Gradall G660C Excavators

Featuring new VHP hydraulics, the Gradall G660C Excavator sets new standards for versatility and efficiency. Productivity ratings and cycle times have been vastly increased with higher volume V-HP pump, relief and control valves.

The G660C offers a choice of V-8 gasoline or turbocharged diesel engine with constant mesh transmissions matched for efficient use of engine horsepower. It features hydraulic power steering, six-wheel air brakes, split-air system and equalizer beam rear suspension for sure-footed travel on off-road job sites.

On the job site, the undercarriage is remote controlled from the upper cab with one joystick and automatic braking. The undercarriage engine is off when the hydraulic remote is in use, saving fuel and prolonging carrier engine life.

Upperstructure designed for rugged durability and operating efficiency

The upper cab is engineered for operator convenience and comfort. New joystick controls provide for faster, easier operation. All controls and instruments are positioned for convenience and efficiency.

The upper engine is enclosed. Cowl ing provides engine protection and reduces noise. Controlled air flow dissipates excess heat for efficient engine and pump operation. Cool air is drawn through oil cooler and radiator, around engine reservoir and pump to pick up heat, then forced out bottom of engine compartment.

An improved valve system handles high oil volume for a fast operating cycle. Built-in relief valves are easy to remove for service. Test ports provide for quick and easy pressure testing. A complete hydraulic filter system, including a by-pass indicator visible from the cab, protects against dirt and foreign particles in the oil. Sight gauges show reservoir oil level at a glance.

Telescoping and tool cylinders of the all-hydraulic telescoping boom are well protected, yet easily accessible for routine maintenance.

The bucket adapter, incorporating four-bar linkage, is mounted on the boom. Double wedge T-bolts facilitate quick-changing of attachments. And, the selection of attachments provides the versatility to keep the G660C on the job...excavating, trenching, ditching, sloping, loading, unloading, dredging, ripping, breaking, demolishing, material handling, grading, finishing and cleaning up.

Wide Frame Undercarriage designed for performance, serviceability, operator visibility and comfort

Available with 6x4 or 6x6, the undercarriage has been designed by Gradall to match the strength and durability of the upperstructure. There’s plenty of power for off-road operation with between-job mobility at highway speeds.

This versatile workhorse has long been known for its unique ability to perform the five basic movements of a human arm: telescoping boom reaches in and out...boom raises and lowers with ability to dig straight down...continuous swing...boom tilt...and bucket wrist action.
RATED LIFT CAPACITY OVER END OR SIDE — Lb. (kg)

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

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

Counterweight: 2400 lbs (1089 kg)
The rated lift capacity is based on machine equipped with 8365-6004 36" (91 cm) excavating bucket weighing 680 lbs (313 kg). For other buckets, adjust the listed capacities as follows:
8365-600S 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.

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

OPERATING RANGES WITH BOOM EXTENSIONS

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<table>
<thead>
<tr>
<th>LOAD POINT HEIGHT</th>
<th>LOAD RADII</th>
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</thead>
<tbody>
<tr>
<td>5' (1.5 m)</td>
<td>10' (3 m)</td>
</tr>
<tr>
<td>15' (4.6 m)</td>
<td>4929</td>
</tr>
<tr>
<td>7078</td>
<td></td>
</tr>
<tr>
<td>6765</td>
<td></td>
</tr>
<tr>
<td>5' (1.5 m)</td>
<td>10' (3 m)</td>
</tr>
<tr>
<td>1170 (5023)</td>
<td></td>
</tr>
<tr>
<td>11140</td>
<td></td>
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<tr>
<td>11075</td>
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</tbody>
</table>

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 such factors as load conditions, side loads, hazardous conditions, experience of personnel, etc. The operator and other personnel should be fully acquainted 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.

UPPERSTRUCTURE ENGINE
GM 4-71N diesel, with blower, liquid cooled, 2 cycle, 4 cylinder, 284 cid (4.7 L), 41/4 bore x 5" stroke (108 mm x 127 mm), 18.7:1 compression ratio. 160 hp (119 kW) gross at 2300 rpm, 145 hp (108 kW) net at 2300 rpm. 400 ft.-lb (542 Nm) maximum torque at 1800 rpm.

Altitude limit 1500' (457 m). De-rate approximately 1.8%/1000' (305 m) above 1500' (457 m).

Maximum slope: 60%
12V electric starter, 12V 55 amp alternator, dry type air cleaner with service indicator, oil filter.

Fuel tank capacity: 60 gal (227 L)
Oil capacity: 20 qt (19 L)
Cooling system capacity: 7.5 gal (28.4 L)

Optional: Deutz F6L413FR diesel, natural aspirated, 4 cycle, air cooled, 6 cylinder, 580 cid (9.5 L), 41/4 bore x 5.1" stroke (124 mm x 130 mm), 18:1 compression ratio. 155 hp (116 kW) gross at 2300 rpm, 143 hp (107 kW) net at 2300 rpm. 450 ft.-lb (610 Nm) maximum torque at 1600 rpm.

Altitude limit 3000' (914 m). De-rate approximately 3.5%/1000' (305 m) above 3000' (914 m).

Maximum slope: 41%
12V electric starter, 12V 33 amp alternator, dry type air cleaner with service indicator, oil filter.
Fuel tank capacity: 60 gal (227 L)
Oil capacity: 20 qt (19 L)

V-HP HYDRAULIC SYSTEM
Two gear-type pumps (one 3-section, one 2-section) on gear box, mounted on engine, with clutch for cold-weather starting.

Pressure-sensing unloading valve built into each pump to produce variable-flow output: minimum 102 gpm (396 L/min), maximum 150 gpm (563 L/min) total at 2300 rpm, 120°F (48.9°C)

Auxiliary pump, 13 gpm (49 L/min), mounted on engine.

Four double-acting cylinders:
2 boom hoist: 5' I.D., 21/2" rod (127 mm x 70 mm), 45/16" (116 mm) stroke
1 tool: 5' I.D., 3" rod (127 mm x 76 mm), 19/8" (498 mm) stroke
1 telescoping: 41/4" I.D., 3" rod (121 mm x 76 mm), 12" (37.2 mm) stroke

Two hydraulic motors: swing, 44 hp (33 kW); tilt, 48 hp (36 kW).

Operating pressures —
Hoist: 2500 psi (172.4 bar)
Tilt: tool: 2750 psi (189.6 bar)
Swing: 2500 psi (172.4 bar)
Boom: 1500 psi (103.4 bar)
Remote Control: 2400 psi (165.5 bar)

Hydraulic oil: 500 psi (34.4 bar)

Oil capacity: reservoir 100 gal (379 L), system 120 gal (454 L).

Viscous oil level gauges on reservoir.

Filtration system, built into reservoir: six filter elements (10 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 relief valve.

Pump relief valves on all circuits. Hose relief valves on hoist, telescope, swing, travel, and tool circuits.
ATTACHMENTS

Buckets fabricated of steel plate, with high strength, low alloy cutting edges and wear strips. Standard attachments available for wide range of applications.

8365-6005 24" (61 cm) Excavating bucket
Cu. yd. m³
1/6 .29

8365-6007 30" (76 cm) Excavating bucket
Cu. yd. m³
1/2 .38

8365-6004 36" (91 cm) Excavating bucket
Cu. yd. m³
1/6 .48

8365-6003 42" (107 cm) Excavating bucket
Cu. yd. m³
1/4 .57

8365-6006 48" (122 cm) Excavating bucket
Cu. yd. m³
1/2 .67

8365-6008 60" (152 cm) Ditching bucket
Cu. yd. m³
1/4 .57

8365-6038 72" (183 cm) Ditching bucket
Cu. yd. m³
1/2 .76

8665-6005 72" (183 cm) Dredging bucket
Cu. yd. m³
1/4 .57

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

8365-6012 15" (38 cm) Trenching bucket
Cu. yd. m³
1/2 .11

8365-6011 21" (53 cm) Trenching bucket
Cu. yd. m³
1/3 .15

8365-6013 Single-tooth ripper

8365-6009 40" (102 cm) Pavement removal bucket
Cu. yd. m³
1/6 .36

GRADALL

New Philadelphia, OH 44663
UPPERSTRUCTURE CAB
All-weather cab with safety-glass windows, skylight, acoustical treatment, heater and defroster. Front window removable, stored in cab.

CONTROLS
Two joysticks (hoist & bucket, telescope & swing), one rocker pedal (tilt) control upperstructure. Joysticks mounted on movable console, adjustable for individual operator convenience. One joystick on fixed console for hydraulic remote control of undercarriage travel and steering.

Pump selector valve. Emergency/parking brake control. Joysticks and rocker pedal are self-centering when controls are released. Power for movement disengages.

Engine controls: key-operated ignition/starner switch with key-on warning light, throttle and emergency shutdown. Oil pressure and water temperature gauges, voltmeter, hour meter.

SWING
Swing speed: 7.5 rpm, 0 to 90° in 3.3 seconds.
Swing brake: automatic swing parking brake, swing spring, hydraulic release. Dynamic braking provided by hydraulic system.

UNDERCARRIAGE
6x4, Gradall Model GW-504-66
Wheel base: 171" (4.3 m).
Frame width: 42" (107 cm).
Gross Vehicle Weight: 50,000 lb (22,680 kg), axle rating. (6x6 undercarriage also available.)

UNDERCARRIAGE ENGINE
GM 6V-537 turbocharged diesel, 2 cycle, 225 hp (168 kW) gross at 2600 rpm, 210 net hp (157 kW) at 2600 rpm (operating), 318 cid (5.2 L), 3.7/8" bore x 4.1/2" stroke (68 mm x 114 mm), 18.7:1 compression ratio, 512 ft-lb (694 Nm) net torque at 1800 rpm.

Optional engine: Ford 7.0 L (429) V8-V-8 gasoline, 234 gross hp (175 kW) at 4000 rpm, 429 cid (7.0 L), 4.388" bore x 3.599" stroke (111 mm x 91 mm), B6.1 compression ratio, 354 ft-lb (480 Nm) torque at 2700 rpm.

ELECTRICAL SYSTEM

COOLING SYSTEM
Fin and tube type radiator, with fan shroud.
GM engine: 6-blade 24" (61 cm) fan.
Ford engine: 5-blade 20" (51 cm) fan.

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

AIR FILTER
Dry type.

OIL FILTER
Full flow, replacement element.

GOVERNOR
Ford engine: electronic
GM engine: mechanical

TRANSMISSION
With Ford engine: Spicer CM5552-C constant mesh main transmission, with 7041 auxiliary.

Travel speed — mph (km/hr): 

<table>
<thead>
<tr>
<th>Aux. Trans.</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>3 (4.8)</td>
<td>5 (8.0)</td>
<td>9 (14)</td>
<td>16 (26)</td>
<td>23 (37)</td>
</tr>
<tr>
<td>Second</td>
<td>6 (9.7)</td>
<td>10 (16)</td>
<td>18 (29)</td>
<td>30 (48)</td>
<td>44 (71)</td>
</tr>
<tr>
<td>Direct</td>
<td>7 (11.3)</td>
<td>13 (21)</td>
<td>21 (34)</td>
<td>37 (60)</td>
<td>53 (85)</td>
</tr>
</tbody>
</table>

With GM engine: Spicer CM5263-B constant mesh main transmission, with 7041 auxiliary.

Travel speed — mph (km/hr): 

<table>
<thead>
<tr>
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<th>1st</th>
<th>2nd</th>
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<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>3 (5)</td>
<td>5 (8)</td>
<td>9 (14)</td>
<td>16 (26)</td>
<td>24 (39)</td>
</tr>
<tr>
<td>Second</td>
<td>6 (10)</td>
<td>10 (16)</td>
<td>18 (29)</td>
<td>32 (51)</td>
<td>46 (74)</td>
</tr>
<tr>
<td>Direct</td>
<td>8 (13)</td>
<td>13 (21)</td>
<td>22 (35)</td>
<td>38 (61)</td>
<td>56 (90)</td>
</tr>
</tbody>
</table>

Axles: Eaton EFA-12, 12,000 lb (5443 kg)
Rear: Rockwell SQ-100 tandem, 38,000 lb (17,237 kg), single reduction, straight line drive. Ratio: 7.8:1. Total final reduction: with Ford engine, 125:1, with GM engine, 91.2:1. No-slip differential on forward-rear axle.

FRAME
Wide-flange beam, 12" (30 cm), 36 lb/ft (52 kg/m)

SUSPENSION
Front: 14-leaf spring, 41 1/2" x 3" (105 cm x 7.6 cm)
Rear: Heinrichson equalizer beam, 5" (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.

Throstal-controlled automatic heated splitter valves on both air tanks.
12 cfm (5.7 L/sec) compressor

WHEELS
Cast spoke, with demountable rim
Optional: Disc, 10-stud, 11 1/2" (29 cm) bolt circle

STEERING
Rass, integral hydraulic power steering.

TIRES
Single front: 15.00 x 22.5 14 ply rated, highway tread.
Dual rear: 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.
15.00 x 22.5 16-ply rated, tubeless, traction tread.

UNDERCARRIAGE CAB
One-man, center-mounted on frame. Bosch T-bar seat, 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 pump and PTO attached to transmission. Propels and steering joysticks in upperstructure cab. Brakes set automatically with joystick in neutral; emergency/parking brake controlled by push button. (Undercarriage engine off when hydraulic remote in use).

Electrically-operated travel alarm mounted on undercarriage signals remote control movement in either direction, or reverse movement when powered by undercarriage engine. Meets SAE J-994b Type B classification.

STANDARD EQUIPMENT (Undercarriage)
Sealed beam headlights, tall lights, identification light cluster on front and rear, directional lights, 4-way hazard lights, instrument lights. Gauges for oil pressure, water temperature, fuel gauge, volt meter, speedometer, and odometer. Electric windshield wiper, windshield washer, wheel and axle wrenches. Wide-angle mirror system with plane and convex mirrors.

OPTIONAL EQUIPMENT
Work lights: 2 floodlights on top of boom cradle, 1 floodlight and 1 spotlight on top of upperstructure cab.
Windshield wiper, upperstructure cab.
Heat resistant glass, upperstructure cab.
Fuel gauge, upperstructure engine, in upperstructure cab.
Engine alarms, lights and buzzer in upperstructure cab or undercarriage cab, to warn of low oil pressure or high water temperature in upperstructure engine.
Pre-cleaner, upperstructure engine.
High boom cradle adapter: raises boom pivot point 4" (1.2 m) higher than standard, for increased above-ground reach as may be needed for certain industrial and mine scaling applications. Boom raise and lower with high cradle: 50° above level. 70° below level.
Vandalism protection kit: Lexan upperstructure cab metal window covers for undercarriage cab, locking bars for engine covers, locking cover on hydraulic reservoir, locking fuel cap, battery cover lock.

Tachometer, undercarriage engine.
Spark arrestors.
A — Maximum range
  Reach: 29'11" (9.1 m) at 5'6" (1.7 m)
  above ground level
  Surface reach: 29'8" (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: 5'4" (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" (7.7 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°
Boom telescoping action: 12' (3.7 m)
Swing: continuous
Rated bucket tangential force: 12,900 lb (57.4 kN)
Rated telescoping boom crowd force: 15,980 lb
(71.1 kN)

TRAVEL POSITION,
Boom in rack, without bucket —
Overall length: Overall height:
  29'2" (8.9 m)  11'3" (3.4 m)
Overall width: 8" (2.4 m)

WEIGHT
Approximate working weight, including 36" (91 cm) bucket,
fuel tanks half full —
  With GM undercarriage engine: 43,160 lb (19,566 kg)
  With Ford undercarriage engine: 42,780 lb (19,405 kg)
Includes 2400 lb (1089 kg) counterweight on upperstructure.