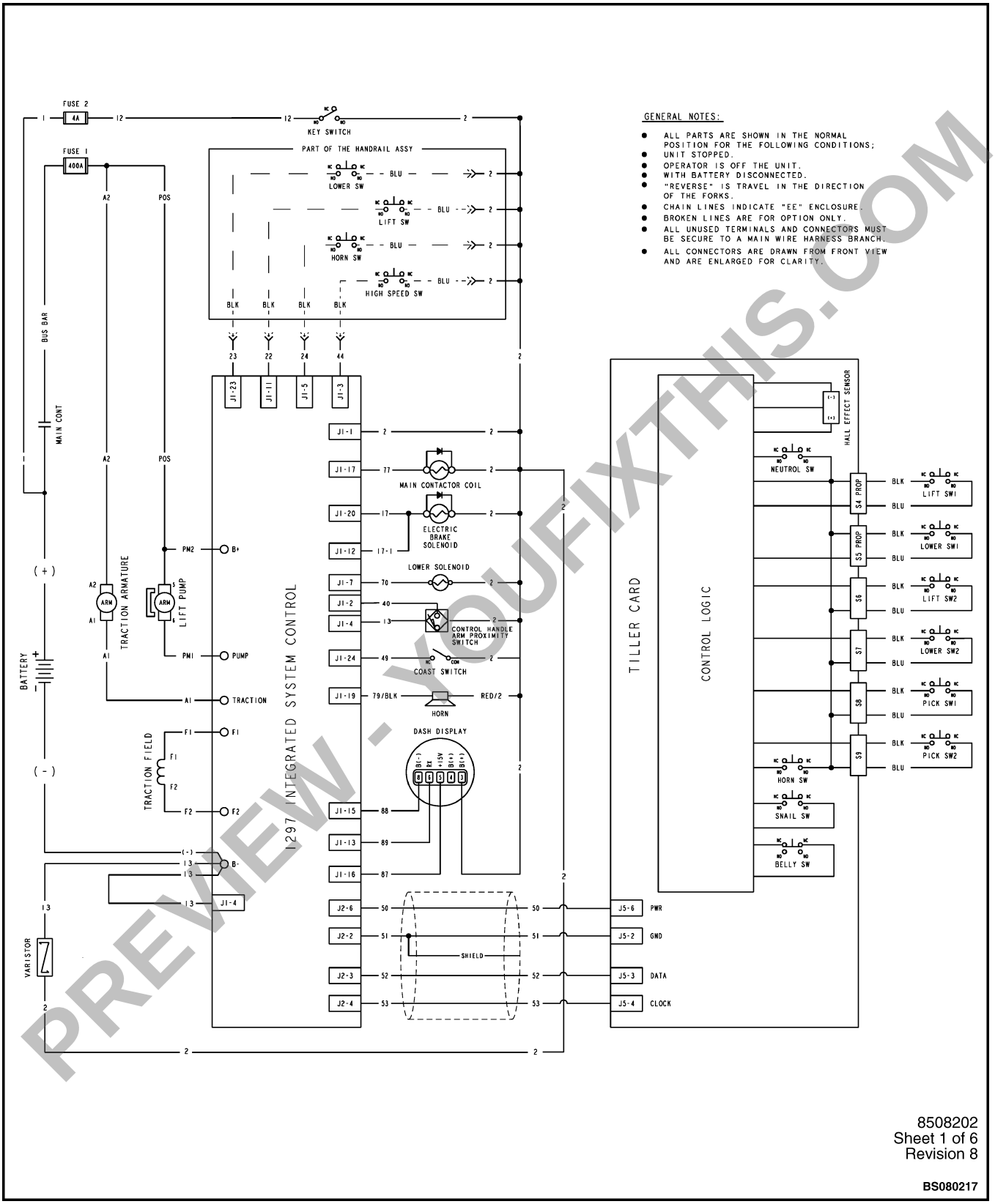


Figure 1. Schematic Diagram - 24 Volt (W60Z and W80Z) (Sheet 1 of 6)

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Description of Operation

The hydraulic system of the B60Z, B80Z, B60Z, B80Z^{AC}, C60Z, C80Z, C60Z, C80Z^{AC}, W60Z, W65Z, and W80Z lift trucks includes:

- Reservoir
- Pump
- Check Valve
- Relief Valve
- Lowering Valve
- Lift Cylinder
- Connecting Hoses and Tubes

WARNING

Always wear the proper protective equipment including eye protection and petroleum-resistant gloves when handling hydraulic oil. Thoroughly wash oil from exposed areas of skin as soon as possible.

Never check for leaks by putting hands on hydraulic lines or components under pressure. Hydraulic oil under pressure can be injected into the skin.

Completely lower forks to relieve hydraulic pressure before disassembling any part of the lift pump or disconnecting any hydraulic hoses.

The hydraulic oil is hot at normal operating temperatures. Be careful when draining the oil.

CAUTION

Protect the hydraulic system from dirt and contaminants when servicing the hydraulic system.

Never operate the pump without the proper amount of oil in the hydraulic system. The operation of the hydraulic pump with low oil levels will damage the pump.

The reservoir contains the hydraulic fluid necessary for the operation of the system. It acts as a heat sink to provide cooling. As the hydraulic oil leaves the reservoir, it passes through a strainer in the reservoir. See Figure 1.

The hydraulic pump provides the flow of the hydraulic oil which activates the cylinder.

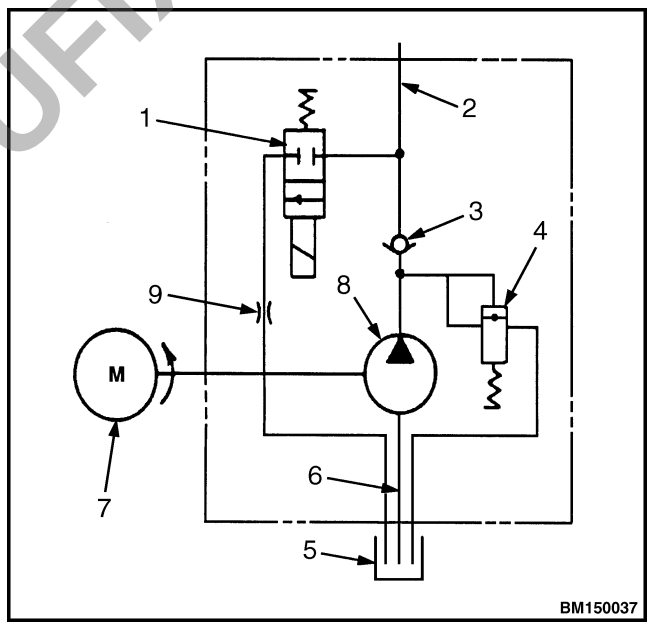
A check valve allows flow of the hydraulic oil in one direction only. In this hydraulic system, it prevents the oil from flowing backwards through the pump.

A relief valve limits maximum system pressure to protect the hydraulic system components.

The lowering valve is a normally closed valve. When it opens, hydraulic oil from the lift cylinder is allowed to return to the reservoir, and the forks lower.

The lift cylinder rod extends to operate the lift linkages to raise the forks.

The connecting hoses and tubing connect the various hydraulic components in the lift truck to complete the hydraulic circuit. See Figure 2 and Figure 3.

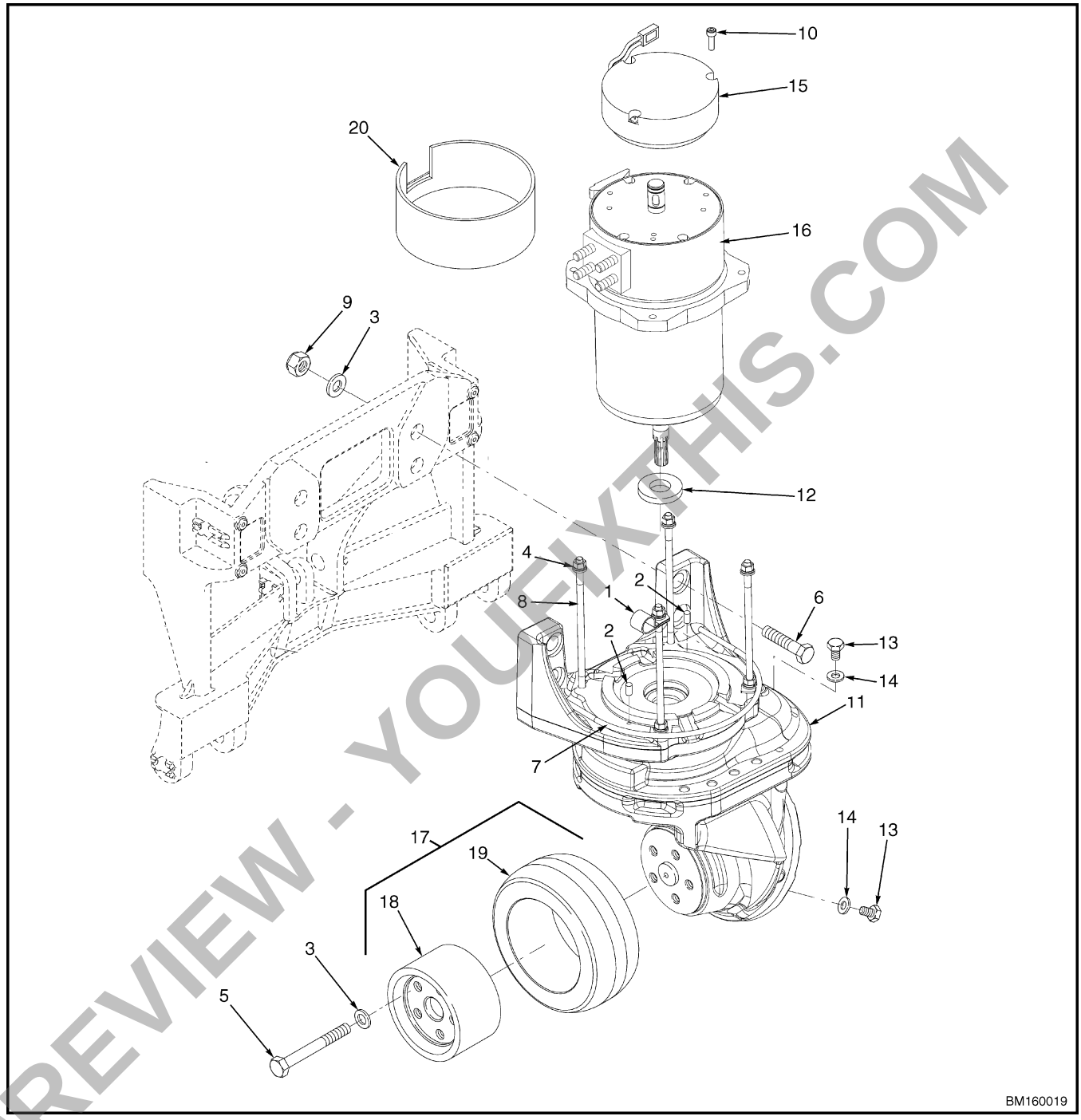


1. LOWERING SOLENOID VALVE
2. TO LIFT CYLINDER
3. CHECK VALVE
4. RELIEF VALVE
5. RESERVOIR
6. INLET LINE
7. PUMP MOTOR
8. LIFT PUMP
9. ORIFICE

Figure 1. Lift Pump and Motor Assembly Schematic

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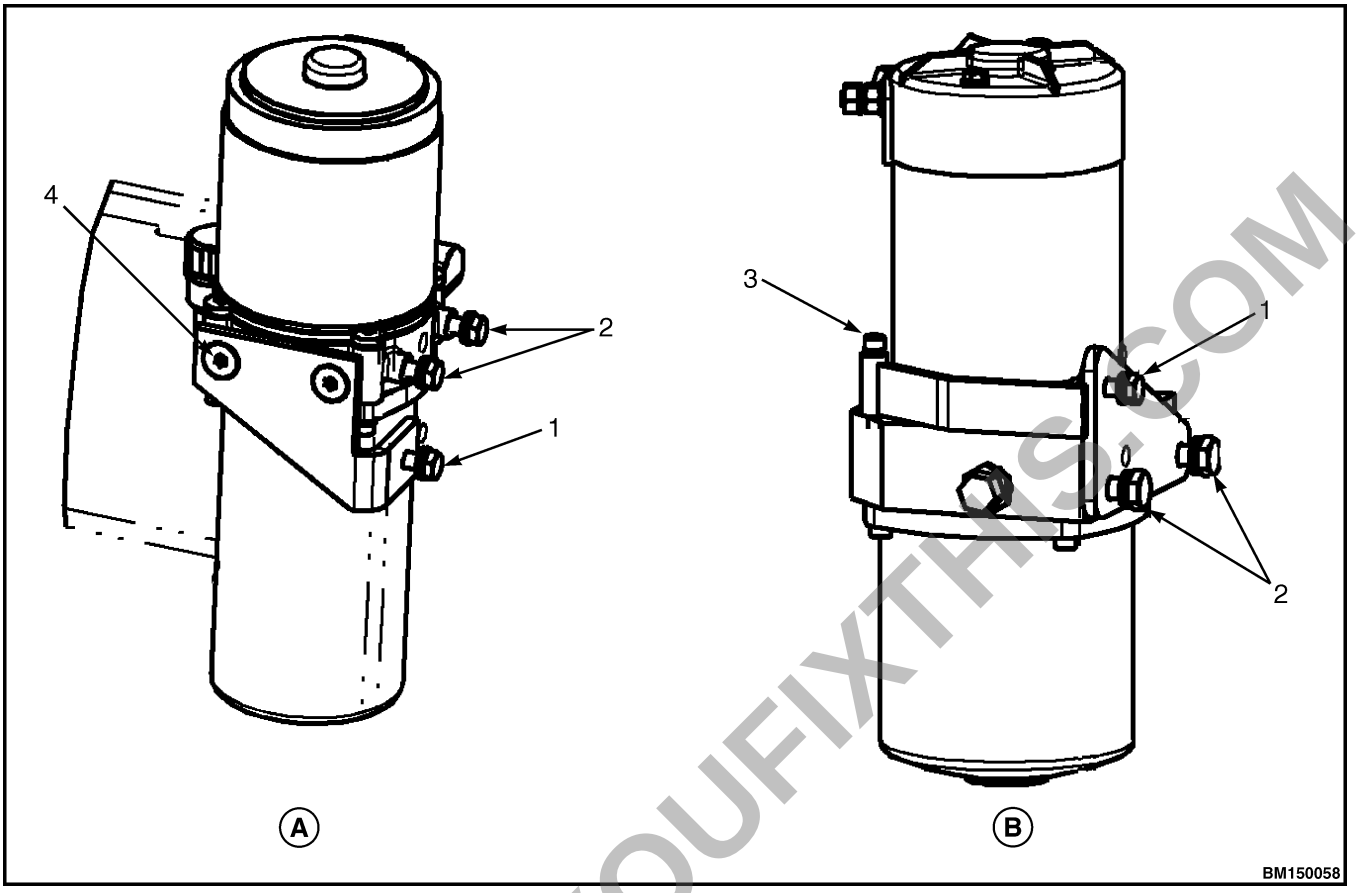
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1. WIRE CLAMP
2. PIN
3. WASHER
4. WASHER
5. CAPSCREW
6. CAPSCREW
7. WIRE GUIDE
8. STUD
9. NUT
10. CAPSCREW
11. DRIVE UNIT
12. MOTOR SHAFT SEAL
13. OIL PLUG
14. OIL GASKET
15. ELECTRIC BRAKE
16. TRACTION MOTOR
17. TIRE AND WHEEL ASSEMBLY
18. DRIVE WHEEL
19. TIRE
20. COVER

Figure 2. Drive Unit Assembly B60-80Z, C60-80Z, W60-65-80Z, and T5-7Z

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A. 6000 LBS CAPACITY **B.** 8000 LBS CAPACITY

Figure 12. Torque Values

Model	Location 1	Location 2	Location 3	Location 4
B60Z, B60Z^{AC}, C60Z, C60Z^{AC}, and W60Z	26 N•m (19 lbf ft)	26 N•m (19 lbf ft)	N/A	26 N•m (19 lbf ft)
B80Z, B80Z^{AC}, C80Z, C80Z^{AC}, W65Z, and W80Z	26 N•m (19 lbf ft)	39 N•m (29 lbf ft)	10 N•m (7 lbf ft)	N/A
NOTE: Apply Loctite® 242 to all locations shown during assembly.				

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Fault codes 20, 32, or 34 may also intermittently appear after the battery has been changed. If the BDI indicator will not reset, this may indicate that the battery is not properly charged. Always install fully charged, properly functioning batteries to the lift truck.

NOTE: Minimum reset voltage for the BDI is 25.2 volts (open cell), specific gravity should be approximately 1.250 per cell.

Table 8. 1297 Diagnostic and Troubleshooting Menu

LED Code	Programmer LCD Display	Explanation	Possible Cause
1,1	DRIVE SENSOR	Traction motor current sensor error.	1. Incorrect traction motor wiring. 2. Controller defective.
1,2	HW FAIL-SAFE	Self-test or watchdog fault.	1. Controller defective.
1,3	DRIVE M-	External short of traction motor M- to B-, or FET damage.	1. Incorrect traction motor wiring. 2. Controller defective.
1,4	LOWER VALVE FAULT	Lowering valve fault.	1. Lowering valve or connection open.
2,0	BDI LOW	Battery needs to be recharged.	1. Battery state of charge <20%.
2,1	THROTTLE WIPER HI	Traction throttle wiper high.	1. Defective MUX card.
2,1	THROTTLE WIPER LO	Traction throttle wiper low.	1. Defective MUX card.
2,2	PUMP SENSOR	Pump motor current sensor error.	1. Incorrect pump motor wiring. 2. Controller defective.
2,3	HPD	HPD sequencing error.	1. Improper sequence of KSI, interlock, and direction inputs.
2,3	SRO	SRO sequencing error.	1. Improper sequence of KSI, interlock, and direction inputs. 2. Interlock switch open.
2,3	ANTI-TIEDOWN	Mode switch activated at startup.	1. Mode switch shorted to B +. 2. Mode switch "tied down" to select M2 permanently.
2,4	PUMP M-	External short of pump motor M- to B-, or FET damage.	1. Incorrect pump motor wiring. 2. Controller defective.

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Legend for Figure 1

1. FRAME
2. MACHINED H CASTING
3. COVER
4. FRAME
5. MACHINED H CASTING
6. COVER

Frame Separation and Assembly

FRAME SEPARATION

In some cases a fork frame or a drive unit frame may be damaged, while the rest of the truck is still usable. The two frames may be separated from each other by using the following steps.

1. Raise the motorized lift truck to its maximum height. Move the key to the OFF position. Disconnect the battery.

2. Remove the drive unit compartment covers.

3. Position blocks under both sides of the truck in the area of the battery compartment and under both forks. See How to Put Lift Truck on Blocks in Periodic Maintenance 8000SRM0919 or Periodic Maintenance 8000SRM1298.

4. Remove the battery.

5. Remove the top clevis pin retaining the hydraulic cylinder to the frame. See Hydraulic Cylinder in Walkie Hydraulic Systems 1900SRM0964.

6. Remove both pivot pins retaining the upper link to the drive unit frame. See Upper Link, Remove in Lifting Mechanism 4000SRM0965.

7. Remove both drive unit frame pivot pins retaining the rocker arm to the drive unit frame. See Rocker Arm, Remove in Lifting Mechanism 4000SRM0965.

8. Carefully move one of the frames away from the other.

FRAME ASSEMBLY

1. Align both frames so the pins may be installed to assemble the frames to each other.

2. Install both drive unit frame pivot pins to attach the rocker arms to the drive unit frame. See Rocker Arm, Install in Lifting Mechanism 4000SRM0965.

3. Install both pivot pins to attach the upper link to the drive unit frame. See Upper Link, Install in Lifting Mechanism 4000SRM0965.

4. Install the pivot pin to attach the hydraulic cylinder to the fork frame. See Hydraulic Cylinder, Install in Walkie Hydraulic Systems 1900SRM0964.

5. Install the battery.

6. Install the drive unit compartment covers.

7. Remove the blocks and lower the motorized lift truck to the floor. Check the pull rod adjustment. See Pull Rod Adjustment in Lifting Mechanism 4000SRM0965.

8. Test the operation of the truck before returning the truck to service.

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Troubleshooting

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
Lift truck will not move.	Motor not operating. Damaged gears or bearings.	Check wiring or repair motor. Check battery, battery connection, and truck fuses. Replace drive unit.
MDU makes noise.	The wrong lubricant is used. There is not enough lubricant. Dry or damaged bearings. Worn or damaged gears.	Drain incorrect lubricant and refill with correct gear oil. Refer to the section **Periodic Maintenance** for your lift truck model. (See General in this section for a list of specific section numbers). Fill with correct lubricant to proper level. Replace drive unit. Replace drive unit.
Oil leakage at fill plug or drain plug.	Dirt between sealing ring and housing. Old sealing ring installed. Loose drain or fill plugs.	Clean sealing ring and housing. Replace sealing ring. Tighten drain or fill plugs. 1. Torque drain plug to 60 N•m (44 lbf ft). 2. Torque fill plug to 45 N•m (33 lbf ft).
Oil leakage at upper part in motor compartment.	Too much oil in drive unit. Motor seal defective.	Check oil level and correct to proper level. Replace motor seal.
Oil leakage at housing cover.	Housing cover not sealed to housing. Capscrews not sealed or not tightened to correct torque.	Clean, seal, and tighten housing cover capscrews to correct torque. Tighten housing cover capscrews to correct torque, 32 N•m (24 lbf ft).

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Top Mount Handle
Bottom Mount Handle

Table 1. Drive Unit Specifications

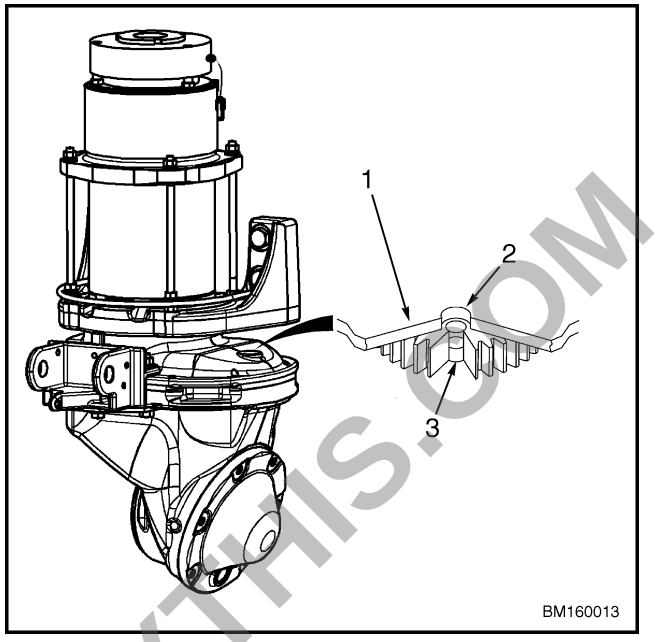
Model	Gear Ratio	MDU
W60/65/80Z, W30/40ZA, W20/30ZR, W25/30/40ZC	25:1	Carraro™ MDU115
B80Z, T7Z, C80Z, $T7Z^{AC}$, $C80Z^{AC}$, $B80Z^{AC}$, $B80Z^{HD}$, $B80Z^{HD2}$	17.8:1	Carraro™ MDU150
B60Z, T5Z, C60Z, $T5Z^{AC}$, $C60Z^{AC}$, $B60Z^{AC}$, $B60Z^{HD}$, $B60^{HD2}$	16:1	Carraro™ MDU115

CHECK OIL LEVEL

1. Rotate the steering control handle until the oil fill plug is exposed.

2. Remove the oil fill plug.

3. Move the directional control knobs, turning the drive wheel slightly forward or backward until one of the gear holes lines up with the fill hole. Check the level of lubricant. There is enough lubricant in the MDU when the lubricant level is up to the bottom of the gear or halfway to the top of the gear. See Figure 1.



1. MASTER DRIVE UNIT FRAME
2. OIL FILL HOLE
3. OIL LEVEL SHOULD BE AT THE BOTTOM EDGE OF GEAR OR HALFWAY UP.

Figure 1. Check Oil Level

4. If the lubricant level is low, add additional lubricant. See the following section for your truck:

- **Capacities and Specifications** 8000SRM1033 for unit codes A476, A477, A478, A479, B476, B477, B478, and B479
- **Capacities and Specifications** 8000SRM0918 for unit codes A229, A230, A231, A233, and A234
- **Capacities and Specifications** 8000SRM1299 for unit codes B230 and B233
- **Capacities and Specifications** 8000SRM1028 for unit codes B453, B454, and B455
- **Capacities and Specifications** 8000SRM1454 for unit codes A257 and A262
- **Capacities and Specifications** 8000SRM1633 for unit codes B257, B262, C230, C476 and C477
- **Capacities and Specifications** 8000SRM2103 for unit codes C257 and C262

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NOTE: The following inspections and necessary corrections are the responsibility of the user.

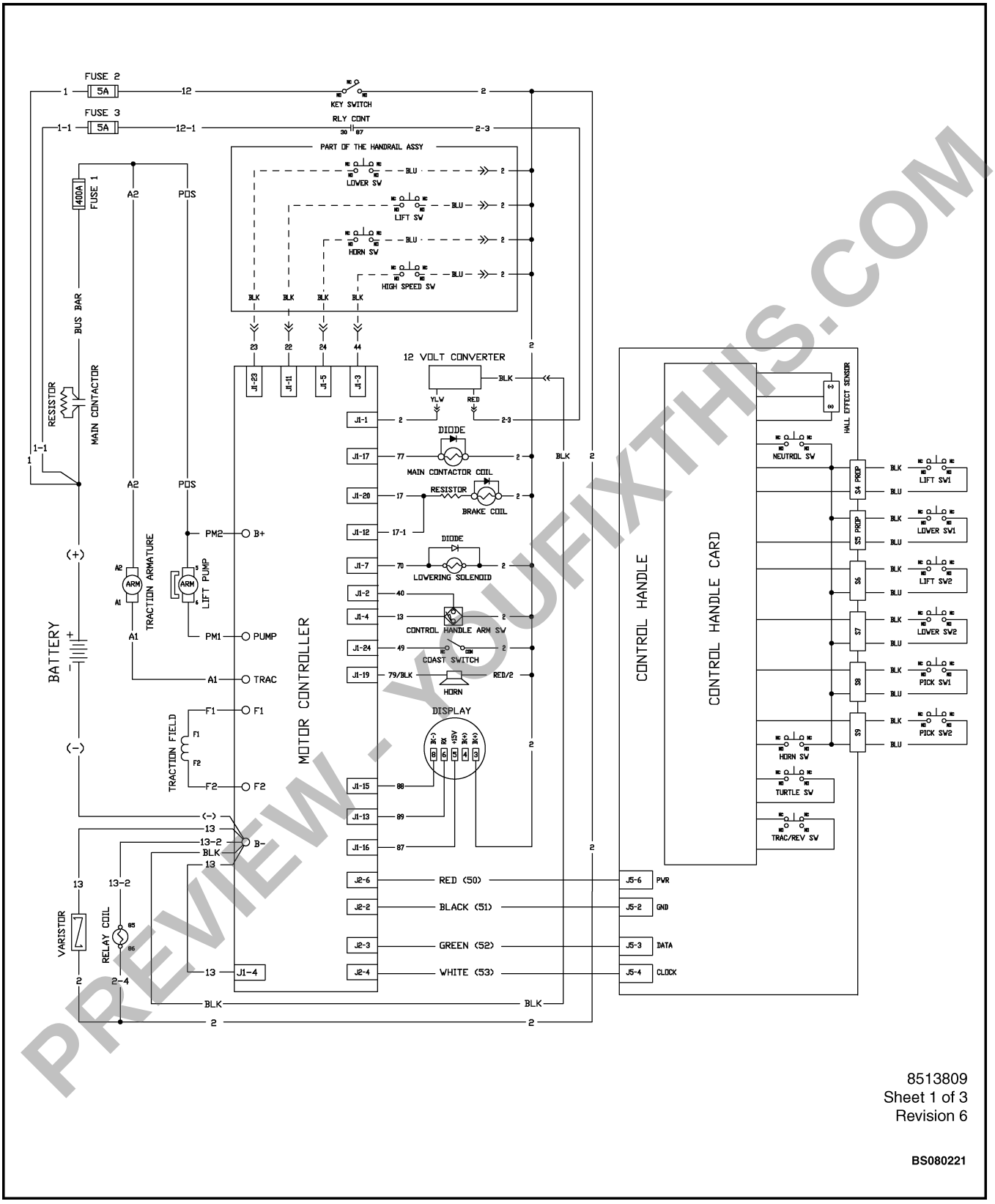
LUBRICATION CHECK Blow off, clean when necessary, and inspect for damage.			
A - Every 8 Hours B - Every 350 Hours C - Every 2000 Hours	X - Indicates Visual Inspection, Repair, or Replace as Required O - Indicates Drain and Fill		
Component:	A	B	C
Lubricate - Chassis (All Fittings)		X	
All Linkage and Load Wheels (See Note 2)		X	
Clean and Repack Load Wheel Bearings			X
Hydraulic Reservoir Oil Level		X	O
Hydraulic Reservoir Breather		X	
Caster Wheel Clearance		X	
Drive Unit Oil Level (Carraro) (See Note 5)		X	O
Drive Unit Oil Level (Kordel) (See Note 7)		X	O

NOTES:

1. Tires - Condition affects stability, safety, and load capacity that can be handled safely.
2. Under Normal Conditions, it is recommended that the Load Wheel Bearings be lubricated every 200 hours, minimum. The load wheel bearings are cleaned and repacked every 2000 hours. For trucks equipped with the Food Processing Package or operate under Wet or Corrosive Conditions, it is recommended to lubricate the lift linkage every 50 hours. Load wheel bearings should be inspected every 350 hours.
3. See Capacities and Specifications 8000SRM0918 for all lubrication specifications.
4. The presence of hydraulic fluid on cylinder rods and fittings does not necessarily indicate a leak.
5. Drain and refill drive unit gear oil after initial 350 hours of operation.
6.  Recycle all waste oils.
7. Replace after first 200 hours of service. Check/replace every 2000 hours or yearly.

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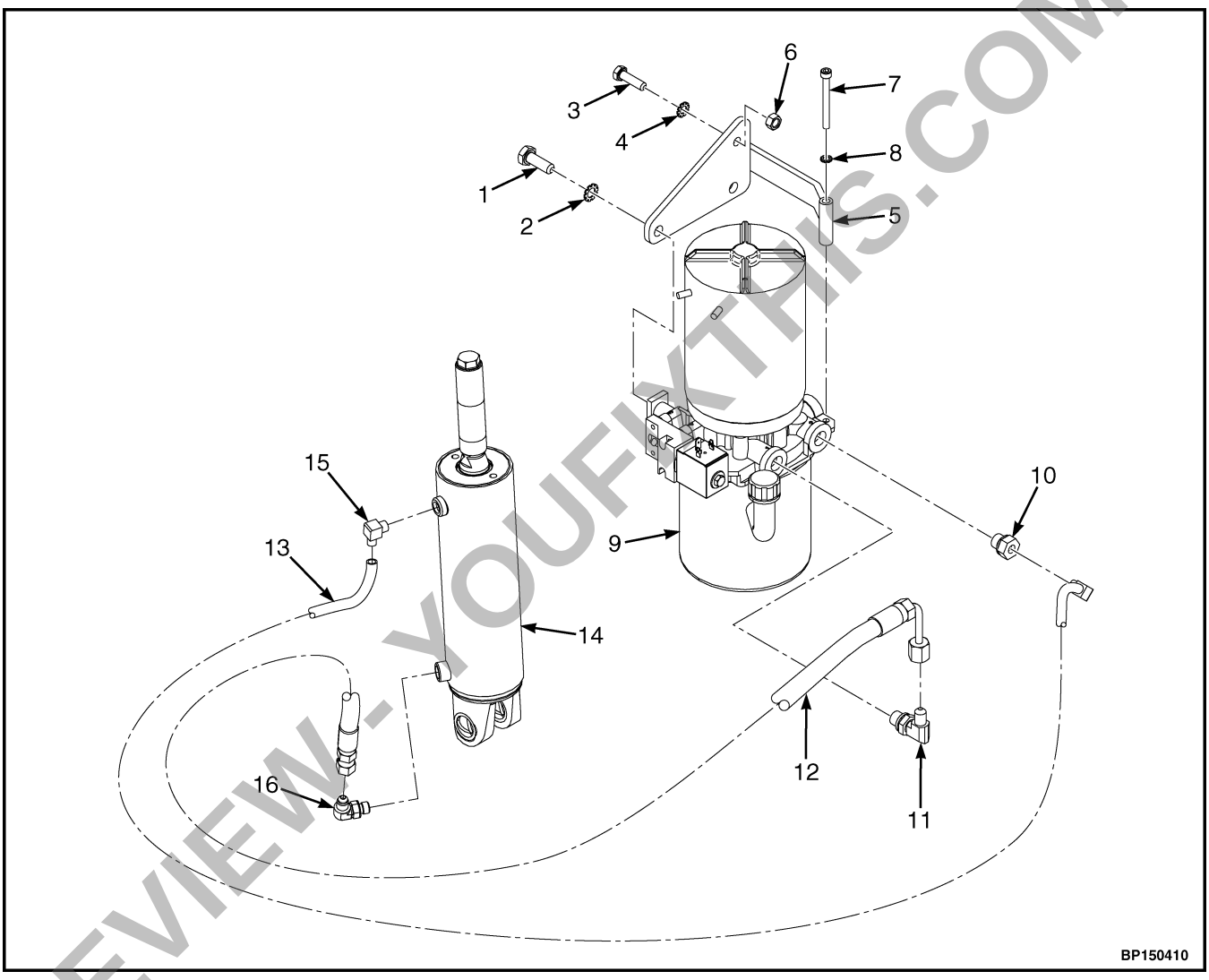
Figure 2. Schematic Diagram - 12 Volt (W65Z) (Sheet 1 of 3)

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LIFTING A LOAD

To raise a load, the lift button must be depressed. Depressing this button will activate the lift pump motor. Torque is transferred to the pump from the motor through the motor shaft and the coupling.

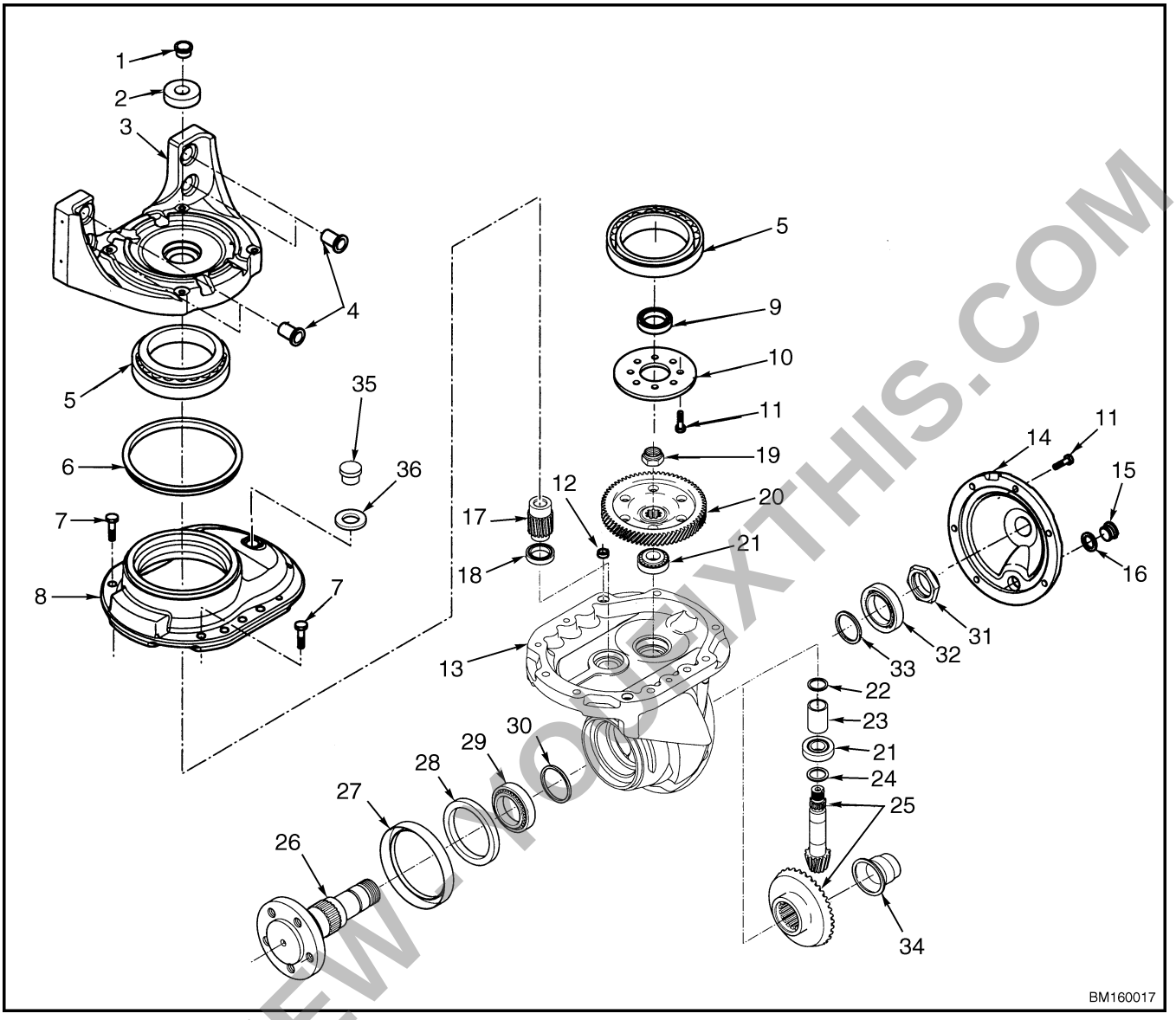
Hydraulic oil is pumped through the system as the pump begins to operate. Atmospheric pressure forces oil into the low pressure area at the pump inlet. Air, which is drawn into the reservoir through the breather, displaces the pumped oil, allowing oil to be sent through the system. See Figure 1.



1. CAPSCREW
2. WASHER
3. CAPSCREW
4. WASHER
5. MOUNTING BRACKET
6. NUT
7. SCREW
8. WASHER
9. PUMP AND MOTOR ASSEMBLY
10. ADAPTER
11. FITTING
12. HOSE
13. TUBE
14. CYLINDER ASSEMBLY
15. FITTING
16. FITTING

Figure 2. Hydraulic System for B60Z, B60Z^{AC}, C60Z, C60Z^{AC}, and W60Z Lift Trucks

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1. PLUG
2. SEAL
3. HOUSING SUPPORT
4. CENTERING BUSHING
5. BEARING
6. GASKET
7. BOLT
8. UPPER HOUSING
9. BEARING ASSEMBLY
10. PLATE
11. BOLT
12. CENTERING BUSHING
13. MAIN HOUSING
14. LOWER COVER
15. OIL DRAIN PLUG
16. WASHER
17. GEAR
18. BEARING
19. RING NUT
20. GEAR
21. BEARING
22. SHIMS
23. SPACER
24. SHIMS
25. BEVEL GEAR AND PINION
26. AXLE SHAFT
27. COVER FLANGE
28. SEAL
29. BEARING
30. SHIM
31. RING NUT
32. BEARING
33. SHIM
34. SPACER
35. OIL FILL PLUG
36. OIL FILL GASKET

Figure 6. Drive Unit Assembly

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FASTENER TORQUE TABLES

*Table 5. Torque Values for Metric Fasteners**

Size and Pitch	Property Class 5.8[1]		Grade 8.8[2]		Grade 10.9[3]	
	N•m	lbf ft	N•m	lbf ft	N•m	lbf ft
M3 × 0.5 M3.5 × 0.6 M4 × 0.7 M5 × 0.8 M6 × 1	0.62 0.97 1.44 2.91 4.94	0.5 0.7 1.1 2.1 3.6	0.99 1.55 2.30 4.65 7.90	0.7 1.1 2.1 3.6 6	1.34 2.11 3.13 6.33 10.8	1.0 1.6 2.3 4.7 8
M8 × 1.25 M8 × 1 M10 × 1.5 M10 × 1.25	12.0 12.8 23.8 25.1	9 9 18 19	19.2 20.5 38.0 40.1	14 15 28 30	26.1 27.9 52 55	19 21 38 41
M12 × 1.75 M12 × 1.25 M14 × 2 M14 × 1.5	41.4 45.3 66 72	31 33 49 53	66 72 105 115	49 53 77 85	90 98 145 155	66 72 105 115
M16 × 2 M16 × 1.5 M20 × 2.5 M20 × 1.5	105 110 200 225	77 81 150 165	165 175 320 355	122 130 235 260	225 240 435 485	165 175 320 360
M24 × 3 M24 × 2 M27 × 3 M27 × 2	345 375 505 550	255 275 370 405	555 605 810 875	410 445 600 645	755 820 1,100 1,190	560 605 810 880
M30 × 3.5 M30 × 3 M30 × 2 M33 × 3.5 M33 × 2	690 715 765 940 1,030	510 530 565 695 760	1,100 1,140 1,220 1,500 1,640	810 840 900 1,100 1,210	1,500 1,550 1,660 2,040 2,240	1,100 1,140 1,230 1,510 1,660
M36 × 4 M36 × 3 M39 × 4 M39 × 3	1,200 1,280 1,560 1,640	885 945 1,150 1,210	1,930 2,040 2,490 2,630	1,430 1,510 1,840 1,940	2,620 2,780 3,390 3,570	1,940 2,050 2,500 2,640
M42 × 4.5 M42 × 3 M45 × 4.5 M45 × 3 M48 × 5 M48 × 3	1,930 2,070 2,410 2,580 2,900 3,160	1,430 1,530 1,780 1,910 2,140 2,330	3,080 3,320 3,850 4,120 4,630 5,040	2,280 2,450 2,840 3,040 3,420 3,720	4,200 4,510 5,240 5,610 6,300 6,860	3,100 3,330 3,870 4,140 4,650 5,060

* Unless otherwise specified [1] Approximately equal to Grade 2 [2] Approximately equal to Grade 5 [3] Approximately equal to Grade 8

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LED Code	Dash Display	Model	Programmer Display
1,1	Code 11	All	Drive Sensor

Condition Handset is plugged into the traction motor controller. Key switch is in the ON position. Diagnostic menu is selected.

Truck Response No Traction

Possible Causes and Test Procedures

1. Incorrect traction motor wiring. Check wiring to traction motor.

   Loose, worn, or frayed wires?

   Motor wiring correctly installed?

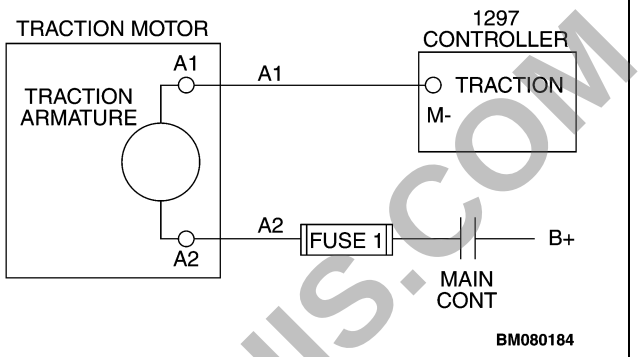
2. Check for motor shorted to frame. Disconnect leads from motor.

   Resistance between frame and motor terminal should be 1 mega ohm or more.

3. Check for controller shorted to B-. Disconnect motor leads from controller.

   Resistance between motor terminals on controller and B- should be 1 mega ohm or more.

Circuit Description



Logic Traction motor current sensor error. The controller uses the traction motor current sensor to detect incorrect current in the traction motor circuit.

LED Code	Dash Display	Model	Programmer Display
1,2	Code 12	All	HW Failsafe

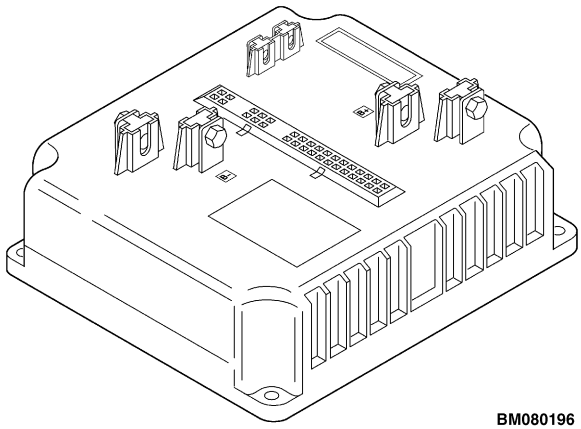
Condition Self Test or Watchdog Error.

Truck Response No Controller Operation

Possible Causes and Test Procedures

1. Turn key switch to OFF position to reset the controller.
2. If fault reoccurs, replace controller.

Circuit Description



Logic Displayed when the internal check logic of the controller determines an internal failure of the controller.

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1. Raise the drive tire off the floor. Block the lift truck. Refer to the section **Periodic Maintenance**, How to Put Lift Truck on Blocks. (See General in this section for a list of specific section numbers.)

WARNING

Always disconnect the battery connector so that the connector is completely free before repairing the brake system. If the connector is not completely free, it can reconnect the battery. Tag the connector - DO NOT CONNECT.

2. Turn the key switch **OFF** and disconnect the battery connector.

3. Remove the drive unit compartment cover to access the MDU.

4. Discharge the capacitors. Refer to Safety Precautions in this section.

5. Remove the lug bolts/lug nuts and remove drive tire and wheel.

6. Drain the gear oil from the MDU into a suitable container with at least 2.0 liter (2.1 qt) capacity.

7. Identify and tag all wires and cables connected to MDU for later installation.

8. Disconnect all wires and cables connected to MDU and the harness clamps on the drive motor.

9. Remove the steering components as necessary for repair. Refer to the section **Steering Mechanism**. (See General in this section for a list of specific section numbers.)

10. Assisted steering models have a steering motor and a bearing assembly for the articulating shaft that mounts to the MDU housing. If the bearing pin and gear are removed, make sure to note position of steer wheel. During replacement, the bearing pin and gear must be aligned with the notch in the pinion shaft facing straight ahead and the drive tire must be in the same position as it was during removal. Refer to the section **Steering Mechanism** for steer motor and lower bearing assembly removal. (See General in this section for a list of specific section numbers.)

NOTE: The traction motor is most commonly removed **BEFORE** the drive unit is removed from the truck. However, it can also be removed after the MDU has been removed from the truck.

11. Remove the traction motor and brake as a single assembly:

NOTE: Wire clamp(s) placement may vary with models. Note where each wire clamp is located prior to removal.

   a. Remove four nuts, lockwashers, washers, and wire clamp from the studs retaining the drive motor.

   b. Attach a sling and an overhead hoist to the drive motor.

   c. Lift the drive motor from the drive unit.

   d. Remove the brake assembly from the traction motor if necessary. Refer to the section **Brakes** for your lift truck model. (See General in this section for a list of specific section numbers.)

   e. Remove wire guard from lower end of studs.

   f. Remove studs, nuts, and two alignment pins from drive unit.

WARNING

To avoid personal injury, keep the MDU supported at all times using a sling and an overhead hoist when removing the MDU from the lift truck.

12. Attach a sling and an overhead hoist to the drive unit. Remove the four capscrews and nuts attaching the drive unit to the frame.

13. Lift the drive unit out of the truck and place on a clean work bench. Remove the sling.

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LIFT PUMP AND MOTOR ASSEMBLY

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
Low hydraulic pressure.	Pump is worn or damaged.	Repair or install new pump.
	Relief valve needs adjustment.	Replace relief valve.
Hydraulic system relief valve opens frequently.	Excessive load on forks.	Reduce load.
	Lift linkage jammed or sticky.	Repair lift linkage.
	Relief valve needs adjustment, or relief valve is defective.	Replace relief valve.
	Restriction in the pressure side of the hydraulic system.	Remove restriction or install new line.
The pump noise is not normal.	Oil in the hydraulic reservoir is low.	Fill reservoir to correct level. Check for leaks.
	Restriction in the inlet hose.	Remove restriction, clean screen, or install new line.
	Inlet fitting or inlet hose clamp is loose.	Tighten fitting. Install new hoses. Remove air from system.
	The pump bearings or gears are damaged.	Repair or install new pump.
	The pump housing is damaged.	Repair or replace pump housing.
	Loose capscrews holding the pump housing together.	Tighten capscrews to specified torque.
	Loose capscrews in the pump mounting.	Tighten capscrews to specified torque.
	Relief valve is stuck open.	Clean, adjust, or replace the relief valve.
The pump has low output.	The pump is worn.	Check, repair, or install new parts as required.
	Oil in the hydraulic reservoir is low.	Fill reservoir to correct level. Check for leaks.
	Lift cylinder has leaks.	Repair or replace lift cylinder.

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Hydraulic System

Unit	Battery Compart-ment	Volts	Operating Pressure[1]		Ampere Draw[2]		Relief Setting		Lift Time (sec)		Lower Time (sec)	
			No Load	Rated Load	No Load	Rated Load	Pressure[3]	Amp Draw	No Load	Rated Load	No Load	Rated Load
W60Z	340 mm (13.4 in.)	24	2.94 MPa (426 psi)	11.03 MPa (1600 psi)	34	81	16.62 MPa (2700 psi)	124	3.7	4.7	3.0	1.8
B60Z	340 mm (13.4 in.)	24	2.94 MPa (426 psi)	11.03 MPa (1600 psi)	34	81	18.62 MPa (2700 psi)	124	3.7	4.7	3.0	1.8
W65Z	229 mm (9.0 in.)	12	(359)	(1750)	93	194	(2850)	270	3.75	5.7	7.8	4.24
W80Z	340 mm (13.4 in.)	24	(401)	(2173)	45	108	(3500)	147	3.7	5.4	5.9	3.2
B80Z	340 mm (13.4 in.)	24	(401)	(2173)	45	108	(3500)	147	3.7	5.4	5.9	3.2
W60Z and B60Z – Standard Specifications Hydraulic Tank Capacity – 1.0 liter (1.06 qt) Pump Displacement (24 Volts) – 1.59 cm^3/rev (0.092 $in.^3$/rev) Creep Rate – 6.4 mm (0.25 in.) Maximum In 10 Minutes @ 32°C (90°F) Oil Temperature												
W65Z, W80Z, and B80Z – Standard Specifications Hydraulic Tank Capacity – 1.0 liter (1.06 qt) W80Z and B80Z Pump Displacement (24 Volts) – 2.0 cm^3/rev (0.122 $in.^3$/rev) W65Z Pump Displacement (12 Volts) – 2.0 cm^3/rev (0.122 $in.^3$/rev) Creep Rate – 6.4 mm (0.25 in.) Maximum In 10 Minutes @ 32°C (90°F) Oil Temperature												
Footnotes [1] ±0.35 MPa (±51 psi) @ 21°C (70°F) Oil Temperature [2] ±10 Amps @ 1.270 Battery Specific Gravity [3]+0.6 to 0.0 MPa (+87 to 0 psi) @ 32°C (90°F) Oil Temperature Full Flow												

Hydraulic Oils

Operating Condition	Standard	CS/Freezer/Food Processing	Arctic
Truck Temperature Range	0 to −84°C (32 to −120°F)	−18 to −84°C (0 to −120°F)	−40 to −84°C (−40 to −120°F)
For All Hydraulically Actuated Equipment			
Specification	ISO VG 46 Antiwear (HCE-140)	Exxon Univis® HVI 26	Exxon Univis® HVI 26
Pour Point Maximum	−15°C (5.0°F)	−60°C (−76.0°F)	−60°C (−76.0°F)
Field Personnel Note: The product listed above is the approved source that meets or exceeds Hyster specifications. The use of products other than that listed above is unauthorized.			

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HYDRAULIC SYSTEM CHECK			
A - Every 8 Hours B - Every 350 Hours C - Every 2000 Hours	X - Indicates Visual Inspection, Repair, or Replace as Required O - Indicates Drain and Fill		
Component:	A	B	C
Hydraulic Pump for Noise and Operation		X	
Hydraulic Control Valve for Leaks and Operation		X	
Relief Valve Settings		X	
All Hydraulic Hoses and Fittings for Leaks, Wear, Kinks, Flattening, and Charring		X	
For General Leaks		X	

NOTES:

1. Tires - Condition affects stability, safety, and load capacity that can be handled safely.
2. Under Normal Conditions, it is recommended that the Load Wheel Bearings be lubricated every 200 hours, minimum. The load wheel bearings are cleaned and repacked every 2000 hours. For trucks equipped with the Food Processing Package or operate under Wet or Corrosive Conditions, it is recommended to lubricate the lift linkage every 50 hours. Load wheel bearings should be inspected every 350 hours.
3. See Capacities and Specifications 8000SRM0918 for all lubrication specifications.
4. The presence of hydraulic fluid on cylinder rods and fittings does not necessarily indicate a leak.
5.  Recycle all waste oils.

DRIVE UNIT CHECKS			
A - Every 8 Hours B - Every 350 Hours C - Every 2000 Hours	X - Indicates Visual Inspection, Repair, or Replace as Required O - Indicates Drain and Fill		
Component:	A	B	C
Brake Wear and Adjustment		X	
Electric Motor and Drive Unit Mounting Bolts		X	
Wheel Bolts - Torque to Specifications		X	

NOTES:

1. Tires - Condition affects stability, safety, and load capacity that can be handled safely.
2. Under Normal Conditions, it is recommended that the Load Wheel Bearings be lubricated every 200 hours, minimum. The load wheel bearings are cleaned and repacked every 2000 hours. For trucks equipped with the Food Processing Package or operate under Wet or Corrosive Conditions, it is recommended to lubricate the lift linkage every 50 hours. Load wheel bearings should be inspected every 350 hours.
3. See Capacities and Specifications 8000SRM0918 for all lubrication specifications.
4. The presence of hydraulic fluid on cylinder rods and fittings does not necessarily indicate a leak.
5.  Recycle all waste oils.

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