

Quaymate M50 Design Parameter

1.0 Dimensions

Chassis length without stabilizer pads	approx. 12.6 m
Chassis width (without stabilizer pads)	approx. 8.1 m
Propping base, longitudinal / transverse	10.0 m x 10.0 m
Stabilizer pad size 4 x	1.2 m x 1.8 m
Counterweight overhang to rear	6.10 m
Boom pivot point height	approx. 7.4 m
Tower cab operator viewing height	approx. 12.7 m

2.0 Working range

max. radius	36.0 m
min. radius	10.5 m

3.0 Hoisting height

Hoisting height above quay level, radius 11 m	34.0 m
Hoisting height above quay level, radius 12 m	33.5 m
Hoisting height above quay level, radius 14 m	33.0 m
Hoisting height above quay level, radius 16 m	32.0 m
Hoisting height above quay level, radius 18 m	31.0 m
Hoisting height above quay level, radius 20 m	30.0 m
Hoisting height above quay level, radius 22 m	29.0 m
Hoisting height above quay level, radius 24 m	27.5 m
Hoisting height above quay level, radius 26 m	26.0 m
Hoisting height above quay level, radius 28 m	24.0 m
Hoisting height above quay level, radius 30 m	21.5 m
Hoisting height above quay level, radius 32 m	18.5 m
Hoisting height above quay level, radius 33 m	17.0 m
Hoisting height above quay level, radius 34 m	15.5 m
Hoisting height above quay level, radius 35 m	13.0 m
Hoisting height above quay level, radius 36 m	10.5 m
Hoisting height below quay level	-12.0 m

4.0 Weights

Total weight of crane including hook in operational state	approx. 180 t
Fixed counterweight	approx. 44 t

5.0 Max. wind loads

Crane in travel condition	Windspeed up to 24 m/s
Crane, propped, in normal-load operation	up to 24 m/s
Crane, propped, out of operation	46 m/s

6.0 Electrical data

Nominal voltage 440 V / 60 Hz / max. current input, auxiliary power supply, 63 A / clearance between crane and overhead high-voltage lines up to 420 kV = 20 m.

7.0 Generator



Make
Type

Stamford
HCl 544 C2
440 V/60 Hz

8.0 Technical Data

Diesel engine

Make	CUMMINS
Model	QSX 15-G6
Cylinders	V 6
Type of engine	diesel
Cooling system	water-cooled
Output	455 kW / 1800 rpm
Fuel consumption	approx. 201 g/kWh

Fuel tank

Capacity, main tank	approx. 1600 l
Capacity, day tank	approx. 500 l
Possible operating time with full tank	up to 75 hrs

Speeds

Hoist		
Lifting capacity	5 t	0 - 50 m/min
Lifting capacity	10 t	0 - 44 m/min
Lifting capacity	20 t	0 - 30 m/min
Lifting capacity	40 t	0 - 19 m/min
Lifting capacity	50 t	0 - 17 m/min

Slewing gear

Superstructure slewing speed in normal operation with load	0 - 1.2 rpm
Maximum peripheral speed	160 m/min
Superstructure slewing speed in heavy-load operation	0 - 0.6 rpm

Luffing gear

Luffing speed in normal operation	0 - 40 m/min
Luffing speed in heavy-load operation	0 - 27 m/min

Travel gear

Travel speed with hook	0 - 60 m/min
Longitudinal inclination during travel	max. 6 %
Lateral inclination during travel	max. 2.5%
Inclination of the propping surface	max. 2.5%

Quaymate M50 Main Data

No	Item			Unit	Value
1	Max. Rated Lifting Torque			KN.M	9124
2	Max. Rated Lifting Capacity			t	50
3	Boom	Length		m	36
		Working Radius (min./max.)		m	11 / 36
		Rated Lifting Capacity (max./min.)		t	50 / 17.9
		Max. Lifting Height		m	34
4	Boom Elevation (max./min.)			o	75 / 18
5	Span of Legs	Longitudinal span of legs (left/right)		mm	10000 / 10000
		Cross span of legs (front/rear)		mm	10000 / 10000
6	Lifting Speed of Main Hook	Max. Lifting Speed (Empty load/ Full load)		m/min	50 / 17
		Max. Lowering Speed (Empty load/ Full load)		m/min	50 / 17
		Min. Lifting Speed (Full load)		m/min	0
		Min. Lowering Speed (Full load)		m/min	0
4	Full Luffing Time (Boom lifting/ Boom lowering)			s	50 / 50
5	Slewing Speed (Empty load/ Full load)			r/min	0-1.2 / 0-0.6
6	Travelling Speed (Max. speed with empty load)			Km/h	3.6
7	Max. Climbing Gradient (Empty load)			%	6
8	Total Length / Total Width/ Total Height			mm	35353 / 11200 / 33620 (Remark: Under condition that Boom outreaches for 28m and legs are fully extended)
9	Axle Base (Front axle base/ Rear axle base)			mm	3900 / 2100
10	Wheel Base (Front wheelbase/ Rear wheelbase)			mm	4173 / 4173
11	Min. Turning Radius			mm	6614
12	Tail Radius			mm	6100
13	Min. Ground Clearance			mm	273
14	Approach Angle/ Departure Angle			o	6.8 / 6.8
15	Total Weight			Kg	180000
16	Front Axle Load (Empty load)			Kg	60000
17	Rear Axle Load (Front rear axle/ Rear rear axle)(Empty load)			Kg	60000 / 60000
18	Power System	Engine	Manufacturer	— — —	Cummins
			Model	— — —	QSX15-G6 Nonroad 2
			Type	— — —	Six Cylinders
			Displacement	L	15
			Prime Power Speed	Kw r/min	455 1800
			Location	— — —	Diesel Group, Above Chassis
			Location and Direction of Exhaust Pipe	— — —	Above Diesel Group
19	Main Generator	Manufacturer	— — —	Stamford	
		Model/ Quantity	— — —	HCI544C2 / 1	
		Power Voltage	Kw V	>360 Kw 440V	

No	Item		Unit	Value
20	Hydraulic Motor	Manufacturer	---	Bosch Rexroth
		Model/ Quantity	---	MOTORA6VM170HA1T30001B/71MWV0R4 A28W0-0 / 1
		Type	---	Axial Piston Variable Pump
21	Front Axle	Manufacturer	---	Kessler
		Model (Or Drawing Number)	---	Steering Axle L91 (91.7861.2c)
		Type	---	Steering Axle
22	Rear axle	Manufacturer	---	Kessler
		Model (Front rear axle/ Rear rear axle)(Or Drawing number)	---	D91VPL418/510 (91.8109.2d) Steering Axle L91 (91.7867.2d)
		Type	---	Driven Axle/ Steering Axle
23	Steering Gear	Manufacturer	---	Euromat Henrion Hydraulique S.A.
		Model	---	STEERING CYLINDER D80/40X300
		Type	---	Steering Cylinder
24	Braking System	Type of Service Brake	---	Hydraulic Brake
		Type of Braking Adjustment	---	Stud to Adjust
		Type of Parking Brake	---	Hydraulic Brake
		Parking Brake Operation	---	By Joystick
		Type of Emergency Brake	---	Emergency Stop Button
25	Tyre	Manufacturer	---	Magna
		Specification/ Quantity of Front Wheel	---	DIAGONAL TYRE 14.00-24 28PR (E3) / 4
		Specification/ Quantity of Rear Wheel	---	DIAGONAL TYRE 14.00-24 28PR (E3) / 8
		Atmospheric Pressure	bar	10
26	Motor	Manufacturer	---	Siemens
		Model/ Quantity	---	3-PH ASYNC MOTOR 1LG4316-8AB91-Z / 1
		Type	---	Three Phase Asynchronous Motor
27	Reducer	Manufacturer	---	Zollern (Tianjing) Machinery Co., Ltd.
		Model/ Reduction Ratio	---	ZHP4.32EG / 92.889
28	Brake	Manufacturer	---	Zollern (Tianjing) Machinery Co., Ltd.
		Model/ Quantity	---	63V / 1
		Brake Torque (Dynamic/ Static)	Nm	4350 / 6525
29	Motor	Manufacturer	---	Siemens
		Model/ Quantity	---	3-PHASE ASYN.MOTOR 1LG4207-4AA94-Z / 1
		Type	---	Three Phase Asynchronous Motor
30	Reducer	Manufacturer	---	Bonfiglioli
		Model Reduction Ratio	---	714T3F W.SPEC.SHAFT 1 : 182.37

No	Item			Unit	Value
31	Slewing Unit	Brake	Manufacturer	---	SIBRE
			Model/ Quantity	---	DISC BRAKE SK4-H-E / 1
			Brake Torque	Nm	492
32	Slewing Bearing	Manufacturer	---	Xvzhou Rothe Erde Slewing Bearing Co., Ltd.	
		Model	---	133.40.2697.002.04.03F1	
33	Extension Cylinder		Manufacturer	---	Jiangsu Hengli HighPressure Oil Cylinder Co.,Ltd.
			Cylinder Diameter/ Piston Diameter/ Stroke	---	φ 90 / φ 70 / 1200
			Quantity	---	4
34	Jack Cylinder		Manufacturer	---	Jiangsu Hengli HighPressure Oil Cylinder Co.,Ltd.
			Cylinder Diameter/ Piston Diameter/ Stroke	---	φ 220 / φ 180 / 600
			Quantity	---	4
35	Overload Protection Unit		Manufacturer	---	BROSA
			Model/ Specification	---	Load cell 25/40T 1006853 RED
36	Luffing Unit	Hydraulic Motor	Manufacturer	---	Bosch Rexroth
			Model	---	AKE VARIABLE PUMP A11VO175+A10VO63
			Quantity	---	1
			Type	---	Variable Pump
37	Luffing Cylinder	Manufacturer	---	Jiangsu Hengli HighPressure Oil Cylinder Co.,Ltd.	
		Cylinder Diameter/ Piston Diameter/ Stroke	---	φ 290 / φ 130 / 5350	
		Quantity	---	1	
38	Control Valve for Travelling		Manufacturer	---	Danfoss Power Solution
			Model/ Quantity	---	PVG 32/4-FACH / 2
			Control Manner	---	By Joystick
39	Hook		Model/ Specification	---	Motor Slewing Unit, 63/80 to. Disk
			Manufacturer	---	PEINER SMAG Lifting
40	Wire Rope		Manufacturer	---	KISWIRE
			Model	---	Veropro 8.8XK26WS-EPIWRC - φ 33
41	Max. Working Pressure of Hydraulic System			bar	280
42	Material of Main Structure		Boom	---	S355J2H / S355J2
			Tower	---	S355J2
			Frame	---	S355J2
			Leg	---	S355J2

Quaymate M50 Mobile Harbour Crane

Main Crane Data:

Total crane weight:	180,0 t
Maximum load:	50,0 t
Maximum load on operation:	230,0 t
Number of axles:	3
Propping base:	10,0 m x 10,0 m
Stabilizer pad size:**	1,2 m x 1,8 m
Stabilizer pads per corner	1

**other sizes on request

Crane in Travelling Mode:

Uniformly distributed load during travelling:

Area covered (11,0 m x 8,9 m)	97,90 m ²
Uniformly distributed load (180,0 t / 97,9 m ²)	1,84 t/m ²

Pressure under wheels:

Axle Load:	60 t
Wheels / Axle:	4
Load / Wheel:	15,00 t
Supporting Area / Wheel:	1690 cm ²
Pressure under Wheel:	8,88 kg/cm ²

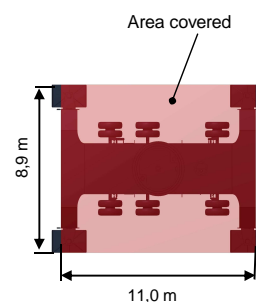


Figure 1: Area covered by the crane in travelling mode *

Crane in Operation:

Maximum propping forces [Heavy load - 75%]

Boom Position	I	II	III
Load:	49,0 t	49,0 t	49,0 t
Radius:	19 m	19 m	19 m
Stabilizer pad loading:	98,3 t	115,4 t	98,3 t
Pad(s) on which load is exerted:	A, D	A	A, B
Stabilizer Pad Area:	2,16 m ²	2,16 m ²	2,16 m ²
Ground Pressure :	4,55 kg/cm ²	5,34 kg/cm ²	4,55 kg/cm ²

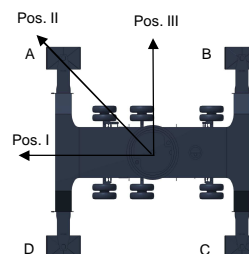


Figure 2: Determination of boom and pad position *

* Images are exemplary and may vary from configured crane