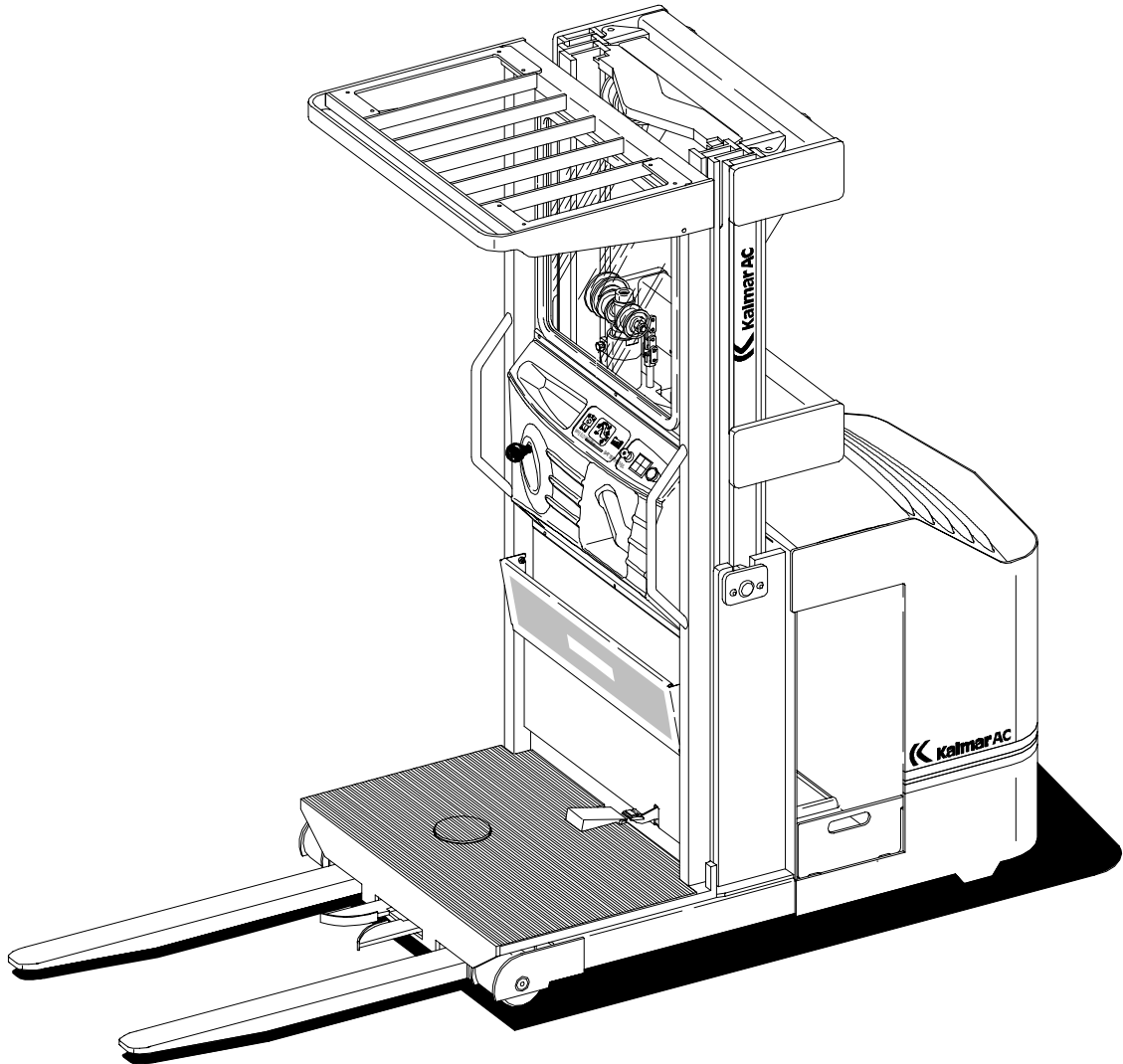




Master Service Manual

OP30B

Electric Order Picker
Effective Serial Number OP30B04075001 - UP



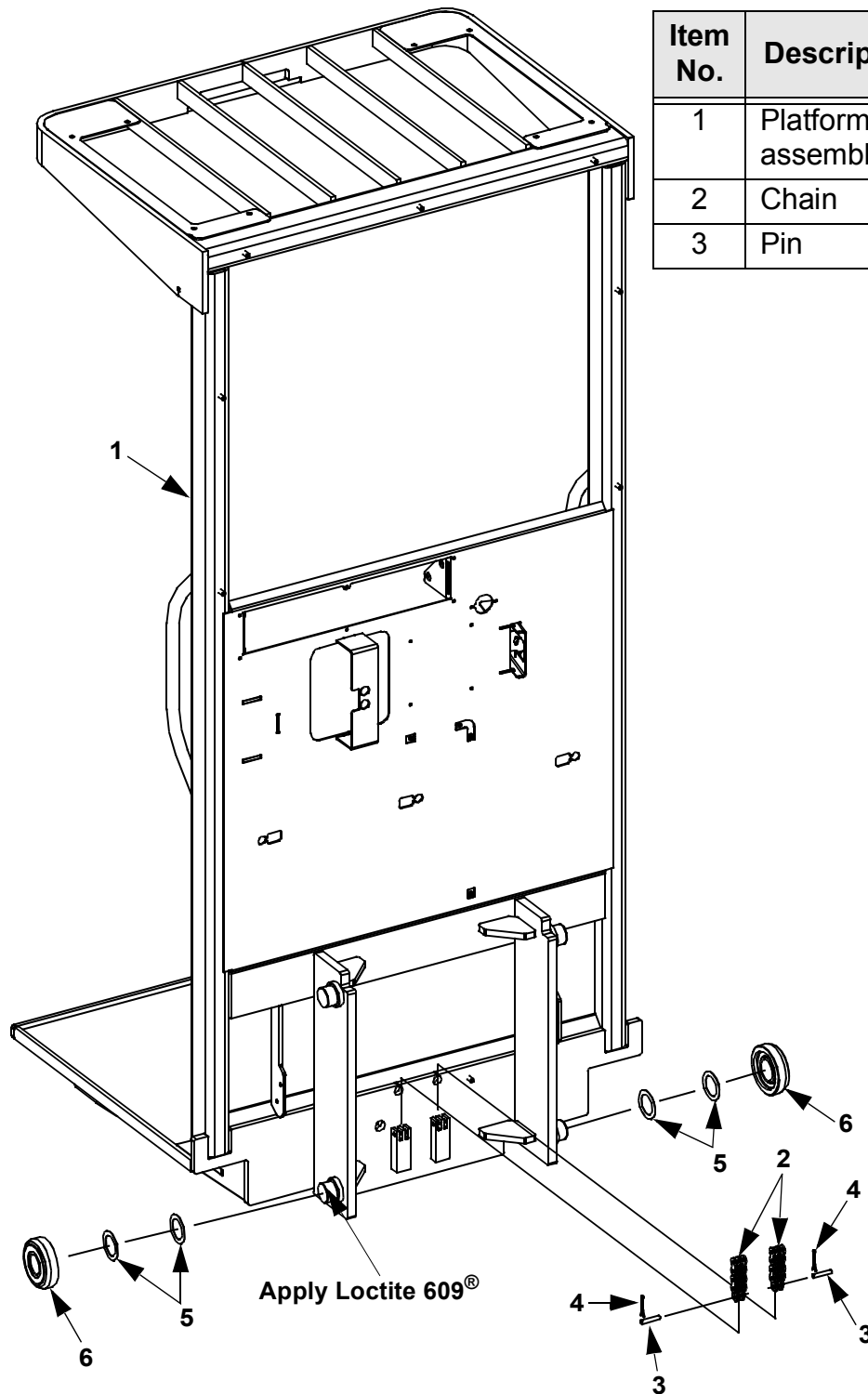
-  **Warning** Read and observe all warnings on this unit before operating it.
-  **Warning** **DO NOT** operate this equipment unless all factory installed guards and shields are properly secured in place.

Contents, Section S

1. Service Instructions

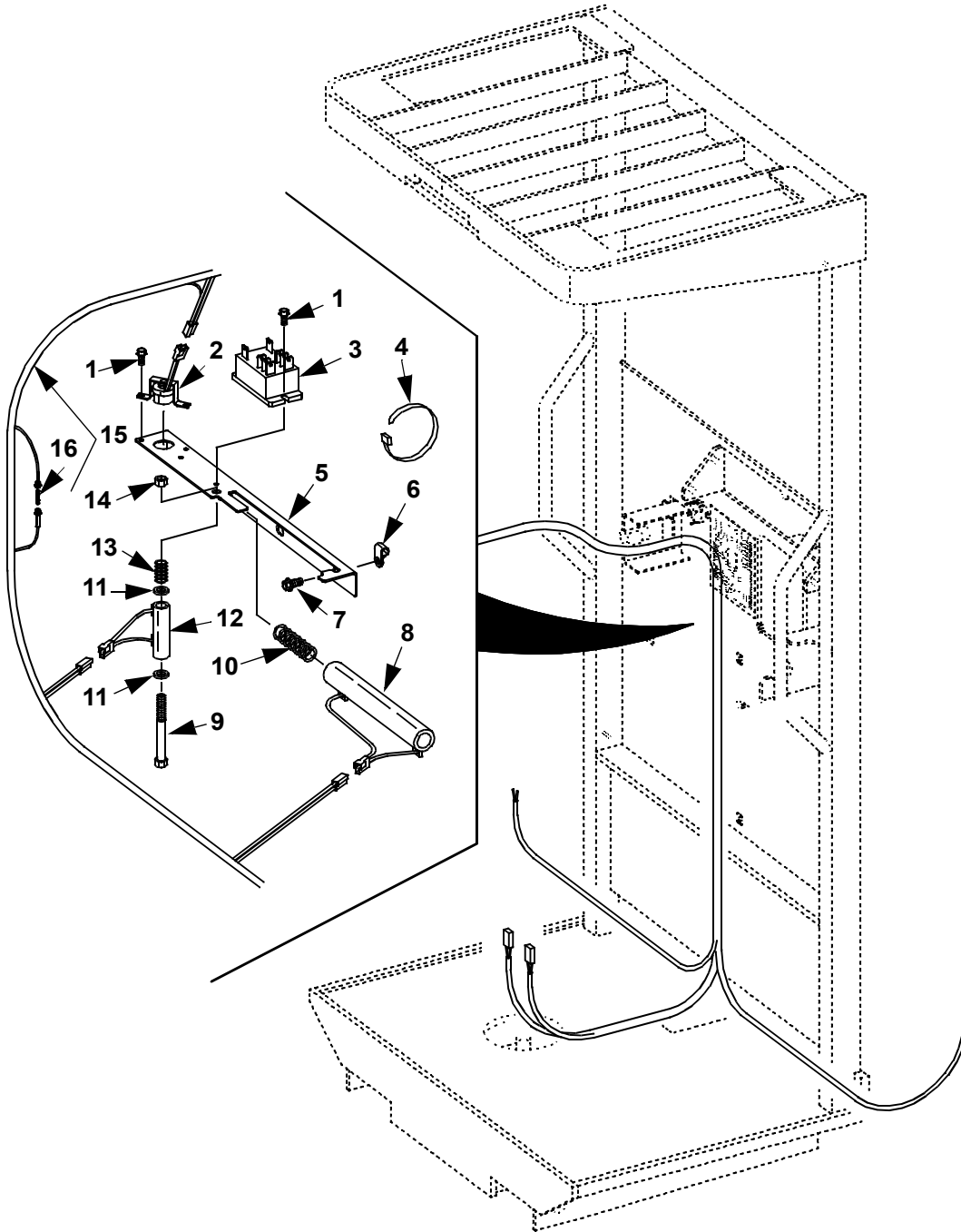
NO	FUNCTION GROUP	C-CODE
0	CHASSIS	0000
4	MOTORS	1000
2	DRIVE GEAR / TRANSMISSION	2000
3	BRAKE / WHEEL SYSTEM	3000
4	STEERING SYSTEM	4000
5	ELECTRICAL / PNEUMATIC SYSTEM	5000
6	HYDRAULIC SYSTEM / CYLINDERS	6000
7	LIFTING MAST	7000
8	PERIPHERAL / INSTALLATION EQUIPMENT	8000
9	OPTIONS / ATTACHMENTS	9000

Platform



Item No.	Description	Item No.	Description
1	Platform assembly	4	Pin, cotter
2	Chain	5	Shim
3	Pin	6	Bearing

Electrical Heater (Platform)



Item No.	Description	Item No.	Description
1	Screw	9	Screw
2	Switch, thermal	10	Spring
3	Relay	11	Washer, flat
4	Tie, wire	12	Resistor, 25 watt
5	Bracket	13	Spring
6	Nut, clip	14	Nut
7	Screw	15	Harness
8	Heat, 100 watt	16	Fuse, 7 Amp

1. Theory of Operation

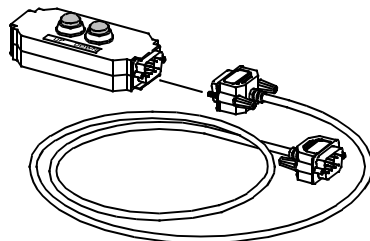
The operator platform attaches to the mast columns and chains. The platform side gates can be added to the truck as an optional feature.

2. Maintenance

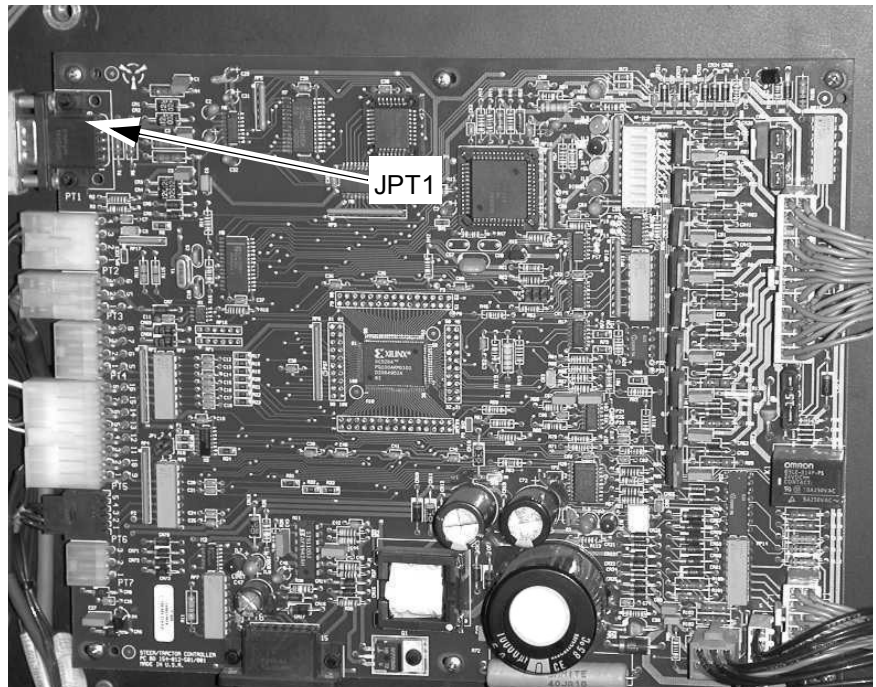
2.1. Platform Shimming

⚠ WARNING When blocking mast columns to reduce the risk of lowering or when working on or near mast, always block both sides of the column. Otherwise, the truck could tip over on its side.

1. Reconnect battery connector to truck. Energize EPO switch and turn key switch ON.
2. Attach pendant to steer/tractor manager card at pin location JPT1 to ease the raising and lowering of the mast assembly (see [page 478](#)).



Lift/ Lower Pendant



3. Raise platform up inner column as far as it will go under normal operation. Check bearing shimming as the platform is lowered in six inch increments. With a 0.030 inch (0.762 mm) feeler gauge, (a shim works well), check bearing clearance between bearings and the web of the column (as a pry bar is used to pry the bearings plates of the platform side to side). Maximum clearance must not exceed 0.030 inch (0.762 mm).
4. Once the number of shims have been determined, divide the shims equally as possible between the upper bearings or the lower bearings as needed to keep the platform centered in the mast.
5. Remove the platform (see [page 478](#)).
6. Install shims behind bearings as needed.
7. Install platform into mast (see [page 481](#)).
8. Remove hoist from platform and test operation of platform in the mast. Check operation first with no load, by checking the bearing clearance for tight spots. If tight spots are encountered, shims will need to be removed as required. If shimming is correct, test operation of platform in the mast with a capacity rated load.
9. Test truck for proper operation before returning to service.

3. Troubleshooting

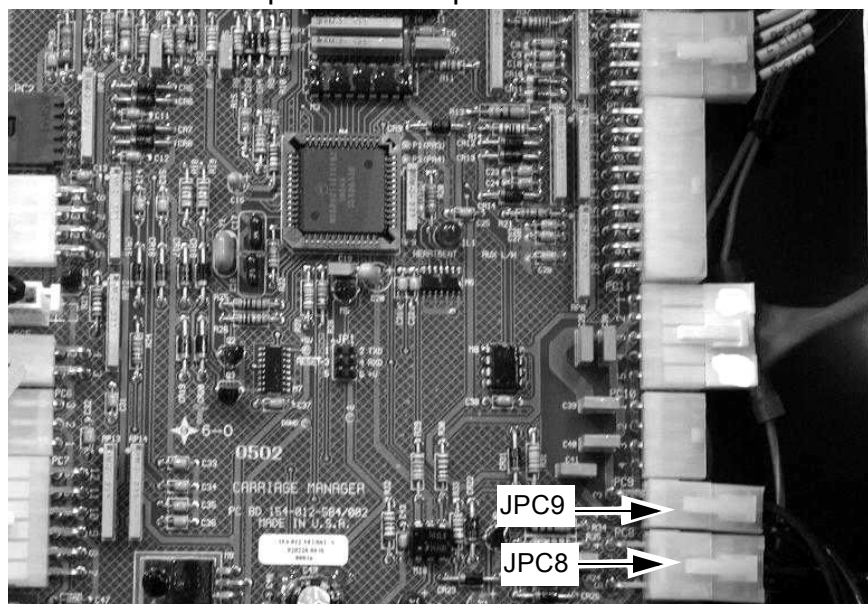
Check fork frame mounting and inspect platform for damage and crack formation every six months.

4. Repair and Rebuild

Replace bearings and chains on platform as necessary. The platform can not be rebuilt. Replace platform with new as necessary.

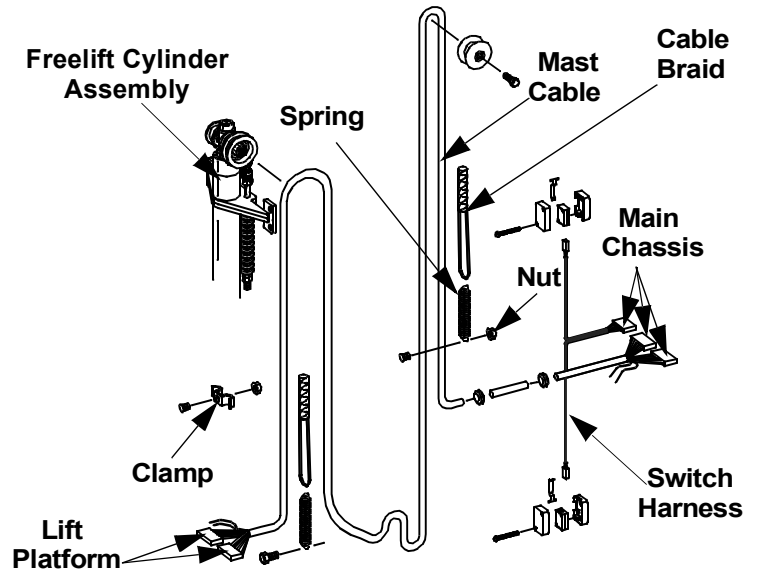
Removal

1. Reconnect battery connector to truck. Energize EPO switch and turn key switch ON.
2. Attach pendant to steer/tractor manager card at pin location JPT1 to ease the raising and lowering of the mast assembly.
3. Remove forks from platform (see [page 490](#)).
4. Remove console panel (see [page 93](#)).
5. Remove the mast cable harness connectors from pin locations JPC8 and JPC9 on the carriage (platform) manager card located behind the console panel on the platform.

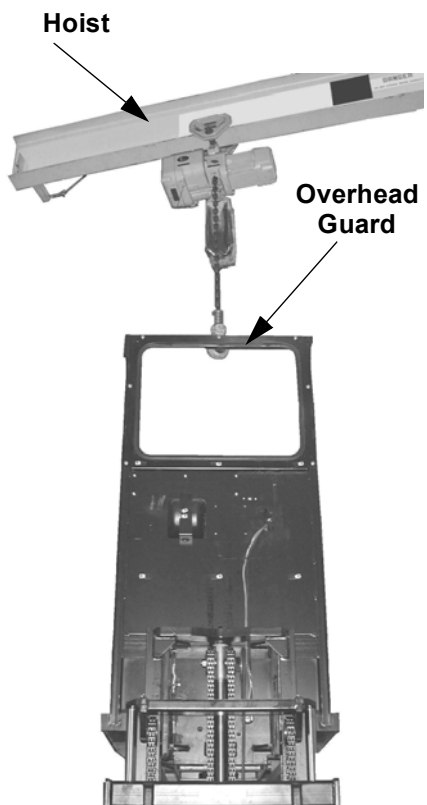
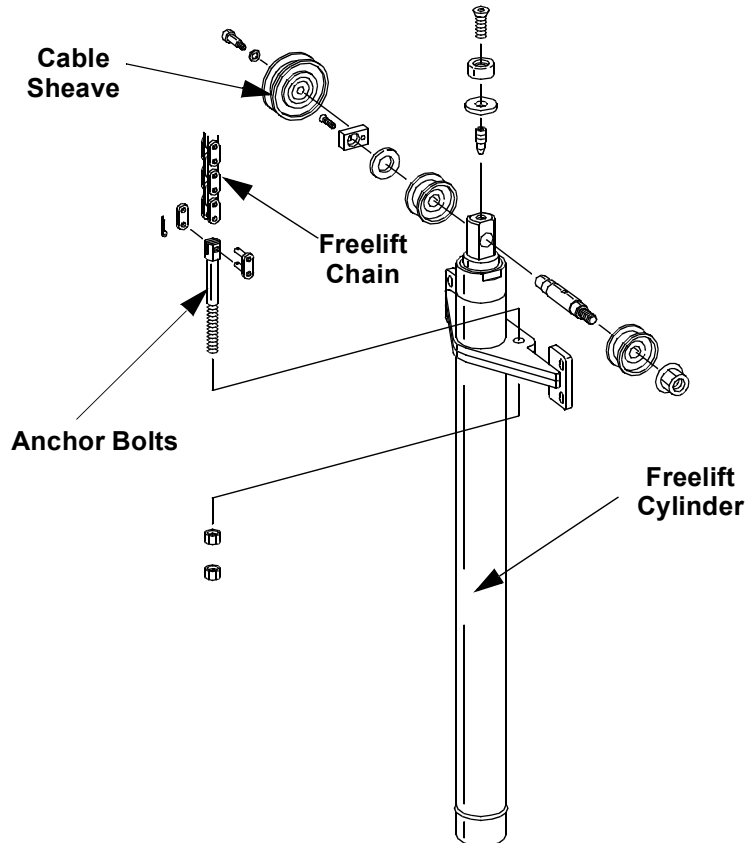


Carriage (Platform) Manager Card

6. Remove wire ties holding the mast cable harness to the platform. Raise the mast assembly until the cable clamp can be accessed at the base of the platform, holding the mast cable harness to the platform. Block mast assembly. Loosen the clamp and remove the harness.



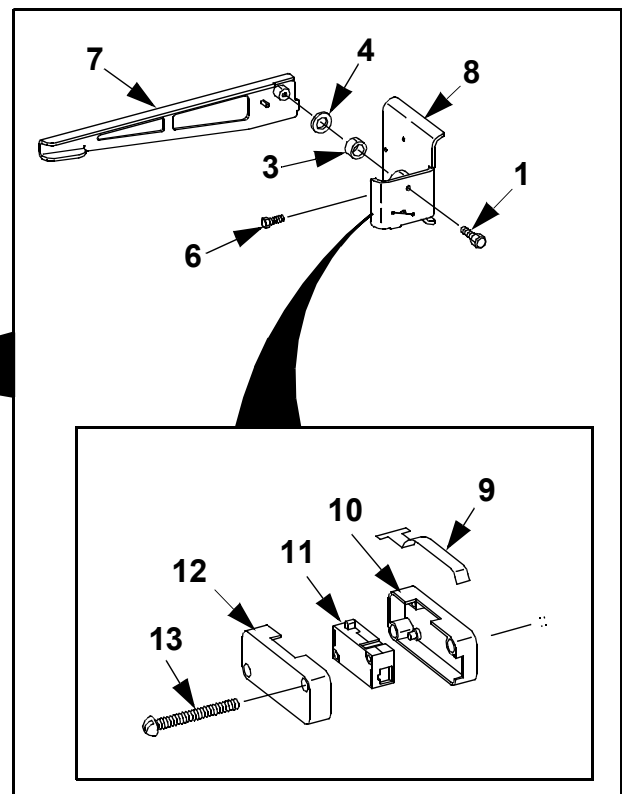
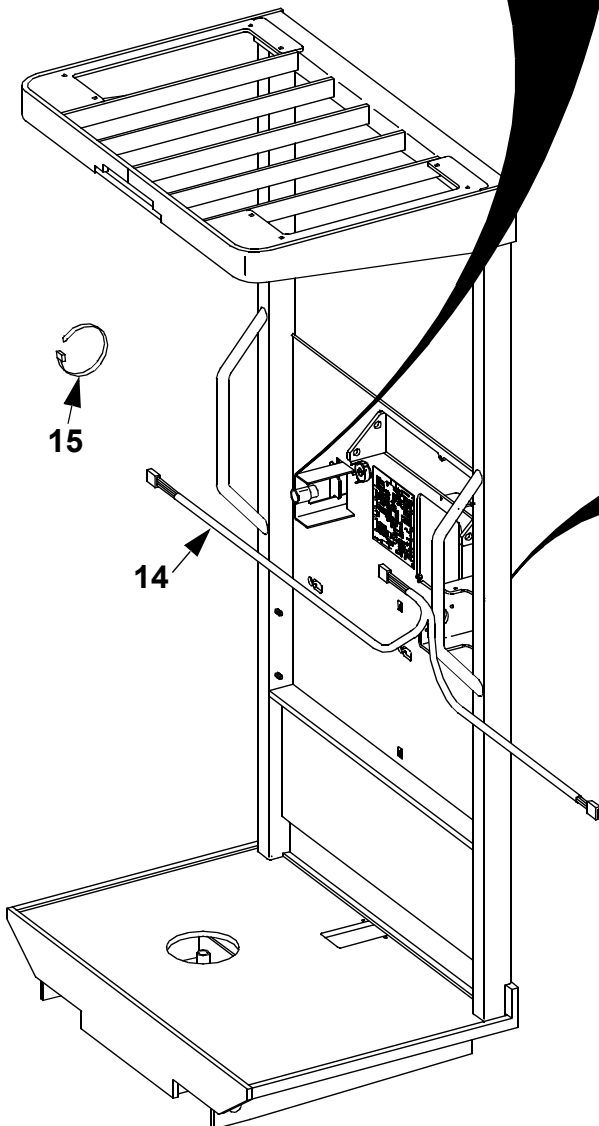
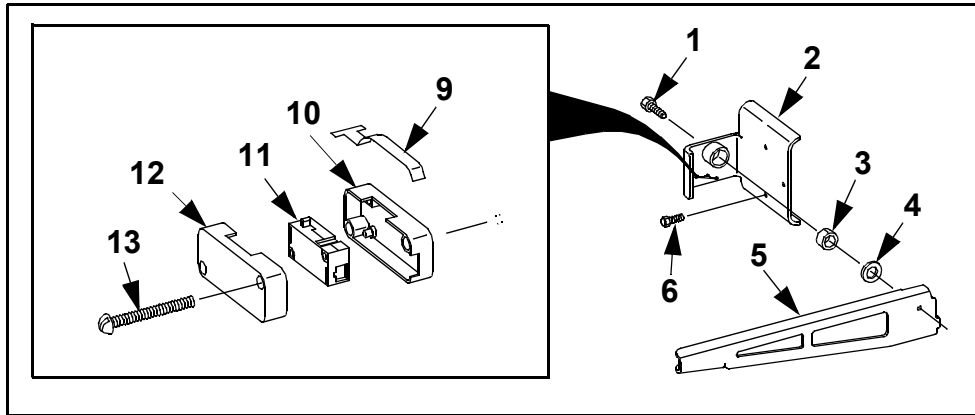
7. Remove mast cable harness from the freelifth sheave and pull back towards the truck frame.



8. Remove blocks from mast assembly. Fully lower mast assembly, being careful not to pinch the recently removed mast cable harness.
9. Attach a hoist to the platform overhead guard. Hoist platform up far enough to release pressure on the freelifth chains.
10. Remove freelifth chains from chain anchor bolts located on either side of the freelifth cylinder.
11. Carefully raise mast assembly to clear the upper bearings on the platform.
12. Remove platform from mast assembly.
13. Fully lower mast assembly.

Assembly

1. Carefully raise mast assembly far enough to clear the upper bearings on the platform.
2. Install platform into mast assembly.
3. Install freelif chains on chain anchor bolts located on either side of the freelif cylinder (see [page 480](#)). Adjust freelif chains (see [page 444](#)).
4. Install mast cable harness. Attach the harness cable clamp to the platform (see [page 479](#)).
5. Install the mast cable harness connectors into pin locations JPC8 and JPC9 on the carriage (platform) manager card (see [page 478](#)).
6. Lower platform until hoist chain is slack. Remove the hoist chain.
7. Install console panel (see [page 93](#)).
8. Install forks on platform (see [page 491](#)).
9. Test truck for proper operation before returning to service.
10. Reconnect battery connector to truck. Energize EPO switch and turn key switch ON. Test truck for proper operation before returning to service.



Platform Side Gates (Optional)

Item No.	Description	Item No.	Description	Item No.	Description
1	Screw, Nyloc	6	Screw	11	Switch
2	Bracket, left	7	Handle, right	12	Housing, cover
3	Bushing	8	Bracket, right	13	Screw, machine
4	Bushing, flat	9	Lever	14	Harness, gate
5	Handle, left	10	Housing, base	15	Tie, wire

Side Gates Installation

1. Install gate harness (14) on platform and secure with wire ties (15).
2. Install switch (11) housing base (10) and housing cover (12) on right bracket (8) and secure with screw (13). Install right bracket (8) on platform and secure with screws (6). Install right handle (7) on right bracket (8) and secure with bushings (3) and (4) and nyloc screws (1).
3. Install switch (11) housing base (10) and housing cover (12) on left bracket (2) and secure with screw (13). Install left bracket (2) on platform and secure with screws (6). Install left handle (5) on left bracket (2) and secure with bushings (3) and (4) and nyloc screws (1).

F-code
PT
Platform

Section
S7.1

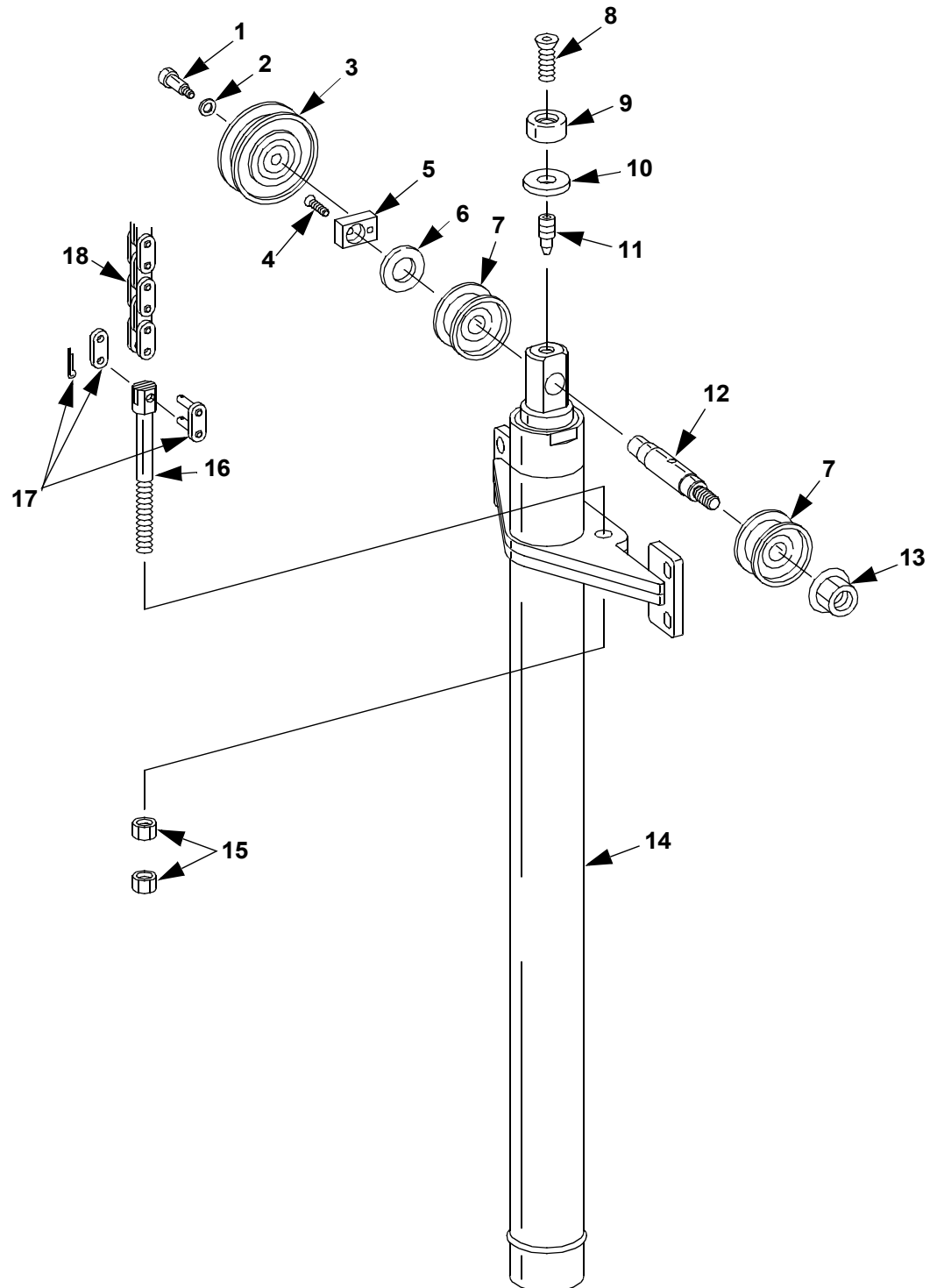
C-code
7130

Version no
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T-code

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Lifting Gear (Crosshead), Three Stage Mast



F-code

PT

Section

S7.2

C-code

7170**Lifting Gear (Crosshead), Three Stage Mast**

Version no

000

T-code

Item No.	Description	Item No.	Description
1	Bolt, shoulder	10	Washer
2	Washer, flat	11	Screw, set
3	Sheave, cable	12	Shaft
4	Screw, flathead	13	Nut, flanged
5	Plate, sheave	14	Cylinder assembly
6	Spacer	15	Nut
7	Sheave, chain	16	Anchor
8	Screw, flathead	17	Link
9	Bumper	18	Chain, lift

1. Theory of Operation

The lifting gear is located at the top of the freelif cylinder and mounts to the inner column

2. Maintenance

See “Wear” on page 438.

3. Troubleshooting

Make sure lift chains are clean.

4. Repair and Rebuild

Replace chain as necessary. The lifting gear can not be rebuilt. Replace lifting gear with new as necessary.

NOTE! Call-outs in the following procedures refer to illustration on [page 485](#).

Removal

1. Park truck on a level surface and apply brake.



DANGER When blocking mast columns to reduce risk of lowering when working on or near mast, always block both sides of column. If both sides are not blocked, unexpected movement could occur resulting in personal injury or death.

2. Lift platform approximately 6 inches (152 mm). Securely block platform to reduce risk of lowering.
3. Lower freelif cylinder so chains and electric cables are loose.
4. Turn key switch OFF and depress Emergency Power OFF (EPO) switch. Disconnect battery connector from truck.
5. Remove chains and electric cables from lifting gear sheaves (3 and 7).

Lifting Gear (Crosshead), Three Stage Mast

6. Remove bolt (1), washer (2) and electric cable sheaves (3).
7. Remove nut (13) and sheave (7) from shaft (12).
8. Remove bolt (8), bumper (9), washer (10) and screw set (11) from end of freelif cylinder rod.
9. Remove shaft (12), sheave (7), spacer (6), and sheave plate (5) from the freelif cylinder rod.



WARNING

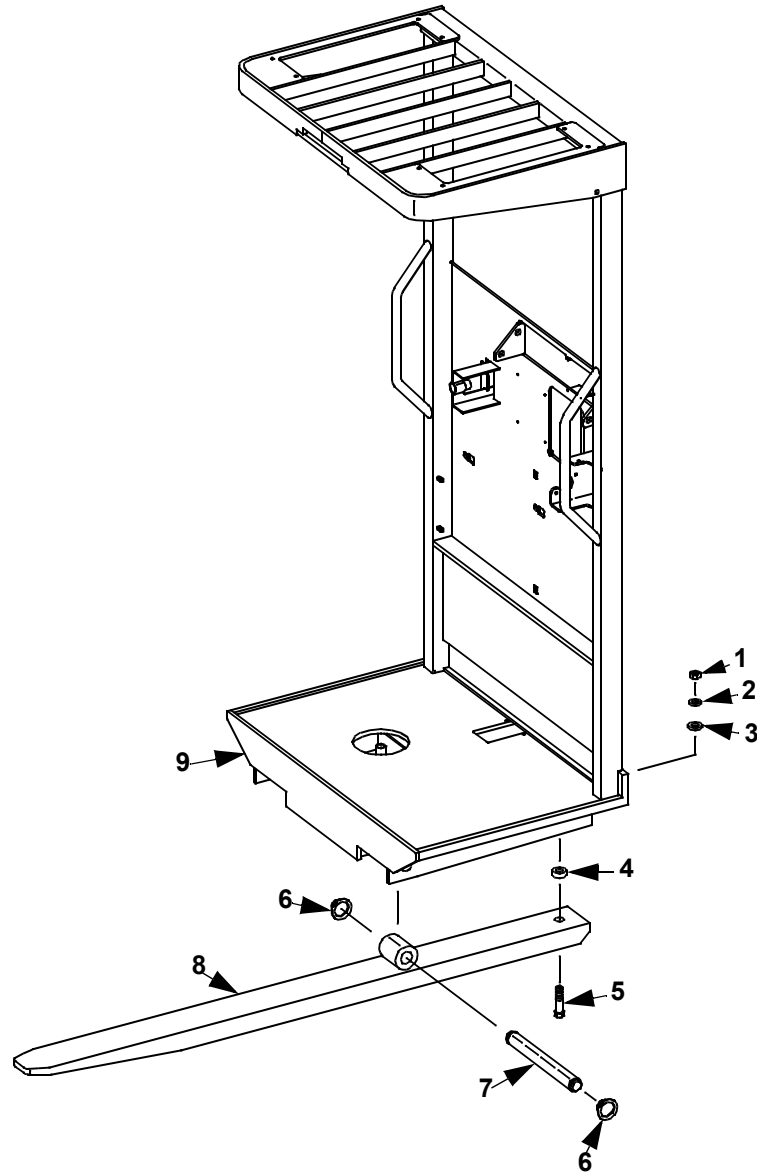
When using compressed air, wear effective chip-guarding and personal protective equipment. Compressed air used for cleaning **MUST** be reduced to less than 30 psi (207 kPa).

10. Clean and inspect parts. Replace as needed.

Assembly

1. Install shaft (12), sheave (7), spacer (6), and sheave plate (5) into the freelif cylinder rod.
2. Install bolt (8), bumper (9), washer (10) and screw set (11) into end of freelif cylinder rod.
3. Install nut (13) and sheave (7) onto shaft (12).
4. Install electric cable sheaves (3), washer (2) and bolt (1).
5. Remove chains and electric cables from lifting gear sheaves (3 and 7).
6. Reconnect battery connector to the truck. Energize EPO switch and turn key switch ON. Test truck for proper operation before returning to service.

Fork Assembly



Item No.	Description	Item No.	Description
1	Nut	6	Ring, retaining
2	Lockwasher	7	Shaft, fork
3	Washer, flat	8	Fork
4	Spacer	9	Platform assembly
5	Screw		

1. Theory of Operation

The forks are raised by means of an electric powered hydraulic pump unit. The lift and lower forks thumb knob is on the end of the control handle. Rotating the thumb knob up will lift the forks and rotating the thumb knob down will lower the forks. Fork extensions can be installed on truck as an option in either 48 X 96 inch (1219 X 2438 mm) or 50 X 96 inch (1270 X 2438 mm) size platform.

2. Maintenance

See [“Planned Maintenance Schedule” on page 69.](#)

3. Troubleshooting

Make sure forks are in good condition.

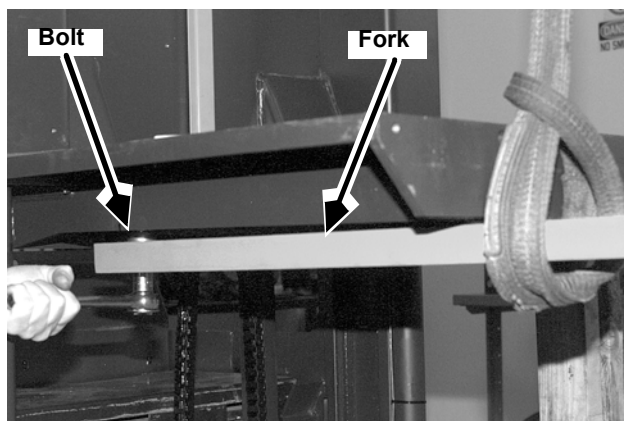
4. Repair and Rebuild

The forks and pallet can not be rebuilt. Replace forks and pallet as necessary.

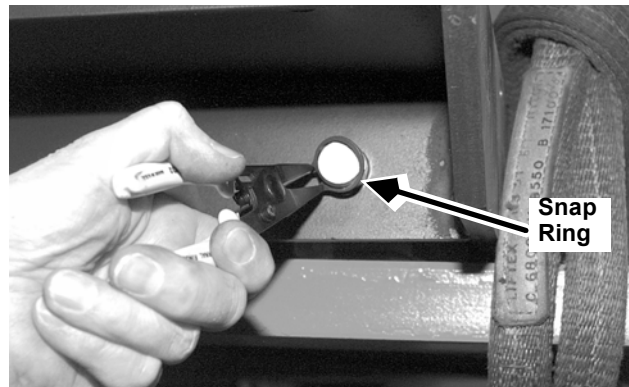
4.1. Forks

Removal

1. Raise platform high enough to reach bottom of forks.
2. Block platform with 4 inch x 4 inch (10 x 10 cm) upright block.
3. Secure fork to hoist using a suitable strap or chain.



4. Remove one socket head cap screw from underneath fork at chassis end.
5. Remove snap ring from pivot pin in mounting block of fork.



CAUTION The fork weighs approximately 150 pounds (68 kg), use caution when it drops.

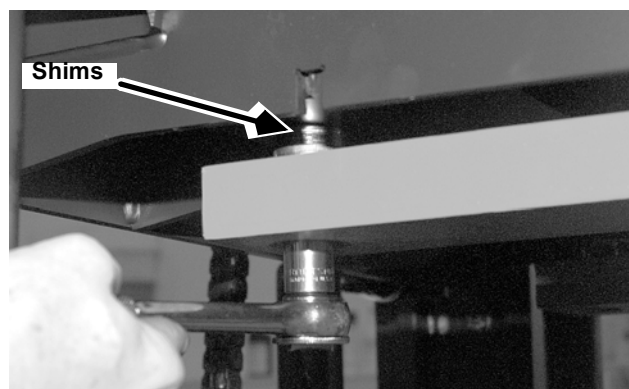
6. Drive out pivot pin. The fork washer(s) or shim(s) will drop.
7. Replace damaged fork.

Install

1. Hold new fork in place underneath platform.
2. Install pivot pin through fork.

NOTE! Always use new snap rings when assembling components.

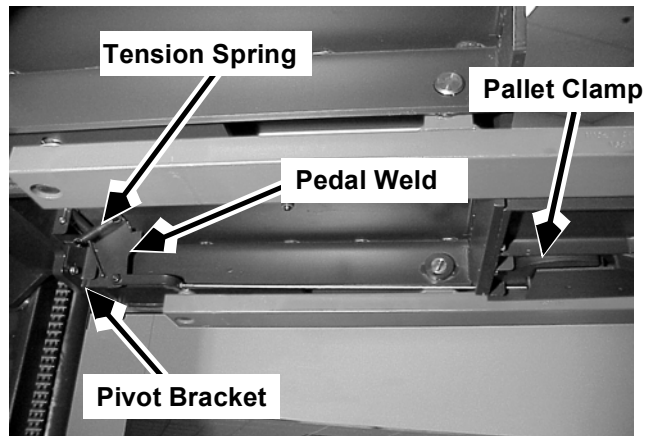
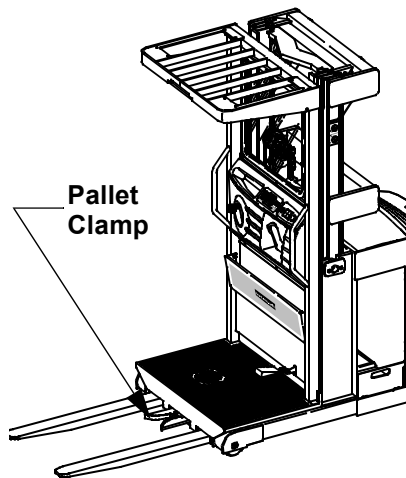
3. Install new snap ring in pivot pin.



4. Install correct amount of washers or shim at back side of fork to maintain a level fork.
5. Install socket head cap screw at chassis end of fork.
6. Remove block from platform.
7. Lower platform to floor and make sure forks are level. If forks are not level, add more shim to fork.

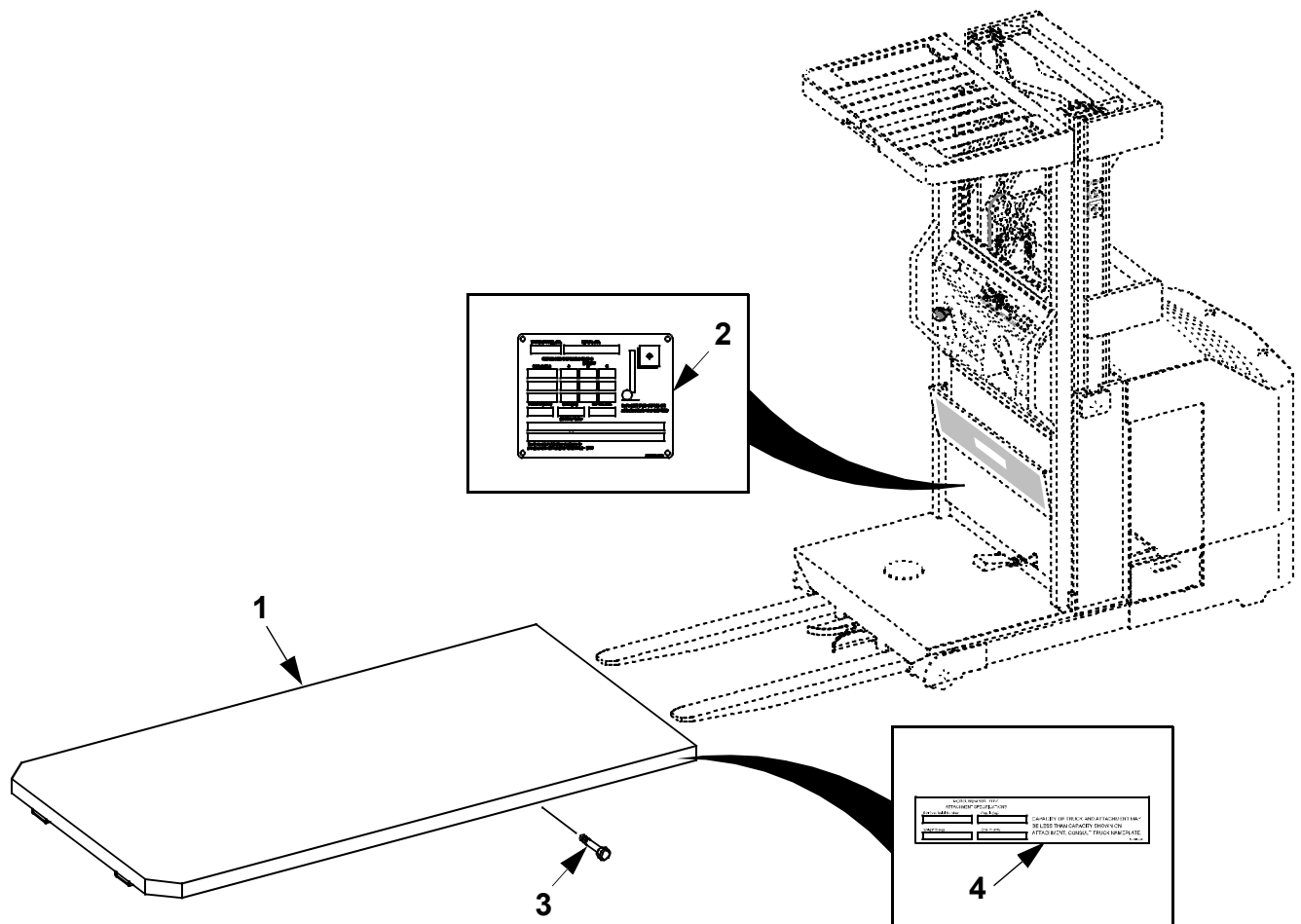
4.2. Pallet Clamp

1. Install the pallet clamp assembly on the platform front plate. Secure with screws and torque to 30 ft-lbs (41 N•m).
2. Install the pedal assembly to the platform main support plate. Secure with screws and torque to 15 ft-lbs (20 N•m).



3. Hook the tension spring into the 0.25 inch (6 mm) holes in the pivot bracket and pedal weld in the pedal assembly.
4. Extend the spring to connect the cable assembly by sliding a 2 inch (51 mm) wide block between the left-hand pallet support and pallet clamp on pallet clamp assembly.
5. Install the cable bracket on the pedal assembly. Secure with bolt and hex nut and torque to 15 ft-lbs (20 N•m).

6. Place the cable assembly in the cable bracket and secure with hex nuts. Finger-tighten the hex nut closest to the pedal mounting and leave other nut loose.
7. Remove the 2 inch (51 mm) block used in step 4.
8. Adjust the hex nut closest to the pedal mounting until there is a 90° angle between the pallet clamp and the left-hand pallet support. Torque the remaining hex nut to 21 ft-lbs (29 N•m).



Fork Extensions

Item No.	Description	Item No.	Description
1	Platform	3	Screw, cap
2	Nameplate	4	Nameplate

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