

AERO-MOTIVE COMPANY



A Woodhead Industries, Inc. Subsidiary

IMPORTANT SAFETY INSTRUCTIONS

Please read this manual carefully and follow its instructions. Improper use or failure to follow these instructions could result in serious injury, death or property damage. Operators should be instructed in the safe and proper use and maintenance of this product. Keep this manual for future reference.

The following safety precautions call attention to potentially dangerous conditions.



DANGER: Immediate hazards which **WILL** result in severe personal injury or death.



WARNING: Hazards or unsafe practices which **COULD** result in severe personal injury or death.



CAUTION: Hazards or unsafe practices which **MAY** result in *minor* personal injury or product or property damage.

NOTE: Instruct operators in the safe, proper use and maintenance. Keep this manual for future reference.

INSTALLATION



WARNING: Failure to read, understand or follow these instructions could lead to hazards or unsafe practices **COULD** result in severe personal injury or death.



CAUTION: Instruct operators in the safe, proper use and maintenance of this product. Hazards or unsafe practices **MAY** result in *minor* personal injury or product or property damage.

MOUNTING

Hang balancer in the desired location by the shackle provided at the top. The balancer should be suspended directly over work area using an eyebolt or similar device with a break strength exceeding 6 times the combined weight of the balancer and the load it is supporting. Balancer should be mounted in such a manner as to minimize cable contact with the cable guide. For proper alignment, utilize the three mounting holes at the top of balancer. If shackle is removed to make the connections, be sure that the nut and cotter pin are properly replaced on the shackle pin.

SECONDARY SUPPORT CHAIN



WARNING: A secondary safety cable or chain must be attached to all balancers mounted overhead to prevent balancer from falling. Immediate hazards which **WILL** result in severe personal injury or death.

A boss with a hole has been provided at the side of the housing to permit installation of a secondary support chain. All balancers mounted over head should have a secondary support chain to protect personnel in case of structure or mounting component failure. Attach one end of secondary support chain or cable to secondary support point on balancer. Attach the other end of secondary support chain or cable to a support component other than that which supports the balancer. The chain or cable should be as short as possible allowing the balancer to drop no more than 6 to 12 inches if the primary connection is released. See illustration below. Secondary chain is offered as an accessory item.

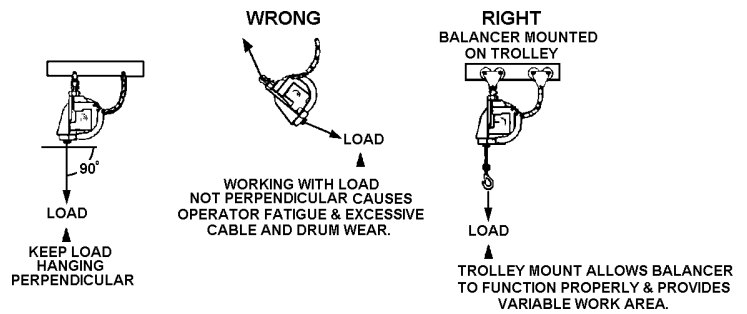
OPERATION

TOOL ATTACHMENT



WARNING: Never pull cable to device to be retracted. Always lift object to hook. If the hook is accidentally released when it is extended, it will snap back. Hazards or unsafe practices which **COULD** result in severe personal injury or death.

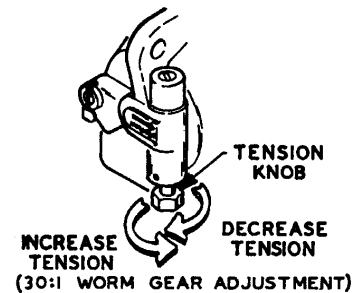
When attaching tool to lower hook, the tool should be lifted to the hook rather than pulling empty hook out against the reel tension. The drum lock can be engaged to prevent cable from retracting (see illustration under "Tool Replacement"). The retaining latch on lower hook **must** be snapped back in the closed position after tool is attached.



SPRING TENSION ADJUSTMENT

NOTE: Attach full load including all attachments before adjusting tension. Only use adjusting nut to set tension. If tension is removed well below the rated range of the balancer during spring adjustment, automatic lock will engage. It will be necessary to apply more tension to release lock.

If weight of tool exceeds amount of existing tension of the balancer mainspring, cable will descend. Spring tension can be adjusted by turning adjustment nut clockwise to increase tension or counterclockwise to decrease tension. If tension exceeds the load, the tool will move upward. The adjustment is accomplished through a worm gear. The 30:1 gear requires many turns to significantly affect tension. If cable does not reach full extension, some tension must be released. After adjusting tension, pull cable to fullest extension to insure proper travel is achieved. If proper tension cannot be achieved, consult factory.



SPOT BRAKE (EL SERIES)

NOTE: See "Automatic Lock" if Balancer locks up.

A spot brake is provided for fine adjustment to eliminate any "creeping" tendency. This adjustment is made only if desired and after adjustment, as explained in "Spring Tension Adjustment". To adjust, loosen lock nut and back up the brake adjusting screw until balancer works freely. Next, apply pressure to spot brake by moving adjustment screw in or out until desired setting is reached. Reset lock when adjustment is completed.

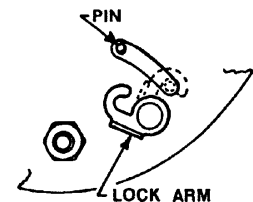
AUTOMATIC LOCK

NOTE: If tension is removed well below the rated range of the Balancer during spring adjustment, the lock will engage. It will be necessary to apply more tension to release the lock.

If a spring should break or lose tension for any reason, an automatic pin lock will engage to prevent drum from turning. Lock will disengage when tension is applied to a new spring.

RATCHET LOCK (EL SERIES)

The ratchet/holding lock (separate from automatic lock) will function in three positions per revolution, providing five to six inch increments. To hold, pull cable down to desired height, halt, and let lock engage. To disengage, simply pull cable down slightly, permitting the lock to release. Cable will retract until end of travel, or until lock is re-engaged. If ratchet lock is not required, it can be disengaged by moving the pin in the housing downward and engaging hook-shaped lock arm over it.



CABLE STOP ADJUSTMENT

NOTE: Moving cable stop will reduce the active travel distance.

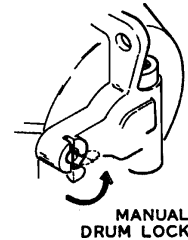
Relocating cable stop is not recommended. Rather, overhang cable assembly (see replacement parts, Accessory "A") is recommended.

SERVICE

TOOL REPLACEMENT

WARNING: NEVER release drum lock unless full load is hung on balancer. If released with no load, hook will retract rapidly, which causes hazards or unsafe practices and COULD result in severe personal injury or death.

Pull tool down to the most convenient height and set manual drum lock by lifting tab allowing pin to snap in (see illustration). This locks the drum in place. The tool can now be removed and replaced. After replacing tool, drum lock can be released by pulling outward on tab and folding it back into its original position.

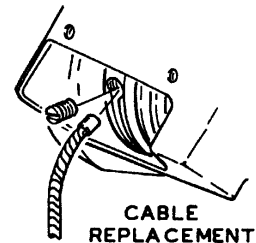


CABLE REPLACEMENT

NOTE: Whenever cable shows signs of deterioration, it should be replaced with new cable.

WARNING: Never release the drum lock unless the full load is hung on the Balancer. (If it is necessary to disassemble Balancer to change cable, always remove all spring tension prior to disassembly (see Spring Tension Adjustment). Hazards or unsafe practices COULD result in severe personal injury or death.

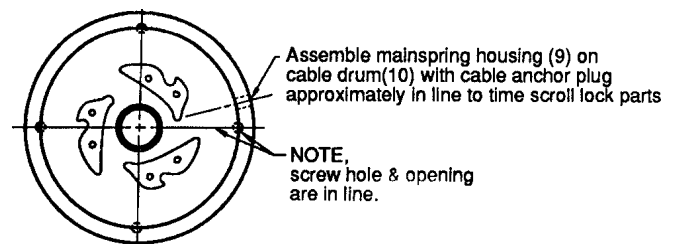
Whenever a cable shows signs of deterioration, it should be replaced with a new cable. To replace cable, there is no need to disassemble the balancer, just remove tension. Remove the bolts and cover. Pull cable to its extreme lower limit, exposing threaded plug in drum as shown in the illustration. Engage manual drum lock (as described in "Tool Replacement") and remove tool. Remove plug and old cable. Insert new cable and replace plug and cover securely. Reattach tool to lower hook and disengage drum lock.



MAIN SPRING REPLACEMENT

CAUTION: Remove all tension before servicing. Hazards or unsafe practices MAY result in *minor* personal injury or product or property damage.

Remove balancer from service, remove the bolts, and cover assembly. Now remove bolts and pull spring assembly from drum. Remove bearing from old spring housing and replace it in the new one, or replace bearing with a new bearing. Reassemble in reverse order and readjust tension as described in Spring Tension Adjustment. To align springs with spring hub, it may be necessary to rotate spring assembly back and forth slightly as spring assembly is pushed back onto shaft.



MAINTENANCE, INSPECTION & LUBRICATION

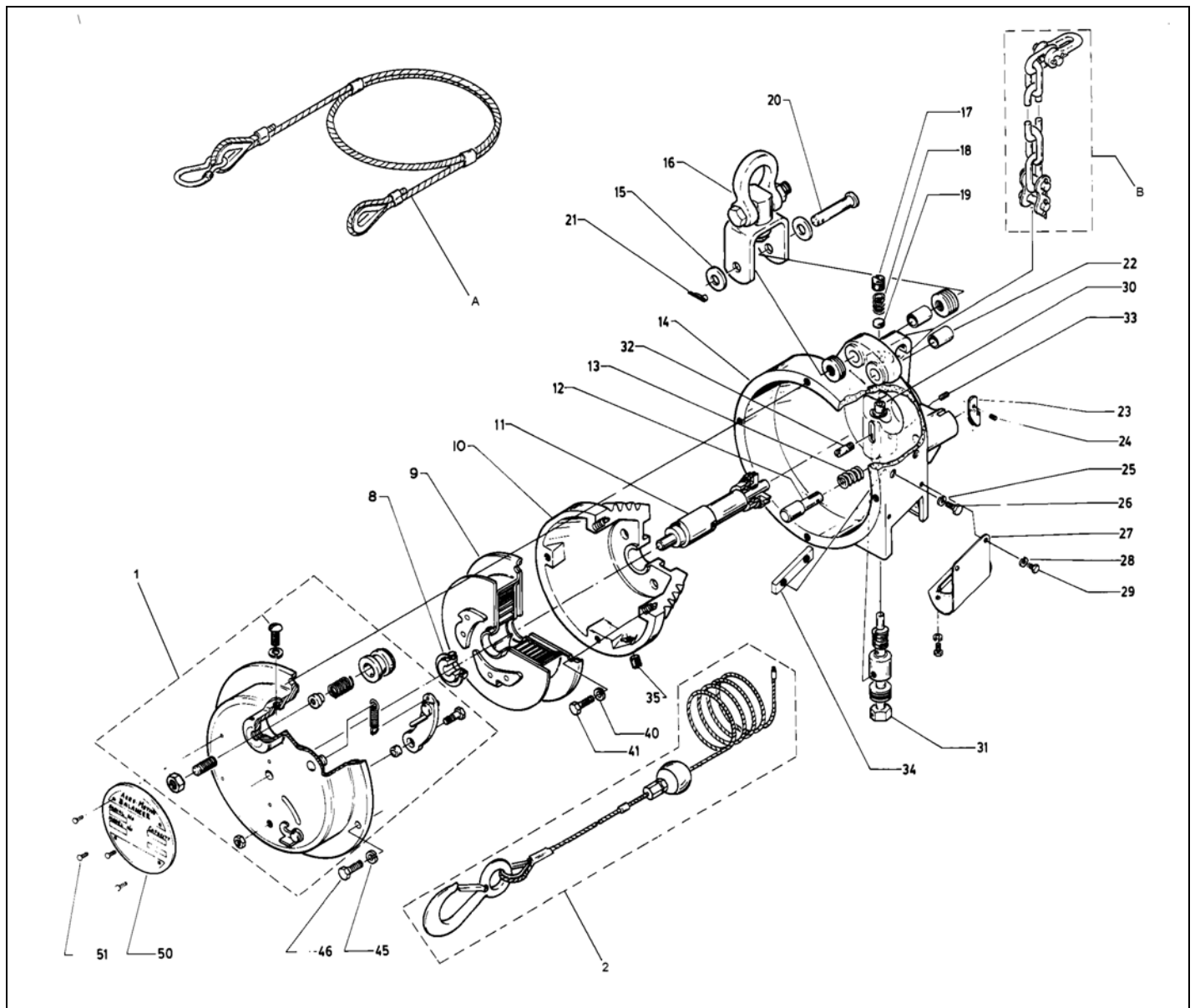
Periodic inspection of the cable and lower hook and upper swivel mount assembly is strongly recommended for safe operation. Bearings and guide rollers should also be inspected periodically to insure efficient operation. All bearings, springs, etc. are permanently lubricated at the factory and should require no further lubrication.

PARTS REPLACEMENT

CAUTION: Always remove all spring tension before attempting to disassemble internal parts. Hazards or unsafe practices MAY result in *minor* personal injury or product or property damage.

NOTE: When ordering replacement parts, always include the balancer model number and serial number.

REPLACEMENT PARTS



Reference Number	Part Number	Qty.	Description
1	M65140083	1	Cover (Assembly; Cover "E" Series)
	M65140083	1	Cover (Assembly; Cover "EA" Series)
	3205200000	1	Cover (Assembly; Cover "EL" Series)
2	3165500000	1	Assembly; Cable (E, EA, EA01 Series)
	3165500001	1	Assembly, Cable (EL, EL01 Series)
	3145600000	1	Assembly, Cable (E03, EA03 Series)
	3145600001	1	Assembly, Cable (EL03 Series)
	H13120017	1	Assembly; Cable (E04, EA04 Series)
	H13120037	1	Assembly; Cable (EL04 Series)

8	00376P0005	1	Bearing
	4191000000	1	Main Spring & Cup Assembly (25EL)
	3167200040	1	Main Spring & Cup Assembly (40EL)
9	4191200000	1	Main Spring & Cup Assembly (10E & 10EA)
	3165900020	1	Main Spring & Cup Assembly (20E & 20EA)
	3165900030	1	Main Spring & Cup Assembly (30E & 30EA)
	3165900040	1	Main Spring & Cup Assembly (40E & 40EA)
10	3160200001	1	Cable Drum
11	3165400000	1	Main Shaft Assembly
12	M27130042	1	Shaft, Manual Drum Lock
13	3164300000	1	Spring
14	3165600001	1	Assembly; Main Housing (includes 17, 18, 19 & 30)
15		9	Washer, Flat
16	4967700000	1	Shackle Assembly (xxE, xxEL, xxE02, xxEL02)
	5949900000	1	Shackle Assembly (xxE01, xxEL01, xxE03, xxEL03, xxE04, xxEL04)
20	3161300000	1	Support Pin
21		1	Cotter Pin
22	3161400000	2	Bushing (included in item 14)
23	3129400000	1	Drum Lock Lever
24	00229P0010	1	Pin
25		2	Washer
26		2	Screw
27	3161800000	1	Cable Guide
28		4	Washer, Lock
29	00030P0211	4	Screw
31	3165300000	1	Worm Shaft
32	3107000000	1	Pin
33		1	Set Screw
34	3107500000	1	Wear Plate
35	C32560710	1	Pipe Plug (1/8" NPT)
50		1	Name Plate
51		4	Screw, Drive

Accessories (sold separately)

	4960600001	Assembly; Overhang Cable, 5'
	4960600002	Assembly; Overhang Cable, 10'
	4960600003	Assembly; Overhang Cable, 15'
A	4960600004	Assembly; Overhang Cable, 20'
	4960600005	Assembly; Overhang Cable, 3'
	4960600006	Assembly; Overhang Cable, 25'
	4960600007	Assembly; Overhang Cable, 30'
	4960600008	Assembly; Overhang Cable, 35'
B	4963900000	Assembly; Secondary Chain

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