

# 456 WHEELED LOADING SHOVEL



A Product of Hard Work



# A powerful machine that's fully loaded

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### **Excellent all-round visibility**

Large glass areas giving excellent visibility around the machine.

Sloped engine cover provides views at the rear.

Front quarter glass panels overlook central pivot area.

### **Power and performance**

Axles provide automatic traction control for all conditions.

Smart hydraulic systems maximise efficiency and drive down fuel costs.

Automatic transmission ensures the machine is always in the right gear.

### **Built to last**

High-quality, industry-recognised components.

Electronic safeguard systems prevent catastrophic failures.

Designed for easy servicing and maintenance.







### **Superb operator environment**

Ergonomic high-back seat for superior comfort.

Easy-to-use, clearly marked controls.

Large, spacious cabin with ample storage room.

### **Easy access to all areas**

Ground-level access for easy servicing and reduced downtime.

All components in accessible areas.

Large, single-piece engine cover and swing-out fan give access to engine and cooling bays.

### **Maximum safety**

Inclined steps and well-placed grab handles allow easy access.

Ground-level checks eliminate the need to climb onto the machine.

Optional rear-view camera systems available.

## Superb operator environment

Central to the 456's well-thought-out design is the person who will be controlling it. With operators working for up to 12 hours a day, they need to be constantly alert and comfortable so they can be productive. The 456's cab is a remarkable achievement, combining a stylish interior with highly practical features.



### Easy, safe access

With a wide door, steps inclined to 10° (something that's fast becoming a quarry standard), non-slip surfaces and well-positioned handles, access is always easy and safe, helping to minimise accidents on site.

### The largest cab in its class

At 3m<sup>3</sup>, the 456 has one seriously large operating environment, with every detail ergonomically designed for comfort and ease of use. There's also plenty of room for storage, including a massive open-floor space.



### Positive pressure cab

The cab is fully sealed in order to reduce dust and dirt entering the cabin, maintaining a healthy working environment. To suit different environments, a range of fresh air intake filters (P3, carbon and standard) is also available; all are easy to remove for cleaning and replacement.



### Ergonomic high-back seat

The standard high-backed suspension seat is fully adjustable and provides excellent support and comfort. The result is reduced operator fatigue for added productivity.

### Just the right temperature

The excellent heating and ventilation systems ensure ideal working temperatures. There is a variable blower speed and a range of fresh air intake filters to choose from. The temperature and recirculation controls are all well marked out and simple to use. An optional air-conditioning system and heated, air-suspended seat are also available.

# Complete controllability and all-round visibility

Today's worksites are busier than ever, so safety is always a primary concern. At JCB, we're committed to doing everything we can to reduce the risk of accidents and so we have designed the 456 to give operators the best possible visibility all around the machine.

## Large operator environment

The 360° tinted glass cab allows the operator not only to spot almost all potential hazards, but also to view the load throughout its full lift range. The cab features narrow uprights between the glass panels, an extra large wiper and a choice of front and rear blinds to keep the sun off.



## Heated mirrors

When it's cold outside, the heated mirrors prevent icing. Plus, there are two interior mirrors that provide superb views of hard-to-see areas.



## Controls

All the 456's controls are conveniently placed and incredibly easy to use. There's a choice of single or multi-lever controllers – both allowing for consistent use with minimum fatigue. The single-lever controller incorporates a forward/reverse switch that can be used without taking your hands off the steering wheel, while the multi-lever version is a switch located to the side. Both controllers feature gear-change and disconnect switches, and the latter speeds things up by transferring engine power to the hydraulics.



# Power and performance as standard

In a competitive world, you need to move the maximum amount of material at the lowest possible cost. Designed to deliver outstanding power and optimum efficiency, every component on the JCB 456 has been created to meet rigorous demands day in, day out.

## A world-class powertrain

A perfectly matched, balanced powertrain provides the power to move even the most demanding material from A to B.



## Turbocharged Cummins QSC engine

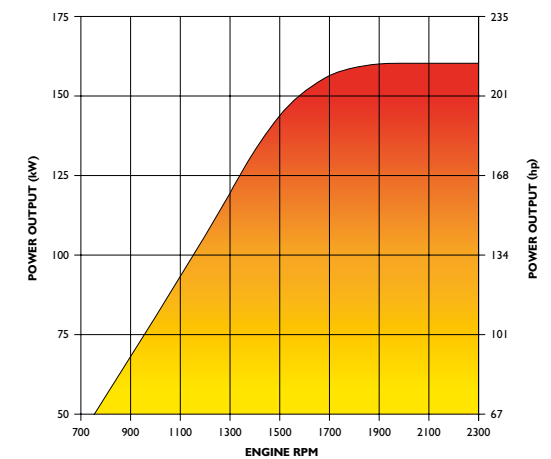
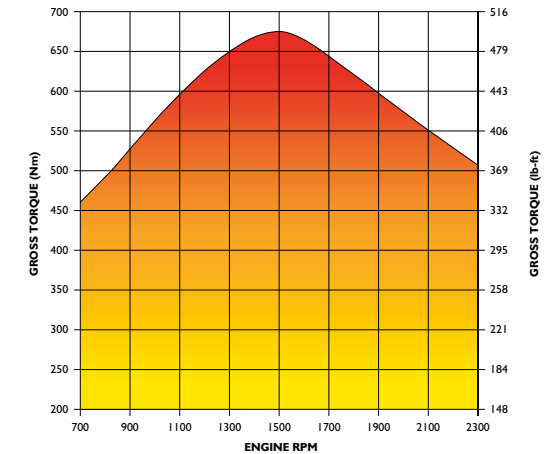
The 456 boasts an air-to-air intercooled low-emission engine with electronically controlled fuel-injection system. This delivers high torque at a low engine RPM, enabling the operator to fill the bucket faster.



## ZF Smoothshift transmission

The 456 features a fully automatic transmission. Normally the driver has to select the correct gear to ensure efficient fuel use. But with this system the correct gear is automatically and immediately selected ensuring the absolute maximum productivity and fuel efficiency, and prolonging the life of the machine.

456E POWER AND TORQUE  
ENGINE PERFORMANCE CURVE





**Graziano axles**

The 456 is fitted with standard torque proportioning axles that keep the machine moving even in difficult conditions. If one wheel is slipping, power is automatically transferred to the wheel with traction. Torque is also increased at the hubs, which reduces stress on other components. Ultimately, this saves wear on the tyres and gets the job done faster. There's also the option to have even more advanced limited slip differential axles.

**Oil-immersed brakes**

The oil-immersed braking system not only ensures effective braking but also a long service life. As a safety precaution, a back-up brake circuit allows safe stopping in the event of drivetrain failure.

**Load-sensing hydraulics**

The 456 delivers efficient hydraulic oil flow on demand thanks to a load-sensing circuit. This minimises fuel consumption, directs power where it is needed most and allows for accurate and efficient load placements. When it comes to driving, the steering requires minimum effort, even at full articulation.

**A choice of loader arms**

Different jobs demand excellent versatility, which is why the 456 comes with a choice of either HT standard/super-high-lift or ZX standard/high-lift arms.

The Z bar arms generate maximum power to get more from the stockpile, while the HT arms can be used for a range of applications with different attachments. The high-lift and super-high-lift options allow you to load higher-sided vehicles or hoppers without the need for loading ramps or high-tip buckets



456ZX



456HT



456ZX High Lift



456HT Super High Lift

## Maintenance made easy

Once in use, the 456 rapidly becomes a vital part of the production process, so any downtime could mean a serious loss in productivity and, therefore, profitability. Keeping it in prime condition is vital, so we have made regular maintenance extremely easy to carry out, which in turn will maximise the machine's use and longevity.

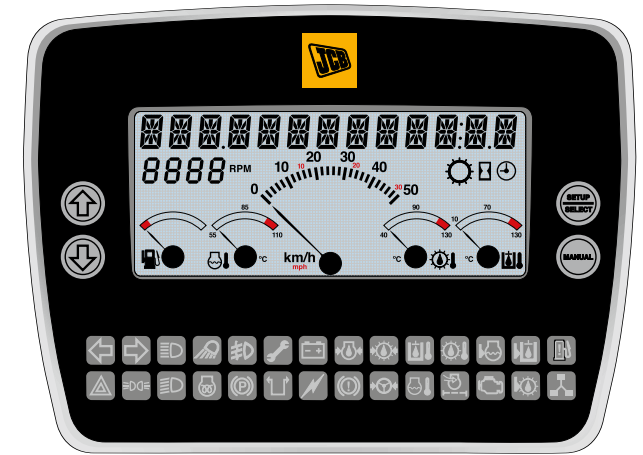
### Ground-level access

Daily and weekly maintenance checks can be completed easily and safely by operators, thanks to ground-level checkpoints.



### Optimum cooling performance

Keeping your machine at the right temperature will ensure it stays efficient and has a long life. The 456's cooling system is cleverly designed to stay free of dirt and debris, while the cooling pack can be easily cleaned via the swing-out rear grille and single-piece engine cover doors. For particularly arduous or dusty conditions, add-on options include a fully automatic reversing fan and a widecore cooling pack. The reversing fan is designed to protect the cooling pack while the widecore pack allows larger particles through the cooler without catching.



### The Electronic Monitoring System

Our sophisticated Electronic Monitoring System (EMS) controls and monitors the components, triggering built-in safeguards that prevent major damage to major parts. For example, if the coolant temperature gets too hot, the machine will automatically protect itself and shut down.

This multi-language system allows you to set certain functions to suit the application, for optimum performance, and displays key operation data in real time. Fault codes allow quick identification of problems enabling quicker turnaround of issues, while a service indicator lets you know when service is required.



## Built to last

Everything about the new 456 indicates that it is built to last, offering maximum productivity over thousands of operational hours. Every single component has been carefully designed and manufactured to rigorous standards, ensuring long life, lower running costs and a high value when it finally comes to selling.

### Designed-in strength

Using cutting-edge design techniques, the best components, sophisticated computational analysis and rigorous physical testing, JCB has created a machine fit for the demands of your business. The cast steel rear end (often of plastic fabrication on competitor machines) gives real strength and protects against significant damage, reducing operating costs. The slope of the rear bonnet is shaped for better visibility so that it's easier to see potential hazards, again reducing damage to the machine. Full chassis belly guarding also protects the main driveline components from damage on the underside.

### Tailoring the machine for your needs

The 456 is built to cope with extremely demanding environments, but it can also be customised to meet the specific requirements of individual applications. For example, for waste applications a series of additional guards is available, including brake lines guards, extra belly guards, lift ram guards, cab screen guards, etc. And for load and carry operations, Smooth Ride Systems can be fitted, turning the arms into a form of suspension which allows them to float. The machine can then travel more quickly over the ground because shock loadings are not passed through the machine making it unstable, plus shock is not passed to loads through all the structures and systems.



### Protected hydraulic circuits

A high-quality filtration system ensures no debris passes through the hydraulic circuit. This, along with highly adapted assembly procedures, ensures a long operating life.



### Smooth operation

By reducing the shock passing through all the components, the machine is guaranteed smooth and easy operation – and a longer life span.

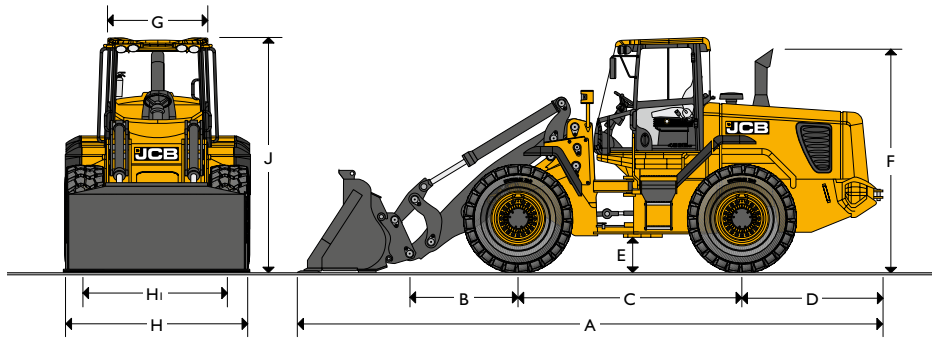
### Easy maintenance

Easier access for operators and maintenance technicians ensures that the machine can be kept in the best condition, maintaining availability and productivity. Service intervals are every 500 hours.

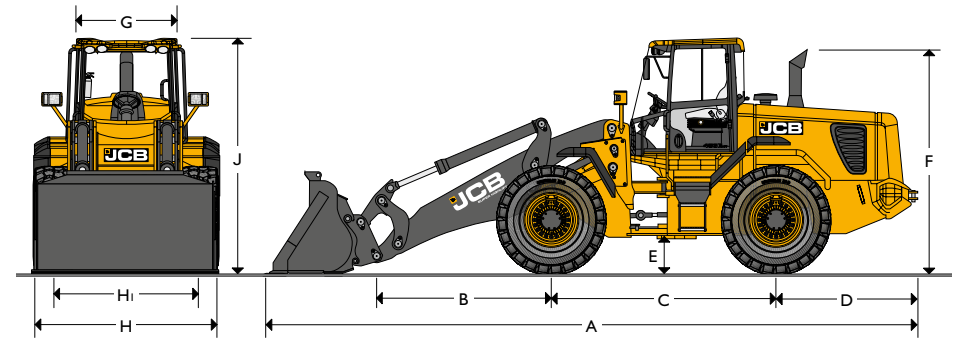


MAX. ENGINE POWER: 160kW (215hp) MAX. OPERATING WEIGHT: 22079kg (48676lb) MAX. LOADER CAPACITY: 3.5m<sup>3</sup> (4.6yd<sup>3</sup>)

456/456e HT – STATIC DIMENSIONS – Standard height arm



456/456e HT – STATIC DIMENSIONS – Super high lift arm



456/456e HT – STATIC DIMENSIONS – Standard height arm

		mm (ft-in)
A	Overall length	8520 (28-0)
B	Axle to pivot pin	1713 (5-7)
C	Wheel base	3300 (10-10)
D	Axle to counterweight face	1970 (6-5)
E	Minimum ground clearance	470 (1-7)
F	Height over exhaust	3260 (10-8)
G	Width over cab	1400 (4-7)
H	Width over tyres	2702 (8-10)
Hi	Wheel track	2100 (6-10)
J	Height over cab	3370 (11-1)
	Pin height (maximum)	4304 (14-1)
	Overall operating height	5768 (18-9)
	Front axle weight	kg (lb) 9266 (20428)
	Rear axle weight	kg (lb) 11105 (24482)
	Total weight	kg (lb) 20371 (44910)
	Inside radius	3182 (10-5)
	Maximum radius	6630 (21-9)
	Articulation angle	± 40°

456/456e HT – STATIC DIMENSIONS – Super high lift arm

		mm (ft-in)
A	Overall length	9450 (31-0)
B	Axle to pivot pin	2727 (8-11)
C	Wheel base	3300 (10-10)
D	Axle to counterweight face	1970 (6-6)
E	Minimum ground clearance	470 (1-7)
F	Height over exhaust	3260 (10-8)
G	Width over cab	1400 (4-7)
H	Width over tyres	2702 (8-10)
Hi	Wheel track	2100 (6-10)
J	Height over cab	3370 (11-1)
	Pin height (maximum)	5270 (17-3)
	Overall operating height	6733 (22-1)
	Front axle weight	kg (lb) 11141 (24562)
	Rear axle weight	kg (lb) 10130 (22333)
	Total weight	kg (lb) 21271 (46894)
	Inside radius	3182 (10-5)
	Maximum radius	7121 (23-4)
	Articulation angle	± 40°

Data based on machine equipped with quickhitch mounted 3.5m<sup>3</sup> bucket with toe plate and 23.5 R25 Michelin XHA (L3) radial tyres.

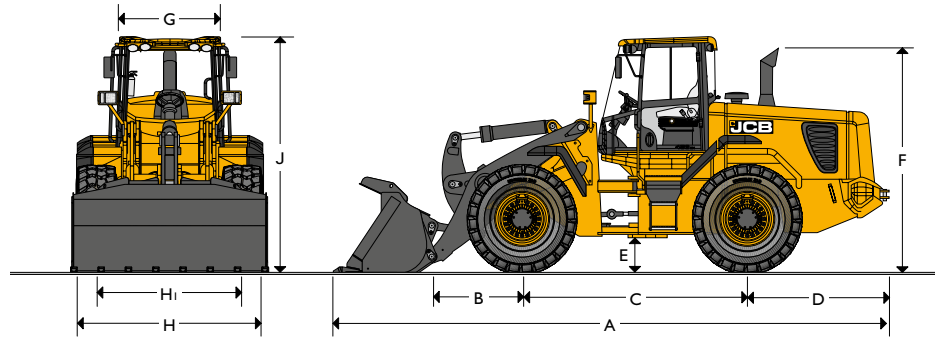
Data based on machine equipped with quickhitch mounted 3.5m<sup>3</sup> bucket with toe plate and 23.5 R25 Michelin XHA (L3) radial tyres.



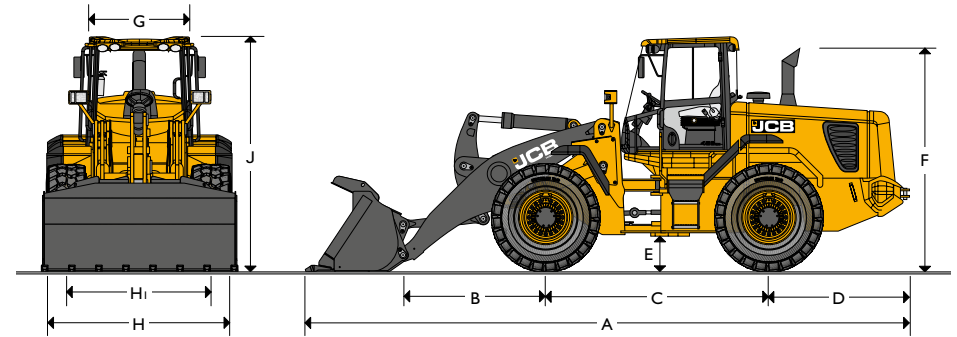


MAX. ENGINE POWER: 160kW (215hp) MAX. OPERATING WEIGHT: 21335kg (47036lb) MAX. LOADER CAPACITY: 3.5m<sup>3</sup> (4.6yd<sup>3</sup>)

456/456e ZX – STATIC DIMENSIONS – Standard height arm



456/456e ZX – STATIC DIMENSIONS – High lift arm



456/456e ZX – STATIC DIMENSIONS – Standard height arm

		mm (ft-in)
A Overall length		7960 (26-1)
B Axle to pivot pin		1622 (5-4)
C Wheel base		3300 (10-10)
D Axle to counterweight face		1970 (6-5)
E Minimum ground clearance		470 (1-7)
F Height over exhaust		3260 (10-8)
G Width over cab		1400 (4-9)
H Width over tyres		2702 (8-10)
Hi Wheel track		2100 (6-10)
J Height over cab		3370 (11-1)
Pin height (maximum)		4107 (13-5)
Overall operating height		5571 (18-3)
Front axle weight	kg (lb)	8840 (19487)
Rear axle weight	kg (lb)	10030 (22112)
Total weight	kg (lb)	18870 (41600)
Inside radius		3182 (10-5)
Maximum radius		6554 (21-6)
Articulation angle		± 40°

Data based on machine equipped with pin mounted 3.3m<sup>3</sup> bucket with teeth and 23.5 R25 Michelin XHA (L3) radial tyres.

456/456e ZX – STATIC DIMENSIONS – High lift arm

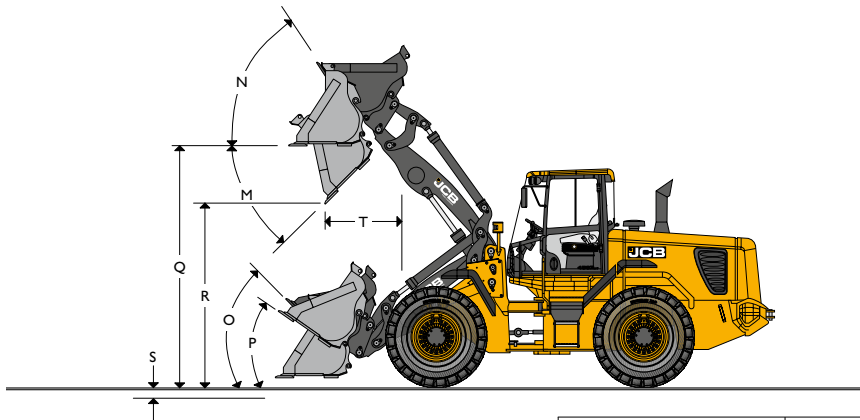
		mm (ft-in)
A Overall length		8520 (27-11)
B Axle to pivot pin		2182 (7-2)
C Wheel base		3300 (10-10)
D Axle to counterweight face		1988 (6-6)
E Minimum ground clearance		470 (1-7)
F Height over exhaust		3260 (10-8)
G Width over cab		1400 (4-9)
H Width over tyres		2702 (8-10)
Hi Wheel track		2100 (6-10)
J Height over cab		3370 (11-1)
Pin height (maximum)		4677 (15-4)
Overall operating height		6140 (20-2)
Front axle weight	kg (lb)	9720 (21429)
Rear axle weight	kg (lb)	9561 (21078)
Total weight	kg (lb)	19281 (42507)
Inside radius		3182 (10-5)
Maximum radius		6770 (22-2)
Articulation angle		± 40°

Data based on machine equipped with pin mounted 3.3m<sup>3</sup> bucket with teeth and 23.5 R25 Michelin XHA (L3) radial tyres.



456/456e HT – LOADER DIMENSIONS – Standard height arm

CHANGES TO OPERATING PERFORMANCE AND DIMENSIONS – Standard height arm



Tyre size	Manufacturer	Type	Rating	Op. weight kg (lb)	Tipping loads		Dimensions	
					Straight kg (lb)	Full turn kg (lb)	Vertical mm (in)	Width mm (in)
23.5 - 25 (crossply)	Bridgestone	20 Ply	L2	-432 (-952)	-251 (-553)	-246 (-542)	-2 (-0.08)	0
23.5 R 25 (radial)	Goodyear	GP - 2B	L2	-64 (-141)	-38 (-84)	-37 (-82)	-2 (-0.08)	0
23.5 R 25 (radial)	Goodyear	RL - 2 +	L2	100 (221)	62 (137)	+61 (135)	-2 (-0.08)	0
23.5 R 25 (radial)	Michelin	XTLA	L2	-100 (-221)	-58 (-128)	-57 (-126)	-2 (-0.08)	0
23.5 - 25 (crossply)	Bridgestone	20 Ply	L3	-208 (-459)	-121 (-267)	-118 (-260)	0	0
650/65 R25 (radial)	Michelin	XLD	L3	-196 (-432)	-113 (-249)	-112 (-247)	-60 (-2.36)	29 (1.14)
750/65 R25 (radial)	Michelin	XLD	L3	424 (935)	262 (578)	257 (567)	-6 (-0.24)	205 (8.07)
23.5 R25 (radial)	Michelin	XRD1A	L4	256 (564)	158 (348)	155 (342)	36 (1.42)	0
23.5 R 25 (radial)	Goodyear	GP - 4B	L4	380 (838)	235 (518)	230 (507)	36 (1.42)	0
23.5 R 25 (radial)	Michelin	XLDD2A	L5	572 (1261)	353 (778)	345 (761)	36 (1.42)	0
23.5 R 25 (radial)	Michelin	XMINED2	L5	808 (1782)	499 (1100)	488 (1076)	36 (1.42)	0
23.5 R 25 (radial)	Goodyear	RL - 5K	L5	704 (1552)	435 (959)	425 (937)	36 (1.42)	0

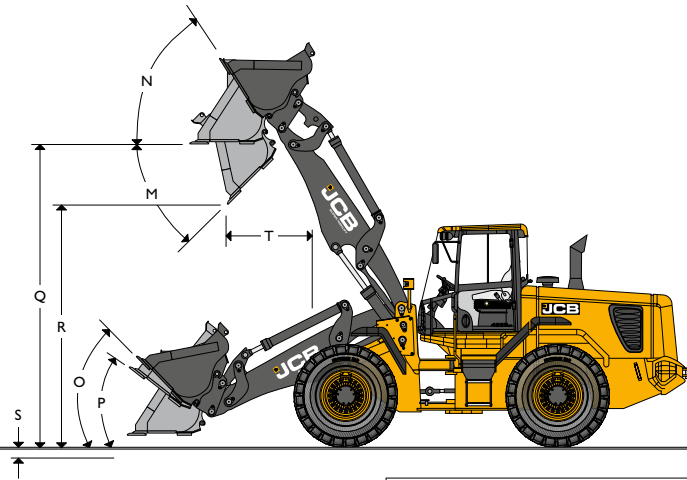
Assumes the fitment of Michelin 23.5R25 XHA (L3) tyres.

Bucket mounting		Direct	Direct	Direct	Direct	Direct	Direct	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch
Bucket type		General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose
Bucket equipment		Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments
Bucket capacity (SAE heaped)	m <sup>3</sup> (yd <sup>3</sup> )	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)
Bucket capacity (struck)	m <sup>3</sup> (yd <sup>3</sup> )	2.497 (3.266)	2.687 (3.517)	2.648 (3.464)	2.844 (3.720)	2.648 (3.464)	2.844 (3.720)	2.497 (3.266)	2.687 (3.515)	2.648 (3.464)	2.844 (3.720)	2.648 (3.464)	2.844 (3.720)
Bucket width	mm (ft-in)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)
Bucket weight with wearparts	kg (lb)	1508 (3325)	1554 (3427)	1623 (3579)	1669 (3680)	1623 (3579)	1669 (3680)	1380 (3043)	1416 (3122)	1495 (3296)	1531 (3376)	1495 (3296)	1531 (3376)
Maximum material density	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	2032 (3389)	1895 (3207)	1888 (3195)	1767 (2964)	1888 (3195)	1767 (2964)	1925 (3209)	1796 (3039)	1787 (3024)	1673 (2806)	1787 (3024)	1673 (2806)
Tipping load straight	kg (lb)	14635 (32271)	14534 (32047)	14493 (31958)	14392 (31733)	14493 (31958)	14392 (31733)	13888 (30623)	13801 (30432)	13746 (30310)	13653 (30104)	13746 (30310)	13653 (30104)
Tipping load full turn	kg (lb)	12601 (27786)	12508 (27580)	12462 (27479)	12368 (27272)	12462 (27479)	12368 (27272)	11933 (26313)	11853 (26135)	11795 (26007)	11708 (25815)	11795 (26007)	11708 (25815)
Payload at 50% FTTL	kg (lb)	6301 (13893)	6254 (13790)	6231 (13740)	6184 (13636)	6231 (13740)	6184 (13636)	5697 (13157)	5926 (13068)	5897 (13004)	5854 (12908)	5897 (13004)	5854 (12908)
Maximum break out force	kN (lbf)	161 (36193)	153 (34394)	150 (33720)	143 (32146)	150 (33720)	143 (32146)	144 (31022)	138 (31022)	135 (30348)	130 (29224)	135 (30348)	130 (29224)
<b>M</b> Dump angle maximum	degrees	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°
<b>N</b> Roll back angle at full height	degrees	57°	57°	57°	57°	57°	57°	57°	57°	57°	57°	57°	57°
<b>O</b> Roll back at carry	degrees	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°
<b>P</b> Roll back at ground level	degrees	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°
<b>Q</b> Load over height	mm (ft-in)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)	4028 (13-3)
<b>R</b> Dump height (45° dump)	mm (ft-in)	2930 (9-7)	2888 (9-6)	3069 (10-1)	3027 (9-11)	2930 (9-7)	2888 (9-6)	2824 (9-3)	2782 (9-2)	2963 (9-9)	2921 (9-7)	2824 (9-3)	2782 (9-2)
<b>S</b> Dig depth	mm (ft-in)	109 (0-4)	109 (0-4)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)	109 (0-4)	109 (0-4)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)
<b>T</b> Reach at dump height	mm (ft-in)	1334 (4-5)	1375 (4-6)	1220 (4-0)	1261 (4-2)	1334 (4-5)	1375 (4-6)	1440 (4-9)	1482 (4-10)	1326 (4-4)	1368 (4-6)	1440 (4-9)	1482 (4-10)
Reach maximum (45° dump)	mm (ft-in)	2310 (7-7)	2352 (7-9)	2196 (7-2)	2238 (7-4)	2310 (7-7)	2352 (7-9)	2416 (7-11)	2458 (8-1)	2302 (7-7)	2344 (7-8)	2416 (7-11)	2458 (8-1)
Operating weight (includes 80kg operator and full fuel tank)	kg (lb)	20028 (44154)	20074 (44255)	20143 (44407)	20189 (44509)	20143 (44407)	20189 (44509)	20220 (44577)	20256 (44656)	20335 (44831)	20371 (44910)	20335 (44831)	20371 (44910)





456/456e HT – LOADER DIMENSIONS – Super high lift arm



CHANGES TO OPERATING PERFORMANCE AND DIMENSIONS – Super high lift arm

Tyre size	Manufacturer	Type	Rating	Op. weight kg (lb)	Tipping loads		Dimensions	
					Straight kg (lb)	Full turn kg (lb)	Vertical mm (in)	Width mm (in)
23.5 - 25 (crossply)	Bridgestone	20 Ply	L2	-432 (-952)	-190 (-419)	-186 (-410)	-2 (-0.08)	0
23.5 R 25 (radial)	Goodyear	GP - 2B	L2	-64 (-141)	-28 (-62)	-28 (-62)	-2 (-0.08)	0
23.5 R 25 (radial)	Goodyear	RL - 2 +	L2	100 (221)	47 (104)	46 (101)	-2 (-0.08)	0
23.5 R 25 (radial)	Michelin	XTLA	L2	-100 (-221)	-44 (-97)	-43 (-95)	-2 (-0.08)	0
23.5 - 25 (crossply)	Bridgestone	20 Ply	L3	-208 (-459)	-92 (-203)	-89 (-196)	0	0
650/65 R25 (radial)	Michelin	XLD	L3	-196 (-432)	-86 (-190)	-85 (-187)	-60 (-2.36)	29 (1.14)
750/65 R25 (radial)	Michelin	XLD	L3	424 (935)	198 (437)	194 (428)	-6 (-0.24)	205 (8.07)
23.5 R25 (radial)	Michelin	XRD IA	L4	256 (564)	120 (265)	117 (258)	36 (1.42)	0
23.5 R 25 (radial)	Goodyear	GP - 4B	L4	380 (838)	178 (392)	174 (384)	36 (1.42)	0
23.5 R 25 (radial)	Goodyear	RL - 5K	L5	704 (1552)	392 (864)	322 (244)	36 (1.42)	0
23.5 R 25 (radial)	Michelin	XLDD2A	L5	572 (1261)	267 (589)	261 (576)	36 (1.42)	0
23.5 R 25 (radial)	Michelin	XMINED2	L5	808 (1782)	378 (833)	369 (813)	36 (1.42)	0

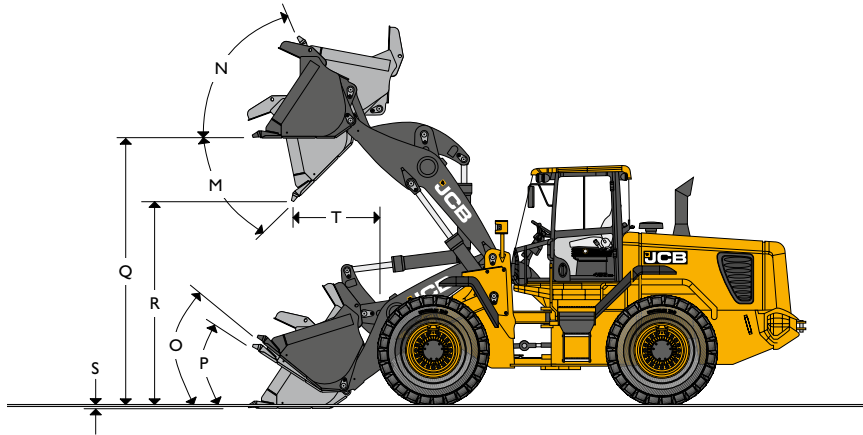
Assumes the fitment of Michelin 23.5R25 XHA (L3) tyres.

Bucket mounting		Direct	Direct	Direct	Direct	Direct	Direct	Direct	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch
Bucket type		General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose
Bucket equipment		Tipped teeth	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments
Bucket capacity AE heaped	m <sup>3</sup> (yd <sup>3</sup> )	2.8 (3.7)	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)
Bucket capacity (struck)	m <sup>3</sup> (yd <sup>3</sup> )	2.210 (2.891)	2.497 (3.266)	2.687 (3.517)	2.648 (3.464)	2.844 (3.720)	2.648 (3.464)	2.844 (3.720)	2.497 (3.266)	2.687 (3.515)	2.648 (3.464)	2.844 (3.720)	2.648 (3.464)	2.844 (3.720)
Bucket width	mm (ft-in)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)
Bucket weight with wearparts	kg (lb)	1436 (3166)	1508 (3325)	1554 (3427)	1623 (3579)	1669 (3680)	1623 (3579)	1669 (3680)	1380 (3043)	1416 (3122)	1495 (3296)	1531 (3376)	1495 (3296)	1531 (3376)
Maximum material density	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	1468 (2450)	1311 (2186)	1222 (2068)	1218 (2061)	1140 (1912)	1218 (2061)	1140 (1912)	1241 (2070)	1158 (1960)	1153 (1951)	1079 (1810)	1153 (1951)	1079 (1810)
Tipping load straight	kg (lb)	9688 (21363)	9587 (20609)	9520 (20991)	9493 (20933)	9427 (20786)	9493 (20933)	9427 (20786)	9097 (20058)	8753 (19932)	9004 (19853)	8942 (19717)	9004 (19853)	8942 (19717)
Tipping load full turn	kg (lb)	8221 (18128)	8128 (17922)	8067 (17784)	8038 (17724)	7978 (17591)	8038 (17724)	7978 (17591)	7697 (16972)	7645 (16856)	7608 (16775)	7551 (16650)	7608 (16775)	7551 (16650)
Payload at 50% FTL	kg (lb)	4111 (9064)	4064 (8961)	4034 (8892)	4019 (8862)	3989 (8795)	4019 (8862)	3989 (8795)	3848 (8486)	3822 (8428)	3804 (8387)	3776 (8325)	3804 (8387)	3776 (8325)
Maximum break out force	kN (lbf)	175 (39340)	163 (36642)	155 (34844)	152 (34170)	145 (32596)	152 (34170)	145 (32596)	146 (32821)	140 (31472)	137 (30798)	132 (29674)	137 (30798)	132 (29674)
M Dump angle maximum	degrees	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°
N Roll back angle at full height	degrees	58°	58°	58°	58°	58°	58°	58°	58°	58°	58°	58°	58°	58°
O Roll back at carry	degrees	54°	54°	54°	54°	54°	54°	54°	54°	54°	54°	54°	54°	54°
P Roll back at ground level	degrees	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°	46°
Q Load over height	mm (ft-in)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)	4994 (16-5)
R Dump height (45° dump)	mm (ft-in)	3960 (13-0)	3896 (12-9)	3854 (12-8)	4034 (13-3)	3993 (13-1)	3896 (12-9)	3790 (12-5)	3790 (12-5)	3748 (12-4)	3929 (12-11)	3887 (12-9)	3790 (12-5)	3748 (12-4)
S Dig depth	mm (ft-in)	109 (0-4)	109 (0-4)	109 (0-4)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)	109 (0-4)	109 (0-4)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)
T Reach at dump height	mm (ft-in)	1327 (4-4)	1393 (4-7)	1432 (4-8)	1277 (4-2)	1318 (4-4)	1393 (4-7)	1432 (4-8)	1497 (4-11)	1539 (5-1)	1383 (4-6)	1425 (4-8)	1497 (4-11)	1539 (5-1)
Reach maximum (45° dump)	mm (ft-in)	3046 (10-0)	3110 (10-2)	3152 (10-4)	2996 (9-10)	3038 (10-0)	3110 (10-2)	3152 (10-4)	3216 (10-7)	3258 (10-8)	3102 (10-2)	3144 (10-4)	3216 (10-7)	3258 (10-8)
Operating weight (includes 80kg operator and full fuel tank) kg (lb)		20856 (45979)	20928 (46138)	20974 (46239)	21043 (46391)	21089 (46493)	21043 (46391)	21089 (46493)	21120 (46561)	21156 (46641)	21235 (46815)	21271 (46894)	21235 (46815)	21271 (46894)



456/456e ZX – LOADER DIMENSIONS – Standard height arm

CHANGES TO OPERATING PERFORMANCE AND DIMENSIONS – Standard height arm



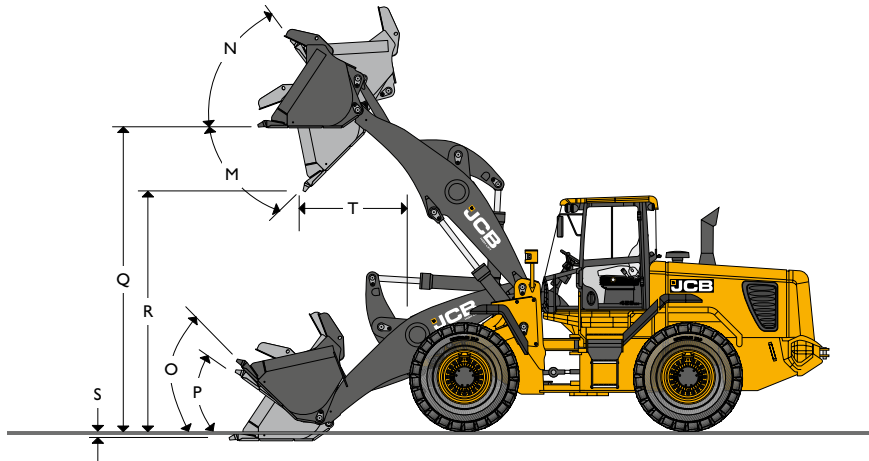
Tyre size	Manufacturer	Type	Rating	Op. weight kg (lb)	Tipping loads			Dimensions	
					Straight kg (lb)	Full turn kg (lb)	Vertical mm (in)	Width mm (in)	
23.5 - 25 (crossply)	Bridgestone	20 Ply	L2	-432 (-952)	-251 (-553)	-246 (-542)	-2 (-0.08)	0	
23.5 R 25 (radial)	Goodyear	GP - 2B	L2	-64 (-141)	-38 (-84)	-37 (-82)	-37 (-82)	0	
23.5 R 25 (radial)	Goodyear	RL - 2 +	L2	100 (221)	62 (137)	61 (135)	-2 (-0.08)	0	
23.5 R 25 (radial)	Michelin	XTLA	L2	-100 (-221)	-58 (-128)	-57 (-126)	-2 (-0.08)	0	
23.5 - 25 (crossply)	Bridgestone	20 Ply	L3	-208 (-459)	-121 (-267)	-118 (-260)	0	0	
23.5 - 25 (crossply)	Firestone	20 Ply	L3	-312 (-688)	-181 (-399)	-177 (-390)	0	0	
650/65 R25 (radial)	Michelin	XLD	L3	-196 (-432)	-113 (-249)	-112 (-247)	-60 (-2.36)	29 (1.14)	
750/65 R25 (radial)	Michelin	XLD	L3	424 (935)	262 (578)	257 (567)	-6 (-0.24)	205 (8.07)	
23.5 R25 (radial)	Michelin	XRD1A	L4	256 (564)	158 (348)	155 (342)	36 (1.42)	0	
23.5 R 25 (radial)	Goodyear	GP - 4B	L4	380 (838)	235 (518)	230 (507)	35 (1.42)	0	
23.5 R 25 (radial)	Goodyear	RL - 5K	L5	704 (1552)	435 (959)	425 (937)	36 (1.42)	0	
23.5 R 25 (radial)	Michelin	XLDD2A	L5	572 (1261)	353 (778)	345 (761)	36 (1.42)	0	
23.5 R 25 (radial)	Michelin	XMINED2	L5	808 (1782)	499 (1100)	488 (1076)	36 (1.42)	0	
Optional extra counterweight	-	-	-	800 (1764)	1445 (2628)	1211 (2206)	0	0	

Assumes the fitment of Michelin 23.5R25 XHA (L3) tyres.

Bucket mounting		Direct	Direct	Direct	Direct	Direct	Direct	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch
Bucket type		General Purpose	General Purpose	Penetration	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose
Bucket equipment		Tipped teeth	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments
Bucket capacity (SAE heaped)	m <sup>3</sup> (yd <sup>3</sup> )	3.1 (4.1)	3.3 (4.3)	3.1 (4.1)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)
Bucket capacity (struck)	m <sup>3</sup> (yd <sup>3</sup> )	2.791 (3.651)	2.991 (3.912)	2.791 (3.651)	2.933 (3.836)	3.137 (4.103)	2.933 (3.836)	3.137 (4.103)	2.497 (3.266)	2.687 (3.515)	2.648 (3.464)	2.844 (3.720)	2.648 (3.464)
Bucket width	mm (ft-in)	2837 (9-4)	2837 (9-4)	2811 (9-3)	2800 (9-2)	2800 (9-2)	2800 (9-2)	2800 (9-2)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)
Bucket weight with wearparts	kg (lb)	1602 (3532)	1645 (3627)	1612 (3554)	1722 (3797)	1765 (3892)	1722 (3797)	1765 (3892)	1380 (3043)	1416 (3122)	1495 (3296)	1531 (3376)	1495 (3296)
Maximum material density	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	2064 (3411)	1925 (3257)	2061 (3436)	1920 (3249)	1797 (3014)	1920 (3249)	1797 (3014)	1874 (3125)	1748 (2957)	1743 (2950)	1631 (2737)	1743 (2950)
Tipping load straight	kg (lb)	15340 (33826)	15235 (33594)	15318 (33776)	15211 (33541)	15106 (33308)	15211 (33541)	15106 (33308)	13975 (30815)	13880 (30557)	13857 (30556)	13762 (30346)	13857 (30556)
Tipping load full turn	kg (lb)	12797 (28218)	12703 (28011)	12776 (28172)	12672 (27943)	12577 (27732)	12672 (27943)	12577 (27732)	11620 (25621)	11534 (25433)	11506 (25371)	11419 (25179)	11506 (25371)
Payload at 50% FTL	kg (lb)	6399 (14109)	6352 (14005)	6388 (14086)	6336 (13971)	6288 (13866)	6336 (13971)	6288 (13866)	5810 (12811)	5767 (12716)	5753 (12686)	5710 (12590)	5753 (12686)
Maximum break out force	kN (lbf)	172 (38666)	165 (37092)	172 (38666)	161 (36193)	154 (34619)	161 (36193)	154 (34619)	153 (34394)	147 (33046)	143 (32146)	137 (30798)	143 (32146)
M Dump angle maximum	degrees	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°
N Roll back angle at full height	degrees	67°	67°	67°	67°	67°	67°	67°	67°	67°	67°	67°	67°
O Roll back at carry	degrees	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°
P Roll back at ground level	degrees	39°	39°	39°	39°	39°	39°	39°	39°	39°	39°	39°	39°
Q Load over height	mm (ft-in)	3822 (12-6)	3822 (12-6)	3856 (12-3)	3831 (12-6)	3831 (12-6)	3822 (12-6)	3822 (12-6)	3822 (12-6)	3702 (12-2)	3831 (12-6)	3711 (12-2)	3822 (12-6)
R Dump height (45° dump)	mm (ft-in)	2741 (9-0)	2699 (8-10)	2765 (9-1)	2887 (9-6)	2845 (9-4)	2741 (9-0)	2699 (8-10)	2621 (8-7)	2559 (8-5)	2767 (9-1)	2725 (8-11)	2621 (8-7)
S Dig depth	mm (ft-in)	74 (0-3)	74 (0-3)	74 (0-3)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)	74 (0-3)	74 (0-3)	91 (0-4)	91 (0-4)	109 (0-4)
T Reach at dump height	mm (ft-in)	1183 (3-11)	1135 (3-9)	1207 (4-0)	1085 (3-7)	1039 (3-5)	1183 (3-11)	1135 (3-9)	1301 (4-3)	1255 (4-1)	1205 (3-11)	1159 (3-10)	1301 (4-3)
Reach maximum (45° dump)	mm (ft-in)	2140 (7-0)	2182 (7-2)	2164 (7-1)	2032 (6-8)	2074 (6-10)	2140 (7-0)	2182 (7-2)	2260 (7-5)	2302 (7-7)	2152 (7-1)	2194 (7-2)	2260 (7-5)
Operating weight (includes 80kg operator and full fuel tank)	kg (lb)	18823 (41497)	18872 (41605)	18833 (41519)	18943 (41762)	18992 (41870)	18943 (41762)	18992 (41870)	19147 (42211)	19196 (42320)	19267 (42476)	19316 (42584)	19267 (42476)



456/456e ZX – LOADER DIMENSIONS – High lift arm



CHANGES TO OPERATING PERFORMANCE AND DIMENSIONS – High lift arm

Tyre size	Manufacturer	Type	Rating	Op. weight kg (lb)	Tipping loads			Dimensions	
					Straight kg (lb)	Full turn kg (lb)	Vertical mm (in)	Width mm (in)	
23.5 - 25 (crossply)	Bridgestone	20 Ply	L2	-432 (-952)	-198 (-436)	-194 (-428)	-2 (-0.08)	0	
23.5 R 25 (radial)	Goodyear	GP - 2B	L2	-64 (-141)	-30 (-66)	-29 (-64)	-2 (-0.08)	0	
23.5 R 25 (radial)	Goodyear	RL - 2 +	L2	100 (221)	49 (108)	48 (106)	-2 (-0.08)	0	
23.5 R 25 (radial)	Michelin	XTLA	L2	-100 (-221)	-46 (-101)	-45 (-99)	-2 (-0.08)	0	
23.5 - 25 (crossply)	Bridgestone	20 Ply	L3	-208 (-459)	-96 (-212)	-93 (-205)	0	0	
23.5 - 25 (crossply)	Firestone	20 Ply	L3	-312 (-688)	-143 (-315)	-140 (-309)	0	0	
650/65 R25 (radial)	Michelin	XLD	L3	-196 (-432)	-89 (-196)	-88 (-194)	-60 (-2.36)	29 (1.14)	
750/65 R25 (radial)	Michelin	XLD	L3	424 (935)	262 (578)	257 (567)	-6 (-0.24)	205 (8.07)	
23.5 R25 (radial)	Michelin	XRD1A	L4	256 (564)	125 (276)	122 (269)	36 (1.42)	0	
23.5 R 25 (radial)	Goodyear	GP - 4B	L4	380 (838)	186 (410)	182 (401)	36 (1.42)	0	
23.5 R 25 (radial)	Goodyear	RL - 5K	L5	704 (1552)	344 (759)	336 (741)	36 (1.42)	0	
23.5 R 25 (radial)	Michelin	XLDD2A	L5	572 (1261)	279 (615)	273 (602)	36 (1.42)	0	
23.5 R 25 (radial)	Michelin	XMINED2	L5	808 (1782)	394 (869)	386 (851)	36 (1.42)	0	
Optional extra counterweight	-	-	-	800 (1764)	1192 (2628)	1000 (2206)	0	0	

Assumes the fitment of Michelin 23.5R25 XHA (L3) tyres.

Bucket mounting		Direct	Direct	Direct	Direct	Direct	Direct	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch	Quickhitch	
Bucket type		General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	General Purpose	
Bucket equipment		Tipped teeth	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments	Tipped teeth	Tipped teeth	Reversible toeplate	Reversible toeplate	Tipped teeth & toeplate segments	Tipped teeth & toeplate segments
Bucket capacity (SAE heaped)	m <sup>3</sup> (yd <sup>3</sup> )	2.8 (3.7)	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)	3.1 (4.1)	3.3 (4.3)	3.3 (4.3)	3.5 (4.6)	3.3 (4.3)	3.5 (4.6)
Bucket capacity (struck)	m <sup>3</sup> (yd <sup>3</sup> )	2.497 (3.266)	2.791 (3.651)	2.991 (3.912)	2.933 (3.836)	3.137 (4.103)	2.933 (3.836)	3.137 (4.103)	2.497 (3.266)	2.687 (3.515)	2.648 (3.464)	2.844 (3.720)	2.648 (3.464)	2.844 (3.720)
Bucket width	mm (ft-in)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2800 (9-2)	2800 (9-2)	2800 (9-2)	2800 (9-2)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)	2837 (9-4)
Bucket weight with wearparts	kg (lb)	1529 (3371)	1602 (3532)	1645 (3627)	1722 (3797)	1765 (3892)	1722 (3797)	1765 (3892)	1380 (3043)	1416 (3122)	1495 (3296)	1531 (3376)	1495 (3296)	1531 (3376)
Maximum material density	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	1713 (2858)	1540 (2567)	1436 (2430)	1432 (2424)	1340 (2249)	1432 (2424)	1340 (2249)	1410 (2351)	1315 (2226)	1312 (2220)	1228 (2060)	1312 (2220)	1228 (2060)
Tipping load straight	kg (lb)	11593 (25563)	11536 (25437)	11456 (25262)	11438 (25222)	11360 (25049)	11438 (25222)	11360 (25049)	10613 (23401)	10540 (23239)	10524 (23204)	10452 (23045)	10524 (23204)	10452 (23045)
Tipping load full turn	kg (lb)	9593 (21152)	9546 (21049)	9476 (20896)	9453 (20844)	9382 (20687)	9453 (20844)	9382 (20687)	8744 (19280)	8680 (19140)	8659 (19094)	8594 (18951)	8659 (19094)	8594 (18951)
Payload at 50% FTL	kg (lb)	4797 (10576)	4773 (10525)	4738 (10448)	4727 (10422)	4691 (10343)	4727 (10422)	4691 (10343)	4372 (9640)	4340 (9570)	4330 (9547)	4297 (9475)	4330 (9547)	4297 (9475)
Maximum break out force	kN (lbf)	164 (36867)	151 (33945)	145 (32596)	142 (31922)	136 (30573)	142 (31922)	136 (30573)	134 (30123)	129 (28999)	126 (28325)	121 (27201)	126 (28325)	121 (27201)
M Dump angle maximum	degrees	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°	45°
N Roll back angle at full height	degrees	53°	53°	53°	53°	53°	53°	53°	53°	53°	53°	53°	53°	53°
O Roll back at carry	degrees	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°	52°
P Roll back at ground level	degrees	44°	44°	44°	44°	44°	44°	44°	44°	44°	44°	44°	44°	44°
Q Load over height	mm (ft-in)	4393 (14-5)	4393 (14-5)	4393 (14-5)	4402 (14-5)	4402 (14-5)	4393 (14-5)	4393 (14-5)	4393 (14-5)	4273 (14-0)	4402 (14-5)	4282 (14-1)	4393 (14-5)	4273 (14-0)
R Dump height (45° dump)	mm (ft-in)	3376 (11-1)	3312 (10-10)	3270 (10-9)	3458 (11-4)	3416 (11-2)	3312 (10-10)	3270 (10-9)	3192 (10-6)	3130 (10-3)	3338 (10-11)	3296 (10-10)	3192 (10-6)	3130 (10-3)
S Dig depth	mm (ft-in)	75 (0-3)	75 (0-3)	75 (0-3)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)	75 (0-3)	75 (0-3)	91 (0-4)	91 (0-4)	109 (0-4)	109 (0-4)
T Reach at dump height	mm (ft-in)	1099 (3-7)	1259 (4-2)	1213 (4-0)	1162 (3-10)	1117 (3-8)	1259 (4-2)	1213 (4-0)	1379 (4-6)	1333 (4-5)	1283 (4-3)	1237 (4-1)	1379 (4-6)	1333 (4-5)
Reach maximum (45° dump)	mm (ft-in)	2553 (8-5)	2617 (8-7)	2659 (8-9)	2509 (8-3)	2551 (8-4)	2617 (8-7)	2659 (8-9)	2737 (9-0)	2779 (9-1)	2629 (8-8)	2617 (8-9)	2737 (9-0)	2779 (9-1)
Operating weight (includes 80kg operator and full fuel tank) kg (lb)		19161 (42242)	19234 (42403)	19283 (42511)	19354 (42668)	19403 (42776)	19354 (42668)	19403 (42776)	19557 (43118)	19607 (43226)	19678 (43382)	19727 (43490)	19678 (43382)	19727 (43490)



**LOADER – HT**

Widely spaced four ram geometry provides the combination of excellent visibility with high bucket torque characteristics throughout the working arc. The pin, bush and sealing design on all pivot points provide extended maintenance intervals.

**LOADER – ZX**

Heavy duty three ram geometry provides high breakout forces with excellent loading characteristics. The pin, bush and sealing design on all pivot points provide extended maintenance intervals.

**TRANSMISSION**

4 wheel drive, automatic smooth shift transmission electrically operated selector and gear change incorporating a speed inhibitor and modulation for smooth, responsive on-the-move direction and ratio changes. Single stage integral torque converter 4 forward and 3 reverse gears.

Type	Smooth shift powershift	
Make & model	ZF 4WG 210	
Torque converter stall ratio	2.813 : 1	
1st gear	kph (mph)	6.9 (4.3)
2nd gear	kph (mph)	12.3 (7.7)
3rd gear	kph (mph)	24.4 (15.3)
4th gear (forward only)	kph (mph)	37.4 (23.4)

**AXLES**

Type	Epicyclic hub reduction	
Make & model	Graziano PR24 front / PR15 rear	
Overall axle ratio	23.538 : 1	
Rear axle oscillation	25°	

**STEERING**

Priority steer hydraulic system with emergency steering. Piston pump meters flow through steer valve to provide smooth low effort response. Steering angle  $\pm 40^\circ$ . Steer rams fitted with end rod damping to provide cushioned steering at full articulation. Adjustable steering column.

**BRAKES**

Hydraulic power braking on all wheels, operating pressure 80 bar (1160psi). Dual circuit with accumulator back-up provide maximum safety under all conditions. In board mounted, oil immersed, multi-plate disk brakes with organic brake linings are environmentally acceptable. Parking brake, electro-hydraulic disc type operating on transmission output shaft.

**456 (TIER 2 EMISSIONS)**

6-cylinder wastegated turbo-charged, liquid cooled, direct injection diesel. Air-to-air charge-air cooling ensure low emissions and "clean-burn" combustion chamber provides minimum fuel consumption. A remote sump oil drain facility simplifies servicing.

Type	4 stroke direct injection	
Model	6CT 8.3C	
Capacity	litres (in <sup>3</sup> )	8.3 (504.5)
Bore	mm (in)	114 (4.49)
Stroke	mm (in)	135 (5.32)
Aspiration	Turbo charged	
Cylinders	6	
Max gross power to SAE J1995/ISO 14396	kW (hp) @ 2000rpm	161 (216)
Rated gross power to SAE J1995/ISO 14396	kW (hp) @ 2200rpm	153 (205)
Nett power to SAE J1349/EEC 80/1269	kW (hp) @ 2200rpm	147 (197)
Max torque	Nm (lbf.ft) @ 1400rpm	994 (733)

**Emissions:-**

Relevant standards EUNR MM Stage 2 USA CFR Part 89

(Complies with EU/EPA "Off Highway" Construction Equipment Regulation Stage 2).

**456e (TIER 3 EMISSIONS)**

6-cylinder wastegated turbo-charged, liquid cooled, direct injection common rail diesel. Air-to-air charge-air cooling ensure low emissions and "clean-burn" combustion chamber provides minimum fuel consumption. A remote sump oil drain facility simplifies servicing.

Type	4 stroke direct injection	
Model	QSC 8.3	
Capacity	litres (in <sup>3</sup> )	8.3 (504.5)
Bore	mm (in)	114 (4.49)
Stroke	mm (in)	135 (5.32)
Aspiration	Turbo charged	
Cylinders	6	
Max gross power to SAE J1995/ISO 14396	kW (hp) @ 2000rpm	160 (215)
Rated gross power to SAE J1995/ISO 14396	kW (hp) @ 2200rpm	160 (215)
Nett power to SAE J1349/EEC 80/1269	kW (hp) @ 2200rpm	154 (206.5)
Max torque	Nm (lbf.ft) @ 1400rpm	915 (675)

**Emissions:-**

US EPA Tier 3, CARB Tier 3, EU Stage 111A.

**TYRES**

A variety of tyre options are available including:

23.5 x 25 x 20 ply (L2). 23.5R25 RL-2+ (L2). 23.5 x 25 x 20 ply (L3). 23.5R25 XTLA (L2). 23.5R25 GP2B (L2). 23.5R25 VUT (L2). 650/65 R25 XLD (L3). 23.5R25 XHA (L3). 23.5R25 VMT (L3). 23.5R25 XMINED2 (L5). 750/65 R25 XLD (L3).

**ELECTRICAL SYSTEM**

24 volt negative ground system, 70 Amp alternator with 2 x 110 Amp hour low maintenance batteries. Isolator located in rear of machine. Ignition key start/stop and pre-heat cold start. Primary fuse box. Other electrical equipment includes quartz halogen, twin filament working lights, front/rear wash/wipe, heated rear screen, full road going lights, clock, gauge and warning light monitoring. Connectors to IP67 standard.

System voltage	Volt	24
Alternator output	Amp hour	70
Battery capacity	Amp hour	2 x 110

**CAB**

Resiliently mounted ROPS/FOPS structure (tested in accordance with EN13510 : 2000/EN13627 : 2000 (Level 2). De - luxe operator environment combines ergonomically located controls with a high level of appointment and low internal noise levels. Entry/exit is via large rear hinged door and anti - slip steps. Excellent forward visibility is provided by a 3 section curved, laminated windscreen and full glazing below waistline. Extensive instrumentation includes electronic monitoring panel and display (EMS). Heating / ventilation provides balanced and filtered air distribution throughout the cab via a powerful 8 kW capacity heater. The unitary construction allows easy sealing and prevents ingress of dust. A transmission lock on the selector prevents inadvertent engagement and the loader controls can be isolated for safe road travel.

Exterior power level 456 (Tier II): 72 Lp(A) 109 Lw(A)  
Exterior power level 456E (Tier III): 72 Lp(A) 106 Lw(A)

**456/456e HT – LOADER HYDRAULICS**

Variable displacement piston pump feed a "load sensing" system providing a fuel efficient and responsive distribution of power as required. Main services are servo actuated from a single lever (joystick) loader control. Auxiliary circuits controlled via additional lever or joystick mounted electrical buttons. Accumulator back-up is available to control loader in the event of loss of pump pressure.

Pump type	Twin variable displacement piston pump	
Pump 1 max. flow	l/min (UK gal/min)	163 (36)
Pump 1 max. pressure	bar (lb/in <sup>2</sup> )	250 (3625)
Pump 2 max. flow	l/min (UK gal/min)	163 (36)
Pump 2 max. pressure	bar (lb/in <sup>2</sup> )	160 (2320)
<b>Hydraulic cycle times at full engine revs</b>	<b>seconds</b>	
Arms raise (full bucket)	5.8	
Bucket dump (full bucket)	1.2	
Arms lower (empty bucket)	4.1	
Total cycle	11.1	

Ram dimensions		Bore	Rod	Closed centres	Stroke
Bucket ram x2	mm (in)	130 (5.1)	75 (3.0)	1845 (72.6)	1270 (50.0)
Lift ram x2	mm (in)	160 (6.3)	80 (3.1)	1290 (50.8)	744 (29.3)
Steer ram x2	mm (in)	90 (3.5)	50 (2.0)	621 (24.4)	312 (12.3)

**456/456e HT – ATTACHMENTS**

An extensive range of attachments including pallet forks, crane jibs, high dumping buckets and timber grapples are available to fit directly or via the JCB quickhitch mounting.

**456/456e HT – STANDARD EQUIPMENT**

**Loader:** Bucket reset mechanism, loader arm kickout mechanism, loader control isolator, single lever or multi lever servo control, high torque geometry combines with excellent visibility between arms.

**Engine:** Air cleaner 2 stage dry type – cyclonic with primary and safety elements, sedimenter, twin bowl fuel filters, alternator and air conditioning compressor drive belt guards, isolated cooling package with hydraulically driven cooling fan.

**Transmission:** Single lever shift control, speed inhibitor, neutral start, disconnect on footbrake and loader lever, disconnect isolator switch, direction changes and kickdown on gear selector and loader control lever.

**Axles:** Epicyclic wheel hub reduction, fixed front, oscillating rear.

**Brakes:** Multi-plate wet disc brakes, organic linings, dual circuit hydraulic power. Parking disc brake on transmission output shaft.

**Hydraulics:** Twin piston pumps with priority steer, emergency steer back-up, 2 spool loader circuit with accumulator support, 3rd and 4th spool auxiliary hydraulic circuits available as an option.

**Steering:** Adjustable steering column, "soft feel" steering wheel 5 turns lock to lock, resilient stops on max lock.

**Cab:** ROPS/FOPS safety structure, interior reading light, centre mounted master warning light. Electronic monitoring panel with LCD message display. Two speed intermittent front windscreen wipe/wash and self park, single speed rear windscreen wipe/wash and self park. 3 speed heater/demisting with replaceable air filter, LH and RH opening windows, sun visor, internal rear view mirror, external mirrors, adjustable suspension seat with belt and headrest, operator storage facilities, laminated windscreen, heated rear screen, loader control isolator, horn, adjustable armrest, heated mirrors.

**Electrical:** Road lights front and rear, parking lights, front and rear working lights, reverse alarm and light, rear fog light, battery isolator, radio wiring and speakers, 70 amp alternator, rotating beacon.

**Bodywork:** Front and rear fenders, side and rear access panels, flexible bottom step, full width rear counterweight, recovery hitch, lifting lugs.

**456/456e HT – OPTIONAL EQUIPMENT**

Air conditioning, limited slip differentials front/rear axles, Turbo 2 and dust buster pre-cleaner, tooth guard, replaceable bucket wearparts, epoxy coated radiator/coolers, automatically reversing cooling fan, stainless steel brake pipes, smooth ride system (SRS), hydraulic quickhitch with in-cab hydraulic pin isolation, full rear fenders, reversing camera (colour), auto greasing system, joystick or Multi-lever hydraulic controls, auxiliary hydraulic control on separate lever or joystick mounted (proportional), 24V to 12V in cab converter, cab screen guards, additional front and rear work lights, heated air suspension seat, light guards, front and rear blinds, engine block heater, biodegradable hydraulic oil, cab filtration options, fire extinguisher, number plate light kit, white noise reverse alarm, smart reverse alarm, parallel lift links (recommended for pallet forks), Super High Lift loader arms, canopy cab, Wastemaster cab, widcore radiator, sealed electrics, grease gun and cartridge, basic and full belly guard kits, mesh air intake screen, ARV kit, safety strut, transmission cooler bypass, non-heated mirrors, grease gun, LiveLink telematics.

**456/456e HT – WASTEMASTER STANDARD EQUIPMENT**

Machine as above including: basic and full belly guard kit, turbo 2 pre-cleaner, carbon cab air intake filter, front and rear light guards, widcore radiator, full Wastemaster branding, mesh air intake screen.



## 456/456e ZX – LOADER HYDRAULICS

Variable displacement piston pump feed a "load sensing" system providing a fuel efficient and responsive distribution of power as required. Main services are servo actuated from a single lever (joystick) loader control. Auxiliary circuit controlled via additional lever or joystick mounted electrical buttons. Accumulator back-up is available to control loader in the event of loss of pump pressure.

Pump type	Twin variable displacement piston pump				
Pump 1 max. flow	l/min (UK gal/min)		163 (36)		
Pump 1 max. pressure	bar (lb/in <sup>2</sup> )		250 (3625)		
Pump 2 max. flow	l/min (UK gal/min)		163 (36)		
Pump 2 max. pressure	bar (lb/in <sup>2</sup> )		160 (2320)		
<b>Hydraulic cycle times at full engine revs</b>			<b>seconds</b>		
Arms raise (full bucket)			5.8		
Bucket dump (full bucket)			1.2		
Arms lower (empty bucket)			4.1		
Total cycle			11.1		
<b>Ram dimensions</b>					
<b>Ram dimensions</b>		<b>Bore</b>	<b>Rod</b>	<b>Closed centres</b>	<b>Stroke</b>
Bucket ram x1	mm (in)	180 (7.1)	90 (3.5)	1120 (44.1)	530 (20.9)
Lift ram x2	mm (in)	160 (6.3)	80 (3.1)	1290 (50.8)	744 (29.3)
Steer ram x2	mm (in)	90 (3.5)	50 (2.0)	621 (24.4)	312 (12.3)

## 456/456e ZX – ATTACHMENTS

An extensive range of attachments are available to fit directly or via the JCB quickhitch mounting.

## 456/456e ZX – STANDARD EQUIPMENT

**Loader:** Bucket reset mechanism, loader arm kickout mechanism, loader control isolator, single lever or multi lever servo control, high breakout forces with excellent loading characteristics.

**Engine:** Air cleaner 2 stage dry type – cyclonic with primary and safety elements, sedimenter, twin bowl fuel filters, alternator and air conditioning compressor drive belt guards, isolated cooling package with hydraulically driven cooling fan.

**Transmission:** Single lever shift control, speed inhibitor, neutral start, disconnect on footbrake and loader lever, disconnect isolator switch, direction changes and kickdown on gear selector and loader control lever.

**Axles:** Epicyclic wheel hub reduction, fixed front, oscillating rear.

**Brakes:** Multi-plate wet disc brakes, organic linings, dual circuit hydraulic power. Parking disc brake on transmission output shaft.

**Hydraulics:** Twin piston pumps with priority steer, emergency steer back-up, 2 spool loader circuit with accumulator support, 3rd and 4th spool auxiliary hydraulic circuits available as an option.

**Steering:** Adjustable steering column, "soft feel" steering wheel 5 turns lock to lock, resilient stops on max lock.

**Cab:** ROPS/FOPS safety structure, interior reading light, centre mounted master warning light. Electronic monitoring panel with LCD message display. Two speed intermittent front windscreen wipe/wash and self park, single speed rear windscreen wipe/wash and self park. 3 speed heater/demisting with replaceable air filter, LH and RH opening windows, sun visor, internal rear view mirror, external mirrors, adjustable suspension seat with belt and headrest, operator storage facilities, laminated windscreen, heated rear screen, loader control isolator, horn, adjustable armrest, heated mirrors.

**Electrical:** Road lights front and rear, parking lights, front and rear working lights, reverse alarm and light, rear fog light, battery isolator, radio wiring and speakers, 70 amp alternator, rotating beacon.

**Bodywork:** Front and rear fenders, side and rear access panels, flexible bottom step, full width rear counterweight, recovery hitch, lifting lugs.

## 456/456e ZX – OPTIONAL EQUIPMENT

Air conditioning, limited slip differentials front/rear axles, Turbo 2 and dust buster pre-cleaner, tooth guard, replaceable bucket wearparts, epoxy coated radiator/coolers, automatically reversing cooling fan, stainless steel brake pipes, smooth ride system (SRS), hydraulic quickhitch with in-cab hydraulic pin isolation, full rear fenders, reversing camera (colour), auto greasing system, joystick or Multi-lever hydraulic controls, auxiliary hydraulic control on separate lever or joystick mounted (proportional), 24V to 12V in cab converter, cab screen guards, additional front and rear work lights, heated air suspension seat, extra counterweight, light guards, front and rear blinds, engine block heater, biodegradable hydraulic oil, cab filtration options, fire extinguisher, number plate light kit, white noise reverse alarm, smart reverse alarm, High Lift loader arms, canopy cab, Wastemaster cab, LiveLink telematics, widecore radiator, sealed electrics, grease gun and cartridge, basic and full belly guard kits, mesh air intake screen, ARV kit, safety strut, transmission cooler bypass.

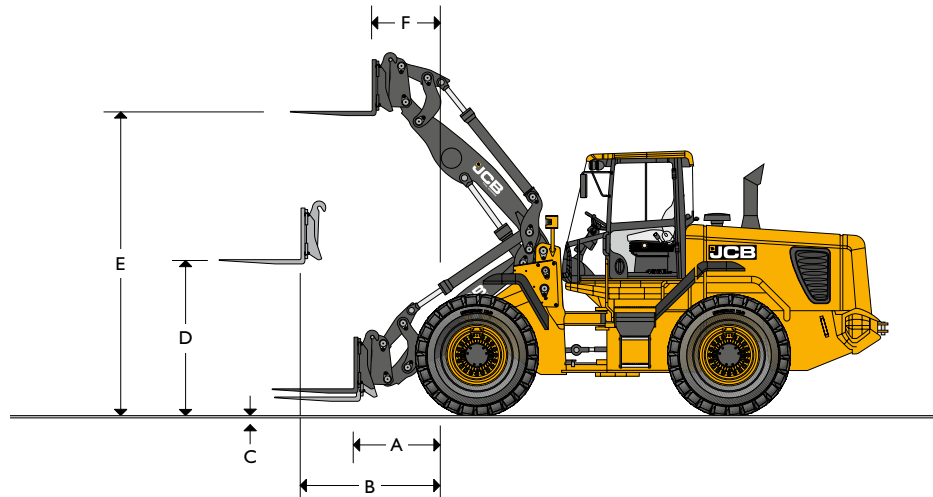
## 456/456e ZX – WASTEMASTER STANDARD EQUIPMENT

Machine as above including: basic and full belly guard kit, turbo 2 pre-cleaner, carbon cab air intake filter, front and rear light guards, widecore radiator, full Wastemaster branding, mesh air intake screen.





456/456e HT – LOADER DIMENSIONS – FORK FRAME WITH FORKS



LOADER DIMENSIONS – FORK FRAME WITH FORKS

	Standard height arm		Super high lift arm	
	mm (ft-in)		mm (ft-in)	
Fork carriage width	1500 (4-11)		1500 (4-11)	
Length of tines	1220 (4-0)		1220 (4-0)	
A Reach at ground level	1175 (3-10)		2143 (7-0)	
B Reach at arms horizontal	1851 (6-1)		2650 (8-8)	
C Tine surface to ground level	50 (0-2)		50 (0-2)	
D Arms horizontal height	1975 (6-6)		1975 (6-6)	
E Arms maximum height	4194 (13-9)		5160 (16-11)	
F Reach at maximum height	874 (2-10)		931 (3-1)	
Payload **	kg (lb)	7808 (17215)	kg (lb)	5755 (12687)
Tipping load straight	kg (lb)	11281 (24868)	kg (lb)	8314 (18328)
Tipping load full turn (40°)	kg (lb)	9760 (21518)	kg (lb)	7193 (15858)
Attachment weight	kg (lb)	590 (1301)	kg (lb)	590 (1301)

Assumes the machine is fitted with Michelin 23.5R25 XHA (L3) tyres.

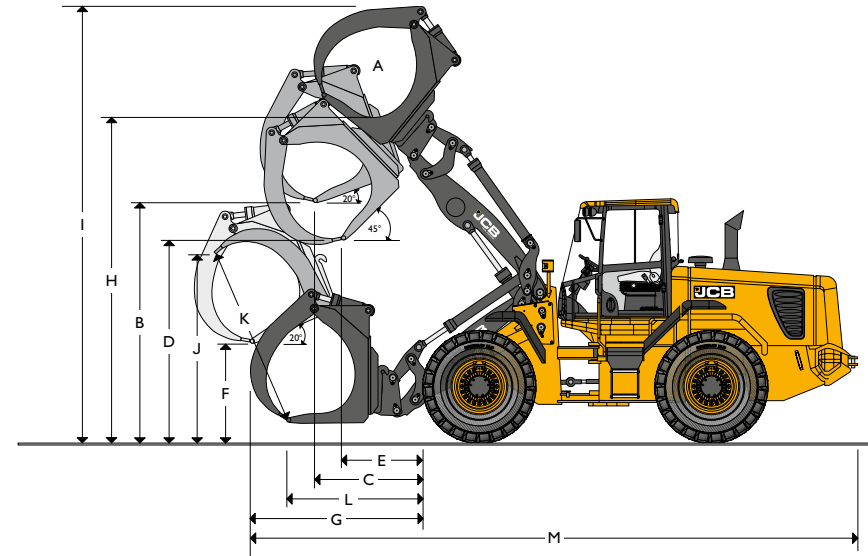
\*\* At a centre of gravity distance of 600mm (2-0).

Based on 80 % of full turn tipping load as defined by ISO 8313.

Manual fork spacings at 50mm increments.

Class 4A fork section 60 mm x 150 mm (2.4 x 6 inches).

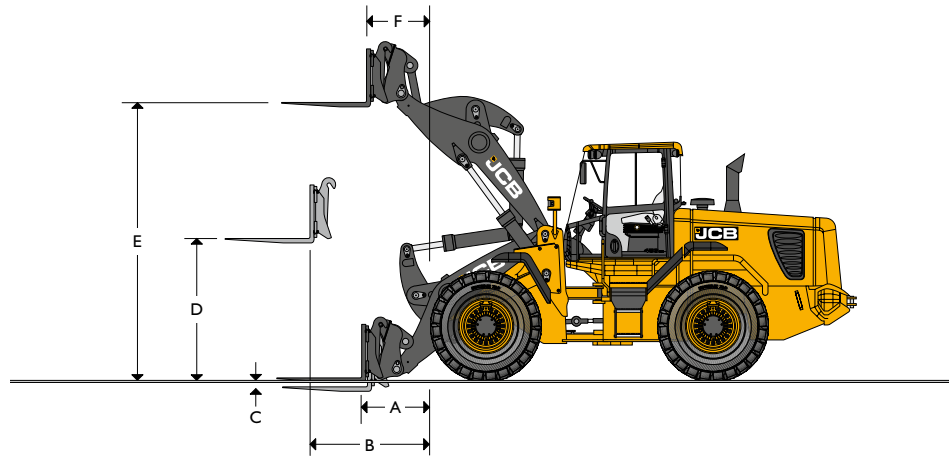
UNLOADING GRAPPLE DIMENSIONS – STANDARD HEIGHT ARM



UNLOADING GRAPPLE DIMENSIONS – STANDARD HEIGHT ARM

	Standard height arm	
	mm (ft-in)	
A Grapple capacity	m <sup>2</sup> (yd <sup>2</sup> )	2.40 (2.87)
B Tine height at 20° dump		3707 (12-2)
C Reach at full height and 20° dump		1998 (6-7)
D Tine height at 45° dump		3087 (10-2)
E Reach at full height and 45° dump		1494 (4-11)
F Tine height, arms horizontal and 20° dump		1228 (4-0)
G Reach, arms horizontal and 20° dump		3086 (10-1)
H Maximum height inside grapple		5129 (16-10)
I Maximum height		7084 (23-3)
J Height at maximum opening		2357 (7-9)
K Maximum opening		2706 (8-11)
L Reach at ground level		2804 (9-2)
M Overall length		9524 (31-3)
Operating weight	kg (lb)	20320 (44798)

Assumes the machine is fitted with Michelin 23.5R25 XHA (L3) tyres.

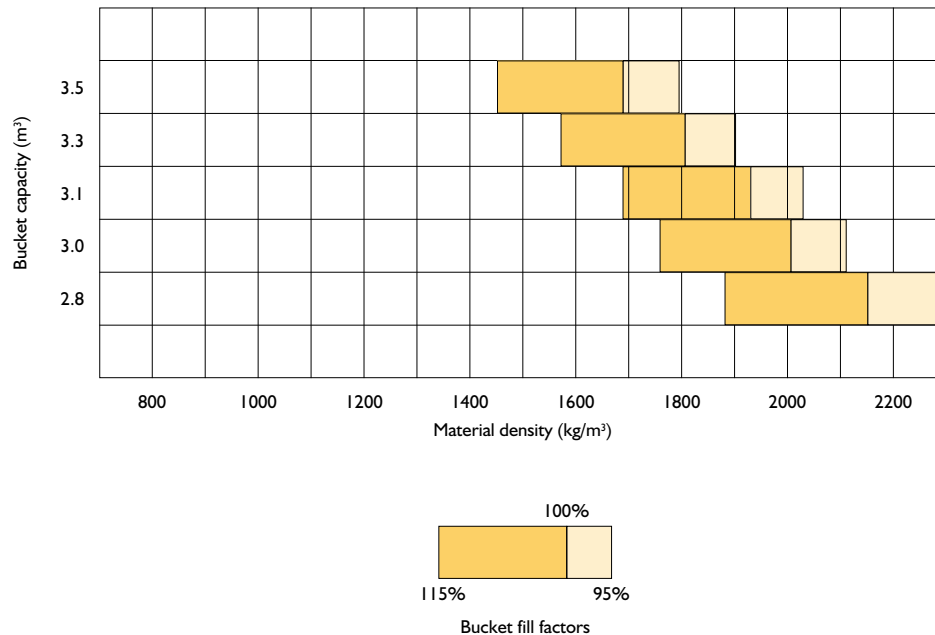


456/456e ZX – LOADER DIMENSIONS – FORK FRAME WITH FORKS

Assumes the fitment of Michelin 23.5R25 XHA (L3) tyres		Standard arm	High lift arm
Fork carriage width	mm (ft-in)	1500 (4-11)	1500 (4-11)
Length of tines	mm (ft-in)	1220 (4-0)	1220 (4-0)
<b>A</b> Reach at ground level	mm (ft-in)	1084 (3-7)	1644 (5-5)
<b>B</b> Reach at arms horizontal	mm (ft-in)	1695 (5-7)	2172 (7-2)
<b>C</b> Below ground level	mm (ft-in)	16 (0-1)	16 (0-1)
<b>D</b> Arms, horizontal height	mm (ft-in)	1975 (6-6)	1975 (6-6)
<b>E</b> Arms, maximum height	mm (ft-in)	3997 (13-1)	4567 (15-0)
<b>F</b> Reach at maximum height	mm (ft-in)	735 (2-5)	813 (2-8)
Payload*	kg (lb)	7883 (17383)	5880 (12967)
Tipping load straight	kg (lb)	11812 (26044)	8882 (19587)
Tipping load full turn (40°)	kg (lb)	9853 (21724)	7351 (16210)
Attachment weight	kg (lb)	590 (1301)	590 (1301)

\*At the centre-of-gravity distance 600mm (2ft-0in). Based on 80% of full turn tipping load as defined by ISO 8313. Manual fork spacings at 50mm (2in) increments. Class 4A Fork section 150mm x 60mm (6in x 2.4in).

BUCKET SELECTOR



Material	Loose density		Fill factor
	kg/m³	lb/yd³	%
Snow (fresh)	200	337	110
Peat (dry)	400	674	100
Sugar beet	530	894	100
Coke (loose)	570	961	85
Barley	600	1012	85
Petroleum coke	680	1146	85
Wheat	730	1231	85
Coal bituminous	765	1290	100
Fertiliser (mixed)	1030	1737	85
Coal anthracite	1046	1764	100
Earth (dry) (loose)	1150	1939	100
Nitrate fertiliser	1250	2180	85
Sodium chloride (dry) (salt)	1300	2192	85
Cement Portland	1440	2428	100
Limestone (crushed)	1530	2580	100
Sand (dry)	1550	2613	100
Asphalt	1600	2698	100
Gravel (dry)	1650	2782	85
Clay (wet)	1680	2832	110
Sand (wet)	1890	3187	110
Fire clay	2080	3507	100
Copper (concentrate)	2300	3878	85
Slate	2800	4721	100
Magnetite	3204	5402	100



20 horizontal lines for writing notes.





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Download the very latest information on this product range at: [www.jcb.com](http://www.jcb.com)

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