



## No. 40 & No. 50 DC YOUNGSTOWN LIMIT SWITCH SIMPLEX (Type FG) AND DUPLEX (Type FFG) SERIES A

### INSTALLATION

• The #50 YOUNGSTOWN SAFETY LIMIT SWITCH for crane hoist service must be mounted in the horizontal position. The weight arm can be bolted to the operating shaft in either of two positions, 180° apart. The limit switch is normally assembled for right-hand operation. It is desirable to mount the limit switch so that the suspended weight is directly over the hook-block with one of the hoisting idler cables passing through the bakelite guide tube on the suspended weight. This tube is split and clamped with "U" straps to facilitate installation. A bracket or platform should be attached to the hook-block for the purpose of lifting the weight.

• A special 90° weight arm may be optionally supplied. If the limit switch cannot be mounted so that the suspended weight hangs directly over the hook-block, an auxiliary sheave and this 90° weight arm can be used. Since the steel cable is ½" in diameter, it is recommended that the sheave be at least 10" in diameter. The bearings in the sheave should be as free from friction as possible at all times.

• CAUTION should be taken in mounting the limit switch to keep the space clear under the heavy end of the weight arm; otherwise obstructions may interfere with the switch operation. When the switch is floor-mounted, it is recommended that an opening be cut in the floor at this point.

• FOR LEFT-HAND OPERATION, turn the weight arm 180° about the vertical line through the shaft center and change wiring connections in accordance with the wiring diagram.

• The weight hangs down a maximum of 120" for the Type FG and 135" for the Type FFG when the standard amount of cable is used. The limit switch trips when this weight is lifted approximately 9" and resets when the weight is lowered to a point approximately 6" above the normal position.

• Since no special connections are required between the limit switch and the hoist controller, no additional trolley bars are required along the crane girders.

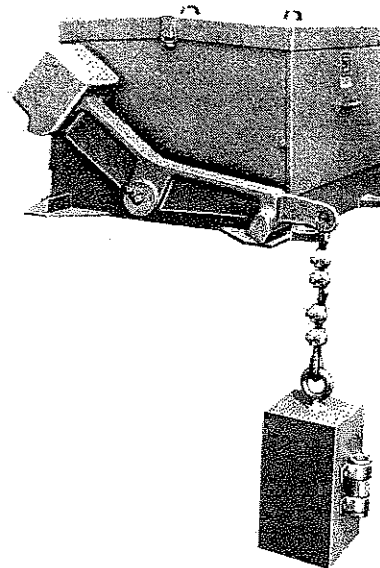
### DUPLEX OPERATION

• When two motors operate in parallel on a single hoist, a duplex limit switch is recommended in which there are two complete sets of electrical contacts operated by heavier weights and a stronger spring. Twelve leads are brought out at one end of the duplex limit switch.

### MAINTENANCE

Contacts should be checked periodically for contact wear allowance (follow-up). The contacts should be replaced when the wear allowance decreases to 1/16". An Allen wrench is supplied for removing hex socket head cap screws holding in Contact Tips. No adjustment of contacts is necessary beyond proper alignment.

Be sure the cover is always replaced after inspection.



RATING — 500 HP. (ONE MOTOR) 230 vdc

### LUBRICATION

No lubrication of bearings is required as bearings are seated cartridge ball bearings. It is recommended that the latching surfaces on both latch arms be periodically lubricated with heavy lubricating grease.

### DC OPERATION

• The #50 Youngstown Limit Switch has double-pole, double-throw contacts. When the switch is "tripped" by over-travel of the hoist, two normally closed contacts are opened to remove power from the motor and set the brake. Two normally open contacts are closed to provide a dynamic braking circuit. In order to reset the limit switch, the hook-block must be lowered by the controller until the suspended weight has traveled to the reset position.

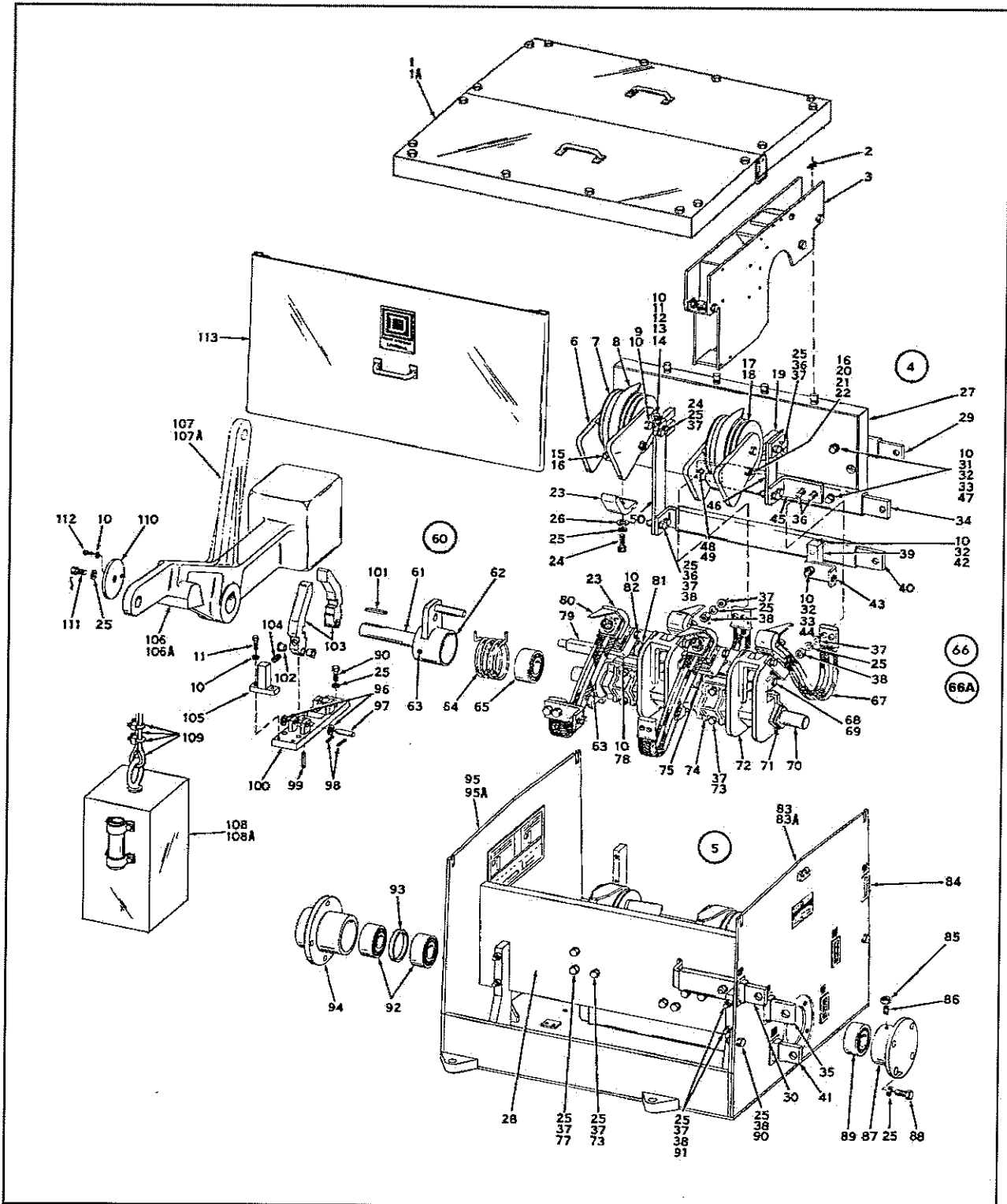
### CAUTION

• The Youngstown Limit Switch is intended primarily as emergency equipment which can be depended upon to prevent the crane operator from running the hook-block into the hoisting drum. It is not intended to take the place of the off-point on the controller. The operator should aim to stop hoisting before the final limit is reached. Repeated unnecessary operation of the switch because of carelessness in this regard will result in excessive burning and wear on the contact tips.





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ADVISE NAME PLATE MARKING WHEN ORDERING PARTS





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Item No.	Part No.	Description	Simplex No. Req'd	Duplex No. Req'd	Item No.	Part No.	Description	Simplex No. Req'd	Duplex No. Req'd
1	B51068-007-50	Top Cover	1		•33		¾"-16 Nut		
1A	B51068-084-50	Top Cover		1	34	A51068-022-50	Bus Bar, Right Hand	1	1
2	RS130	Special Cotter Pin	8	16	35	A51068-022-51	Bus Bar, Left Hand	1	1
3	A51068-046-50	Arc Chute	4	8	•36		½"-13x1¼" Hex Head Cap Screw		
4	51068-127-50	Stationary Contact Assembly, Right Hand. (Includes Items 6 thru 27, 73 and 77)	1		•37		½" Standard Washer & Nut		
4A	51068-142-50	Stationary Contact Assembly, Right Hand. (Includes Items 6 thru 26, 27A, 73 and 77)		1	•38		½" Nut		
5	51068-126-50	Stationary Contact Assembly, Left Hand. (Includes Items 6 thru 26, 28, 73 and 77) (Same as Item 4 except assembled in reverse)	1		39	A51068-014-50	Bus Bar Support	2	4
5A	51068-141-50	Stationary Contact Assembly, Left Hand. (Includes Items 6 thru 26, 28A, 73 and 77) (Same as Item 5 except assembled in reverse)		1	40	A51068-041-50	Bus Bar, Right Hand	1	1
6	A51068-039-50	Blowout Ear	8	16	41	A51068-041-51	Bus Bar, Left Hand	1	1
7	B50512-001-27	Blowout Insulating Washer	8	16	•42		¾"-16x1½" Hex Head Cap Screw		
8	A51068-038-50	Blowout Guard	4	8	43	A51068-009-01	Bus Support	2	2
•9		¾"-16x7/8" Hex Head Steel Cap Screw			•44		¾"-16x2¼" Hex Head Cap Screw		
•10		¾" Lock Washer			45	A51068-022-03	Bus Bar	2	4
•11		¾"-16x¼" Hex Head Steel Cap Screw			46	A51068-044-01	Bus Bar	2	4
•12		13/32" I.D. Standard Washer			•47		½" Jam Nut		
13	B50512-051-01	Spacer	4	8	•48		½"-13x4" Hex Head Cap Screw		
14	B50512-001-25	Insulating Washer	4	8	•49		¾"-11 Standard Nut		
•15		¼"-20x¾" Hex Socket Head Cap Screw			50	A51068-041-01	Bus Bar	2	4
•16		¼" Lock Washer			51	A51068-090-50	Bus Bar, Right Hand		1
17	B50502-776-11	Blowout Core	4	8	52	A51068-090-51	Bus Bar, Left Hand		1
18	B50512-052-16	Insulator for Blowout Core	4	8	53	A51068-041-52	Bus Bar, Right Hand		1
19	A51068-036-50	Contact Bracket Assembly	4	8	54	A51068-041-53	Bus Bar, Left Hand		1
20	B50502-103-12	Stud	4	8	55	A51068-066-01	Bus Bar		1
21	A51068-040-01	Blowout Ear Spacer	4	8	56	B50502-408-07	Spacer		2
•22		¼"-20 Hex Nut			57	A51068-091-50	Bus Bar, Right Hand		1
•23	A50005-015-01	Contact Tip	8	16	58	A51068-092-50	Bus Bar, Left Hand		1
•24		½"-13x1½" Hex Socket Head Cap Screw			59	Item Deleted			
•25		½" Lock Washer			59A	Item Deleted			
•26		1½" O.D. Standard Washer			60	A51068-027-50	Trip Assembly (Includes Items 61 thru 63)	1	1
27	C51068-034-50	Base, Right Hand	1		61	A51068-028-01	Shaft	1	1
27A	C51068-089-50	Base, Right Hand		1	62	C51068-029-01	Operating Arm	1	1
28	C51068-033-50	Base, Left Hand	1		63	24209-32780	½"x3¾" Spring Roll Pin		1
28A	C51068-088-50	Base, Left Hand		1	64	A51068-030-01	Torsion Spring	1	1
29	A51068-042-50	Bus Bar, Right Hand	1	1	•65	29013-04560	Bearing	1	1
30	A51068-043-50	Bus Bar, Left Hand	1	1	66	A51068-015-51	Contact Shaft Assembly (Includes Items 23, 63, 67 thru 82)	1	
•31		¾"-16x3¼" Hex Head Cap Screw			66A	A51068-085-51	Contact Shaft Assembly (Includes Items 23, 63, 67 thru 82)		1
•32		¾" Standard Washer			67	A51068-020-50	Connector Assembly	4	8
					68	L6056	Auxiliary Arm Pin	4	8
					69	LT3394	Set Screw	4	8
					70	A51068-017-01	Shaft	1	
					70A	A51068-017-02	Shaft		1
					71	B50512-251-24	Shaft Insulator	1	
					71A	B50512-251-25	Shaft Insulator		1
					72	C51068-018-50	Contact Arm Assembly	4	8
					•73		½"-13x2½" Hex Head Cap Screw		

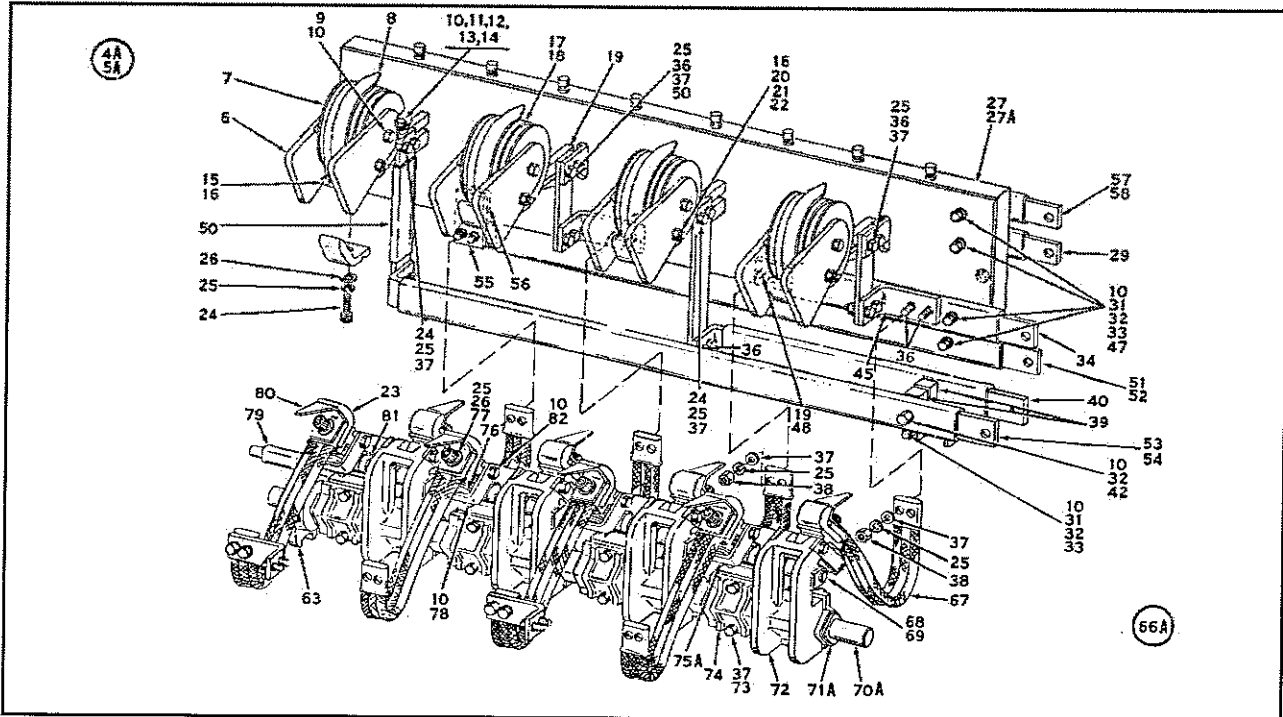
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The Electric Controller and Manufacturing Company, LLC



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74	B51068-019-01	Contact Arm Clamp	4	8	94	A51068-011-01	Front Bearing Housing	1	1
75	A51031-035-50	Contact Spring Bracket Assembly	4		95	D51068-005-50	Frame Assembly	1	
•75A	A51031-035-50	Contact Spring Bracket Assembly		8	95A	D51068-082-50	Frame Assembly		1
76	B50502-601-34	Contact Spring	4	8	96	23602-13209	Washer	4	4
•77		1/2"-13x2 1/4" Hex Socket Head Cap Screw			97	B50502-276-31	Pivot Pin	2	2
•78		3/8" Jam Nut			98	24201-06320	Cotter Pin	4	4
79	C51068-026-50	Rocker Arm Assembly	1	1	99	24209-32480	1/2"x1 1/2" Roll Pin		
80	A51068-025-01	Arc Horn	4	8	100	A51068-013-50	Base Assembly	1	1
81	B51068-021-01	Auxiliary Arm	4	8	101	B50502-407-22	Key	1	1
•82		3/8"-16x3/4" Hex Head Cap Screw			102	29005-32200	Oilite Bearing	4	4
83	B51068-010-50	Rear Panel Assembly	1		103	A51068-031-01	Latch Arm	2	2
•83A	B51068-095-50	Rear Panel Assembly		1	104	B50502-601-37	Latch Arm Spring	1	1
84	A51202-062-01	Gasket	6	12	105	A51068-045-01	Stop Plate	2	2
•85		1/4"-20 Jam Nut			106	C51068-053-50	Weight Arm Assembly	1	
•86		1/4"-20x3/4" Set Screw			106A	C51068-053-51	Weight Arm Assembly		1
87	A51068-012-01	Bearing Housing	1	1	107	D51068-059-50	Weight Arm Assembly, 90°	1	
•88		1/2"-20x1 1/4" Hex Head Cap Screw			107A	D51068-059-51	Weight Arm Assembly, 90°		1
•89	29013-04560	Bearing	1	1	108	A51068-055-50	Suspended Weight Assembly	1	
•90		1/2"-13x1/4" Hex Head Cap Screw			108A	A51068-055-51	Suspended Weight Assembly		1
•91		1/2"-13x3 1/2" Hex Head Cap Screw			109	A51068-056-50	Wire Rope & Fittings	1	1
•92	29013-04641	Bearing	2	2	110	B50502-005-21	Washer	1	1
93	B50502-053-21	Bearing Spacer	1	1	111	X-2319	Hex Head Cap Screw	1	1
					112	X-2222	Hex Head Cap Screw	1	1
					113	B51068-051	Side Cover Assembly	2	2

• Standard hardware listed without an EC&M part number, should be obtained from a local hardware supplier. ADVISE NAME PLATE MARKING WHEN ORDERING PARTS

