

SPECIFICATION FOR A 75 TON OR 70.0 METRIC TON TELESCOPIC TRUCK CRANE

General Description: These specifications cover the furnishing and delivery of a diesel engine driven, 75 U.S. ton or 70.0 metric ton capacity, on-highway, telescopic crane. The crane shall be capable of highway speeds of at least 62 mph (99.8 km/h), and can maneuver around off road job sites. The crane shall be completely equipped, ready for operation, and shall comply in all respects with the requirements specified hereunder. Crane offered shall be tested to meet the Society of Automotive Engineers (SAE) structural and stability requirements for cranes.

A. CARRIER

1. **Main Frame:** Main frame shall be all welded double wall construction with gusseting and integral outrigger boxes. Frame and outrigger boxes to be 100,000 PSI (689.5 MPa) high strength steel.
2. **Main Outriggers:** Four (4) hydraulic, dual-stage beams with vertical jack outriggers. Vertical jack cylinders shall be equipped with integral holding valves. The outriggers shall be equipped with removable and stowable, lightweight, high strength, 23.5" x 27.25" (59.7 cm x 69.2 cm) hexagonal steel pontoons. All outrigger controls and sight level bubbles shall be mounted in operator's cab (upper) and on each side of carrier. The outriggers shall have sufficient strength to provide full stability under all loading conditions, including the ability to raise the crane from ground contact. With outriggers extended and the crane in a level working position, there shall be no dependence upon the hydraulic system for support of any portion of the total weight imposed on the outriggers. The beams extend to 24' (7.3 m) center to center and retract to within 7' 9" (2.36 m). Crane shall have capacity charts with the outriggers in the retracted, intermediate, and fully extended positions.
3. **Bumper Outrigger:** One (1) hydraulic, front mounted vertical jack outrigger. Vertical jack cylinder shall be equipped with an integral holding valve. The outrigger shall be equipped with a self-stowing, lightweight, high strength, 16" (40.6 cm) diameter steel pontoon.
4. **Steering and Axles:** 8x4x4 drive/steer for on/off highway travel. The front tandem axles are to be steered and non-driven. Steering is by means of a Sheppard full integral dual circuit, mechanical over hydraulic system. The rear tandem axles are to be non-steered and driven. The front tandem axles to have a track of 84.38" (2.1 m) with 445/65R22.5 tires. The rear tandem axles to have a track of 73.41" (1.9 m) with 12R22.5 tires. Traction adding device to be an inter-axle differential lock that locks the rear tandem axles together. The traction device is to be operated by a rocker switch within the carrier cab. Wheelbase of the crane to be no less than 23'-10" (7.27m).
5. **Suspension:** Walking beam air suspension with height adjustment to be provided for both the front and rear tandem axles.
6. **Brakes:** Full air anti-lock (ABS) service brakes on all wheels with front and rear systems. Air dryer for moisture prevention in the system. Park/emergency brake to be spring applied, air released chambers on the rear tandem axles. It is to be activated by a push/pull valve located in the carrier cab and releases air pressure from the air circuit pumping. Park/emergency brake to automatically apply when air pressure falls below 40 PSI (275.8 kPa) in both systems.

7. **Engine:** The engine shall be diesel powered, complete with electric starting system, alternator/voltage regulator, battery, liquid cooling system, lubricating oil filter, and dry type air filter. Engine shall be six (6) cylinder and four (4)-cycle turbocharged.
 - For North America - Displacement shall be at least 729 cu. in. (11.9 liters) with a peak torque of 1,550 ft.-lbs. (2 101.5 J) @ 1,200 rpm and brake horsepower at least 450 (336.0 kW) @ 1,800 rpm. The engine must meet the EPA2013 on-highway emission requirements.
 - Outside North America - Displacement shall be at least 915 cu. in. (15.0 liters) with a peak torque of 1,550 ft.-lbs. (2 101.5 J) @ 1,400 rpm and brake horsepower at least 480 (358.8 kW) @ 1,800 rpm. The engine must meet the Tier III/Stage IIIA off-highway emission requirements.
8. **Transmission:** Automatic shift with twelve (12) forward gears and two (2) reverse gears.
9. **Hydraulic System:** One pump for the steering and bumper outrigger circuits shall be gear type and shall have priority flow to provide adequate pressure for steering. Three pumps for the load hoist(s), swing, boom hoist, and telescope circuits shall be gear-type and have the capability to be disconnected for highway travel. Two pumps for the engine cooling fan and main outriggers circuits shall be gear-type. A hydraulic oil cooler shall be supplied of a proper size to provide adequate cooling for the hydraulic system. Reservoir shall be all steel fabrication with internal diffusers for deaeration. Filter shall be located for easy replacement. Separate control valves shall allow simultaneous operation of crane functions.
10. **Fuel Tank:** An aluminum fuel tank shall be furnished having sufficient capacity for not less than eight (8) hours of normal operation.
11. **Tires:** The tires supplied shall be of the tire manufacturer's first line grade, be on/off-road profile type, tubeless, and shall have individual rated load carrying capacities equal to the maximum individual tire loadings imposed by the operation. Front tandem axles to consist of 445/65R22.5 tires and rear tandem axles to consist of 12R22.5 tires.
12. **Lights:** Lights shall be installed on the front of the carrier and be of such intensity as to provide sufficient light for night operation of the crane. The lights shall be the manufacturer's standard sealed beam type and shall be secured in brackets capable of withstanding shock and vibration. The lighting package shall consist of two (2) front dual sealed beam type lights, two (2) front turn indicators, two (2) rear stop/turn indicators, two (2) rear reverse lights, and six (6) side marker/turn indicator lights.
13. **Reverse Signal Alarm:** The crane shall be equipped with a backup alarm that shall operate automatically when in the reverse gear. The alarm may be continuous or intermittent (not to exceed three (3) second intervals) and shall operate during the entire backup movement.
14. **Carrier Cab:** The cab shall be one-person occupancy, fiber composite construction, with acoustical insulation, and mounted on rubber isolation pads. All glass shall be tinted safety glass with windshields being laminated. Left side window to roll down for ventilation. Six-way adjustable, air ride seat shall be provided. Compartments for document storage shall be provided. The cab shall contain an engine dependent, warm-water heater and defroster which shall have a capacity of not less than 31,000 BTU to effectively defrost the windshield and heat the cab. The cab shall also have air conditioning with a capacity of not less than 20,000 BTU to effectively keep the cab cool.

15. **Controls and Instrumentation:** All transportation functions shall be controlled from the carrier cab. Controls shall be conveniently located and arranged for easy access and operation by the driver when in a seated position and shall not obstruct the driver's view. Either the name of the control or a symbol shall identify the function of all the controls. Controls for: lights, turn signals, hazard flashers, circuit breakers/fuses, parking brake, inter-axle differential lock, transmission shifter, throttle pedal, and service brake pedal. Back-lit instrumentation for: speedometer, odometer, tachometer, voltmeter, hour meter, front and rear air gauges, low air pressure light and buzzer, oil pressure gauge, water temperature gauge, and fuel gauge. Other equipment included with the cab should be: clearance lights, windshield washer, seat belt, dome and courtesy lights, lighter and ash tray, lockable door, automotive type ignition, fire extinguisher, rear view mirrors, tilt steering column, adjustable defroster vents, horn, and access step.
16. **Aluminum Fenders:** Front and rear fenders with non-slip surface on top. Fenders should be large enough to allow tire chains to be installed.
17. **Access:** Four (4) locations should provide access to the top of the carrier deck and operator's cab.
18. **Cameras:** Viewing monitor shall be conveniently located and arranged for easy access and operation by the driver in the carrier cab. The monitor should display images on the right side and rear of the carrier.
19. **Lubrication:** Moving parts requiring lubrication shall have means provided for such lubrication and be lubricated prior to delivery. All lubricant receptacles (crankcase, transmission, etc.) and hydraulic systems shall be filled to proper operating level before delivery. The crane shall have all lubricants and fluids identified in the Operator's Manual.

B. UPPERSTRUCTURE

1. **Lifting Capacity:** With maximum counterweight the rated capacity of the crane shall be one of the following:
 - Imperial - 150,000 lbs. @ 9 ft. radius with a minimum retracted boom, outriggers fully extended, and 360° rotation. At a boom length of 50 ft. and a radius of 40 ft., the lifting capacity shall be a minimum of 29,800 lbs. with one of the boom extend modes (outriggers fully extended: 360° rotation). Crane capacities shall not exceed 85% of the tipping load. A permanent Crane Rating Manual located in the cab near and easily visible to the operator, shall be provided showing rated lifting capacities at various boom radii for various boom lengths, with and without outriggers. Manufacturer's standard ratings shall not be raised, or special ratings developed to meet this specification.
 - Metric - 70,000kg @ 2.5m radius with a minimum retracted boom, outriggers fully extended, and 360° rotation. At a boom length of 15.2m and a radius of 12m, the lifting capacity shall be a minimum of 12 950kg with one of the boom extend modes (outriggers fully extended: 360° rotation). Crane capacities shall not exceed 75% of the tipping load. A permanent Crane Rating Manual located in the cab near and easily visible to the operator, shall be provided showing rated lifting capacities at various boom radii for various boom lengths, with and without outriggers. Manufacturer's standard ratings shall not be raised, or special ratings developed to meet this specification

2. **Boom:** The main boom shall be sectional, of formed construction, and fully powered to at least 127 ft. (38.7 m). An additional stowable attachment shall be included to make boom length at least 191 ft. (58.2 m) long. Boom telescope sections shall be supported by wear shoes to prevent metal-to-metal contact. The boom extend mode shall be a minimum speed of 3 minutes and 10 seconds.
3. **Boom Nose:** Reinforced hi-strength steel construction. Five (5) non-metallic load bearing sheaves, 16.5" (41.9 cm) root diameter, and two (2) non-metallic idler sheaves, 16.5" (41.9 cm) root diameter. Sheaves shall be smooth and free of surface defects, which could damage the rope. Removable rope guards for easy reeving and rope dead ends shall be provided on each side of the boom nose.
4. **Boom Elevation:** One double acting cylinder with integral holding valve shall be provided for controlling boom elevation from -3° to 80°. The boom hoist up mode (10° – 70°) shall be a minimum speed of 51 seconds.
5. **Swing:** A bi-directional hydraulic swing motor shall provide for 360° continuous smooth rotation at 1.9 rpm. A two-position swing lock shall be capable of positively locking the superstructure in the "over the front" position for highway travel. An additional one-position swing lock shall be capable of positively locking the superstructure in the "over the rear" position for counterweight installation/removal and over the rear lifts. The swing brake shall be foot-activated for precise control and shall be capable of locking the superstructure in any 360° location.
6. **Operator's Cab:** The cab shall be fully enclosed. It shall be fabricated from galvaneal steel and shall have sufficient windows and doors to permit a minimum of 180° visibility for the operator. All glass shall be tinted safety glass held in place by rubber channels for easy replacement. Windshield wiper/washer for front and top window glass shall be provided. The right side and back windows shall open for ventilation. Cab doors shall be adequately restrained from accidentally opening or closing while traveling or operating the crane and shall be capable of being locked in a closed position when desired. The cab shall contain an engine-dependent, warm water heater and defroster that shall have sufficient capacity to effectively defrost the windshield and heat the cab. The cab shall also have provisions for air conditioning. An adjustable and comfortable operator's seat shall be provided and shall be located for maximum unobstructed visibility of the work area by the operator without leaving the seat and within easy reach of the joystick controllers and pedals. The cab shall be isolated from vibration by rubber mounts.
7. **Controls:** All crane functions shall be controlled by the least possible number of hand controllers and foot pedals necessary for efficient operation. The joystick controllers and pedals shall be conveniently located and arranged for easy access and operation by the operator, when in a seated position, and they shall not obstruct the operator's view of work. All operating controls shall be identified, either by the name of the control or a symbol. Controls shall also have arrows or appropriate markings showing the direction of movement for operation. Hand-operated controllers shall be provided for swing, load hoist(s), and boom elevation. Foot operated controls shall be provided for swing brake, boom telescope, and engine throttle. Other cab controls include heater controls, outrigger sequence controls and sight level bubble, electric windshield wiper, electric horn, lights, and engine start/stop.
8. **Upper Cab Instrumentation:** Dash mounted; backlighted gauges shall include hydraulic oil temperature, fuel, water temperature, and tachometer. A boom angle indicator shall be located such that the angle reading is plainly visible from the operator's seat.

9. **Cameras:** Viewing monitor shall be conveniently located and arranged for easy access and operation by the operator in the operator's cab. The monitor should display images on the right side when swinging the upper structure and operation of the hoist system.
10. **Lights:** Lights shall be installed on the operator's cab and shall always face the direction of the boom and be of such intensity as to provide sufficient light for night operation of the crane if required. The lights shall be the manufacturer's standard sealed beam type and shall be secured in brackets capable of withstanding shock and vibration. The lighting package shall consist of two (2) sealed beam type lights.
11. **Counterweight:** The counterweights are to be a modular design and shall be removable by means of hydraulic system. The removal system to be controlled by the left hand control lever within the operators cab. Crane shall have the capacity to carry the standard counterweights on the carrier.
12. **Access:** Single ladder leading to a work platform with guard railing shall be provided to gain access to the load hoist systems.
13. **Load Hoist System:** The hoist shall be equipped with a piston type, two (2) speed hydraulic motor and automatic brake; power up/power down mode of operation. The hoist shall be driven through a planetary reduction unit for positive operator control under all load conditions. Maximum permissible single line pull shall be not less than 16,880 lbs. (7656.6 kg) and the maximum line speed shall be not less than 460 F.P.M. (140.2 m/min.) on 16" (40.6 cm) diameter grooved drum. The auxiliary winch shall be sized equal to the main winch for equal line speeds and pulls. Drum rotation indicators to be included and provisions for third wrap indicators.
14. **Wire Rope:** The wire rope shall be 3/4" (19 mm) diameter (18x19 class), filler wire, preformed, independent wire rope core, extra improved plow steel, right regular lay.
15. **Size:** The crane furnished shall not exceed the following dimensions:
 - Overall width with outriggers retracted – 8'-6" (2.6 m)
 - Overall length without boom - 40' 5.3" (12.32 m)
 - Overall height 11' 4.7" (3.47 m)
16. **Treatment and Painting:** All parts of the crane normally painted in good commercial practice shall be cleaned, treated, pre-painted, and oven baked prior to assembly, in accordance with manufacturer's standard practice and color.
17. **Servicing:** Upon delivery, the equipment shall be serviced by the Seller for satisfactory operation. Servicing shall include greasing and oiling, filling of oil reservoirs to proper levels, removal of unnecessary shipping tags and instructions, and other necessary and suitable servicing required for normal operation.
18. **Testing:** Upon delivery, the Seller shall perform such operational tests as may be required to fully demonstrate to the satisfaction of the Contracting Officer that the crane will perform the functions which are specified in these specifications. All equipment failing to perform the operational function indicated properly will be rejected.
19. **Technical Publications and Drawings:** Two (2) copies of an Operator's Manual and one (1) copy of a Parts Manual for all parts of the crane and carrier shall be provided.

**QUESTIONNAIRE FOR
75 ON OR 70 METRIC TON TRUCK CRANE**

1. Make _____ Model _____
 Manufacturer _____

2. **Lift Capacity:** attach Load Chart for Crane and Boom offered.

On Outriggers - 360 Degrees

Imperial Units			Metric Units		
Boom Length	Radius	Capacity	Boom Length	Radius	Capacity
41 ft	9 ft		12.48 m	2.5 m	
50 ft	40 ft		15.2 m	12 m	
60 ft	12 ft		18.3 m	4 m	
80 ft	15 ft		24.4 m	22 m	

3. **Boom:** length extended _____ retracted _____

Number of sections _____

Number of power extendable sections _____

Can boom be power extended under full load? _____

Boom elevation _____ degrees to _____ degrees

4. **Load Hoist:** Make _____ Model _____

Drum Capacity _____ of _____ (Size) Wire Rope

Maximum permissible bare drum line pull _____

Maximum full drum line speed _____

Maximum number of line parts that can be used with equipment furnished

Diameter, construction class, and length of load line wire rope to be furnished _____

Breaking strength of the wire rope _____

5. **Carrier:**

Engine: Make _____ Model _____

Transmissions: Make _____ Model _____

8x4 Drive (Yes or No) _____

Drive Axles: Make _____ Model _____

Axle Mfg.'s rated capacity _____

Max Speed _____

Max Gradeability _____

Front Tire - Size _____ Rear Tire - Size _____

Lights furnished (list) _____

6. **Weights and Dimensions** in Travel Configuration:

Dimensions are per definitions of SAE J1234:

Height _____ Width _____

Length Incl. Boom _____ Chassis only _____

Wheel Base _____

Vehicle Turn Diameter (Wall to Wall) (Per SAE J695b)

Gross Weight_____

- Front Tandems Weight_____

- Rear Tandems Weight_____

7. **Outriggers** - Overall Width Fully Extended_____

Is there a mechanical or hydraulic safety lock? _____

8. **Hydraulic Filter** - Make_____ Model_____

9. **Testing** - Is the crane tested and verified in accordance with:

- SAE J1063 (Yes or No)_____

- SAE J765 (Yes or No)_____

Submitted by_____

Title_____