SM-612 Rv 1
CGC/CGP 40/70



ISO 9001 CERTIFIED CLARK

CLARK Technical Publications Lexington, KY 40508

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Section 2.
The Planned Maintenance Program

This Section defines a set of basic service procedures, known as the "Planned Maintenance Program," and describes a systematic approach for performing them.

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4.3L ENGINE SPECIFICATIONS

GENERAL DATA:				
Type				V6
Displacement				4.3L (262 C.I.D.)
Bore				101.600 mm (4.00 in.)
Stroke				88.392 mm (3.48 in.)
Compression Ratio				9.10 to 1
Firing Order				1 - 6 - 5 - 4 - 3 - 2
Oil Pressure (Minimum HOT)				41 kPa (6 psi) / 1000 RPM - 124 kPa (18 psi) / 2000 RPM
CYLINDER BORE:				
Diameter				101.618 - 101.643 mm (4.0007 - 4.0017 in.)
Out of Round	Production			0.025 mm (0.001 in.) Maximum
	Service			0.051 mm (0.002 in.) Maximum
Taper	Production	Thrust Side		0.0125 mm (0.0005 in.) Maximum
		Relief Side		0.025 mm (0.001 in.) Maximum
	Service			0.025 mm (0.001 in.) Maximum
PISTON:				
Clearance	Production			0.018 - 0.061 mm (0.0007 - 0.0024 in.)
	Service Limit			0.061 mm (0.0024 in.) Maximum
PISTON RING:				
Compression	Groove Clearance	Production	Top	0.030 - 0.081 mm (0.0012 - 0.0032 in.)
			Second	0.030 - 0.081 mm (0.0012 - 0.0032 in.)
		Service Limit		0.107 mm (0.0042 in.) Maximum
	Gap	Production	Top	0.254 - 0.508 mm (0.010 - 0.020 in.)
			Second	0.254 - 0.635 mm (0.010 - 0.025 in.)
		Service Limit		0.889 mm (0.035 in.) Maximum
Oil	Groove Clearance	Production		0.051 - 0.178 mm (0.002 - 0.007 in.)
		Service Limit		0.202 mm (0.008 in.) Maximum
	Gap	Production		0.381 - 1.397 mm (0.015 - 0.055 in.)
		Service Limit		1.651 mm (0.065 in.)
PISTON PIN:				
Diameter				23.546 - 23.553 mm (0.9270 - 0.9273 in.)
Clearance in Piston	Production			0.005 - 0.018 mm (0.0002 - 0.0007 in.)
	Service Limit			0.025 mm (0.001 in.) Maximum
Fit in Rod				0.020 - 0.041 mm (0.0008 - 0.0016 in.) Interference
EXHAUST MANIFOLD:				
Surface Flatness				0.254 mm (0.010 in.) Maximum
INLET MANIFOLD:				
Surface Flatness				0.254 mm (0.010 in.) Maximum
CYLINDER HEAD:				
Surface Flatness				0.102 mm (0.004 in.) Overall
BALANCE SHAFT:				
Front Bearing Journal Diameter				54.986 - 55.001 mm (2.1648 - 2.1654 in.)
Rear Bearing Journal Diameter				38.085 - 38.100 mm (1.4994 - 1.500 in.)
Rear Bearing Journal Clearance				0.025 - 0.091 mm (0.001 - 0.0036 in.)

43SPEC1

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- Spool not centered; see spool remedies for correcting problems when spools do not return to neutral.
- Oil bypassing piston in cylinder; repair or replace cylinder.

Oil leaks at either end of main hydraulic valve spool

- Defective O-ring seals; rebuild valve.

Spring-centered spools do not return to neutral

- Broken springs; rebuild valve.
- Entrapped foreign particles; check and clean system and valve.
- Bent spool; replace with new valve section.
- Misalignment or binding of linkage; check and align/adjust linkage.

No relief valve action (high pressure)

- Small particles of dirt in relief valve subassembly; check, clean, and/or replace relief valve, clean hole.
- Relief valve subassembly installed backwards; reinstall correctly.

Load drops when spool is moved from neutral to a power position

- Dirt or foreign particles lodged between check valve ball and seat; check and clean.
- Sticking or scored check valve; clean if sticking, replace if scored, replace poppet.

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Upright noise

- Bent or broken components; inspect upright thoroughly and repair or replace components as required.
- Damaged upright roller; check condition of rollers and replace defective rollers.
- Roller scuffing rails; clean and lubricate rails.
- Roller (carriage or upright) shimming needs adjustment; check and adjust as required.
- Dry lift chain; lubricate chain.
- Dry hose sheave or rollers; check condition of all sheaves and rollers and lubricate as necessary.
- Damaged chain sheaves; check condition of chain sheaves and repair or replace.
- Excessive fork hanger or carriage fork bar wear; inspect and replace as necessary.
- Seals dry; lubricate rod.
- Seals dry - all primary cylinders; remove gland and add 100 ml (3.4 oz) of hydraulic oil to rod side of piston, see "Cylinder Removal, Shimming, Overhaul, and Replacement."

No lift, tilt, or auxiliary function

- Hydraulic fluid level low; check level and fill.
- Broken hoses or fittings; check and repair.
- Damaged or blocked sump strainer; check and clean.
- Hydraulic pump defective; see Group 29 for pump troubleshooting.
- Defective main hydraulic control valve; see Group 30 for valve troubleshooting.
- Defective upright load-lowering flow valve; disassemble valve, check and clean or replace.

No lift function but tilt operates

- Broken hoses or fittings; check and repair.
- Cylinder is damaged; inspect and repair.
- Main hydraulic control valve, lift section defective; see Group 30 for valve troubleshooting and service information.
- Upright load-lowering flow valve damaged; disassemble valve, check and clean or replace.

Load cannot be lifted to maximum height

- Hydraulic fluid level low, check level and fill.
- Debris in upright; check and clean.
- Hydraulic hose fittings loose or damaged; check and torque correctly (see Group 40 for specifications) or replace.
- Check cylinder for external leakage; replace cylinder if cracked.
- Cylinder shimming is incorrect; check and adjust shimming.
- Leakage within cylinders; on primary cylinders, remove rod and piston and clean check valves; on all cylinders clean and inspect/replace piston seals. See Section 5.
- By pass check valve on primary cylinders not functioning properly, remove rod and piston and clean check valves; also clean and inspect/replace piston seals. See Section 5.
- Hydraulic pump defective; see Group 29 for pump troubleshooting information.
- Upright rails binding:
  a. Perform a visual inspection and check for worn, or distorted parts, broken or cracked rails or tie-bars, correct chain and hosing placement and operation
  b. Check rollers for contamination and proper operation, perform roller clearance check and adjustment

Lift speed sluggish

- Hydraulic fluid level low; check level and fill.
- Broken hoses or fittings; check and repair.
- Pump inlet line restricted; remove from pump and clean.
- Damaged or binding upright roller; check condition of roller and replace if necessary.
- Internal leakage on piston-type lift and secondary cylinders (with load); perform cylinder checks listed under "Load cannot be lifted to maximum height."
- Hydraulic pump defective; see Group 29 for pump troubleshooting information.
- Defective main lift valve; see Group 30 for valve troubleshooting and service information.
- Defective velocity fuse; remove fuse from cylinder hydraulic port, clean and recheck for proper operation.
- Defective priority valve; see Group 30 for valve troubleshooting information.
- Defective upright load lowering flow valve; remove valve clean, inspect, and replace if necessary.

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GAS LPG or DIESEL
PLANNED MAINTENANCE REPORT

CODE: O.K. | Potential | Urgent

✓ = O.K.
x = Adjust (Not P.M.)
r = Repair or replace
s = Requires shop repair

DATE	HOUR METER
DATE LAST P.M.	HRS. LAST P.M.
CUST. P.O. NO.	

MODEL & SERIAL NO.
ATTACHMENT NO.

AUTHORIZED SIGNATURE | INSPECTOR | SPECIAL INSTRUCTIONS

A. TEST DRIVE MACHINE					
a. Drive Train Noise					
b. Steering Operation					
c. Service Brake Operation					
d. Inching Operation					
e. Transmission Operation					
f. Clutch Operation					
g. Hydraulic System Operation					
h. Engine Performance					
i. Parking Brake Operation					
j. Pedal Pads & Linkages					
k. Return to Neutral					
l. Pedestrian Warning Devices					
m. Dead Engine Service Brake					
00 ENGINE					
a. Mounting					
* b. Head Bolt Torque					
c. RPM - Idle					
Gov. No Load					
Tilt By-Pass					
d. Stall RPM					
Fwd Rev					
High Low					
e. Inspect Exhaust for Smoke					
01 CLEANING & LUBRICATION					
a. Air Clean Truck/Radiator					
b. Lubricate Truck					
01 ENGINE LUBRICATION					
a. Check for Leakage					
b. Check Oil Level					
* c. Drain & Replace Oil					
* d. Replace Oil Filter					
e. Filler Cap Condition					
f. Clean Crankcase Breather					
* g. Check/Replace PCV					
01 COOLING SYSTEM					
a. Coolant Level/Condition					
b. Temperature Protection					
c. Inspect Fan & Control					
* d. Inspect & Adjust Belts					
* e. Drain/Flush Radiator					
f. Coolant Leakage					
g. Inspect Water Pump					

02 FUEL SYSTEM					
a. Check Filler Cap					
b. Check Accelerator & Return Spring					
c. Choke Operation					
d. Fuel Leakage					
e. Inspect Tank Fitting LPG					
f. Lock Off Valve Operation - LPG					
g. Clean/Replace Filter					
h. Glow Plug Operation - Diesel					
i. Idle Up System					
02 AIR INTAKE & EXHAUST					
a. Air Filter Condition/Replace					
b. Hoses & Clamps					
c. Muffler & Exhaust					
06 & 08 TRANSMISSION					
a. Fluid Level					
* b. Condition of Fluid/Change					
c. Clean Air Vent					
* d. Replace Filter					
e. Fluid Leakage					
f. Inspect Control Linkage					
11 IGNITION & CRANKING SYSTEM					
a. Check Neutral Start					
b. Check Anti-Restart					
c. Distributor Condition					
* d. Point Condition/Dwell					
e. Check Engine Timing					
f. Cap and Rotor Condition					
* g. Wiring Condition					
h. Engine Shut Down System					
12 BATTERY AND CABLES					
* a. Clean & Check Terminals					
b. Fluid Level					
c. Cranking Voltage					
12 CHARGING SYSTEM					
a. Alternator/General Mounting					
* b. Inspect & Adjust Belts					
c. Check Charging Voltage					

13 GAUGES-LIGHTS-INDICATORS					
a. Hour Meter Operation					
b. Gauges - All Operate					
c. Lights - All Operate					
d. Wiring Condition					
e. Horn					
f. Operation of Accessories					
20 DRIVE AXLE					
* a. Differential Level					
b. Clean Air Vent					
c. Security of Mounting					
d. Check Wheel Bearings					
23 WHEELS AND TIRES					
a. Tighten Mounting Bolts					
b. Tire Condition					
RF LF					
RR LR					
c. Check Air Pressure					
23 BRAKE SYSTEM					
a. Check for Leakage					
b. Cylinder Fluid Level					
c. Clean Vent Cap					
d. Pedal Free Travel					
e. Pedal Drift					
f. Cylinder/Valve Mounting					
g. Service Brake Wear/Adjustment					
h. Parking Brake Wear/Adjustment					
i. Brake Line/Cable Condition					
26 STEER AXLE					
a. Security of Mounting					
b. Axle Stop Adjustment					
c. Drag Link Adjustment					
d. Articulation Stops					
e. Check Wheel Bearings					
26 STEERING SYSTEM					
a. Check for Leakage					
b. Oil Level - Condition					
c. Security of Mounting					
d. Tilt Column Operation					
e. Steering Control Adjustment					
29/30 HYDRAULIC SYSTEM					
a. Check for Leakage					
b. Fluid Level - Condition					
c. Clean/Replace Breather					

29/30 HYDRAULIC SYSTEM					
* d. Replace Filter					
e. Linkage Adjustment					
f. Hose Condition					
g. Lift Speed (In./Sec.)					
No Load					
Full Load					
h. Drift Test (In./Min.)					
Lift Cylinder					
Tilt Cylinder					
32 TILT CYLINDERS					
a. Check for Leakage					
b. Cylinder Rod Condition					
c. Mounting Security					
d. Tilt Cylinder Adjustment					
34 UPRIGHT-CARRIAGE					
a. Security of Mounting					
b. Roller Condition/Clearance					
c. Chain and Anchor Condition					
d. Chain Adjustment					
e. Latch and Stop Condition					
f. Cylinder Condition					
g. Forks, Locks, Stops					
h. Rail Condition					
i. Trunnion Ring Condition					
j. Check Free Lift Guide					
34 LOAD BACK REST					
a. Condition					
b. Security of Mounting					
38 SHEET METAL & CWT					
a. Decals-Missing/Condition					
b. Data Plate Condition					
c. Seat Mounting and Operation					
d. Seat Belts (If Equipped)					
e. Door and Deck Latches					
f. C/W Mounting Bolts					
g. Slip Resistance Surfaces					
39 OVERHEAD GUARD					
a. Condition					
b. Security of Mounting					
53 ATTACHMENTS					
a. Mounting Bolts					
b. Leakage					
c. Operation					

COMMENTS

*SEE MAINTENANCE INTERVAL IN P.M.A. MANUAL

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