B45E Articulated Dump Truck

BELL

ENGINE
Manufacturer
Mercedes Benz (MTU)

Model
OM471LA (MTU 6R 1300)

Configuration
Inline 6, turbocharged and intercooled

Gross Power
390 kW (523 hp) @ 1,700 rpm

Net Power
369 kW (495 hp) @ 1,700 rpm

Gross Torque
2,460 Nm (1,814 lbft) @ 1,300 rpm

Displacement
12.8 liters (781 cu.in)

Auxiliary Brake
Jacobs Engine Brake®

Fuel Tank Capacity
442 liters (117 US gal)

AdBlue® Tank Capacity
40 liters (11 US gal)

Certification
OM471LA (MTU 6R 1300) meets EPA Tier 4 final/Stage V emissions regulations

TRANSMISSION
Manufacturer
Allison

Model
4700 ORS

Configuration
Fully automatic planetary transmission

Layout
Engine mounted

Gear Layout
Constant meshing planetary gears, clutch operated

Gears
7 Forward, 1 reverse

Clutch Type
Hydraulically operated multi-disc

Control Type
Electronic

Torque Control
Hydrodynamic with lock-up in all gears

TRANSFER CASE
Manufacturer
Kessler

Series
W2400

Layout
Remote mounted

Gear Layout
Three in-line helical gears

Output Differential
Interaxle 29/71 proportional differential. Automatic inter-axle differential lock.

AXLES
Manufacturer
Bell

Model
30T

Differential
High input controlled traction differential with spiral bevel gears

Final Drive
Outboard heavy duty planetary on all axles

BRAKING SYSTEM
Service Brake
Dual circuit, full hydraulic actuation wet disc brakes on front and middle axles. Wet brake oil is circulated through a filtration and cooling system.

Maximum brake force:
327 kN (73,513 lbf)

Park & Emergency
Spring applied, air released driveline mounted disc

Maximum brake force:
218 kN (49,008 lbf)

Auxiliary Brake
Automatic Jacobs Engine Brake®. Automatic retardation through electronic activation of wet brake system.

Total Retardation Power
Continuous: 442 kW (593 hp)
Maximum: 854 kW (1,145 hp)

WHEELS
Type
Radial Earthmover

Tire
29.5 R 25 (875/65 R 29 optional)

FRONT SUSPENSION
Semi-independent, leading A-frame supported by hydro-pneumatic suspension struts

Option: Electronically controlled adaptive suspension with ride height adjustment

REAR SUSPENSION
Pivoting walking beams with laminated rubber suspension blocks

Option: Comfort Ride suspension walking beams, with two-stage sandwich block

HYDRAULIC SYSTEM
Full load sensing system serving the prioritized steering, body tipping and brake functions. A ground-driven, load sensing emergency steering pump is integrated into the main system.

Pump Type
Variable displacement load sensing piston

Flow
330 L/min (87 gal/min)

Pressure
315 bar (4,569 psi)

Filter
5 microns

STEERING SYSTEM
Double acting cylinders, with ground-driven emergency steering pump

Lock to lock turns
5

Steering Angle
42º

DUMPING SYSTEM
Two double-acting, single stage, dump cylinders

Raise Time
11 seconds

Lowering Time
6 seconds

Tipping Angle
70 deg standard, or any lower angle programmable

PNEUMATIC SYSTEM
Air drier with heater and integral unloader valve, serving park brake and auxiliary functions

System Pressure
810 kPa (117 psi)

ELECTRICAL SYSTEM
Voltage
24 V

Battery Type
Two AGM (Absorption Glass Mat) type

Battery Capacity
2 X 75 Ah

Alternator Rating
28V 80A

MAX. VEHICLE SPEED
|		
1st	4 km/h	2.5 mph
2nd	9 km/h	6 mph
3rd	17 km/h	11 mph
4th	23 km/h	14 mph
5th	33 km/h	21 mph
6th	44 km/h	27.3 mph
7th	51 km/h	32 mph
R	7 km/h	4 mph

CAB
ROPS/FOPS certified 76 dBA internal sound level measured according to ISO 6396

Load Capacity & Ground Pressure

OPERATING WEIGHTS		GROUND PRESSURE*		LOAD CAPACITY		OPTION WEIGHTS	
UNLADEN	**kg (lb)**	**LADEN**		**BODY**	**m³ (yd³)**		**kg (lb)**
Front	16,984 (37,443)	(No sinkage/Total Contact Area Method)		Struck Capacity	19.5 (25.5)	Bin liner	1,404 (3,095)
Middle	7,778 (17,148)	**29.5 R 25**	**kPa (Psi)**	SAE 2:1 Capacity	25 (33)	Tailgate	1,013 (2,233)
Rear	7,564 (16,676)	Front	321 (47)	SAE 1:1 Capacity	29.5 (38)	875/65 R29	
Total	32,326 (71,267)	Mid & Rear	370 (54)	SAE 2:1 Capacity		(per vehicle) Add	1,182 (2,606)
LADEN				with Tailgate	26 (34)		
Front	22,109 (48,742)	**875/65 R29**	**kPa (Psi)**			**EXTRA WHEELSET**	
Middle	25,715 (56,692)	Front	294 (43)	Rated Payload	41,000 kg	29.5 R 25	800 (1,764)
Rear	25,502 (56,222)	Mid & Rear	331 (48)		(90,390 lb)	875/65 R29	1,024 (2,258)
Total	73,326 (161,656)						

* 29.5R25 Groundpressures calculated with Michelin XADN+ Tire. 875/65R29 Groundpressures calculated with Michelin XAD65-1 Tire.
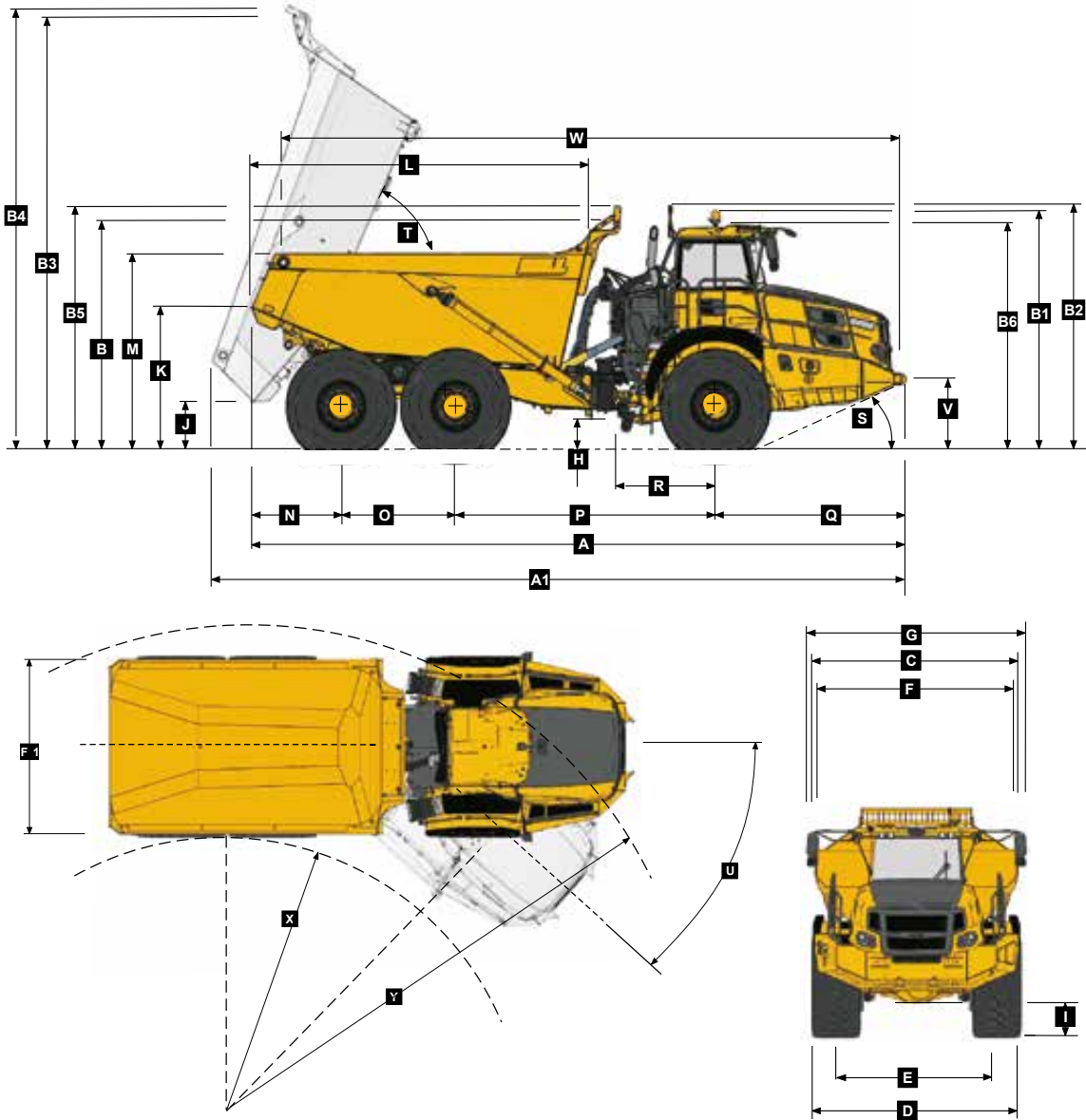
Machine Dimensions

A	Length - Transport Position with Tailgate	11,184 mm	(36 ft. 8 in.)
A	Length - Transport Position w/o Tailgate	11,184 mm	(36 ft. 8 in.)
A1	Length - Bin Fully Tipped	11,778 mm	(38 ft. 8 in.)
B	Height - Transport Position w/o Rock Guard	3,802 mm	(12 ft. 6 in.)
B	Height - Transport Position with Rock Guard	3,844 mm	(12 ft. 7 in.)
B1	Height - Rotating Beacon	4,038 mm	(13 ft. 3 in.)
B2	Height - Load Light	4,127 mm	(13 ft. 6 in.)
B3	Bin Height - Fully Tipped w/o Rock Guard	7,340 mm	(24 ft. 1 in.)
B4	Bin Height - Fully Tipped with Rock Guard	7,448 mm	(24 ft. 5 in.)
B5	Height - Rock Guard Operating Position	4,123 mm	(13 ft. 6 in.)
B6	Height - Cab	3,802 mm	(12 ft. 6 in.)
C	Width over Mudguards	3,495 mm	(11 ft. 6 in.)
D	Width over Tires - 875/65 R29	3,656 mm	(12 ft.)
D	Width over Tires - 29.5R25	3,487 mm	(11 ft. 5 in.)
E	Tire Track Width - 875/65 R29	2,773 mm	(9 ft. 1 in.)
E	Tire Track Width - 29.5R25	2,725 mm	(8 ft. 11 in.)
F	Width over Bin	3,448 mm	(11 ft. 4 in.)
F1	Width over Tailgate	3,738 mm	(12 ft. 3 in.)
G	Width over Mirrors - Operating Position	3,614 mm	(11 ft. 10 in.)
H	Ground Clearance - Artic	545 mm	(21.5 in.)
I	Ground Clearance - Front Axle	543 mm	(21.3 in.)
J	Ground Clearance - Bin Fully Tipped	880 mm	(34.7 in.)
K	Bin Lip Height - Transport Position	2,521 mm	(8 ft. 3 in.)
L	Bin Length	5,753 mm	(18 ft. 10in.)
M	Load over Height	3,316 mm	(10 ft. 11 in.)
N	Rear Axle Center to Bin Rear	1,540 mm	(5 ft.)
O	Mid Axle Center to Rear Axle Center	1,950 mm	(6 ft. 5 in.)
P	Mid Axle Center to Front Axle Center	4,438 mm	(14 ft. 7 in.)
Q	Front Axle Center to Machine Front	3,256 mm	(10 ft. 8 in.)
R	Front Axle Center to Artic Center	1,558 mm	(ft. 1 in.)
S	Approach Angle	24 °	
T	Maximum Bin Tip Angle	70 °	
U	Maximum Articulation Angle	42 °	
V	Front Tie Down Height	1,262 mm	(4 ft. 2 in.)
W	Machine Lifting Centers	10,569 mm	(34 ft. 8 in.)
X	Inner Turning Circle Radius - 875/65R29	4,782 mm	(15 ft. 8 in.)
X	Inner Turning Circle Radius - 29.5R25	4,866 mm	(16 ft.)
Y	Outer Turning Circle Radius - 875/65R29	9,320 mm	(30 ft. 7 in.)
Y	Outer Turning Circle Radius - 29.5R25	9,235 mm	(30 ft. 4 in.)

Gradeability/Rimpull

1. Determine tractive resistance by finding intersection of vehicle mass line and grade line. NOTE: 2% typical rolling resistance is already assumed in chart and grade line.
2. From this intersection, move straight right across charts until line intersects rimpull curve.
3. Read down from this point to determine maximum speed attained at that tractive resistance.

ADT, B45E 6X6 - Tractive Effort
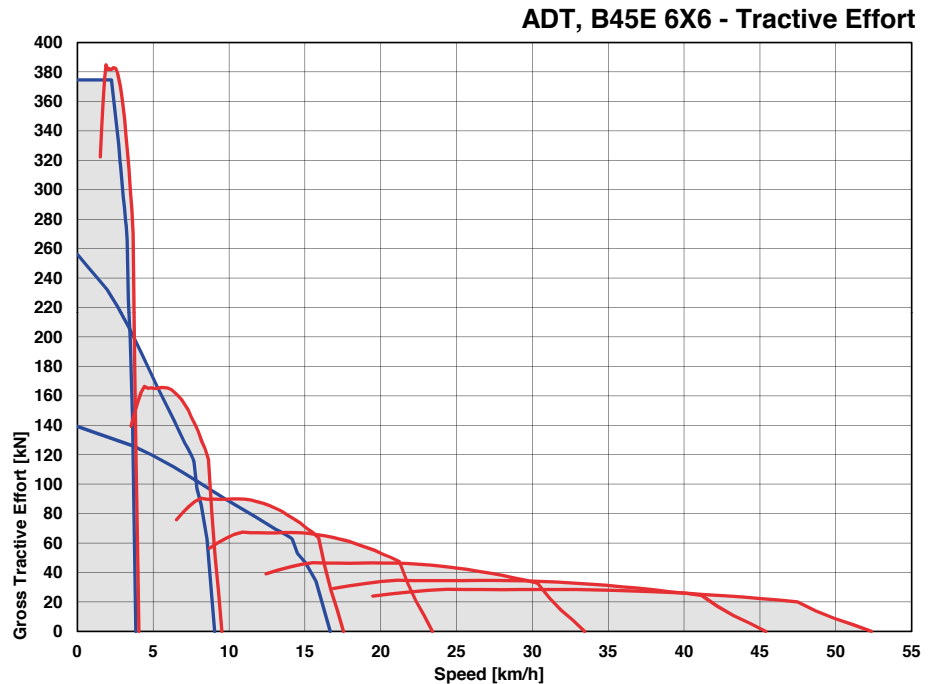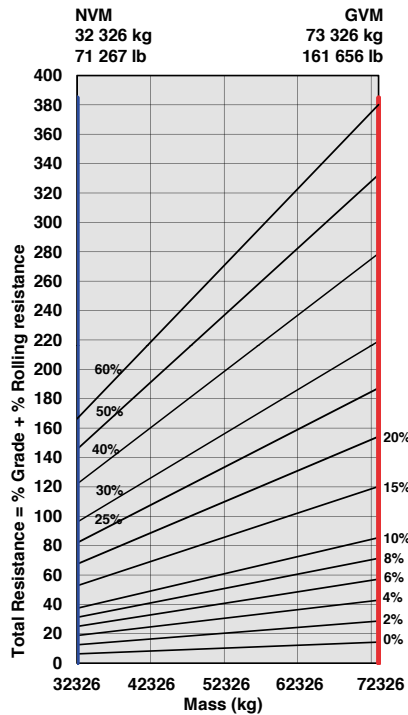
Retardation

1. Determine retardation force required by finding intersection of vehicle mass line.
2. From this intersection, move straight right across charts until line intersects the curve. NOTE: 2% typical rolling resistance is already assumed in chart.
3. Read down from this point to determine maximum speed.

ADT, B45E 6X6 - Retardation