For Use in CCO Written Examinations

TELESCOPIC BOOM CRANE—FIXED CAB (TSS)

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REV 01/23

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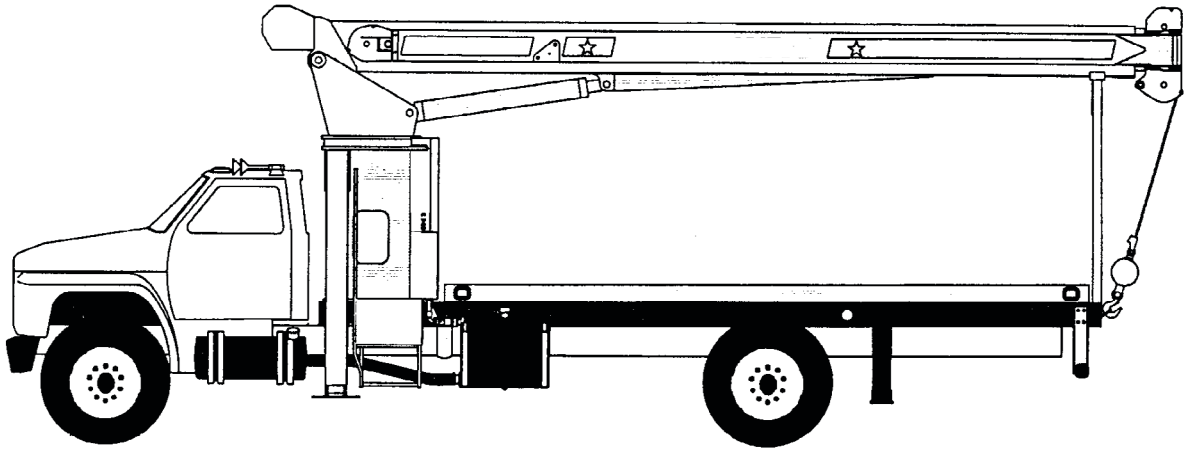


Model shown with optional jib.

STANDARD EQUIPMENT

- 2 speed planetary hoist
- 5-Ton (4.5-mt) hook and ball
- 2 sheave boom point
- Anti-two-block shutoff
- Boom hoist cylinder
- System pressure gauge
- 70 gallon (265 liter) hydraulic reservoir
- Removable boom rest
- Finish paint in colors
- Engine start/stop
- Operator/service/parts manuals
- 3 section telescopic boom 26 ft. to 68 ft. (7.93 m to 20.73 m)
- 260 feet (79.25m) of 9/16 in (14.3 mm) EIPS IWRC wire rope
- 372° Non-continuous rotation
- Pedestal, turret, rotation bearing and swing system
- Dual operator control stations
- Hydraulic capacity alert warning system (HYCAS) — audio
- Audible outrigger/stabilizer motion alarm
- A-frame link type outriggers
- A-frame rear stabilizer
- 3 section vane-type hydraulic pump
- Signal horn
- 18 foot (5.49m) subframe

STANDARD SPECIFICATIONS AND FEATURES

Boom — 26 ft. to 68 ft. (7.93m to 20.73m), inverted-T cross section, 3-section telescoping type, extended and retracted crowd system. Maximum tip height 79 ft. (24.09m).

Boom Point — Two high-density nylon sheaves mounted on heavy-duty roller bearings. Two removable pin-type rope guards.

Hoist — Maximum theoretical line speed 247 fpm (75.29 mpm). Maximum theoretical bottom-layer line pull 12,000 lb. (5,443 kg). Two-speed planetary reducer. Spring-applied, pressure released internal brake.

Wire Rope — 260 ft. (79.25m) of 9/16 in. (14.29mm) diameter 6 × 25 EIPS IWRC.

Boom Elevation — Double-acting hydraulic cylinder. Working range from 13° below horizontal to 80° above.

Swing System — Externally mounted, double-reduction planetary driven by hydraulic motor. Maximum theoretical swing speed 180 rpm. Wet multi-disc internal brake is spring applied, pressure released. Oversized diameter ball bearing swing circle with external gear. 372° non-continuous rotation.

Outriggers — 20 ft. 10 in. (6.13m) extended. A-frame link type. Operated independently for precise leveling. Equipped with double-acting hydraulic cylinders. 16 in. × 20 in. (406mm x 508mm) pivoting pads. 8.5 in. (215.9mm) maximum rise.

A-Frame Stabilizers — 8 ft. (2.44m) retracted; 10 ft. (3.05m) extended. Operated independently for precise leveling. Double-acting hydraulic cylinders. 8 in. × 11 in. (203mm × 279mm) fixed pads. 9 in. (229mm) maximum rise.

Subframe — Torsionally resistant, rigid 4-plate design. Mounted under crane full length of truck frame.

Rear Underride Protection — Supplied on factory-mounted cranes. Fabricated structure mounted under rear of bed.

Back-up Alarm — Supplied on factory-mounted cranes. Electronic audible motion alarm activated when truck transmission is in reverse gear.

Mounting — Pedestal and subframe are mounted to chassis by threaded rods and clamp plates. No welding, drilling, or bolting to truck.

Control System — Dual operator stations are equipped with four single-lever crane controls arranged to ANSI B30.5 standards. Fully proportional control valves and system pressure gauge. Each station also includes outrigger and stabilizer controls, engine start/stop, foot throttle, signal horn, capacity light indication, boom-angle indicator, bubble levels, load chart, and range diagram.

Hydraulic System — A 3-section vane pump direct mounted to power take-off on truck transmission provides 35 gpm (133 lpm) to the hoist, 8 gpm (30 lpm) to the swing circuit and 18 gpm (68 lpm) to other crane functions. 70-gallon (265-liter) baffled reservoir includes 10-micron filter in the return line. Extensive use on SAE O-ring and face seal O-ring hydraulic fittings.

Hydraulic Cylinders — All are equipped with integral holding valves.

Boom Rest — Heavy-duty fabrication. Easily removed to simplify loading and unloading.

Load Hook — 5-Ton (4.5-mt) capacity hook with heavy-duty swivel and weight is provided for single-line operation.

Hydraulic Capacity Alert System (HYCAS) — Hydraulically senses boom hoist cylinder pressure and indicates an overload condition with an audible alarm. Optional shutdown prevents continuing overload.

Anti-Two-Block System — Audible warning and shutoff functions prevent hook from contacting boom point.

OPERATOR ASSIST FEATURES

- Anti-two-block warning and shutoff
- Capacity-alert system, audio warning
- Load chart/range diagram
- Boom-angle indicator
- Audible outrigger/stabilizer motion alarm
- Engine start/stop
- Signal horn
- Back-up alarm

Electrical — 12-volt direct current. Environmentally sealed enclosure contains accessory circuit, terminal strips, and relays. In-line fuse.

Design/Welding — Design conforms to ANSI B30.5. Welding conforms to AWS D1.1.

Manuals — Operator, service, and parts manuals depict correct crane operation, maintenance procedures, and parts listing.

Warranty — 12-month warranty covers parts and labor resulting from defects in material and workmanship.

OPTIONS

Electronic Capacity Alert System (ECAS) — Electronically senses boom hoist cylinder pressures. Color-coded gauge at each operator station and audible alarm indicate approaching overload. Operational shutdown system hydraulically prevents continuing overload.

Fixed Swing-Around Jib — 23 ft. (7.01m) fixed length, stows along the boom base. Maximum tip height 101 ft. (30.79m).

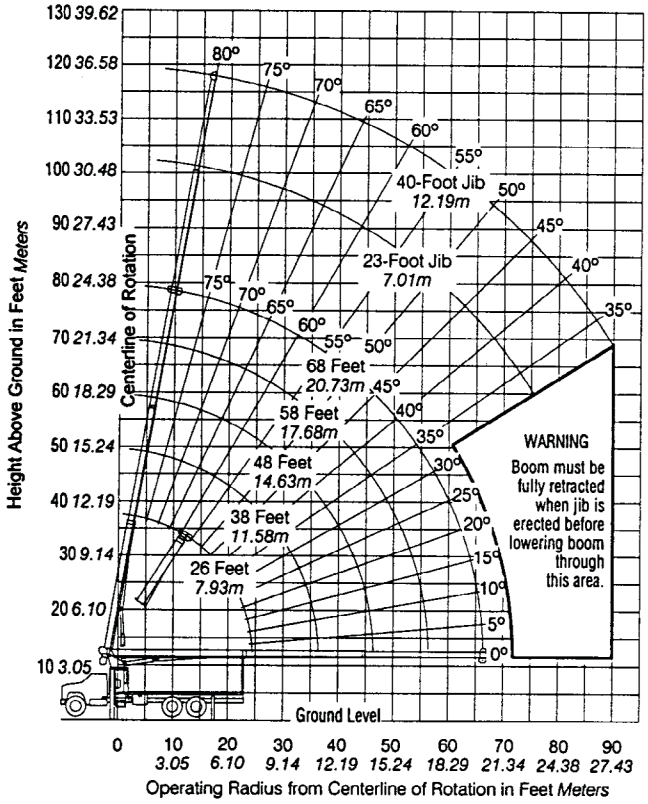
Telescopic Swing-Around Jib — Working lengths 23 ft. (7.01m) and 40 ft. Telescopic section stows inside the jib base. Manually pinned in the retracted or extended position. Maximum tip height 118 ft. (35.97m).

H-Style Stabilizers — Two vertical double-acting hydraulic cylinders – 18 in. (457.2mm) stroke with 12 in. (204.8mm) diameter pivoting pads.

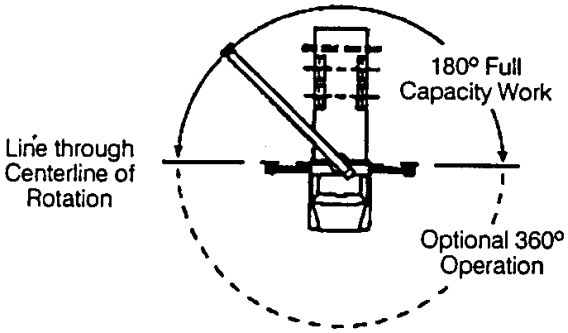
Bed — Choice of 8 ft. × 14 ft. lengths (2.44m × 4.27m to 6.10m). Deck of high density hardwood or diamond steel tread plate. Cross sills on 12 in. (305mm) centers. Bolts to subframe.

- 9/16 in. (14.3mm) rotation-resistant wire rope
- Hook blocks for 2- to 4-part load line
- Hanger sheave for 3- to 4-part line
- Aerial baskets, 1- to 2-person
- Top mounted work platform
- Radio remote-control operation
- Front-bumper stabilizer for 360° operation
- Hydraulic swivel for continuous rotation
- Capacity overload shutdown system
- Dunnage/tool boxes
- Air throttle
- Various mountings
- Special paint
- Roofing application
- Hydraulic hose reel
- Oil cooler for duty-cycle applications

RANGE DIAGRAM



AREA OF OPERATION



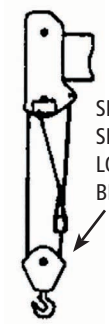
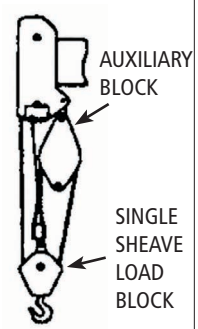
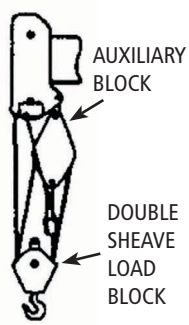
WEIGHTS

Total crane, including hydraulic fluid	13,900 lb.	6,305 kg
23 ft. (7.01m) Fixed length jib	545 lb.	247 kg
40 ft. (12.19m) Telescopic jib	820 lb.	372 kg
15-Ton (13.6 mt) Single-sheave block	260 lb.	118 kg
20-Ton (18.1 mt) Double-sheave block	350 lb.	159 kg
Hanger sheave for 3- and 4-part line	50 lb.	23 kg
20 ft. 4 in. (6.20m) steel or wood bed	1,900 lb.	862 kg

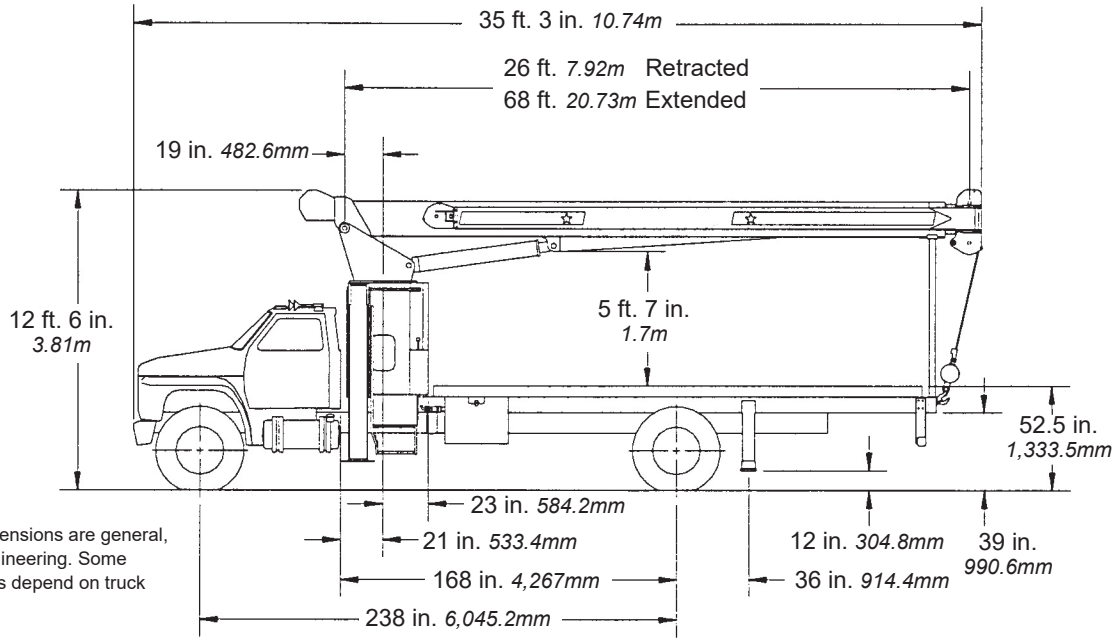
DEDUCTIONS

Auxiliary Block	50 lb.	22.68 kg
Overhaul Ball	120 lb.	54.43 kg
Single-Sheave Load Block	260 lb.	117.93 kg
Double-Sheave Load Block	350 lb.	158.76 kg
Hose Reel	190 lb.	86.18 kg
Swing-Around Jib (Stowed)	See Load Chart Rating	See Load Chart Rating
WARNING Lifting off the main boom point while the swing-around jib is erected is not intended or approved.		

ALLOWABLE LINE PULL

1 Part Line	*2 Part Line*	*3 Part Line*	*4 Part Line*	
				***Warning*** Anti-Two-Block system must be in good operating condition before operating crane. Refer to Owner's Manual. Keep at least three wraps on load line on drum at all times.
8,500 lb. 3,856 kg	17,000 lb. 7,711 kg	25,500 lb. 11,567 kg	34,000 lb. 15,422 kg	9/16" (14.29mm) 6 x 25 IWRC (3.5:1 SF). 29,750 lb. (13,494 kg). Minimum breaking strength.
7,400 lb. 3,357 kg	14,800 lb. 6,313 kg	22,200 lb. 10,070 kg	29,600 lb. 13,426 kg	9/16" (14.29mm) rot resistant (5.0:1 SF). 37,000 lb. (16,783 kg). Minimum breaking strength.

OUTLINE DIMENSIONS



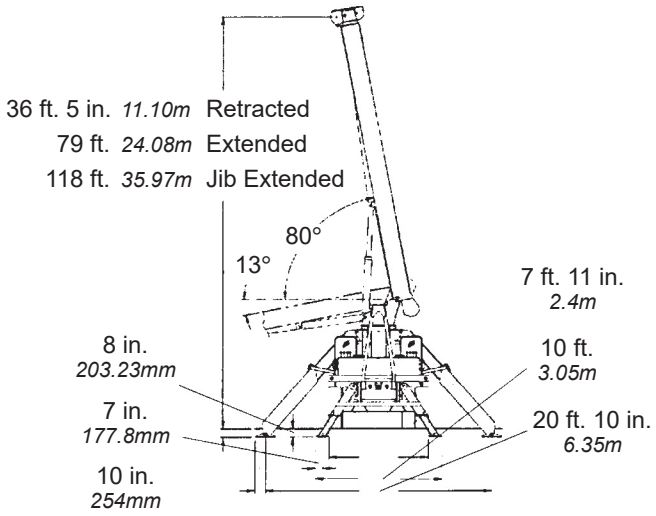
These dimensions are general, not for engineering. Some dimensions depend on truck selection.

TRUCK CHASSIS DATA

Minimum Requirements

Some configurations and options may increase requirements

Wheelbase	238 in	6.045mm
Cab to Axle	168 in	4.267mm
Frame Section Modulus	18 in³	3.295cc
	50,000 psi	344,750kPa
Frame Section Modulus	15.9 in³	260cc
	110,000 psi	758,450kPa
Nominal Frame Width	34 in	864mm
Front Axle Gross Weight Rating	12,000 lb.	5,443 kg
Rear Axle Gross Weight Rating	21,000 lb.	9,525 kg



LOAD RATINGS IN LBS WITH OUTRIGGERS AND STABILIZERS EXTENDED										
OPERATING RADIUS FT	LOADED BOOM ANGLE / BOOM LENGTH	26 FT		38 FT		48 FT		58 FT		68 FT
5	77	34000								
8	70	24000	77	21500						
10	66	20110	74	18460	78	14600				
12	61	17360	71	16010	76	12680	79	11810		
15	52	14310	66	13320	72	10500	76	9830	78	9200
20	36	10490	57	10350	65	8160	70	7690	74	7280
25			47	8310	58	6570	65	6240	70	5910
30			36	6610	51	5420	59	5200	65	4940
35			17	4560	42	4470	53	4390	60	4200
40					32	3580	47	3720	55	3610
45					16	2380	39	3120	50	3110
50							29	2500	43	2670
55							15	1610	36	2240
60									28	1780
65									14	1400
70										
75										
80										
85										
90										
95										
100										
	480 LB.		330 LB.		260 LB.		220 LB.		190 LB.	

JIB LOAD RATINGS WITH OUTRIGGERS AND STABILIZERS EXTENDED				
OPERATING RADIUS FT	LOADED BOOM ANG	23 FT. JIB FOR ALL BOOM LENGTH SEE WARNING NOTE*	LOADED BOOM ANG	40 FT. JIB FOR ALL BOOM LENGTH SEE WARNING NOTE*
		RATED LOAD IN POUNDS		RATED LOAD IN POUNDS
10				
12				
15				
20	78	3500		
25	75	3060	78	1940
30	72	2700	75	1690
35	69	2400	72	1490
40	65	2150	70	1320
45	62	1950	67	1180
50	58	1770	64	1060
55	55	1550	61	960
60	50	1350	58	870
65	46	1160	55	790
70	41	1010	51	730
75	36	830	48	670
80			44	610
85			40	570
90			35	520
95				
100				
DEDUCTIONS FOR STOWED JIB				

WARNING

1. THE OPERATOR MUST READ AND UNDERSTAND THE OWNER'S MANUAL BEFORE OPERATING THIS CRANE.
2. POSITIONING OR OPERATION OF CRANE BEYOND AREAS SHOWN ON THIS CHART IS NOT INTENDED OR APPROVED EXCEPT WHERE SPECIFIED IN OWNER'S MANUAL.
3. LOADED BOOM ANGLES AT SPECIFIED BOOM LENGTHS GIVE ONLY AN APPROXIMATION OF THE OPERATING RADIUS. THE BOOM ANGLE BEFORE LOADING SHOULD BE GREATER TO ACCOUNT FOR DEFLECTIONS. DO NOT EXCEED THE OPERATING RADIUS FOR RATED LOADS.
4. THE OPERATING RADIUS SHOWN IN THE JIB RATING CHART IS FOR FULLY EXTENDED BOOM ONLY. WHEN BOOM IS NOT FULLY EXTENDED, USE ONLY LOADED BOOM ANGLE TO DETERMINE LOAD RATING OF JIB. DO NOT RELY ON CAPACITY ALERT SYSTEM WHEN LIFTING FROM JIB.
5. BOOM MUST BE FULLY RETRACTED WHEN JIB IS ERECTED, BEFORE LOWERING BOOM THRU THIS AREA.
6. FOR BOOM ANGLES NOT SHOWN ON JIB LOAD RATING CHART, USE RATING OF NEXT LOWER BOOM ANGLE.
7. FOR BOOM LENGTHS NOT SHOWN, USE RATING OF NEXT LONGER BOOM LENGTH. FOR RADII NOT SHOWN, USE RATING OF NEXT LONGER RADIUS.
8. CRANE LOAD RATINGS ON OUTRIGGERS ARE BASED ON FREELY SUSPENDED LOADS WITH THE MACHINE LEVELED AND STANDING ON A FIRM UNIFORM SUPPORTING SURFACE. NO ATTEMPT SHALL BE MADE TO MOVE A LOAD HORIZONTALLY ON THE GROUND IN ANY DIRECTION.
9. PRACTICAL WORKING LOADS DEPEND ON SUPPORTING SURFACE, WIND, AND OTHER FACTORS AFFECTING STABILITY SUCH AS HAZARDOUS SURROUNDINGS, EXPERIENCE OF PERSONNEL, AND PROPER HANDLING, ALL OF WHICH MUST BE TAKEN INTO ACCOUNT BY THE OPERATOR.
10. THE MAXIMUM LOAD WHICH MAY BE TELESCOPED IS LIMITED BY HYDRAULIC PRESSURE, BOOM ANGLE, AND BOOM LUBRICATION. IT IS SAFE TO ATTEMPT TO TELESCOPE ANY LOAD WITHIN THE LIMITS OF THE LOAD RATING CHART.

INFORMATION

1. DEDUCTIONS MUST BE MADE FROM RATED LOADS FOR STOWED JIB, OPTIONAL ATTACHMENTS, HOOKS, AND LOAD BLOCKS (SEE DEDUCTION CHART). WEIGHTS OF SLINGS AND ALL OTHER LOAD HANDLING DEVICES SHALL BE CONSIDERED A PART OF THE LOAD.
2. CRANE LOAD RATINGS WITH OUTRIGGERS ARE BASED ON OUTRIGGERS AND STABILIZERS EXTENDED AND SET WITH MACHINE LEVELED.
3. LOAD RATINGS ABOVE THE HEAVY LINE ARE STRUCTURALLY LIMITED CAPACITIES. LOAD RATINGS BELOW THE HEAVY LINE ARE STABILITY LIMITED CAPACITIES AND DO NOT EXCEED 85% OF TIPPING.

DEFINITIONS

1. OPERATING RADIUS IS THE HORIZONTAL DISTANCE FROM THE AXIS OF ROTATION TO THE CENTER OF THE VERTICAL HOIST LINE OR TACKLE WITH LOAD APPLIED.
2. LOADED BOOM ANGLE AS SHOWN IN THE COLUMN HEADED BY ∠, IS THE INCLUDED ANGLE BETWEEN THE HORIZONTAL AND LONGITUDINAL AXES OF THE BOOM BASE AFTER LIFTING RATED LOAD AT RATED RADIUS.

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