

**LA Balancer Series
210LA through 300LA
330LAS through 370LAS
9160La through 9230La
Service Manual**

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

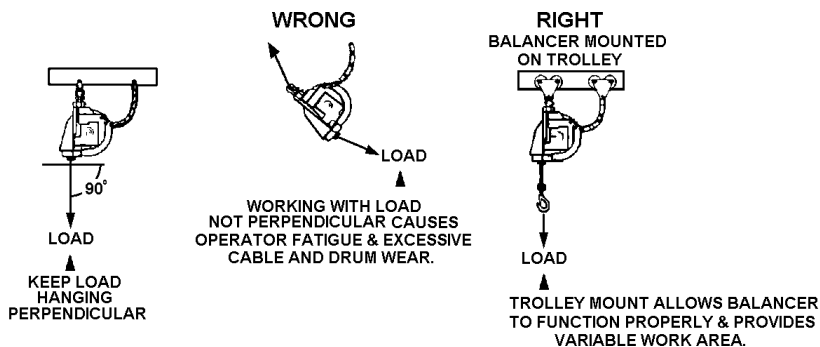
Hang balancer in the desired location by the shackle provided at the top. The balancer should be suspended directly over work area using an eyebolt or similar device with a break strength exceeding 6 times the combined weight of the balancer and the load it is supporting. Balancer should be mounted in such a manner as to minimize cable contact with the cable guide. 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



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

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 (shackle) 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 on Page 2). A secondary support is offered as an accessory item.



OPERATION

TOOL ATTACHMENT

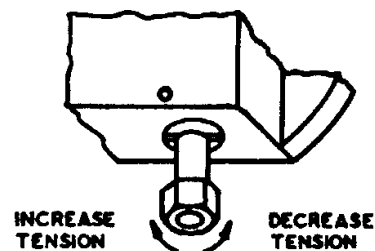
WARNING: Never pull cable to device to be retracted. Always lift object to hook. If the hook is accidentally released when it is extended, it will snap back. Hazards or unsafe practices which **COULD** result in severe personal injury or death.

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

SPRING TENSION ADJUSTMENT

CAUTION: Only use adjusting nut to set tension. Hazards or unsafe practices **MAY** result in *minor* personal injury or product or property damage.

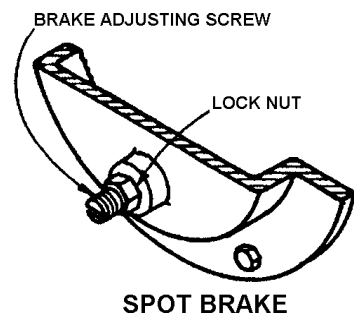
The complete tool including all attachments and connections must be in place before adjusting spring tension. If load exceeds spring tension, tool will move downward. If tension exceeds load, tool will move upward. Spring tension can be adjusted by turning the adjustment nut clockwise to increase tension or counterclockwise to decrease tension.



SPOT BRAKE

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 brake adjusting screw until the balancer works freely. Next, apply pressure to spot brake by turning adjustment screw in until desired setting is reached. Reset lock when adjustment is completed.



AUTOMATIC LOCK

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


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

CABLE STOP ADJUSTMENT

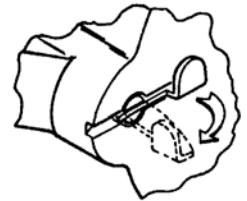
Adjusting cable stop is not recommended due to reduction in active travel distance, and difficulty. If additional cable extension is required, extension cable assemblies are offered as an accessory item. In addition, special cables are available if needed.

SERVICE

TOOL REPLACEMENT


 **WARNING:** Never release drum lock unless full load is hung on balancer. If released with no load, hook will retract rapidly. Hazards or unsafe practices **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. Tool can now be removed and replaced. After replacing tool, the drum lock can be released by pulling outward on tab and folding it back into its original position.

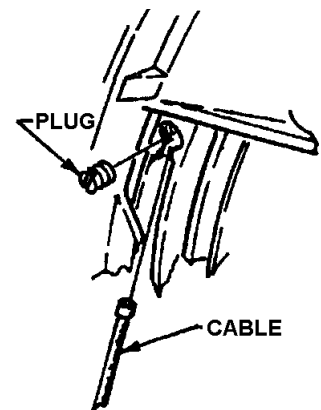


MANUAL DRUM LOCK

CABLE REPLACEMENT

 **CAUTION:** Never release drum lock unless 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 **MAY** result in *minor* personal injury or product or property damage.

Whenever cable shows signs of deterioration, it should be replaced with a new cable. To replace cable, there is no need to disassemble balancer, remove tension, and/or remove it from its location. Simply pull cable to its extreme lower limit, exposing threaded plug in the 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 securely. Reattach tool to lower hook and disengage drum lock.



CABLE REPLACEMENT

LOWER HOOK REPLACEMENT

CAUTION: After securing sleeve, tape may be placed around cable end to prevent injury on frayed strands. Hazards or unsafe practices MAY result in *minor* personal injury or product or property damage.

NOTE: Clamps are used for models xxxLA01 only. A swage-fitting sleeve should be used for all other models.

If lower hook is removed or replaced for any reason, the thimble and clamps (or sleeve) must be replaced as shown in illustration. If clamps are used, turn back $3\frac{3}{4}$ inch of rope from thimble. Apply u-bolt over dead end of wire rope - live end rests in saddle. Tighten nuts evenly, alternating from one nut to the other until reaching recommended torque (7.5 ft-lbs.). Apply second clip as near the thimble as possible. Tighten evenly, alternating until reaching recommended torque (7.5 ft-lbs.).



MAINSRING REPLACEMENT

WARNING: Never under any circumstances remove spring from its sheet metal cartridge. Replacement springs are assembled in a sealed cartridge for safety and there is no need to remove them. Removal of spring from its cartridge lead to hazards or unsafe practices which COULD result in severe personal injury or death.

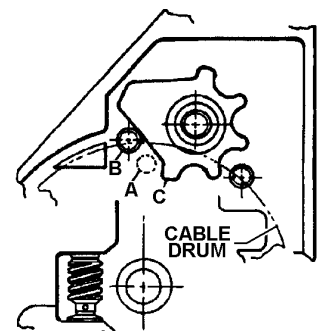
CAUTION: Before removing mainspring, remove all tension from balancer by turning tension adjustment nut counterclockwise until all tension is released (ref. Spring Tension Adjustment). Hazards or unsafe practices which MAY result in *minor* personal injury or product or property damage.

Remove the balancer from service and remove the two hanger bracket pins and the two cable guide screws. The spring cover can now be removed by loosening six bolts. Remove the four bolts that hold spring cartridge to drum. This will allow the spring cartridge assembly to be removed from the drum and pulled off over the main shaft. The entire cartridge (containing three springs) must be replaced with a new or rebuilt unit. Remove the old bearing from the spring cover and replace with new one. Reassemble in reverse order and add enough tension to retract safety lock fingers on the spring cartridge as described in Spring Tension Adjustment. Reinstall spring cover and complete tensioning.

NOTE: To align the springs with spring hubs, it may be necessary to rotate the spring assembly back and forth slightly as the spring assembly is pushed back onto the shaft.

STAR WHEEL POSITIONING

If drum has been removed during service, it is very important to Position star wheel properly when reassembling balancer. If this is not done, drum will be "out-of- time" and will either fail to return or extend The full distance of cable travels. When reassembling, with cable off the drum and when viewed from the spring side of housing, the star wheel must be positioned as shown in relation to pin (B). The pin on the cable drum (A) must be positioned as shown in relation to point (C) on star wheel.



PARTS REPLACEMENT

CAUTION: Always remove all spring tension (as described in "Spring Tension Adjustment") before attempting to disassemble internal parts. Always remove balancer from service. Hazards or unsafe practices which MAY result in *minor* personal injury or product or property damage.

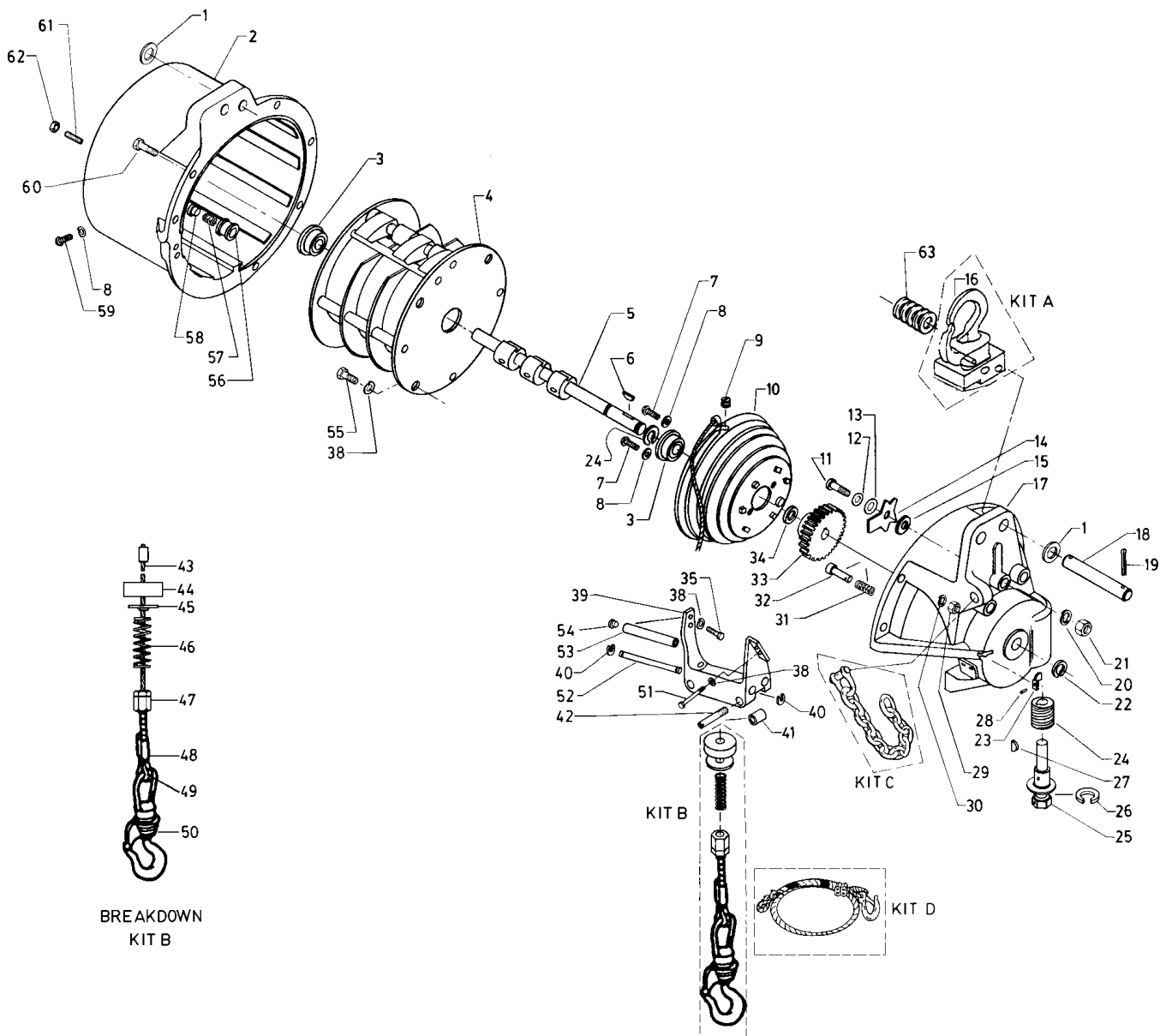
NOTE: When ordering replacement parts, always include the balancer model number and serial number.

All parts are replaceable in the field without special tools.

MAINTENANCE & INSPECTION

Periodic inspection of cable, lower hook, and upper swivel mount assembly (Kit A) 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.

REPLACEMENT PARTS



Reference Number	Part Number	Qty.	Description
1	00126P0105	4	Washer, flat (SAE 5/8)
2	5248300001	1	Cover
3 *	00376P0085	2	Ball bearing, radial (7/8 x 2 x 5/8)
4 *	3139800012	1	Spring housing assembly (9160 LA)
	3139800006	1	Spring housing assembly (9198 LA)
	3139800007	1	Spring housing assembly (9200 LA)
	3139800008	1	Spring housing assembly (210 LA)
	3139800001	1	Spring housing assembly (9210 LA)
	3139800009	1	Spring housing assembly (230 & 9230 LA)
	3139800013	1	Spring housing assembly (250 LA)
	3139800010	1	Spring housing assembly (260 LA)
	3139800011	1	Spring housing assembly (280 & 290 LA)
	3139800015	1	Spring housing assembly (300 LA)
	3139800019	1	Spring housing assembly (330 LAS)
	3139800018	1	Spring housing assembly (350 LAS)
	3139800017	1	Spring housing assembly (370 LAS)
5	3132300000	1	Shaft assembly main
6	00751P0016	1	Key, Woodruff (5/32 x 7/8)
7	00006P0104	2	Screw (#10-24 x 3/8 rd hd mach)
8	00101P0015	3	Lock washer, spring (#10)
9	00827P0010	1	Pipe plug, slotted (1/4 pipe)
10	4261700000	1	Cable drum assembly, 7-ft (210-300 LA)
	4261800000	1	Cable drum assembly, 9-ft (9210-9230 LA)
11	3107200000	1	Shaft, star wheel
12	3123400000	1	Washer, star wheel
13	3107300000	1	Spring washer, star wheel
14 *	3107100000	1	Star wheel, 7-ft (210-300 LA)
	3129100001	1	Star wheel, 9-ft (9210-9230 LA)
15	3117100000	1	Friction plate, star wheel
16	01240P0007	1	Shackle only (see Kit A)
17	3141000000	1	Housing sub assembly
18	5248600000	2	Pin, suspension
19	00228P0012	4	Cotter pin (1/8 x 1)
20	00101P0016	1	Lock washer, spring (1/2)
21	00156P0020	1	Hex JM nut (SAE 1/2-20)
22	00580P0075	2	Retaining ring (.875)
23	3129400000	1	Lever, manual drum lock
24	3130700000	1	Worm
25	4785800000	1	Worm shaft assembly
26	00583P0001	1	Retaining ring, internal (1.625)
27	00751P0017	1	Key, Woodruff (3/16 x 3/4)
28	00229P0010	1	Drive pin (1/8 x 5/16)
29	00151P0075	6	Hex nut (5/16-18)
30	00101P0014	6	Lock washer, spring (5/16)
31	3164300000	1	Spring, manual drum lock
32	3133800000	1	Shaft, manual drum lock
33	3130800000	1	Worm gear
34	3131200000	1	Spacer, main shaft
35	00030P0112	2	Screw (1/4-20 x 7/8 hex hd)
38	00101P0030	8	Lock washer, spring (1/4 x .062)
39	3134000001	1	Frame cable guide
40	00580P0010	4	Retaining ring (for .312 shaft)
41	3134600000	2	Roller, cable guide
42	3134700000	2	Pin, cable guide roller
43	H13120033	1	Cable assembly 7-ft (210-300 LA)
	H13120034	1	Cable assembly 9-ft (9210-9230 LA)
44	1102600000	1	Bumper

45	3116800000	1	Retainer
46	3128500000	1	Spring
47	3162500001	1	Stop
3162500002 – previous part number			
48	C25380625	1	Swage Fitting
49	00677P0015	1	Thimble
50	5949700000	1	Hook, Bullard
51	00030P0110	2	Screw (1/4-20 x 3/4 hex hd)
52	3125000000	2	Shaft, cable guide
53	3124800002	2	Roller, cable guide
54	3124900000	4	Bearing, cable guide
55	00030P0111	4	Screw (1/4-20 x 5/8 hex hd)
56	4260700000	1	Sleeve assembly, velocity control
57	3125800000	1	Spring, velocity control friction
58	3125900000	1	Plug, velocity control friction spring
59	00002P0418	1	Screw (#10-24 x 11/16 rd hd mach)
60	00031P0045	6	Screw (5/6-18 x 1 hex hd)
61	00053P0409	1	Set screw, slot headless (3/9-24 x 1)
00052P0025 – previous part number			
62	00156P0045	1	Hex jam nut (SAE 3/8-24 x 7/32)
63	00126P0105	6	Washer (5/8")
64	3136300000	1	Cable guide frame assembly (includes items 35-42, 51-54)

OPTIONAL KITS

Kit A	3145300000	1	Upper Bullard hook assembly complete (210-300 LA)
	6266600000	1	Upper Bullard hook assembly complete (9160-9230 LA)
Kit B *	H13120031	1	Cable assembly 7-ft travel with Bullard hook (210-300 LA)
	H13120032	1	Cable assembly 9-ft travel with Bullard hook (9160-9230 LA)
	H13120069	1	Cable assembly 5-ft travel & 2-ft overhang with Bullard hook (330-370 LAS)
Kit C	4963900000	1	Safety chain
Kit D	4960600001	1	Cable overhang – 5 ft
	4960600002	1	Cable overhang – 10 ft
	4960600003	1	Cable overhang – 15 ft
	4960600004	1	Cable overhang – 20 ft
	4960600005	1	Cable overhang – 3 ft
	4960600006	1	Cable overhang – 25 ft
	4960600007	1	Cable overhang – 30 ft
	4960600008	1	Cable overhang – 35 ft

* Recommended Spare Parts

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