SERVICE MANUAL

B187 (S40-60XL)



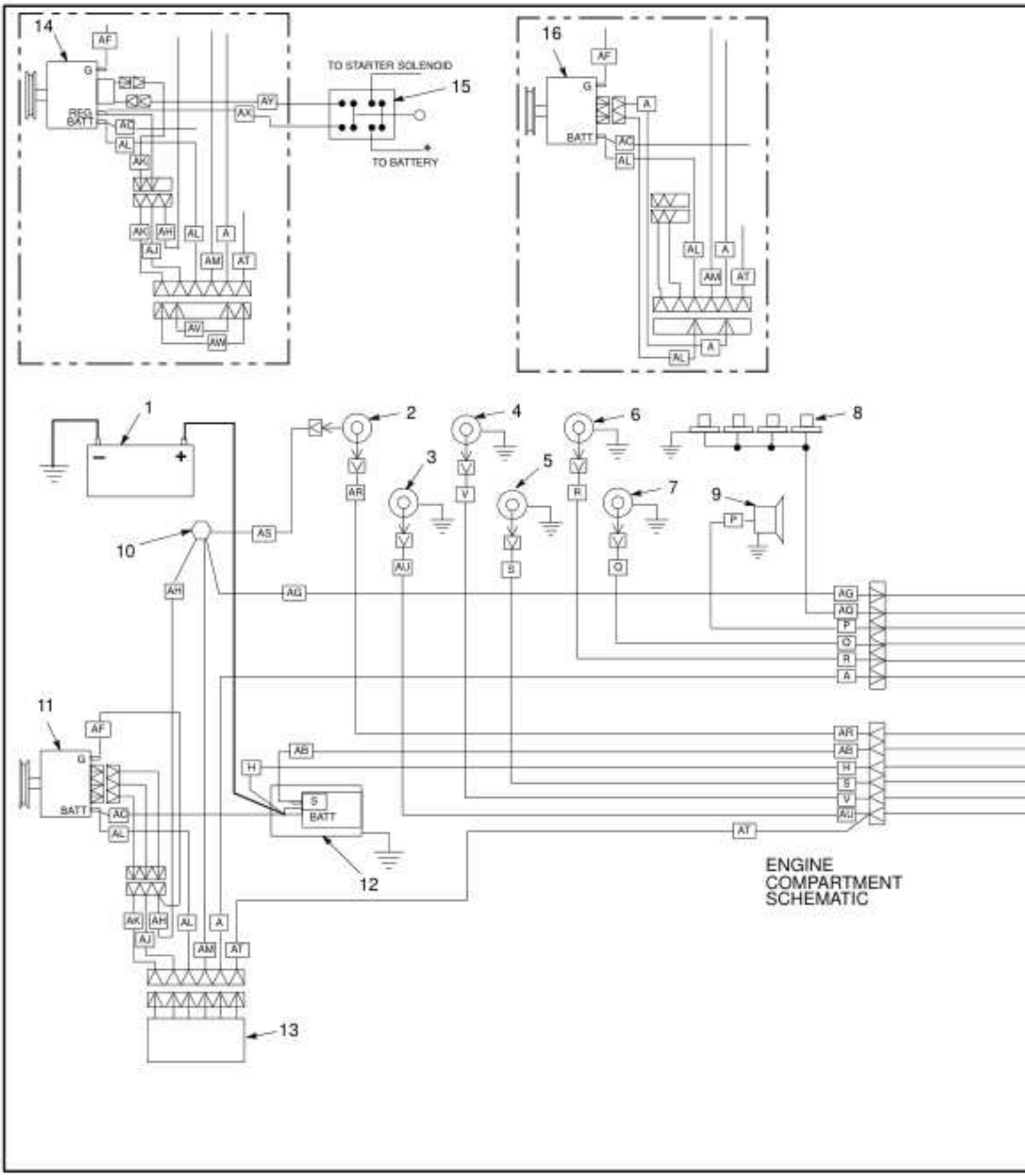
FORM 599915-B187 Rev. 10/11

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TORQUE SPECIFICATIONS

Cylinder Head	81 to 88 N.m (60 to 65 lbf ft)
Inlet manifold	30 to 51 N.m (22 to 38 lbf ft)
Exhaust manifold	30 to 51 N.m (22 to 38 lbf ft)
Main Bearing Cap	81 to 88 N.m (60 to 65 lbf ft)
Connecting Rod Cap	48 to 52 N.m (35 to 38 lbf ft)
Crankshaft Pulley	137 to 157 N.m (101 to 116 lbf ft)
Flywheel Housing	28 to 41 N.m (20 to 30 lbf ft)
Flywheel	58 to 64 N.m (43 to 47 lbf ft)
Camshaft Gear	118 to 137 N.m (87 to 101 lbf ft)
Camshaft Thrust Plate	16 to 23 N.m (12 to 17 lbf ft)
Cooling Fan	16 to 23 N.m (12 to 17 lbf ft)
Water Pump	16 to 23 N.m (12 to 17 lbf ft)
Rocker Arm Brackets	28 to 41 N.m (21 to 30 lbf ft)
Oil Sump	7 to 9 N.m (5 to 7 lbf ft)
Oil Pressure Switch	12 to 17 N.m (9 to 13 lbf ft)
Coolant Pump	16 to 23 N.m (12 to 17 lbf ft)
Alternator	13 to 20 N.m (18 to 27 lbf ft)
Starter	87 to 117 N.m (64 to 87 lbf ft)
Distributor	7 to 9 N.m (5 to 7 lbf ft)
Spark Plug	15 to 23 N.m (11 to 17 lbf ft)
Motor Mount to Engine	56 N.m (41 lbf ft)
Motor Mount to Frame	53 N.m (39 lbf ft)

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Table 1. Troubleshooting Procedure for Operator Presence Module (Continued)

Symptom	Cause	Check	Result	Investigate
		With power **ON** and engine **OFF**. Plug the Operator Presence System connector in, and with operator in the seat, check for approximately 3.0 to 4.5 volts on Operator Presence System connector pin 11 (+) and pin 12 (−).	Greater than 4.5 volts > Yes> 3 to 4.5 volts > yes > (next step below)	Check circuit SB for short to 5 volts or short to battery. Repair or replace.
Truck does not move with Operator Present.	Operator Presence System does not reset.	With power **ON**, engine **OFF**, service brake applied, and the Operator Presence System connector unplugged, check for battery voltage on Operator Presence System connector pin 3 and pin 1.	Battery voltage >No> Battery voltage >yes> (next step below)	Check ground and power wiring for open circuits. Check connectors, service brake switch, and brake light relay for an open circuit. Check left hand instrument cluster fuse for an open circuit. Repair or replace.
		With power **ON**, engine **OFF**, service brake not applied, and the Operator Presence System connector unplugged, check for battery voltage on Operator Presence System connector pin 3 and pin 1.	Battery voltage >yes>	Check power wiring or connectors for short to battery. Service Brake switch circuit shorted. Repair or replace.
Truck can move without Operator Present.	Operator Presence System is detecting a false seat presence signal.	With power **ON** and engine **OFF**. Plug the Operator Presence System connector in with no operator in the seat, check for approximately 3.0 to 4.5 volts on Operator Presence System connector pin 11 (+) and pin 12 (−).	3 to 4.5 volts > Yes> 3 to 4.5 volts > No> (next step below)	Stuck seat mechanism Repair Stuck seat sensor Replace

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10 minutes when the hydraulic oil is 30°C (90°F). If the oil temperature is 70°C (160°F), the maximum speed that the carriage can lower is 150 mm (6 in.) per 10 minutes.

3. Check the lift cylinder for internal leaks. Remove the load from the forks. Install a gate valve in the supply line between the main control valve and the mast. Put a capacity load on the forks again. Raise the carriage 1 m (3 ft). Close the gate valve. If the carriage or mast lower slowly, the seals in the lift cylinders have leaks.

4. If the carriage does not move, open the gate valve and check the movement again. If the carriage lowers when the gate valve is open, check for leaks in the hydraulic lines and fittings. If no leaks are found, the main control valve can have a defect. Remove the load from the forks.

NOTE: See the procedures in the mast repair sections for lift chain adjustments, mast adjustments, carriage adjustment, and header hose roller adjustment.

Specifications

Table 2. Cylinder Retainer Torque Specifications and Weight Guide

Rod Diameter		Typical Outer Retainer Torque Values		Lifting Mechanism
mm	in.	N•m	lbf ft	
One-Stage Cylinders for Lift Trucks with Less than 7000 kg (15,000 lb) Capacity				
57.2	2.25	373-441	275-325	Use crane and slings with at least 500 kg (1000 lb) capacity to lift the cylinder.
63.5	2.50	203-271	150-200	
69.9	2.75	373-441	275-325	
76.2	3.00	407-475	300-350	
81.3	3.20	407-475	300-350	
88.9	3.50	475-452	350-400	
101.6	4.00	407-475	300-350	
114.3	4.50	610-678	450-500	
One-Stage Cylinders for Lift Trucks with More than 7000 kg (15,000 lb) Capacity				
108.0	4.25	Tighten retainer or packing gland nut. Oil leakage is not controlled by the torque on the retainer.		Use crane and slings with at least 1000 kg (2000 lb) capacity to lift the cylinder.
113.4	5.25			
241.3	9.50			Use crane and slings with at least 2000 kg (4000 lb) capacity to lift the cylinder.
254.0	10.00			

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