

Small Cable Yarders

Concept—Yarding may be an option in areas of steep slopes or difficult terrain when feller-bunchers or other machines would not be effective. For this report we chose to stay with small cable-yarding systems of 10,000-pound line pull or less. We also included some unique monocable systems. The Jewell/Allied Power Products, Inc. Yoader (combination yarder and loader) was included for its unusual flexibility—it can be used to shovel-log, load logs at landing, shotgun log, and it has a slack thrower for tongs. Allied Power Products, Inc. can put cable drum winches on most equipment to meet yarding needs. Winches were not included in this section as they were considered outside the scope of this project.

Comments—Stem extraction can be done aerially (helicopter), by ground (skidding or forwarding), or by cable yarding. Highlead and skyline cable systems require a cleared path and appropriate slope to allow clearance of the yarded material and to haul the material. Each cable requires a separate drum, and a yarder can have up to 4 drums: mainline, skyline, slackpull, and strawline (to pull the rest of cable into position). Monocable systems require a capstan winch and a series of special blocks to position the cable in the stand. Yarding can be done uphill or downhill. While moving the material by a cable reduces traffic over ground, roads are required within yarding distance.

Some yarders employ carriages to move the material. The main types of carriages are radio controlled and slackpull.

Other Manufacturers or Sources—See the Canadian Forest Industries annual steep-slope issue, or the Timber West or Timber Harvesting annual buyer's guides for additional information on yarding equipment (see Appendix B for details).

Other unconfirmed sources of small commercial wood yarders listed in Timber West 1999/2000 Buyer's Guide & Directory include:

- Christy Manufacturing, Inc.
- Madill, Inc.
- Ross Corp.
- TLD Gauthier, Inc.

Carriage manufacturers include:

- Acme Manufacturing Co.
- Christy Manufacturing, Inc.
- Diamond Manufacturing, Inc.
- Eagle Carriage and Machine, Inc.
- Enviroquip Sales, Ltd.
- Koller USA Corp.
- Maki Manufacturing, Inc.
- Northwest Harvesters, Inc.
- Ross Corp.
- Skylead Logging Equipment Co.

Other unconfirmed sources of carriages listed in Timber West 1999/2000 Buyer's Guide & Directory include:

- Boman Industries, Inc.
- TLD Gauthier, Inc.
- Global Forest Equipment, Ltd.

Small Cable Yarders

Yarding Converter Packages

Jewell Hydraulic Dual-Winch Yarding Packages



Make/Model	Jewell Hydraulic Dual-Winch Yarder for log loaders; with mast assembly for excavators; Yoader conversion (combination log loader, winch/tong—thrower and yarder winch; also with dual winches)
Manufacturer/Source	Jewell Manufacturing, Inc.
Distributor	Contact Jewell Manufacturing, Inc.
Price	Contact manufacturer
Status	In production
Prime Mover	Excavator; log loader, 20- to 40-ton range
Yarder Power Plant	Depends upon host machine
Gas/Diesel	Depends upon host machine
Transmission	Hydraulic two-speed, self-contained winches
Weight	Two-drum system adds 5,000 lb to base machine
Boom/Tower	Tower (36 to 52 ft) varies by machine requirements
Controls	Winch controls are direct-acting pilot
Number of Drums	Four
Cable Capacity	Drum 1: 296 ft, $\frac{5}{16}$ -in or 210 ft, $\frac{3}{4}$ -in cable; Drum 2: 728 ft, $\frac{5}{16}$ -in or 516 ft, $\frac{3}{4}$ -in cable; Drum 3: 1,125 ft, $\frac{5}{16}$ in or 797 ft, $\frac{3}{4}$ -in cable; Drum 4: 1,456 ft, $\frac{5}{16}$ -in or 1,032 ft, $\frac{3}{4}$ -in cable Mainline pull (lb/kg), dual winch specifications: Mean drum = 16,049 lb, 218 fpm; or 3,427 lb, 1,018 fpm; Main yoader winch has 9,000-lb line pull, 800 fpm Inhaul line speed; capacity 400 ft, $\frac{9}{16}$ -in cable; comes with logging grapple
Mainline Speed	Line pulls to 50,000 lb
Maximum Yarding Distance	Yarder conversion—tong throw to 300 ft, shotgun yard to 1,000 ft
Carriage	Most commonly used is Christy manual slack-pulling carriage; some use
Shaft (horizontal/vertical)	small motorized carriages such as Eaglet II or Acme 10
Special Uses/Adaptations/Other Uses	Data not supplied
Manufacturer's Comments Regarding Equipment Application	Data not supplied

Small Cable Yarders

Three-Drum Yarder

Koller Three-Drum Cable Yarders



Koller K501 cable yarder (left) and K300.

<p>Make/Model</p> <p>Manufacturer/Source</p> <p>Distributor</p> <p>Price</p> <p>Status</p> <p>Prime Mover</p> <p>Yarder Power Plant</p> <p>Gas/Diesel</p> <p>Transmission</p> <p>Weight</p> <p>Boom/Tower</p> <p>Controls</p> <p>Number of Drums</p> <p>Cable Capacity</p> <p>Mainline Pull</p> <p>Mainline Speed</p> <p>Maximum Yarding Distance</p> <p>Carriage</p> <p>Special Uses/Adaptations/Other Uses</p> <p>Manufacturer's Comments Regarding Equipment Application</p>	<p>Koller Three-Drum Cable Yarders: K300 Trailer-Mount; K501 Trailer-Mount; K501 Truck-Mount; K501 Track-Mount</p> <p>Koller Austria</p> <p>Northwest Harvesters, Inc.</p> <p>K300 trailer-mount with Koller SKA 1 carriage: \$94,600; K501 trailer-mount with Koller SKA 2.5 carriage: \$169,000; K501 truck-mount with Koller SKA 2.5 carriage: \$187,000; K501 track-mount with Koller SKA 2.5 carriage: \$234,000</p> <p>In production</p> <p>K301; K501 trailer-mount: 3-ton truck; K501 truck-mount: 5 ton, 6 x 6 military truck; K501 track-mount: M32 tank undercarriage</p> <p>K300 trailer-mount: 62 hp; K501 trailer- or truck-mount: 112 hp or 160 hp; K501 track-mount: 160 hp</p> <p>Diesel</p> <p>K300 trailer-mount: hydrostatic; K501 truck-mount: 4-speed automatic; K501 track-mount: 545 Allison automatic</p> <p>K300 trailer-mount: 9,000 lb; K501 trailer-mount: 17,500 lb; K501 truck-mount: 46,200 lb; K501 track-mount: 51,000 lb, including lines</p> <p>K 300 trailer-mount: 23 ft; K501 (all): 33 or 40 ft</p> <p>Generally ground; radio and cab options</p> <p>Three or four</p> <p>Trailer-mounted models: Mainline: 1,150 ft, ³/₈-in cable; Skyline: 1,150 ft, ⁵/₈-in cable; Guyline: 100 ft, ⁹/₁₆-in cable. Truck- and track-mounted models: Mainline: 1,800 ft, ¹/₂-in cable; Skyline: 1,600 ft, ³/₄-in cable; Haulback: 2,900 ft, ⁷/₁₆-in cable; Guyline: 145 ft, ³/₄-in cable</p> <p>K300: 4,000 lb at medium drum; K501 (all): 8,100 lb at medium drum</p> <p>K300: 985 ft/min; K501 (all) is 1,000 ft/min</p> <p>K300: 1,200 ft; K501 (all) is 1,640 ft</p> <p>K300: Koller SKA 1; K501(all): Koller SKA 2.5 or Eaglet</p> <p>K501 truck- and track-mounted models have a 7-ft tower extension</p> <p>Data not supplied</p>
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Small Cable Yarders

Four-Drum Yarder

Skylead Four-Drum Cable Yarder



Make/Model	Skylead Four-Drum Cable Yarder: C-40 16000 Series with Skidder, Truck, or Trailer Mount
Manufacturer/Source	Skylead Logging Equip. Corp.
Distributor	Contact Skylead Logging Equip. Corp.
Price	Contact manufacturer
Status	In production
Prime Mover	Skidder, truck, or trailer
Yarder Power Plant	130 to 174 hp
Gas/Diesel	Diesel
Transmission	Four-speed transmission
Weight	Approximately 41,000 lb, mounted on typical skidder without cable or rigging
Boom/Tower	40-ft round, tubular latticed tower
Controls	Hydraulic
Number of Drums	Four
Cable Capacity	Mainline: 2,000 ft of 1 $\frac{1}{2}$ -in cable; Haulback: 4,200 ft of 1 $\frac{1}{2}$ -in cable; Skyline: 2,000 ft of 3 $\frac{1}{4}$ -in cable; Guyline: 200 ft of 3 $\frac{1}{4}$ -in cable; Strawline: 4,000 ft of 1 $\frac{1}{4}$ -in cable
Mainline Pull	16,180 lb at mid-drum
Mainline Speed	1,525 fpm at mid-drum
Maximum Yarding Distance	2,000 ft
Carriage	Mini Maki I, Mini Maki II, Eaglet, Koller SKA-1, Skylead C7
Special Uses/Adaptations/Other Uses	Data not supplied
Manufacturer's Comments Regarding Equipment Application	Data not supplied

Small Cable Yarders

Three- or Four-Drum Yarder

**Urus I 300 Skyline Mini Tower Yarder
and Urus II Universal 600 Skyline Yarder**



Make/Model	Urus I 300 Skyline Mini Tower Yarder; Urus II Universal 600 Skyline Yarder
Manufacturer/Source	Global Forest Equipment Ltd.
Distributor	Contact Global Forest Equipment Ltd.
Price	Urus I 300: \$118,000; Urus II 600: \$190,000
Status	In production
Prime Mover	Truck, trailer-mounted, or skidder
Yarder Power Plant	Urus I 300: 100 hp; Urus II 600: 185 hp
Gas/Diesel	Diesel
Transmission	Urus I 300: Allison 4 speed transmission; Urus II 600: Volvo hydraulic drive; also available with standard transmission
Weight	Urus I 300: 5,020 kg on trailer with cables; Urus II 600: 22,000 kg on truck with cables
Boom/Tower	Urus I 300: 33-ft steel tower; Urus II 600: 40-ft steel tower
Controls	Urus I 300: Ground-operated, hydraulic controls; Urus II 600: Cab-operated, hydraulic controls
Number of Drums	Urus I 300: 3; Urus II 600: 4
Cable Capacity	Urus I 300: Mainline: 1,050 ft of $\frac{3}{8}$ -in cable; Skyline: 1,050 ft of $\frac{5}{16}$ -in cable; Haulback: 2,100 ft of $\frac{5}{16}$ -in cable; Guyline: 150 ft of $\frac{5}{16}$ -in cable Urus II 600: Mainline: 2,000 ft of $\frac{1}{2}$ -in cable; Skyline: 2,000 ft of $\frac{3}{4}$ -in cable; Haulback: 4,100 ft of $\frac{3}{8}$ -in cable; Strawline: 4,165 ft of $\frac{1}{4}$ -in cable; Guyline: 160 feet of $\frac{3}{4}$ -in cable
Mainline Pull	Urus I 300: 4.6-ton breakout force; Urus II 600: 5.5-ton breakout force; 2.8 tons throughout working distance
Mainline Speed	Urus I 300: 1,180 ft/min; Urus II 600: 885 ft/min with load, 1,770 ft/min empty
Maximum Yarding Distance	Urus I 300: 1,000 ft; Urus II 600: 2,000 ft
Carriage	Urus I 300: Steufer Hydraulic; Urus II 600: Eaglet or Maki or Steufer
Special Uses/Adaptations/Other Uses	See below
Manufacturer's Comments Regarding Equipment Application	Urus yarders are commonly used for commercial thinning or selective harvesting second growth timber from steep slopes, swampy ground or rocky terrain not suitable for ground-based equipment

Small Cable Yarders

Monocable Yarders

Howe-Line Trailer-Mount Monocable System



Make/Model	Howe-Line Trailer-Mount Monocable System
Manufacturer/Source	Howe-Line, CC; exported as Truckhowe, CC
Distributor	Howe-Line, CC
Price	Ready to use, including training in USA, not including shipment is \$25,000; Freight estimate to Idaho is \$2,000
Status	In production
Yarder Power Plant	14-hp Hatz
Gas/Diesel	Diesel
Transmission	Data not supplied
Weight	Depends on amount of cable: empty, 750 kg
Controls	Operator or radio control option, manufacturer suggests buying radio model locally known
Cable Capacity	600-m standard; starts with 400 m of cable and adds 100-m sections with special quick coupler; not tested with more than 900 m of cable
Mainline Pull	Line pull is tailored to suit operation, e.g.: 600 m of cable with 200-mm capstan = 3.5 tons (metric) at 20 m/min; 280-mm capstan = 2.6 tons (metric) at 30 m/min
Maximum Yarding Distance	Tension controls: manually move trailer forward; put cable on a separate drum that can tension; or move the trailer forward with a vehicle 600 m of cable swaged 10 mm can effectively penetrate forest about 250 m (lead) with a further 50-m lead for roadside stacking; Not tested with more than 900-m cable which equals 400-m penetration
Special Uses/Adaptations/Other Uses	Cost efficient to operate; handles 8-ft logs, 12-in diameter, or anything 2 people can pick up (approximately 100 kg); has had over 3 metric tons on system at once
Manufacturer's Comments Regarding Equipment Application	Good for steep, deep, rocky and swampy areas

Small Cable Yarders

Truck- or Trailer-Mounted Miniyarder

Bitterroot Miniyarder



Make/Model	Bitterroot Miniyarder
Manufacturer/Source	Plans available from USDA Forest Service, Missoula Technology and Development Center
Price	Varies, depending upon fabricator
Status	Plans only; custom made
Prime Mover	Can be mounted on a ³ / ₄ -ton truck or trailer
Yarder Power Plant	18 hp
Gas/Diesel	Gasoline
Transmission	Hydrostatic
Weight	1,600 lb rigged
Boom/Tower	2 ¹ / ₂ -in pipe A-frame, 17 ¹ / ₂ ft long; 180-degree swivel head; manually raised/ lowered
Controls	15-ft mechanical push/pull cable
Number of Drums	2
Cable Capacity	Skyline, mainline drums: 800 ft of ¹ / ₄ -in cable or 650 ft of ³ / ₈ -in cable
Mainline Pull	0 to 2,000 lb
Mainline Speed	0 to 400 fpm
Maximum Yarding Distance	800 ft
Special Uses/Adaptations/Other Uses	Light enough to transport via helicopter
Manufacturer's Comments Regarding Equipment Application	Publication number 4100-8541-2601, September 1985



Small Cable Yarders

Truck-Mounted Small Yarder

Clearwater Cable Yarder



Make/Model	Clearwater Cable Yarder
Manufacturer/Source	Plans available from the Forest Service, Missoula Technology and Development Center
Price	Varies depending upon fabricator
Status	Plans only; custom made
Prime Mover	5-ton truck recommended
Yarder Power Plant	Ford industrial model LSG-633 P 6-cylinder; 200 cu in; 68 hp at 2,800 rpm
Gas/Diesel	Diesel
Transmission	Hydrostatic
Weight	13,000 lb, fully rigged
Boom/Tower	Mast is 10 x 10 x 1/2-in-wall square-wall tubing; 170-degree fairlead swivel; hydraulically raised and lowered
Controls	Remote up to 50 ft; 12-volt dc electric over hydraulic; remote to 50 ft
Number of Drums	Three
Cable Capacity	Mainline Drum: 900 ft of 3/8-in cable; Skyline Drum: 800 ft of 1/2-in cable
Mainline Pull	3,500 lb, maximum
Mainline Speed	0 to 1,000 fpm
Maximum Yarding Distance	800 ft
Carriage	Christy carriage suggested
Special Uses/Adaptations/Other Uses	See Forest Service plans
Manufacturer's Comments Regarding Equipment Application	Lightweight, three-drum system that makes harvesting small material practical; publication number: 5100-8151-2602, May 1981