

UPPERSTRUCTURE ENGINE

GM 4-53 diesel, 115 hp 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, 271 ft-lbs (37.5 mkg) max. torque at 1500 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.

Optional engines: Cat 3208 diesel, 155 hp at 2400 rpm (operating), 636 cid (10.4 l), 4.5" bore x 5" stroke (114 mm x 127 mm), 16.4:1 compression ratio, 385 ft-lbs (52.3 mkg) max. torque at 1400 rpm.

GM 4-71N diesel, 160 hp at 2300 rpm (operating), 2-cycle, 4 cylinders, 284 cid (4.7 l), 4 1/4" bore x 5" stroke (108 mm x 127 mm) 18.7:1 compression ratio, 400 ft-lbs (55.3 mkg) max. torque at 1600 rpm.

HYDRAULIC SYSTEM

Three-section tandem pump, flange-mounted to engine, with clutch for cold-weather starting. With 4-53 or 3208 engine, 115 gpm (435 l/min) at 2400 rpm; with 4-71N engine, 127 gpm (481 l/min) at 2300 rpm.

Four double-acting cylinders:
2 boom hoist: 5" ID, 2 3/4" rod (127 mm x 70 mm)
1 telescoping: 4 1/4" 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 pressure: 1500 psi (105 kg/cm²) and 2400 psi (169 kg/cm²)

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, with hydraulic power assist, for all boom and upperstructure movements.

Propel and steering levers: remote control. All controls are self-centering: when controls are released, machine movements stop automatically.

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

CARRIER
6x4, Warner & Swasey Model G-564-66
Wheel base: 171" (4.3 m)
Frame width: 34" (86.4 cm)
Gross Vehicle Weight: 56,000 lbs (25,402 kg)
axle rating. 6x6 carrier also available.

CARRIER ENGINE

Chrysler I-413-3 gasoline, 180 net hp at 3600 rpm (operating), 413 cid (6.8 l), 4.18" bore x 3.75" stroke (106 mm x 95 mm), 7.5:1 compression ratio, 335 ft-lbs (46.3 mkg) net torque at 2,000 rpm, 90° overhead valves.

Optional Engine: GM 6V-53N diesel, 210 hp at 2800 rpm (operating), 318 cid (5.2 l), 3-7/8" bore x 4 1/2" stroke (98 mm x 114 mm), 17:1 compression ratio, 446 ft-lbs (61.7 mkg) max. torque at 1,500 rpm.

TRANSMISSION

With Chrysler engine: Spicer 5652-B main transmission with 7231-D auxiliary.

With GM engine: Spicer 6352-B main transmission, with 7041 auxiliary. 14" (36 cm) single plate clutch, Spicer needle bearing universal joints.

AXLES

Front: Rockwell FF-931, 12,000 lbs (5,443 kg). Chain snubbers.

Rear: Rockwell SRD tandem, 44,000 lbs (19,958 kg), double reduction, straight line drive. Ratio 7.54:1. Total final reduction: with Chrysler engine 114:1; with GM engine 127:1. No-spin differential on forward-rear axle.

FRAME

Wide flange beam, 10" (25 cm), 39 lb (17.7 kg).

SUSPENSION

Front: 13-leaf main spring, 41-3/8" x 3" (105 cm x 7.6 cm); 4-leaf auxiliary spring, 30" x 3" (76 cm x 7.6 cm).

Rear: Cast steel walking beam, 8" (20 cm) oscillation.

BRAKES

Rockwell Stopmaster, spring set wedge brakes on rear, self-adjusting; cam brakes on front.

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

Rear drums: 15" x 7" (381 mm x 178 mm).

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

AC Wheel Lock Control anti-skid system, all wheels.

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

12 cfm (5.7 l/sec) compressor.

WHEELS

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

TIRES

9:00 x 20 10-ply. Single front with highway tread, dual rear with all-traction heavy-duty tread.

Optional: 10:00 x 20

STEERING

Ross, integral hydraulic power steering.

ELECTRICAL SYSTEM

Chrysler engine — Electronic ignition system with transistorized voltage regulator, 12-volt 60 amp alternator, 95-amp battery.

GM engine — 12-volt 62-amp alternator with integral voltage regulator, 225-amp battery.

COOLING SYSTEM

Fin and tube type radiator, with fan shroud. 6-blade 22 1/2" (57 cm) fan.

FUEL SYSTEM

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

AIR FILTER

Chrysler engine — oil bath type. GM engine — dry type.

OIL FILTER

Full flow, replaceable element.

GOVERNOR

Mechanical.

CAB

One-man. Bostrom T-bar seat, adjustable fore and aft. Tinted safety glass windows. Adjustable side windows, ventilator in cowl.

HYDRAULIC REMOTE CONTROL

Carrier 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. (Carrier engine off when hydraulic remote in use.)

Standard equipment: Dual 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. Heater and defroster, air-operated windshield wiper, windshield washer, bus-type mirrors, wheel and axle wrenches.

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G-660

GRADALL® Hydraulic Excavator

CARRIER

Specifications, Operating Ranges

Travel speed, with Chrysler engine — mph (km/hr.):

Aux. Trans.	Main Transmission				
	1st	2nd	3rd	4th	5th
Low	3 (4.8)	6 (9.7)	10 (16.1)	18 (28.9)	25 (40.2)
Direct	7 (11.3)	12 (19.3)	22 (35.4)	38 (61.2)	50 (80.5)
Overdrive	9 (14.5)	15 (24.1)	26 (41.8)	45 (72.4)	56 (90.1)

Travel speed, with GM engine — mph (km/hr.):

Aux. Trans.	Main Transmission				
	1st	2nd	3rd	4th	5th
Low	2 (3.2)	4 (6.4)	6 (9.7)	11 (17.7)	18 (29)
2nd	4 (6.4)	7 (11.3)	12 (19.3)	21 (33.8)	34 (54.7)
Direct	5 (8)	9 (14.5)	15 (24.1)	26 (41.8)	42 (67.6)
Overdrive	6 (9.7)	11 (17.7)	18 (28.9)	31 (49.9)	50 (80.5)

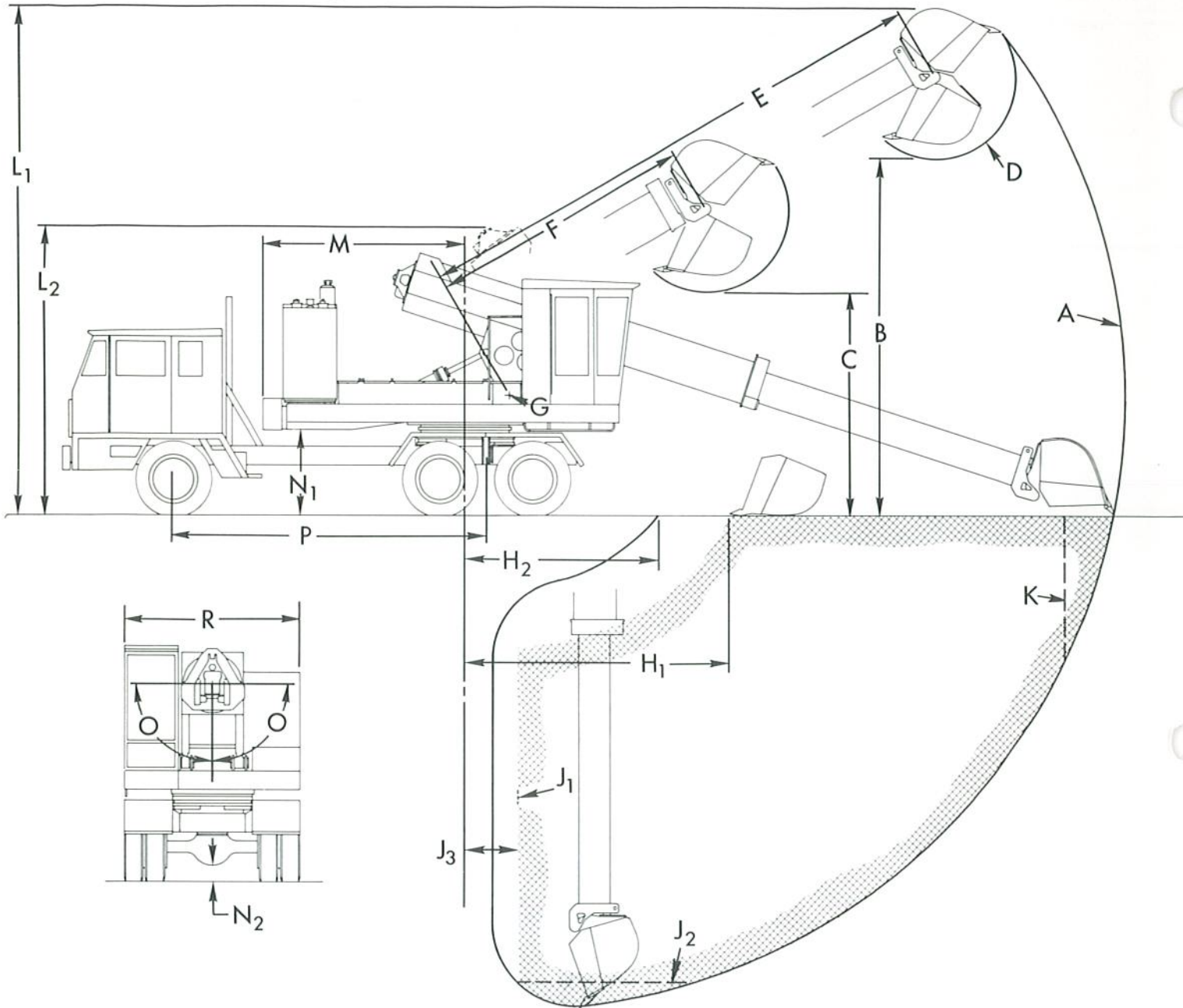


WARNER & SWASEY

THE WARNER & SWASEY CO.
CONSTRUCTION EQUIPMENT
OLON, OHIO 44139



Shown with 36" (91 cm) excavating bucket.



- 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 – Carrier 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°

- Boom telescoping action: 12' (3.7 m)
- Swing: continuous
- Travel position, boom in rack, without bucket –
- Overall length: 27'7" (8.4 m)
- Overall width: 8' (2.4 m)
- Overall height: 11'9" (3.6 m)

RATED LIFT CAPACITY OVER END OR SIDE – Pounds (kg)

Load Point Height	Load Radius						Maximum Radius
	5' (1.5 m)	10' (3 m)	14'½" (4.3 m)	15' (4.6 m)	20' (6.1 m)	25' (7.6 m)	
Above Ground Level	15' (4.6 m)			4445 (2016)	2935 (1331)		
	10' (3 m)			6490 (2944)	3880 (1760)	2375 (1077)	2190 @ 25'9" (993) (7.8 m)
	Boom Level 8'4" (2.5 m)		Minimum Reach 7655 (3472)	6855 (3109)	4055 (1839)	2475 (1122)	2230 @ 26' (1012) (7.9 m)
	5' (1.5 m)			6960 (3157)	4170 (1891)	2565 (1163)	2275 @ 26'3" (1032) (8 m)
At Ground Level				6030 (2735)	3855 (1749)	2450 (1111)	2320 @ 25'7" (1052) (7.8 m)
Below Ground Level	5' (1.5 m)		6860 (3112)	4805 (2180)	3265 (1481)		
	10' (3 m)	10,070 (4568)	5475 (2483)	3810 (1728)	2655 (1204)		
	15' (4.6 m)	10,005 (4538)	4640 (2105)				

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) on machine with GM 4-53 engine
2650 lbs (1202 kg) on machine with Cat 3208 engine
2400 lbs (1089 kg) on machine with GM 4-71N engine

The rated lift capacity is based on machine equipped with 36" (91 cm) excavating bucket weighing 690 lbs (313 kg). For other buckets, adjust the listed capacities as follows:
24" (61 cm) excavating – add 190 lbs (86 kg)
30" (76 cm) excavating – add 70 lbs (32 kg)
42" (107 cm) excavating – subtract 70 lbs (32 kg)
48" (122 cm) excavating – subtract 130 lbs (59 kg)
60" (152 cm) ditching – add 140 lbs (64 kg)
40" (102 cm) pavement removal – 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.

Do not attempt to lift or hold any load greater than these rated values at specified load radii and height.

The weights of slings and any auxiliary lifting devices must be deducted from the rated load to determine the net load that may be lifted.

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.

OPERATING RANGES WITH BOOM EXTENSIONS

	4' (1.2 m) Extension & 30" (76 cm) Bucket	6' (1.8 m) Extension & 30" (76 cm) Bucket	8' (2.4 m) Extension & 30" (76 cm) Bucket	8' (2.4 m) Extension & Grading Blade
Surface Reach	33'6" (10.2 m)	35'6" (10.8 m)	37'6" (11.4 m)	36'3" (11 m)
Digging Depth	26'5" (8.1 m)	28'5" (8.7 m)	30'5" (9.3 m)	
Depth of 8' (2.4 m) level cut	25'3" (7.7 m)	27'5" (8.4 m)	29'5" (9 m)	
Loading Height, boom extended	18'3" (5.6 m)	19'3" (5.9 m)	20'3" (6.2 m)	