

## LIFT TRUCK WEIGHTS\*

UNIT	KILOGRAMS	POUNDS
S2.00XL (S40XL)	3390	7460
S2.50XL (S50XL)	3750	8250
S3.00XL (S60XL)	4325	9515

\* Lift trucks equipped with overhead guard, mast, carriage, load backrest extension, forks, gasoline engine and operator.

S2,00–2.50XL (S40–50XL) has 3760 mm (148 in) two-stage mast.  
 S3.00XL (S60XL) has 3600 mm (142 in) two-stage mast.

## HYDRAULIC SYSTEM

LIFT AND STEERING SYSTEM	
<p><b>PUMP TYPE</b></p> <p><b>MAIN FLOW (Lift, Tilt &amp; Attachment)*</b>                      A187** @ 2000 rpm with no load                          Mazda/Isuzu                          GM 4-153                      B187** @ 2000 rpm with no load                          Mazda/Isuzu                          GM 4-181 engine</p> <p><b>CONTROLLED FLOW (Steering), all units</b></p>	<p style="text-align: center;">Gear Pump with Flow Control Valve</p> <p style="text-align: center;">46.5 litres/min (12.3 gpm)                      54.1 litres/min (14.3 gpm)</p> <p style="text-align: center;">44.7 litres/min (11.8 gpm)                      54.1 litres/min (14.3 gpm)</p> <p style="text-align: center;">6.4 litres/min (1.7 gpm)</p>
<p><b>LIFT SYSTEM RELIEF PRESSURE*</b>                      Control Valves (3 plunger type)                      with one Relief Value</p> <p style="padding-left: 40px;">Control Valves (4 plunger type)                      with two Relief Valves                      Primary</p> <p style="padding-left: 40px;">Secondary</p>	<p style="text-align: center;">19.30 to 20.00 MPa (2800 to 2900 psi) at full flow.                      Check at inlet line to control valve port.</p> <p style="text-align: center;">19.30 to 20.00 MPa (2800 to 2900 psi) at full flow.                      Check at inlet line to control valve with                      Lift spool in the “full lift” position</p> <p style="text-align: center;">15.15 to 15.85 MPa (2200 to 2300 psi) at full flow.                      Check at inlet line to control valve with                      Tilt spool in the “full tilt” position</p>
<p><b>STEERING RELIEF PRESSURE, all units *</b></p>	<p style="text-align: center;">9.9 to 10.7 MPa (1435 to 1552 psi) @ 1000rpm</p>

\* Oil temperature at 55 to 65° C (130 to 150° F). Oil with different viscosity will change “Flow” values.  
 \*\* Lift Truck Serial Number Codes

This section is for the following models:  
 S2.00–3.00XL (S40–60XL)

## ELECTRICAL SYSTEM

ITEM	MAZDA M4-121G (A187 & B187)*	ISUZU C240 (A187 & B187)*	GM 4-153 (A187)*	GM 4-181 (B187)*
All Models	12 volt, Negative Ground	12 volt, Negative Ground	12 volt, Negative Ground	
Alternator Output Hot	35 Amps (A187)* or 56 Amps (B187)* @ 3000 rpm	35 Amps @ 3000 rpm	56.0 Amps @ 2600 rpm ** 37.8 Amps @ 2600 rpm ***	
Ignition System Point Setting	0.4 to 0.5 mm (0.016 to 0.020 in) Later Units, N/A****	N/A	N/A****	
Spark Plugs Type	NGK BP-2E or NIPPON DENSO W9EPR	N/A	AC R46TS or Champion RBL 17Y	
Gap	0.7 to 0.8 mm (0.028 to 0.032 in)		11.1 mm (0.045 in)	
<p>* Lift Truck Serial Number Codes.  ** Lift truck with a G or LP rating (high idle).  *** Lift truck with a GS or LPS rating (high idle).  **** Electronic ignition system.  N/A = Not Applicable</p>				

## CAPACITIES

ITEM	QUANTITY
ENGINE OIL with Filter	
GM 4-153/4-181	4.3 litre (4.5 qt)
Mazda M4-121G	5.2 litre (5.5 qt)
Isuzu C240	5.2 litre (5.5 qt)
COOLING SYSTEM	
GM 4-153	11.4 litre (12.0 qt)
GM 4-181	11.0 litre (11.6 qt)
Mazda M4-121G	7.6 litre (8.0 qt)
Isuzu C240	8.5 litre (9.0 qt)
HYDRAULIC SYSTEM	36.0 litre (38.1 qt)
HYDRAULIC TANK	30.3 litre (32.0 qt)
TRANSMISSION	7.6 litre (8.0 qt)
DIFFERENTIAL	3.8 litre (4.0 qt)
FUEL TANK	38.6 litre (10.2 gal)
BRAKE FLUID	0.2 litre (0.5 pt)

(More Content includes: Brake system, Capacities, and specifications, Frame, Hydraulic, System, Industrial battery, Main control, Valve, Mast repair, Fasteners, Schematics diagrams, Steering axle, Steering system, Wire harness repair And more)

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**MAST SPEEDS  
(MAZDA Gasoline/LPG – A187\*& B187\* Units)**

<b>VISTA FREE-LIFT MAST</b>								
<b>UNIT</b>	<b>LIFTING</b>				<b>LOWERING</b>			
	<b>NO LOAD</b>		<b>RATED LOAD</b>		<b>NO LOAD</b>		<b>RATED LOAD</b>	
	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>
S2.00XL (S40XL)	.50	98	.45	89	.41	81	.49	96
S2.50XL (S50XL)	.50	98	.44	87	.41	81	.49	96
S3.00XL (S60XL)	.50	98	.42	83	.41	81	.48	94
<b>VISTA TWO-STAGE MAST</b>								
S2.00XL (S40XL)	.52	102	.47	93	.45	89	.46	91
S2.50XL (S50XL)	.52	102	.46	91	.45	89	.46	91
S3.00XL (S60XL)	.52	102	.44	87	.45	89	.49	96
<b>VISTA THREE-STAGE MAST</b>								
S2.00XL (S40XL)	.50	98	.45	89	.43	85	.45	89
S2.50XL (S50XL)	.50	98	.43	85	.43	85	.45	89
S3.00XL (S60XL)	.50	98	.41	81	.43	85	.46	91
* Lift Truck Serial Number Code								

**MAST SPEEDS  
(ISUZU Diesel – A187\*& B187\* Units)**

<b>VISTA FREE-LIFT MAST</b>								
<b>UNIT</b>	<b>LIFTING</b>				<b>LOWERING</b>			
	<b>NO LOAD</b>		<b>RATED LOAD</b>		<b>NO LOAD</b>		<b>RATED LOAD</b>	
	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>
S2.00XL (S40XL)	.40	91	.36	75	.41	81	.49	96
S2.50XL (S50XL)	.40	91	.37	73	.41	81	.49	96
S3.00XL (S60XL)	.40	91	.35	67	.41	81	.48	94
<b>VISTA TWO-STAGE MAST</b>								
S2.00XL (S40XL)	.42	94	.38	81	.45	89	.46	91
S2.50XL (S50XL)	.42	94	.37	79	.45	89	.46	91
S3.00XL (S60XL)	.42	94	.36	75	.45	89	.49	96
<b>VISTA THREE-STAGE MAST</b>								
S2.00XL (S40XL)	.40	91	.38	75	.43	85	.45	89
S2.50XL (S50XL)	.40	91	.37	71	.43	85	.45	89
S3.00XL (S60XL)	.40	91	.35	65	.43	85	.46	91
* Lift Truck Serial Number Code								

**MAST SPEEDS  
(GM 4-153 Gasoline/LPG – A187\*)**

<b>VISTA FREE-LIFT MAST</b>								
<b>UNIT</b>	<b>LIFTING</b>				<b>LOWERING</b>			
	<b>NO LOAD</b>		<b>RATED LOAD</b>		<b>NO LOAD</b>		<b>RATED LOAD</b>	
	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>
S2.00XL (S40XL)	.58	114	.52	102	.50	98	.45	89
S2.50XL (S50XL)	.58	114	.51	100	.50	98	.45	89
S3.00XL (S60XL)	.58	114	.49	96	.50	98	.45	89
<b>VISTA TWO-STAGE MAST</b>								
S2.00XL (S40XL)	.60	118	.54	106	.45	89	.46	91
S2.50XL (S50XL)	.60	118	.53	104	.45	89	.46	91
S3.00XL (S60XL)	.60	118	.51	100	.45	89	.46	91
<b>THREE-STAGE MAST</b>								
S2.00XL (S40XL)	.58	114	.51	100	.50	98	.45	89
S2.50XL (S50XL)	.58	114	.50	98	.50	98	.45	89
S3.00XL (S60XL)	.58	114	.49	96	.50	98	.45	89
* Lift Truck Serial Number Code								

**MAST SPEEDS  
(GM 4-181 Gasoline/LPG – B187\*)**

<b>VISTA FREE-LIFT MAST</b>								
<b>UNIT</b>	<b>LIFTING</b>				<b>LOWERING</b>			
	<b>NO LOAD</b>		<b>RATED LOAD</b>		<b>NO LOAD</b>		<b>RATED LOAD</b>	
	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>	<b>m/sec</b>	<b>ft/min</b>
S2.00XL (S40XL)	.58	114	.52	102	.41	81	.49	96
S2.50XL (S50XL)	.58	114	.51	100	.41	81	.49	96
S3.00XL (S60XL)	.58	114	.49	96	.41	81	.48	94
<b>VISTA TWO-STAGE MAST</b>								
S2.00XL (S40XL)	.60	118	.54	106	.45	89	.46	91
S2.50XL (S50XL)	.60	118	.53	104	.45	89	.46	91
S3.00XL (S60XL)	.60	118	.51	100	.45	89	.49	96
<b>THREE-STAGE MAST</b>								
S2.00XL (S40XL)	.58	114	.51	100	.43	85	.45	89
S2.50XL (S50XL)	.58	114	.50	98	.43	85	.45	89
S3.00XL (S60XL)	.58	114	.49	96	.43	85	.46	91
* Lift Truck Serial Number Code								

## MAST CREEP SPEEDS

LIFT/TILT	CREEP SPEEDS
Lift, at Carriage Tilt, at Tilt Cylinder	* 33.0 mm (1.30 in) in 10 minutes * 21.5 mm (0.84 in) in 10 minutes
*Hydraulic Oil Temperature 30° C (86° F). This value will triple when oil temperature is 70° C (158° F).	

## WHEELS AND TIRES

MODEL	DRIVE TIRES	STEER TIRES
S2.00XL (S40XL)	18 x 7.00 x 12.12	16 x 5.00 x 10.5
S2.50XL (S50XL)	18 x 8.00 x 12.12	16 x 5.00 x 10.5
S3.00XL (S60XL)	18 x 8.00 x 12.12	16 x 6.00 x 10.5
Wheel Nut Torque		240 to 305 N.m (175 to 225 lbf ft)

## TRANSMISSION PRESSURES

Pressure	PORT 1 Transmission Pump	PORT 2 Forward Clutch	PORT 3 Reverse Clutch	PORT 4 Torque Converter	PORT 5 Lubrication Pressure	PORT 6 Modulator Pressure
kPa (psi)	965 to 1170 (140 to 170)	724 to 860 (105 to 125)	724 to 860 (105 to 125)	724 to 860 (105 to 125)	105 to 176 (15 to 25)	Pressure Variation

**NOTES:**

FOR LATER MODELS  
(HYSTER TRANSMISSION ONLY).

All pressures are taken at 2000 rpm with oil temperature at 50° C (120° F).

The difference in the Forward and Reverse clutch pressures must not be more than 70 kPa (10 psi).

TEST PORT 1 – PRESSURE FROM THE TRANSMISSION PUMP  
 TEST PORT 2 – PRESSURE TO THE FORWARD CLUTCH  
 TEST PORT 3 – PRESSURE TO THE REVERSE CLUTCH  
 TEST PORT 4 – OIL PRESSURE TO THE TORQUE CONVERTER  
 TEST PORT 5 – OIL PRESSURE FROM THE OIL COOLER  
 TEST PORT 6 – MODULATOR PRESSURE

\* On transmissions before serial number, T42M 3040 (and one unit T42M 3068) test ports 3 and 5 are reversed.

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## ENGINE SPECIFICATIONS

ENGINE	MAZDA M4-121G (A187 & B187)*	ISUZU C240 (A187 & B187)*
NUMBER OF CYLINDERS	4	4
FIRING ORDER	1-3-4-2	1-3-4-2
BORE AND STROKE	82 mm x 94 mm (3.23 in x 3.70 in)	86 mm x 102 mm (3.39 in x 4.02 in)
DISPLACEMENT	1985 cm <sup>2</sup> (121.1 in <sup>2</sup> )	2369 cm <sup>2</sup> (144.5 in <sup>2</sup> )
COMPRESSION RATIO	8.0:1 (A187)* 8.6:1 (B187)*	20.0:1
COMPRESSION PRESSURE	1075 kPa (156 psi) @ 200 rpm	3040 kPa (441 psi) @ 200 rpm
OIL PRESSURE	450 kPa (65 psi) Min. @ 3000 rpm	390 kPa (57 psi) Min. @ 1000 rpm
TIMING	13° BTDC @ 625 rpm	14° BTDC Static
IDLE SPEED	600 to 650 rpm	600 to 650 rpm
GOVERNOR SPEED (No Load)	2700-2800 rpm	2500 to 2600 rpm
STALL SPEED **	2000 to 2100 rpm (Gasoline) 1950 to 2050 rpm (LPG)	2100 to 2200 rpm
THERMOSTAT RANGE	75 to 78° C (167 to 172° F)	75 to 78° C (167 to 172° F)
COOLING SYSTEM PRESSURE	103 kPa (15psi)	103 kPa (15psi)
VALVE CLEARANCE Intake and Exhaust	0.3 mm (0.012 in) Hot	0.45 mm (0.018 in) Cold
FUEL INJECTOR PRESUURE	N/A	11.95 MPa (1706 psi)
FUEL INJECTION TIMING	N/A	14° BDTC
* Lift Truck Serial Number Codes	** Engines with 30 hours of operation or more	

## ENGINE SPECIFICATIONS

ENGINE	GM 4-153 (A187)*	GM 4-181 (B187)*
NUMBER OF CYLINDERS	4	4
FIRING ORDER	1-3-4-2	1-3-4-2
BORE AND STROKE	99 mm x 90 mm (3.88 x 3.53 in)	102 mm x 91 mm (4.00 x 3.60 in)
DISPLACEMENT	2507 cm <sup>2</sup> (153 in <sup>2</sup> )	2966 cm <sup>2</sup> (181 in <sup>2</sup> )
COMPRESSION RATIO	8.25:1	8.0:1
COMPRESSION PRESSURE	760 kPa (110 psi) @ 200 rpm	758 kPa (110 psi) @ 200 rpm
OIL PRESSURE	140 kPa (20 psi) Minimum @ 1200 rpm	138 to 207 kPa (20 to 30 psi) Minimum @ 1200 rpm
TIMING	8° (BTDC) @ 600 rpm	0° (TDC) <sup>***</sup> @ 600 rpm
IDLE SPEED	600 to 650 rpm	550 to 600 rpm
GOVERNOR SPEED (No Load)	2550 to 2650 rpm	2700 to 2800 rpm
STALL SPEED **	1900 rpm (Gasoline) 1800 rpm (LPG)	1950 to 2050 rpm (Gasoline) 1850 to 1950 rpm (LPG)
THERMOSTAT RANGE	83° C (180° F)	82° C (180° F)
COOLING SYSTEM PRESSURE	103 kPa (15 psi)	88 kPa (13 psi)
VALVE CLEARANCE Intake and Exhaust	One turn down from zero clearance.	One turn down from zero clearance.
* Lift Truck Serial Number Codes		*** With initial timing connector and vacuum advance hose disconnected
** Engines with 30 hours of operation or more		



## TORQUE SPECIFICATIONS

ITEM	SPECIFICATION
<b>FRAME</b> Counterweight Capscrews Engine Mount to Frame	555 N.m (410 lbf ft) 53 N.m (39 lbf ft)
<b>ENGINE (ISUZU C240)</b> Cylinder Head Bolts Crankshaft Pulley Bolt Connecting Rod Cap Bolt Flywheel Bolts Main Bearing Bolts Camshaft Gear Bolt Camshaft Thrust Plate Bolt Idler Gear Bolt Engine Mount to Engine	78 N.m (58 lbf ft) 167 N.m (123 lbf ft) 81 N.m (60 lbf ft) 108 N.m (80 lbf ft) 160 N.m (120 lbf ft) 108 N.m (80 lbf ft) 19 N.m (14 lbf ft) 26 N.m (19 lbf ft) 53 N.m (39 lbf ft)
<b>ENGINE (MAZDA M4-121G)</b> Cylinder Head Bolts Main Bearing Cap Rod Bearing Cap Timing Gear Case Flywheel Housing Flywheel Rocker Arm Support Engine Mount to Engine	88 N.m (65 lbf ft) 81 to 88 N.m (60 to 65 lbf ft) 47 to 52 N.m (35 to 38 lbf ft) 16 to 23 N.m (12 to 17 lbf ft) 28 to 41 N.m (20 to 30 lbf ft) 58 to 64 N.m (43 to 47 lbf ft) 28 to 41 N.m (21 to 30 lbf ft) 56 N.m (41 lbf ft)
<b>ENGINE (GM 4-153)</b> Cylinder Head Capscrews Main Bearing Capscrews Piston Rod Cap Nuts Flywheel Engine Mount to Flywheel Housing Engine Mount to Engine	130 N.m (95 lbf ft) 90 N.m (65 lbf ft) 50 N.m (35 lbf ft) 80 N.m (60 lbf ft) 75 N.m (55 lbf ft) 47 N.m (35 lbf ft)
<b>ENGINE (GM 4-181)</b> Cylinder Head Capscrews Main Bearing Capscrews Piston Rod Cap Nuts Crankshaft Pulley Capscrews Flywheel Engine Mount to Engine	130 N.m (95 lbf ft) 90 N.m (65 lbf ft) 50 N.m (35 lbf ft) 80 N.m (60 lbf ft) 80 N.m (60 lbf ft) 44 N.m (33 lbf ft)
<b>TRANSMISSION</b> Drive Plate to Torque Converter Torque Converter Housing to Transmission Torque Converter Housing to Engine Front Cover to Transmission  Differential Adapter to Transmission Oil Pump to Front Cover Differential Case Halves Ring Gear  Pinion (Prevail Nut Torque) Differential Bearing Caps Retainers for Adjusting Nuts	45 N.m (33 lbf ft) 38 N.m (28 lbf ft) 38 N.m (28 lbf ft) 38 N.m (28 lbf ft)  38 N.m (28 lbf ft) 19 N.m (14 lbf ft) 50 N.m (37 lbf ft) 111 N.m (82 lbf ft)  750 N.m (553 lbf ft) 110 N.m (80 lbf ft) 19 N.m (14 lbf ft)

## TORQUE SPECIFICATIONS

ITEM	SPECIFICATION
<b>DRIVE AXLE</b> Back Plate to Axle Mount Capscrews Axle Mount to Frame Bolts and Nuts Tighten with bolt head Tighten with nut Axle Housing to Differential Housing Capscrews Axle to Hub Wheel Nuts	245 N.m (181 lbf ft)  540 N.m (398 lbf ft) 475 N.m (350 lbf ft) 38 N.m (28 lbf ft) 90 N.m (66 lbf ft) 271 N.m (200 lbf ft)
<b>STEERING AXLE</b> Axle to Frame Bracket Spindle Cap, Lower Tie Rod to Spindle Cylinder Mount Capscrews	88 N.m (65 lbf ft) 44 N.m (32 lbf ft) 163 N.m (120 lbf ft) 225 N.m (166 lbf ft)
<b>BRAKES</b> Back Plate to Axle Mount Capscrews (3) Back Plate to Axle Mount nuts (3)	245 N.m (181 lbf ft) 110 N.m (80 lbf ft)
<b>HYDRAULIC PUMP</b> Adjustment Screw Acorn Nut Plug for Relief Valve Plug for Regulator Valve Capscrews for Body	28 to 31 N.m (20 to 23 lbf ft) 34 to 39 N.m (25 to 29 lbf ft) 59 to 69 N.m (43 to 51 lbf ft) 46 to 49 N.m (34 to 36 lbf ft)
<b>HYDRAULIC CONTROL VALVE</b> Through Bolts 5/16 in 3/8 in	19 N.m (14 lbf ft) 45 N.m (33 lbf ft)
<b>TILT CYLINDERS</b> Rod End capscrews	77 N.m (57 lbf ft)
<b>MASTS</b> Bolts, Hanger caps	165 N.m (122 lbf ft)