

WESTERN-CULLEN-HAYES, INC.
120 VOLT ELDO
ELECTRIC LOCK DERAIL OPERATOR
INSTALLATION INSTRUCTIONS

THIS MANUAL COVERS THE INSTALLATION OF:

PART NUMBER 416-00-00

ELDO FOR FAR RAIL APPLICATION

AND

PART NUMBER 420-00-00

ELDO FOR NEAR RAIL APPLICATION

A. Check to be sure that the materials received are correct for your application:

1. Eldo For Far Rail Application:

- a. Part Number 416-00-00, Far Rail Eldo Derail Operator
- b. Part Number 416-19-00, 72" Offset Connecting rod

2. Eldo For Near Rail Application

- a. Part Number 420-00-00, Near Rail Eldo Derail Operator
- b. Part Number 416-19-02, 55" Offset Connecting Rod

3. Derail:

Be sure that the derail to be operated is Hayes sliding derail of the HB series. This series includes the HB, HPB, HBX and the HBPX

4. Common components required to complete the derail station:

- a. Part Number 412-00-01, Derail position target mount with colored day targets. Colors as required
- b. Part Number 412-05-00, 96" Far Rail offset connecting rod
or
Part Number 412-08-00, 84" Near Rail offset connecting rod
- c. Part Number 1880-394-(X), aluminum switch lamp with colored lens and day targets.
1832-51, 110V-18W lamp bulb.
colors as required.
- d. Part Number 1182-26, terminal housing with 3' of 1" sealtite for connecting to the eldo unit and cable grip for the switch lamp cable.
- e. A Western-Cullen-Hayes, 50 series, eldo family control system enclosure. Consult Western-Cullen-Hayes control engineering department for system controls tailored to your application.

B. Pre Installation Check:

- 1. Make certain that the ties are in sound condition and of the proper 13'-6" length and ballast has been cleared from the connecting rod area between the ties.
- 2. If using other than a Western-Cullen-Hayes eldo family control system enclosure, make certain that a fused safety disconnect for the power service to the eldo operator has been provided.
- 3. Make certain that the terminal housing is properly installed so that only the terminal box itself is above ground, and that the conductors that have been run to the terminal housing from the control enclosure re:
 - a. For 115 VAC solenoid power and readback circuits:
#14 thhn/thwn min. runs of 0 to 500 feet.
#12 thhn/thwn min, runs of 500 to 1000 feet.
#10 thhn/thwn min. for runs of 1000 to 2000 feet.

- b. For low voltage interlock and readback circuits:
 - #10 thhn/thwn min. for runs of 0 to 500 feet.
 - # 8 thhn/thwn min. for runs fo 500 to 1000 feet.
 - # 6 thhn/thwn min. for runs of 1000 to 2000 feet.

C. Derail Installation:

The derail must be properly installed for safe operation. Please refer to the Hayes, sliding derail installation instructions included in this booklet. Also refer to Western-Cullen-Hayes derail installation, inspection and mintenance booklet included seperatly. The following points are especially important:

- 1. Measure the vertical distance from the top of the rail to the mounting tie on which the derail is secured. Be sure to include the thicknes of the tie plate in this measuremen. This distance must be in even inches and match the derail size as stamped on the derail nameplate. If the rail height is not the same as the size number of the derail, adjustment for height may be made by placing steel plates under the derail, or by adzing the mounting tie deirectly under the derail only. The limit of this adjustment should be no more than 1/2 inch in either direction.

Example:

- a. If using a size 6 derail on a rail and tie plate that measures a total of 5-1/2", the mounting tie would need to be adzed to a total of 1/2". This would lower the derail to achieve the proper height. This adjustment could also be made by installing 1/2" steel plate between the rail, or tie plate if installed, and the mounting ties. This would raise the derail to achieve the proper height.
- b. If using a size 6 derail on a rail and tie plate that measures a total of 6-1/2", a 1/2" steel plate wuld need to be installed between the bottom of the two derail mounting flanges and the surface ties to which the derail will be mounted to. This would raise the derail to achieve the proper height.

Failure to observe this fundamental requirement will result in the inability of the derail block to seal properly. This condition can result in a non-derailment or may cause damage to the derail operator during a derailment.

- 2. Be certain that the derail is secured to the mounting surface. Install a lag screw, spike or bolt in each mounting hole. 15/16" x 4" lag bolts are preferred.
- 3. Be certain that the derail box fits snugly against the web of the derail. If height installation instructions have been carefully followed, and the derail is snug against the rail, the derailing surface will cover the 3" ball of the rail and will overhang by approximately 1/2".

4. If connecting to an existing derail, be certain that the above requirements are true and that the derail is in good operating condition.

D. Eldo Installation:

Referring to typical installation drawing #DSL-1001 for near rail application or drawing #DSL-1002 for rail application:

1. Place the derail in the off rail position without any connecting rods attached.
2. Set the derail and target mount connecting rods between this ties in the approximate positions. Set clevis ends on the derail rod to the center of their travel.
3. Set the eldo unit in position.
4. Place the eldo in the off-rail position. The ram will be retracted if using a near rail configuration. The ram will be extended if using a far rail configuration.
5. Connect derail connecting rod to the eldo and the derail and install the clevis pins. Do not install the cotter pins at this time.
6. Align the eldo operator to it's final position being sure it is aligned 90 degrees to the rail and at the proper distance from the rail. Adjust clevis ends if necessary to achieve this dimension.
7. Secure the eldo operator to the tie using 4 lag screws.
8. Operate the eldo operator to the on-rail position. If necessary, adjust the clevis ends to enable the derailing surface of the derail to properly seat atop the ball of the rail as described in section C.3.
9. After all adjustments are complete, install the cotter pins in the clevis pins and spread, and tighten the jam nuts against the cleves.
10. Connect the target mount connecting rod to the derail and install washer and cotter pin.
11. With the derail in the on rail position, position the target mount so the target and/or switch lamp restrictive movement colors are displayed parallel to the track, while the thru colors are directed to the field at right angles to the track. Adjust the eye bolt in the target mount until the end of the connecting rod fits easily into it, when it is at the far end of its travel. Check final positioning and secure the target mount to the tie using 3 lag screws or spikes. Operate derail and be sure that the targets rotate to their proper position, and that the connecting rod does not bind in the eye bolt or rub against the eldo derail operator housing.

12. Refill the space between the ties with ballast up to apx. 2" below the connecting rods.
13. Lubricate the derail slide and operate the eldo station to check for proper final operation.

E. Wiring:

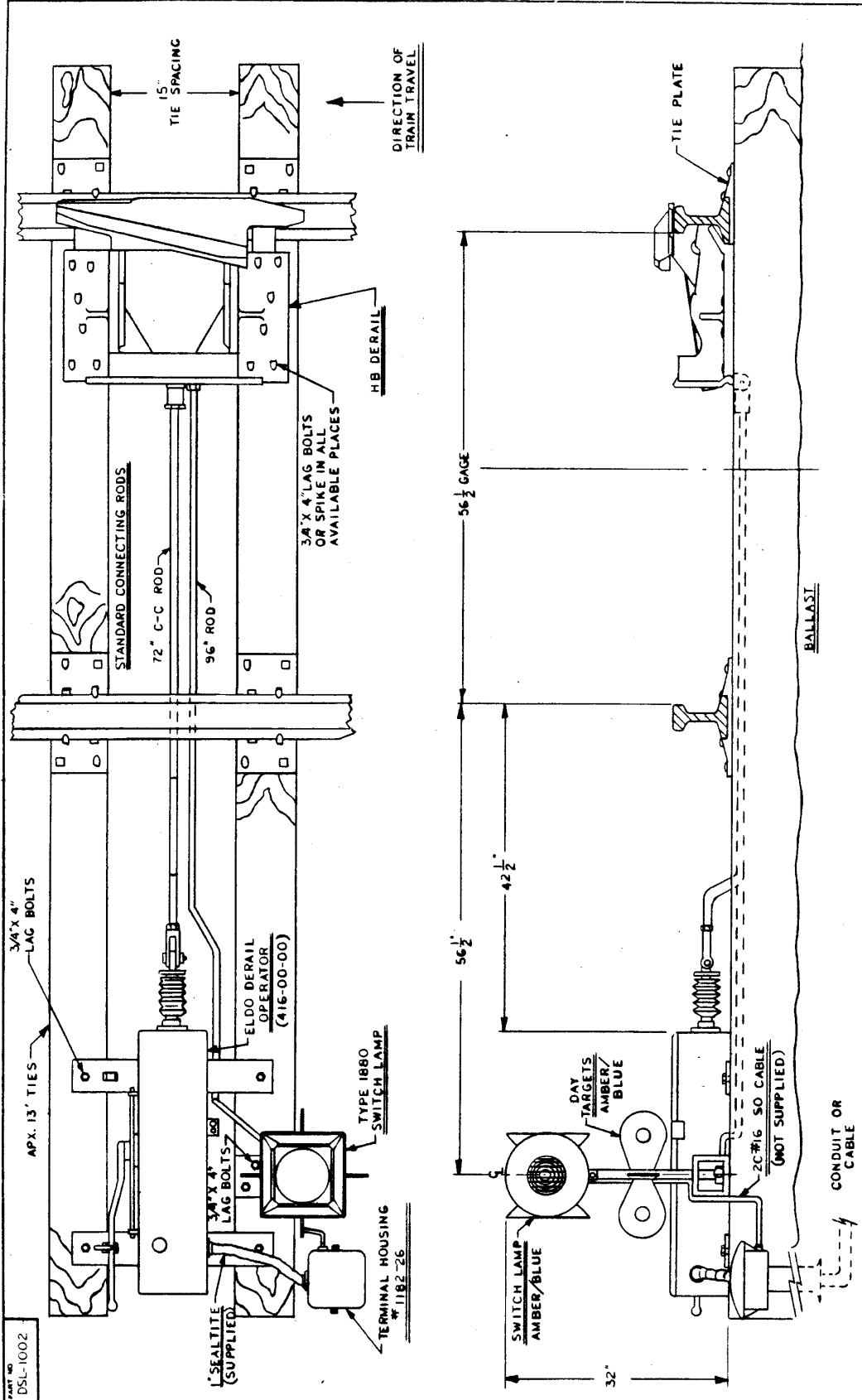
When using Western-Cullen-Hayes eldo family system control, the sequence of operation and the field wiring and innerconnect diagrams will be included on the control system enclosure diagrams.

Internal wiring for eldo #416-00-00, for far rail application, is shown on drawing #416-18-00, rev.C. internal wiring for eldo #420-00-00, for near rail application, is shown on drawing #420-18-00, rev. B. these drawings are included in this manual, and also shown typical field wiring when using W-C-H #415-10-00, basic remote operators station.

1. Run 2 conductor #14 so cable from the terminal housing to the switch lamp>
(Cable supplied by others)

Final Eldo Derail Station Check List

1. ____ Derail fits snug against the web of the rail, derailing shoes sit flat atop the ball of the rail and overhangs apx. 1/2".
2. ____ Derail is lubricated and operates freely.
3. ____ Connecting rods are parallel to the ties, cotter pins are spread and clevis lock-nuts are tightened.
4. ____ Derail, eldo and target mount are secured to the ties using all mounting holes provided.
5. ____ All wire terminations are tight at the terminal housing and eldo terminal strips.
6. ____ All wires are run and secured away from any moving parts inside of the eldo.
7. ____ All conduit connectors are properly sealed where entering the terminal housing and eldo.
8. ____ All covers are closed and securely fastened. Padlocks installed to secure eldo cover and latch if required.



RIGHT HAND INSTALLATION SHOWN

NOTE: CROPPED TIE PLATE INSTALLATION SHOWN. REFER TO ELDO STATION INSTRUCTION MANUAL AND DERAIL INSTALLATION GUIDE FOR FURTHER DETAILED INFORMATION.

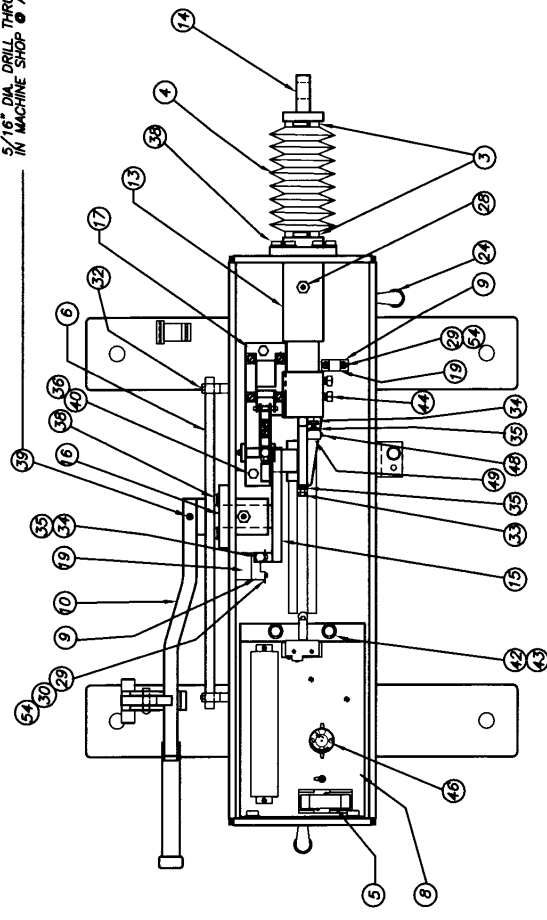
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REVISIONS		DATE		BY		REASON	
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NOTE: CROPPED TIE PLATE INSTALLATION SHOWN. REFER TO ELDO STATION INSTRUCTION MANUAL AND DERAIL INSTALLATION GUIDE FOR FURTHER DETAILED INFORMATION.

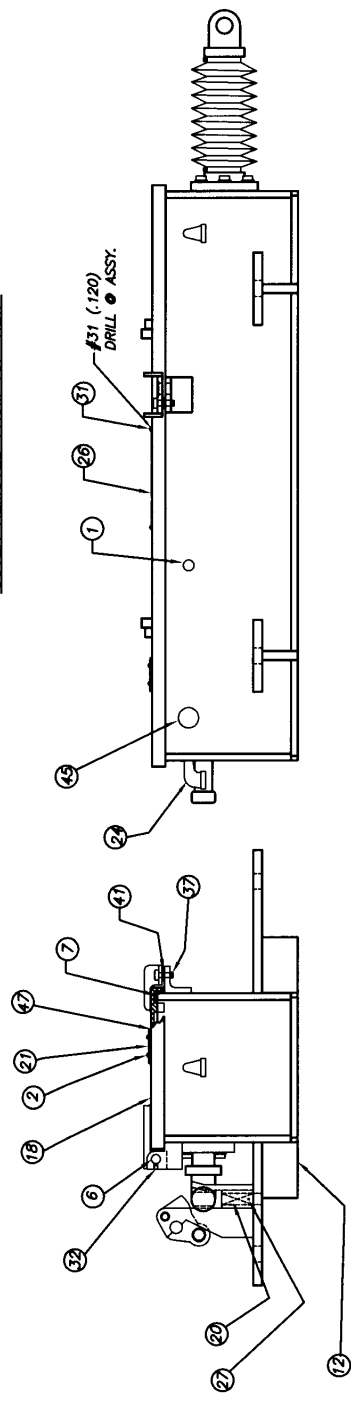
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Doc # 4005 ASSYS
C-416-00-00

5/16" DIA. DRILL THRU & PIN
IN MACHINE SHOP @ ASSY.



COVER REMOVED FROM TOP VIEW



ITEM 25 BISON GREASE TO BE
APPLIED AS NEEDED IN ASSEMBLY.

REV	DATE	BY	CHKD	DESCRIPTION
1	8-1-78	M.H.L.	M.H.L.	ISSUED FOR PRODUCTION
2	8-1-78	M.H.L.	M.H.L.	REVISION
3	8-1-78	M.H.L.	M.H.L.	REVISION
4	8-1-78	M.H.L.	M.H.L.	REVISION
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57	8-1-78	M.H.L.	M.H.L.	REVISION
58	8-1-78	M.H.L.	M.H.L.	REVISION
59	8-1-78	M.H.L.	M.H.L.	REVISION

WESTERN-CULLEN-HAYES, INC.
ELECTRIC LOCK 115 VAC
DERAIL OPERATOR

WESTERN-CULLEN-HAYES, INC.
ELECTRIC LOCK 115 VAC
DERAIL OPERATOR
NOT TO SCALE

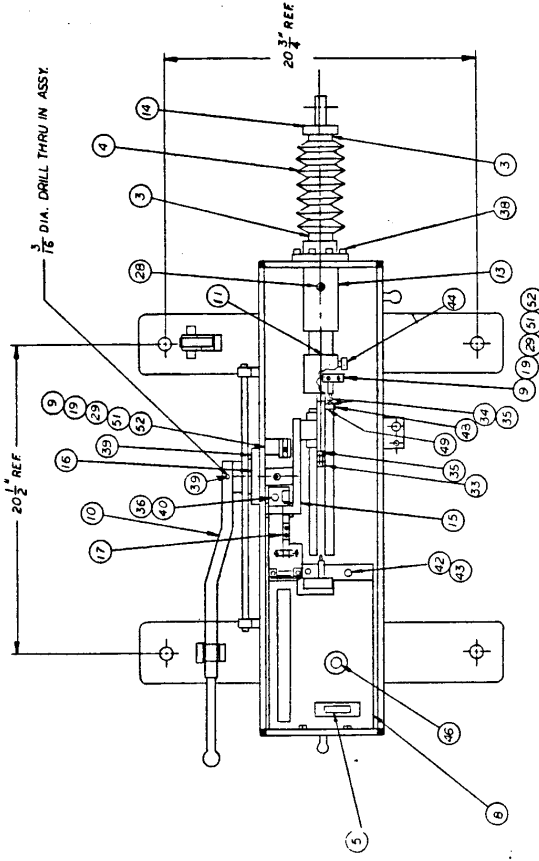
416-00-00 EILDO, 115V AC, FAR RAIL			
ITEM	PART NUMBER	DESCRIPTION	PIECES
1	38-0045-273	PIPE PLUG PLASTIC	1
2	39-0019-7	RND HD TAMPER PROOF MACH SCREW	1
3	400-03-00	HOSE CLAMP	1
4	400-04-00	PROTECTOR BOOT	1
5	400-35-07	5 AMP FUSE	1
6	400-38-00	COVER PIN	1
7	400-39-00	WEATHERSTRIP	1 IN
8	416-03-00	CHASSIS ASSEMBLY	1
9	416-03-03	MICRO SWITCH ASSY	1
10	416-04-00	HANDLE MACHINING	1
11	416-06-00	CAM	1
12	416-08-00	CASE ASSEMBLY	1
13	416-09-00	TUBE ASSEMBLY	1
14	416-10-00	SHEFT ASSEMBLY	1
15	416-11-00	CAM FOLLOWER	1
16	416-12-00	HANDLE TUBE ASSY	1
17	416-13-00	115V, NR ELDO LOCK ASSY	1
18	416-14-00	CASE COVER ASSY W/LATCH	1
19	416-15-00	MOUNTING BLOCK	2
20	416-16-00	SPRING	1
21	416-17-00	WINDOW	1
22	416-18-00	ELECTRICAL CONNECTION DIAGRAM	1
24	1143-16	VENTILATOR ASSEMBLY	2
25	3590-1650	BISON GREASE	.20 OZ
26	5612-41	NAME PLATE	1
27	WW-00-AZ-3-0037	1/16 X 3/8 LG STL ROLL PIN	1
28	MC-126-00012	GREASE FIT STRAIGHT 1/8 NPT	2
28	AA-10-AA-3-0225	6-32 X 2-1/4 RHMS	4
30	RR-00-AF-3	#6 LOCK WASHER	1
31	AS-10-AF-3-0025	#6 X 1/4 DRIVE SCREW	2
32	DD-48-DD-3-0025	10-32 X 1/4 HEX S.CUP PT. S. SCR	2
33	AA-12-EE-3-0087	1/4-20 X 7/8 LG H.H.M.S.	1
34	AA-12-EE-3-0125	1/4-20 X 1-1/4 LG H.H.C.S	2
35	JJ-12-EE-3	1/4-20 HEX NUT	3
36	AA-12-GG-3-005	5/16-18 X 1/2 H.H. MACH SCR STL	2
37	AA-12-GG-3-0062	5/16-18 X 5/8 HEX HD SCREW	1
38	CC-33-HH-3-0075	5/16-24 X 3/4 12 PT HD BOLT STL	10
39	WW-00-AK-3-02	5/16 X 2 ROLL PIN STL	1
40	RR-00-AK-3	5/16SPLIT LOCKWASHER	2
41	AT-00-AK-3	5/16 PUSHNUT	1
42	PP-00-AM-3	3/8" PLAIN STEEL WASHER	4
43	AA-12-JJ-3-005	3/8-16 X 1/2 H.H.M.S. ZINC PL	4
44	DD-38-JJ-3-0062	3/8-16 X 5/8 S.H.F.P. ST SC ZP	2
45	MC-126-00011	CARPLUG PIPE PLUG 14X PLASTIC	1
46	1832-51	S,C,B,B. LAMP 120V-10W	1
47	MC-126-00026	SILASTIC COMPOUND RTV-102	.10 OZ
48	AA-10-AA-3-01	6-32 X 1 RD, HD.M.S.	2
49	416-15-01	BLOCK	1
51	SS-00-AF-3	#6 INT TOOTH LOCKWASHER STEEL	4
52	JJ-12-AM-3	6-32 HEX NUT	8

416-03-00 CHASSIS ASSEMBLY

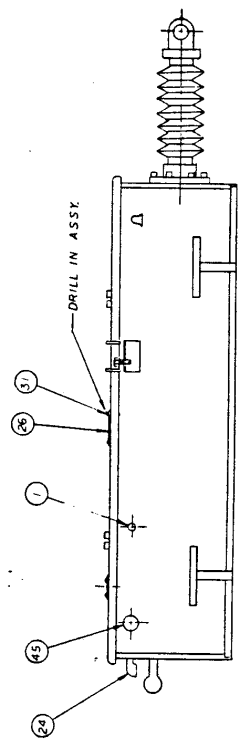
ITEM	PART NUMBER	DESCRIPTION	PIECES
1	400-26-01	TERMINAL BLOCK	1
2	400-26-02	END BLOCK	1
3	400-26-03	MOUNTING FRAME	1
4	50-0275	250 VOLT FUSE BLK SINGLE POLE	1
5	411-39-00	RETAINING CLIP	1
7	416-03-01	CHASSIS	1
8	416-03-02	JUMPER	1
9	416-03-03	MICRO SWITCH ASSY	1
9	50-0601	VINYL INSULATION RING TERMINAL	1
10	416-03-04	INSULATOR	1
12	1585-N-17	TERMINAL	1
13	5973-162	TERMINAL	1
14	5973-213	CABLE TIE	1
15	90809	SOCKET	1
16	AA-10-BG-3-0043	4-36 X 7/16 RD HD MACH SCREW	1
17	AA-10-AA-3-01	6-32 X 1 RD.HD.M.S	1
18	SS-00-AF-3	#6 INT TOOTH LOCKWASHER STEEL	1
19	AA-10-BB-3-0031	8-32 X 5/16 RD.HD. M.S	1
20	PP-00-AG-3	#8 PLAIN STEEL WASHER	1
21	AA-10-DD-3-0037	10-32 X 3/8 RD MACH SCR STL	1
22	50-0506	#14 MACHINE TOOL WIRE - YELLOW	1
23	416-18-00	ELECTRICAL CONNECTION DIAGRAM	1
24	50-0504	#14 MACHINE TOOL WIRE - BLACK	1

416-13-00 115 FR ELDO LOCK ASSY

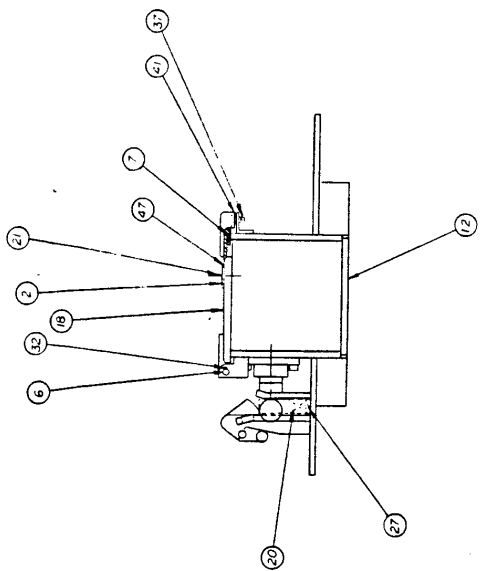
ITEM	PART NUMBER	DESCRIPTION	PIECES
1	38-0045-229	LUBRICATING OIL	1
2	38-0045-282	CAP SCREW	1
3	416-01-00	LOCKING BRACKET	1
4	416-02-00	BASE FOR ELECTRIC LOCK	1
5	41-13-01	SOLENOID	1
6	416-13-02	LINK	1
7	41-13-03	PIN	1
8	416-13-04	PIN	1
9	416-13-05	PIN	1
10	416-13-06	SPACER	1
11	416-13-07	SPRING	1
12	416-13-08	SPRING	1
13	3590-1650	BISON GREASE	1
14	VV-00-AZ-3-005	1/16 X 1/2 STL COTTER PIN	1
15	AA-10-BB-3-0031	8-32 X 5/16 RD.HD.M.S	1
16	PP-00-AG-3	#8 PLAIN STEEL WASHER	1
17	RR-00-AG-3	#8 SPLIT LOCKWASHER	1
18	AA-10-DD-3-0031	#10-32 X 5/16 RD HD MACH SCR	1
19	PP-00-AH-3	#10 PL STEEL WASHER	1
20	RR-00-AH-3	#10 SPLIT LOCKWASHER	1
21	KK-12-EE-3	1/4-20 HEX JAM NUT STL	1



SHOWN IN UNLOCKED, OFF RAIL POSITION



DET. 25, BISON GREASE TO BE APPLIED AS NEEDED IN ASSY.
 DET. 22, WIRING DIAGRAM NOT SHOWN
 DET. 23, CONNECTING ROD NOT SHOWN



ELDO DERAIL OPERATOR FOR NEAR RAIL APPLICATION

UNLESS OTHERWISE SPECIFIED		DATE	BY	APPROVED
DIMENSIONS ARE IN INCHES		2/11/56	J. J. O'NEILL	
TOLERANCE ON DIMENSIONS		DATE	BY	APPROVED
AXES 0.015 0.005 0.005				
RATES 0.005 0.005 0.005		DATE	BY	APPROVED
REVISIONS		DATE	BY	APPROVED
1	REWORK ALL SURFACES			

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
 PITTSBURGH, PENNSYLVANIA
 U.S. PATENT OFFICE
 470-00-00

420-00-00 EILDO, 115V AC, NEAR RAIL

ITEM	PART NUMBER	DESCRIPTION	PIECES
1	38-0045-273	PIPE PLUG PLASTIC	1
2	39-0019-7	RND HD TAMPER PROOF MACH SCREW	1
3	400-03-00	HOSE CLAMP	1
4	400-04-00	PROTECTOR BOOT	1
5	400-35-07	5 AMP FUSE	1
6	400-38-00	COVER PIN	1
7	400-39-00	WEATHERSTRIP	1 IN
8	420-03-00	CHASSIS ASSEMBLY	1
9	416-03-03	MICRO SWITCH ASSY	1
10	416-04-00	HANDLE MACHINING	1
11	416-06-00	CAM	1
12	420-08-00	CASE ASSEMBLY	1
13	416-09-00	TUBE ASSEMBLY	1
14	416-10-00	SHEFT ASSEMBLY	1
15	419-03-00	CAM FOLLOWER	1
16	416-12-00	HANDLE TUBE ASSY	1
17	420-13-00	115V, NR ELDO LOCK ASSY	1
18	416-14-00	CASE COVER ASSY W/LATCH	1
19	416-15-00	MOUNTING BLOCK	2
20	416-16-00	SPRING	1
21	416-17-00	WINDOW	1
22	420-18-00	ELECTRICAL CONNECTION DIAGRAM	1
24	1143-16	VENTILATOR ASSEMBLY	2
25	3590-1650	BISON GREASE	.20 OZ
26	5612-41	NAME PLATE	1

420-00-00 EILDO, 115V AC, NEAR RAIL (CONTINUED)

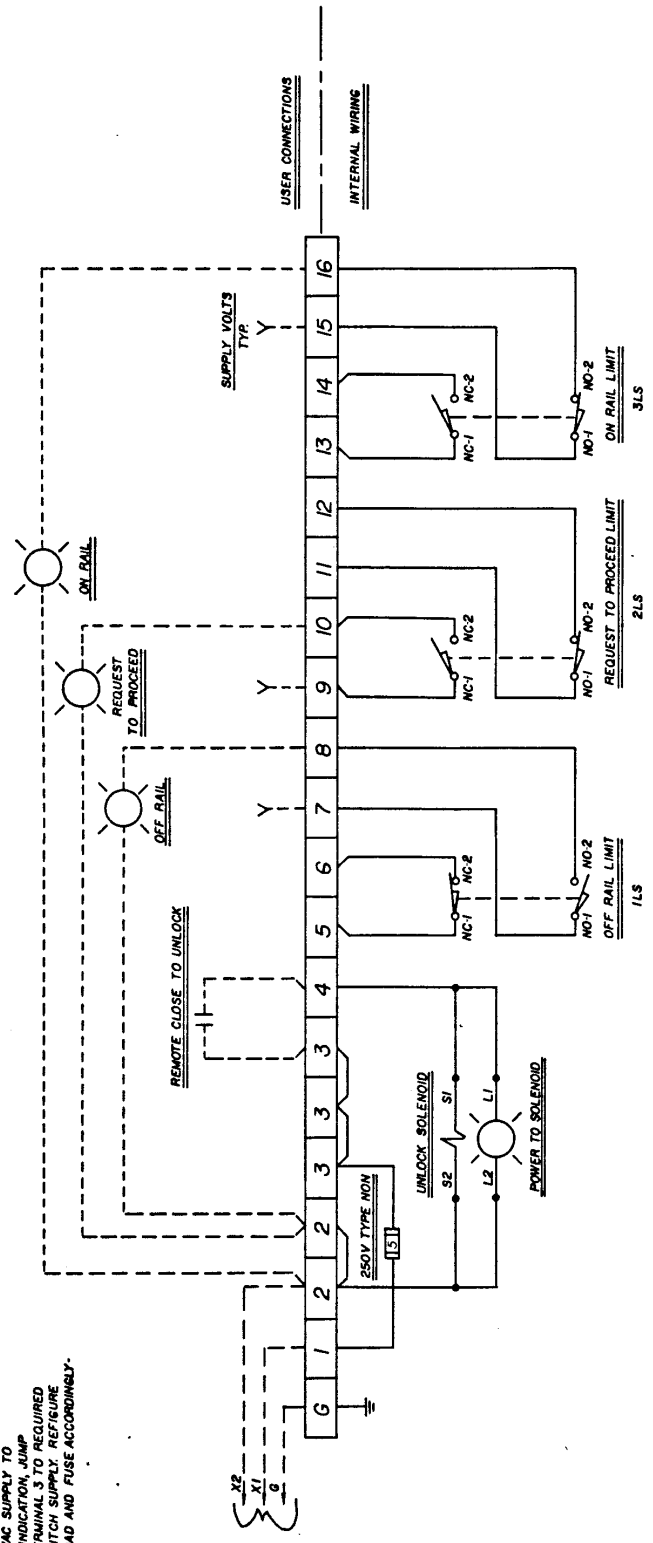
ITEM	PART NUMBER	DESCRIPTION	PIECES
27	WW-00-AZ-3-0037	1/16 X 3/8 LG STL ROLL PIN	1
28	MC-126-00012	GREASE FIT STRAIGHT 1/8 NPT	2
28	AA-10-AA-3-0225	6-32 X 2-1/4 RHMS	4
30	RR-00-AF-3	#6 LOCK WASHER	1
31	AS-10-AF-3-0025	#6 X 1/4 DRIVE SCREW	2
32	DD-48-DD-3-0025	10-32 X 1/4 HEX S.CUP PT. S. SCR	2
33	AA-12-EE-3-0087	1/4-20 X 7/8 LG H.H.M.S.	1
34	AA-12-EE-EE-3-0125	1/4-20 X 1-1/4 LG H.H.C.S	2
35	JJ-12-EE-3	1/4-20 HEX NUT	3
36	AA-12-GG-3-005	5/16-18 X 1/2 H.H. MACH SCR STL	2
37	AA-12-GG-3-0062	5/16-18 X 5/8 HEX HD SCREW	1
38	CC-33-HH-3-0075	5/16-24 X 3/4 12 PT HD BOLT STL	10
39	WW-00-AK-3-02	5/16 X 2 ROLL PIN STL	1
40	RR-00-AK-3	5/16SPLIT LOCKWASHER	2
41	AT-00-AK-3	5/16 PUSHNUT	1
42	PP-00-AM-3	3/8" PLAIN STEEL WASHER	4
43	AA-12-JJ-3-005	3/8-16 X 1/2 H.H.M.S. ZINC PL	4
44	DD-38-JJ-3-0062	3/8-16 X 5/8 S.H.F.P. ST SC ZP	2
45	MC-126-00011	CARPLUG PIPE PLUG 14X PLASTIC	1
46	1832-51	S,C.B.B. LAMP 120V-10W	1
47	MC-126-00026	SILASTIC COMPOUND RTV-102	.10 OZ
48	AA-10-AA-3-01	6-32 X 1 RD, HD.M.S.	2
49	416-15-01	BLOCK	1
51	SS-00-AF-3	#6 INT TOOTH LOCKWASHER STEEL	4
52	JJ-12-AM-3	6-32 HEX NUT	8

PART NO
416-18-00

NOTE:

FOR 115 VAC SUPPLY TO
REMOTE INDICATION, JUMP
FROM TERMINAL 3 TO REQUIRED
LIMIT SWITCH SUPPLY REFERENCE
TOTAL LOAD AND FUSE ACCORDINGLY.
ISA MAX.

115 VAC
1 PH
60 HZ



CIRCUIT SHOWN LOCKED / ON RAIL

LEGEND:
YELLOW - ALL LS WIRING
BLACK - ALL 115 VAC DEVICES
LIMIT SWITCH RATED 10A - 115 VAC

NOTE:
THIS DWG CORRESPONDS TO SERIAL NUMBERS 0072 & UP
FOR SERIAL NUMBERS 0071 & BELOW SEE REV. A

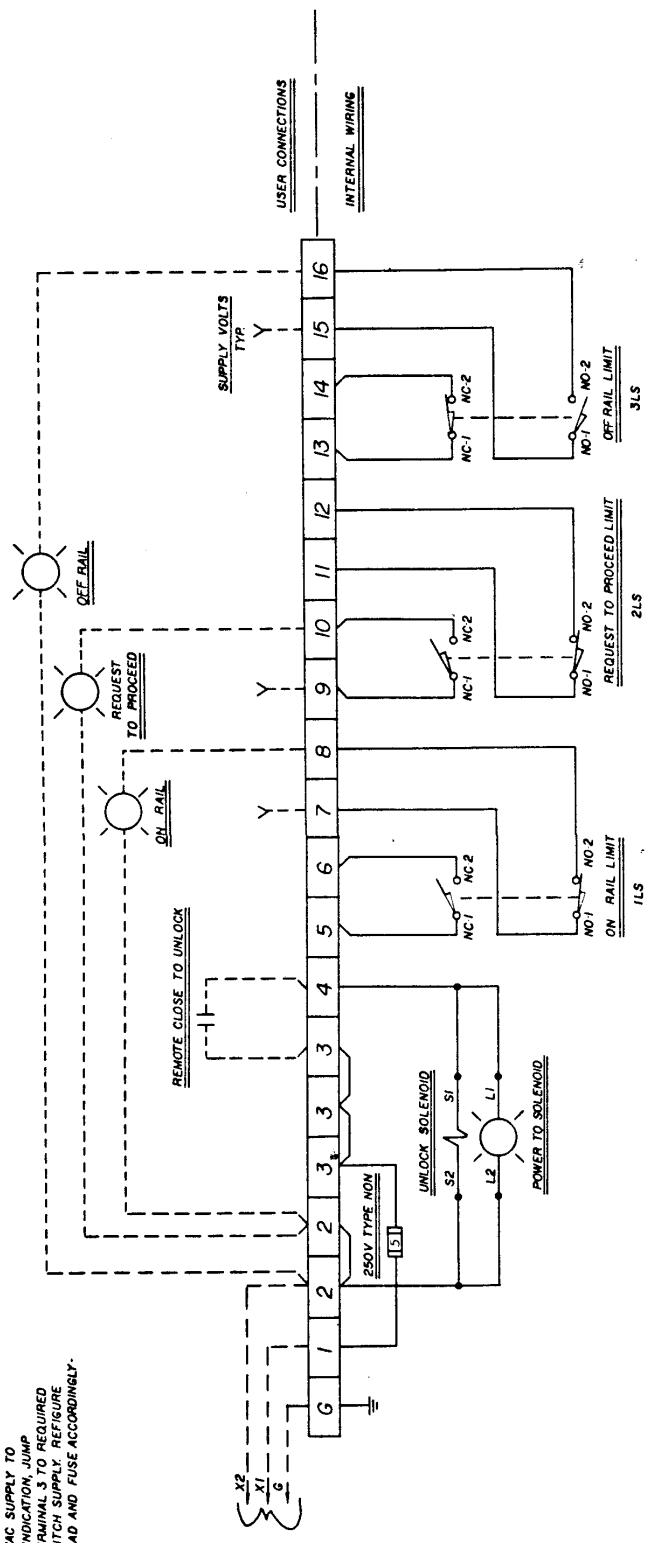
DATE	7-23-85	DRAWN	K	WESTERN-CULLEN-HAYES, INC.
CHECK		CHECK		TITLE
DATE		DATE		ELECTRICAL CONNECTION DIAGRAM
DATE		DATE		FOR ELD O RAIL OPERATOR
DATE		DATE		THIS PRINT IS THE PROPERTY OF WESTERN-CULLEN-HAYES
DATE		DATE		INC AND SHALL NOT BE REPRODUCED, COPIED OR USED
DATE		DATE		IN ANY MANNER WITHOUT WRITTEN PERMISSION TO THEIR
DATE		DATE		RESPECTIVE OWNERS.
DATE		DATE		SIZE
DATE		DATE		1/8" X 11"
DATE		DATE		REV
DATE		DATE		C 1 of 1
DATE		DATE		416-18-00
DATE		DATE		B

420-18-00

NOTE:

FOR 115 VAC SUPPLY TO
REMOTE INDICATION JUMP
PROVIDE INDICATION JUMP
FROM MAIN TO REQUIRED
LIMIT SWITCH SUPPLY. REFERENCE
TOTAL LOAD AND FUSE ACCORDINGLY.
ISA MAX.

115 VAC
1 PH
60 HZ



CIRCUIT SHOWN LOCKED / ON RAIL

LEGEND:
YELLOW - ALL LS WIRING
BLACK - ALL 115 VAC DEVICES
LIMIT SWITCH RATED 10A - 115 VAC

NOTE:
THIS DWG CORRESPONDS TO SERIAL NUMBERS 0072 & UP
FOR SERIAL NUMBERS 0071 & BELOW SEE REV A

1	UNLESS OTHERWISE SPECIFIED	DATE	5-21-66
2	DIMENSIONS ARE IN INCHES	CHECK	
3	TOLERANCE ON DECIMALS FRACTIONS	APP'D	
4	X X .010 .4 .006	DATE	
5	XXX .005 ANGLES	SCALE	
6	REMOVE ALL BURRS	SIZE	C 1 of 1 420-18-00
7	USE DATA	SHEET	REV
8	REVISIONS	DATE	
9	BY		
10	DATE		
11	BY		
12	DATE		
13	BY		
14	DATE		
15	BY		
16	DATE		
17	BY		
18	DATE		
19	BY		
20	DATE		

WESTERN-CULLEN-HAYES, INC. ELECTRICAL CONNECTION DIAGRAM FOR ELDO DERAIL OPERATOR. THIS DRAWING IS THE PROPERTY OF WESTERN-CULLEN-HAYES, INC. IT IS TO BE KEPT IN CONFIDENCE AND NOT REPRODUCED OR TRANSMITTED IN ANY MANNER OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. C 1 of 1 420-18-00