LIFT TRUCK SPECIFICATIONS

NOBLE™

QUANTUM

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GENERAL SPECIFICATIONS

WEIGHT AND PERFORMANCE

	R40	R50	RC60
Towable Option	Yes	Yes	Yes

STANDARD MACHINE CAPACITY RATINGS

Standard Load Center	lb (kg)	4000 (2000)	5000 (2500)	6000 (3000)
	In (mm)	24 (500)	24 (mm)	24 (mm)
Fork Height	In (mm)	168 (4270)	168 (4270)	168 (4270)
Alternate Load Center	lb (kg)	3550 (1825)	4450 (2275)	5350 (2750)
	In (mm)	30 (600)	30 (600)	30 (600)
Fork Height	In (mm)	168 (4270)	168 (4270)	168 (4270)
Moment Rating	In lb (kg)	201 600 (2340)	252 500 (2930)	302 400 (3510)

TRUCK WEIGHT

Shipping Wgt. (1)	lb (kg)	10700 (4850)	11200 (5050)	11800 (5350)
Drive Axle	lb (kg)	5250 (2375)	5100 (2275)	4800 (2175)
Steer Axle	lb (kg)	5450 (2475)	6100 (2775)	7000 (3175)

(1) Weight values shown are based on a Standard Mast with a MFH of 120" (3050 mm)

ENGINE DATA

Power Type	Engine Mfg. & Model	No. Cyl.	Net Power & RPM	Torque & RPM	Displacement	Compression Ratio	Governed Speed Capacity (Not Loaded) RPM	Crankcase (with Filter)
			hp (kw)	lb ft (N.m)	cu in (liter)			quarts (liter)
Diesel Balance Engine	Caterpillar 3054C	4	68 (50.7) @ 2000	180 (244) @ 1350	258.3 (4.233)	16 to 1	2400	7.5 (7.0)

(2) Above listed engine performance values are net flywheel for the vehicle engine operating under SAE (J816b) standard ambient temperature and barometric conditions, 85 degrees F (29.4 degrees C) and 29.83" Hg (99 kPa) (corresponding to an altitude of 500 ft (152 m) above sea level). Vehicle engine equipment includes air cleaner, alternator, coolant pump, fan, fuel pump, ignition system (where applicable), lubricating oil pump and muffler.

RC60 Non-Towable

RC60 Low Profile

See Page 9 for More Information

GENERAL SPECIFICATIONS

WEIGHT AND PERFORMANCE

	R60	R80	R60 4-WD	R80 4-WD
Towable Option	Yes	Yes	No	No

STANDARD MACHINE CAPACITY RATINGS

Standard	lb (kg)	6000 (3000)	8000 (4000)	6000 (3000)	8000 (4000)
Load Center	In (mm)	24 (500)	24 (500)	24 (mm)	24 (mm)
Fork Height	In (mm)	240 (6100)	192 (4880)	240 (6100)	192 (4880)
Alternate	lb (kg)	5400 (2775)	7200 (3700)	5450 (2750)	7250 (3650)
Load Center	In (mm)	30 (600)	30 (600)	30 (600)	30 (600)
Fork Height	In (mm)	240 (6100)	192 (4880)	240 (6100)	192 (4880)
Moment Rating	In lb (mkg)	315 000 (3670)	422 500 (4930)	340 500 (3990)	456 000 (5350)

TRUCK WEIGHT

Shipping Wt. (1)	lb (kg)	12700 (5750)	13800 (6250)	14800 (6700)	16000 (7250)
Drive Axle	lb (kg)	5850 (2650)	5600 (2550)	6650 (3000)	6200 (2800)
Steer Axle	lb (kg)	6850 (3100)	8200 (3700)	8150 (3700)	9800 (4450)

(1) Weight values shown are based on a Standard Mast with a MFH of 120” (3050 mm)

R80 4-WD

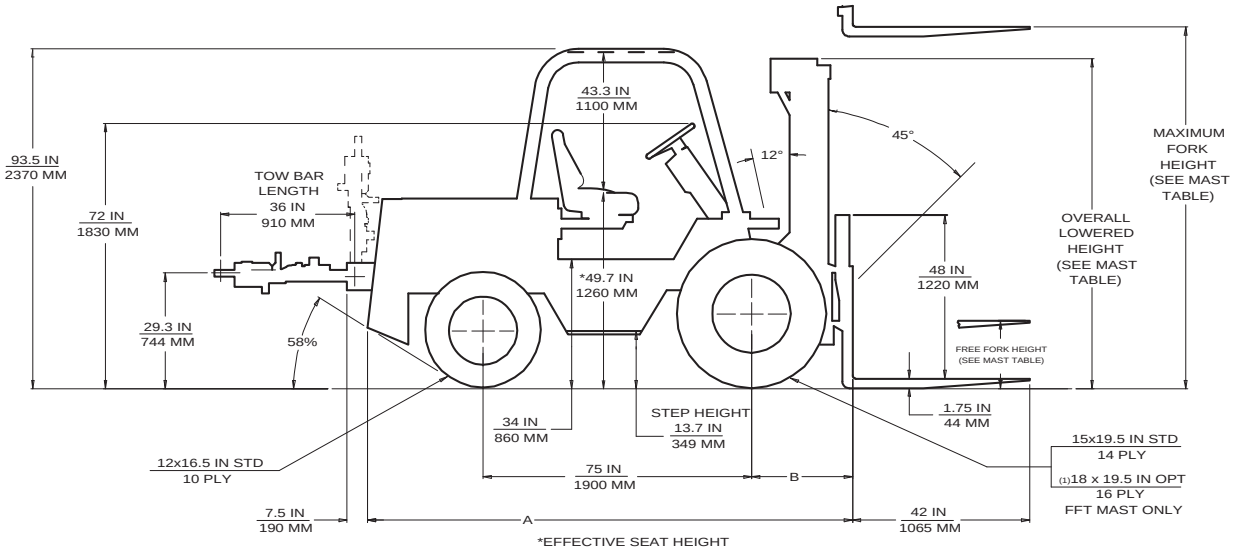
R80
Non-Towable

ILLUSTRATIONS MAY INCLUDE OPTIONAL EQUIPMENT

NOTES

R40 / R50 / RC60
SPECIFICATIONS

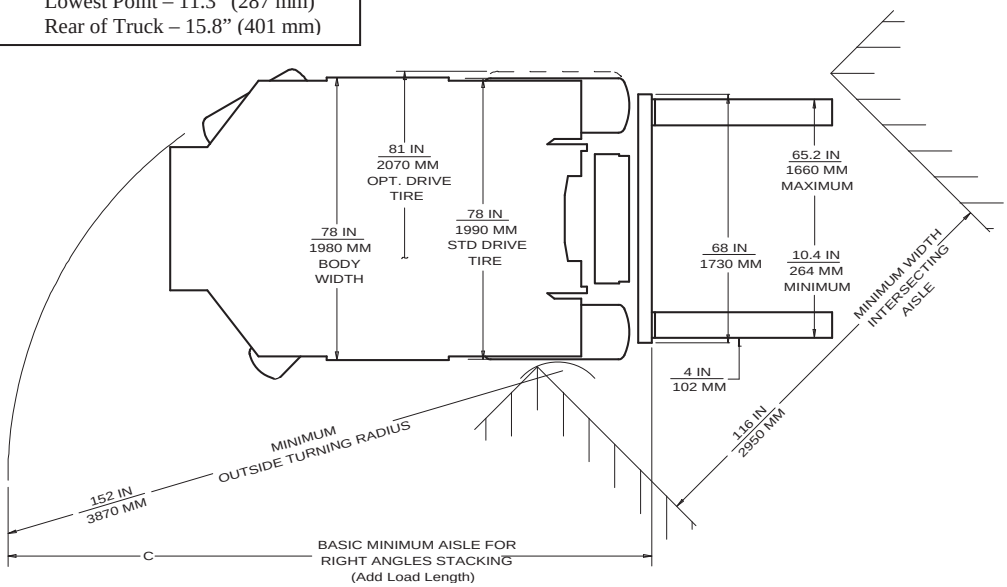
DIMENSIONAL DATA



*EFFECTIVE SEAT HEIGHT
(1) Optional tires increase some vertical dimensions 1 in (22 mm)

Truck under clearances:

Mast – 8.2" (210 mm)
Drive Axle – 8.3" (210 mm)
Center of Truck:
Power Shuttle – 9.8" (248 mm)
Steer Axle – 10" (254 mm)
Counterweight:
Lowest Point – 11.3" (287 mm)
Rear of Truck – 15.8" (401 mm)



Model	Mast Type	A	B	C
		in (mm)	in (mm)	in (mm)
R40 R50	Standard	132.5 (3370)	26.4 (671)	181.5 (4610)
RC60	Full Free Triple	134.5 (3410)	28.2 (716)	183.5 (4650)

TOP TRAVEL SPEED

Model	Power	Transmission	Speed Range	Condition	
				Empty mph (km/h)	Loaded mph (km/h)
R40 **R50** **RC60**	**Diesel**	**Power Shuttle**	1 2 3 4	4.7 (7.6) 9.7 (15.6) 17.7 (28.5) 29.9 (48.1)	4.5 (7.2) 9.1 (14.6) 16.6 (26.7) 28.1 (45.2)

R40 GRADE VS SPEED

Condition		Grade %	Speed Power Shuttle – Diesel mph (km/h)
Empty		0.0 5.0 10.0 15.0	29.9 (48.1) 23.4 (37.6) 13.0 (20.9) 8.8 (14.2)
Maximum Empty (1) (2)	0.6 Traction Coefficient	30.1	4.3 (6.9)
	0.9 Traction Coefficient	30.1	4.3 (6.9)
Loaded		0.0 5.0 10.0 15.0	28.7 (46.2) 17.0 (27.3) 9.2 (14.8) 6.4 (10.3)
Maximum Loaded		Grade @ Speed	37.6% @ 4.5 (37.6% @ 4.5)

R40 MAXIMUM DRAWBAR PULL

Condition		Power Shuttle – Diesel lb (Newton)
Truck Empty	0.6 Traction Coefficient	3120 (13900)
(1) (2) 0.9	Traction Coefficient	4680 (20840)
Truck with Rated Load		7140 (31760)

(1) Truck Empty Gradeability and Drawbar Pull are shown with Mast Vertical. These values will be substantially increased with the mast tilted 45 degrees forward. Towbar height is 29.3" (744 mm) above floor level. Refer to General Specification Section for Speed vs Grade and Drawbar Pull qualifications.

(2) Speeds shown in tables are for towable axles only. Trucks with non-towable enclosed, oil cooled disk brake axles have lower top speeds (18 mph / 29.0 kmh).

R50 GRADE VS SPEED

Condition		Grade %	Speed - Power Shuttle – Diesel mph (km/h)
Empty		0.0	29.9 (48.1)
		5.0	23.0 (37.0)
		10.0	12.2 (19.6)
		15.0	8.5 (13.7)
Maximum	0.6 Traction Coefficient	20.7	6.5 (10.5)
Empty (1) (2)	0.9 Traction Coefficient	27.9	4.6 (7.4)
Loaded		0.0	28.4 (45.7)
		5.0	15.2 (24.5)
		10.0	8.3 (13.3)
		15.0	6.0 (9.6)
Maximum Loaded		Grade @ Speed	38.1% @ 2.3 / (36.8% @ 3.5)

R50 MAXIMUM DRAWBAR PULL

Condition		Power Shuttle – Diesel lb (Newton)
Truck Empty	0.6 Traction Coefficient	3020 (13430)
(1)	0.9 Traction Coefficient	4530 (20140)
Truck with Rated Load		8040 (35760)

RC60 GRADE VS SPEED

Condition		Grade %	Speed - Power Shuttle – Diesel mph (km/h)
Empty		0.0	29.9 (48.1)
		5.0	21.0 (33.8)
		10.0	11.8 (19.0)
		15.0	7.5 (12.0)
Maximum	0.6 Traction Coefficient	18.7	6.6 (10.6)
Empty (1) (2)	0.9 Traction Coefficient	25.1	4.7 (7.6)
Loaded		0.0	28.1 (45.2)
		5.0	14.5 (23.3)
		10.0	7.8 (12.5)
		15.0	5.0 (8.0)
Maximum Loaded		Grade @ Speed	38.3% @ 2.0 / (33.1% @ 3.5)

RC60 MAXIMUM DRAWBAR PULL

Condition		Power Shuttle – Diesel lb (Newton)
Truck Empty	0.6 Traction Coefficient	2870 (12790)
(1)	0.9 Traction Coefficient	4310 (19180)
Truck with Rated Load		8900 (39590)

(1) Truck Empty Gradeability and Drawbar Pull are shown with Mast Vertical. These values will be substantially increased with the mast tilted 45 degrees forward. Towbar height is 29.3” (744 mm) above floor level. Refer to General Specification Section for Speed vs Grade and Drawbar Pull qualifications.

(2) Speeds shown in tables are for towable axles only. Trucks with non-towable enclosed, oil cooled disk brake axles have lower top speeds (18 mph / 29.0 kmh).

CARRIAGE LIFT – LOWERING SPEEDS

Condition	Mast Type	Lift Speed			Lowering Speed		
		R40	R50	RC60	R40	R50	RC60
		Fpm (m/s)	Fpm (m/s)	Fpm (m/s)	Fpm (m/s)	Fpm (m/s)	Fpm (m/s)
Empty	STD	71 (0.36)	71 (0.36)	71 (0.36)	56 (0.28)	56 (0.28)	56 (0.28)
	FFT	70 (0.36)	70 (0.36)	70 (0.36)	54 (0.27)	54 (0.27)	54 (0.27)
Loaded (1)	STD	64 (0.33)	62 (0.31)	59 (0.30)	72 (0.36)	88 (0.45)	89 (0.45)
	FFT	63 (0.32)	61 (0.31)	58 (0.29)	73 (0.37)	74 (0.38)	75 (0.38)

(1) Loaded lift speeds are shown for truck with gasoline engine. Loaded lift speeds with diesel engine is 69 fpm (0.35 m/s).

MAST PERFORMANCE & CAPACITY TABLE

Mast Type	Maximum Fork Height (1) (2)	Overall Lowered Height (2)	Free Fork Height (2)	Tilt Degrees	Capacities (Mast Vertical) 24" (500 mm) Load Center		
					R40 Drive Tires 15 x 19.5 – 14 ply Singles 78" (1990 mm) O.A.W.	**R50** Drive Tires 15 x 19.5 – 14 ply Singles 78" (1990 mm) O.A.W.	**RC60** Drive Tires 15 x 19.5 – 14 ply Singles 78" (1990 mm) O.A.W.
	in (mm)	in (mm)	in (mm)	fwd (bkd)	lb (kg)	lb (kg)	lb (kg)
	120 (3050)	95 (2410)	5.7 (146)	45 (12)	4000 (2000)	5000 (2500)	6000 (3000)
	132 (3350)	101 (2560)	5.7 (146)	45 (12)	4000 (2000)	5000 (2500)	6000 (3000)
	144 (3660)	107 (2710)	5.7 (146)	45 (12)	4000 (2000)	5000 (2500)	6000 (3000)
	156 (3960)	113 (2870)	5.7 (146)	45 (12)	4000 (2000)	5000 (2500)	6000 (3000)
	168 (4270)	119 (3020)	5.7 (146)	45 (12)	4000 (2000)	5000 (2500)	6000 (3000)
Standard	180 (4570)	125 (3170)	5.7 (146)	45 (12)	3750 (1875)	4750 (2375)	5750 (2875)
2-Stage	192 (4880)	131 (3320)	5.7 (146)	45 (12)	3550 (1725)	4550 (2225)	5550 (2725)
*2500 psi	204 (5180)	137 (3480)	5.7 (146)	45 (12)	3300 (1600)	4300 (2100)	5300 (2600)
17240 kPa	216 (5490)	143 (3630)	5.7 (146)	45 (12)	3050 (1475)	4050 (1975)	5500 (2475)
	228 (5790)	149 (3780)	5.7 (146)	45 (12)	2800 (1325)	3800 (1825)	4800 (2325)
	240 (6100)	155 (3930)	5.7 (146)	45 (12)	2600 (1200)	3600 (1700)	4600 (2200)
	252 (6400)	161 (4090)	5.7 (146)	45 (12)	2350 (1075)	3350 (1575)	4350 (2075)
	120 (3050)	76 (1930)	41.7 (1060)	45 (10)	4000 (2000)	5000 (2500)	6000 (3000)
Full Free	132 (3350)	80 (2030)	45.7 (1160)	45 (10)	3850 (1925)	4850 (2425)	5850 (2925)
Triple	144 (3660)	84 (2130)	49.7 (1260)	45 (10)	3700 (1825)	4700 (2325)	5700 (2825)
3-Stage	156 (3960)	88 (1360)	53.5 (1360)	45 (10)	3550 (1750)	4550 (2250)	5550 (2750)
	168 (4270)	92 (1470)	57.5 (1470)	45 (10)	3400 (1650)	4400 (2150)	5400 (2650)
	180 (4570)	96 (2430)	61.5 (1570)	45 (10)	3250 (1575)	4250 (2075)	5250 (2575)
	192 (4880)	100 (2540)	65.5 (1670)	45 (10)	3100 (1500)	4100 (2000)	5100 (2500)
	204 (5180)	104 (2640)	69.5 (1770)	45 (10)	2950 (1400)	3950 (1900)	4950 (2400)
*2500 psi	216 (5490)	108 (1870)	73.5 (1870)	45 (10)	2800 (1325)	3800 (1825)	4000 (2325)
17240 kPa	228 (5790)	112 (2840)	77.5 (1970)	45 (10)	2650 (1225)	3650 (1725)	4650 (2225)
	240 (6150)	116 (2940)	81.5 (2080)	45 (10)	2500 (1150)	3500 (1650)	4500 (2150)
	252 (6450)	120 (3040)	85.5 (2180)	45 (10)	2350 (1075)	3350 (1575)	4350 (2075)

Standard Production Masts are marked to the left of the Specifications.

* Hydraulic System Pressures (Relief Valve Settings)

(1) Overall Extended Height is equal to Maximum Fork Height plus Carriage Height. Carriage Height is 48" (1219 mm).
(2) All Mast performance values shown will be increased by approximately 1.0" (25 mm) when optional drive tires are used.

Meets or exceeds all requirements of American Society of Mechanical Engineers (ASME) B56.6.a-1994 Safety Standards for Rough Terrain Fork Lift Trucks.

MAXIMUM CAPACITIES AT VARIOUS LOAD CENTERS

Load Center	Fork Length	Capacities – Mast Vertical					
		R40		R50		RC60	
		Standard Mast	Full Free Triple Mast	Standard Mast	Full Free Triple Mast	Standard Mast	Full Free Triple Mast
in (mm)	in (mm)	lb (kg)	lb (kg)	lb (kg)	lb (kg)	lb (kg)	lb (kg)
16 (400)	42 (1065)	4750 (2175)	4700 (2150)	5950 (2725)	5900 (2700)	6000 (3000)	6000 (3000)
18 (450)		4550 (2075)	4500 (2075)	5700 (2600)	5650 (2575)	6000 (3000)	6000 (3000)
20 (500)		4350 (2000)	4350 (2000)	5450 (2500)	5400 (2500)	6000 (3000)	6000 (3000)
22 (550)		4150 (1900)	4150 (1900)	5200 (2375)	5200 (2375)	6000 (3000)	6000 (2975)
24 (600)		4000 (1825)	4000 (1825)	5000 (2275)	5000 (2275)	6000 (3000)	6000 (2850)
26 (650)		3850 (1750)	3850 (1750)	4800 (1750)	4800 (1750)	5750 (2650)	5800 (2750)
28 (700)		3700 (1700)	3700 (1700)	4650 (2125)	4650 (2125)	5500 (2550)	5550 (2650)
30 (750)	48 (1220)	3550 (1625)	3600 (1650)	4450 (2050)	4500 (2050)	5350 (2450)	5400 (2550)
32 (800)		3450 (1575)	3450 (1575)	4300 (1975)	4350 (1975)	5200 (2375)	5200 (2450)
34 (850)	54 (1370)	3350 (1525)	3350 (1525)	4150 (1900)	4200 (1925)	5000 (2300)	5050 (2375)
36 (900)		3250 (1475)	3250 (1500)	4050 (1850)	4050 (1850)	4850 (2225)	4900 (2300)
38 (950)	60 (1525)	3150 (1425)	3150 (1450)	3900 (1800)	3950 (1800)	4700 (2150)	4750 (2225)
40 (1000)		3050 (1400)	3050 (1400)	3800 (1750)	3850 (1750)	4550 (2075)	4600 (2175)
42 (1100)	66 (1675)	2950 (1350)	2950 (1375)	3700 (1700)	3700 (1700)	4400 (2025)	4450 (2100)
44 (1100)		2850 (1300)	2900 (1325)	3600 (1650)	3600 (1650)	4300 (1975)	4350 (2050)
46 (1150)	72 (1830)	2800 (1275)	2800 (1300)	3500 (1600)	3500 (1600)	4200 (1925)	4200 (1975)
48 (1200)		2700 (1250)	2750 (1250)	3400 (1550)	3400 (1575)	4050 (1875)	4100 (1875)

Above listed Capacity Ratings are applicable to Fork Heights with Mast Vertical up through 168" (4270 mm) for standard and 120" (3050) mm) for FFT when machine is equipped with Standard Carriage and two Pallet Forks of appropriate cross section for length stated.

PALLET FORK SPECIFICATIONS

Mast	Shaft Type					
	Width	Thickness	Length Range (2 Forks)	Bottom Taper	Shaft Height	Hole Diameter
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
R40	4 (100)	1.75 (45)	42 through 54 (1065 through 1370)	26 (660)	37.4 (950)	2.13 (54)
R50	5 (125)		60 through 72 (1525 through 1830)			
RC60	4 (100)	1.75 (45)	42 through 48 (1065 through 1220)			
	5 (125)		54 through 72 (1370 through 1830)			

Standard minimum fork length is 42" (1065 mm). Contact Sales Engineering for availability of lengths longer or shorter than those listed. Refer to General Information Section for dimensional reference and line drawing.

FORK CAPACITY REDUCTION TABLE (PER 2 FORKS)

Model	Mast Type	Fork Data				Capacity Reduction
					Weight (2 Forks)	Standard Pallet
		Width	Thickness	Length	Standard Pallet	@ 24" (500 mm) Load Center
		in (mm)	in (mm)	in (mm)	lb (kg)	lb (kg)
R40 R50	Standard or Full Free Triple	4 (100)	1.75 (45)	42 (1065)	286 (130)	0 (0)
				48 (1220)	310 (141)	
		5 (125)		54 (1370)	334 (152)	
				60 (1525)	441 (200)	
				66 (1675)	471 (214)	
				72 (1830)	501 (227)	
RC60	Standard or Full Free Triple	4 (100)		42 (1065)	286 (130)	
				48 (1220)	310 (141)	
		5 (125)		54 (1370)	411 (186)	
				60 (1525)	441 (200)	
				66 (1675)	471 (214)	
				72 (1830)	501 (227)	

No Capacity reduction is required for fork lengths of 72" (1830) or less, unless: a cross section of greater size is used than that list or more than two forks are used.

SIDESHIFTTER CARRIAGES

Model	Mast Type	Carriage Width (1)	Capacity Reduction @ 24" (500 mm) Load Center	Centerline of Drive Axle to Fork Face	Carriage Height	Fork Adjustment In to In	Fork Adjustment Out to Out	Carriage Weight Less LBR
		in (mm)	lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg)
R40	Std	68 (1730)	0 (0)	27.8 (710)	48 (1220)	2.4 (60)	65 (1660)	660 (300)
R50 RC60	FFT			29.5 (750)				

(1) Sideshifter Travel is 4" (102 mm) each side of centerline.

CONCRETE BLOCK FORK SPECIFICATIONS

Model	Shaft Type: Maximum Capacity Rating per Fork At Rated Load Centers 20" (500 mm)	Shaft Type: Maximum Capacity Rating per Fork At Rated Load Centers 24" (600 mm)	Width	Thickness	Length	Bottom Taper	Shaft Height	Hole Diameter	Fork Weight (Per Fork)
	lb (kg)	lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg)
R40	1539 (698)	1290 (585)	2 (51)	1.5 (38)	38 (711) 46 (1168)	12 (305)	35.87 (910)	2.13 (54)	61 (27)
R50 RC60	2094 (950)	1757 (797)		1.75 (44)					67 (31) 70 (32) 78 (35)

All dimensions shown are actual, not rounded. The tip configuration is a spherical radius which is tapered to blend into the fork blade. Refer to General Specification Section for dimensional reference and line drawing.

SIDESHIFTER CARRIAGES W/ CONCRETE BLOCK FORKS

Model	Carriage Type	Carriage Width (1)	Number of Forks Recommended	Capacity Reduction (2) 24" (500 mm) Load Center	Center Lines of Drive Axle to Fork Face: Mast Type STD	Center Lines of Drive Axle to Fork Face: Mast Type FFT	Carriage Height	Fork Spacing	Carriage Weight
		in (mm)		lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg0
R40	Shaft	68 (1730)	8	0 (0)	27.5 (700)	29.3 (740)	48 (1220)	7.8 (200)	660 (300)
R50					27.8 (710)	29.5 (750)			
RC60					27.8 (710)	29.5 (750)			

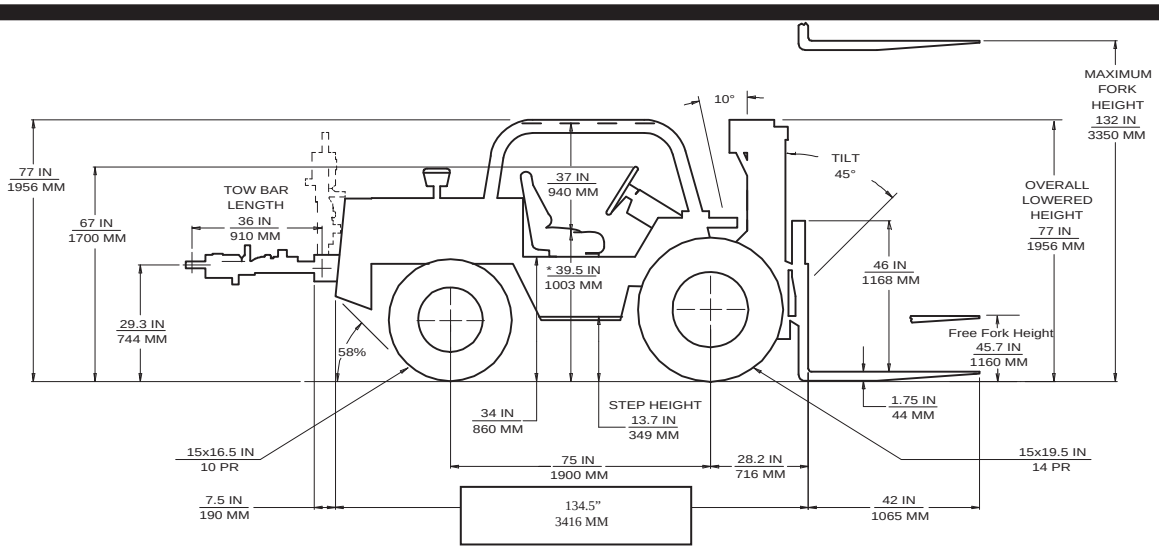
(1) Sideshifter Travel is 4" (102 mm) each side of centerline.
(2) Capacities are applicable to Fork Heights (Mast Vertical) up through 168" (4270 mm) with Standard Mast and 120" (3050 mm) with Full Free Triple Mast. Consult Sales Engineering for capacities at Fork Heights above those listed.

AUXILIARY HYDRAULIC SYSTEM SPECIFICATIONS

Mast Type	MFH Range (1)	System Type (2) (3)		Additional Tilt Restrictions	Hose Size (I.D. & Type)
	in (mm)	3 Section Valve	4 Section Valve		
Standard	120 through 252 (3050 through 6400)	Internal Sheaves one hose right side And one hose left side	Not Available	None	.25" (6 mm) Thermoplastic
Full Free Triple	120 through 252 (3050 through 6400)	Standard (4)	Internal Sheaves one hose right side and one hose left side	None	

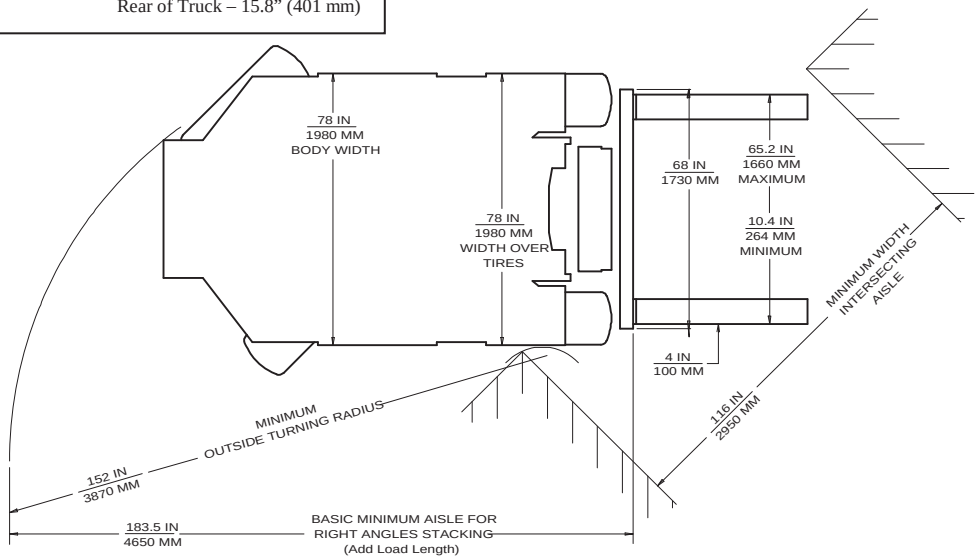
(1) The Auxiliary Hydraulic System Specifications listed are limited to the MFH ranges shown. For system adaptability to other MFH ranges, consult Sales Engineering.
(2) Hydraulic Control Valves – Sectional with non-relieved spools as standard.
(3) Hose Termination – standard hose termination will be capped fittings at truck carriage.
(4) A Three Section Valve is standard on trucks equipped with Full Free Triple Masts. First lever operates primary Lift Cylinder, Second lever operates Secondary Lift Cylinder, Third lever operates Tilt.

RC60 LOW PROFILE ARRANGEMENT



Truck under clearances:

Mast – 6.2" (210 mm)
Drive Axle – 8.3" (210 mm)
Center of Truck:
Power Shuttle – 9.8" (248 mm)
Steer Axle – 10" (254 mm)
Counterweight:
Lowest Point – 11.3" (287 mm)
Rear of Truck – 15.8" (401 mm)



Mast Performance and Capacity

- **Capacity (Mast Vertical) 24" (500 mm) Load Center – 5850 lbs. (2925 kg).**
- **Overall extended height – 178" (4569 mm); (maximum fork height plus carriage height).**

Chassis modifications included in this package are:

- **77" (1956 mm) to top of overhead guard with standard size drive tires.**
- **Seat relocated to top of floor plate to provide 37.0" (942 mm) of operator clearance.**
- **Steering column and column controls relocated.**

The optional vertical exhaust, high air intake and gauge package are not available with this package due to Clearance considerations. Only the 36" tow bar is available because the 48" bar exceeds the guard height When the bar is raised. This lift truck is available in both towable & non-towable.

Characteristics

Model		**RC60 Low Profile**
System of Measurement		**English**
Capacity	**Rated Load**	**6,000 lbs.**
At Load Center	**Distance**	**24" Load Center**
Power		**Diesel**
Wheels	**Number Front / Rear**	**x 2/2**

Dimensions

Lift	**Maximum Fork Height with Load**	**132"**
	Maximum Fork Height	**132"**
	Free Fork Height	**45.7"**
Forks	**Length x Width x Thickness**	**1.75" x 4" x 48"**
Fork Spacing	**Minimum / Maximum**	**10.4" / 65.2"**
Tilt of Mast	**Forward / Back**	**45 degrees / 10 degrees**
Overall Dimensions	**Length to Fork Face**	**134.5"**
	Width with Standard Tires	**78.3"**
	Height with Lowered Mast	**77"**
	Seat Height	**39.5"**
	To Top of Overhead Guard	**77"**
	With Extended Mast (Top of Carriage)	**152"**

Minimum Outside Turning Radius	**183.5"**
Load Moment Constant / From Center of Front Axle to Fork Face	**26.4"**

Performance

Top Travel Speed	**Standard**	**19.4 mph**
Lift Speed	**Loaded / Unloaded (Diesel)**	**59 / 71 fpm**
Lowering Speed	**Loaded / Unloaded**	**69 / 71 fpm**
Drawbar Pull / loaded	**All Trucks**	**9,310 lbs.**
Gradeability	**Loaded**	**53.0%**
	Unloaded	**26.6%**

Weight

Empty		**12,425 lbs.**
Axle Load	**With Rated Load / Front**	**15,150 lbs.**
	With Rated Load / Rear	**2,650 lbs.**
	Without Load / Front	**4,800 lbs.**
	Without Load / Rear	**7,000 lbs.**

Chassis

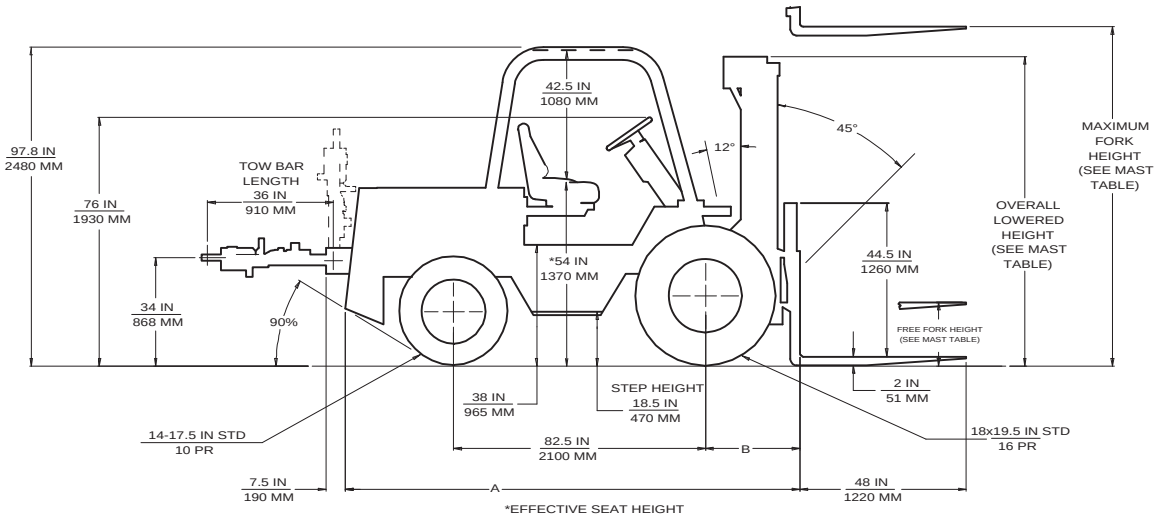
Tires	**Front / Standard**	**15 x 19.5, 14 Ply**
	Rear	**12 x 16.5, 12 Ply**
Wheel Base		**75"**
Tread Width	**Front with Standard Tires**	**64"**
	Rear	**64.7"**
Ground Clearance	**Loaded - Lowest Point**	**11.3"**
	Loaded - Center of Wheel Base	**9.8"**
Brakes	**Service (Standard)**	**Oil Disc, Mechanical**
	Parking	**Hand Operated Mechanical**

Power Train

Manufacturer / Model (Diesel)		**Caterpillar 3054C**
Gross Power per SAE J1349 (Diesel)		**83 Hp**
At RPM (Diesel)		**2400 rpm**
Cylinder / Displacement (Diesel)		**4 / 258 in^3**
Transmission	**Type**	**Power Shuttle**
Number of Speeds		**4/4**
Relief Pressure	**For Attachment**	**2500 psi**

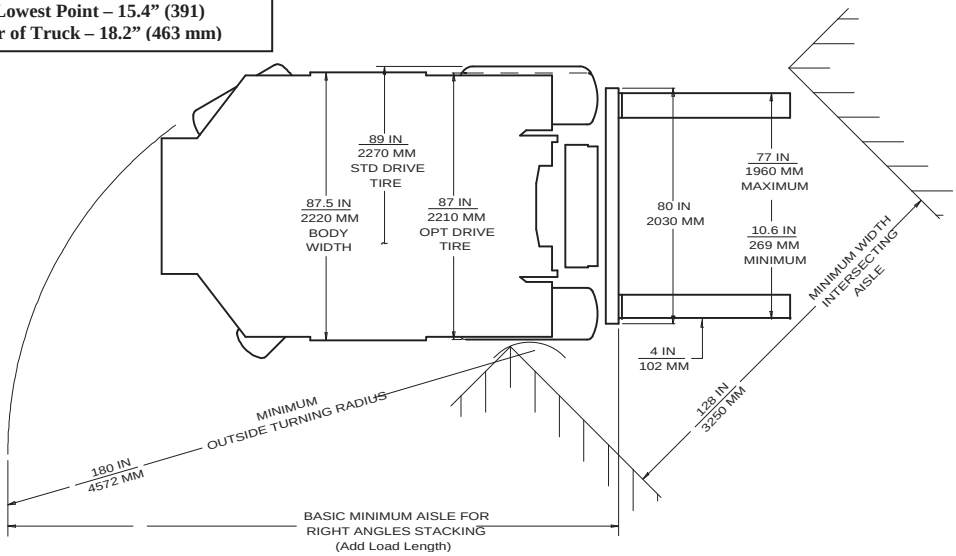
R60 / R80
SPECIFICATIONS

R60 / R80
DIMENSIONAL DATA



Truck under clearance:

Mast – 9.5" (241 mm)
Drive Axle – 9.5" (241 mm)
Center of Truck:
Power Shuttle – 14.6" (371 mm)
Steer Axle – 12.1" (307)
Counterweight:
Lowest Point – 15.4" (391)
Rear of Truck – 18.2" (463 mm)



Model	Mast Type	A	B	C
		in (mm)	in (mm)	in (mm)
	Standard	145.5 (3690)	28.5 (724)	204 (5180)
R60	Full Free Triple	146 (3700)	28.9 (734)	204.5 (5190)
	Standard	146 (3700)	28.8 (732)	204.5 (5190)
R80	Full Free Triple	146.5 (3710)	29.2 (742)	204.5 (5200)

TOP TRAVEL SPEED

Model	Power	Transmission	Speed Range	Condition	
				Empty mph (km/h)	Loaded mph (km/h)
R60	**Diesel**	**Power**	1	4.9 (7.9)	4.8 (7.7)
			2	10.0 (16.1)	9.8 (15.8)
R80		**Shuttle**	3	19.2 (30.9)	18.0 (29.0)
			4	31.0 (49.9)	30.8 (49.6)

R60 / R80 GRADE VS SPEED

Condition		Grade %		Speed - Power Shuttle – Diesel	
				R60	**R80**
				mph (km/h)	mph (km/h)
		R60	R80		
Empty		0.0		31.1 (49.9)	31.0 (49.9)
		5.0		19.4 (31.2)	19.0 (30.6)
		10.0		10.0 (16.1)	9.5 (15.3)
		15.0		7.3 (8.5)	6.9 (11.1)
Maximum Empty (1)(2)	0.6 Traction Coefficient	21.2	18.5	5.2 (8.4)	5.6 (9.0)
	0.9 Traction Coefficient	28.4	24.8	3.9 (6.3)	4.2 (6.8)
Loaded		0.0		31.0 (49.9)	30.8 (49.6)
		5.0		13.0 (20.9)	11.3 (18.2)
		10.0		7.5 (12.1)	6.3 (10.1)
		15.0		4.6 (7.4)	4.3 (6.9)
Maximum Loaded		Grade @ Speed		39% @ 1.8 mph (39% @ 2.9 kmh)	40.1% @ 2.0 mph (40.1% @ 3.2 kmh)

R60 / R80 MAXIMUM DRAWBAR PULL

Condition		Power Shuttle – Diesel	
		R60	**R80**
		lb (Newton)	lb (Newton)
Truck Empty	0.6 Traction Coefficient	2660 (11840)	2520 (11200)
(1)	0.9 Traction Coefficient	3340 (14840)	3160 (14060)
Truck with Rated Load		7130 (31710)	8490 (37780)

(1) Truck Empty Gradeability and Drawbar Pull are shown with Mast Vertical. These values will be substantially increased with the mast tilted 45 degrees forward. Towbar height is 34" (864 mm) above floor level. Refer to General Specification Section for Speed vs Grade and Drawbar Pull qualifications.

(2) Speeds shown in tables are for towable axles only. Trucks with non-towable enclosed, oil cooled disk brake axles have lower top speeds (18 mph / 29.0 kmh).

CARRIAGE LIFT – LOWERING SPEEDS

Condition	Mast Type	Lift Speed		Lowering Speed	
		R60	**R80**	**R60**	**R80**
		Fpm (m/s)	Fpm (m/s)	Fpm (m/s)	Fpm (m/s)
Empty	STD	67 (0.34)	67 (0.34)	48 (0.24)	48 (0.24)
	FFT	71.5 (0.36)	71.5 (0.36)	58 (0.29)	58 (0.29)
Loaded	STD	65 (0.33)	52 (0.26)	66 (0.34)	66 (0.34)
	FFT	68.5 (0.35)	62 (0.32)	77 (0.39)	80 (0.41)

MAXIMUM CAPACITIES AT VARIOUS LOAD CENTERS

Load Center	Fork Length	Capacities – Mast Vertical			
		R60		**R80**	
		Standard Mast	Full Free Triple Mast	Standard Mast	Full Free Triple -24-Mast
in (mm)	in (mm)	lb (kg)	lb (kg)	lb (kg)	lb (kg)
16 (400)		7100 (3225)	7100 (3225)	8000 (4000)	8000 (4000)
18 (450)		6800 (3100)	6800 (3100)	8000 (4000)	8000 (4000)
20 (500)		6500 (3000)	6500 (3000)	8000 (4000)	8000 (4000)
22 (550)	42 (1065)	6250 (2850)	6250 (2850)	8000 (4000)	8000 (4000)
24 (600)		6000 (2750)	6000 (2750)	8000 (4000)	8000 (4000)
26 (650)		5800 (2650)	5800 (2650)	7700 (3525)	7700 (3525)
28 (700)		5550 (2550)	5550 (2550)	7450 (3400)	7450 (3400)
30 (750)		5400 (2450)	5400 (2450)	7150 (3275)	7200 (3275)
32 (800)	48 (1220)	5200 (2375)	5200 (2375)	6950 (3175)	6950 (3175)
34 (850)		5050 (2300)	5050 (2300)	6700 (3075)	6700 (3075)
36 (900)	54 (1370)	4850 (2225)	4900 (2225)	6500 (2975)	6500 (2975)
38 (950)		4700 (2150)	4750 (2175)	6300 (2875)	6300 (2900)
40 (1000)	60 (1525)	4600 (2100)	4600 (2100)	6100 (2800)	6150 (2800)
42 (1100)		4450 (2050)	4450 (2050)	5950 (2725)	5950 (2725)
44 (1100)	66 (1675)	4350 (1975)	4350 (1975)	5800 (2650)	5800 (2650)
46 (1150)		4200 (1925)	4200 (1925)	5600 (2550)	5650 (2575)
48 (1200)	72 (1830)	4100 (1875)	4100 (1875)	5450 (2500)	5500 (2525)

Above listed Capacity Ratings are applicable to Fork Heights with Mast Vertical up through 192” (4880 mm) for standard and 144” (3660) mm) for FFT when machine is equipped with Standard Carriage and two Pallet Forks of appropriate cross section for length stated.

MAST PERFORMANCE & CAPACITY TABLE

Mast Type	Maximum Fork Height (1) (2) (3)	Overall Lowered Height (2)	Free Fork Height (2) (3)	Tilt Degrees	Capacities (Mast Vertical) 24" (500 mm) Load Center	
					R60	**R80**
					Drive Tires 18 x 19.5 – 16 ply Singles 89" (2270 mm) O.A.W.	Drive Tires 18 x 19.5 – 16 ply Singles 89" (2270 mm) O.A.W.
	in (mm)	in (mm)	in (mm)	fwd (bkd)	lb (kg)	lb (kg)
	120 (3050)	100.5 (2550)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
	132 (3350)	106.5 (2710)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
	144 (3660)	112.5 (2860)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
	156 (3960)	118.5 (3010)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
	168 (4270)	124.5 (3160)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
Standard	180 (4570)	130.5 (3310)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
2-Stage	192 (4880)	136.5 (3470)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
*2500 psi	204 (5180)	142.5 (3620)	5.7 (146)	45 (12)	6000 (3000)	7850 (3925)
17240 kPa	216 (5490)	148.5 (3770)	5.7 (146)	45 (12)	6000 (3000)	7700 (3850)
	228 (5790)	154.5 (3920)	5.7 (146)	45 (12)	6000 (3000)	7550 (3775)
	240 (6100)	160.5 (4080)	5.7 (146)	45 (12)	6000 (3000)	7400 (3700)
	120 (3050)	81 (2060)	43.75 (1110)	45 (12)	6000 (3000)	8000 (4000)
Full Free	132 (3350)	85 (2160)	47.75 (1160)	45 (12)	6000 (3000)	8000 (4000)
Triple	144 (3660)	89 (2260)	51.75 (1260)	45 (12)	6000 (3000)	8000 (4000)
3-Stage	156 (3960)	93 (2360)	55.75 (1420)	45 (12)	6000 (3000)	7850 (3925)
	168 (4270)	97 (2460)	59.75 (1520)	45 (12)	6000 (3000)	7700 (3850)
	180 (4570)	101 (2570)	63.75 (1620)	45 (12)	5850 (2925)	7550 (3800)
	192 (4880)	105 (2670)	67.75 (1720)	45 (12)	5700 (2850)	7450 (3700)
	204 (5180)	109 (2770)	71.75 (1820)	45 (12)	5550 (2775)	7300 (3650)
*2500 psi	216 (5490)	113 (2870)	75.75 (1920)	45 (12)	5400 (2700)	7150 (3575)
17240 kPa	228 (5790)	117 (2970)	79.75 (2030)	45 (12)	5300 (2650)	7000 (3500)
	240 (6100)	121 (3070)	83.75 (2130)	45 (12)	5150 (2575)	6850 (3425)
	252 (6400)	125 (3180)	82.75 (2230)	45 (12)	5000 (2500)	6700 (3375)
	264 (6710)	129 (3280)	91.75 (2330)	45 (12)	4850 (2425)	6600 (3300)
	276 (7010)	133 (3380)	95.75 (2430)	45 (12)	4700 (2350)	6450 (3225)
	288 (7320)	137 (3480)	99.75 (2530)	45 (12)	4550 (2275)	6300 (3150)
	300 (7620)	141 (3580)	103.75 (2640)	45 (12)	4400 (2200)	5800 (2900)
	312 (7920)	145 (3680)	107.75 (2740)	45 (12)	4250 (2125)	5300 (2650)
	324 (8230)	149 (3780)	111.75 (2840)	45 (12)	4100 (2050)	4800 (2425)
	336 (8530)	151 (3840)	115.75 (2940)	45 (12)	4000 (2000)	4350 (2175)
	348 (8840)	155 (3940)	119.75 (3040)	45 (12)	3850 (1925)	3850 (1925)
	355 (9017)	157.5 (4000)	124.75 (3067)	45 (12)	3700 (1850)	3350 (1675)

Standard Production Masts are marked to the left of the Specifications.

The foregoing specifications assume the use of drive axles, tires and tilt angles specified. Other combinations are possible which can Modify Resultant capacity. They may, however, if misapplied result in instability and therefore should not be attempted without the Written approval of appropriate Sales Engineering function for lift trucks.

* Hydraulic System Pressures (Relief Valve Settings)

(1) Overall Extended Height is equal to Maximum Fork Height plus Carriage Height. Carriage Height is 49.5" (1257 mm).
(2) All Mast performance values shown will be increased by approximately 1.0" (25 mm) when optional drive tires are used.
(3) For R80 with 2.0" (51 mm) Forks, add 0.25" (6 mm).

Meets or exceeds all requirements of American Society of Mechanical Engineers (ASME) B56.6.a-1994 Safety Standards for Rough Terrain Fork Lift Trucks.

PALLET FORK SPECIFICATIONS

Model	Width	Shaft Type				
		Thickness	Length Range (2 Forks)	Bottom Taper	Shaft Height	Hole Diameter
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
R60	4 (100)	1.75 (45)	42 through 48 (1065 through 1370)	26 (660)	41.73 (1060)	2.13 (54)
	5 (125)		54 through 72 (1525 through 1830)			
R80	4 (100)		42 through 54 (1065 through 1220)	30 (762)		
	5 (125)		60 through 72 (1370 through 1830)			

Standard minimum fork length is 42" (1065 mm). Contact Sales Engineering for availability of lengths longer or shorter than those Listed. Refer to General Information Section for dimensional reference and line drawings.

FORK CAPACITY REDUCTION TABLE (2 FORKS)

Model	Mast Type	Fork Data				Capacity Reduction
		Width	Thickness	Maximum Length	Weight Standard Pallet	Standard Pallet @ 24" (500 mm) Load Center
		in (mm)	in (mm)	in (mm)	lb (kg)	lb (kg)
R60	Standard or Full Free Triple	4 (100)	1.75 (45)	42 (1065)	316 (143)	0 (0)
				48 (1220)	340 (154)	
		5 (125)		54 (1370)	448 (203)	
				60 (1525)	478 (217)	
				66 (1675)	484 (220)	
				72 (1830)	514 (233)	
R80	Standard or Full Free	4 (100)	2.0 (50)	42 (1065)	348 (158)	
				48 (1220)	376 (171)	
				54 (1370)	402 (182)	
		5 (125)		60 (1525)	452 (205)	
				66 (1675)	566 (257)	
				72 (1830)	600 (272)	

No capacity reduction is required for fork lengths of 72" (1830 mm) or less, unless
- A cross section of greater size is used than that listed.
- More than two forks are used.

SIDESHIFTER CARRIAGES

Model	Mast Type	Carriage Width	Capacity Reduction @ 24" (500 mm) Load Center	Centerline of Drive Axle to Fork Face	Carriage Height	Fork Adjustment		Carriage Weight Less LBR
						In to In	Out to Out	
		in (mm)	lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg)
R60	STD	80 (2030)	0 (0	29.7 (754)	58 (1470)	2.6 (40)	77 (1980)	760 (345)
R80	FFT			30.1 (770)				

AUXILIARY HYDRAULIC SYSTEM SPECIFICATIONS

Mast Type	MFH Range (1) in (mm)	System Type (2) (3) 3-Section Valve	System Type (2) (3) 4-Section Valve	Additional Tilt Restrictions	Hose Size (I.D. & Type)
Standard	120 through 240 (3050 through 6100)	Internal Sheaves one hose right side and one hose left side	Not Available	None	.25" (6 mm)
Full Free Triple	120 through 360 (3050 through 9140)	Standard (4)	Internal Sheaves one hose right side and one hose left side	None	

(1) The auxiliary hydraulic System Specifications listed are limited to the MFH ranges shown. For system adaptability to other MFH ranges, consult Sales Engineering.
(2) Hydraulic Control Valves – Sectional with non-relieved spools as standard.
(3) Hose Termination – Standard hose termination will be capped fittings at truck carriage.
(4) A Three Section Valve is standard on trucks equipped with Full Free Triple Masts. First lever operates primary lift cylinder, second lever operates secondary lift cylinder, third lever operates tilt.

CONCRETE BLOCK FORK SPECIFICATIONS

Model	Shaft Type: Maximum Capacity Rating Per Fork At Rated Load Centers 20" (500 mm) lb (kg)	Maximum Capacity Rating Per Fork At Rated Load Centers 24" (600 mm) lb (kg)	Width in (mm)	Thickness in (mm)	Length in (mm)	Bottom Taper in (mm)	Shaft Height in (mm)	Hole Diameter in (mm)	Fork Weight (Per Fork) lb (kg)
R60	1850 (850)	1540 (710)	2 (51)	1.75 (44)	38 (711) 46 (1168)	12 (1060)	41.7	2.13 (52)	86 (39) 94 (42.6)
R80	2400 (1110)	2000 (920)		2 (51)	38 (711) 46 (1168)		(1060)		97 (44) 106 (48.1)

All dimensions shown are actual, not rounded. The tip configuration is a spherical radius which is tapered to Blend into the fork blade. Refer to General Specification Section for dimensional reference and line drawing.

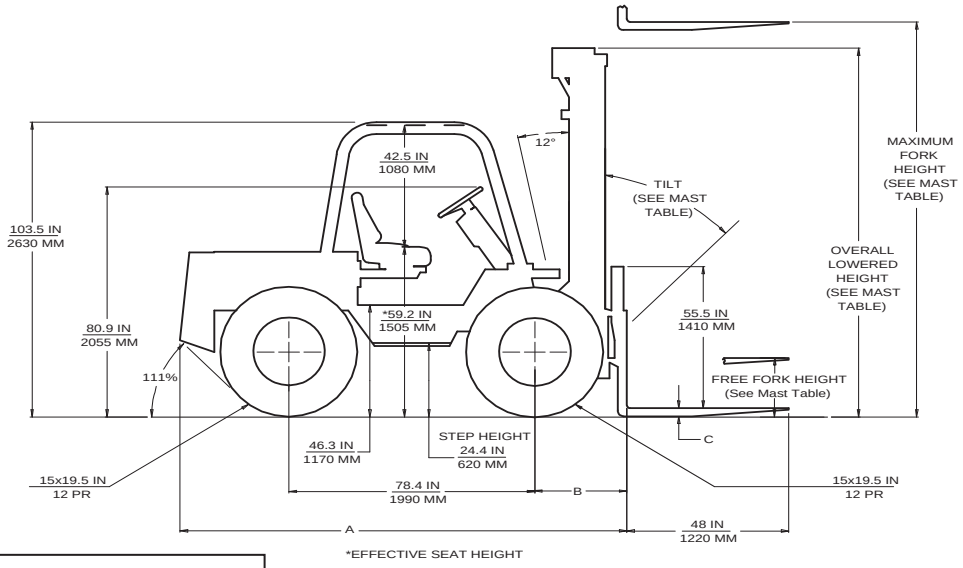
SIDESHIFTER CARRIAGES WITH CONCRETE BLOCK FORKS

Model	Carriage Type	Carriage Width (1) in (mm)	Number of Forks Recommended	Capacity Reduction (2) 24" (500 mm) Load Center lb (kg)	Center Lines of Drive Axle to Fork Face Mast Type STD in (mm)	Center Lines of Drive Axle to Fork Face Mast Type FFT in (mm)	Carriage Height in (mm)	Fork Spacing in (mm)	Carriage Weight lb (kg)
R60	Shaft	78 (1980)	8	0 (0)	29.4 (747)	29.8 (765)	58 (1470)	7.8 (200)	760 (345)
R80					29.7 (754)	30.1 (770)			

(1) Sideshift Travel is 4" (102 mm) each side of centerline.
(2) Capacities are applicable to fork heights (mast vertical) up through 168" (4270 mm) with Standard Mast and 120" (3050 mm) with Full Free Triple Masts. Consult Sales Engineering for capacities at Fork Heights above those listed.

SPECIFICATIONS

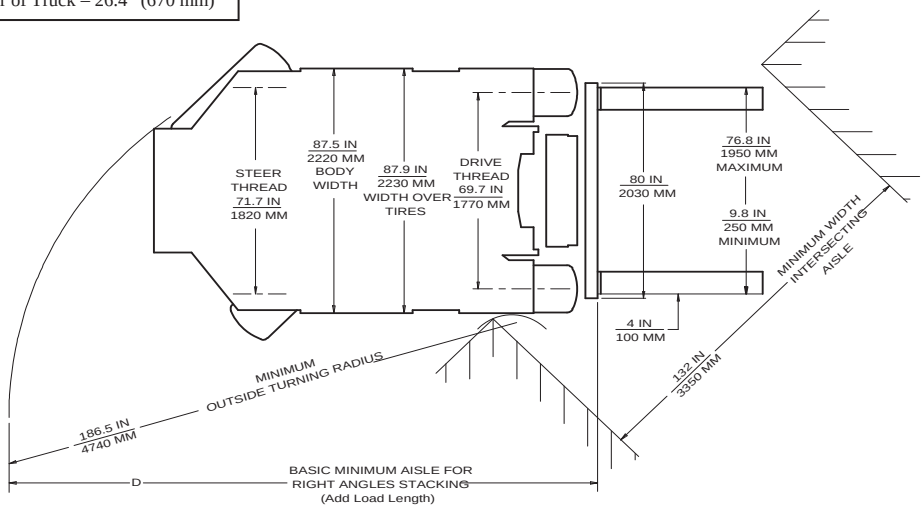
DIMENSIONAL DATA



*EFFECTIVE SEAT HEIGHT

Truck under clearances:

Mast – 14.4" (365 mm)
Drive Axle – 7.3" (186 mm)
Center of Truck – 15.3" (388 mm)
Steer Axle – 13.8" 350 mm)
Counterweight:
Lowest Point – 22.2" (558 mm)
Rear of Truck – 26.4" (670 mm)



Model	Mast Type	A	B	C	D
		in (mm)	in (mm)	in (mm)	in (mm)
R60 4-WD	Standard	145.5 (3690)	32.7 (832)	1.75 (45)	219 (5570)
	Full Free Triple	146 (3700)	33.1 (842)	1.75 (45)	220 (5580)
R80 4-WD	Standard	146 (3700)	33 (838)	2 (50)	220 (5580)
	Full Free Triple	146.5 (3710)	33.3 (847)	2 (50)	220 (5590)

TOP TRAVEL SPEED

Model	Power	Transmission Speed	Range	Condition	
				Empty	Loaded
				mph (km/h)	mph (km/h)
R60 4-WD	**Diesel**	**Power**	1	4.6 (7.4)	4.5 (7.2)
			2	8.5 (13.7)	8.2 (13.2)
R80 4-WD		**Shuttle**	3	14.3 (23.0)	13.9 (22.4)

R60 / R80 4-WD GRADE VS SPEED

Condition		Grade %		Speed - Power Shuttle – Diesel	
				R60 4-WD	**R80 4-WD**
				mph (km/h)	mph (km/h)
		R60 4-WD	**R80 4-WD**		
Empty		0.0	0.0	14.3 (23.0)	14.3 (23.0)
		5.0	5.0	13.3 (21.4)	12.6 (20.0)
		10.0	10.0	7.7 (12.4)	7.0 (11.3)
		15.0	15.0	5.7 (9.2)	5.0 (8.1)
Maximum Empty	0.6 Traction Coefficient	61.9	56.3	1.0 (1.6)	1.0 (1.6)
	0.9 Traction Coefficient	61.9	56.3	1.0 (1.6)	1.0 (1.6)
Loaded		0.0	0.0	13.9 (22.4)	13.9 (22.4)
		5.0	5.0	10.0 (16.1)	8.7 (14.0)
		10.0	10.0	5.7 (9.2)	5.1 (8.2)
		15.0	15.0	4.2 (6.8)	4.0 (6.4)
Maximum Loaded		Grade @ Speed		42.6% @ 1.0 mph (42.6% @ 1.6 kmh)	36.4% @ 1.0 mph (36.4% @ 1.6 kmh)

R60 / R80 4-WD MAXIMUM DRAWBAR PULL

Condition		Power Shuttle – Diesel	
		R60 4-WD lb (Newton)	**R80 4-WD** lb (Newton)
Truck Empty	0.6 Traction Coefficient	8590 (3900)	8570 (3890)
	0.9 Traction Coefficient	8590 (3900)	8570 (3890)
Truck with Rated Load		8740 (3970)	8680 (3940)

Refer to General Specification Section for Speed vs Grade and Drawbar Pull Qualifications.

CARRIAGE LIFT – LOWERING SPEEDS

Condition	Power	Mast Type	Lift Speed		Lowering Speed	
			R60 4-WD	**R80 4-WD**	**R60 4-WD**	**R80 4-WD**
			fpm (m/s)	fpm (m/s)	fpm (m/s)	fpm (m/s)
Empty	Diesel	STD	67 (0.34)	67 (0.34) 48 (0.24)	48 (0.24)	
		FFT	71.5 (0.36)	71.5 (0.36) 58 (0.29)	58 (0.29)	
Loaded		STD	65 (0.33)	52 (0.26) 66 (0.34)	66 (0.34)	
		FFT	68.5 (0.35)	62 (0.32) 77 (0.39)	80 (0.41)	

R60 / R80 4-WHEEL DRIVE

MAST PERFORMANCE & CAPACITY TABLE

Mast Type	Maximum Fork Height (1)	Overall Lowered Height	Free Fork Height	Tilt Degrees	Capacities (Mast Vertical) 24" (500 mm) Load Center	
					R60 4-WD	R80 4-WD
					Drive Tires 158 x 19.5 – 12 ply Singles 87.9" (2230 mm) O.A.W.	Drive Tires 15 x 19.5 – 12 ply Singles 87.9" (2230 mm) O.A.W.
	in (mm)	in (mm)	in (mm)	fwd (bkd)	lb (kg)	lb (kg)
	120 (3050)	106.5 (2700)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
(45 degrees	132 (3350)	112.5 (2860)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
Forward	144 (3660)	118.5 (3010)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
Tilt STD)	156 (3960)	124.5 (3160)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
	168 (4270)	130.5 (3310)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
Standard	180 (4570)	136.5 (3460)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
2-Stage	192 (4880)	142.5 (3620)	5.7 (146)	45 (12)	6000 (3000)	8000 (4000)
*2500 psi	204 (5180)	148.5 (3770)	5.7 (146)	45 (12)	6000 (3000)	7850 (3925)
17240 kPa	216 (5490)	152.5 (3920)	5.7 (146)	45 (12)	6000 (3000)	7700 (3850)
	228 (5790)	160.5 (4080)	5.7 (146)	45 (12)	6000 (3000)	7550 (3775)
	240 (6100)	166.5 (4230)	5.7 (146)	45 (12)	6000 (3000)	7400 (3700)
	120 (3050)	87 (2210)	43.75 (1110)	37 (12)	6000 (3000)	8000 (4000)
Full Free	132 (3350)	91 (2310)	47.75 (1210)	37 (12)	6000 (3000)	8000 (4000)
Triple	144 (3660)	95 (2410)	51.75 (1310)	37 (12)	6000 (3000)	8000 (4000)
3-Stage	156 (3960)	99 (2510)	55.75 (1420)	37 (12)	6000 (3000)	8000 (4000)
	168 (4270)	103 (2610)	59.75 (1520)	37 (12)	6000 (3000)	8000 (4000)
	180 (4570)	107 (2720)	63.75 (1620)	37 (12)	6000 (3000)	8000 (4000)
	192 (4880)	111 (2820)	67.75 (1720)	37 (12)	6000 (3000)	8000 (4000)
	204 (5180)	115 (2920)	71.75 (1820)	37 (12)	5800 (2625)	7750 (3525)
*2500 psi	216 (5490)	119 (3020)	75.75 (1920)	37 (12)	5600 (2550)	7550 (3425)
17240 kPa	228 (5790)	123 (3120)	79.75 (2030)	37 (12)	5450 (2475)	7300 (3325)
	240 (6100)	127 (3220)	83.75 (2130)	37 (12)	5250 (2375)	7050 (3225)
(37 degrees	252 (6400)	131 (3330)	87.75 (2230)	37 (12)	5050 (2300)	6850 (3100)
forward	264 (6710)	135 (3430)	91.75 (2330)	37 (12)	4850 (2225)	6600 (3000)
Tilt Req'ed)	276 (7010)	139 (3530)	95.75 (2430)	37 (12)	4700 (2125)	6400 (2900)

Standard Production Masts are marked to the left of the Specifications.

Based on 2" (50 mm) thick fork.
The foregoing specifications assume the use of drive axles, tires and tilt angles specified. Other combinations are possible which can modify Resultant capacity. They may, however, if misapplied result in instability and therefore should not be attempted without the written approval of appropriate Sales Engineering for lift trucks.

* Hydraulic System Pressures (Relief Valve Settings)

(1) Overall Extended Height is equal to Maximum Fork Height plus Carriage Height. Carriage Height is 55.5" (1410 mm).

Meets or exceeds all requirements of American Society of Mechanical Engineers (ASME) B56.6.a-1994 Safety Standards for Rough Terrain Fork Lift Trucks.

R60 / R80 4-WHEEL DRIVE

MAXIMUM CAPACITIES AT VARIOUS LOAD CENTERS

Load Center	Fork Length	Capacities – Mast Vertical			
		R60 4-WD		**R80 4-WD**	
		Standard Mast	Full Free Triple Mast	Standard Mast	Full Free Triple Mast
in (mm)	in (mm)	lb (kg)	lb (kg)	lb (kg)	lb (kg)
16 (400)		7000 (3175)	7000 (3175)	8000 (4000)	8000 (4000)
18 (450)		6700 (3050)	6700 (3050)	8000 (4000)	8000 (4000)
20 (500)		6450 (3000)	6450 (3000)	8000 (4000)	8000 (4000)
22 (550)		6250 (2850)	6250 (2850)	8000 (4000)	8000 (4000)
24 (600)		6000 (2750)	6000 (2750)	8000 (4000)	8000 (4000)
26 (650)		5800 (2650)	5800 (2650)	7750 (3525)	7750 (3525)
28 (700)	48 (1220)	5600 (2550)	5600 (2550)	7500 (3425)	7500 (3425)
30 (750)		5450 (2475)	5450 (2475)	7250 (3300)	7250 (3300)
32 (800)		5250 (2400)	5250 (2400)	7000 (3200)	7050 (3200)
34 (850)		5100 (2325)	5100 (2325)	6800 (3100)	6850 (3100)
36 (900)	54 (1370)	4950 (2275)	4950 (2275)	6600 (3025)	6650 (3025)
38 (950)		4800 (2200)	4850 (2200)	6450 (2925)	6450 (2925)
40 (1000)	60 (1525)	4700 (2150)	4700 (2150)	6250 (2850)	6300 (2850)
42 (1100)		4550 (2050)	4550 (2075)	6100 (2775)	6100 (2775)
44 (1100)	66 (1675)	4450 (2025)	4450 (2025)	6000 (2700)	5950 (2725)
46 (1150)		4350 (1975)	4350 (1975)	5800 (2650)	5800 (2650)
48 (1200)	72 (1830)	4250 (1925)	4250 (1925)	5650 (2575)	5650 (2575)

Above listed Capacity Ratings are applicable to Fork Heights with Mast Vertical when machine is equipped with Standard Carriage
And two Pallet forks of appropriate cross-section for length stated. R60 4-WD Standard Mast – 240" (6100 mm), Full Free Triple Mast – 192"
R80 4-WD Standard Mast – 192" (4880 mm), Full Free Triple Mast – 192"

PALLET FORK SPECIFICATIONS

Model	Shaft Type					
	Width	Thickness	Length Range (2 Forks)	Bottom Taper	Shaft Height	Hole Diameter
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
R60 4-WD	4 (100)	1.75 (45)	42 through 48 (1065 through 1220)	26 (660)	47.6 (1210)	2.13 (54)
	5 (125)		54 through 72 (1370 through 1830)			
R80 4-WD	4 (100)	2.0 (50)	42 through 54 (1065 through 1370)	30 (762)	47.6 (1210)	2.13 (54)
	5 (125)		60 through 72 (1525 through 1830)			

Standard minimum fork length is 48" (1220 mm). Contact Sales Engineering for availability of lengths longer or shorter than those listed. Refer to General Information Section for dimensional reference and line drawings.

SIDESHIFTER CARRIAGES

Model	Mast Type	Carriage Width	Capacity Reduction @ 24" (500 mm) Load Center	Centerline of Drive Axle to Fork Face	Carriage Height	Fork Adjustment Carriage In to In	Fork Adjustment Carriage Out to Out	Weight Less LBR
		in (mm)	lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg)
R60 4-WD	STD	80 (2030)	0 (0)	32.7 (831)	63.9 (1620)	2.6 (40)	77 (1980)	760 (345)
	FFT			33.1 (841)				
R80 4-WD	STD			33 (837)				
	FFT			33.4 (847)				

FORK CAPACITY REDUCTION TABLE (2 FORKS)

Model	Mast Type	Fork Data				Capacity Reduction
		Width	Thickness	Maximum Length	Weight Standard Pallet	Standard Pallet @ 24" (500 mm) Load Center
		in (mm)	in (mm)	in (mm)	lb (kg)	lb (kg)
R60 4-WD	Standard or Full Free Triple	4 (100)	1.75 (45)	42 (1065) 48 (1220)	330 (150) 354 (161)	0 (0)
		5 (125)		54 (1370) 60 (1525) 66 (1675) 72 (1830)	464 (210) 494 (224) 524 (238) 554 (251)	
R80 4-WD	Standard or Full Free	4 (100)	2.0 (50)	42 (1065) 48 (1220) 54 (1370)	364 (165) 392 (178) 420 (191)	
		5 (125)		60 (1525) 66 (1675) 72 (1830)	550 (250) 584 (265) 618 (280)	

No Capacity reduction is required for fork lengths of 72" (1830 mm)) or less, unless
- A cross section of greater size is used than that listed
- More than two forks are used

AUXILIARY HYDRAULIC SYSTEM SPECIFICATIONS

Mast Type	MFH Range (1) in (mm)	System Type (2) (3) 3-Section Valve	System Type (2) (3) 4-Section Valve	Additional Tilt Restrictions	Hose Size (I.D. & Type)
Standard	120 through 240 (3050 through 6100)	Internal Sheaves one hose right side and one hose left side	Not Available	None	.25" (6 mm) Thermoplastic
Full Free Triple	120 through 360 (3050 through 9140)	Standard (4)	Internal Sheaves one hose right side and one hose left side	None	

(1) The auxiliary hydraulic System Specifications listed are limited to the MFH ranges shown. For system adaptability to other MFH ranges, consult Sales Engineering.
(2) Hydraulic Control Valves – Sectional with non-relieved spools as standard.
(3) Hose Termination – Standard hose termination will be capped fittings at truck carriage.
(4) A Three Section Valve is standard on trucks equipped with Full Free Triple Masts. First lever operates primary lift cylinder, second lever operates secondary lift cylinder, third lever operates tilt.

CONCRETE BLOCK FORK SPECIFICATIONS

Model	Shaft Type: Maximum Capacity Rating Per Fork At Rated Load Centers 20" (500 mm)	24" (600 mm)	Width	Thickness	Length	Bottom Taper	Shaft Height	Hole Diameter	Fork Wgt (Per Fork)
	lb (kg)	lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg)
R60 4-WD	1850 (850)	1540 (710)	2 (51)	1.75 (44)	38 (711) 46 (1168)	12 (305)	47.6	2.13 (53)	93 (42.2) 101 (45.8)
R80 4-WD	2400 (1110)	2000 (920)		2 (51)	38 (711) 46 (1168)		(1210)		104 (47.2) 113 (51.3)

All dimensions shown are actual, not rounded. The tip configuration is a spherical radius which is tapered to Blend into the fork blade. Refer to General Specification Section for dimensional reference and line drawing.

SIDESHIFTER CARRIAGES WITH CONCRETE BLOCK FORKS

Model	Carriage Type	Carriage Width (1)	Number of Forks Recommended	Capacity Reduction (2) 24" (500 mm) Load Center	Center Lines of Drive Axle to Fork Face Mast Type STD	Center Lines of Drive Axle to Fork Face Mast Type FFT	Carriage Height	Fork Spacing	Carriage Weight
		in (mm)		lb (kg)	in (mm)	in (mm)	in (mm)	in (mm)	lb (kg)
R60 4-WD	Shaft	78 (1980)	8	0 (0)	29.4 (747)	29.8 (765)	63.9 (1620)	7.8 (200)	760 (345)
R80 4-WD					29.7 (754)	30.1 (770)			

(1) Side shift Travel is 4" (102 mm) each side of centerline.
(2) Capacities are applicable to fork heights (mast vertical) up through 168" (4270 mm) with Standard Mast and 120" (3050 mm) with Full Free Triple Masts. Consult Sales Engineering for capacities at fork heights above those listed.

COMPONENT SPECIFICATIONS

ENGINES

Diesel Powered Models (N/A for R60 / R80 4-WD or RC60 Low Profile Models)

Diesel Powered Models
Caterpillar Model 3054C, 4 cylinder, 4 cycle, direct injection.

Cylinders – cast in block with removable head.
Pistons – aluminum alloy, 4-ring type with two compression and two oil control rings.
Crankshaft – chrome molybdenum steel forging, induction hardened, statically and dynamically balanced, mounted with five main bearings.
Bearings – (Rod and Main) replaceable type, thin wall, steel backed, aluminum-tin lined.
Lubrication – pressure feed to rocket arms, connecting rod, camshaft and main bearings from rotary type pump.
Governor – hydraulic type, integral with fuel injection pump.
Mounts – three point rubber cushioned.

FUEL SYSTEM

Diesel Powered Models

Fuel Tank – Removable for servicing.
Capacity – 18.5 U.S. Gallons (70 liters).

Engine – direct injection system.
Injection Pump – gear driven, distributes, meters and pressurized fuel to injectors.
Injectors – orifice type, atomize fuel into combustion chambers.
Fuel Filters – two in line units. The first unit is a combination edge type filter and sediment bowl; the second unit is a replaceable cartridge filter.
Fuel Pump – camshaft driven, mechanical pump with hand priming lever.
Engine Shutdown Control – electric key control mounted on steering control pedestal stops engine by shutting off fuel at injector pump.
Starting Aid – automatic electric heater coil which preheats and ignites a mixture of fuel and air in the intake manifold for cold weather starting ease.

ENGINE FILTERS

Air – dual-stage with pre-cleaner, dry type air cleaner with replaceable pleated paper cartridge and molded rubber connecting hose. Optional high air intake with service indicator and pre-cleaner.
Oil – quick change, spin-on, full flow type filter.

COOLING SYSTEM

Pressurized 7 psi (48.3 kPa) system – cross flow type, in-line tube and fin radiator with overflow bottle.
Six blade pusher fan.
Powershuttle System Capacity – 19 qt (18.0 liter).

EXHAUST SYSTEM

Muffler – two-pass design constructed of 16-gauge steel with all welded seams.
Exhaust Pipe (Standard) – low level, rear outlet type.
Exhaust Pipe (Optional) – vertical stack mounted on rear leg of overhead guard. A perforated metal heat guard is provided as standard equipment for operator and service personnel protection.

ELECTRICAL SYSTEM

System – 12 volt, negative ground; 60 amp circuit breaker protected.
Alternator – 60 amp, ventilated type with integral solid state voltage regulator.
Ignition Switch – a combination key type ignition and starter switch. Switch is mounted on a steering control pedestal.
Battery – 700 cold cranking amps for diesel models.
Signal Horn – convolute trumpet type with high audible signal.

Starter – 600 amp capacity, totally enclosed, positive engagement type with automatic disengagement lockout protection.

INSTRUMENTATION

Instrument panel is located on the steering control pedestal and contains three warning lights (engine oil pressure, engine coolant temperature and alternator output). A direct reading engine hour meter is also located on the instrument panel. Fuel gauge is mechanical type mounted on tank. All indicators are functionally marked with pictograph symbols. An electric gauge package is optionally available.

POWER SHUTTLE TRANSMISSION

Powershuttle with Torque Converter – selective type, four speeds forward and four speeds reverse.
Gear Shift Forward / Reverse – steer column mounted left hand operation.
Speed Selection – floor mounted right hand operation. Full reversing capability in all four gears. Forward and reverse shifting without depressing inching control pedal.
Inching Control Pedal – left foot operation, is interlocked with brake system for precise inching control.
The forward and reverse gear train is controlled by oil cooled, pressure lubricated, self adjusting, multiple disc clutches.

4-WHEEL DRIVE

4-Wheel Drive with steer axle drive disconnect. Steer axle engages by directing power flow from the transmission through a vertical drop box into a double U-joint drive shaft. Floor mounted mechanical lever operated.

DRIVE AXLE

Towable & 4-WD Axle (Towable features not available on R60 / R80 4-Wheel Drive models)

Double reduction with planetary gear in differential (four pinion type). Hypoid ring and pinion gear set. Full floating axle shaft transmits torque only; truck weight is supported by load bearing spindles in axle housing. Constant flow of oil lubricates gears and bearings for long life. Towing package uses an electric disconnect system which disconnects the power train from the differential for towing.

Non-Tow Axle

Planetary, enclosed, oil cooled, mechanically applied, disc brakes for long life in dirty environment. R40/R50/RC60 Axle provides locking differential as standard provides greater control in extreme conditions. R60/R80 Axle provides Limited Slip Differential (LSD) as standard. The LSD improves the steerability of the machine in soft or muddy soil conditions, because The inside drive wheel will rotate at a different speed than the outside drive wheel.

COMPONENT SPECIFICATIONS

BRAKES

Towable Axle

Service Brakes – internal expanding hydraulic brakes in drive wheel. Riveted linings with 99.2 in^2 (640 cm^2) of effective brake area per wheel.
Parking Brake – lever actuated, mechanically sets the service brakes with equal pressure to both wheels. Towing brakes for air brakes.

Non-Tow Axle

Enclosed in oil, brake discs with mechanical brake application. Pedal locking provides parking brake feature. Drive line brake provides secondary holding brake.

4-Wheel Drive Models

Service Brakes – self-energizing, manual adjusting, internal expanding hydraulic drum brakes in front Axle only. Riveted linings with 99.2 in^2) (640 cm^2) of effective brake area per wheel.
Parking Brake – lever actuated, mechanically sets the service brake with equal pressure to both wheels.

WHEELS AND TIRES

Wheel – Drop center one piece design.
Tires – Highway service on towable only. Pneumatic type.

R40 / R50 / RC60

Standard Drive – 15” x 19.5” – 14 ply
Standard Steer – 12” x 16.5” – 10 ply
Optional Drive (FFT Masts Only) – 18” x 19.5” – 16 ply

R60 / R80

Standard Drive – 18” x 19.5” – 16 ply
Standard Steer – 14” x 17.5” – 10 ply*

R60 / R80 4-Wheel Drive

Standard Drive – 15” x 19.5” – 12 ply
Standard Steer – 15” x 19.5” – 12 ply

* 18” x 19.5” Radials on Non-Tow Models.

FRAME

Frame and body are an integral unit. Frame is fabricated from heavy steel plate, welded into box sections for strength and torsional rigidity. Hinged swing-up hood permits easy access to engine for checks and service. Removable counterweight is bolt mounted to the rear of the frame.

STEERING GEAR

Full hydraulic power steering utilizing a gear driven, vane type pump. Steering unit consists of a control valve and a metering section to direct and meter fluid to the hydraulic cylinder. Metering section also acts as a manually operated pump to provide manual steering in event of an inoperative engine or hydraulic supply pump. Oil supply for the steering unit is from the main hydraulic system. Power cylinder is mounted above steer axle for protection. Steering wheel diameter is 16” (406 mm).

STEERING AXLE

2-Wheel Drive Models

Cast alloy steel with spring suspension 4" (102 mm) thick.
Leaf Springs – (R40 / R50 / RC60) eleven leaves each side 2.5" (63 mm) wide and .32" (8 mm) thick.
Leaf Springs – (R60 / R80) twelve leaves each side 2.5" (63 mm) wide and .36" (9 mm) thick.
Springs are heavy duty, shackle mounted to frame to absorb road shock and feature a cupped center bolt hole for positive and maximum life.

4-Wheel Drive Models

Driving steer axle has planetary gear reduction in hubs for reduced axle shaft and universal joint stresses. Compact center section for increased under clearance. Integral power steer cylinder for strength and rigidity, with simplified linkage, positioned above axle for component protection.
Leaf Springs – Thirteen each side 2.5" (63 mm) wide and 0.36" (9 mm) thick to absorb road shock. Springs are heavy duty, shackle mounted to frame and feature cupped bolt hole for positive positioning and maximum life.

TOWING EQUIPMENT

Not Available on 4-Wheel Drive Models
Tow package includes an exclusive tow alarm system and electric disconnect for the differential, 36" (915 mm) or 48" (1220 mm) tow bar length, includes air control towing brakes. Tow bar fitted with two .375" (10 mm) chains and a 6.2" (159 mm) O.D., 3.0" (76 MM) I.D. pintle eye for coupling with a pintle hook. The package also includes tow truck activated stop, tail and turn lights mounted and guarded on the drive tire fenders.

OPERATOR'S SEAT

Semi-bucket seat with contoured backrest. Covering is heavy vinyl-on-fabric. Lever adjustable in 0.5" (13 mm) increments with a total fore and aft adjustment of 4" (102 mm). Suspension seat optionally available.

MASTS

Two stage standard and three stage FFT masts. Rolled steel channel stationary and elevating members extend on four (six on FFT) adjustable rollers and adjustable blocks adsorb fore / aft side loading. Forged alloy steel crosshead with anti-fiction bearing mounted chain rollers. Leaf type lift chain.

Mast Tilt – 8 Degrees Forward / 12 Degrees Back (Tilt Bypass allows tilt to 45 Degrees for Transporting the R-Series). Note: FFT Mast on 4-Wheel Drive only has 37 Degree forward tilt after pressing tilt bypass button.

CARRIAGE

Shaft type high visibility single center bar type. Carriage rides on six adjustable load rollers and has Four adjustable side thrust rollers to absorb fore / aft and side loading.

FORKS

Alloy steel forgings, reinforced at the heel and heat treated for high strength and fatigue resistance. Semi-rounded thin tip with long bottom taper for easy insertion under load. Shaft mounted to carriage. Fork types available are standard pallet from factory.

NOBLE CONSTRUCTION EQUIPMENT, INC.

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