

# Captive Reel Winches



## REDEFINING LOAD MANAGEMENT ON LARGE SAILING YACHTS

Harken Captive Reel Winches are smaller in size than similarly configured winches and include models with pulling loads of 1.5 to 16 tons. Winches 6T and up are offered with variable speed motors for continuous line adjustment. Standard-sized drums come in various lengths, with all components located on one side of the winch for easy access. Tensioners are available for underdeck, deck, or through-deck mounting. In-line tensioners and runner tricing line winches are also offered.

### USES

Remotely control sheets and halyards on yachts of all sizes.

### WINCH FEATURES

The first 60 mm of the drum is knurled, increasing holding power of initial line wraps and reducing line needed for effective trimming.

The feeder transmission features twin feeder screws to balance the load on the feeder sheave assembly.

Double-screw design positions screws close to the drum, reducing winch size by 10%-20% over similarly configured winches.

Automatic disc brake between motor and gearbox is locked unless system is activated.

Two inner magnetic switches factory set at the feeder's stroke limits to prevent over-travel. Two outer fail-safe limit switches automatically engage the brake. Optical over-ride sensor alerts to a line over-ride or slack line.

Using a synchronized transmission, four gears drive the twin feeder screws. Adjust line size by changing two gear sets on the motor end of the winch.

The winch is driven by an industrial sealed hydraulic motor. Winches 6T and up offered with variable-speed motors; 1.5T and 3T with fixed displacement motors.

### MATERIALS

Winch frame and drum are 6061 Hardkote-anodized aluminum to reduce weight.

Feeder screw nuts and feeder skates are made of self-lubricating composite.

The gear cover is carbon fiber.

### MAINTENANCE

All parts connected to hydraulic or electric circuitry, screw bearings, and gear transmission are on motor side of winch for easy access.

All bearings are sealed and lubricated with grease. The main gearbox is sealed and lubricated with oil.

### OPTIONS

Line exits from the winch are available in port or starboard configurations.

Drums come in various lengths to suit scope.



Self-lubricating feeder screw and sheave allow line to lie smoothly on the drum, even when slack.



Two inner magnetic switches factory set at the feeder's stroke limits prevent over-travel. Two outer fail-safe limit switches automatically engage the brake.



Precise gearing provides even line take-up and release.

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## MANIFOLD CONTROL FEATURES

Manifold contains counterbalance valves that control the load while easing. Valve circuits have anti-cavitation checks on A and B lines.

Shuttle valve feeds brake circuit which contains:

- Pressure-reducing valve to limit pressure to the hydraulic brake.
- Two-position, solenoid-controlled directional valve (fail-safe brake valve that is normally closed). Valve hard-wired to two redundant over-travel switches (one each direction). Loss of system power or depressing over-travel switch cuts power to the brake valve, blocking oil and engaging the brake valve. Brake valve supplied with a manual override knob.
- Flow control for smooth brake engagement.
- Manual needle valve blocks oil pressure to release the brake—a safety feature when servicing the winch. Use to set counterbalance valve relief pressures without disconnecting A and B lines to the winch motor.

All work ports are BSPP type.

All components and work ports clearly marked with engraved labels.

Manifolds drilled through for four M10 mounting fasteners.



## TENSIONER MANIFOLD FEATURES

Harken line tensioners prevent slack line and overrides on the winch drum while sheeting in, and help clear line from the drum when sheeting out. Compact hydraulic motors mount inside sandblasted sheaves with multiple attachment methods for underdeck, below deck, or through deck mounting.

In-line and through deck tensioners use driven rubber belts to help power line without damage. Tensioner manifolds include a solenoid directional valve to synchronize the tensioner and winch timing.

## TENSIONERS

### CT1: 90-Degree Tensioner

- Use with winches up to 12T
- Features sealed roller bearing sheave
- Mounts above or below deck
- Symmetrical for right hand or left hand mounting
- Can handle 80° to 120° line wraps

### CT2: In-Line Tensioner

- Use with winches up to 20T
- Two independently-powered rubber belts drive line off winch drum
- Carbon fiber cover keeps tensioner clean and safe

### CT3: Through-Deck Tensioner

- Use with winches up to 20T
- 300 mm sandblasted sheave handles line load
- Synchronized rubber belt adds additional grip
- Sealed roller bearings
- Waterproof



Line tensioner removes line slack when loading and unloading the spool.



Flush-deck mounting



Belowdeck mounting

Tensioners can be installed above deck, belowdeck, or through-deck.

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## Power/Sheet Size Guide

| Part No. | Maximum dynamic pull |       | Maximum holding load |       | Line Ø |     |       |     | Max pressure |     | Flow rate |       | Max line speed |       |
|----------|----------------------|-------|----------------------|-------|--------|-----|-------|-----|--------------|-----|-----------|-------|----------------|-------|
|          | lb                   | kg    | lb                   | kg    | Min    | Max | Min   | Max | PSI          | Bar | gal/min   | L/min | ft/min         | m/min |
| 1.5T     | 3300                 | 1500  | 5500                 | 2500  | 1/2    | 12  | 3/4   | 18  | 1739         | 120 | 13        | 50    | 115.9          | 35.0  |
| 3T       | 6600                 | 3000  | 11000                | 5000  | 1/2    | 12  | 3/4   | 18  | 2753         | 190 | 13        | 50    | 99.3           | 30.0  |
| 6T       | 13200                | 6000  | 19800                | 9000  | 9/16   | 14  | 7/8   | 22  | 3478         | 240 | 18        | 70    | 344.5          | 105.0 |
| 9T       | 19800                | 9000  | 26400                | 12000 | 5/8    | 16  | 1     | 26  | 3623         | 250 | 21        | 80    | 259.2          | 79.0  |
| 12T      | 26400                | 12000 | 33000                | 15000 | 3/4    | 20  | 1 1/8 | 28  | 3623         | 250 | 26        | 100   | 285.4          | 87.0  |
| 16T      | 35200                | 16000 | 41800                | 19000 | 1      | 24  | 1 1/4 | 32  | 3623         | 250 | 31        | 120   | 255.9          | 78.0  |

Loads and converted sizes are guides only. Winches are customized to application. Line speeds can vary with each winch and power configuration.

## Active Line Storage

| Captive Length Size mm | Line Ø 12 mm |      | Line Ø 14 mm |      | Line Ø 16 mm |      | Line Ø 18 mm |      | Line Ø 20 mm |      | Line Ø 22 mm |      | Line Ø 24 mm |      | Line Ø 26 mm |      | Line Ø 28 mm |      | Line Ø 30 mm |      | Line Ø 32 mm |      |
|------------------------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|
|                        | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    | ft           | m    |
| <b>1.5T</b>            |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |
| 420                    | 49.3         | 14.9 | 41.4         | 12.5 | 39.1         | 11.8 | 33.8         | 10.2 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| 520                    | 66.5         | 20.1 | 55.9         | 16.9 | 53.0         | 16   | 45.7         | 13.8 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| <b>3T</b>              |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |
| 420                    | 49.3         | 14.9 | 41.4         | 12.5 | 39.1         | 11.8 | 33.8         | 10.2 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| 520                    | 66.5         | 20.1 | 55.9         | 16.9 | 53.0         | 16   | 45.7         | 13.8 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| 720                    | 101.3        | 30.6 | 85.1         | 25.7 | 80.1         | 24.2 | 69.5         | 21.0 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| <b>6T</b>              |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |
| 810                    | —            | —    | 70.2         | 21.2 | 61.6         | 18.6 | 56.6         | 17.1 | 49.3         | 14.9 | 46.0         | 13.9 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| 1010                   | —            | —    | 110.9        | 33.5 | 97.3         | 29.4 | 89.4         | 27.0 | 78.1         | 23.6 | 72.8         | 22.0 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| 1210                   | —            | —    | 151.6        | 45.8 | 133.1        | 40.2 | 122.1        | 36.9 | 106.9        | 32.3 | 99.6         | 30.1 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| 1410                   | —            | —    | 192.3        | 58.1 | 168.8        | 51.0 | 154.9        | 46.8 | 135.7        | 41.0 | 126.4        | 38.2 | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    |
| <b>9T</b>              |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |
| 930                    | —            | —    | —            | —    | 108.2        | 32.7 | 96.7         | 29.2 | 88.0         | 26.6 | 79.1         | 23.9 | 76.5         | 23.1 | 70.5         | 21.3 | —            | —    | —            | —    | —            | —    |
| 1130                   | —            | —    | —            | —    | 155.6        | 47   | 139.0        | 42   | 127.1        | 38.4 | 114.5        | 34.6 | 110.6        | 33.4 | 101.6        | 30.7 | —            | —    | —            | —    | —            | —    |
| 1330                   | —            | —    | —            | —    | 204.2        | 61.7 | 182.4        | 55.1 | 166.2        | 50.2 | 149.6        | 45.2 | 144.6        | 43.7 | 133.1        | 40.2 | —            | —    | —            | —    | —            | —    |
| 1530                   | —            | —    | —            | —    | 252.2        | 76.2 | 225.4        | 68.1 | 205.2        | 62   | 185.0        | 55.9 | 178.7        | 54   | 164.5        | 49.7 | —            | —    | —            | —    | —            | —    |
| 1730                   | —            | —    | —            | —    | 300.2        | 90.7 | 268.1        | 81   | 244.3        | 73.8 | 220.1        | 66.5 | 212.8        | 64.3 | 195.6        | 59.1 | —            | —    | —            | —    | —            | —    |
| <b>12T</b>             |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |
| 1130                   | —            | —    | —            | —    | —            | —    | 129.6        | 39.2 | 117.4        | 35.5 | 105.8        | 32.0 | 102.3        | 30.9 | 94.3         | 28.5 | 90.4         | 27.3 | —            | —    | —            | —    |
| 1330                   | —            | —    | —            | —    | —            | —    | 171.1        | 51.7 | 156.0        | 47.1 | 140.5        | 42.4 | 135.7        | 41.0 | 125.4        | 37.9 | 120.2        | 36.3 | —            | —    | —            | —    |
| 1530                   | —            | —    | —            | —    | —            | —    | 213.5        | 64.5 | 194.5        | 58.7 | 175.2        | 52.9 | 169.1        | 51.1 | 156.6        | 47.3 | 149.6        | 45.2 | —            | —    | —            | —    |
| 1730                   | —            | —    | —            | —    | —            | —    | 255.9        | 77.3 | 233.0        | 70.4 | 209.9        | 63.4 | 202.9        | 61.3 | 187.3        | 56.6 | 179.4        | 54.2 | —            | —    | —            | —    |
| <b>16T</b>             |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |              |      |
| 1030                   | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | 92.7         | 28.0 | 83.1         | 25.1 | 80.4         | 24.3 | 74.1         | 22.4 | 71.2         | 21.5 |
| 1330                   | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | 150.9        | 45.6 | 135.4        | 40.9 | 130.7        | 39.5 | 120.5        | 36.4 | 115.9        | 35.0 |
| 1530                   | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | 189.7        | 57.3 | 169.8        | 51.3 | 164.2        | 49.6 | 151.6        | 45.8 | 145.6        | 44.0 |
| 1730                   | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | —            | —    | 228.1        | 68.9 | 204.6        | 61.8 | 197.6        | 59.7 | 182.4        | 55.1 | 175.4        | 53.0 |

Line storage lengths are guides only. Winches are customized to application. Contact Harken for price and lead time.

# Captive Reel Winches



1. Open-ended drum is anodized 6061 aluminum for reduced weight.
2. Drum knurled for first 60 mm to increase holding power of initial line wraps.
3. Choice of port or starboard line exits.
4. Over-travel proximity switches on each end of the feeder prevent damage from drum movement.
5. Feeder design minimizes weight. Feeder screw features composite self-lubricating bearings. Sheave assembly has sealed roller bearings.
6. Feeder sheave available with line load sensor.
7. Replace two gear sets (four gears) to change line size.
8. Carbon fiber gear cover reduces weight.
9. Twin feeder screws balance load on feeder bearing. Feeder screw features sealed thrust bearings.
10. High-load sealed roller bearing inside winch.
11. Hydraulic motor and gearbox coated with corrosive-resistant paint similar to that used by offshore industries.
12. All hydraulic and electric circuitry connections, screw bearings, and gear transmission are on motor side of winch for easy maintenance.
13. Electrical junction box gathers sensor wiring into one spot for easy hook-up.

