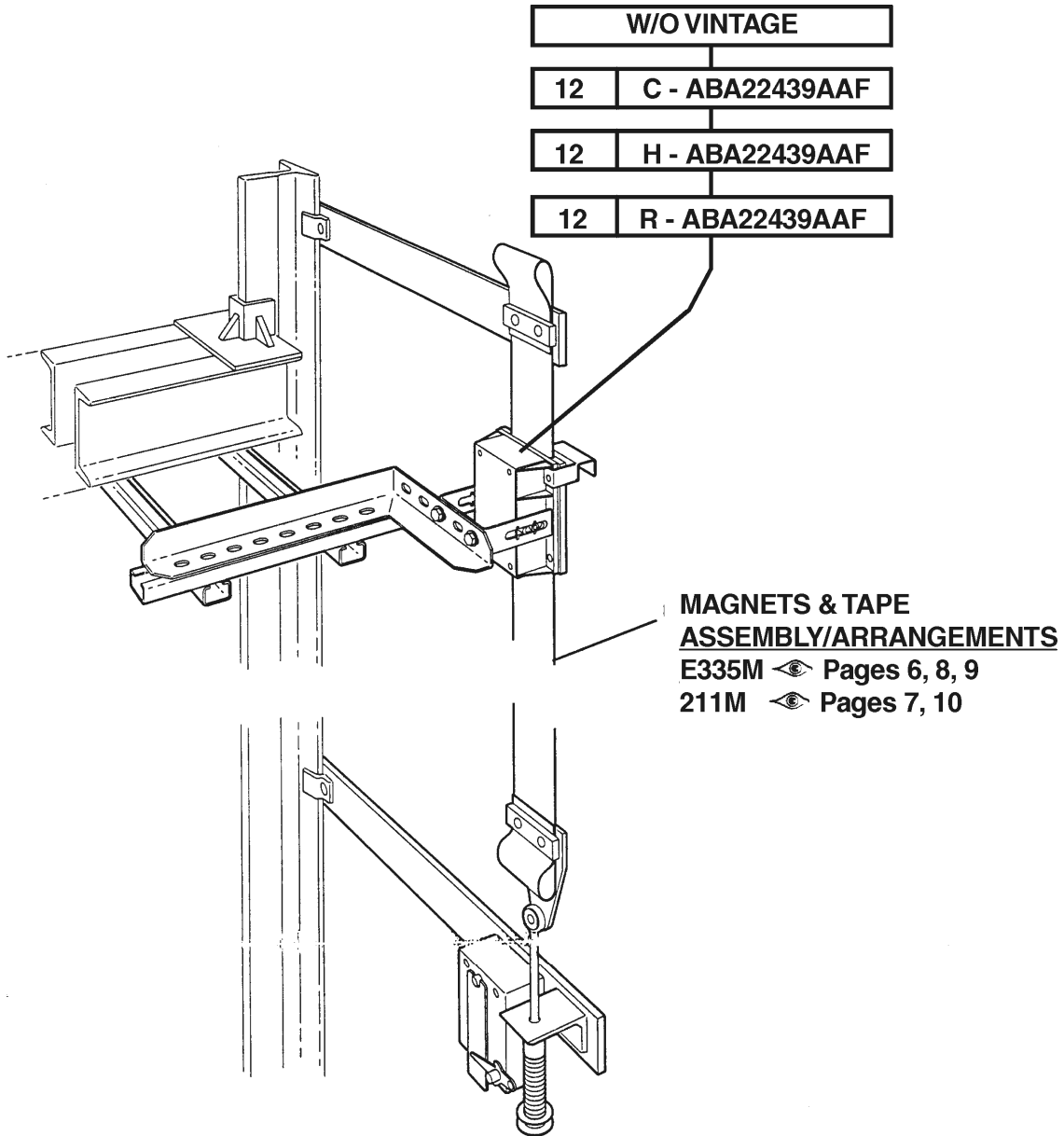


**Tape Reader Assembly  
211/211M, E335M/E335MW,  
& Electronic Valve Control**

**Spare Parts Leaflet**

**12-AAA22439AAF**

April 14, 2021 / Page 1 of 12



**OTIS**

This document does not contain any  
technical data subject to EAR or ITAR

**SERVICE ENGINEERING**  
**Otis Elevator Company**  
**Bloomfield, Connecticut USA**

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**Leaflet Description**

This leaflet provides spare parts information for the tape reader assemblies used with 211, 211M, E335M, E335MW, and electronic valve control.

**Leaflet Revisions**

<b>Date Revised</b>	<b>Subject Matter Expert</b>	<b>Reason for Revision</b>
October 1992	---	New SPL
June 1995	---	Updated information
February 1997	---	Added C-ABA22439AAF and H-ABA22439AAF vintages. Included tape readers for 211, 211M, and electronic valve control
May 1, 2000	Ali Bozorgzadeh	Updated parts for tape reader used with 211 and 211M
February 1, 2001	Ali Bozorgzadeh	Made tape reader pp. 4-6 a "reference only" callout
December 3, 2004	Ali Bozorgzadeh	Corrected guide part number on page 3
November 16, 2005	Ali Bozorgzadeh	Corrected p/n in ref. 3, p. 8
November 16, 2007	Ali Bozorgzadeh	Change occurrences of 355M to 335M
November 13, 2013	Gary Mendrala	Updated history page with SME information
April 14, 2021	Gary Mendrala	Revised Ref. 1 on p. 3

**Related Drawings**

<b>Drawing No.</b>	<b>Title</b>	<b>Drawing No.</b>	<b>Title</b>
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**Related Documents**

<b>Document ID</b>	<b>Title</b>
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**Subject Matter Expert**

<b>Name</b>	<b>Department</b>
Gary Mendrala	OSC Service Engineering

**About Spare Parts Leaflets...**

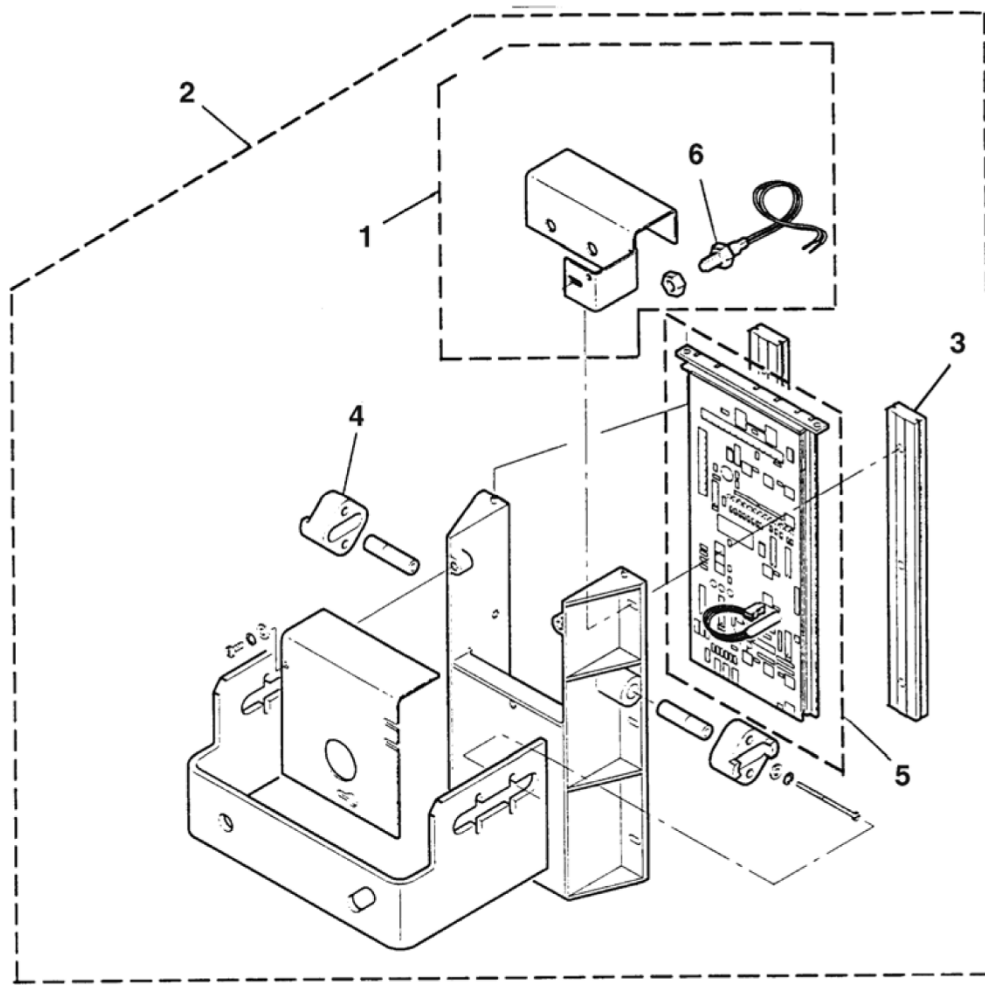
This document lists the lowest replaceable units (LRUs) for the standard version of the product. The LRUs are chosen by a team of Otis associates representing engineering and manufacturing.


While goal of this document is to make parts identification as easy as possible, the document cannot be all-inclusive. Elevator and escalator contracts classified as "special" or "custom" are not addressed here. For such contracts, please refer to specified information, the contract folder, TIPs, Field Education Articles, Construction Letters, etc. for further information.

If you have any suggestions about this document, please contact the subject matter expert listed on this page.

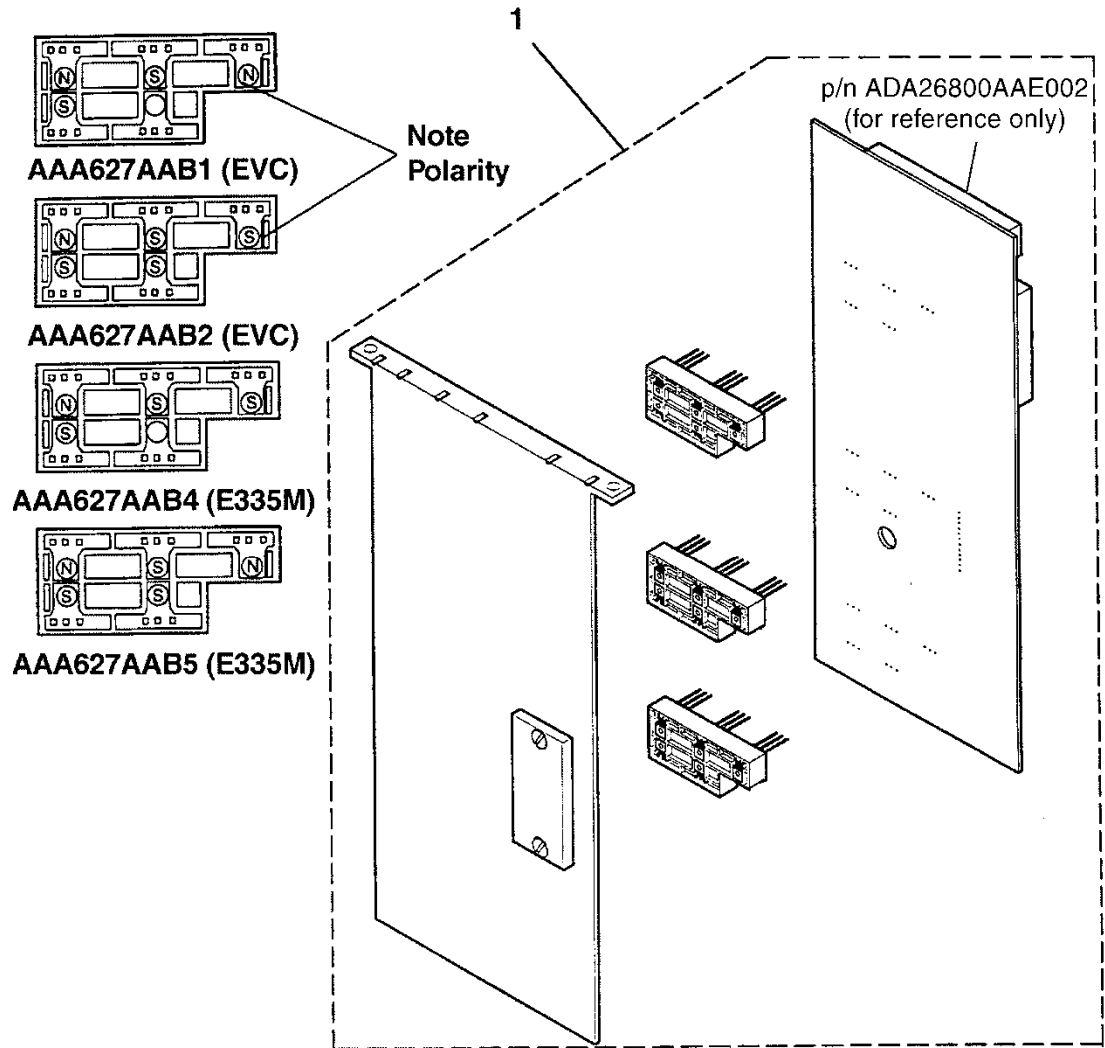
# Tape Reader Components

12-AAA22439AAF



REF. NO.	PART or ML	DESCRIPTION
1	AAA22439F2	Assembly, Selector Tape Bracket w/ 1 Sensor
	AAA22439F1	Assembly, Selector Tape Bracket w/ 2 Sensors
2	ABA22439AAF3	Assembly, Tape Reader, w/o Inspection Limit Sensor, <b>W</b> → E335M
	ABA22439AAF4	Assembly, Tape Reader, w/Inspection Limit Sensor, <b>W</b> → E335M
	ABA22439AAF7	Assembly, Tape Reader, <b>W</b> → E335MW
	ABA22439AAF8	Assembly, Tape Reader, <b>W</b> → 211M
	ABA22439AAF9	Assembly, Tape Reader, <b>W</b> → 211 (New Equipment or MOD)
3	ABA385AAC1	Guide
4	AAA385PY1	Guide
5	---	Sub-Assembly, Tape Reader, TYPE AAA22439E (  detail p. 3-5)
6	AAA608B2	Switch, Proximity

**W** → 335M & Electronic Valve Control (EVC, Restricted Part)



<b>ABA22439AAF</b>		
<b>REF. NO.</b>	<b>PART or ML</b>	<b>DESCRIPTION</b>
1	AAB22439E2	Assembly, Tape Reader, E335M  NOTE

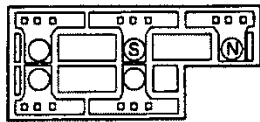
**NOTE:** Engineering recommends replacing complete assembly if individual sensor fails.

# Tape Reader for E355MW (ETO Version)

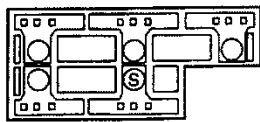
**12-AAA22439AAF**

**W** → E335MW ETO

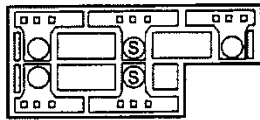
NOTE: Use as reference only.



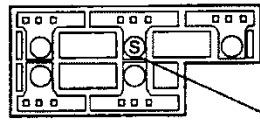
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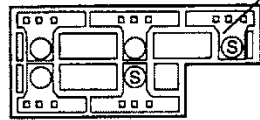
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**AAA627AAB8**

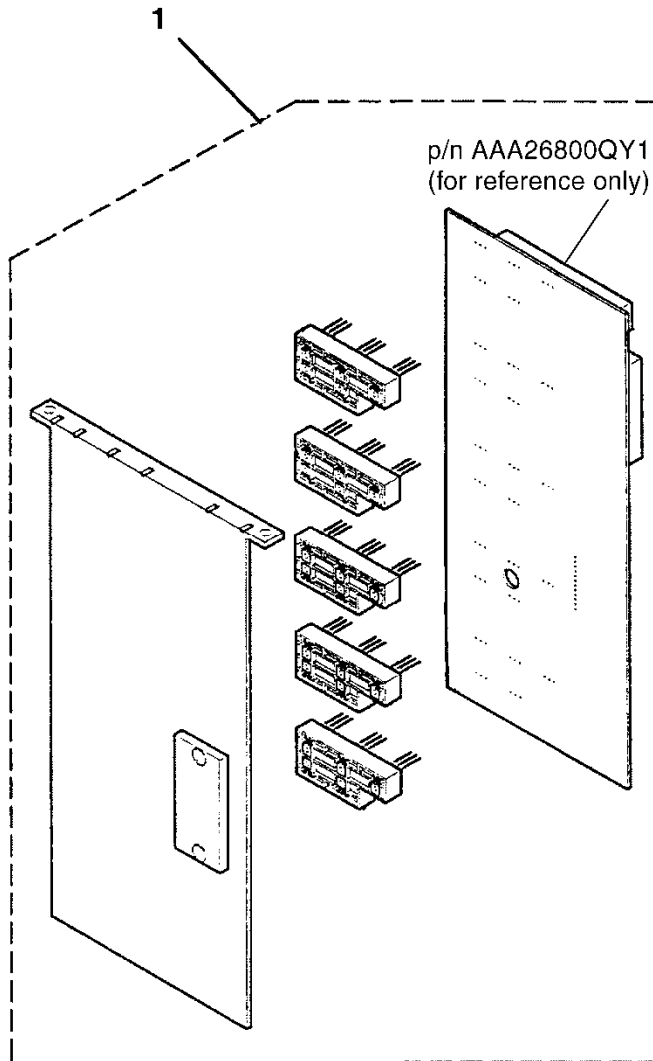


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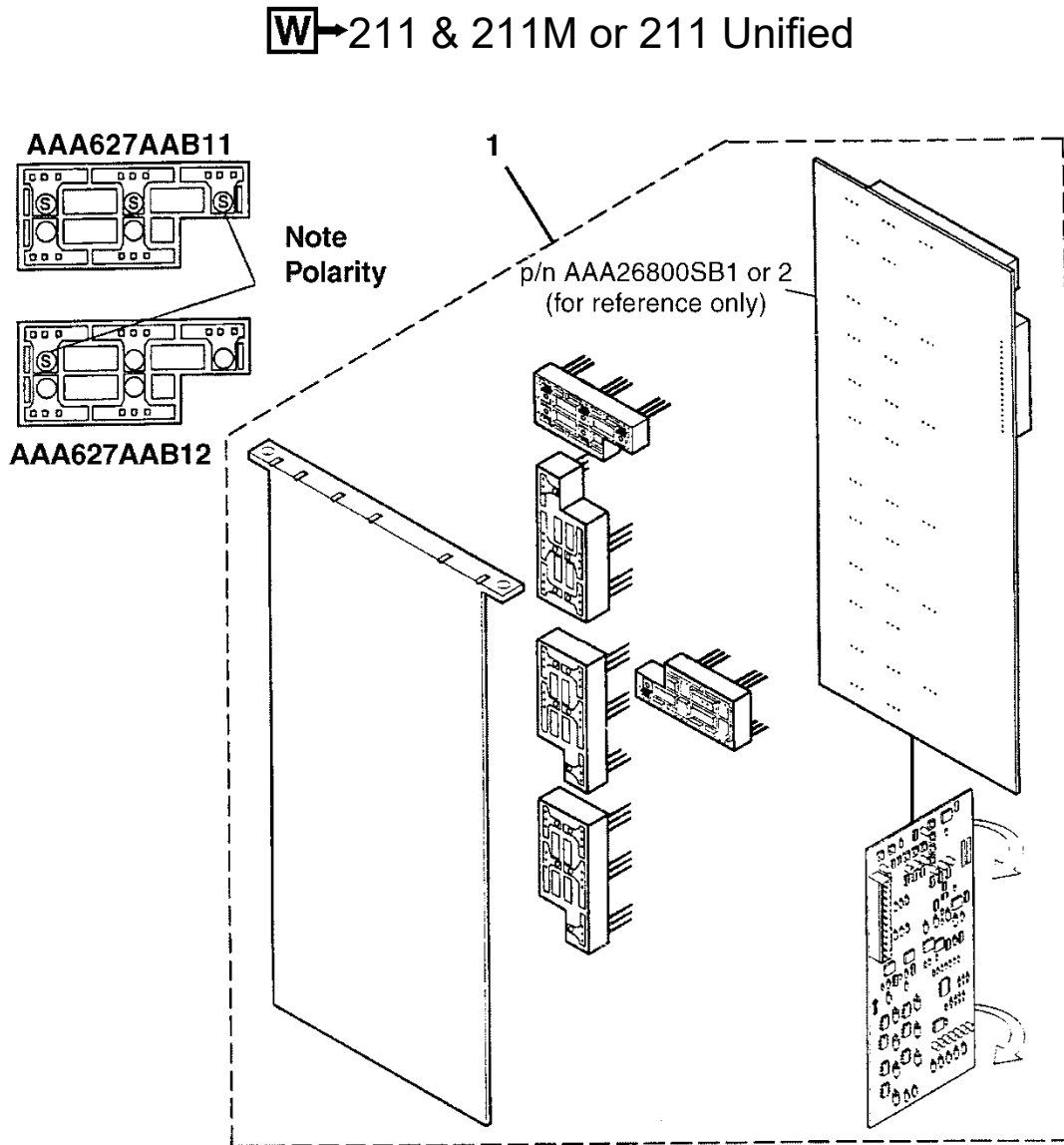
**AAA627AAB10**

Note  
Polarity



<b>REF. NO.</b>	<b>PART or ML</b>	<b>DESCRIPTION</b>
1	AAB22439E4	Assembly, Tape Reader, E335MW <span style="font-size: 1.2em;">👁</span> NOTE

**NOTE:** Engineering recommends replacing complete assembly if individual sensor fails.

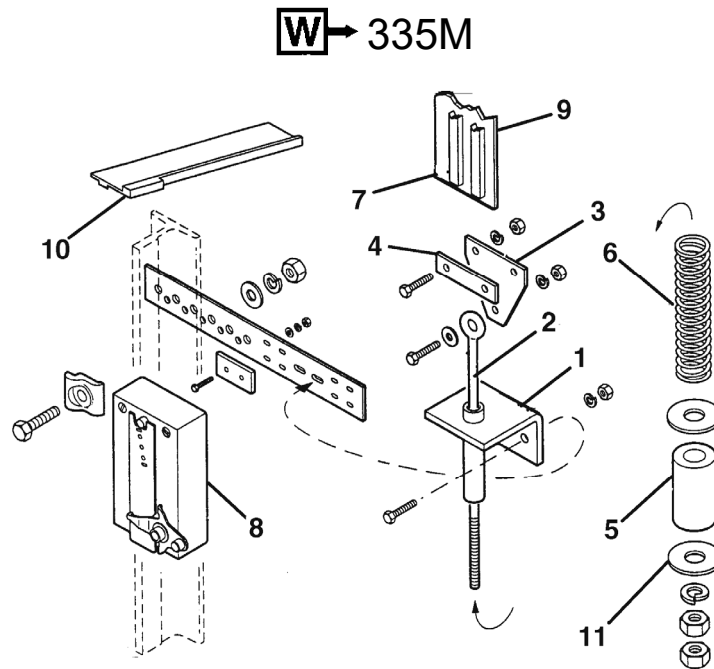


ABA22439AAF		
REF. NO.	PART or ML	DESCRIPTION
1	AAB22439E5	Assembly, Tape Reader, <b>W</b> → 211M  NOTE
	AAB22439E6	Assembly, Tape Reader, <b>W</b> → 211 or 211 Unified  NOTE

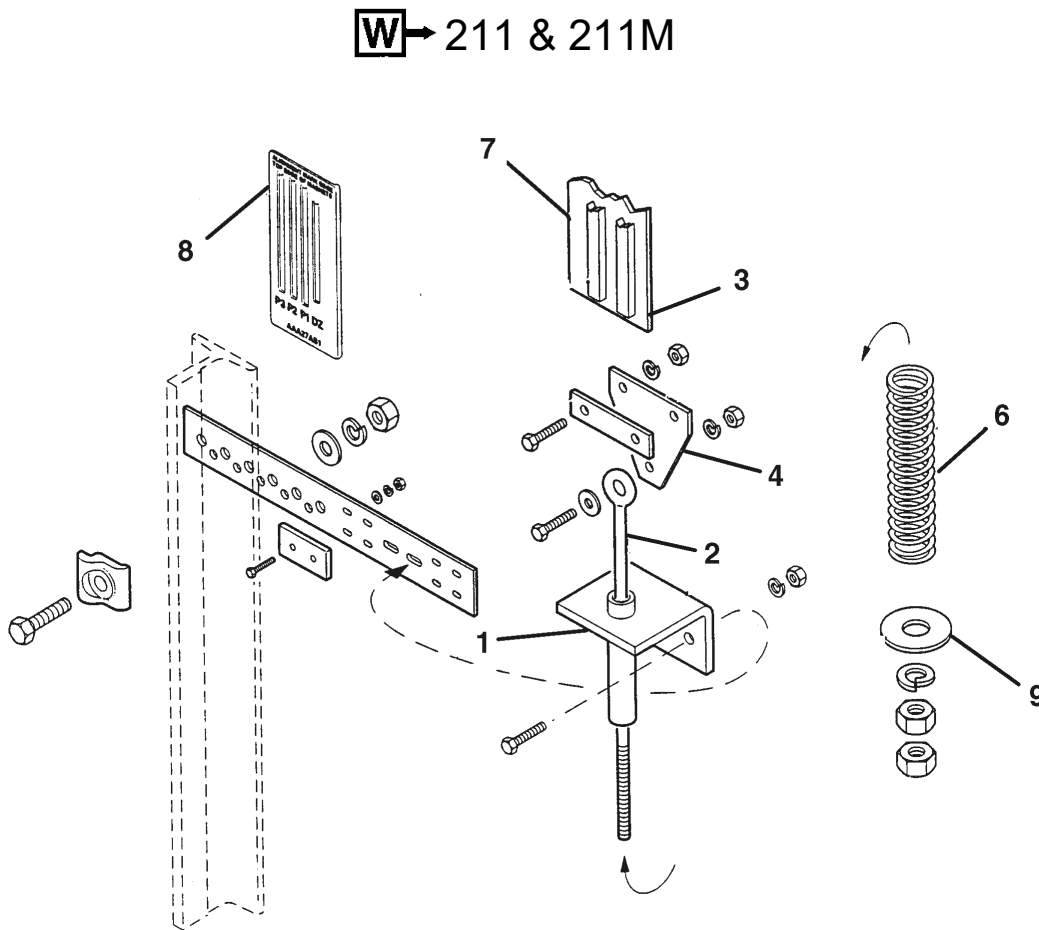
**NOTE:** Engineering recommends replacing complete assembly if individual sensor fails.

# Tape Reader for 335M

**12-AAA22439AAF**



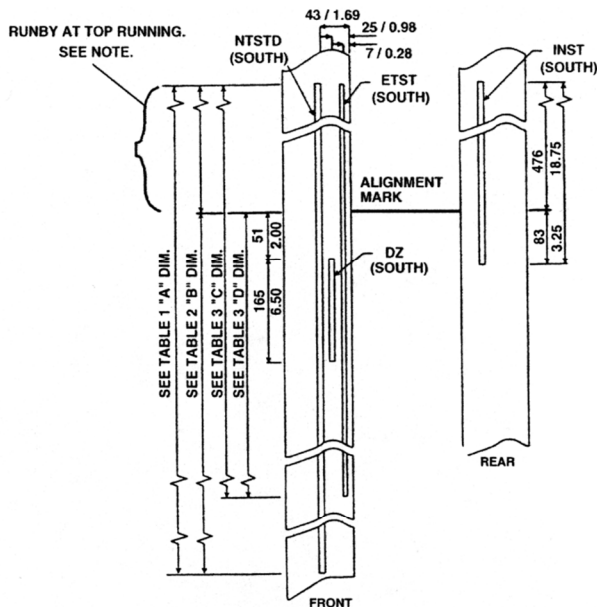
ABA22439AAF			
REF. NO.	PART or ML	DESCRIPTION	
1	AAA316FCN1	Bracket, Lower Tape	
2	AAA65FP1	Eye-Bolt	
3	AAA386CAL1	Plate	
4	AAA386CAM1	Plate	
5	AAA462HV2	Spacer	
6	90FC5	Spring	
7	CAA233A5	Strip, Magnet, North Polarity, 203.2 mm L (EF)	W →
	CAA233A3	Strip, Magnet, North Polarity, 1828.8 mm L (NTSDB/1LS)	
	CAA233A1	Strip Magnet, South Polarity, 165.1 mm L (DZ)	
	CAA233A2	Strip, Magnet, South Polarity, 762 mm L (INST, INSB)	
	CAA233A4	Strip, Magnet, South Polarity, 1828.8 mm L (ETST, ETSB)	
	CAA233A4	Strip, Magnet, South Polarity, 1828.8 mm L (NTSDT/2LS)	
8	6098D3	Switch (  detail SPL C-919G)	
9	CAA297A1	Tape, Steel, 100 mm W, L = Rise + 6500 mm	
	CAA297A2	Tape, Stainless Steel, 100 mm W, L = Rise + 6500 mm	
10	CAA27C1	Tool, Magnet Alignment	
11	127VB149	Washer, Flat	



<b>ABA22439AAF</b>		
<b>REF. NO.</b>	<b>PART or ML</b>	<b>DESCRIPTION</b>
1	272FC108	Bracket, Lower Tape
2	65GB8	Eye-bolt
3	AAA233J34	Magnet, South Polarity (ID by straight line groove), 127 mm L (w/acrylic based adhesive)
	AAA233J35	Magnet, South Polarity (ID by straight line groove), 152.4 mm L (w/acrylic based adhesive)
4	AAA386KXH1	Plate
5	AAA386KXG1	Plate
6	90FC5	Spring
7	AAA297AV2	Tape, Stainless Steel, 100 mm W, L = Rise + 6500 mm
	AAA297AV1	Tape, Steel, 100 mm W, L = Rise + 6500 mm
8	AAA27AS1	Tool, Magnet Alignment <b>W</b> → 211/211M
9	127VB149	Washer, Flat



## Top Landing



NTSDB/1LS: Normal Terminal Slowdown at Top Landing  
 ETST: Emergency Terminal Stopping at Top Landing  
 INST: Inspection Limit Travel at Top Landing  
 DZ: Door Zone at Top Landing ± 3.25"

### Normal Terminal Slowdown (Top Landing)

CAR VELOCITY		MAGNET LENGTH DIMENSION A	
FMP	mm/sec	Inches	mm
100	508	32	813
150	762	37	940
200	1016	46	1168
250	1270	55	1397
300	1524	69	1753
350	1778	82	2083
400	2032	96	2438

Example:  $V^2 = 2.5 \times 2.5 \text{ ft}^2/\text{sec}^2 = 6.25$   
 $= 2 \times a = 2 \times 4.92 \text{ ft}/\text{sec}^2 = 9.84$   
 $= 0.64 \text{ ft} = 8"$

V = Car Velocity = 150 ft/min = 2.5 ft/sec

NOTE 1: Field to extend length of both NTSDB and ETST magnets if runby dim. (30") is not long enough to keep NTSDB and ETST signal on when counterweight buffer is compressed.

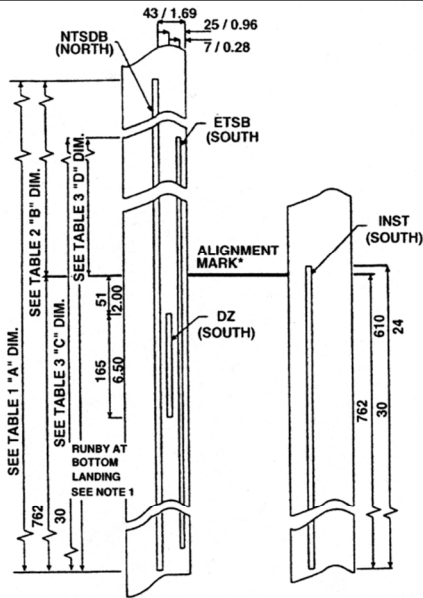
### Emergency Terminal Slowdown (ETST) Magnet Length (Top Landing)

CAR VELOCITY		DIMENSION C		DIMENSION D	
FMP	mm/sec	Inches	mm	Inches	mm
100	508	28	711	4	102
150	762	30	762	6	152
200	1016	32	813	8	203
250	1270	36	914	12	305
300	1524	42	1067	10	457
350	1778	46	1168	22	559
400	2032	52	1321	28	711

### Normal Terminal Slowdown at Top LDG (a = Deceleration Rate 1500 mm/sec<sup>2</sup> = 4.92 ft/sec<sup>2</sup>)

CAR VELOCITY		STOPPING DISTANCE		MLB SOFTWARE PARAMETER		MAGNET LENGTH FROM ALIGNMENT MARK	
FPM	mm/sec	Inches	mm	Inches	mm	Inches	mm
		$D=V^2/2A$		NTSD COMENSATION DIST.		DIM. B = D + NTSD + OFFSET 2.4	
100	508	4	86.0	1.6	41	8	203
150	762	8	193.5	2.6	66	13	330
200	1016	14	344.0	5.6	142	22	559
250	1270	21	537.6	7.6	193	31	788
300	1524	31	774.0	11.6	295	45	1143
350	1778	42	1053.7	13.6	346	58	1473
400	2032	54	1376.3	15.6	396	72	1829

# Magnet-Mounting Reader for 335M, Bottom Landing



NTSD/1LS: Normal Terminal Slowdown at Top Landing  
 ETST: Emergency Terminal Stopping at Top Landing  
 INST: Inspection Limit Travel at Top Landing  
 DZ: Door Zone at Top Landing ± 3.25"

**Normal Terminal Slowdown (Btm. Landing)**

CAR VELOCITY		MAGNET LENGTH DIMENSION A	
FMP	mm/sec	Inches	mm
100	508	27.5	670
150	762	32.5	826
200	1016	41.5	1054
250	1270	50.5	1283
300	1524	64.5	1638
350	1778	77.5	1696
400	2032	91.5	2324

Example:  $V^2 = 2.5 \times 2.5 \text{ ft}^2/\text{sec}^2 = 6.25$   
 $= 2 \times a = 2 \times 4.92 \text{ ft}/\text{sec}^2 = 9.84 = 0.64 \text{ ft} = 8"$   
**V = Car Velocity = 150 ft/min = 2.5 ft/sec**

**NOTE 1:** Field to extend length of both NTSD and ETSB magnets if runby dim. (30") is not long enough to keep NTSD and ETSB signal on when counterweight buffer is compressed.

**NOTE 2:** Start magnet 2.50" below alignment mark.

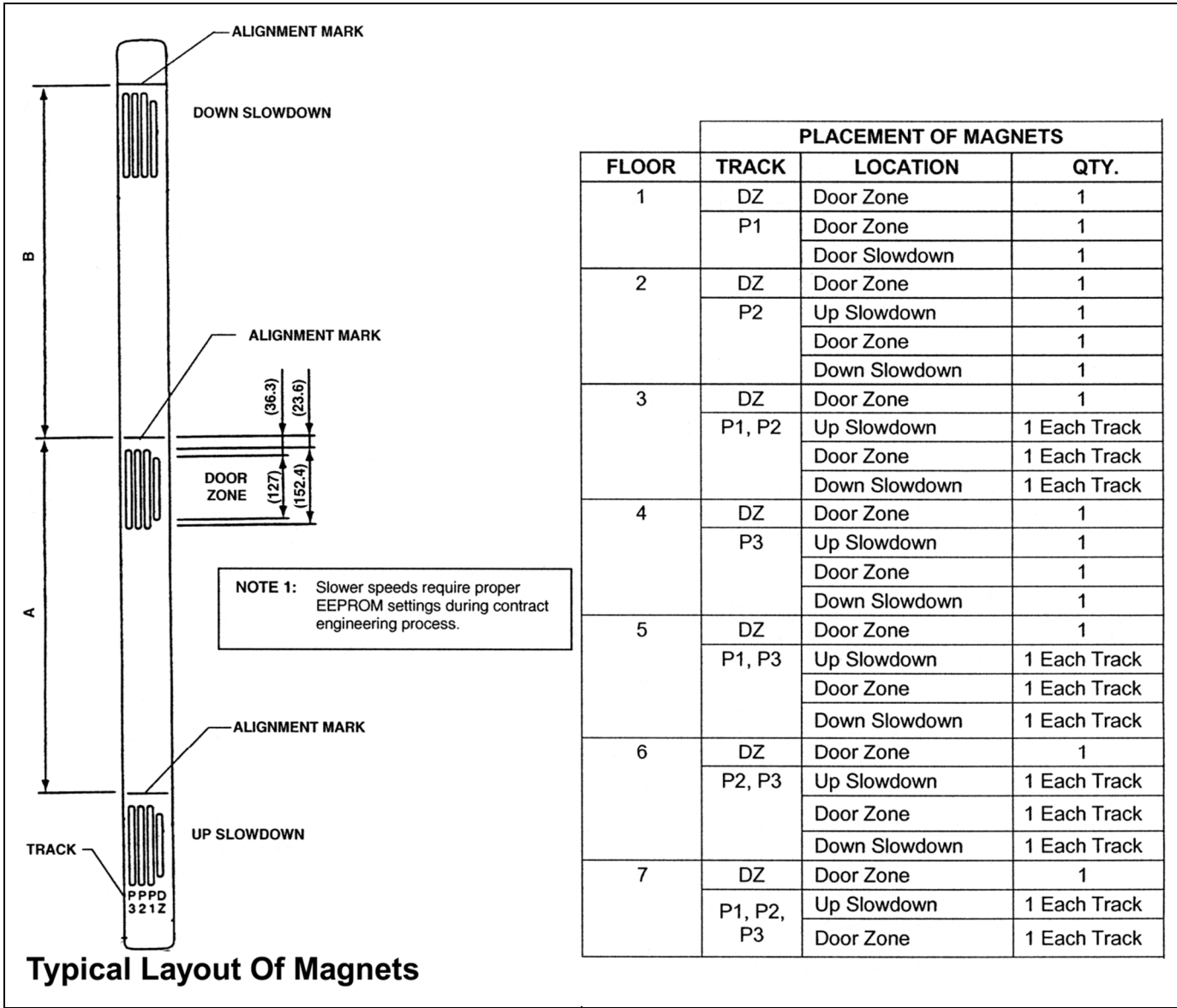
**NOTE 3:** Start magnet 0.75" below alignment mark.

CAR VELOCITY		DIMENSION C		DIMENSION D	
FMP	mm/sec	Inches	mm	Inches	mm
100	508	28.00	711	See Note 2	
150	762	30.75	781	0.75	19
200	1016	33.50	851	3.50	89
250	1270	38.50	978	85.00	216
300	1524	45.50	1156	15.50	394
350	1778	53.50	1359	23.50	597
400	2032	63.50	1613	33.50	851

**Normal Terminal Slowdown at Top LDG ( a = Deceleration Rate 1500 mm/sec<sup>2</sup> = 4.92 ft/sec<sup>2</sup>)**

CAR VELOCITY		STOPPING DISTANCE		MLB SOFTWARE PARAMETER		MAGNET LENGTH FROM ALIGNMENT MARK	
FPM	mm/sec	Inches	mm	NTSD COMENSATION DIST.		DIM. B = D +NTSD +OFFSET 2.4	
FPM	mm/sec	Inches	mm	Inches	mm	Inches	mm
100	508	4	86.0	1.6	41	See NOTE 3	
150	762	8	193.5	2.6	66	2.5	64
200	1016	14	344.0	5.6	142	11.5	292
250	1270	21	537.6	7.6	193	20.5	521
300	1524	31	774.0	11.6	295	34.5	876
350	1778	42	1053.7	13.6	346	47.5	1207
400	2032	54	1376.3	15.6	396	61.5	1562

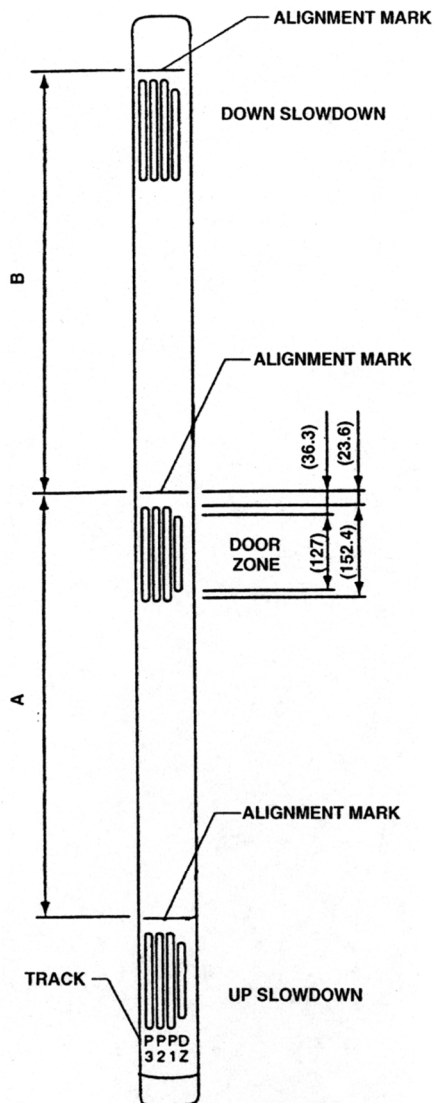
# Magnet-Mounting Reader for 211M or 211 Unified



FLOOR	PLACEMENT OF MAGNETS		
	TRACK	LOCATION	QTY.
1	DZ	Door Zone	1
	P1	Door Zone	1
		Door Slowdown	1
2	DZ	Door Zone	1
	P2	Up Slowdown	1
		Door Zone	1
3	DZ	Door Zone	1
	P1, P2	Up Slowdown	1 Each Track
		Door Zone	1 Each Track
Down Slowdown		1 Each Track	
4	DZ	Door Zone	1
	P3	Up Slowdown	1
		Door Zone	1
Down Slowdown		1	
5	DZ	Door Zone	1
	P1, P3	Up Slowdown	1 Each Track
		Door Zone	1 Each Track
Down Slowdown		1 Each Track	
6	DZ	Door Zone	1
	P2, P3	Up Slowdown	1 Each Track
		Door Zone	1 Each Track
Down Slowdown		1 Each Track	
7	DZ	Door Zone	1
	P1, P2, P3	Up Slowdown	1 Each Track
		Door Zone	1 Each Track

**Typical Layout Of Magnets**

CAR VELOCITY				MAGNET MOUNTING DISTANCES			
UP		DOWN		A		B	
mm/sec	ft/sec	mm/sec	FPM	mm	inches	mm	inches
UP TO 188	UP TO 37	+30% (MAX 762mm/sec)	+30% (MAX 150 fpm)	381 (NOTE 1)	15 (NOTE 1)	381 (NOTE 1)	15 (NOTE)
193-315	38-62	+30% (MAX 762mm/sec)	+30% (MAX 150 fpm)	381 (NOTE 1)	15 (NOTE 1)	381 (NOTE 1)	15 (NOTE)
320-442	63-84	+30% (MAX 762mm/sec)	+30% (MAX 150 fpm)	381	15	508	20
447-569	88-112	+30% (MAX 762mm/sec)	+30% (MAX 150 fpm)	508	20	660.4	26
574-696	113-137	+30% (MAX 762mm/sec)	+30% (MAX 150 fpm)	635	25	762	30
701-762	138-150	+30% (MAX 762mm/sec)	+30% (MAX 150 fpm)	762	30	762	30



**Typical Layout of Magnets**

PLACEMENT OF MAGNETS			
FLOOR	TRACK	LOCATION	QTY.
1	DZ	Floor Level	1
	P1		1
	P1	Down Slowdown	1
2	P2	Up Slowdown	1
	DZ	Floor Level	1
	P2		1
3	P1, P2	Up Slowdown	2
	DZ	Floor Level	1
	P1, P2		2
	P1, P2	Down Slowdown	2
4	P3	Up Slowdown	1
	DZ	Door Level	1
	P3		1
	P3	Down Slowdown	1
5	P1, P3	Up Slowdown	2
	DZ	Floor Level	1
	P1, P3		2
	P1, P3	Down Slowdown	2
6	P2, P3	Up Slowdown	2
	DZ	Floor Level	1
	P2, P3		2
	P2, P3	Down Slowdown	2
7	P1, P2, P3	Up Slowdown	3
	DZ	Floor Level	1
	P1, P2, P3		3

CAR VELOCITY		MAGNET MOUNTING DISTANCES				SHORT FLOOR	
FPM	mm/sec	A		B		D	
		Inches	mm	Inches	mm	Inches	mm
100	508	17	431,8	17	431,8	44	1118
125	635	22	584,2	22	584,2	55	1397
150	762	27	711,2	27	711,2	65	1651