



VOLTAS LIMITED

MATERIALS HANDLING BUSINESS DIVISION

A **TATA** Enterprise

**HIGH RELIABILITY
EXCELLENT PERFORMANCE
GREATER PRODUCTIVITY**

Rough Terrain

Hydraulic Mobile Crane

40-M T @ 3.00 mt. radius

Model : VLRT40

Tip height maximum 52.1 mt.

Detailed Specification



DETAILED SPECIFICATIONS FOR VLRT40 CRANE

Excellent reach afforded by telescoping 32.3 m 4 section boom. Add 10.4 m lattice boom extension and 7.6 m jib for total length of 50.3 m.

Telescope rated loads for precise placement. Semi-fixed cylinder mounts decrease cylinder deflection under load and increase telescoping capacity.

Superior lifting performance Provided by rectangular full depth four-plate boom that is welded inside and out.

Industry's most maneuverable RT crane — Four wheel drive / steer with co-ordinated steering has the shortest turning radius and the lowest travel height.

Fast, solid set-up with scissors type outriggers. Excellent stability due to 6.71 m outrigger stance.

Total operator comfort means less fatigue and greater production. Spacious cab module allows efficient placement of controls, lots of leg and elbow room and full vision of work areas.

A duty-cycle machine — Powerful Winch offers high line speeds & pull. Non-competing hydraulic system provides optimum flow for fast crane functioning.

Less downtime Valtas crane is 'Pit-Stop' maintenance-proven. It is industry's most serviceable crane engineered for parts commonality, accessibility and fast teardown.

BOOM

All boom sections are of full depth, rectangular, four-plate construction, welded inside and out, with adjustable nylon slider pads on top, bottom and sides. Boom point contains four main sheaves and one idler sheave. Sheaves are non-metallic with roller bearings. Semi-fixed telescope cylinder mounts provide capacity to telescope full rated loads.

Four (4) section boom with pinned section. 9.9 m retracted length, 32.3 m extended length. Consisting of one base section, 2 powered sections and one manually pinned section with boom point which can be hydraulically extended or retracted (standard).

Boom Extension (Optional)

For extending the reach of boom. 10.4 m swing around tapered lattice structure, with single metallic boom point sheave. Easily installed from ground level by pivoting from its stowed position on right side of boom base and pin connecting to boom point.

JIB (Optional)

For extending reach of boom extension 7.6 m A-frame structure with single metallic jib point sheave with compression strut and guy cables provided. Pin and guy line connected.

Auxiliary Sheave (Optional)

Single metallic sheave, bracket-mounted on boom point, for use with single auxiliary winch line.

Hook Block (Standard)

- A) 40MT—4 sheaves with swivel hook and safety latch, for 19 mm wire rope.
- B) 20MT—1 sheave with swivel hook and safety latch, for 19 mm wire rope.
- C) 8.5MT—weighted hook with swivel and safety latch, for 19 mm wire rope.

UPPER STRUCTURE

Operator's Cab

All-weather environmental cab of steel has hinged ceiling window. Right side window with guard, large windows with full view in all directions and locking slide-by door. Safety glass used throughout. Operator's four-way adjustable seat has torsion suspension.

Controls

Cab contains all roading and crane function controls. In front of operator are foot pedals for boom hoist, swing brake, service brakes, and engine throttle. Left of steering wheel are console mounted double-acting levers for swing with horn button and telescope. At the right are levers for auxiliary winch (optional), main winch and boom hoist. Also in front of operator are rear steer centering light, axle lockout override button (optional). On the right side of the seat are floor mounted levers for house lock and swing holding brake. At the operators right are console mounted switches for master ignition, steering mode, parking brake, windshield wiper, and outrigger controls. Also on the console are engine start button, warning light and buzzer monitoring power plant gauge panel, engine stop button, dash light, fuel gauge, air pressure gauge, circular level, gear forward-reverse selector lever and positive hand throttle. Console has pre-wired removable modules for ease of service.

Other controls

Located elsewhere are power plant gauge panel (rear of engine compartment) with gauges for hydraulic oil temperature, engine oil pressure, engine temperature, torque converter oil temperature, transmission clutch oil pressure, volt meter and hour meter. Hydraulic axle oscillation lockouts on rear axle cradle are activated when boom is swung by 6°, on either side. Selecting reverse gear activates electric back-up alarm.

WINCH

Main Winch

Single speed, mounted on revolving frame. Planetary gearing for power raising and lowering infinitely variable controlled speed. Spring applied, hydraulically released load holding coliper disc brake. Complete with 167.6 m wire rope.

Wire Rope 18 / 19 mm dia.

Line Pull (Max) 7,000 kg 1st layer
Line speed (Max) 95 m/m 5th layer

Auxiliary winch (Optional)

Same as main winch, but with 152.4 m wire rope and additional boom point idler sheave.

BOOM HOIST

Two cylinders, double-acting. Hydraulically powered raising and lowering with holding valve.

DETAILED SPECIFICATIONS FOR VLRT40 CRANE

Boom Telescope

Two cylinders double acting. Hydraulically powered extending and retracting with holding valve. Supplied by single hose loop.

Hydraulic system

This system utilizes 4 pumps and is designed to provide ample volume and pressure for optimum performance. Pumps are gear driven from two PTOs located on rear of engine torque converter.

The right hand main tandem gear pump, at 2500 rpm (engine full load), provides 160 lpm to the Main Winch and 109 lpm to Outrigger and Swing.

The left hand main tandem gear pump, at 2500 rpm (corresponding to full load) provides 135 lpm to the boom hoist and telescope circuits main and for auxiliary winch circuits and 83 lpm to steering circuit.

High pressure oil leaving the pump to the swing, steer and outrigger circuits is filtered to 20 microns to protect seals in cylinders, valves and motors before entering the functioning circuits. All returning oil (100%) is filtered in two bypass type filters to 10 microns before entering the reservoir.

The 681 litre reservoir is located on the right side of carrier. Pumps, valves, cylinders and motors are readily accessible and easy to service. Control valves are three-way, three position type with low effort spools and pilot-operated relief valves for quick smooth response. Cable linkage connects valves to control levers. Oil Cooler is standard.

SWING UNIT

Hydraulic motor driving through double reduction plus single planetary gear reducer to pinion gear. 360° continuous rotation to 3 RPM.

Swing Brake

Caliper disc brake integral with swing gear reducer, manually applied with swing brake pedal for slow dynamic stopping or manually applied with swing holding brake lever for static holding. Holding brake is spring applied and hydraulically released by defenting swing brake lever.

House Lock

Two position pin-in hole lock manually engaged with house lock lever in cab is standard.

Fastening to Lower

Single row ball bearing Swing Circle

integral with swing gear. Welded or bolted to carrier frame and bolted to rotating frame. Bearing is protected from dust by labyrinth seal.

Rotary Manifold

Sealed rotary swivel for air and hydraulic hose connections, between rotating upper and carrier. Quickly removable from above or below for servicing. Electrical swivel is mounted on top of air and hydraulic swivel.

CARRIER

4 x 4 x 4 (Four wheel drive. Four wheels steer).

Frame

All-welded unitised construction assures rigidity and permanent alignment of swing bearing and rotating upper machinery. Fabricated rectangular box section main frames beams of high strength low alloy steel, reinforced with rectangular box cross members of high strength low alloy steel.

OUTRIGGERS

Patented hydraulic scissors type with removable remote storing floats. Solenoid valve controlled, eight double-acting hydraulic cylinders for independent horizontal and vertical motion of each beam. Holding valves on all vertical cylinders. Patented remote controlled air operated ratchet and pawl locks.

Outrigger Housings

Two independent housings front and rear, pin-connected and removable. High yield high strength alloy steel construction.

Outrigger beams

High strength alloy steel box, extending to a maximum of 3.36 m from centre of carrier.

Outrigger Floats

Removable floats with storage on ends of the frame.

STEERING

Front and Rear Axle Steer – pressure compensated hydrostatic power system fully controlled by steering wheel for front and rear axles. Two wheel, four wheel and crab steering modes are selected by 3 position toggle switch located in cab, on side console.

Front Axle

Drive-steer axle driven through differential with planetary in hubs. Axle is rigid mounted and has power steering. Front axle can be disconnected for highway travel, for higher speeds.

Rear axle

Rear drive-steer axle driven through differential with planetary in hubs. Power steering axle is pivot mounted with automatic hydraulic lockout cylinders to prevent oscillation (vertical movement of Axle), for "over side" lifts on rubber. Total oscillation attainable is 8" (203 mm) at center of tyres.

Service Brakes

Air brakes on all four wheels. Drum & liner type brakes.

Parking Brakes

Parking brake on Rear Axle. Spring applied and air released for safety.

Tyre Options

Std - 18.00 X 25 — 24 / 32 PR tubular / tubeless.

Opt - 21.00 X 25 — 24 PR tubular / tubeless

POWER PLANT

Engine

Suitable water cooled diesel engine of adequate horse power.

TRANSMISSION

Model: Clark

Type - Powershift with torque converter, 6 speeds forward and 3 speed reverse. Electrically operated gearshift. Natural safety start.

Lower Equipment (standard)

Fenders, tool box, engine hood, engine gauge panel with engine oil pressure, engine water temp, transmission clutch oil pressure, converter oil temp., hydraulic oil temp., hourmeter, voltmeter, headlights, tail lights, stop lights, & directional signals, back-up alarm.

Vehicle Weights

Include standard engine, boom (forward in travel position), standard main winch and cable, standard tires, full fuel and hydraulic tanks, and counterweight.

GVW — 33,648 kg.

FAW — 16,283 kg.

RAW — 17,365 kg.

Performance

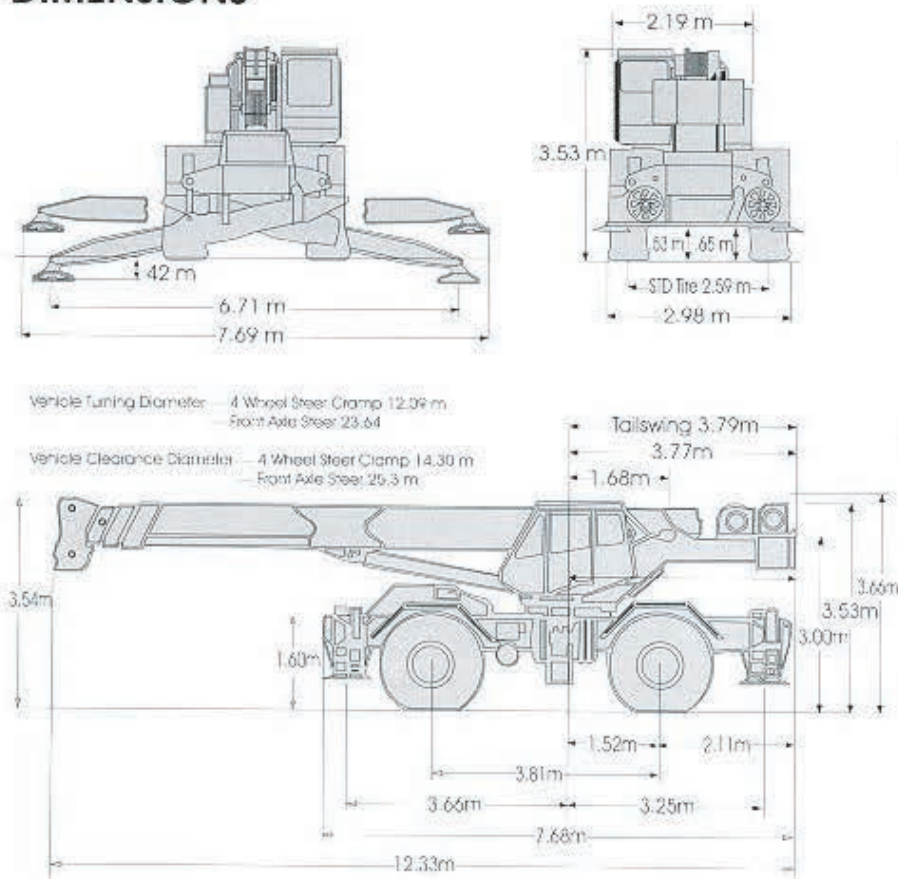
Maximum grade is under ideal conditions and is limited by tire slip.

Veh. Max. Speed: 38 kmph.

SAFETY SYSTEM

Electronic LMI system (standard) Panel located in operator's cabin indicates Boom length, angle, load radius, safe load, load lifted etc. Audio visual alarm while approaching overloading condition. Automatic cut off when overloading occurs. Anti-two block provided.

DIMENSIONS



OPERATING INSTRUCTIONS

Operating instructions

This VOLTA crane meets the requirements of ANSI B30.15(1973). Boom structure (boom, lattice extension and jib) has been tested per SAE J 1063, machine stability tested per SAE J765. LOAD RATINGS shown apply only to machine as originally manufactured and equipped by VOLTAS LTD.

Warning: Operation of this machine in excess of rated loads, in areas of chart not rated, or with disregard to instructions voids this warranty.

1. LOAD RADIUS is the horizontal distance from axis of rotation (before loading) to center of vertical hoist line (after loading.) Actual working radii should be an accurate measurement.
2. Boom, lattice extension and jib point height dimensions are measured from ground to center of load sheave.
3. LOADED BOOM ANGLE is the angle between the boom base section and the horizontal axis after lifting rated load at rated radius. Loaded boom angles shown are with rated loads applied and

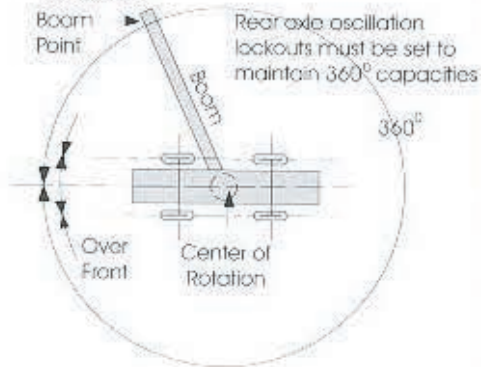
provide an approximation of the LOAD RADIUS at the specified BOOM LENGTH (includes lattice extension); The boom angle before loading should be slightly greater to account for boom deflection.

4. LOAD RATINGS shown are for machine with counterweight as shown, leveled and standing on firm, uniform supporting surface. Ratings are based on freely suspended loads & are not more than 85% of minimum tipping loads. Ratings above the bold horizontal line are based on machine's hydraulic or structural competence and not on machine stability (tipping conditions).
5. To determine LOAD RATINGS in-between those shown on chart, proceed as follows:
 - a) For boom lengths not shown, use rating of next longer rated boom.
 - b) For load radii not shown, use rating of next longer rated radius.
3. Deduct weight from LOAD RATINGS of all suspended load handling devices such as hooks, hook blocks, slings, buckets, etc as they are considered part of the load. See table for deductions.

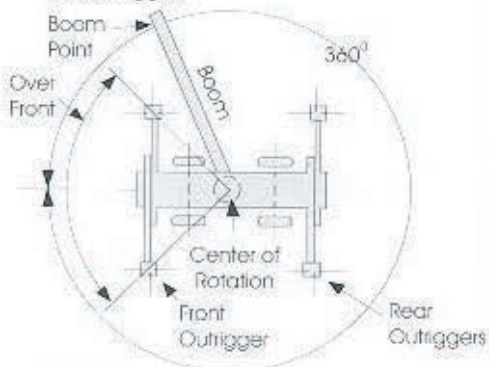
7. Deduct weight from LOAD RATINGS of fixed boom attachments (jib, boom extension) either stowed or erected, as they reduce capacity of boom. See table for deductions.
8. LOAD RATINGS shown make no allowance for such factors as wind effect on lifted loads, ground conditions out-of-level, operating speed or conditions that could be detrimental to safe operation of this machine. The operator must judge these factors and reduce ratings accordingly.
9. WITH OUTRIGGERS LOAD RATINGS are based on outriggers fully extended and set at a distance of 3.38 m from the longitudinal axis of the carrier to the vertical axis of outrigger float. Machine must be level and supported by outriggers with tires free off the supporting surface.
10. WITHOUT OUTRIGGERS LOAD RATINGS are based on lift limitations and conditions of tires inflated to pressures shown in table, and apply only when the rear axle lockouts are engaged. Over front Pick and Carry ratings are limited to travel speed less than 2 1/2 mph (4 kmph) on firm, level ground with load centered over front of machine and load restrained from swinging.
11. WARNING: Lifts with jib or boom extension in working position are prohibited. When lifting a load, all powered sections of the boom must be extended equally.
12. Maximum JIB LOAD Ratings are based on structural competence. Ratings at any radius shall not exceed BOOM LOAD RATINGS at same radius and shall not exceed maximum ratings shown.
13. Jibs are intended to increase lifting height not load radius. Maximum JIB LOAD RADIUS shall not exceed maximum BOOM LOAD RADIUS of boom length on which jib is mounted.
14. For bucket ratings on jib, deduct 20% from maximum JIB LOAD RATINGS.
15. Method of telescoping boom is independent with each section extendible a distance of 7.92 m.
16. The maximum load which may be telescoped is limited by hydraulic pressure, boom angle and lubrication. It is safe to telescope any load with limits of load rating chart.

AREAS OF OPERATION

On Rubber



On Outriggers

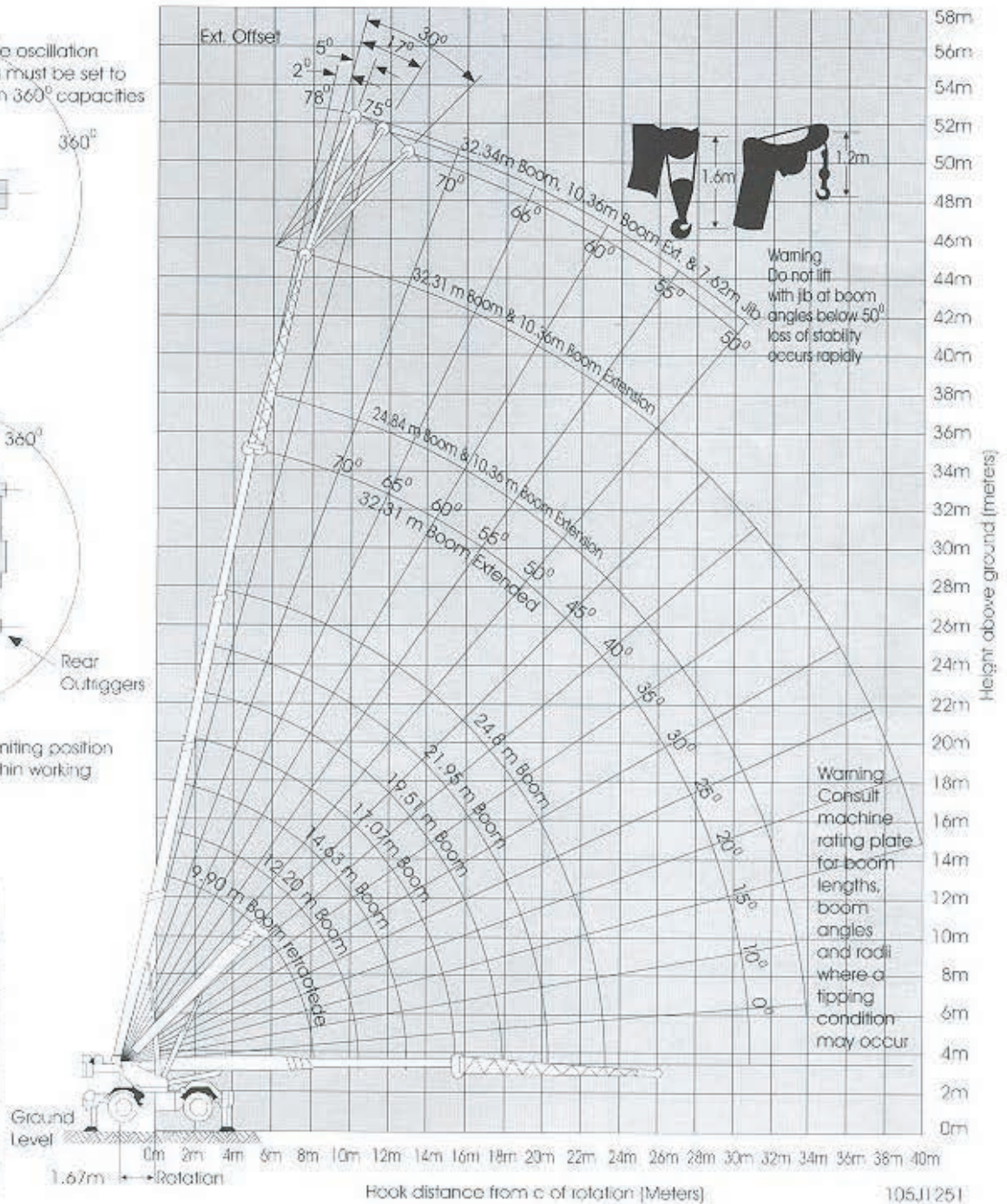


Note
These lines determine any limiting position of any load for operation within working areas indicated

Premissible Hoist Line Load in Kg

Parts Of Line	P&H Main Winch
1	4,538
2	9,075
3	13,613
4	18,150
5	22,688
6	27,225
7	31,763
8	36,000
9	40,000

WORKING RANGE



On Outriggers — Rated crane loads in Kg — main boom in 360° and over front work areas with outrigger fully extended and set [85% ratings]

Load Radius in Meters	Boom Length in Meters																	
	9.9			12.3			14.6			17.1			19.5					
	Loaded Boom Angle	Rated Load Kg		Loaded Boom Angle	Rated Load Kg		Loaded Boom Angle	Rated Load Kg		Loaded Boom Angle	Rated Load Kg		Loaded Boom Angle	Rated Load Kg				
	360°	Front		360°	Front		360°	Front		360°	Front		360°	Front				
3	64	40000	40000	70	29900	29900	73	29700	29700	76	27500	27500						
3.5	61	36100	36100	67	28800	28800	71	28000	28000	74	26000	26000	77	22050	22050			
4	58	32250	32250	65	27000	27000	69	26200	26200	73	24000	24000	75	21100	21100			
5	50	26500	26500	59	24200	24200	65	23050	23050	69	21300	21300	72	18500	18500			
6	42	21750	21750	53	20750	20750	61	19800	19800	65	18450	18450	69	16200	16200			
7	32	18350	18350	47	17700	17700	56	17050	17050	62	16050	16050	66	14750	14750			
8				40	15150	15150	51	14700	14700	58	13900	13900	62	12850	12850			
9				31	13400	13400	45	12950	12950	53	12300	12300	59	11500	11500			
10	Caution: For 9.9 m boom length ratings, telescope cylinders must be fully retracted and against stops						39	11650	11650	49	11000	11000	55	10400	10400			
11							32	9750	10400	44	9750	10050	52	9450	9450			
12										23	8200	8950	39	8200	8950	48	8200	8750
14													25	6050	6600	39	6050	6600
																27	4600	5000

WARNING : Main boom ratings must be reduced by weight of fixed boom attachments. See table

Deductions to be made from rated loads

	Deductions To Be Made From Main Boom Rated Loads (in kg) (Hoisting from Boom Point)			
	Jib (Stowed)		181	
	Hook Block	On Boom Point	On Lattice Extn.	On Jib
	40 Ton 4 Sheave	331	—	—
	Deductions To Be Made From Main Boom Rated Loads (in kg) (Hoisting from Extension Point)			
	Jib (Stowed)		181	
	Hook Block	On Boom Point	On Lattice Extn.	On Jib
	40 Ton	227	—	—
	Deductions To Be Made From Main Boom Rated Loads (in kg) (Hoisting from Jib Point)			
	Jib (Stowed)		181	
	Hook Block	On Boom Point	On Lattice Extn.	On Jib
	40 Ton	181	—	—

WARNINGS

- For boom lengths less than 32.3 m with manual section extended. The rated loads are determined by boom angle only in the column headed by 32.3 m boom. For boom angles not shown, use rating of next lower boom angle.
- For boom lengths less than 35.2 m with manual retracted and less than 42.7 m with manual extended. The 10.4 m boom extension rated loads are determined by boom angle only in the column headed by 35.2 m boom and 42.7 m boom respectively. For angles not shown use ratings of next lower boom angle.

To help prevent tipping conditions when lifting on tyres, it is recommended that —

- Minimum boom lengths be used, not exceeding 21.9 m
- Outriggers be extended as far as possible and clear of ground.

Load ratings depend on tyre capacity and condition, inflated per table, and apply only when rear lockouts are engaged. See areas of operation plate for working ranges.

WARNING : Do not exceed Maximum radius shown or a tipping condition will occur.

Manual Section Retracted						Manual Section Extended			Lattice Extension Manual Retracted			Lattice Extension Manual Extended			Load Radius in Meters
21.9		24.8				32.3			35.2			35.2			
Loaded Boom Angle °	Rated Load Kg		Loaded Boom Angle °	Rated Load Kg		Loaded Boom Angle °	Rated Load Kg		Loaded Boom Angle °	Rated Load Kg		Loaded Boom Angle °	Rated Load Kg		
	360 ^a	Front		360 ^c	Front		360 ^b	Front		360 ^d	Front		360 ^e	Front	
															3
						SEE WARNING NOTE 1			SEE WARNING NOTE 2			SEE WARNING NOTE 2			3.5
															4
75	16800	16800													5
72	14750	14750	75	13150	13150										6
69	12900	12900	72	12000	12000										7
66	11400	11400	69	10800	10800	75	8200	8200	76	7000	7000				8
63	10500	10500	67	9450	9450	73	8000	8000	75	6300	6300				9
60	9500	9500	64	8650	8650	71	7400	7400	73	6050	6050				10
57	8350	8350	62	7900	7900	70	6800	6800	71	5850	5850	75	3900	3900	11
54	7850	7850	59	7150	7150	68	6200	6200	70	5400	5400	74	3700	3700	12
47	6050	6600	53	6000	6000	64	5200	5200	66	5050	5050	71	3300	3300	14
38	4600	5000	47	4600	5000	59	4500	4500	62	4150	4150	68	3000	3000	16
28	3500	3850	40	3500	3850	55	3900	3900	58	3600	3600	65	2800	2800	18
			31	2650	2950	50	3350	3400	54	3150	3150	62	2500	2500	20
						43	2450	2650	48	2400	2400	58	2150	2150	23
						33	1750	1950	41	1750	1950	53	1850	1850	26
						20	1200	1350	32	1200	1400	47	1600	1600	29
									19	950	1100	41	1200	1300	32
												34	850	950	35
												24	550	650	38
												18	-	500	39.5

'On Tires' Rated crane loads in kg — main boom — without outriggers

Ratings For 18.0 x 25 — 24 Ply Tires					Load Radius in Meters
Stationery		Over Front			
Over Front	360°	Creep	4.0 kmph		
21800	15600	17100	11950	3	
19550	13600	15200	10450	3.5	
17700	11900	13700	9250	4	
14800	8200	11300	7400	5	
12550	5850	9400	5950	6	
7900	3250	6900	4050	8	
5050	1850	5050	2800	10	
3400	950	3400	1850	12	
2300	-	2300	1150	14	
1550	-	-	-	16	
1000	-	-	-	18	

WARNING : Do not exceed Maximum radius show or a tipping condition will occur 32U1706

Jib ratings

Maximum Load Ratings in kg			
Minimum Boom Angle	Jib Angle Offset		
	5°	17°	30°
78°	2250	1900	1650
75°	2050	1800	1550
70°	1850	1650	1450
65°	1550	1450	1300
60°	1400	1300	1050
55°	1150	1100	1050
50°	1000	950	900

Jib ratings

1. Maximum jib load ratings are based on structural competence and do not exceed 85% of tipping load with fully extended outriggers. Use of outriggers is required when boom is equipped with jib.
2. For bucket ratings on jib. Deduct 20% from maximum jib load ratings.
3. Warning : Do not lift with jib at boom angles below 50°. Loss of stability occurs rapidly.
4. Warning : Do not exceed operating radius with erected jib or a tipping condition will occur.

Tire inflation			
Size	Static Creep	4.0 kmph	Travel
18.0 x 25-24 PLY	7.0 KG/CM ²	5.6 KG/CM ²	4.2 KG/CM ²

When transporting a load machine must be on firm, level surface with mechanical house lock engaged and load centered over front of machine and restrained from swinging. Do not exceed 4 KMPH vehicle speed.

Creep is motion for less than 200 ft. (61 m), in 30 min, period & not exceeding 1 MPH (1.6 KMPH).

Solid Cranes
Solid Confidence
The confidence of quality
VOLTIAS manufacturing plant is certified for

ISO 9001

The rare certification for stringent quality systems.

OTHER PRODUCTS ON OFFER FROM MATERIAL HANDLING BUSINESS DIVISION VOLTAS

EQUIPMENTS

- **DIESEL FORKLIFTS** : 1.5T to 16T capacity and Zone II upgradation in 1.5T to 3T FC
- **ELECTRIC FORKLIFTS** : 2T to 3T capacity
- **HAND PALLET AND POWER PALLET TRUCK** : 2.5T & 2T respectively
- **WAREHOUSING EQUIPMENTS** : Pallet Trucks upto 3T, Power Pallet Trucks upto 2.4T, Stackers upto 2T & 5.4M lift, Reach Trucks upto 2.5T & 11.5M lift, Order Pickers - manufactured by BT Sweden
- **CONTAINER HANDLING REACH STACKERS** : 45T & 48T capacity, manufactured by Terex, France



ATTACHMENTS FOR FORKLIFTS

VOLTAS can offer customized solutions for any kind of special application and a vast range of attachments for special handling.

MECHANICAL

- Fork Extensions
- Goose Neck Crane Booms
- Parrot Beak drum handlers
- Two pallet forks

- Ram Attachments
- 3 Drum Prongs
- Stokers for foundry
- Carpet booms

HYDRAULIC

- Bale Clamps
- 360 degree Rotators
- Drum Clamps
- Scoop Attachments

- Paper Roll Clamps
- Side Shifters
- Fork positioners
- Load dump and many more



The specifications are subject to change without prior notice. please contact our nearest office for latest specifications



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MATERIALS HANDLING BUSINESS DIVISION

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