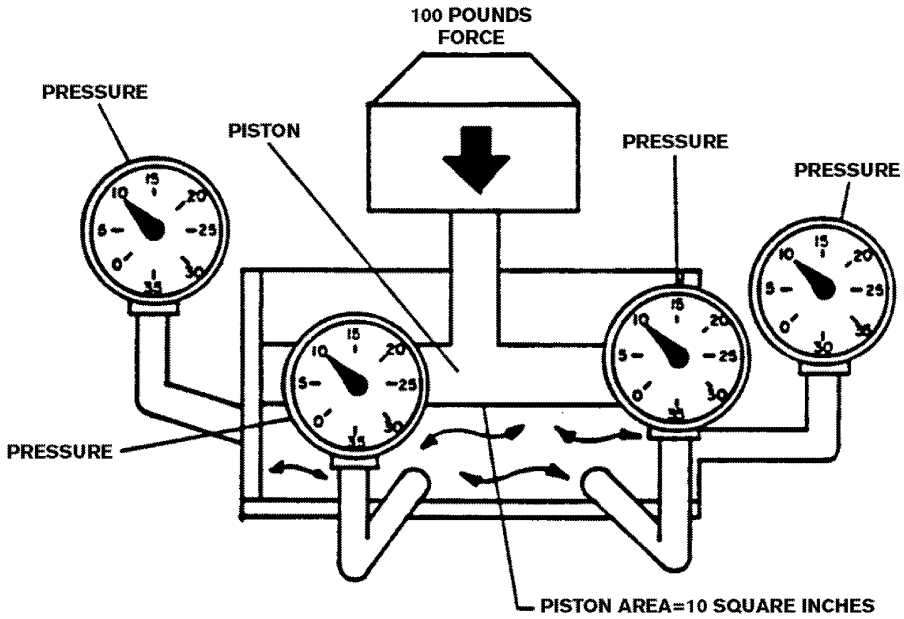


BASICS OF HYDRAULICS

How To Determine Pressure

Now, lets run through how the pressure developed in the fluid is equal to the force applied when divided by the piston area.

If the force is 100 pounds and the piston area is 10 square inches, the pressure equals 10 psi. According to Pascal's Law, the pressure (in this case 10 psi) is equal everywhere in the trapped (confined) fluid (as shown below).



Again..."pressure on a confined fluid is transmitted undiminished in all directions".

Therefore, no matter what shape the container is and no matter how large it is, the pressure will be maintained throughout...so long as the fluid remains confined.

According to Pascal's Law, pressure on a confined fluid is equal everywhere in the trapped fluid.

One Of Pascal's Laws

$$\frac{\text{FORCE}}{\text{AREA}} = \text{PRESSURE}$$

$$\frac{\text{100 LBS.}}{\text{10 SQ. INCHES}} = \text{10 PSI}$$

PUMP AND SERVICE MAINTENANCE

Pump assemblies presently used are gear type pumps. We **do not** supply internal replacement parts for pump. Should a failure occur, the pump must be replaced as an assembly.

Gear type pumps have tight tolerance. Accordingly, care must be exercised when servicing or filling the system to prevent foreign material from entering.

As described before, presently we use a solenoid operated valve to control the lowering hydraulics. A pressure relief valve regulator is incorporated in the pump body. This valve is also adjusted at the factory, final inspection for the capacity of the unit and **does not** require further adjustment.

Oil Type

Use only hydraulic type oils, or in some freezer conditions an automatic transmission fluid such as Dextron II may be used. Always refer to the lubrication pages. **Do not use any type of motor oils.**

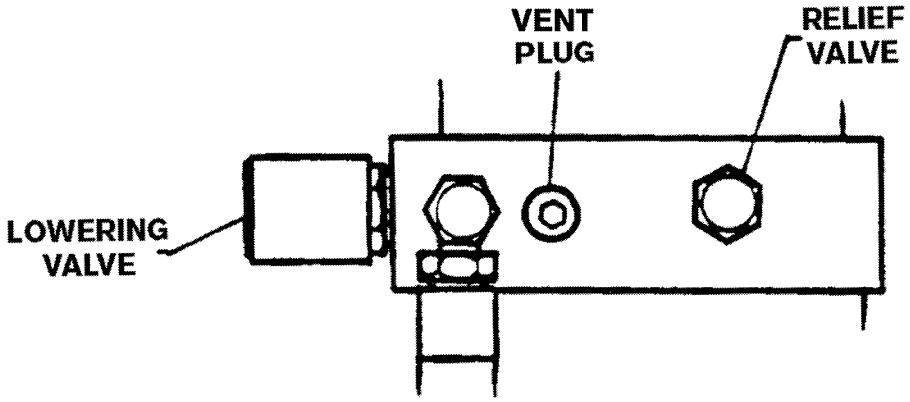
Normal maintenance requires oil to be changed **yearly** depending on the operating condition.

To change oil, the reservoir must be removed and wiped clean. Always clean the suction screen of any foreign material.

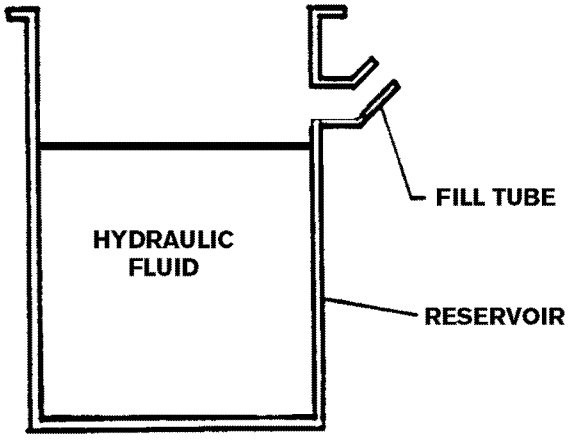
Filling Pump Unit

When filling the pump reservoir, make sure the cylinder is fully lowered.

Remove the front plug (as shown). This is a vent which will allow filling the reservoir easily.



The reservoir take approximately 2 quarts of hydraulic fluid. When filled, it should be in the bottom of the elbow for the breather cap.

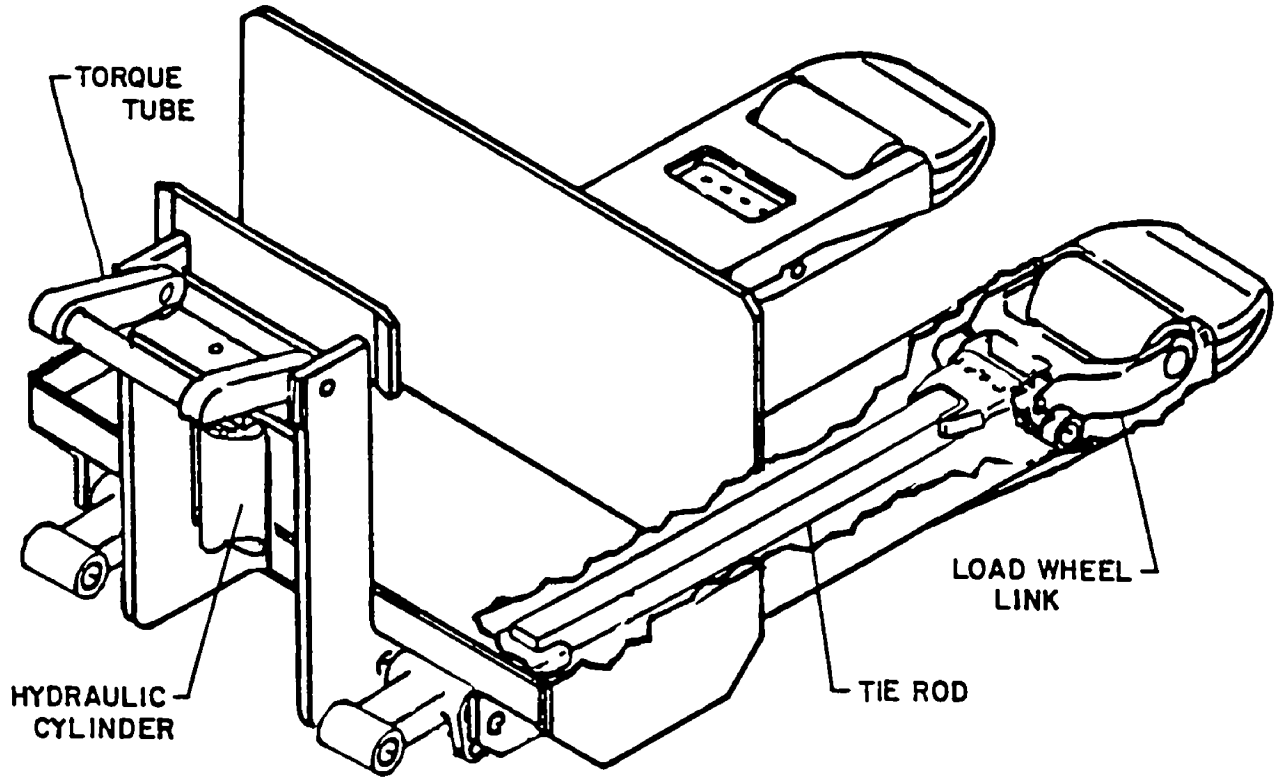


GENERAL INTRODUCTION

Load Carrying Device

The load carrying device normally referred to as the "forks" is, of course, what carries products for our customers. As with any industrial truck, these forks were not meant to carry or transport people.

The load carrying device is connected to the powerhead in three (3) places, the upper torque tube assemble, the hydraulic cylinder and the two lower tie rod links, as shown in the figure below.



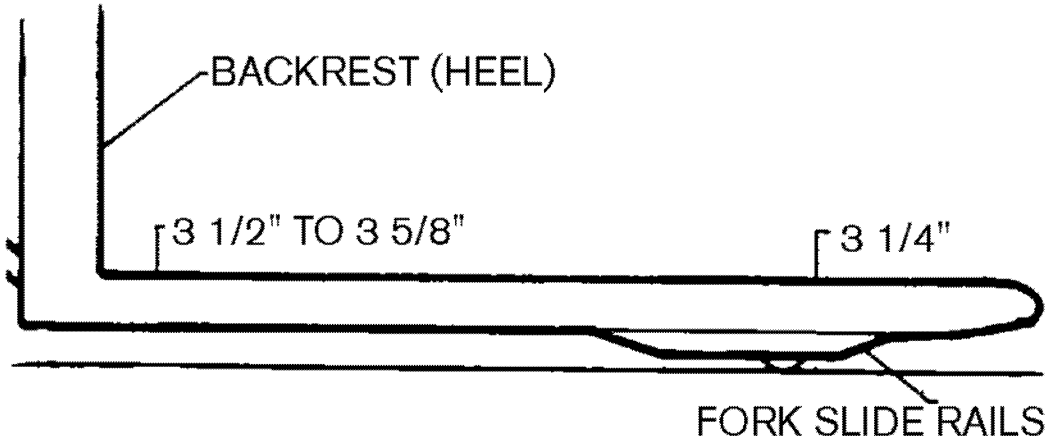
The upper torque tube is used to keep the forks level during lifting and lowering. The hydraulic cylinder's lifting action not only lifts the load at the battery compartment, but also causes the motion by which the load wheels at the end of the forks are pushed up. The pushing action is done by the movement of the lower tie rod links during the lifting of the cylinder. This will be covered in more detail on the following page.

It should also be noted that the solid tie rods are not adjustable, there are some small adjustments under the lift cylinder and under the load wheel links as they fit into the forks.

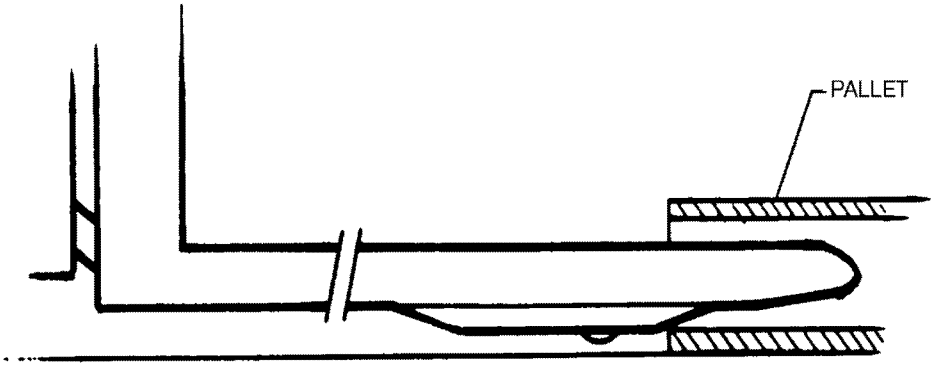
FORK HEIGHT SETTING

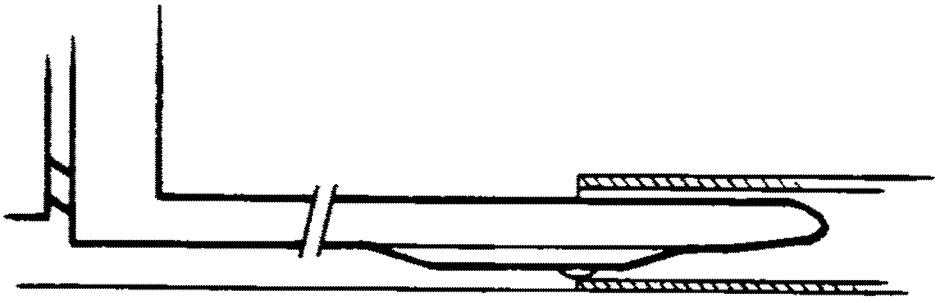
In order to maintain good pallet entrance and exit, the forks must have the correct angle from the tip to the heel (backrest). This will allow the fork slide to make contact with the pallet so the load wheel will not catch the lower pallet board. Of course, many other factors do come into play such as, pallet condition, size, opening for the forks and/or lower board thickness. Shown below is our standard fork height setting, which should provide excellent pallet entering and exiting.

Measure on smooth, level floor in lowered position. Dimensions are based on a truck with new drive and load wheels installed.



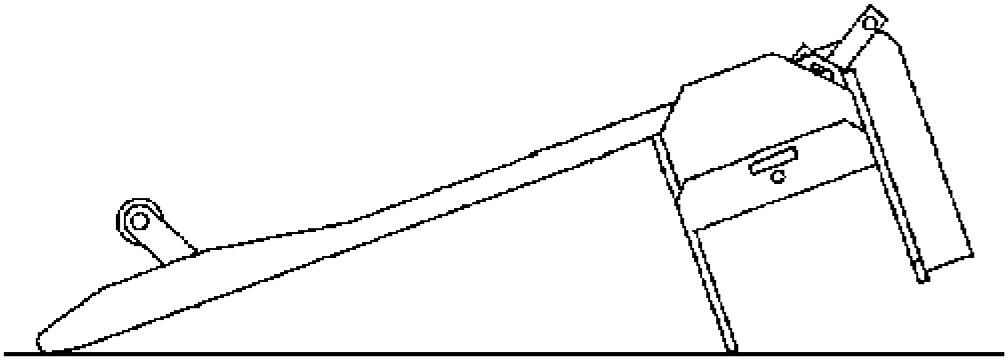
As just explained, the height difference between the wheel and heel (backrest) is very important for proper pallet entering and exiting. When the heel (backrest) is higher than the load wheel it allows the fork slide rails, on either side of the load wheels, to lift the fork and load wheel off the floor and roll into the pallet, as shown below.





REPAIR/REPLACEMENT
LIFT LINKAGE 2W2

11. Once fork and load assembly is in this position you continue to dismantle tie rods and load wheel assembly clean oil bearing (bushing) and remember to count shims and note their location for reassembly.



SERVICE NOTE: Inspect for wear, cracks, or damage to forks and battery compartment. If pivot pin has worn through oilite bearing (bushing) on the lower front link, tie rod end, or load wheel assembly, the oilite bearings (bushings) must be replaced.

- Replace all roll pins
- Replace any pivot pins which are damaged

12. For assembly, reverse disassembly procedure

- During reassembly always use (anti-seize compound) on pins, roll pins, and bolts on any units used in wet, brine, or cold storage operations.
- During reassembly replace shims in the same location, as noted before disassembly.