Model No. _____

Serial No. _____

FC 4500 Series
AC Traction
Service & Parts Manual



Crown 2007 PF15703 08/07

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1. Pressure Check Point located under floorboard and used to monitor pressure during operation for troubleshooting.
2. For all Quad and TL Mast trucks, RV1 relief valve is set to 21375 ± 345 kPa (3100 ± 50 psi) - Lift and Tilt Circuit. For TT Mast trucks manufactured prior to 9/2/08, RV1 relief valve is set to 21735 ± 345 kPa (3100 ± 50 psi). For TT Mast trucks manufactured on 9/2/08 and after, RV1 is set to 23440 ± 345 kPa (3400 ± 50 psi) - Lift and Tilt Circuit.
3. RV2 relief valve set to 17235 ± 345 kPa (2500 ± 50 psi) - Accessory Circuit.
4. MPCE, Main Pressure Compensating Element.
5. Breather Cap contains a 10 micron filter.
6. Suction Strainer is 100 mesh.
7. Lowering Flow Control Manifold, pressure compensated, non-adjustable regulated flow in one direction.
8. Flow Control Regulator, maintains a constant flow rate in one direction only (lowering). Reverse (lift) flow rate is uncontrolled.
9. CBV counter balance valve, limits tilt "forward" speed and minimizes tilt "forward" drift. Pressure setting is preset.
10. SV1 solenoid valve, limits tilt "forward" above staged lift. Controlled by tilt interlock module. Not adjustable.
11. Return Filter, 10 micron filtration.
12. Brake Valve, input pressure, 8275 kPa (1200 psi), output pressure of 5515 kPa (800 psi). Not adjustable.
13. Reservoir, capacity is 32.7 litre (7.2 gal) at full mark on dip stick.
14. RV3 relief valve, steering relief, is set at 9655 kPa (1400 psi).
15. ULV Unloading Valve, controls pressure in the brake accumulator and limits maximum pressure in brake circuits. Preset at 7930 kPa (1150 psi).
16. PS1 Hydraulic Pressure Switch, applies power to alarm when insufficient hydraulic pressure for service brake operation or parking brake release. Preset at 4135 kPa (600 psi). Not Adjustable.
17. Accumulator is precharged to 2760 kPa (400 psi). Accumulator is not rechargeable.
18. SV2 Solenoid Valve controls hydraulic pressure in parking brake cylinder to apply or release the parking brake. Not adjustable.
19. Manual Release Valve manually releases parking brake.
20. Hand Pump manually pressurizes the parking brake hydraulic circuit to release parking brake.
21. SV3 solenoid valve, when Tilt Position Assist Option is ON and forks reach the level position, the VTS switch on the tilt cylinder activates the Tilt Assist Valve and hydraulic fluid passes through the valve and back to the reservoir. Forks will stay in the level position until the Tilt Position Assist Option is turned OFF.

The truck has a power disc brake and hydrostatic steering system that utilizes a gear type pump for the steer and brake circuit. Refer to Figure 17726-01.

The steering system is composed of the pump, a steering control unit (SCU) and a double rod cylinder steer axle assembly. The pump contains an internal steering circuit relief valve, RV3, set at 9655 kPa (1400 psi).

The brake system includes the pump, an accumulator, pressure switch, brake valve, park brake release valve manifold and service disc brakes. The pump contains an internal brake circuit unloading valve set to 7930 ± 345 kPa (1150 ± 50 psi).

With an operator in the seat and the truck powered up, the traction control system will energize the brake and steering motor (M3) solenoid. Hydraulic oil will be drawn from the reservoir through a 100 mesh suction strainer by the brake & steering pump and sent to the accumulator, pressure switch, SV2, port P of the brake valve and port P of the SCU.

With no demand for steering, the oil will enter port P of the SCU, pass through the open center envelope of the valve spool and exit the SCU at port T. The hydraulic oil will then be routed back to the reservoir via the return filter.

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12. Remove tilt cylinder pins. Refer to Figure 17628.



Remove Tilt Cylinder Pins

Figure 17628

1. Using the hoist, carefully remove the mast assembly from the truck.
2. Tie strap tilt cylinders out of the way.
3. Remove front and rear floorboards.
4. Remove service brake valve from service brake pedal mounting bracket.
5. Remove pressure and return lines from service brake valve. Be prepared to catch oil and cap lines.
6. Remove service brake pedal mounting bracket.
7. Disconnect all electrical and hydraulic lines to parking brake cylinder and traction motor. Label all connections to aid in installation of drive unit.
8. If present, remove hydraulic line and clamp from bottom side of traction motor.
9. Support the traction motor/drive unit assembly by placing a pallet under the drive unit to support assembly.

CAUTION

The drive unit and traction motor combined weigh approximately 410 kg (905 lb) minus the drive tires. Use appropriately rated pallet for drive unit removal.

10. Using a brass drift punch, drive in the dowel pins on the drive unit, thru the power unit. Pins can be removed after the drive unit has been removed from the truck.
11. Loosen the eight bolts (four on each side) that connect the drive unit to the power unit.

CAUTION

Keep hands away from pinch points when removing drive unit and traction motor from truck.

12. Remove mounting bolts and remove drive unit assembly from truck using pallet to slide drive unit out.

Drive Unit Installation

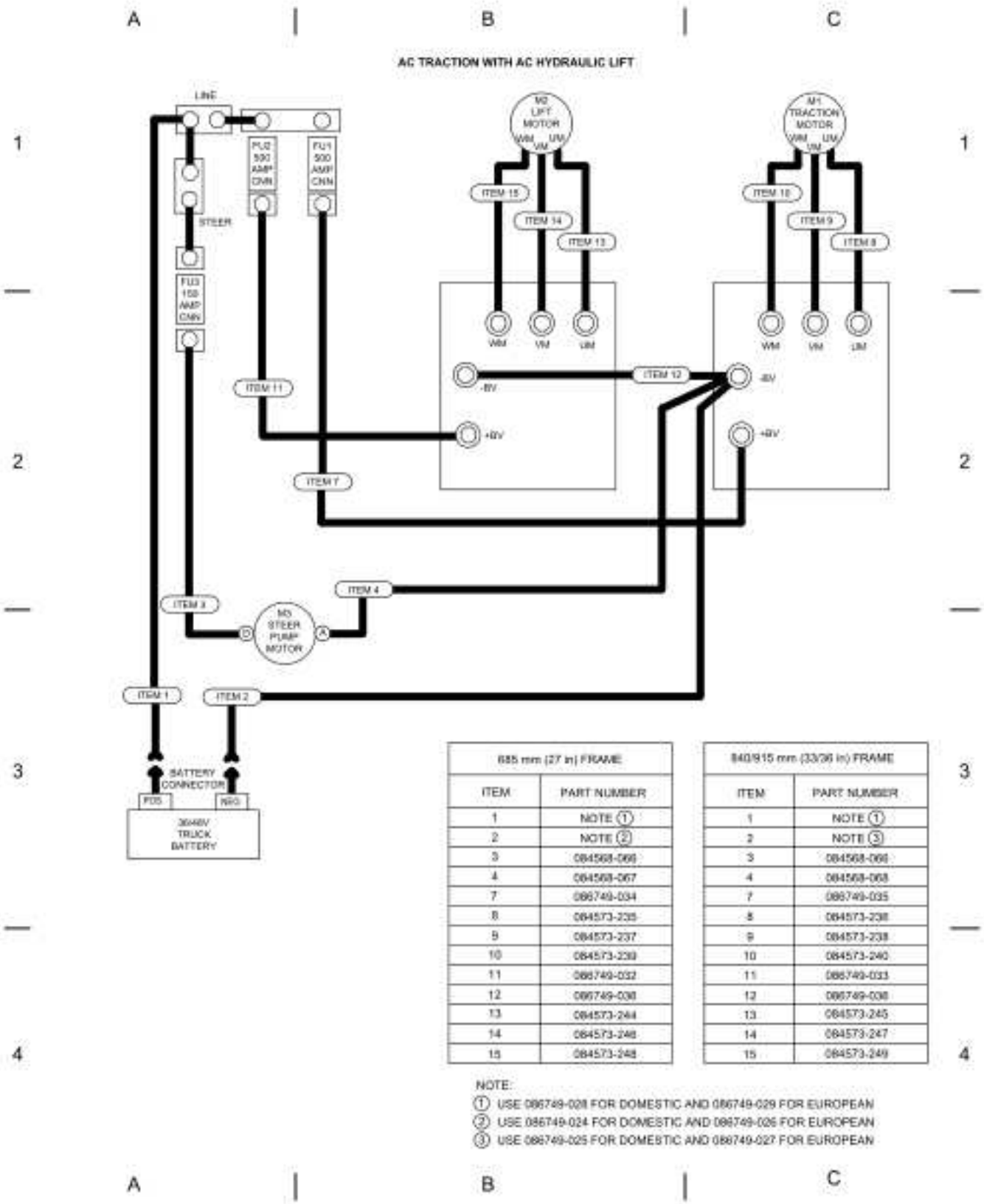
1. Reverse the disassembly procedures for installing drive unit assembly.
2. Align bolt and dowel pins holes.
3. Install mounting bolts and snug tighten.
4. Using a brass drift punch, drive the four dowel pins in until they are flush with the frame.
5. Torque mounting bolts that connect drive unit to power unit frame to 545 Nm (400 ft lb).
6. All hydraulic lines need to be bled after assembly. Refer to hydraulic system and service brake sections for circuit bleeding procedures.

CAUTION

Do not attempt to bleed a line by cracking an o-ring face seal fitting. This action will result in damaging the o-ring which then must be replaced to prevent hydraulic fluid leakage.

7. All remaining screws and bolts must be torqued to proper values. Refer to torque values and drive unit repair/rebuild maintenance sections for torque values and sequences.
8. Check for hydraulic leaks at all connections.
9. Verify oil level in drive unit and hydraulic reservoir.
10. Verify all truck functions and options are operational.

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685 mm (27 in) FRAME	
ITEM	PART NUMBER
1	NOTE ①
2	NOTE ②
3	084568-066
4	084568-067
7	086749-034
8	084573-235
9	084573-237
10	084573-239
11	086749-032
12	086749-036
13	084573-244
14	084573-246
15	084573-248

840/915 mm (33/36 in) FRAME	
ITEM	PART NUMBER
1	NOTE ①
2	NOTE ③
3	084568-066
4	084568-068
7	086749-035
8	084573-238
9	084573-238
10	084573-240
11	086749-033
12	086749-036
13	084573-245
14	084573-247
15	084573-249

NOTE:
① USE 086749-028 FOR DOMESTIC AND 086749-029 FOR EUROPEAN
② USE 086749-024 FOR DOMESTIC AND 086749-026 FOR EUROPEAN
③ USE 086749-025 FOR DOMESTIC AND 086749-027 FOR EUROPEAN

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Drive Unit Removal

NOTE

Removal of traction motor for drive unit removal is not necessary. The traction motor and drive unit can be removed from truck as one complete unit.

1. A pallet will be needed to place under the drive unit assembly for removal. Refer to Figure 17626 for example.



Figure17626

2. Remove forks, lower mast and tilt mast completely forward.
3. Disconnect battery and chock wheels.
4. Remove battery from truck. Refer to battery maintenance section for battery removal procedures.
5. Raise and block truck under power unit, steer axle and counterweight, 330 mm (13 in) off of floor. Refer to Figure 17627 and control of hazardous energy-lifting and blocking section for proper procedures on lifting and blocking the truck.



Figure 17627

6. Remove drive tires.

⚠ WARNING

Once the mast and drive unit are removed the rear of the truck will be the heaviest. The counterweight must be blocked to maintain stability of truck.

NOTE

It may be necessary to connect a jumper from the battery to the truck in order to apply the service brake to prevent the drive tires from turning while removing the lug nuts.

7. Connect a lifting strap and hoist to all sections of the mast assembly. Refer to control of hazardous energy-lifting and blocking section.
8. Disconnect all hoses, hydraulic lines, cables and connectors that connect power unit to mast assembly. Label all connections to aid in installation of mast assembly. Cap hydraulic lines and hoses.
9. Remove the screw and retainer on the front of the right and left hand tilt cylinders. Do not remove pins that connect tilt cylinders to mast assembly at this time.
10. Apply tension to the mast assembly using the hoist. Be sure mast is not binding at this time.
11. Remove bearing caps that connect mast pivot points to truck.

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FU1

Traction Motor Power Fuse

Location: contactor panel.

Purpose: protect Access 3 (TCM) and associated wiring from over current.

Data: CNN500, ANN500.

Adjustment: none required.

Diagrams: DIA-2045-002 (A-4), DIA-2045-003 (B-4), DIA-2045-004 (A-4),DIA-2045-018 (B-1), DIA-2045-019 (B-1).

Parts Breakdown: 04.2-2045-001 (25).

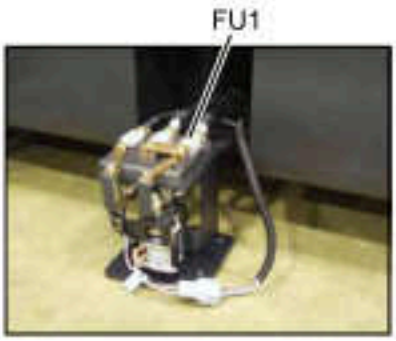


Figure 17777

FU2

Lift Pump Motor Power Fuse

Location: Contactor Panel.

Purpose: protect ACCESS2 and associated wiring from over current.

Data: ANN500, CNN500.

Adjustment: none required.

Diagrams: DIA-2045-002 (A-1), DIA-2045-003 (B-2), DIA-2045-004 (A-1), DIA-2045-018 (A-1), DIA-2045-019 (A-1).

Parts Breakdown: 04.2-2045-001 (26).

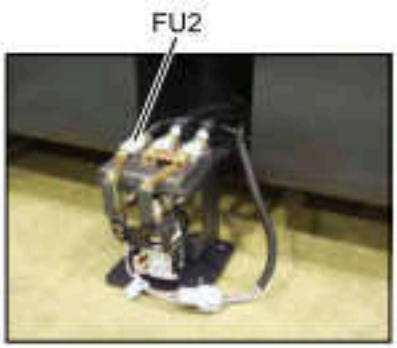


Figure 17778

FU3

Steering Pump Motor Power Fuse

Location: contactor panel.

Purpose: protect power steering pump motor and associated wiring from over current.

Data: ANN150, CNN150.

Adjustment: none required.

Diagrams: DIA-2045-002 (A-1), DIA-2045-003 (A-1), DIA-2045-004 (A-1), DIA-2045-018 (A-1), DIA-2045-019 (A-2).

Parts Breakdown: 04.2-2045-001 (25).

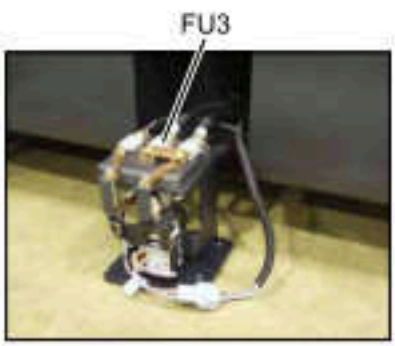


Figure 17779

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