

TRANSMISSION

With International engine: Spicer CM5052-C constant mesh main transmission, with 7231-D auxiliary.

Travel speed — mph (km/h):

Aux. Trans.	Main Transmission				
	1st	2nd	3rd	4th	5th
Low	4 (6)	6 (10)	10 (16)	17 (27)	25 (40)
Direct	8 (13)	12 (19)	21 (34)	37 (60)	53 (85)
Overdrive	9 (14)	14 (23)	25 (40)	43 (69)	62 (100)

With GM engine: Spicer CM6253-B constant mesh main transmission, with 7041 auxiliary.

Travel speed — mph (km/h):

Aux. Trans.	Main Transmission				
	1st	2nd	3rd	4th	5th
Low	3 (5)	5 (8)	9 (14)	16 (26)	24 (39)
2nd	6 (10)	10 (16)	18 (29)	32 (51)	46 (74)
Direct	8 (13)	13 (21)	22 (35)	38 (61)	56 (90)
Overdrive	9 (14)	15 (24)	26 (42)	46 (74)	67 (108)

CLUTCH

14" (36 cm) single plate.

UNIVERSAL JOINTS

Spicer needle bearing.

AXLES

Front: Rockwell FF-931, 12,000 lbs (5443 kg)

Rear: Rockwell SQHD tandem, 38,000 lbs (17,237 kg), single reduction, straight line drive. Ratio 7.8:1. Total final reduction: with International engine, 118:1; with GM engine, 91.2:1. No-spin differential on forward-rear axle.

FRAME

Wide-flange beam, 12" (30 cm), 35 lb/ft (52 kg/m).

SUSPENSION

Front: 14-leaf spring, 41-3/8" x 3" (105 cm x 7.6 cm)

Rear: Hendrickson equalizer beam, 8" (20 cm) oscillation

BRAKES

Rockwell Cam-Master, spring set cam brakes on rear. Cam brakes on front.

Front drums: 16 1/2" x 5" (419 mm x 127 mm)

Rear drums: 16 1/2" x 7" (419 mm x 178 mm)

Spring brake system incorporates emergency and parking brakes on both rear axles.

Thermostat-controlled automatic heated spitter valves on both air tanks.

12 cfm (5.7 L/sec) compressor

WHEELS

Cast spoke, with demountable rim

Optional: Disc, 10-stud, 11 1/4" (29 cm) bolt circle

STEERING

Ross, integral hydraulic power steering.

TIRES

Single front (2): 15.00 x 22.5 14-ply rated, highway tread.

Dual rear (8): 9.00 x 20 10-ply rated, highway tread.

Optional: 9.00 x 20 10-ply rated, traction tread.

10.00 x 20 14-ply rated, traction tread.

10.00 x 20 14-ply rated, highway tread.

10.00 x 22.5 16-ply rated, tubeless, traction tread.

ELECTRICAL SYSTEM

International engine — Electronic ignition system with transistorized voltage regulator. 12-volt, 60-amp alternator. Battery: SAE #30 CIM-425.

GM engine — 12-volt 60-amp alternator with integral voltage regulator. Battery: SAE #8D CIM-900.

COOLING SYSTEM

Fin and tube type radiator, with fan shroud.

International engine: 5-blade 22" (56 cm) fan. Surge tank.

GM engine: 6-blade 22" (56 cm) fan.

FUEL SYSTEM

50 gal (189 L) fuel tank, primary and secondary fuel filters.

AIR FILTER

Dry type

OIL FILTER

Full flow, replaceable element.

GOVERNOR

International engine: electronic

GM engine: mechanical

UNDERCARRIAGE CAB

One-man, center-mounted on frame. Bostrom T-bar seat with arm rests, adjustable fore and aft. Tinted safety glass windows. Sliding windows left and right. Fresh air heater and defroster.

HYDRAULIC REMOTE CONTROL

Undercarriage powered by upperstructure engine through hydraulic motor and PTO attached to transmission. Propel and steering levers in upperstructure cab. Brakes set automatically with travel lever in neutral; emergency/parking brake controlled by push button. (Undercarriage engine off when hydraulic remote in use).

STANDARD EQUIPMENT (Undercarriage)

Sealed beam headlights, tail lights, identification light cluster on front and rear, directional lights, 4-way hazard lights, instrument lights. Gauges for oil pressure, water temperature, dual air tank pressures, fuel; voltmeter, tachometer, speedometer, odometer. Electric windshield wiper, windshield washer, wheel and axle wrenches. Wide-angle mirror system with plane and convex mirrors.

WEIGHT

Approximate working weight, including 36" (91 cm) bucket, full fuel tanks —

With Int'l undercarriage engine: 42,565 lb (19,307 kg)

With GM undercarriage engine: 43,105 lb (19,552 kg)

Includes 2750 lb (1247 kg) counterweight on upperstructure.

Fluid capacities in U.S. gallons. Specifications subject to change without notice.

G660

GRADALL®

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Wheel Undercarriage



Specifications, Operating Ranges

Form No. 8206

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G-660 SPECIFICATIONS

- A — Maximum range
Reach: 29'11" (9.1 m) at 5'6" (1.7 m) above ground level
Surface reach: 29'6" (9 m)
Digging depth: 22'5" (6.8 m)

- B — Loading height, boom extended: 16'3" (5 m)
- C — Loading height, boom retracted: 10'4" (3.1 m)
- D — Bucket pivot: 165°
- E — Boom length, extended: 24'1" (7.3 m)
- F — Boom length, retracted: 12'1" (3.7 m)

- G — Boom pivot point: 5'6" (1.7 m) above ground level, 2' (.6 m) forward from centerline of rotation

- H₁ — Minimum reach for surface clean-up, bucket level at ground line, boom retracted: 12' (3.7 m)

- H₂ — Minimum surface reach, digging: 8'9" (2.7 m)

- J₁ — Level cut range
- J₂ — Maximum depth for 8' (2.4 m) level cut: 21'3" (6.5 m)
- J₃ — Minimum radius of level cut range: 2'4" (.7 m)
- K — Maximum depth of vertical wall cut: 6'8" (2 m)

- L₁ — Maximum working height: 23'2" (7.1 m)
- L₂ — Maximum working height with bucket below ground level: 13'1" (4 m)

- M — Tail swing: 9'4" (2.8 m)
- N₁ — Upperstructure ground clearance: 3'11" (1.2 m)
- N₂ — Undercarriage ground clearance: 10" (25.4 cm)
- O — Boom tilt: 90° each way, total 180°
- P — Wheelbase: 14'3" (4.3 m)
- R — Overall width: 8' (2.4 m)

- Boom raise and lower
- Above ground level 30°
 - Below ground level 90°
 - Total arc 120°

RATED LIFT CAPACITY OVER END OR SIDE — Lb (kg)

All loads shown are limited by hydraulic lift capacity rather than stability.

The above loads are in compliance with SAE Standard J-1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.

- Counterweight: 2750 lbs (1247 kg)
- The rated lift capacity is based on machine equipped with 8365-6004 36" (91 cm) excavating bucket weighing 690 lbs (313 kg). For other buckets, adjust the listed capacities as follows:
- 8365-6005 24" (61 cm) exc. — add 190 lbs (86 kg)
 - 8365-6007 30" (76 cm) exc. — add 70 lbs (32 kg)
 - 8365-6003 42" (107 cm) exc. — subtract 70 lbs (32 kg)
 - 8365-6006 48" (122 cm) exc. — subtract 130 lbs (59 kg)
 - 8365-6008 60" (152 cm) ditching — add 30 lbs (14 kg)
 - 8365-6009 40" (102 cm) pav. rem. — subtract 210 lbs (95 kg)

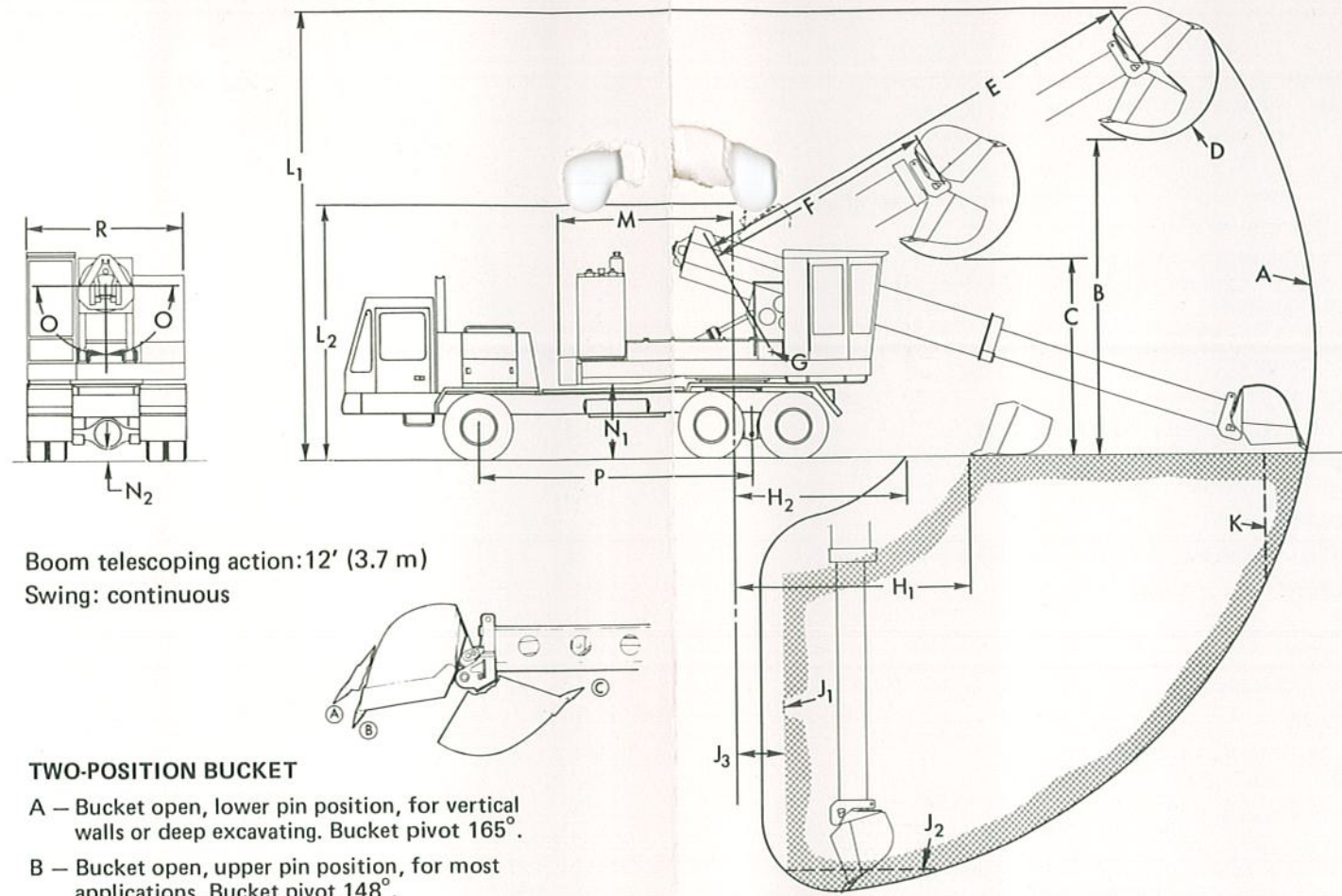
The load point is located on the bucket pivot point, including loads listed for maximum radius. Do not attempt to gain additional radius by wrapping the load line around the back of the bucket.

LOAD POINT HEIGHT	LOAD RADIUS						Maximum Radius
	5' (1.5 m)	10' (3 m)	14' 1/2" (4.3 m)	15' (4.6 m)	20' (6.1 m)	25' (7.6 m)	
Above Ground Level	15' (4.6 m)			4929 (2235)	3366 (1527)		
	10' (3 m)			7078 (3210)	4366 (1980)	2797 (1268)	2600 @ 25'9" (1179) (7.8 m)
	Boom Level 8'4" (2.5 m)		Minimum Reach 8262 (3747)	7467 (3386)	4554 (2065)	2908 (1319)	2641 @ 26'1" (1198) (8 m)
	5' (1.5 m)			7605 (3449)	4686 (2125)	3009 (1365)	2697 @ 26'3" (1223) (8 m)
At Ground Level				6666 (3023)	4379 (1986)	2902 (1316)	2753 @ 25'7" (1249) (7.8 m)
Below Ground Level	5' (1.5 m)		7610 (3451)	5406 (2452)	3776 (1712)		
	10' (3 m)	11,140 (5052)	6165 (2796)	4378 (1985)	3148 (1428)		
	15' (4.6 m)	11,075 (5023)	6297 (2856)				

Do not attempt to lift or hold any load greater than these rated values at specified load radii and heights. The weight of slings and any auxiliary lifting devices must be deducted from the rated load to determine the net load that may be lifted.

CAUTION: All rated loads are based on the machine being level on a firm supporting surface. For safe working loads,

the user is expected to make due allowance for his particular job conditions, such as soft or uneven ground, out of level conditions, side loads, hazardous conditions, experience of personnel, etc. The operator and other personnel should fully acquaint themselves with the Operator's Manual furnished by the manufacturer before operating this machine, and rules for safe operation of equipment should be adhered to at all times.



Boom telescoping action: 12' (3.7 m)
Swing: continuous

TWO-POSITION BUCKET

- A — Bucket open, lower pin position, for vertical walls or deep excavating. Bucket pivot 165°.
- B — Bucket open, upper pin position, for most applications. Bucket pivot 148°.
- C — Bucket closed, either pin position.

Travel position, boom in rack, without bucket

- Overall length: 29'2" (8.9 m)
- Overall width: 8' (2.4 m)
- Overall height: 11'3" (3.4 m)

OPERATING RANGES WITH BOOM EXTENSIONS

	4' (1.2 m) Extension & 30" (76 cm) Bucket	6' (1.8 m) Extension & 30" (76 cm) Bucket
Surface Reach	33'6" (10.2 m)	35'6" (10.8 m)
Digging Depth	26'5" (8.1 m)	28'5" (8.7 m)
Depth of 8' (2.4 m) level cut	25'3" (7.7 m)	27'5" (8.4 m)
Loading Height, boom extended	18'3" (5.6 m)	19'3" (5.9 m)

	8' (2.4 m) Extension & 30" (76 cm) Bucket	8' (2.4 m) Extension & Grading Blade
Surface Reach	37'6" (11.4 m)	36'3" (11 m)
Digging Depth	30'5" (9.3 m)	
Depth of 8' (2.4 m) level cut	29'5" (9 m)	
Loading Height, boom extended	20'3" (6.2 m)	

ATTACHMENTS

- 8365-6004 36" (91 cm) Excavating bucket
- 8365-6006 48" (122 cm) Excavating bucket
- 8365-6003 42" (107 cm) Excavating bucket
- 8365-6007 30" (76 cm) Excavating bucket
- 8365-6005 24" (61 cm) Excavating bucket
- 8365-6011 21" (53 cm) Trenching bucket
- 8365-6012 15" (38 cm) Trenching bucket
- 8365-6009 40" (102 cm) Pavement removal bucket
- 8365-6008 60" (152 cm) Ditching bucket
- 8665-6085 72" (183 cm) Dredging bucket
- 8365-6013 Single-tooth ripper
- 8365-6014 Industrial hook
- 8365-6010 8' (2.4 m) Grading blade
- 8665-5003 4' (1.2 m) Boom extension
- 8665-5010 6' (1.8 m) Boom extension
- 8665-5002 8' (2.4 m) Boom extension
- 8665-5004 12' (3.7 m) Tubular boom extension

UPPERSTRUCTURE ENGINE

GM 4-53N diesel, 123 hp (92 kW) at 2400 rpm (operating), 4-valve head, 212 cid (3.5 L), 3-7/8" bore x 4 1/2" stroke (98 mm x 114 mm), 17:1 compression ratio, 282 ft-lb (382 Nm) max. torque at 1800 rpm, cam-operated unit type injectors.
Fuel tank capacity: 60 gal (227 L)
Electric starter, 55 amp alternator, dry-type air cleaner with service indicator, oil filter, permanent anti-freeze.

HYDRAULIC SYSTEM

Three-section tandem pump, flange-mounted to engine with clutch for cold-weather starting, 115 gpm (436 L/min) at 2400 rpm, 120°F (48.9°C).

- Four double-acting cylinders:
- 2 boom hoist: 5" ID, 2 1/4" rod (127 mm x 70 mm)
 - 1 telescoping: 4 3/4" ID, 3" rod (121 mm x 76 mm)
 - 1 tool: 5" ID, 3" rod (127 mm x 76 mm)

Two 30 hp hydraulic motors: swing and boom tilt.

Operating pressures —

- Hoist: 2500 psi (17,237 kPa)
- Tilt, swing, tool: 2400 psi (16,548 kPa)
- Boom: 1500 psi (10,342 kPa)
- Remote control: 2400 psi (16,548 kPa)

Oil capacity: reservoir 100 gal (379 L), system 120 gal (454 L). Visual oil level gauges on reservoir.

Filtration system, built into reservoir: four filter elements (15 micron) with visual indicators, strainer on by-pass; magnet clusters built into filter housings; air filter on reservoir breather. Fin and tube type oil cooler, with thermostat-controlled valve. Pump relief valves on all circuits. Hose relief valves on hoist, telescope, and tool circuits.

UPPERSTRUCTURE CAB

All-weather cab with safety-glass windows, skylight, acoustical treatment, heater and defroster. Front window removable, stored in cab.

CONTROLS

3 levers, 2 pairs of pedals for all boom and upperstructure movements.

Propel and steering levers: remote control.

All controls are self-centering: when controls are released, power for movement disengages.

Engine controls: Key-operated ignition/starter switch, throttle. Engine gauges for oil pressure, water temperature; voltmeter, hour meter.

UNDERCARRIAGE

6x4, Warner & Swasey Model GW-504-66

Wheel base: 171" (4.3 m)

Frame width: 42" (107 cm)

Gross Vehicle Weight: 50,000 lbs (22,680 kg), axle rating. (6x6 carrier also available.)

UNDERCARRIAGE ENGINE

International MV446 gasoline, 235 net hp (175 kW) at 3600 rpm (operating), 446 cid (7.3 L), 4.125" bore x 4.18" stroke (105 mm x 106 mm), 8:1 compression ratio, 381 ft-lbs (517 Nm) net torque at 2600 rpm.

Optional engine: GM 6V-53T turbocharged diesel, 210 net hp (157 kW) at 2600 rpm (operating), 318 cid (5.2 L), 3-7/8" bore x 4 1/2" stroke (98 mm x 114 mm), 18.7:1 compression ratio, 512 ft-lbs (694 Nm) net torque at 1800 rpm.