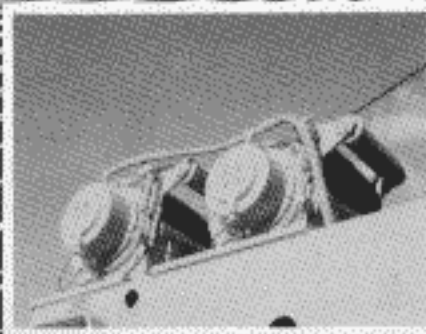
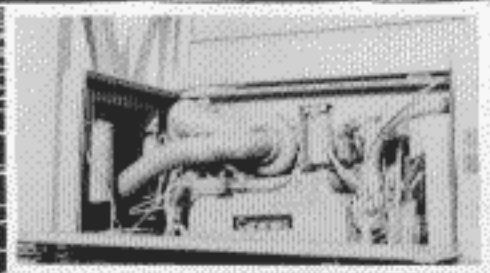




# TWIS 522



SPECIFICATIONS





# Specifications

## Hoist

Description: Power up and down, equal speed, planetary reduction with integral automatic brake, and electronic hoist drum rotation indicator.				
HOIST DATA	MAIN HOIST GROVE MODEL NO 15H-16B	*MAIN HOIST GROVE MODEL NO 15H-11B	*AUXILIARY HOIST GROVE MODEL NO 15S-11B	*MAIN/OR AUXILIARY HOIST + (CONTROLLED FREE FALL) GEARMATIC MODEL 25 SGECR
DRUM DIMENSIONS	12 in. dia. (305mm) 16 in. length (406mm) 17.5 in. flange dia. (445mm)	12 in. dia. (305mm) 11 in. length (279mm) 17.5 in. flange dia. (445mm)	12 in. dia. (305mm) 11 in. length (279mm) 17.5 in. flange dia. (445mm)	9 in. dia. (229mm) 13 in. length (330mm) 17.5 in. flange dia. (445mm)
PERFORMANCE: MAX. SINGLE LINE SPEED: BARE DRUM MEAN DRUM FULL DRUM MAX. SINGLE LINE PULL BARE DRUM MEAN DRUM FULL DRUM	287 FPM (87.5m/min) 340 FPM (103.6m/min) 383 FPM (116.7m/min) 9,165 lbs. (4157 kg) 7,730 lbs. (3506 kg) 6,890 lbs. (3125 kg)	287 FPM (87.5 m/min) 340 FPM (103.6m/min) 383 FPM (116.7m/min) 9,165 lbs. (4157 kg) 7,285 lbs. (3560 kg) 6,890 lbs. (3125 kg)	154 FPM (46.9m/min) 183 FPM (55.8m/min) 206 FPM (62.8m/min) 9,165 lbs. (4157 kg) 7,285 lbs. (3304 kg) 6,890 lbs. (3125 kg)	155 FPM (47.2m/min) 220 FPM (67.1m/min) 290 FPM (88.4m/min) 9,145 lbs. (4148 kg) 7,105 lbs. (3222 kg) 5,065 lbs. (2297 kg)
DRUM ROPE CAPACITY +MAX. STORAGE ++MAX. USABLE	720 ft. of 1/2 in. dia. rope (219.6m of 13mm) 585 ft. of 1/2 in. dia. rope (178.3m of 13mm)	485 ft. of 1/2 in. dia. rope (147.8m of 13mm) 395 ft. of 1/2 in. dia. rope (120.4m of 13mm)	485 ft. of 1/2 in. dia. rope (147.8m of 13mm) 395 ft. of 1/2 in. dia. rope (120.4m of 13mm)	675 ft. of 1/2 in. dia. rope (205.7m of 13mm) 675 ft. of 1/2 in. dia. rope (205.7m of 13mm)
PERMISSIBLE SINGLE LINE ROPE PULL W/ 3.5:1 SAFETY FACTOR	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)

**NOTES:**

\*Denotes Optional Equipment.

+6th layer of rope not recommended for hoisting operations (9th layer for Gearmatic model 25 hoist)

++With wire rope minimum 1/2 in. (13mm) below top of drum flange.

\* Controlled free fall hoist option available for main or auxiliary hoist, not both.

NOTE: 19x7 and other rotation resistant wire ropes are best suited for single line lifting operations. Use of rotation resistant wire rope for multiple part reeving or with swivels requires special consideration - Consult the wire rope manufacturer for specific recommendations.

## Grove Carrier - 6x4 and 6x6

**OUTRIGGERS** - Hydraulic, double-box, telescoping beam outriggers, integral welded boxes, removable beams, vertical 5 1/2 in. (140mm) bore x 17 in. (432mm) stroke jack cylinders with integral holding valves and 24 in. (610mm) diameter removable stowable steel floats. Beams extend to 17 ft. (5.2m) centerline to centerline and retract to within 8 ft. (2.4m) overall width by 2 1/2 in. (64mm) bore x 78 1/4 in. (1988mm) double-acting cylinders. Controls and sight leveling bubble located inside superstructure cab. In addition to the standard integral holding valve and for added security, the exclusive Grove \*spin-lock is offered, which permits the outrigger vertical jack to be mechanically locked in any position throughout its stroke.

**\*FRONT END STABILIZER** - A fifth hydraulic vertical jack cylinder with integral holding valve is mounted to the front frame section of the chassis to permit 360° lifting capabilities. The 24 in. (610mm) diameter steel float is easily removed for highway travel. Individual controls for fifth outrigger cylinder conveniently located in superstructure cab.

**FRAME** - High strength steel, all-welded construction with triple-box type design and integral welded outrigger boxes.

**STEERING GEAR** - Sheppard rack and pinion design with hydraulic power assist.

**CLUTCH** - 14 in. (356mm) two plate, dry disc (with Roadranger transmission only).





## Grove Carrier - 6x4 and 6x6 (continued)

**TRANSMISSION** - Fuller Roadranger RT6613, 13 speeds forward, 3 reverse. \*Allison MT653DR, 5 speeds forward, 1 reverse fully automatic transmission.

**TRANSFER CASE (6x6)** - Dana model 738 single speed.

**UNIVERSAL JOINTS** - Needle bearing type.

**AXLES** - Front (6x4): (1) Rockwell tubular type steer axle model FL-931, 18,000 lbs. (8165 kg) capacity.  
Front (6x6): (1) Rockwell tubular type steer/drive model FDS 1600, 18,000 lbs. (8165 kg) capacity.  
Rear (6x4 & 6x6): Rockwell SLHD drive tandem, 34,000 lbs. (15 422 kg) capacity with interaxle differential and dash mounted control.

**SUSPENSION** - Front: Dana multi-leaf spring type with shock absorbers 18,000 lbs. (8165 kg) capacity.  
Rear: Hendrickson R-340 tandem-axle equalizing beam with solid steel saddles, 34,000 lbs. (15 422 kg) capacity.

**FUEL TANK** - Single 60 gallon (227 liter) capacity mounted on left side of frame.

**TIRES** - Front: 15.00x22.5-16 PR duplex highway tread tubeless singles. \*Optional are 16.5x22.5-16 PR duplex highway tread tubeless and Michelin 14/80R20-18 PR tube type.  
Rear: 9:00x20-10 PR highway tread tube-type duals. \*Optional are 10.00x20-12 PR highway tread tube-type and Michelin 9:00 R20-12 PR.

**RIMS** - Front: Demountable 22.5 in. x 12.25 in. (572mm x 311 mm) with 15:00/16.5x22.5 tires.  
\*20.00 in. x 13.0 in. (508mm x 330mm) with 14/80 R20 tires.  
Rear: Demountable 20.00 in. x 7.0 in. (508mm x 178mm) with 9:00 x 20 tires.  
\*20.00 in. x 8.0 in. (508mm x 203mm) with 10.00 x 20 tires.

**WHEELS** - Steel spoke; 6 spoke front and 5 spoke rear.

\* **TIRE INFLATION KIT** - Quick connect air outlet located at midpoint on left side of carrier. Includes dual foot air chuck and 25 ft. (7.6m) coiled nylon tubing.

**BRAKES** - Full air on all wheels. Separate independent front and rear circuits.

Front (6x4): 15 in. x 6 in. (381mm x 152mm)

Front (6x6): 17-1/4 in. x 5 in. (438mm x 127mm)

Rear (6x4 & 6x6): 15 in. x 7 in. (381mm x 178mm)

Total lining area (6x4): 1256 in.<sup>2</sup> (8103 cm<sup>2</sup>); (6x6): 1182 in.<sup>2</sup> (7626 cm<sup>2</sup>). Air dryer provided to preclude system-damaging moisture accumulation.

**PARKING BRAKES** - Spring-set, air released chambers on both rear axles with manual emergency release feature.

**ELECTRICAL SYSTEM** - 12 volt lighting, 24 volt starting. Federal safety standard lights and reflection.

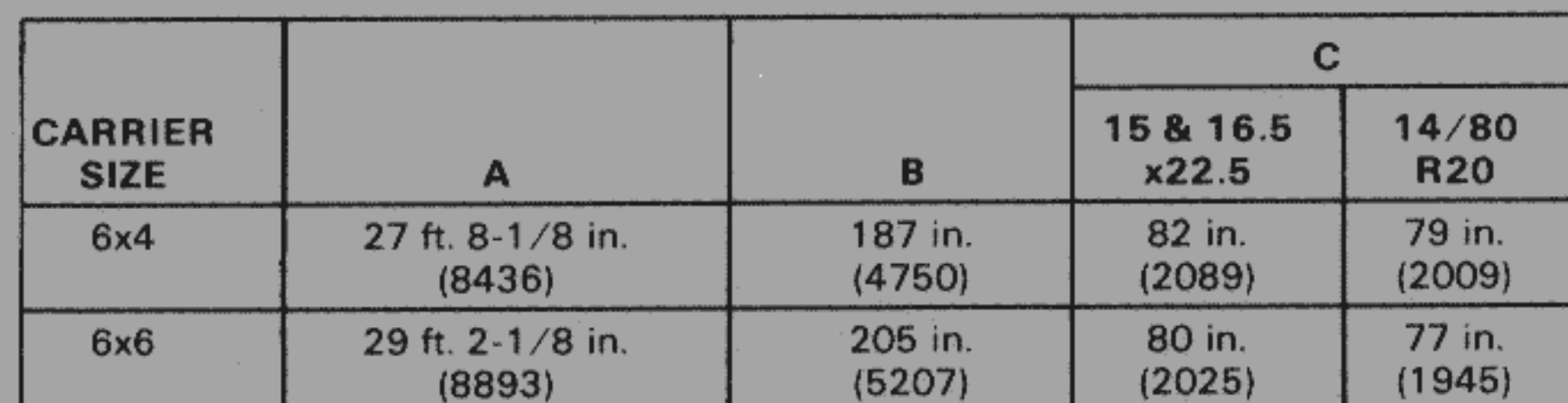
**CAB** - One-man, left hand drive, all-steel construction, acoustically treated, tinted safety glass throughout, electric wiper and washer, door and window locks, Bostrom "T" bar deluxe fabric seat with seat belt, hot water heater, circulating air fan, forced hot air defroster, dual rearview mirrors, domelight, instrument lights, electric horn, traffic hazard warning switch (4-way flashers), complete instrumentation and driving controls, 2-3/4 lb. (1.3 kg) dry type fire extinguisher.

**CAB INSTRUMENTATION (International Type)** - Engine oil-pressure gauge, speedometer, dual air-pressure gauge, fuel level gauge, engine water temperature gauge, voltmeter, tachometer, low air pressure audio-visual warning system, high beam indicator, hourmeter (10,000 hr.) and ignition on indicator light.

**MISCELLANEOUS STANDARD EQUIPMENT** - Wheel nut wrench and handle, channel-type front bumper, two front and rear towing loops, fenders, full width decking, mud flaps, maintenance free batteries, back up light, air cleaner service indicator, combination lifting/tie-down lugs, electronic back-up alarm, fuel/water separator and ether cold start aid.

\* **MISCELLANEOUS OPTIONAL EQUIPMENT** - Sling box on left side of frame, engine block heater, spare tire and wheel carrier (located on superstructure), automatic transmission oil heater and engine low oil pressure/high water temperature audio-visual warning system.

\*Denotes Optional Equipment



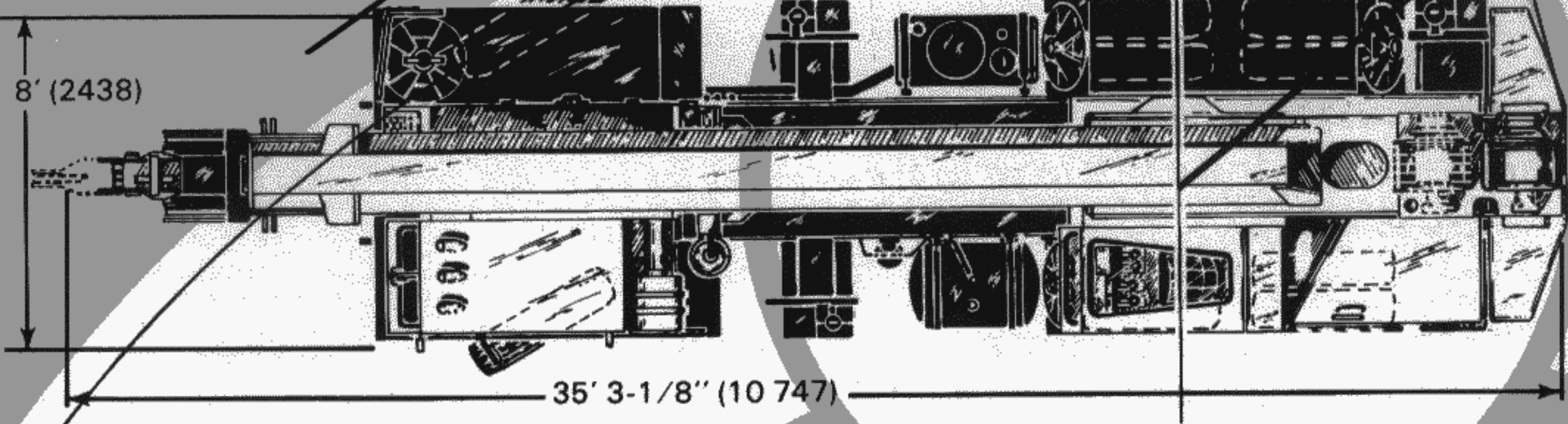
**NOTE:** Dimensions shown in parentheses are in millimeters (mm).



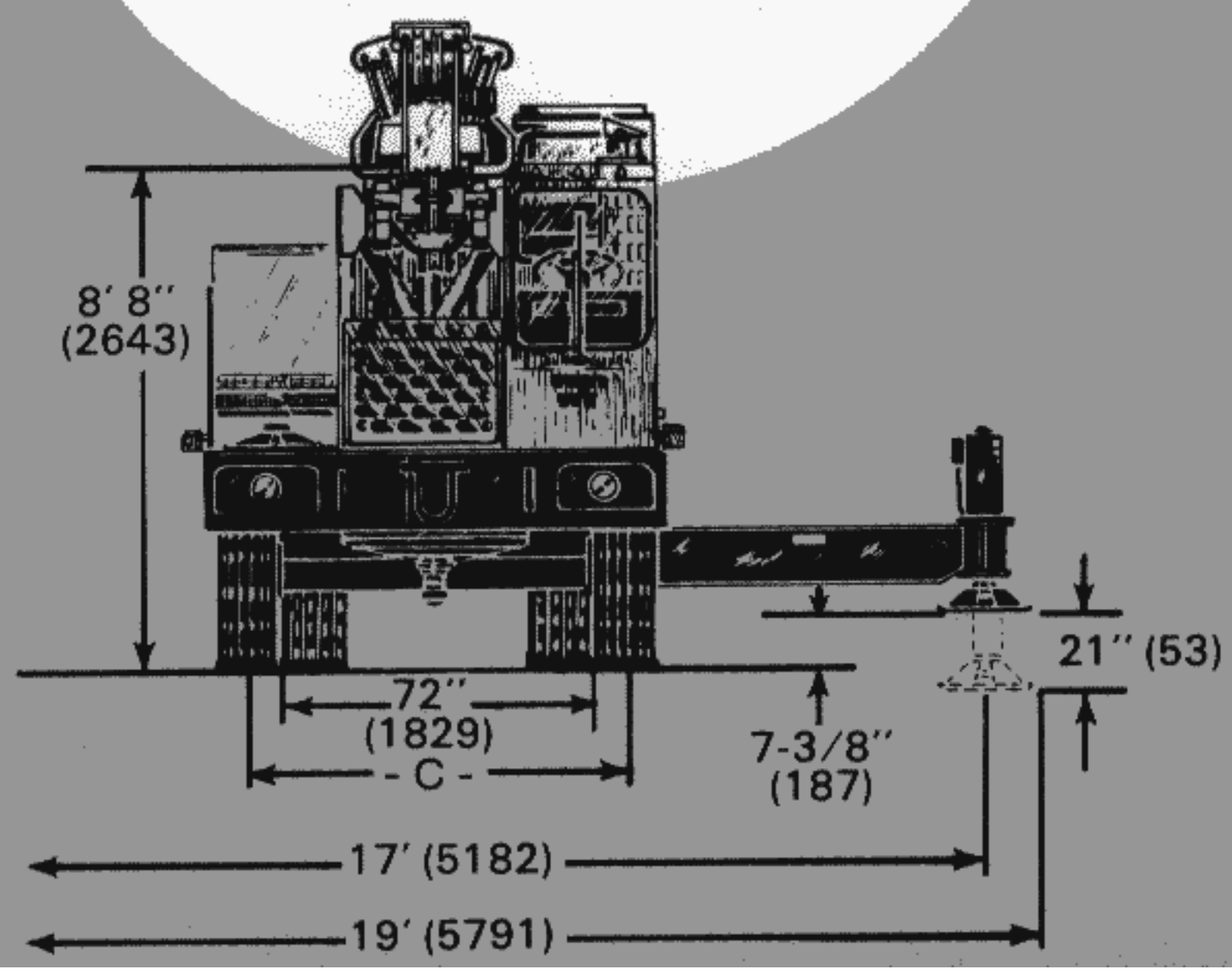


Tailswing  
9' 5" (2870)

Bumper Clearance  
6x4 - 38' 9-1/2" (11 824)  
6x6 - 39' (11 887)



Turning Radius  
36' (10 973)





# Specifications

## Superstructure

**ANTI-TWO BLOCK (KRUEGER "HAP")** - An audio-visual (light/-buzzer) warning system to alert operator to an impending two block condition. System uses solid state circuitry and consists of following basic components: boom nose mounted switch and weight assembly, base boom mounted electric cable reel and in-cab mounted console. Hookblock or headache ball coming in contact with weight suspended from boom nose switch activates the audio-visual warning system. A spring-loaded, key-type switch is provided to permit operator to momentarily override the system for emergencies. System further incorporates electronic boom angle display with "presets". Angle indicator has audio-visual warning system to alert operator if preset boom angles are reached.

\* **ANTI-TWO BLOCK (KRUEGER "HLAP")** - Same as basic anti-two block audio-visual warning system (Krueger "HAP"), but incorporates selective electronic display of boom angle in degrees and boom length in feet and meters. Angle indicator has "presets" with audio-visual warning system to alert operator should the preset boom angles be reached.

\* **LOAD MOMENT AND ANTI-TWO BLOCK SYSTEM (KRUEGER "LMI")** - A load moment indicating system in combination with anti-two block, audio-visual and Grove control lever lockout of: hoist up, telescope out and boom down crane functions. System uses solid state circuitry and consists of following basic components: boom nose mounted switch and weight assembly, base boom mounted electric cable reel and in-cab mounted console. Dash mounted console displays relative load moment and also provides selective electronic display of boom length in feet and meters and angle in degrees. Angle indicator has "presets" with audio-visual warning system to alert operator if preset boom angles are reached.

**BOOM** - 28 ft. - 70 ft. (8.6m-21.2m), 3 section trapezoidal-shaped full power mechanically synchronized main boom with boom length decals. Boom extension is composed of a 6 1/2 in. (165mm) bore, double-acting telescope cylinder with integral holding valve which extends the mid section. Fly section is mechanically extended by a 7/8 in. (22mm) dia. cable attached

to the mid section which insures positive synchronization at all boom lengths. Extension cable is supported by two 14-7/8 in. (378mm) tread dia., metallic sheaves attached to the outer end of the mid section. A separate 3/4 in. (19mm) dia. cable is provided for boom retraction. Boom telescope sections are supported on nylatron wear pads. Adjustable side wear pads prevent metal-to-metal contact of inner boom sections and permit ease of boom side alignment.

**BOOM NOSE** - Reinforced hi-strength steel construction. Three metallic load bearing sheaves, 10-5/8 in. (270mm) tread dia. mounted on heavy duty tapered roller bearings. One (\*two with auxiliary hoist and/or jib) metallic floating idler sheave, 10-5/8 in. (270mm) tread dia. mounted on bronze bushing. Removable pin-type rope guards for easy reeving. Rope dead ends on either side of boom nose.

\* **AUXILIARY BOOM NOSE** - Removable single metallic load bearing sheave, 13-3/4 in. (349mm) tread dia. mounted to main boom nose for single part line work. Equipped with removable pin-type rope guard.

**BOOM ELEVATION** - Two double-acting 9 in. (229mm) dia. bore, 36 in. (914mm) stroke cylinders with integral holding valves that provide elevation from 0° to 75°. Combination controls for hand or foot operation. Electronic boom angle indicator (Krueger HAP) mounted inside the operator's cab.

\* **JIBS** - 23 ft.-38 ft. (7.1m-11.6m) telescopic "A" frame. Jib length can be adjusted from 23 ft. (7.1m) retracted length to 33 ft. (10.1m) and 38 ft. (11.6m) fully extended length.

23 ft. (7.1m) fixed length "A" frame. Both "A" frame jibs attach to the boom nose and stow beneath the main boom for travel. Jibs can be offset at 0°, 15° and 30°. Includes backstops, single rope self-equalizing suspension, removable pin-type rope guard and single 13-3/4 in. (349mm) tread dia. metallic sheave.

\*Denotes Optional Equipment





## Superstructure (continued)

**CAB** - One-man, full vision, all-steel with acoustical treatment and tinted safety glass throughout; hinged tinted skylight, sliding left side door and sliding right side window for ventilation. Fully adjustable deluxe fabric seat with headrest and seat belt, diesel fuel heater and hot air defroster; electric windshield wiper and washer, circulating air fan, swing horn, domelight, dash light, door and window locks and 2-3/4 lb. (1.3 kg) dry-type fire extinguisher. Complete engine instrumentation and crane operating controls, full length control levers, combination hand and foot controls for swing, boom elevation and engine throttle, outrigger control panel and sight leveling bubble, Krueger electronic boom angle indicator (HAP) with high/low angle presets and audio-visual warning.

**CAB INSTRUMENTATION** - Engine oil pressure gauge, engine water-temperature gauge, voltmeter, tachometer, fuel-level gauge and ignition-on indicator light.

**SWING** - Ball bearing swing circle, 360° continuous rotation. Grove planetary "glide swing" with foot actuated multi-disc swing brake, spring set-hydraulically released park brake and hand operated 2 position plunger-type house lock. Combination controls provided for hand or foot operation. Maximum swing speed 3.0 RPM. \*Hand operated 360° positive swing lock controlled from operator's cab is available.

**OUTRIGGER CONTROLS** - Independently controlled in, out, up and down from superstructure cab. Required sequence control arrangement eliminates unintentional outrigger actuation. \*To insure proper outrigger retraction sequence, the optional front jack cylinder retracts first when outrigger control master switch is activated.

**COUNTERWEIGHT** - Stationary type, pin-mounted to turntable to facilitate removal. Weight varies depending on hoist configuration. (Refer to axle weight distribution chart)

### HYDRAULIC SYSTEM

**RESERVOIR** - 88 gallon (333 liter) capacity, all-steel welded construction with internal baffles, cleanout access, exterior oil sight level and magnet.

**FILTER** - Return line type, full flow with by-pass protection and filter by-pass indicator, replaceable 25 micron rated cartridge.

**PUMPS** - One, three-section gear pump driven off transmission PTO with manual pump disconnect. Combined capacity 112.5 GPM (426 LPM) at 2400 RPM.

**CONTROL VALVES** - Precision four-way, double-acting with integral load holding main and circuit relief valves with hydraulic pressure test panel. Three individual valve banks permit simultaneous independent control of three crane functions. Standard "low effort" control valves provide for reduced operator effort and smoothness of operation. Maximum system operating pressure 2500 PSI (175 kg/cm<sup>2</sup>).

\* **OIL COOLER** - Turntable mounted, oil to air with thermostatically controlled electric motor driven fan.

**POWER DISTRIBUTION** - Main hoist, 39.5 GPM (150 liters) at 2500 PSI (175.8 kg/cm<sup>2</sup>). Main hoist boost, \*auxiliary hoist, lift and boom telescope, 46.5 GPM (171 liters) at 2500 PSI (175.8 kg/cm<sup>2</sup>). Swing, outriggers, 26.5 GPM (100 liters) at 2250 PSI (158.1 kg/cm<sup>2</sup>).

\* **MISCELLANEOUS OPTIONAL EQUIPMENT** - 22 ton (20MT) 3 sheave hookblock, 12 ton (10.9MT) 1 sheave hookblock, 5 ton (4.5MT) headache ball, hoist drum cable follower, spare tire bracket, propane heater, boom mounted floodlights, cab mounted spotlight and amber rotating beacon.

\*Denotes Optional Equipment





## Axle Weight Distribution Chart - 6x4 Carrier

ITEM	POUNDS			KILOGRAMS		
	GROSS	FRONT	REAR	GROSS	FRONT	REAR
Basic standard machine to include 28-70 ft. (8.6-21.2m) trapezoidal boom, Grove model HO15H-16B main hoist with 400 ft. of 1/2 inch (13mm) rope, ●3,400 lb. (1542 kg) counterweight.	44,378	14,428	29,950	20 130	6 545	13 585
REMOVE:						
●Standard 3,400 lb. (1542 kg) counterweight	-3,400	1,609	-5,009	-1542	730	-2272
ADD:						
23 ft. (7.1m) A-frame jib	997	965	32	452	437	15
23-38 ft. (7.1-11.6m) telescoping jib	1,686	1,498	188	765	680	85
Auxiliary boom nose	100	175	-75	45	79	-34
Front outrigger jack	269	321	-52	122	146	-24
22 ton (20MT) hookblock	455	762	-307	206	346	-140
12 ton (10.9MT) hookblock	400	670	-270	181	303	-122
5 ton (4.5MT) headache ball	150	251	-101	68	114	-46
●●Grove model HO15S-11B auxiliary hoist with 350 ft. (107m) of 1/2 in. (13mm) dia. rope	852	-287	1,139	386	-130	516
●●Gearmatic 25 SGEGR auxiliary hoist with 350 ft. (107m) of 1/2 in. (13mm) dia. rope	1,048	-353	1,401	475	-160	635
Sling box	45	37	8	20	17	3
SUBSTITUTE:						
●●2,800 lb. (1270 kg) counterweight	-600	284	-884	-272	129	-401
●Grove model HO15H-11B main hoist with 400 ft. (122m) of 1/2 in. (13mm) dia. rope	-67	32	-99	-30	15	-45
●Gearmatic model 25 SGEGR main hoist with 400 ft. (122m) of 1/2 in. (13mm) dia. rope	193	-91	284	88	-41	129
Spin lock jack cylinders	172	23	149	78	10	68
Allison automatic transmission	-260	-223	-37	-118	-101	-17

**NOTE:** Appropriate counterweight substitutions must be made depending on main and auxiliary hoist configuration specified.

●Use 3,400 lbs. (1542 kg) counterweight with main hoist only.

●●Use 2,800 lbs. (1270 kg) counterweight with auxiliary hoist.

## Axle Weight Distribution Chart - 6x6 Carrier

ITEM	POUNDS			KILOGRAMS		
	GROSS	FRONT	REAR	GROSS	FRONT	REAR
Basic standard machine to include 28-70 ft. (8.6-21.2m) trapezoidal boom, Grove model HO15H-11B main hoist with 400 ft. of 1/2 in. (13mm) rope, ●3,400 lb. (1542 kg) counterweight.	45,458	14,947	30,511	20 620	6 780	13 840
REMOVE:						
●Standard 3,400 lb. (1542 kg) counterweight	-3,400	1,468	-4,868	-1542	666	-2208
ADD:						
23 ft. (7.1m) A-frame jib	997	880	117	452	399	53
23-38 ft. (7.1-11.6m) telescoping jib	1,686	1,367	319	765	620	145
Auxiliary boom nose	100	160	-60	45	72	-27
Front outrigger jack	269	332	-63	122	151	-29
22 ton (20MT) hookblock	455	695	-240	206	315	-109
12 ton (10.9MT) hookblock	400	611	-211	181	277	-96
5 ton (4.5MT) headache ball	150	229	-79	68	104	-36
●●Grove model HO15S-11B auxiliary hoist with 350 ft. (107m) of 1/2 in. (13mm) dia. rope	852	-262	1,114	386	-119	505
●●Gearmatic 25 SGEGR auxiliary hoist with 350 ft. (107m) of 1/2 in. (13mm) dia. rope	1,048	-322	1,370	475	-146	621
Sling box	45	38	7	20	17	3
SUBSTITUTE:						
●●2,800 lb. (1270 kg) counterweight	-600	259	-859	-272	117	-389
●Grove model HO15H-11B main hoist with 400 ft. (122m) of 1/2 in. (13mm) dia. rope	-67	29	-96	-30	13	-43
●Gearmatic model 25 SGEGR main hoist with 400 ft. (122m) of 1/2 in. (13mm) dia. rope	193	-84	277	88	-38	126
Spin lock jack cylinders	172	21	151	78	10	68
Allison automatic transmission	-260	-222	-38	-118	-101	-17

**NOTE:** Appropriate counterweight substitutions must be made depending on main and auxiliary hoist configuration specified.

●Use 3,400 lbs. (1542 kg) counterweight with main hoist only.

●●Use 2,800 lbs. (1270 kg) counterweight with auxiliary hoist.