35-ton capacity truck-crane

HC-98A Zephyr Crane

with Speed-o-Matic power hydraulic controls... featuring angle-type boom and revolutionary "HI-LITE" boom
OUTSTANDING TRANSPORTABILITY! The HC-98A with “Hi-Lite” boom strips down in 55 minutes and without the extra service-expense of an auxiliary crane. See page 14 for a proof demonstration.
ACID TEST FOR TRUCK-CRANES in logging operations. Here's where stability, mobility, strength of components, high line pulls and ease of control are all required. And in this tough test, Link-Belt Speeder Zephyrcranes have earned an enviable reputation.

ONLY FULL-FUNCTION DESIGN GIVES YOU A SEPARATE POWER TRAIN for each machine operation . . . more standard features plus a wider choice of factory- or field-installed optional features that do not restrict any other operation.

new meaning to truck-crane profitability . . .
**Standard 3-axle carrier**

Custom-built to Link-Belt Speeder's specifications, this specially designed carrier provides a sturdy, stable working platform for all lifting crane jobs... offers the quality construction needed for many years of trouble-free service. A few of the outstanding standard features include hydraulic power steering, 12 forward and 3 reverse speeds, 6 x 4 drive with 6-wheel air brakes, Maxi emergency and parking brake on both rear axles, diamond plate rear fenders, 9' 3" over-all width. Optional features, include choice of diesel engines, 10' rear axle and electric remote control including 5-speed main transmission.

**Hydraulic Outriggers**

*New Separate Out and Down Control*

**Hydraulic Outrigger Jacks and Beams** (optional). Power Hydraulics, instead of muscle power, quickly extends or retracts outrigger beams and jacks for faster set-up or get-away. Each of the four outrigger points has separate out and down control that adapts to any restriction... width or slope. Check valves in hydraulic jacks assure maximum safety for all lifts. All this without increase to overall carrier width.
On the job

Bogie or Walking Beam Support for rear axles on 3-axle carrier or both front and rear axles on the optional 4-axle carrier, allows tandem wheels to follow uneven terrain for maximum traction and mobility.

Removable Front and Rear Outrigger Boxes and Beams add to the ease of stripping weight from the HC-98A for highway travel. Screw-type outrigger jacks are optional and the lightweight pontoons, also optional, feature a quick connect and disconnect socket. When moving short distances, jacks can be raised without removing the pontoons.

Optional 4-axle carrier

This sturdy, highly mobile carrier was designed specifically to distribute axle loadings more evenly over the full length of the carrier. Front and rear tandem axles are bogie mounted. Standard features include 8 x 4 drive with 6-wheel air brakes, Maxi emergency and parking brake on both rear axles, 12 speeds forward and 3 reverse, power steering, planetary rear axles, removable front and rear outrigger boxes and beams and diamond plate rear fenders. Optional equipment is the same as listed for the 3-axle carrier, plus 8-wheel air brakes.
Exclusive Speed-o-Matic power hydraulic controls

for pin point spotting, perfect “feel”, added safety

Developed by Link-Belt Speeder—proved outstanding in the field

Speed-o-Matic is a true power hydraulic control system—the superior to manual controls, considerably more effective than air or hydraulic-booster type systems. Standard equipment on the HC-98A—as it is on all Link-Belt Speeder models—Speed-o-Matic has been thoroughly proved by the success of thousands of Link-Belt Speeder owners since 1936. At a flick of his wrist, the operator can put his HC-98A through its paces. Response is fast and positive—without jerk, jump or lag. And there’s perfect “feel” of the load at all times through variable pressure control valves.

Self-adjusting, interchangeable, hydraulic actuated clutches

Speed-o-Matic clutches make it unnecessary for the operator to adjust clutches in the morning and again as the work progresses. Weeks, and in some cases months, may pass before even a minor adjustment is needed. That’s because hydraulic actuated pistons engage the clutch shoes to the clutch rim. Therefore, the clutch cylinder pistons automatically compensate for normal lining wear and heat expansion. The hydraulic pressure remains constant to assure full power transmission.
Oil under pressure
does the work

In the Speed-o-Matic control system, oil pressure (generated by a compact, engine-driven pump) does all the work...delivers power for all operating functions of the machine. This system is unaffected by day-to-day atmospheric variations, does not require priming or bleeding. Only seasonal oil changes are required. It eliminates control rods, collars, bell cranks and other fast-wearing parts normally found in mechanical or booster-actuated clutches. Also, Speed-o-Matic ends the annoyance and the hazards of jerk, jump or lag common to other systems.

As shown in the diagram at right, oil pressure in the accumulator tank is maintained between 900 and 1050 psi. By means of variable pressure control valves, the operator can meter this oil pressure to each operating clutch. This means the operator is always sure of prompt, positive, smooth response.

Further, the micronic type replaceable oil filter keeps the oil clean...provides additional assurance of trouble-free operation.

Short-throw levers
make operation
a breeze

Conveniently located. Speed-o-Matic controls make the operator’s job far less fatiguing...keep him fresh and alert throughout the shift...minimize end-of-the-shift letdown...encourage the operator to take fullest advantage of the machine's high production potential.

The fingertip-operated Speed-o-Matic control levers on the standard control stand at right are:

1. Swing control
2. Boomhoist
3. Front drum
4. Rear drum

Other controls are:
5. Boomhoist locking pawl
6. Swing lock
7. Engine master clutch
8. Front drum brake pedal
9. Rear drum brake pedal
10. Foot throttle
11. Swing brake variable pressure valve (control at operator’s upper right)
**Full-function design reveals**

**EIGHT ADJUSTABLE CONICAL HOOK ROLLERS**, two equalized pairs in front and rear, are mounted on anti-friction bearings. Rollers, mounting brackets, and equalizer beams are heat treated for long trouble free service. Conical rollers permit true circular travel without the scuffing common to cylindrical rollers. This design, combined with the matched taper of the double flanged roller path gives smoother swings with less wear even with maximum lifts.

**LINE BORING OF SIDE HOUSINGS** is performed to extremely close tolerances. The result—precision fits that greatly reduce chance for misalignment and wear. Eliminates bearing caps and bolts.

**Full-function design provides separate power trains for each machine operation. Result is more standard features... a wider choice of optional features that do not restrict any other operations**

With the HC-98A you get a big bonus in terms of less machinery wear. That's because each operation is performed through a separate power train. The other gears run free on anti-friction bearings under no appreciable load... therefore with insignificant wear.

Another bonus is the exceptionally easy access for maintenance offered by the HC-98A. If necessary, the entire upper machinery can be field stripped, piece by piece, without removing major portions of the cab.
New concept in power flow...

ExCLUSIVE DRUM SHAFT DESIGN

Since each Link-Belt Speeder operation (hoist, boomhoist, swing, etc.) utilizes a separate shaft—very short shafts can be used to minimize deflection. The drum shafts (as illustrated at left) are mounted in the side housings on anti-friction bearings. And, like all shafts in these precision-built machines, they’re involute splined.

Because clutches and brakes generate heat, they are completely separated from each other. This design results in faster, more effective dissipation of performance-cutting, wear-causing heat. Heat from brake does not reduce efficiency of clutch or vice versa.

1. Cast-iron clutch shells for better friction qualities are ribbed for faster heat dissipation. 1A (above) is optional load lowering (reversing) drum clutch assembly.
2. Brake drums are cast-iron alloy.
3. Drum shafts are mounted on anti-friction bearings.
4. Spur gears with clutch shells bolted to them, are mounted on anti-friction bearings.
5. Clutch spiders and brake drums are involute splined to shaft.
6. Scored or smooth heavy-duty laggings...split for easy removal.
7. High-strength alloy steel shafts.

More readily accessible than most servicemen would believe possible

On the infrequent occasions when an HC-98A needs detailed inspection for service, it’s unlikely it will be out of action very long. The upper machinery arrangement makes all components easy to reach—without “knuckle-busting,” without tearing down the entire upper and without need for auxiliary crane equipment.

And to simplify service, cut downtime, simplify parts stocking—all HC-98A operating clutches are interchangeable with each other. Clutch drums, linings, and other components are completely interchangeable throughout the machine. Any clutch can be removed without “pulling” any other major component.

INDEPENDENT BOOMHOIST. This standard feature provides safe, rapid, power booming up and down—both operations controlled by Speed-o-Matic power hydraulic clutches. Provides precision control for all booming operations. An automatic spring applied brake is power hydraulically released for boom lowering or raising.

In addition, a safety locking pawl—manually controlled from the operator’s position—holds boom at any fixed operating radius.
Tailor the truck crane to the job

for maximum application versatility

Nowhere is the superiority of Link-Belt Speeder design and engineering more apparent than in the wide choice of factory or field-installed optional equipment. The basic HC-98A can become a custom-tailored machine—at close to standard machine price. All operations (hoist, boomhoist, swing, etc.) are controlled by separate shafts and clutches which operate independently or simultaneously without restricting any other operation.

The features illustrated are only a few of many available. But they provide evidence of how an HC-98A can be readily equipped for more efficient work on a wide range of highly specialized applications.

Optional features include:

- Variety of engine and engine-converter power packages
- Reversing clutches for either or both main drums
- Elevated operator's cab
- Drum rotation indicator
- Third operating drum
- Hydraulic jack for one-man power raising or lowering of retractable high gantry
- Boomhoist lever kick-out device
- Two speed drums, planetary or gear driven
- Auxiliary 2-shoe rear drum brake

EXCLUSIVE TWO-SPEED PLANETARY OPERATING DRUMS provide individual drum speeds of either standard plus high or standard plus low on either or both main operating drums without affecting the speed or independency of other functions. This allows a selection of either the standard line speed or a 70% increased high speed for long boom work. By a gear change in the planetary, the same arrangement provides a selection of either the standard line speed or a 41% decreased low speed for a short boom or heavy lift work when reduced line speed is desired. Available as optional equipment for front and rear drum hoist and rear drum power load lowering.
Angle-type boom... for general use...
For long booming... the revolutionary

Less weight + double strength

PIN CONNECTIONS—are standard for both the angle-type boom and the optional “HI-LITE” boom. They permit fast, simple folding... save time when inserting or removing boom extensions. Because chords are butted together, boom stresses are not on the connecting pins. All boom section butt plates are precision machined to eliminate possible high spots... assure proper full-face mating of sections.

THREESHEAVE HEADMACHINERY for either standard angle boom or optional “HI-LITE” boom features three boom-point sheaves mounted on anti-friction bearings. No need to lower boom for daily greasing. Triple sheaves permit multiple reeving of hoist line for extra fine control in spotting loads. Jib peak sheaves also on anti-friction bearings. Four sheave head machinery available as optional equipment.

AUXILIARY 2-SHOE BRAKE
The auxiliary 2-shoe brake almost doubles the total effective braking area of the rear drum. Standard equipment with 23-ft. hoe boom and optional with 20-ft. hoe boom. It can also be installed for long boom lifting crane applications. When the auxiliary 2-shoe brake is installed, power load lowering cannot be provided on the rear drum but can be quickly converted to in the field.
Unassisted, the HC-98A raises a total of 170 feet of boom and jib from ground to sky...

Applied geometry and new steel pay off. Use of an age-old geometric figure—the tetrahedron—plus high strength, lightweight steel tubing explains how it's possible for this 35-ton rig to pick up from the ground either 120 feet of main boom plus 50 feet of jib or 150 feet of main boom alone... both unassisted... with "Hi-Lite" boom.

TETRAHEDRON IS STRONGEST OPEN BRACED GEOMETRIC FIGURE and is the only geometric figure made of just four sides. And, because the four sides are all triangular in shape, this pyramid-like structure offers the greatest resistance to stresses or loadings from all directions. Hundreds of these triangles combine to form scores of tetrahedrons throughout the length of the "Hi-Lite" boom. All work together as a brace against the combined forces of compression, torsion and tension.

CABLE SUPPORTING ROLLERS are required when a third drum cable passes over crane boom. One roller is furnished as standard for "Hi-Lite" booms, 40 feet to 100 feet long. These rollers, full width of boom and mounted anti-friction bearings, protect any long boom from the slap or wear, also give longer cable life.
HC-98A roadability with “Hi-Lite” Boom

55-Minute strip-down... without an auxiliary crane.

Ready to strip-down. A 35-ton HC-98A in full dress: 100 feet of tubular “Hi-Lite” boom, boom gantry, retractable high gantry (used for counterweight lowering), telescopic boom backstays, and front and rear outriggers with screw jacks and pontoons.

Gantry backstays are unpinned from revolving frame and two counterweight T-bolts are loosened and cleared. This enables powered counterweight lowering to the carrier through the use of the boom lowering method and the retractable high gantry (see explanation Page 15).

The counterweight remains on the carrier as a rigger reeves a cable into the extra sheave of the “Hi-Lite” boom gantry, converting it to a short lifting boom. (Boom gantry is normally used to provide a higher angle of support for the boom). Telescopic backstays are pinned to short boom.

Entire boom is quickly removed in one piece. Boom gantry lifts boom to remove boom hinge pins. Truck operator drives forward as operator lowers boom to ground. After this operation the retractable high gantry is lowered for minimum clearance.

Next, the operator swings the upper around and with boom gantry lifts and spots the counterweight on the flat bed truck. Now the complete rear outrigger assembly, including the screw jacks and beams, is also removed by the boom gantry and placed on the hauling unit.

Connecting pins are quickly tapped out of the boom while counterweight and outrigger are loaded. The boom is then loaded section by section on the flat bed truck. This completes a job in minutes that usually takes half a day or more.

Ready to go! A 35-ton HC-98A with 100 feet of “Hi-Lite” boom. Even if it had up to 170 feet of boom including jib it would take only minutes longer. And reassembly is equally fast. The speedy strip-down feature of the HC-98A lets you log more jobs, never tie up your productive forces. You cut costs, too, since HC-98A strip-down requires fewer men and no extra service-expense of an auxiliary crane.
HC-98A Zephyrcrane answers need for fast field stripping to meet highway weight restrictions

It is often necessary, especially with larger truck cranes, to strip the machine of all excess weight for legal travel over the highway.

The ease and speed with which a machine can be stripped is a most important factor since time is precious to the busy contractor handling several, widely scattered jobs. A machine that can pick-up-and-go in a hurry is not just desirable—it’s a must. Such a machine is the HC-98A.

It is pictured mounted on the standard 3-axle carrier, with all major components removed. These include the complete crane attachment, together with both front and rear outrigger boxes and beams. The one-piece counterweight is removed quickly and safely with the retractable high gantry lowering method outlined below... standard on the HC-98A.

One-piece counterweight quickly-easily removed
**STANDARD**

- Speed-o-Matic controls
- All-welded, stress-relieved upper frame
- Involute-splined heat-treated shafting throughout
- Machine-cut spur gears and pinions
- Exclusive drum shaft design
- Extended front and rear drum shafts
- Fully interchangeable clutches
- Independent boomhoist
- Boom-lowering clutch
- Swing lock
- Swing brake, spring applied, hydraulically released
- Retractable high gantry (used for counterweight lowering)
- Foot-throttle
- Eight conical hook rollers . . . two equalized pairs in both front and rear
- Rollers and roller brackets are heat-treated

**ATTACHMENTS**

- Convertibility to shovel, hoe, two types of crane boom, dragline, or clamshell
- Pin-connected angle-type crane boom
- Two-piece, box-lattice crane boom construction
- Spring-loaded rigid boom backstopping for angle boom
- Extender cables (both booms)
- Three boompoint sheaves on needle bearings (both booms)
- Full revolving fairleader for dragline
- Boomhoist lever kick-out device
- Auxiliary 2-shoe rear drum brake on 23-foot hoe boom

**OPTIONAL**

- Wide selection of gasoline or diesel engines equipped with friction clutch, hydraulic couplings or torque converter
- Coffa two-speed transmission on Waukesha 140GK
- Twist-type Throttle control mounted on swing hoist levers
- Reversing clutches for either or both main operating drums independent of other machine functions
- Independent third operating drum
- Hydraulic jack for raising or lowering retractable high gantry
- Elevated cab
- Visual drum rotation indicator
- Two speed drums, planetary or gear driven
- Catwalk
- Auxiliary 2-shoe rear drum brake

**ATTACHMENTS**

- Pin connected "HI-LITE" tubular boom with telescopic boom backstopping and one cable supporting roller
- Crane boom cable supporting rollers (both booms)
- Crane boom angle indicator
- Roller-type cable guards for boom point

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**LINK-BELT SPEEDER**

Cedar Rapids, Iowa  •  Woodstock, Ontario, Canada

Power cranes and shovels . . . diesel pile hammers . . . all hydraulic excavators

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