# **TECHNICAL REPORT**

J134a

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# BRAKE SYSTEM ROAD TEST CODE—PASSENGER CAR—TRAILER COMBINATIONS—SAE J134a

#### **SAE Recommended Practice**

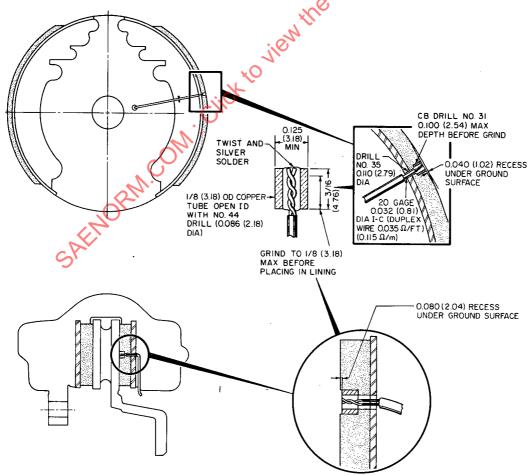
Report of Brake Committee approved December 1970 and last revised March 1973.

- 1. Introduction—This recommended practice, in conjunction with SAE J135, is intended for use by tow vehicle manufacturers to determine the maximum weight unbraked trailer which can be towed, and by trailer manufacturers to determine the adequacy of trailer brakes. This procedure assumes a tow vehicle complying with existing applicable legal requirements.
- 2. Scope—This SAE Recommended Practice is a modification of SAE J843b to establish a uniform procedure for the level road test of the brake systems of all combinations of new passenger cars and new trailers (braked or unbraked). For purposes of this test, adherence to each manufacturer's recommendations is mandatory.
- 3. Purpose—The purpose of the test code is to establish a uniform test procedure to determine capabilities with regard to:
- 3.1 Deceleration versus input, as affected by vehicle speed, brake temperature, and usage.
- <sup>1</sup> Tow vehicles should incorporate that manufacturer's trailering package. Tow vehicle manufacturer's recommendations regarding hitching should be followed. Hitches should be set up according to hitch or tow vehicle manufacturer's recommendations where applicable. Trailer brakes should be set up according to recommendations of the brake system supplier. Trailer loading should be in accordance with trailer manufacturer's recommendations except as modified in this procedure. Tires should be inflated to vehicle manufacturer's recommendations.

- 3.2 Brake system integrity.
- 3.3 Stopping ability during:
- 3.3.1 Emergency conditions.
- 3.3.2 Inoperative power assist conditions.

#### 4. Instrumentation

- 4.1 Passenger car line pressure or pedal force gage.
- 4.2 Decelerometer (U-tube or equivalent).
- 4.3 Direct reading temperature instrument.
- 4.4 Speedometer (calibrated) or fifth wheel Pousometer.
- 4.5 Tire pressure gage.
- 4.6 Odometer (calibrated).
- 4.7 Thermometer-ambient (or ambient sensitive thermocouple).
- 4.8 Stopmeter (fifth wheel, distance only).
- 4.9 Voltmeter and ammeter (where applicable).
- 4.10 Optional instrumentation:
- 4.10.1 Pedal travel gage.
- 4.10.2 Solenoid stop counter.
- 4.10.3 Stop watch.
- 4.10.4 Trailer line pressure gage (where applicable).



DIMENSIONS ARE IN (mm)

TRAILER

TRAILER MAKE

NUMBER OF AXLES\_

TIRE MFG. AND TYPE

#### 5. Installation Details

5.1 Friction Material Preparation-Attach and finish friction material per vehicle manufacturer's specifications.

5.2 Thermocouples-Install plug type thermocouples in each pas-

senger car and trailer brake per Fig. 1.

- 5.3 Brake Drum (or Rotor) and Hub Assembly-New drums (or rotors) are recommended for each test. Surface finish and dimensional characteristics, with special emphasis on runout of rubbing surface, shall be in accordance with manufacturer's specifications.
- 5.4 Brake Assembly-Brakes shall be prepared in accordance with manufacturer's specifications with special attention to required load characteristics on all brake springs. New linings are recommended on all brakes for each test. Adjust brakes to manufacturer's specifications.
- 5.5 Towing Vehicle Test Weight-Vehicle manufacturer's recommended axle test loading<sup>2</sup> shall be maintained throughout the full test
- 5.6 Towed Vehicle Test Weight-Vehicle manufacturer's gross trailer weight shall be maintained throughout the full test procedure.

### 6. Test Procedure

#### 6.1 Test Notes

- 6.1.1 Effectiveness, stopping distance, fade, and recovery test stops shall be conducted on a substantially level (not to exceed a  $\pm$  1% grade), dry, smooth, hard-surfaced roadway of Portland cement concrete (or other surface with equivalent coefficient of surface friction) that is free from loose materials.
- 6.1.2 During all phases of this procedure, any unusual performance such as wrap-up or noise characteristics are to be noted and recorded. Also note, at the appropriate stops, which wheel or wheels of the passenger car or trailer skidded. Note any uncontrollable braking action causing either of the vehicles to pull or swerve out of a 12 ft (3.7 km) wide roadway lane.
- 6.1.3 "Initial brake temperature" is defined as 0.2 mile (0.3 km) before stop (average temperature of brakes on hottest axle), brakes off.

6.1.4 If the brakes require warming to the prescribed temperature, use the burnish procedure and shorten the interval if necessary.

- 6.1.5 Because variations in ambient temperature have a significant effect on test results, fade and recovery tests must be conducted within a range of ambient temperature of 40-90 °F (4.4-32.2 °C).
- 6.1.6 Decelerations used in the various fade, recovery, or warmup procedures refer to values at which the decelerometer is held approximately constant during the stop by varying the input pressure.
- 6.1.7 Deceleration and line pressure (pedal force) readings shall not be taken below 5 mph (8 km/h).
- 6.2 Preburnish Check-In order to allow for a general check of the instrumentation, brakes, and vehicle function, the following stops are to be run: 10 stops 30-0 mph (48-0 km/h), 10 ft/s<sup>2</sup> (3 m/s<sup>2</sup>), 1 mile (1.6 km) interval, 40 mph (64 km/h) cooling speed in normal driving gear. Record line pressure or pedal force.

Note: Assuming instrumentation, brakes, and vehicle are functioning satisfactorily, proceed immediately with First Effectiveness Test.

6.3 First (Preburnish) Effectiveness Test-Initial brake temperature, 200 °F (93.3 °C) before each application.

Stop speed—30 and 60 mph (48 and 97 km/h) (full stops in neutral). Increments-Curve shall be defined to the point of loss of lateral control or 16 ft/s2 (5.2 m/s2) by an adequate number of points (wheel slide permitted).

Record-Deceleration, line pressure (pedal force), trailer brake input, and method of brake application (that is, machine or manual). When using manual method, full stops shall be defined by maximum line pressure (pedal force) and deceleration.

### 6.4 Burnish

Stop speed-40-0 mph (64-0 km/h).

Stop deceleration-12 ft/s<sup>2</sup> (3.7 m/s<sup>2</sup>) (in normal gear).

Stop interval-As required to achieve 250 °F (121 °C) "initial brake temperature" or a maximum of 1 mile (1.6 km). NOTE: The 1 mile (1.6 km) maximum must be observed even though the initial temperature exceeds 250 °F (121 °C).

Cooling speed-40 mph (64 km/h) (moderate acceleration to cooling

Stops required-200. Record line pressure (pedal force) and brake temperature for stops 1, 20, and each succeeding 20th stop.

After burnish cycle-

(a) Inspect and adjust trailer brakes-mandatory.

WEIGHT LB (kg
TONGUE LOAD AT COUPLING PERCENT OF TOTAL TRAILER AXLE(S) WEIGHT (COUPLED): FRONT \_LB (kg) REAR LB (kg) TOTAL TYPE OF ACTUATION TOWING VEHICLE AXLE RATIO TRANSMISSION ENGINE CURB WEIGHT: FRONT LB (kg) REAR LB (kg) TOTAL LB (kg) LB (kg) REAR TIRE MFGR. SIZE PRESSURE: P BRAKES FRONT SIZE REAR SIZE DESCRIPTION TYPE LINING: FRONT REAR RUM (DISC) TYPE: FRONT MASTER CYL: DIA STROKE PEDAL: PEDAL RATIO AVAILABLE TRAVEL THERMOCOUPLE INSTALLATION METHOD TESTED BY LOCATION AMBIENT TEMPERATURE RANGE: HIGH \_oe (oc) rom \_

GENERAL DATA

NUMBER OF BRAKES

TIRE PRESSURE

TIRE SIZE

## FIG 2—GENERAL DATA SHEET

III	SUMMARY SHEET			
TEST PHASE			ACTUAL	5
PREBURNISH CHECK		_MIN		X LB (N) PEDAL FORCE
100				
EFFECTIVENESS TESTS	1ST	2ND	3RD	
30 MPH (48 km/h) AT 16 FT/S <sup>2</sup> (5.2 m/s <sup>2</sup> )			<del></del>	LB (N) PEDAL FORCE
60 MPH (97 km/h) AT 16 FT/S <sup>2</sup> (5.2 m/s <sup>2</sup> )				LB (N) PEDAL FORCE
EMERGENCY BRAKE TEST	•			
WARNING SYSTEM ACTUATION	TYPE: POWER		MANUAL	
60 MPH (97 km/h) STOPPING DISTANCE				LB (N) PEDAL FORCE
				LB (N) PEDAL FORCE
				LB (N) PEDAL FORCE
	REAR OPERATING	·i	T (m)	LB (N) PEDAL FORCE
INOPERATIVE POWER SYSTEM TEST				
60 MPH (97 km/h) STOPPING DISTANCE	FT (m)		B (N) PEDAL I	FORCE
	FT (m)			
FIRST FADE AND RECOVERY TEST				
FADE STOPS 1-4				LB (N)
	2	2		N) MAX PEDAL FORCE
RECOVERY STOPS 1-5				N) MAX PEDAL FORCE
RECOVERY STOPS 6-12	LB (N)	MAX PEDA	L FORCE	
SECOND FADE AND RECOVERY TEST				
FADE STOPS 1-8			- · ·	
RECOVERY STOPS 1-5	ET/s <sup>2</sup> (1	m /2°\ AT	18 (N)	MAX PEDAL FORCE
RECOVERY STOPS 6-12	LB (N) N	AAY DEDAL	POPCE IN (IV)	MINA FEDAL FORCE
RECOVER STORS U-12	LD (N) S	MA FEDAL	PORCE	
STABILITY DURING	CONTROLLABLE E	RAKING BE	LOW 16 FT/S	(5.2 m/s <sup>2</sup> )
EFFECTIVENESS TESTS	YES	мо	_ `	
PINAL INSPECTION				
LINING INTEGRITY	YES	NO	_	
MECHANICAL INTEGRITY		NO		
HYDRAULIC INTEGRITY	YES	NO	_	
COMMENTS:				
	,			
REPORTED BY:		DATE		

#### FIG. 3-SUMMARY SHEET

- (b) Inspect and adjust towing vehicle brakes—optional.
- (c) Record any operations performed.
- 6.5 Emergency Brake System Test-This test can be run separately. It need not necessarily be run after paragraph 6.4. If run separately, brakes are to be burnished per paragraph 6.4.

Initial brake temperature-150 °F (65.6 °C) before each stop.

Procedure-With one-half of the passenger car system open to the atmosphere, determine the shortest stopping distances under two con-

<sup>&</sup>lt;sup>2</sup> At least curb +600 lb (270 kg) for vehicles of four or more passengers including the tongue load. No ballast should be added to the towing vehicle if curb +600 lb (270 kg) loading is achieved by tongue load. For purposes of testing, in order to achieve reproducible results, a static tongue load of 10% of gross trailer weight should be used.

<sup>3</sup> See Test Notes, paragraph 6.1.3.

TEST NO	ODOMETER: FINISH _	WEATHER CONDITION _		TEST N	io			WEA'	THER CO	NDITION	·				
DATE	START _	ROAD CONDITION	1 1 100					ROAI	AND T	RACK GO	NDITIO	ON	4,1 5,5		
RIVER	TOTAL _	AMBIENT TEMPERATURE	:: HIGH	DRIVER				AMB	ENT TE	MPERATU	RE: HI	IGH		_°F (°C	) .
DOERVER			LOW°F (°C)	OBSERV		SH		START		·		TAL M	II ES Om	_vr (vc)	)
	. IN	PUT CORRELATION	• •	1 DODOWNE	IEN: FINI	on						.,			
	ENGINE IDLING IN NEU	JTRAL IN HG (Pa) VACUUM		1					BURNIS	н					
	(POWER	EQUIPPED CARS ONLY) PEDAL FORCE, LB (N)		1			10-0 MPH (6	4-0 km/h	). 12 FT	/s <sup>2</sup> (3, 7	m/s <sup>2</sup> ) I	IN GEA	R.		
LINE PRESSURE,	1st	2nd 3rd	<del></del>	1		250 F (	21 C) BT E	ACH STO	P BUT 1	MILE (1.	6 km)	MAX II	NTERVA	L	
PSI (Pa)	RECORDING	RECORDING RECORDING	AVERAGE	1 1	PASS. CA	AR	PEDAL	PASS	CAR T	EMP,		TRAILÈF	R TEMP.		•
				STOP NO.	INPUT,		TRAVEL.		of (oc)			oF (0			222
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				160						1					_
	PF	EBURNISH CHECK		180								$\Box$	$\Box$	$\Box$	
30 1	MPH (48 km/h) 10 FT/s <sup>2</sup> (	3 m/s <sup>2</sup> ) IN GEAR - 1 MILE (1.6 km) IN	TERVAL	200	<u> </u>		L			٠.	لــــا	щ			
	PASS. CAR INF			RECORD	ANY OPE	RATIONS PER	FORMED:								
STOP NO.	(LINE PRESSUI OR PEDAL FOR	RE TRAILER	PEDAL TRAVEL,												
NO. 1	OR PEDAL FOR	CE INPUT	IN (mm)	<del></del>							لين	$\alpha$		<u> </u>	
2		·		i I			· .	EMERGEN	CY SYST	EM TEST	~C	12			
3				l I —		60-0 MPH	(97-0 km/h	) IN GEA	150°F	(65.6°C	IBT E	ACH AP	PLICAT	ION.	
4				l l			150 ANI	D 200 LB (	667 ANI	890 N)	EDAL I	FORCE			
						ASS.	STOR	DING W	A DATES OF	PASS.	CAR	T D A	ILER TE		
7	<del>-  </del>			SYST		PUT. TRA	LER DISTA	PING W	CHT ON	OF C	P,		OF (OC)		
8				OPERA		OR PF INP	UT FT	(m) Y	S NO	L	Ř L		F. L.R.		RE
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10				FRONT				للصا	X	<b>↓</b> ↓				1	
NAL TEMPERATURES	AFTER 19th STOP			FRONT	GE OF FRO	NET	-	<del>^, D</del>		+	-+				_
PASSENGER CAR				REAR		'N1	<del>-   - \</del>	-	+	++		-		+	<del></del>
L. F	°F (°C) R	L. F		REAR			1	7		1	-+	-	+	+	
	OF (OC) R	L. R °F (°C)		REAR			. 0				二	二	二		
TRAILER: L. F	0c (0c) n	D 00 000	the second second		GE OF REA										
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				1 1	. •	$\sim$	INC	PERATIV	E POWER	SYSTEM	1 TEST	,			
JMMARY OF PERFORM	MANCE:	<u> </u>				60-0 MPH	(97-0 km/h	) IN GEAR	, 150°F	(65.6°C)	IBT E/	ACH AP	PLICAT	ION,	
·			<del></del>			/ .	150 ANI	200 LB (	667 AND	890 N) F	EDAL	FORCE			
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ORIVEROBSERVER	^^	ABIENT TEMPERATURE: HIGH	or (°C)	<del> </del>											
DOSERVER	. ME	THOD OF APPLICATION	— °F (°C)	TEST NO	·			WEAT	ER CON	DITION .			,4		<u>:</u>
DOMETER: FINISH_	START	TOTAL MILES (	km)	DATE		7		ROAD	AND TR	ACK CON	DITIO	м —			
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	FIRST (PREBI	URNISH) EFFECTIVENESS TEST		OBSERVE	R	<del></del>		AMBIE			_ LO1	w		°F (°C	
PASS.   I	0 MPH (48 km/h) IN NEUTI	RAL - 200°F (93. 3°C) IBT EACH APPLI	CATION	ODOMET	ED- ETMICI	H	START	METHO	DD OF A	PPLICAT	ION		<del>.                                     </del>		<u> </u>
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INPUT. TRAILER	ATION TRAVEL	of (oc)		l 1			SI	COND EF	FECTIVI	NESS TE	ST				
LP OR PF INPUT		.F. R.F. L.R. R.R. L.F. R.F.	L.R. R.R. REMARKS			30 MPH (48	km/h) IN N	EUTRAL,	200°F (	93. 3 <sup>o</sup> C) I	BT EAC	CH APPI	LICATIO	ON	
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				CAR INPUT.	TRAILE	ATTO		p, 1	Oc. A	R TEMP,	4	Or	iler tei f (°C)		1
		6/2		LP OR PI		FT/S <sup>2</sup> (m	/3 <sup>2</sup> ) IN (m	m) L.F.	R.F.	L.R. R.	R. 1.	.F. D	F. I 1	2. R.D	RE
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PASS. CAR		DECELER-	PEDAL		ASS. C					R TEM		
INPUT,	TRAILER	ATION	OTD A TITTE	ı	~			I				
LP OR PF	INPUT	FT/S <sup>2</sup> (m/s <sup>2</sup> )	IN (mm)	L. F.	R.F.	L. R.	R.R.	L/F.	R.F.	L. R.	R.R.	REMARK
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PASS		60 MPH (97 km	/h) in Neu	TRAL,	200 <sup>0</sup> F	(93, 3 <sup>0</sup>	С) ІВТ	EACH	APPLIC	CATION		
PASS.		60 MPH (97 km DECELER-										
CAR	TO A II FO	DECELER-	PEDAL	P.A	SS. C	AR TEN			RAILE	R TEMP		
	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	DEMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
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CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
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CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT,	TO A II FO	DECELER-	PEDAL	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT, LP OR PF	TRAILER	DECELER- ATION FT/S <sup>2</sup> (m/s <sup>2</sup> )	PEDAL TRAVEL, IN (mm)	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS
CAR INPUT, LP OR PF	TRAILER	DECELER-	PEDAL TRAVEL, IN (mm)	P.A	SS. CA	AR TEN	ΜP,	. 1	raile of	R TEMP (°C)	,	REMARKS

INPUT. TRAILER ATION, TRAVEL OF (°C) OF (°C)	TEMP,	
LP OR PF INPUT FT/S <sup>2</sup> (m/s <sup>2</sup> ) IN (mm) L.F. R.F. L.R. R.R. L.F. R.F.	L.R. R.R.	REMARK
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UMMARY OF PERFORMANCE:		
UMMARI OF FERFORMANCE:		

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DATE_				RC	OAD AN	ID TRA	CK CO	NDITIO	ON			
DRIVER				^:	MBIENT	TEME	PERATU	RE: HI	GH			(C)
OBSERV	/ER							rc	·w		_°F (	'C)
ODOME	TER: FINISH		STAR	г		то	TAL MI	LES (kr	n)			
							CHECK					
	:	30 MPH	(48 km/h),	10 FT	/s <sup>2</sup> (3 :	m/s <sup>2</sup> ) !	IN GEA	R, 150 <sup>C</sup>	F (65.	6 <sup>0</sup> C) II	r	
	PASS. CAR		PEDAL		SS. CA			ĩ		R TEMP	• •	
STOP		TRAILER			°F (			1.		(°C)		
NO.	LP OR PF	INPUT	IN (mm)	L.F.	R.F.	L.R.	R. R.	L.F.	R.F.	L.R.	R. R.	REMARKS
2				<u> </u>			<u> </u>					
3				<u> </u>								
START	TIME		FINI	SH TIN	1E			ı	.APSEC	TIME		
					FIRST F	ADE T	EST					
60 M		15 FT/S <sup>2</sup> (	(4.6 m/s <sup>2</sup> )	IN GEA	R, 0.4	MILE	(0.6 m)	INTER	VAL,	150 <sup>0</sup> F (	65.6°C	) IBT FIRST STOP
	PASS. CAR		PEDAL				P,	ī			,	
STOP			TRAILER,		°F (					°C)		Į.
NO.	LP OR PF	INPUT	IN (mm)	L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	REMARKS
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SIIMM	ARY OF PERFO	DMANCE		<u> </u>	<u> </u>							
SCIVINI	ini oi fenio	MANAGE:										

FIG. 8-FIRST BASELINE CHECK AND FIRST FADE TEST DATA SHEET

	10													
				^	MBIEN	TEMP	ERATI	JRE: H	IGH		o <sub>F</sub>	(°C)		
												(°C)		
ME	TER FINISH		STAR	Γ		TO	TAL M	ILES (k	m)					
					FIRST	RECOV	ERY							
,	30 MPH (48 kr	n/h). 10 F	T/S <sup>2</sup> (8 m/	ω <sup>2</sup> λ. 19	GEAR	. 1 MII	E (1.6	km) II	TERVA	i at 4	10 MPI	H (64 km/h)		
٦	PASS. CAR		PEDAL		SS. C.	R TEM	Ρ,	7	RAILE	TEME	,	\ \ \ \		
)P	INPUT,	TRAILER							°F (			15		
	LP OR PP	INPUT	IN (mm)	L.F. R.F. L.R. R.R.				L.F.	R.F.	L.R.	R.R.	REMARKS		
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7.										1	<u> </u>	ļ		
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Н	<del></del>			_		-	_			_	<del></del>	1		
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								14						
	<del></del>													
	ARY OF PERFO	RMANCE:				7	5							
	ARY OF PERFO	RMANCE:		RST EF	PECTI	ENESS	SPOT	CHECK						
	ARY OF PERFO		PI					CHECK		i. S C)	IBT			
	ARY OF PERFO			15 FT	(\$ <sup>1</sup> (4.	m/i²) AR TEM	IN GE	AR, 20	0 F (98	. S C)	IBT P.			
			97 km/h), PEDAL TRAVEL,	15 FT.	(\$ (4. SS. C	m/s <sup>2</sup> ) AR TEM <sup>o</sup> C)	IN GE	AR, 20	O F (98	C)	٠,			
M/	PASS, CAR	60 MPH (	PI 97 km/h), PEDAL	15 FT.	(\$ (4. SS. C	m/s <sup>2</sup> ) AR TEM <sup>o</sup> C)	IN GE	AR, 20	O F (98	C)	٠,	REMARKS		
M/	PASS, CAR INPUT,	60 MPH (	97 km/h), PEDAL TRAVEL,	15 FT.	(\$ (4. SS. C	m/s <sup>2</sup> ) AR TEM <sup>o</sup> C)	IN GE	AR, 20	O F (98	C)	٠,	REMARKS		
M/	PASS, CAR INPUT,	60 MPH (	97 km/h), PEDAL TRAVEL,	15 FT.	(\$ (4. SS. C	m/s <sup>2</sup> ) AR TEM <sup>o</sup> C)	IN GE	AR, 20	O F (98	C)	٠,	REMARKS		
M/	PASS, CAR INPUT,	60 MPH (	97 km/h), PEDAL TRAVEL,	15 FT.	SS. C F R. F.	m/s <sup>2</sup> ) AR TEM <sup>o</sup> C)	IN GE	AR, 20	O F (98	C)	٠,	REMARKS		
M/	PASS, CAR INPUT,	60 MPH ( TRAILER INPUT	97 km/h), FEDAL TRAVEL, IN (mm)	15 FT. P.	SS. C F R. F.	m/s <sup>2</sup> ) AR TEM C) L. R. REBURI	IN GE IP, R. R.	AR, 20	P (98	C)	٠,	REMARKS		
M/	PASS, CAR INPUT,	60 MPH ( TRAILER INPUT	97 km/h), PEDAL TRAVEL,	15 FT. E. P. 64-0 k	(\$ (4. SS. C OF R.F. FIRST	m/s <sup>2</sup> ) AR TEM C) L. R. REBURI	IN GE IF, R. R.	L.F.	RAILE PF.	C) L.R.	R.R.	REMARKS		
M/	PASS, CAR INPUT,	60 MPH ( TRAILER INPUT	97 km/h), PEDAL TRAVEL, IN (mm)	15 FT. D. P. L. P. 64-0 k	S. C. F. R. F. FIRST m/h), STOP, ASS. C	REBURI	IN GE F. R. R. NISH S <sup>2</sup> (S. MILE (	AR, 20	R.F.	C) L.R. AR, INTER	R.R.	REMARKS		
M/	PASS. CAR INPUT, LP OR PF	60 MPH ( TRAILER INPUT	PI km/h), PEDAL TRAVEL, IN (mm)  40-0 MPH ( 121 C) IBT, PEDAL TRAVEL,	L.P. 64-0 k EACH	FIRST m/h), STOP, ASS. C	REBURI 12 PT/ BUT 1 AR TEM C)	IN GE IP, R. R. SISH S <sup>2</sup> (8.1 MILE (IP,	L.F.	R.F.	AR. INTER	R.R.			
M/	PASS. CAR INPUT, LP OR PF	60 MPH ( TRAILER INPUT	97 km/h), PEDAL TRAVEL, IN (mm) 40-0 MPH (121 C) IBT	L.P. 64-0 k EACH	FIRST m/h), STOP, ASS. C	REBURI 12 PT/ BUT 1 AR TEM C)	IN GE IP, R. R. SISH S <sup>2</sup> (8.1 MILE (IP,	L.F.	R.F.	AR. INTER	R.R.			
M/	PASS. CAR INPUT, LP OR PF	60 MPH ( TRAILER INPUT  250 F ( TRAILER	PI km/h), PEDAL TRAVEL, IN (mm)  40-0 MPH ( 121 C) IBT, PEDAL TRAVEL,	L.P. 64-0 k EACH	FIRST m/h), STOP, ASS. C	REBURI 12 PT/ BUT 1 AR TEM C)	IN GE IP, R. R. SISH S <sup>2</sup> (8.1 MILE (IP,	L.F.	R.F.	AR. INTER	R.R.			
M/	PASS. CAR INPUT, LP OR PF	60 MPH ( TRAILER INPUT  250 F ( TRAILER	PI km/h), PEDAL TRAVEL, IN (mm)  40-0 MPH ( 121 C) IBT, PEDAL TRAVEL,	L.P. 64-0 k EACH	FIRST m/h), STOP, ASS. C	REBURI 12 PT/ BUT 1 AR TEM C)	IN GE IP, R. R. SISH S <sup>2</sup> (8.1 MILE (IP,	L.F.	R.F.	AR. INTER	R.R.			
M/	PASS. CAR INPUT, LP OR PF	60 MPH ( TRAILER INPUT  250 F ( TRAILER	PI km/h), PEDAL TRAVEL, IN (mm)  40-0 MPH ( 121 C) IBT, PEDAL TRAVEL,	L.P. 64-0 k EACH	FIRST m/h), STOP, ASS. C	REBURI 12 PT/ BUT 1 AR TEM C)	IN GE IP, R. R. SISH S <sup>2</sup> (8.1 MILE (IP,	L.F.	R.F.	AR. INTER	R.R.			

FIG. 9-FIRST RECOVERY, FIRST EFFECTIVENESS SPOT CHECK, AND FIRST REBURNISH DATA SHEET

	10											
DATE _	<u></u>			RO	AD AN	D TRAC	CK CO	NDITIC	N			
DRIVER				vy	ABIENT	TEMP	RATU	RE: HI	GH		or (oc	)
											of (oc	)
DDOM	TER: FINISH		START		_TOT	AL MIL	ES (km	) ——				
						ASELIN						
		30 MPH	(48 km/h),	10 FT	r/s² (3	m/s2),	IN GE	AR, 15	0 <sup>0</sup> F (65	5.6°C)	IBT	
	PASS. CAR		PEDAL			AR TEN			TRAILE	R TEM	Ρ,	
STOP	INPUT,	TRAILER	TRAVEL,									
NO:	LP OR PF	INPUT	IN (mm)	L.F.	R.F.	L.R.	R.R.	L.F.	R. F.	L.R.	R. R.	REMARKS
1												
2												
3	l											
TART	TIME		FIN	ISH TI	ME				LAPS	ED TIM	E	
				S	ECONE	FADE	TEST					
60 MPI	H (97 km/h).	15 FT/S <sup>2</sup> (	4.6 m/s <sup>2</sup> );	IN GE	AR. 0.4	MILE	10.6 kr	n) INT	ERVAI	150 P	(65.6	C) BT FIRST STOP
	PASS CAR		PEDAL	I D	00 0						1	
					155. C.	AR TEN	₽.	7	TRAILE	R TEM	P. 1	
STOP			TRAVEL,				₽,	,	<b>TRAILE</b>	R TEM (°C)	Ρ,	
STOP NO.	INPUT,			1	°F (	(°C)		,	raile °F	r temi (°C)		
	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO.	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO.	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10 11	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10 11 12	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10 11 12 13	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 4 5 6 7 8 9 10 11 12 13 14	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10 11 12 13	INPUT,	TRAILER	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	INPUT, LP OR PF	TRAILER INPUT	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		
NO. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	INPUT,	TRAILER INPUT	TRAVEL,	1	°F (	(°C)		,	raile °F	r temi (°C)		

FIG. 10-SECOND BASELINE CHECK AND SECOND FADE
TEST DATA SHEET

	vo											
				RC	DAD A	ND TRA	CK CC	ITIONO	ON			
VER	·			^I	MBIEN	T TEM	PERATL	JRE: H	igh		°F (°C	C)
	/ER			_				L	™—		_op (o	C)
JML	ETER: PINISH		STAR	r		_ TO	LAL MI	LES (kr	n)	-		
				e	ECONE	RECO	VEDV					
_	30 MPH 48			, 2,		- 1000						
	PASS, CAR	km/h) 10 1	PEDAL	/\$ } IN	GEAR,	AR TE	E (1.6			L AT 4		64 km/h)
OP	INPUT.	TRAILER				(C)	MIP.	٠		( <sub>O</sub> C)	,	
٥.	LP OR PF	INPUT	IN (mm)				P.D.	I. E.			R. R.	REMARKS
1	Li OK II		211 (111111)	2,11		27.11	10 10		10.17	D. 10.	10 10	IGHIARO
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<u>-</u>	L					L		<u> </u>		L		
***	ARY OF PERFO	DMANCE.										
11417	IKI OI FERIO	MAINCE.										
			SEC	OND EF	PECTI	VENES	SPOT	CHEC	<			
_		0.0 1001 0	97-0 km/h	15.00	n/o <sup>2</sup> //		2,	0040	0.00m	.00 .00		
	PASS. CAR		PEDAL	, 10 F	1/5 (4	AR TE	I ) IN	GEAR,	DATIED	TEMP.	*) IR1	
	INPUT	TRAILER		''		(°C)	****	1 -	OF (			
ΩP	LP OR PF	INPUT	IN (mm)	L. F.			R. R.	L.F.			R. R.	REMARKS
	Br Given	<del></del>	*** (******)		****	27.10	1010	-	1,777	21.10	1010	Idininicko
OP O.				_								
	T										·	
ο.												
ο.						REBUR						
ο.			10-0 MBH (					m/2	IN CE	\D		
ο.		25.0 <sup>O</sup> F (	10-0 MPH (	64-0 kı	n/h),	12 FT/	s <sup>2</sup> (4.6	m/s <sup>2</sup> )	IN GE	NR.	Δ1	······································
ο.	IPASS. CAR	250 <sup>O</sup> F (1	121°C) IBT	64-0 ki EACH	n/h), STOP E	12 FT/	s <sup>2</sup> (4.6 MILE (1	.6 km)	MAX	INTERV	'AL	
5.	PASS. CAR	250°F (1	PEDAL	64-0 ki EACH	n/h), STOP E	12 FT/	s <sup>2</sup> (4.6 MILE (1	m/s <sup>2</sup> ) .6 km)	MAX	TEMP,	'AL	
OP	PASS. CAR INPUT, LP OR PF	250 <sup>O</sup> F (I	PEDAL	64-0 ki EACH	n/h), STOP E	12 FT/ BUT 1 AR TE (°C)	s <sup>2</sup> (4.6 MILE (1 MP,	.6 km)	MAX RAILER OF (	TEMP,	AL R. R.	REMARKS
OP O.	INPUT,	250°F (I	PEDAL TRAVEL,	64-0 ki EACH	n/h), STOP E ASS. C	12 FT/ BUT 1 AR TE (°C)	s <sup>2</sup> (4.6 MILE (1 MP,	6 km)	MAX RAILER OF (	TEMP, C)		REMARKS
OP D.	INPUT,	250°F (I	PEDAL TRAVEL,	64-0 ki EACH	n/h), STOP E ASS. C	12 FT/ BUT 1 AR TE (°C)	s <sup>2</sup> (4.6 MILE (1 MP,	6 km)	MAX RAILER OF (	TEMP, C)		REMARKS
ο.	INPUT,	250°F (I	PEDAL TRAVEL,	64-0 ki EACH	n/h), STOP E ASS. C	12 FT/ BUT 1 AR TE (°C)	s <sup>2</sup> (4.6 MILE (1 MP,	6 km)	MAX RAILER OF (	TEMP, C)		REMARKS

FIG. 11—SECOND RECOVERY, SECOND EFFECTIVENESS SPOT CHECK, AND SECOND REBURNISH DATA SHEET