

670 Hydro-Scopic Special Features

Custom Built in America. For Today. For the Future.

HYDRO-SCOPIC TELESCOPING BOOM EXCAVATOR

ONE MACHINE DOES THE WORK OF MANY

You'll get more hard work from one Hydro-Scopic than from any other machine in your fleet because a wide variety of easily changed attachments allow an amazing range of construction and maintenance tasks. Beyond its use as a precision excavator, Hydro-Scopic can stand in for backhoes, trenchers, graders and loaders. It can even be used for lifting objects of three tons and more.

SPEED AND COORDINATION GET DIGGING JOBS DONE FAST

Only when you've seen Hydro-Scopic operate can you fully appreciate how its rapid, versatile actions pay big dividends in total yards moved per hour.

Imagine the productivity of an excavator that provides five working functions: the boom hoists and telescopes, the excavator swings and the bucket tilts and curls. All these operations can occur simultaneously, even while the carrier is in motion, under full control from the excavator cab.

New operators will quickly master these rapid, coordinated movements while experienced hands exploit Hydro-Scopic's extreme flexibility to make quick work of production digging and loading.

UNIQUE ABILITIES NO OTHER TYPE OF EXCAVATOR CAN MATCH

More than handling the production work that other excavators can, however, Hydro-Scopic handles precision grading and finishing. And, Hydro-Scopic typically completes an entire task with no need for final shoveling by hand.

Other machines can't match Hydro-Scopic's abilities to work in tight spaces and around obstructions. Culverts, posts and powerlines pose little problem for Hydro-Scopic. With its precise controls and sensitive feel, Hydro-Scopic even works with great accuracy under water to clear or enlarge running ditches or to dig in flooded excavation sites.

THE ONE EXCAVATOR TO HAVE

Consider its many features and uses. You'll agree that Hydro-Scopic is the most versatile type of excavator and over a thousand satisfied users will confirm that Hydro-Scopic heads the list for reliable productivity.

FOR MINIMUM TRANSIT TIME

For most construction and maintenance projects, the 6 x 4 Hydro-Scopics have the traction you'll need to get to the jobsite. Or, choose the sure-footed 6 x 6 version to venture even further off-road. No matter which truck-mounted unit you select, you'll get the convenience of unlimited highway mobility, plus the time and cost savings of eliminating an extra truck needed to transport most other types of excavators.

FULL-FEATURED HYDRAULIC REMOTE DRIVE

At the jobsite, the upperstructure engine powers the carrier using a hydraulic motor attached to the carrier's transmission. From the upperstructure, the operator can control carrier speed, direction and braking.

EXTRA HEAVY-DUTY CARRIERS

Truck-mounted Hydro-Scopics are built on a heavily reinforced, wide-flange 'I' beam frame designed specifically for these excavators. Cross members are integrally welded and distribute working loads equally. The swing-bearing mounting structure is welded integrally to the frame adding to its strength.

TROUBLE-FREE FLUID POWER SYSTEM

The sealed reservoir has a built-in filter and a visual sight glass. An oil filter condition light is provided in the cab. All cylinders have precision-honed barrels and chrome-plated rods and use bolt-on heads for simplified maintenance. Relief and cushion valves are provided throughout the hydraulic system.

PRECISION-MACHINED GEAR-DRIVE TURNTABLE

A hydraulic motor provides 360° of continuous rotation on a ball-bearing turntable. For long life and smooth operation, the mating surfaces are precision-machined to very fine tolerances using a computer-controlled boring mill.

EXCLUSIVE WRIST-ACTION BUCKET

Our exclusive boom-tip hydraulic swivel holds its angle firmly for grading or contouring. It provides 180° of bucket tilt - 90° each way from horizontal - and is fully sealed against dirt and corrosion.

RUGGED, PRECISION BOOM

Hydro-Scopic's exclusive rectangular, fast-cycling boom holds accurate grade extended or retracted. Since the boom itself never pivots, maximum boom strength is maintained regardless of the bucket angle. Boom sections are continuously welded for strength and telescope on adjustable, heavy-duty rollers with aluminum-bronze bushings. Due to the square cross section with rollers at each corner, digging loads are always supported by at least two rollers no matter what the bucket angle.

RETRACTING RAILROAD GUIDE WHEELS

With its optional railroad guide wheels, Hydro-Scopic is an excellent tool for maintaining a railroad right-of-way and it gains this added use with no loss of flexibility to perform other tasks. The guide-wheel mechanism is hydraulically operated and is welded securely to a special, heavy-duty truck frame.

WORKS EASILY IN CONFINED AREAS

With the boom fully lowered, Hydro-Scopic works to within a few feet of the carrier. And, with its shorter tail swing, Hydro-Scopic works in areas where other excavators can't. When used for ditching, Hydro-Scopic will let traffic flow, even on narrow roads.

- Super heavy-duty carriers
- 6 x 4 and 6 x 6 drivetrains available
- Hydraulically assisted power steering
- Isolation-mounted cab with sound deadening
- Tinted, safety-glass windows
- Sound-insulated engine compartment
- 10-speed transmission
- 14-leaf front suspension with snubbers and spring stops
- Cast-steel equalizer beams
- Rear-wheel brakes, spring set and pneumatically released

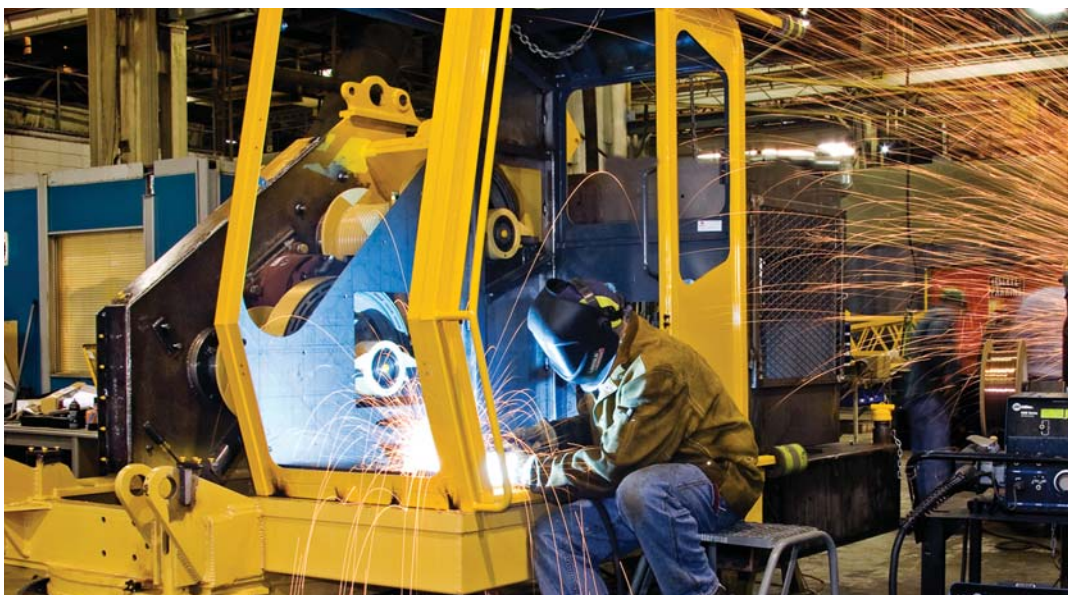


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CUSTOM BUILT IN AMERICA.

670 Hydro-Scopic Working Range

RATED LIFTING CAPACITY – OVER SIDE, ON TIRES – POUNDS (kg)

Load Point Height		Minimum Load Radius	10' (3.0m)	15' (4.6m)	20' (6.1m)	25' (7.6m)	Maximum Load Radius
Above Ground Level	15.0' 4.6m			6910 (3134)	4560 (2068)		3070 (1392) @ 24.7' 7.5m
	10.0' 3.0m	10610 (4813) @ 14.0' 4.3m		9490 (4305)	*5730 (2599)	3620 (1642)	3260 (1479) @ 26.2' 7.9m
	▲ 9.0' 2.7m	*10190 (4622) @ 14.4' 4.4m		*9460 (4291)	*5740 (2604)	3700 (1678)	3280 (1488) @ 26.3' 8.0m
	5.0' 1.5m	*9230 (4187) @ 14.8' 4.5m		*9060 (4110)	*5550 (2517)	*3610 (1637)	*3180 (1442) @ 26.6' 8.1m
At Ground Level		9350 (4241) @ 13.5' 4.1m		8270 (3751)	*5240 (2377)	*3430 (1556)	*3200 (1452) @ 25.9' 7.9m
Below Ground Level	-5.0' 1.5m	9430 (4277) @ 8.8' 2.7m	8860 (4019)	6560 (2976)	4640 (2105)		3420 (1551) @ 24.1' 7.3m
	-10.0' 3.0m	10630 (4822) @ 6.1' 1.9m	7250 (3289)	5260 (2386)	3820 (1733)		3610 (1637) @ 20.8' 6.3m
	-15.0' 4.6m	10640 (4826) @ 6.1' 1.9m	6320 (2867)				4360 (1978) @ 14.9' 4.5m

RATED LIFTING CAPACITY – OVER REAR, ON TIRES – POUNDS (kg)

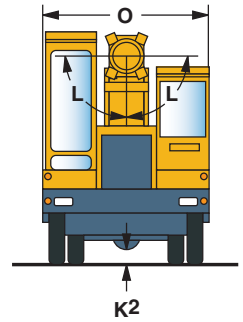
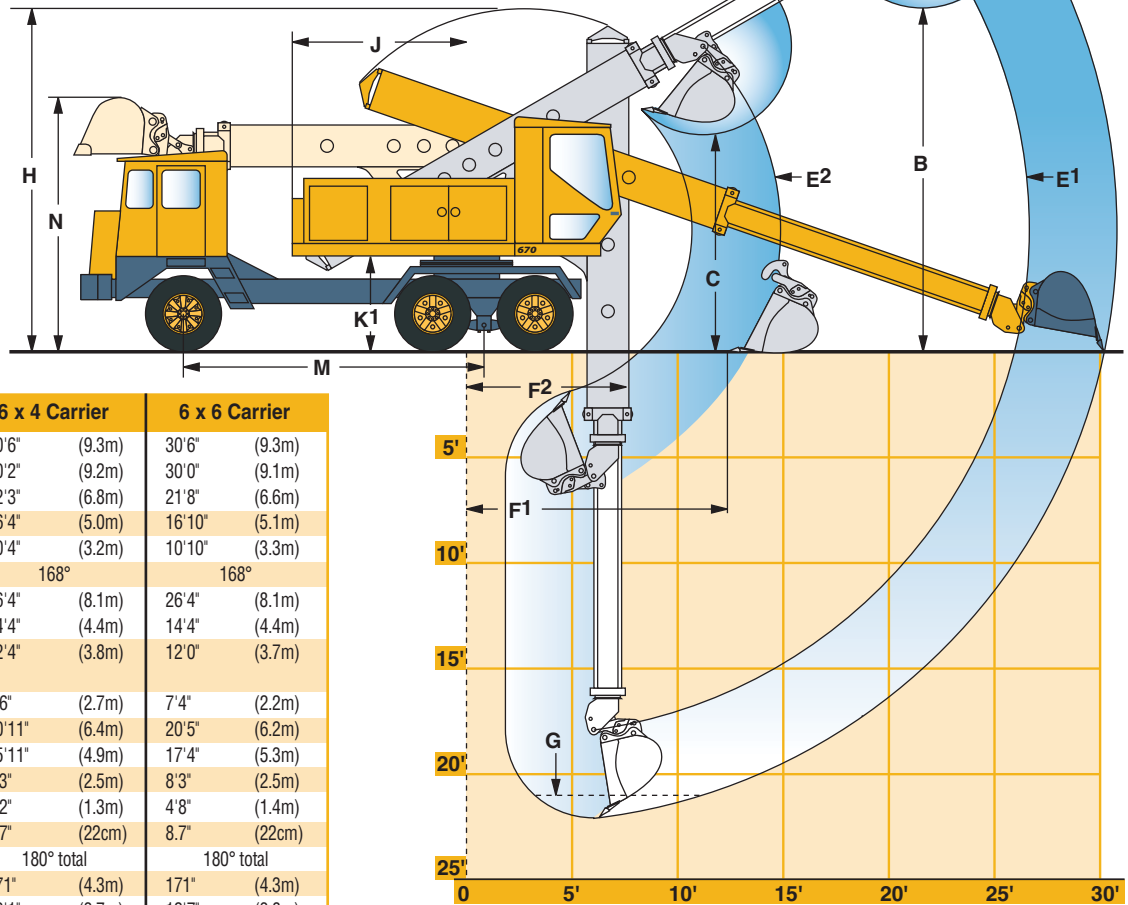
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	10.0' 3.0m	10610 (4813) @ 14.0' 4.3m		9490 (4305)	5730 (2599)	3620 (1642)	3260 (1479) @ 26.2' 7.9m
	▲ 9.0' 2.7m	*10370 (4704) @ 14.4' 4.4m		*9760 (4427)	5860 (2658)	3700 (1678)	3280 (1488) @ 26.3' 8.0m
	5.0' 1.5m	*9520 (4318) @ 14.8' 4.5m		*9360 (4246)	6000 (2722)	3830 (1737)	3320 (1506) @ 26.6' 8.1m
At Ground Level		9350 (4241) @ 13.5' 4.1m		8270 (3751)	5480 (2486)	3630 (1647)	3360 (1524) @ 25.9' 7.9m
Below Ground Level	-5.0' 1.5m	9430 (4277) @ 8.8' 2.7m	8860 (4019)	6560 (2976)	4640 (2105)		3420 (1551) @ 24.1' 7.3m
	-10.0' 3.0m	10630 (4822) @ 6.1' 1.9m	7250 (3289)	5260 (2386)	3820 (1733)		3610 (1637) @ 20.8' 6.3m
	-15.0' 4.6m	10640 (4826) @ 6.1' 1.9m	6320 (2867)				4360 (1978) @ 14.9' 4.5m

▲ Boom is level at this point.

*Load is limited by tipping conditions.

All other loads are limited by hydraulic capacity.

THE ONE EXCAVATOR TO HAVE.



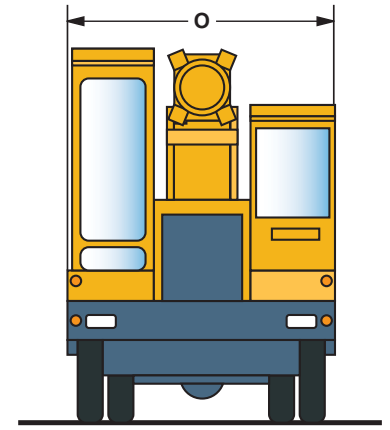
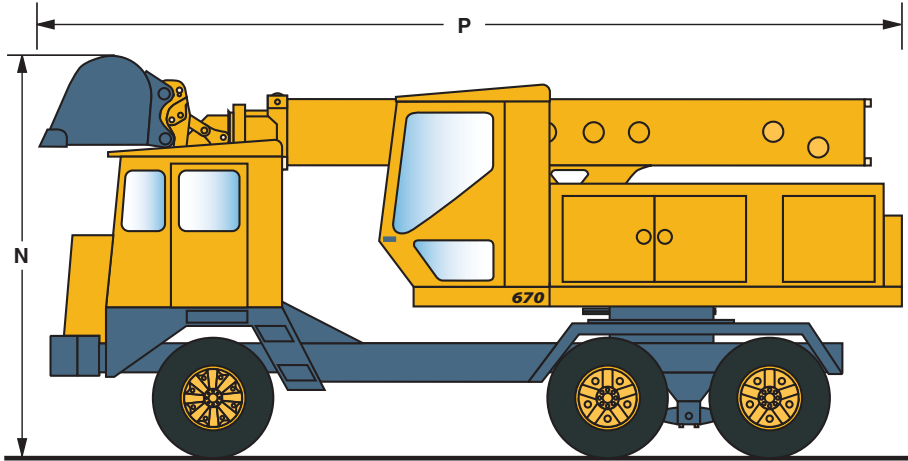
Carrier shown with 36" (91cm) excavating bucket

Description	6 x 4 Carrier		6 x 6 Carrier	
A Maximum reach	30'6"	(9.3m)	30'6"	(9.3m)
Surface reach	30'2"	(9.2m)	30'0"	(9.1m)
Digging depth	22'3"	(6.8m)	21'8"	(6.6m)
B Loading height, boom extended	16'4"	(5.0m)	16'10"	(5.1m)
C Loading height, boom retracted	10'4"	(3.2m)	10'10"	(3.3m)
D Bucket pivot angle	168°		168°	
E1 Attachment pivot point full range, boom extended	26'4"	(8.1m)	26'4"	(8.1m)
E2 Attachment pivot point, full range, boom retracted	14'4"	(4.4m)	14'4"	(4.4m)
F1 Minimum surface reach, cleanup, bucket level at ground line, boom retracted	12'4"	(3.8m)	12'0"	(3.7m)
F2 Minimum surface reach, digging	8'6"	(2.7m)	7'4"	(2.2m)
G 8' (2.4m) of level bottom	20'11"	(6.4m)	20'5"	(6.2m)
H Maximum working height	15'11"	(4.9m)	17'4"	(5.3m)
J Tail swing	8'3"	(2.5m)	8'3"	(2.5m)
K1 Upperstructure ground clearance	4'2"	(1.3m)	4'8"	(1.4m)
K2 Carrier ground clearance	8.7"	(22cm)	8.7"	(22cm)
L Bucket tilt (90° each way)	180° total		180° total	
M Wheel base	171"	(4.3m)	171"	(4.3m)
N Travel height	12'1"	(3.7m)	12'7"	(3.8m)
O Overall width	8'0"	(2.4m)	8'0"	(2.4m)
Boom telescoping action	12'0" (3.7m)		12'0" (3.7m)	
Swing	continuous		continuous	
Digging range	270°		270°	
Dumping range	360°		360°	
Rated bucket tangential force:				
Ditching bucket (60")	18,250 lb.	(81.2kN)	18,250 lb.	(81.2kN)
Excavating bucket (36")	15,380 lb.	(68.4kN)	15,380 lb.	(68.4kN)
Telescope crowd force:	17,670 lb. (78.6kN)		17,670 lb. (78.6kN)	
Boom raise and lower (for 6x4 & 6x6)				
Above horizontal 30°, Below horizontal 90°, Total arc 120°				

All specifications are subject to change.

Compared to the 460, the 670 has more reach, more lifting capacity and larger hydraulic pumps that can handle larger buckets and other heavy-duty attachment options such as grapples.

670 Hydro-Scopic Transportation Dimensions



Transport Data	6 x 4 Carrier		6 x 6 Carrier	
N Overall height (boom in rack)				
with 36" bucket	12'1"	(3.7m)	12'7"	(3.8m)
without bucket	11'2"	(3.4m)	11'8"	(3.6m)
O Overall width	8'0"	(2.4m)	8'0"	(2.4m)
P Overall length (without bucket)	26'6"	(8.1m)	26'6"	(8.1m)

TRAVEL SPEEDS:													
6 x 4 or 6 x 6 Carrier with C8.3-210 Engine, 2400 rpm, 4.88:1 Axle Ratio, 10.00-20 Traction Tires													
	Forward										Reverse		
	1	2	3	4	5	6	7	8	9	10	low	int.	dir.
mph	3.0	4.7	7.1	9.6	13.0	17.5	24.2	32.6	44.5	59.6	2.9	4.5	15.3
kph	4.8	7.6	11.4	15.4	20.9	28.2	38.9	52.5	71.6	95.9	4.7	7.2	24.6

All specifications are subject to change.



FIRST CLASS CONSTRUCTION.

The Hydro-Scopics are quality built. T-1 steel is used in areas of stress, continuous welds, proven components and **especially** precision assembly.

Instead of shimming our gear-drive turntable, we machine the surfaces to very fine tolerances. We precision align-bore all of the boom pivot and hoist cylinder pins. Numbers and charts don't show these differences, but you'll see them with more years of trouble-free operation.



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670 Hydro-Scopic Specifications

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670 Carrier Engine

Cummins QSB6.7-240-Tier 3, turbo-charged, charge-air cooled, 6-cylinder, 4-cycle, liquid-cooled, isolation mounted diesel engine. 250 peak hp (186kw) @ 2,300 rpm, 728 lbs.-ft. peak torque (987Nm) @ 1,500 rpm, 409 cid (6.7L), 4.21" bore x 4.88" stroke (107mm x 124mm), 18.0:1 compression ratio. Two-stage dry-type air cleaner. Spin-on coolant, fuel/water separator and combination full flow/bypass lube filters. 12-volt DC, 100 amp alternator with integral solid-state regulator. Electronically controlled fuel pump. Exhaust gas particulate filter is not required.

Battery: One SAE 12-volt DC, 1,150 CCA @ 0° F (-22° C).

Radiator: Fin and flat tube type radiator with silicone coolant and heater hoses. Brazed aluminum charge-air cooler.

Fuel Tank: 50-gal. (189L) fuel tank with in-line filter.

Optional Carrier Engine

Cummins QSC-280, turbo-charged, charge-air cooled, 6-cylinder, 4-cycle, liquid-cooled, isolation-mounted diesel engine. 300 peak hp (224kw) @ 2,000 rpm; peak torque 1,000 lbs.-ft. (1,356Nm) @ 1,500 rpm; 504.5 cid (8.3L)

Carrier Air System

13.2 cfm (374CL) compressor. Bendix AD-9 desiccant type air dryer with heated automatic ejector valve, spin-on cartridge.

Transmission

Eaton Fuller RT8908LL manual, 10 speeds forward, 3 reverse with Spicer 14" (356mm) diameter two-disc hydraulic clutch. Air operated countershaft brake and multi-mesh gearing.

Transfer Case: Fabco TC170 with cab-controlled front axle disconnect.

Axles

6 x 4 Front: Rockwell FF-942: 13,200 lb (5,987kg) rated capacity.
6 x 6 Front: Eaton SS-180-S: 16,000 lb. (7,257kg) rated capacity with 4.88:1.00 ratio.

Rear: Eaton 405 tandem: 40,000 lb (18,144kg) rated capacity. Cab-controlled inter-axle and differential lock with 4.88:1.00 ratio.

Optional Rear Axle: Eaton 461 tandem: 46,000 lb. (20,865kg) rated capacity.

Steering

Integral hydraulic power steering.

Drive Line

Spicer 1710 series needle bearing universal joints.

Suspension

Front: Two 14-leaf springs 41.50" x 3" (105cm x 7.6cm) with mechanical stops.

Rear: Hendrickson cast steel equalizer teams with 54" (137cm) axle center, 8" (20cm) oscillation.

Brakes

Independent front and rear service brake system incorporates spring set emergency and air applied service and parking brakes with automatic slack adjusters on both rear axles.

6 x 4 Front: Rockwell CamMaster

16.5" x 5" (41.9cm x 12.7cm).

6 x 6 Front: Eaton Standard Service Cam

16.5" x 5" (41.9cm x 12.7cm).

Rear: Eaton Extended Service Cam

16.5" x 7" (41.9cm x 17.8cm).

Wheels

6 x 4 Front and Rear: Disc

6 x 6 Front and Rear: Disc

Tires

6 x 4 and 6 x 6: 11R-22.5 (G) 14 PR front and dual rear highway tread.

Option: 385/65R 22.5 (J) 18PR front highway tread.

Option: 11R-22.5 (G) 14 PR dual rear traction tread.

Frame

Reinforced wide-flange "I" beams 12" x 35 lbs/ft (31cm x 52kg/m), fully welded crossmembers. Bolt-on front bumper.

Carrier Cab

All-weather steel cab, isolation-mounted, acoustic-lined, with Bostrom T-bar seat, seat belt, tinted safety glass windows with adjustable side windows, ventilator in cowl, 2-speed electric windshield wiper with washer, fire extinguisher, sun visor, heat and defroster fans and interior light.

Carrier Controls

Individual foot pedals hydraulically actuate the clutch and mechanically actuate the dual air brake valve and engine throttle. One manual transmission shift lever with air-operated range selector.

Carrier Standard Equipment

Sealed halogen high/low beam headlights, with high beam indicator. Turn signals, clearance lights, tail lights, back-up lights, stop lights, and 4-way hazard lights. 3-light identification cluster front and rear. Cab interior light. West Coast and convex mirrors. Tow hooks, front and rear. Dual electric horns. Dual electric travel alarms, signal remote control movement, and reverse movement. Key-operated ignition/start. Lighted gauges for engine oil pressure and coolant temperature, voltage, fuel lever, speedometer, odometer, tachometer, hour meter and dual air pressure. Audio-visual alarm system monitors: low coolant level, high coolant temperature and low engine oil pressure. Low air pressure warning light. Push-pull air valve for emergency/parking brakes with flashing indicator light.

Carrier Options

Spark arrester. Vandalism covers. Hydraulic stabilizers, controls in upper cab. Maintenance-free battery. Air-ride seat. Air conditioning.

Upperstructure Engine

Cummins QSB-4.5-Tier 3, turbo-charged, 4-cylinder, 4-cycle liquid-cooled, isolation-mounted diesel engine. 160 peak hp (119kw) @ 2,200 rpm, 460 lbs.-ft. peak torque (624Nm) @ 1,500 rpm, 275 cid (4.5L), 4.21" bore x 4.88" stroke (107mm x 124mm), 17.2:1 compression ratio. Two-stage dry-type air cleaner. Spin-on lube filter, fuel filter / water separator. Electronically controlled fuel pump. 12 volt DC, 105 amp alternator with integral solid-state regulator.

Battery: One SAE 12 volt DC 1,150 CCA A 0 deg. F (-22° C).

Radiator: Fin and flat tube type radiator with box type shroud. Brazed aluminum charge-air cooler.

Fuel Tank: 50-gal. (189L) fuel tank with in-line filter.

Upperstructure Air System

8.5 cfm (241CL) compressor. Bendix AD-9 desiccant type air dryer with heated automatic ejector valve, spin-on cartridge.

Hydraulic System, Variable Flow

Two tandem-section gear-type, one single-section gear-type hydraulic pumps. Pumps mounted to engine by gear box, 11" (28cm) single plate clutch for cold weather starting. Cross pressure sensing unloading valves in both tandem pumps provide variable flow output for horsepower summation: minimum 106 gpm (401L/min), maximum 124 gpm (470L/min) @ 2,200 rpm, 100° F (38° C) oil temperature. Manual pump unload selector valve.

Hydraulic System, Fixed Flow

Three-section triple gear-type hydraulic pump direct flange mounted to engine. Maximum 121 gpm (460L/min) @ 2,200 rpm and 100° F (38° C) oil temperature.

Six double-acting cylinders: Two boom hoist: 5" ID (127mm), 2.5 (63mm) rod, 40.87" (1,038mm) stroke, seal aligning bearing in rod end. One tool: 5" ID (127mm), 2.5" (63mm) rod, 18.09" (460mm) stroke, self-aligning in housing end. Two axle lockouts: 3" ID (76mm), 1.25" (32mm) rod, 5" (127mm) stroke. One 44 hp (33kw) hydraulic swing motor, dual staging relief valves and oil-cooled automatic swing/parking break. One 80 hp (60kw) hydraulic remote travel motor. One cylinder-type rotary actuator 6" ID (152mm), 180° rotation.

Hydraulic Remote Control

Carrier powered by upperstructure engine through hydraulic motor and PTO attached to transmission. Toggle air valve to select remote control located in carrier cab. Propel, steering pedals located in upperstructure cab.

Swing

Speed: 8 rpm, 0° 90° 2.7 seconds

Upperstructure Cab

All weather, isolation-mounted, acoustic-lined steel cab with tinted safety glass windows and skylight. Heater, defroster fan, fire extinguisher, 3-way adjustable cushioned seat. Front window self-stores in cab. Sliding rear window. Swing-open side door, manual holder and interior light.

Upperstructure Control

Upperstructure digging control: two hydraulic joystick controllers with adjustable pedestals for tool-hoist and swing telescope functions and electrical rocker switch for boom tilt function. Carrier remote travel control: one hydraulic heel-toe pedal for propel functions, one rocker pedal for steering. All controls are dead-man type: when released, machine movements automatically stop. Electrical rocker switch for dual electric horns. Push-pull air valve for emergency brakes.

Upperstructure Options

Vandalism protection package: metal window covers, locks for upperstructure access doors, storage rack (or Lexan windows less storage rack). Tachometer/hour meter. Engine coolant filter. Pump cavitation warning light. Strobe or rotating-beacon and indicator. Light package: two boom-mounted and two frame-mounted halogen work lights, two tail lights on upper shroud. Electric 2-speed windshield wiper with washer. Electric heating element hydraulic reservoir. Kwik-change bucket adapter. Seat belts. Air conditioning.

Buckets and Attachments

Buckets fabricated of steel plate with T-1 steel cutting edges and wear strips, hardened steel bushings in ears, replaceable tooth points with flex pins on excavating buckets.

Ditching Buckets: 60" (152cm), 66" (168cm), 72" (183cm).

Excavating Buckets: 24" (61cm), 30" (76cm), 36" (91cm),

42" (107cm), 48" (122cm).

Specialty Buckets: 42" (107cm) pavement removal bucket.

Boom Extensions: 4' (1.2m), 6' (1.8m), 8' (2.4m), 12' (3.7m), material (unloading).

Attachments: 8' (2.4m) grading blade, single-tooth ripper, brush mower, grapple, magnet, hammer and auger attachments also available.

Operating Weights

Approximate working weight of carrier and upperstructure, including 36" (91cm) excavating bucket and full fuel tanks.

6 x 4: 45,500 lbs. (20,638kg).

6 x 6: 47,700 lbs. (21,636kg).



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