

LIFT TRUCK WEIGHTS¹

MODEL	kg	lb
H3.50XL (H70XL)	5210	11,490
H4.00XL-5 (H80XL)	5475	12,075
H4.00XL-6 (H90XL)	6170	13,605
H4.50XL (H100XL)	6475	14,270
H5.00XL (H110XL)	6765	14,910
NOTES: ¹ Lift trucks equipped with overhead guard, two-stage mast*, carriage, load backrest, forks, gas engine, powershift transmission and operator. * 3020 mm (119.0 in) for H3.50-4.00XL-5 (H70-80XL) * 3390 mm (133.5 in) for H4.00XL-6, H4.50-5.00XL (H90-110XL)		

TIRE PRESSURE

BIAS PLY TIRES		
Tire Size	kPa	psi
7.00 x 12	793	115
300 x 15	862	125
250 x 15 -16 Ply	862	125
250 x 15 -18 Ply	965	140
7.50 x 15 -10 Ply	690	100
7.00 x 15 -10 Ply	690	100
7.00 x 15 -12 Ply	793	115
8.25 x 15 -12 Ply	690	100
29 x 8 -15m -12 Ply	862	125
RADIAL TIRES		
Tire Size	kPa	psi
7.00R12	1034	150
300R15	1034	150
250R15	1034	150
7.50R15	1034	150
8.25R15	1034	150

CAPACITIES

ITEM	QUANTITY
ENGINE OIL	
GM V-6	4.7 litre (5.0 qt)
Perkins 4.2482	8.5 litre (9.0 qt)
Perkins 1004-4	8.0 litre (8.5 qt)
COOLING SYSTEM	
GM V-6	15.1 litre (16.0 qt)
Perkins 4.2482	17.0 litre (18.0 qt)
Perkins 1004-4	15.1 litre (16.0 qt)
HYDRAULIC TANK	36.0 litre (38.0qt)
OIL CLUTCH SYSTEM	9.5 litre (10.0 qt)
POWERSHIFT TRANSMISSION	17 .0 litre (18 qt)
MANUAL TRANSMISSION AND DRIVE	14.7 litre (15.5 qt)
SPEED REDUCER AND DRIVE AXLE FOR POWER-SHIFT TRANSMISSION	7.6 litre (8.0 qt)
FUEL TANK	60.0 litre (16 gal)
BRAKE FLUID	0.2 litre (0.5 pt)

ELECTRICAL SYSTEM

ITEM	GM V-6 4.3	Perkins
All Models	12 volt,negative ground	12 volt,negative ground
Alternator Output (Hot)	38 amps @ 650 RPM	42 amps @ 650 RPM
Alternator Output (Hot)	62 amps @2200 RPM	59 amps @2200 RPM
Ignition Timing Gasoline LPG	0° BTDC 0° BTDC	16° BTDC
Spark Plugs	AC R48TS	
Spark Plug Gap	0.89 mm (0.035 in)	

STALL SPEEDS (RPM)

ENGINE	NEW ENGINE	ENGINE WITH 50 HOURS
GM V-6 Gasoline	1710	1820
LPG	1700	1800
Perkins	1730	1820

ENGINE SPECIFICATIONS

ITEM	GM V-6 4.3	PERKINS 4.2482	PERKINS 1004-4
No. of Cylinders	6	4	4
Firing Order	1-6-5-4-3-2	1-3-4-2	1-3-4-2
Bore and Stroke	101.6 mm x 88.39 mm (3.99 in x 3.48 in)	101 mm x 127 mm (3.975 in x 5.00 in)	100 mm x 127 mm (3.937 in x 5.00 in)
Displacement	4.3 litre (262.4 cu in)	4.06 litre (244.0 cu in)	4.06 litre (244.0 cu in)
Compression Ratio	9.3:1	18:1	16.5:1
Oil Pressure	207 to 380 kPa (30 to 55 psi) @2000 rpm	276 kPa (40 psi) min. @1200 rpm	280 kPa (40 psi) min. @ 2200 rpm
Valve Clearance (Intake/Exhaust)	Not Adjustable	0.20/0.45 mm (0.008/0.018 in) Cold	0.20/0.45 mm (0.008/0.018 in) Cold
Idle Speed	625 to 675 rpm	725 to 775 rpm	725 to 775 rpm
Governed Speed @ No Load	2400 to 2500 rpm (Early Models P.S. and O.C.)	2400 to 2500 rpm	2400 to 2500 rpm
Governed Speed @ No Load	O.C. 2400 to 2500 rpm P.S. 2110 to 2210 rpm (Fuel Injected and MSTs Models)	2400 to 2500 rpm	2400 to 2500 rpm
Thermostat Range	82° C (180° F)	71 to 86°C (167 to 187°F)	71 to 86°C (167 to 187°F)
Cooling System Pressure	103 kPa (15 psi)	88 kPa (13 psi)	103 kPa (15 psi)
Fuel pump Pressure	—	42 to 70 kPa (6 to 10 psi)	42 to 70 kPa (6 to 10 psi)

HYDRAULIC SYSTEM

ITEM	SPECIFICATION
HYDRAULIC PUMP Type Priority Flow Capacity	Gear 17 litre/min @ 9.7 Mpa (4.5 gal/min @1400 psi) 89 litre/min @ 20.7 Mpa (23.5 gal/min @ 3000 psi)
RELIEF PRESSURES *Steering (At Pump) @Lift Circuit(At Control Valve) @Tilt and Auxiliary Circuit (At Control Valve)	9.30 to10.0 MPa (1350 to 1450 psi) 21.4 MPa (3100 psi) 15.5 MPa (2250 psi)
* Pressures with oil at 90°C (194°F) and engine at 2500 rpm @ Pressures with oil at 49°C (120°F) and engine at 2000 rpm	

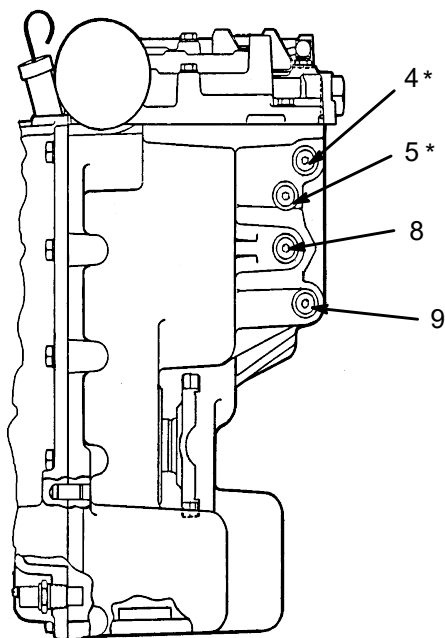
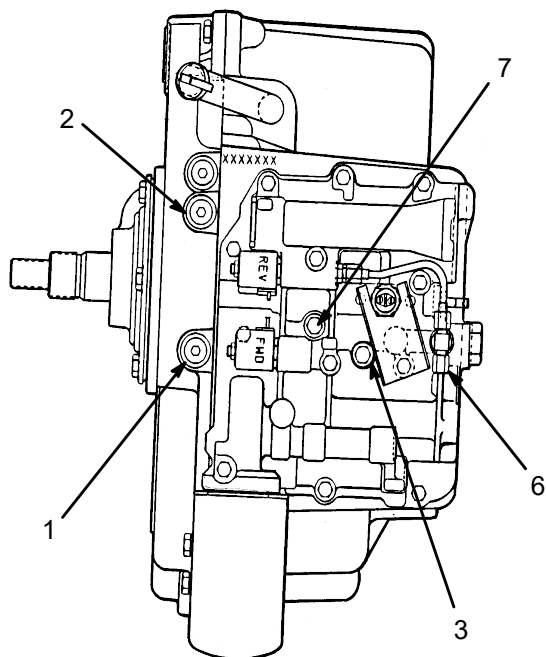
MAST SPEEDS

TWO-STAGE MAST								
UNIT	LIFTING				LOWERING			
	No Load		Rated Load		No Load		Rated Load	
	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min
H3.50-4.00XL5* H70-80XL	.51	100	.46	90	.48	94	.54	106
	FREE LIFT MAST							
	.46	91	.41	81	.43	84	.48	94
	THREE-STAGE MAST							
	.48	95	.43	85	.45	88	.50	99

MAST SPEEDS

TWO-STAGE MAST								
UNIT	LIFTING				LOWERING			
	No Load		Rated Load		No Load		Rated Load	
	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min
H4.00XL-6 H4.50-5.00XL (H90-110XL)	.38	75	.34	67	.47	80	.46	91
	THREE-STAGE MAST							
	.36	71	.32	64	.37	72	.44	86

* H4.00XL-6 rated at 4,000 kg at 600 mm



*Transmissions from earlier production

PORT NO.	TRANSMISSION PRESSURES*	
1	SYSTEM PRESSURE	1032 to 1312 kPa (150 to 190 psi)
2	TORQUE CONVERTER PRESSURE	765 to 903 kPa (111 to 131 psi)
3, 4*, 5*	CLUTCH PRESSURE	827 to 965 kPa (120 to 140 psi)
6, 7	SOLENOID PRESSURE	827 to 1103 kPa (120 to 160 psi)
8†, 9†	LUBRICATION PRESSURE	117 to 187 kPa (17 to 27 psi)
See Note‡		96 to 138 kPa (14 to 20 psi)
*Oil temperature at least 82°C (180°F) and engine speed at 2000 rpm.		

†Earlier production (with ports 4 and 5)

‡Later production (without ports 4 and 5): These transmissions do not have a regulator in the lubrication circuit for each clutch. An internal restriction controls lubrication pressure. The lubrication pressure for the FORWARD clutch is higher than the lubrication pressure for the REVERSE clutch. Checks at 8 and 9 will indicate pressure, but checks for the correct lubrication pressure at each clutch are not necessary.

1. SYSTEM PRESSURE CHECK PORT
2. TORQUE CONVERTER CHECK PORT
3. COMMON CLUTCH PRESSURE CHECK PORT
4. REVERSE CHECK PORT*
5. FORWARD CHECK PORT*
6. REVERSE SOLENOID CHECK PORT
7. FORWARD SOLENOID CHECK PORT
8. FORWARD LUBRICATION CHECK PORT
9. REVERSE LUBRICATION CHECK PORT

FIGURE 1. CHECK THE TRANSMISSION OIL PRESSURES

TORQUE SPECIFICATIONS

ITEM	SPECIFICATION
FRAME Counterweight Capscrew	680 N.m (500 lb _f ft)
MASTS Pivot Pin Capscrews Side Shift Carriage Keeper Plate Capscrews Side Roller Mount Capscrews	225 N.m (166 lb _f ft) 90 N.m (66 lb _f ft) 90 N.m (66 lb _f ft)
TILT CYLINDERS Piston Nut Retainer Rod End Lock Capscrews Anchor Pin Retainer Capscrew	400 to 440 N.m (295 to 325 lb _f ft) 400 to 500 N.m (295 to 369 lb _f ft) 77 N.m (57 lb _f ft) 77 N.m (57 lb _f ft)
MAIN CONTROL VALVE Through Bolt Nuts (5/16 in) Through Bolt Nuts (3/8 in)	19 N.m (14 lb _f ft) 45 N.m (33 lb _f ft)
HYDRAULIC SYSTEM Capscrews for Special Blocks for Pump Drive Train	19 N.m (14 lb _f ft)
BRAKE SYSTEM Back Plate Nuts Brake Drum to Hub Nuts Brake Valve Mount Screws	122 N.m (90 lb _f ft) 285 N.m (210 lb _f ft) 38 N.m (28 lb _f ft)
DRIVE AXLE Drive Axle to Frame Capscrews Axle Spindle to Housing Capscrews Hub to Brake Drum Nuts Wheel Bearing Lock Nut Axle Shaft Capscrews Wheel Bearing Adjustment Nut	1000 N.m (740 lb _f ft) 225 N.m (166 lb _f ft) 285 N.m (210 lb _f ft) 136 N.m (100 lb _f ft) 225 N.m (166 lb _f ft) 200 N.m (150 lb _f ft) Initial 34 N.m (25 lb _f ft) Final
STEERING SYSTEM Axle Mount Capscrews Bearing Cap for Spindle Steering Cylinder Capscrews Wheel Bearings Tie Rod Nut	88 N.m (65 lb _f ft) 44 N.m (32 lb _f ft) 225 N.m (165 lb _f ft) 200 N.m (150 lb _f ft) Initial 34 N.m (25 lb _f ft) Final 163 N.m (120 lb _f ft)

TORQUE SPECIFICATIONS

ITEM	SPECIFICATION
ENGINE	
PERKINS 4.2482	
Engine Mount to Engine Capscrews	56 N.m (41 lb _f ft)
Flywheel Housing Capscrews	50 N.m (37 lb _f ft)
Cylinder Head	136 N.m (100 lb _f ft)
Connecting Rod Nuts	102 N.m (75 lb _f ft) Silver 129 N.m (95 lb _f ft) Black
Main Bearing Capscrews	244 N.m (180 lb _f ft)
Camshaft Gear Capscrew	68 N.m (50 lb _f ft)
Crankshaft Capscrew	406 N.m (300 lb _f ft)
Idler Gear Capscrew	41 N.m (30 lb _f ft)
Flywheel Capscrews	120 N.m (90 lb _f ft)
Fuel Injector Capscrews	15 N.m (12 lb _f ft)
Fuel Tube Nuts	20 N.m (15 lb _f ft)
Cold Start Aid	13 N.m (10 lb _f ft)
PERKINS 1004-4	
Engine Mount to Engine Capscrews	56 N.m (41 lb _f ft)
Flywheel Hoousing Capscrews	75 N.m (55 lb _f ft)
Cylinder Head	110 N.m (80 lb _f ft)
Connecting Rod Nuts	155 N.m (114 lb _f ft)
Main Bearing Capscrews	265 N.m (196 lb _f ft)
Camshaft Gear Capscrew	78 N.m (58 lb _f ft)
Idler Gear Capscrews	44 N.m (33 lb _f ft)
Flywheel Capscrews	120 N.m (88 lb _f ft)
Fuel Injector Capscrews	12 N.m (9 lb _f ft)
Fuel Tube Nuts	18 N.m (14 lb _f ft)
Cold Start Aid	13 N.m (10 lb _f ft)

TORQUE SPECIFICATIONS GM V-6 4.3 litre

Alternator Pulley	61 N.m (45 lb _f ft)
Balance Shaft Gear Bolt	20 N.m (15 lb _f ft) Plus 35 Degrees
Balance Shaft Retainer Bolts	14 N.m (10 lb _f ft)
Camshaft Retainer Screws	14 N.m (10 lb _f ft)
Camshaft Spocket Bolts	28 N.m (21 lb _f ft)
Camshaft Spocket Nut	28 N.m (21 lb _f ft)
Chain Control Block For Hydraulic Pump Drive	19 N.m (14 lb _f ft) with Adhesive Sealant
Connecting Rod Cap	44 N.m (32 lb _f ft)
Coolant Pump To Engine Block	10 N.m (7 lb _f ft)
Cooling Fan To Pulley	24 N.m (18 lb _f ft)
Cylinder Head	Step one: 34 N.m (25 lb _f ft) Step two: 61 N.m (45 lb _f ft) Step three: 90 N.m (65 lb _f ft)
Distributor Mount Bolt	34 N.m (25 lb _f ft)
Exhaust Manifold	Center Two Bolts: 36 N.m (26 lb _f ft) All Other Bolts: 28 N.m (20 lb _f ft)
Flywheel	80 N.m (60 lb _f ft)
Flywheel Housing	44 N.m (35 lb _f ft)
Inlet Manifold To Cylinder Head	48 N.m (35 lb _f ft)
Main Bearing Cap	106 N.m (78 lb _f ft)
Motor Mount to Engine	44 N.m (35 lb _f ft)
Motor Mount to Frame	53 N.m (39 lb _f ft)
Oil Pump Cover	14 N.m (10 lb _f ft)
Oil Pump To Crankcase	30 N.m (22 lb _f ft)
Oil Pressure Switch	27 N.m (20 lb _f ft)
Oil Screen Support To Crankcase	50 N.m (37 lb _f ft)
Oil Sump To Crankcase (¹ / ₄ -20)	10 N.m (7 lb _f ft)
Oil Sump To Crankcase (⁵ / ₁₆ -18)	19 N.m (14 lb _f ft)
Rear Oil Seal Retainer Screws and Nut	15 N.m (11 lb _f ft)
Rocker Arm Cover	10 N.m (7 lb _f ft)
Rocker Arm Nuts (With Rocker Arm Studs That Screw Into The Head)	27 N.m (20 lb _f ft)
Rocker Arm Studs	44 N.m (35 lb _f ft)
Side Cover To Engine Block	10 N.m (7 lb _f ft)
Thermostat Housing	27 N.m (20 lb _f ft)
Timing Cover	14 N.m (10 lb _f ft)
Valve Lifter Retainer Bolts	16 N.m (12 lb _f ft)
Vibration Damper	95 N.m (70 lb _f ft)