UM-HSRI-76-30-3

MOTORCYCLE BRAKING PERFORMANCE

Contract Number DOT-HS-5-01264

Appendix A

Robert D. Ervin
Charles C. MacAdam
Yoshinori Watanabe

Highway Safety Research Institute
The University of Michigan

December, 1976

Prepared for the Department of Transportation, National Highway Traffic Safety Administration under Contract No. DOT-HS-5-01264. The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the National Highway Traffic Safety Administration.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UM-HSRI-76-30-3		

4. Title and Subtitle	5. Report Date
MOTORCYCLE BRAKING PERFORMANCE	December 1976
	6. Performing Organization Code
7. Author(s) Robert D. Ervin, Charles C. MacAdam, and Yoshinori Watanabe	8. Performing Organization Report No. UM-HSRI-76-30-3
9. Performing Organization Name and Address Highway Safety Research Institute The University of Michigan Huron Parkway & Baxter Road Ann Arbor, Michigan 48109	10. Work Unit No. (TRAIS) 11. Contract or Grant No. DOT-HS-5-01264
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration U. S. Department of Transportation Washington, D.C. 20590	13. Type of Report and Period Covered Final 7/75 - 10/76 14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

A study was conducted to evaluate the existing Federal Motor Vehicle Safety Standard for Motorcycle Braking Systems and to develop an alternate test methodology which resolves certain shortcomings thereof. Full-scale vehicle tests were conducted, per the existing standard, and the alternate test concept was developed and demonstrated. The study finds that a procedure involving a process of towing the test motorcycle does represent a viable approach suitable for adaptation in a next-generation rule concerning motorcycle braking performance.

17. Key Words	18. Distribution Statement
motorcycle, brakes, tow-test, effectiveness, fade, rulemaking	UNLIMITED

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
NONE	NONE	421	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

* U. S. GOVERNMENT PRINTING OFFICE : 1973 725-504/324

TABLE OF CONTENTS

APPENDIX A.1

FMVSS 122 TEST DATA (BAPG)

The test data appearing in this appendix represents the conduct of the FMVSS 122 test procedure at the Bendix Automotive Proving Ground (BAPG) test facility near South Bend, Indiana. The tests were conducted on each of the four test motorcycles by the Bendix staff. A professional rider was employed for all portions of the testing but the burnish procedure.

The test log sheets which follow present the data in the sequence specified by FMVSS 122:

Pre-Burnish (1st) Effectiveness
- Full system ; 30 and 60 mph
- Front only ; 30 and 60 mph
- Rear only ; 30 and 60 mph

Burnish Procedure

2nd Effectiveness
- Full system ; 30, 60, 80, top

Fade and Recovery

Final Effectiveness
- Full system ; 30, 60, 80, top
- Front only ; 30, 60
- Rear only ; 30, 60

Water Recovery

The following paragraphs are provided to clarify and define the column headings:

Columns 1-2 show maximum front and rear brake actuator forces (lb) achieved during the entire stop.

Columns 3-4 show initial speed at the time of the brake application. Column 4 is the speed in ft/sec; column 3 the digital meter equivalent as displayed to the rider.

Columns 5-8 show stopping distance and correction factor effects. Column 5 is the chalk-mark-to-stop measurement; column 6-7 the correction error and distance due to delay in the chalk gun firing mechanism; column 8 the final corrected stopping distance accounting for initial velocity variations from the nominal.

Columns 9-10 show front and rear brake temperatures (°F) just prior to the brake application.

Data sets for each of the four bikes follow. Data plots for the full system tests, which summarize the tabular listings, are included at the end of the appendix.

1st EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-9 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN. 65
WIND: VELOCITY 7-10 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 54 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]		[illegible]	[illegible]	37				[illegible]	[illegible]						
2			[illegible]		[illegible]				[illegible]	[illegible]						
3	[illegible]		[illegible]	[illegible]	[illegible]				[illegible]	[illegible]						
4	[illegible]		[illegible]		[illegible]				[illegible]							
5			[illegible]		[illegible]				[illegible]							
6	[illegible]		[illegible]		[illegible]				[illegible]	[illegible]						

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: A-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-4-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN._____
WIND: VELOCITY 7-10 DIRECTION [illegible] DRIVER R. Higgins OBSERVER _____
TEST LOCATION_____ SKID NO._____

60 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 216 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR					REMARKS
1	[illegible]														
2															
3															
4															
5															
6															

VEHICLE IN 8 ' LANE: YES ✓ NO _____
REMARKS:_____

1ST EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-[illegible]-[illegible] PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 6[illegible] MIN._____
WIND: VELOCITY 7-15 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION_____ SKID NO._____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 121 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1			[illegible]		6[illegible]				[illegible]							
2			[illegible]		[illegible]				[illegible]							
3			[illegible]		[illegible]				[illegible]							
4			[illegible]		[illegible]				[illegible]							
5			[illegible]		[illegible]				[illegible]							
6			[illegible]		[illegible]				[illegible]							

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS:_____

1ST EFFECTIVENESS TEST

VEHICLE NO.: H-10
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-4-75 PAGE _____ of _____
ROOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 68 MIN. 64
WIND: VELOCITY 7-10 DIRECTION N DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 484 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8' LANE: YES ____ NO ____
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-4-75 PAGE _____ of _____
DOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
IND: VELOCITY 0-2 DIRECTION N/A DRIVER _____ OBSERVER _____
EST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
0°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 121 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8 ' LANE: YES ✓ NO ____
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: H.D.
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN. [illegible]
WIND: VELOCITY 3-4 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 484 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1			3													
2																
3																
4																
5																
6																

VEHICLE IN 8 ' LANE: YES ✓ NO ____
REMARKS: _____

BURNISH

VEHICLE NO.: _____
TEST NO.: _____
PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ DATE _____
AMB. TEMP.: MAX. _____ MIN. _____

With the vehicle at loaded test weight, conduct 200 burnish stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F or the distance of 1 mile, whichever occurs first. Record initial brake temperature and ACTUATOR force every 20th stop.
ALL STOPS MADE WITH THE CLUTCH DISENGAGED.

STOP NO.	ACTUATOR FORCES		BK. TEMPS.		DRIVER	REMARKS
	FRONT	REAR	FRONT	REAR		
1						
20						
40						
60						
80						
100						
120						
140						
160						
180						
200						

REMARKS: _____

SERVICE BRAKE ADJUSTMENTS

Adjust all service brakes to the manufacturers specification. Note any operations performed and problem areas if any.

BRAKE ADJUSTMENT NOTES: _____

2ND EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-6-[illegible] PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 72 MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1																
2																
3	55			1	55											
4	[illegible]															
5																
6																

10

VEHICLE IN 8 ' LANE: YES ✓ NO ____
REMARKS:

2nd EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 10-6-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. [illegible]
WIND: VELOCITY _____ DIRECTION _____ DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	5	[illegible]	[illegible]	[illegible]	144			14[illegible]		14[illegible]						
2	[illegible]	[illegible]	[illegible]	[illegible]	132			16[illegible]	[illegible]	141						
3	49	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]						
4	50	36	[illegible]	[illegible]	148.5			[illegible]	139	146			[illegible]			
5	[illegible]	36	[illegible]	[illegible]	146			[illegible]	131	140			[illegible]			
6	[illegible]	5	[illegible]	[illegible]	[illegible]			14[illegible]	[illegible]	[illegible]			[illegible]			

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: _____

2ND EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-6-70 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY 6-7 DIRECTION _____ DRIVER B. HEIMAN OBSERVER _____
TEST LOCATION_____ SKID NO._____

80 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 315 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

12

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1														3.91		
2														4.27		
3														4.08		
4														4.1		
5																
6																

VEHICLE IN 8 ' LANE: YES ✓ NO ____
REMARKS:

2ND EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 10-6-65 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 78 MIN. _____
WIND: VELOCITY 0 DIRECTION _____ DRIVER R. Reimann OBSERVER _____
TEST LOCATION _____ SKID NO. _____

4-3 brake top spd

105 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 105 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 452 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: _____

FADE BASELINE AND RECOVERY TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-6-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY 0 DIRECTION _____ DRIVER [illegible] OBSERVER _____
TEST LOCATION: _____

BASELINE

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. Conduct applications at 10 TO 11 FPSPS (DECEL WITH CLUTCH DISENGAGED.) Test Requirements: FRONT ACTUATOR Force 5-55 #; REAR ACTUATOR Force 10-90 #. THE FRONT TO REAR BRAKE TEMPERATURE DIFFERENTIAL MUST BE 10°F OR LESS FOR THE FIRST STOP.

STOP NO.	MAX ACTUATOR FORCE FRONT	MAX ACTUATOR FORCE REAR	BK TEMP FRONT	BK TEMP REAR	REMARKS
1	12	23			
2	10	21			
3	12	22			

Average max. ACTUATOR force for Baseline Checks: FRONT _____ # REAR _____ #
Requirement for Recovery Test: Max. A.F. Limits: FRONT _____ # + 20 # = 31 # REAR _____ # + 20 # = _____ #
Min. A.F. Limits: FRONT _____ # - 10 # = 13 # REAR _____ # - 10 # = _____ #

RECOVERY TEST (See next page for Fade Results)

Conduct 5 recovery stops at 30 to 0 mph at 10 (to 11) fpsps and at 1.0 mile intervals. Record maximum ACTUATOR forces (FRONT AND REAR) for each stop.
Test Requirements: ACTUATOR force not to exceed 55 lbs FRONT (AND 90 lbs REAR) for stops 1 through 4. Fifth (5th) recovery stop must be within _____ # to 33 # A.F. inclusive for the FRONT BRAKE AND _____ # to _____ # A.F. INCLUSIVE FOR THE REAR BRAKE.

STOP NO.	MAX. ACTUATOR FORCE FRONT	MAX. ACTUATOR FORCE REAR	BK. TEMPS.		REMARKS
1	2	[illegible]	[illegible]	37	
2	11	2	[illegible]	[illegible]	
3	[illegible]	[illegible]	101	[illegible]	
4	[illegible]	[illegible]	68	[illegible]	
5	10	18	92	38	
6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE: _____

FADE TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 10-6-[illegible] PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX._____ MIN._____
WIND: VELOCITY 0 DIRECTION_____ DRIVER [illegible] OBSERVER_____
TEST LOCATION_____

Conduct 10 stops from 60 to 0 mph with an I.B.T. of 130°F to 150°F (WITH NO MORE THAN A 10°F FRONT TO REAR TEMP. DIFF. FOR THE INITIAL APPLICATION) at 15 fpsps (CLUTCH DISENGAGED) and not to exceed maximum ACTUATOR FORCES OF 55# FRONT AND 90# REAR. Attain the 15 deceleration AS QUICKLY AS POSSIBLE AND MAINTAIN FOR AT LEAST THREE-FOURTHS of the stop. Brake application to application to be a 0.4 mile interval.

After the last fade stop, drive for 1.0 mile at 30 mph and immediately start the recovery test.

SPECIAL INSTRUCTIONS:_____

15

STOP NO.	MAX. ACTUATOR FORCES FRONT	MAX. ACTUATOR FORCES REAR	BK. TEMPERATURE FRONT	BK. TEMPERATURE REAR	REMARKS
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	[illegible]	[illegible]	
4	[illegible]	[illegible]	[illegible]	[illegible]	
5	[illegible]	[illegible]	[illegible]	[illegible]	
6	[illegible]	[illegible]	[illegible]	[illegible]	
7	[illegible]	[illegible]	[illegible]	[illegible]	
8	[illegible]	[illegible]	[illegible]	[illegible]	
9	[illegible]	[illegible]	[illegible]	[illegible]	
10	[illegible]	[illegible]	[illegible]	[illegible]	
11					
12					
13					
14					
15					
MAX. SOAK TEMPERATURES					

SUMMARY OF PERFORMANCE:_____

SPOT CHECK EFFECTIVENESS TEST AFTER FADE RECOVERY

VEHICLE NO.: 4-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-10-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 48 MIN. 42
WIND: VELOCITY 4-5 DIRECTION SO. DRIVER REIMAN OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 stops from 60 mph with initial brake temperature between ~~150°F to 150°F.~~ ~~FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F.~~ ~~FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#.~~ REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: PERFORM ~~immediately~~ after last ~~FADE~~ FADE RECOVERY STOP
NO TEMP REQUIREMENTS

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8' LANE: YES ____ NO ____
REMARKS: _____

1ST REBURNISH TEST

VEHICLE NO.: 11
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-10-25 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES 17 AMB. TEMP.: MAX. 45 MIN. _____
DRIVER: _____

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. IBT 10°F FRONT TO REAR DIFFERENTIAL)

SPECIAL INSTRUCTIONS: _____

17

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR											REMARKS
1	18	22	130	140											
10	17	24		142											
20	19	24	141	140											
30	18	23													
35	19	1													

REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-11-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 63 MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER R. Edmonds OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

18

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			[illegible]			REMARKS
1	74												1.43			
2													1.61			
3	60	34			34								1.53			
4	55												1.62			
5	58												1.54			
6	60															

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-11-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 63 MIN. 63
WIND: VELOCITY 2 DIRECTION W DRIVER R. REMINGTON OBSERVER _____
TEST LOCATION_____ SKID NO._____

60 MPH FULL SYSTEM: X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 155 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

19

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP Time			REMARKS
1	40							137					3.4			
2	48							141					3.3			
3	47							146								
4	53							144								
5	43															
6	43															

VEHICLE IN 4 ' LANE: YES ✓ NO ____
REMARKS:

FINAL EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-11- PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 56 MIN. 54
WIND: VELOCITY 3 DIRECTION N.W DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

80 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____ 4

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 80 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#. TEST REQUIREMENT: 312 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

20

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			Stop Rate			REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ✓ NO ____
REMARKS:_____

FINAL EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

4-snubber top speed
___ MPH FULL SYSTEM ___X___ FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS								REMARKS
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR							
1																	
2																	
3																	
4																	
5																	
6																	

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS:

FINAL EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-1 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN._____
WIND: VELOCITY 7 DIRECTION 50 DRIVER R. PEIFER OBSERVER _____
TEST LOCATION_____ SKID NO._____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 91 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

22

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR		STOP Time				REMARKS
1																
2																
3	52							55								
4	52															
5																
6																

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS:

FINAL EFFECTIVENESS TEST

VEHICLE NO.: 12-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 92 MIN._____
WIND: VELOCITY 7 DIRECTION 50 DRIVER R. REMAR OBSERVER _____
TEST LOCATION_____ SKID NO._____

60 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 328 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR		STOP Time				REMARKS
1	50															
2	55															
3	55															
4	52															
5																
6																

VEHICLE IN 8' LANE: YES ____ NO ____
REMARKS:

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN. _____
WIND: VELOCITY 7 DIRECTION SO DRIVER R. Reinhardt OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 92 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

24

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR		STOP TIME				REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8 ' LANE: YES _____ NO _____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: H-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 1/13 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN._____
WIND: VELOCITY 7 DIRECTION 30 DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 358 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR		STOP TIME				REMARKS
1																
2																
3			2									6.4				
4								1								
5																
6																

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS:

WATER RECOVERY TEST

VEHICLE NO.: H-12
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-12-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY 0-5 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION: _____

Elapsed Time Start to last stop 5 min. 10 sec.

BASELINE

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. ALL STOPS ARE TO BE MADE WITH THE CLUTCH DISENGAGED AT A DECEL. LEVEL of 10 to 11 fpsps. Record MAX ACTUATOR Forces.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR	REMARKS
1	15	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	146	[illegible]	

Average maximum pedal forces for Baseline Checks: FRONT AVG. 17 # REAR AVG. [illegible] #

Requirement for Recovery Test: MAX. ACTUATOR Forces: FRONT 17 # + 20 # = 37 # REAR [illegible] # + 20 # = [illegible] #

MIN. ACTUATOR Forces: FRONT 17 # − 10 # = 7 # REAR [illegible] # 10 # = [illegible] #

26

RECOVERY TEST

IMMEDIATELY AFTER PERFORMING THE WETTING PROCEDURE ACCELERATE AT THE MAXIMUM RATE TO 30 MPH AND CONDUCT A STOP AT A DECEL. LEVEL OF 10 to 11 fpsps WITH THE CLUTCH DISENGAGED. AFTER EACH STOP, IMMEDIATELY ACCELERATE THE VEHICLE AT THE MAXIMUM RATE AND REPEAT FOR A TOTAL OF 5 STOPS. Record MAXIMUM ACTUATOR FORCES FOR EACH STOP. TEST REQUIREMENTS: 5-55 # FRONT AND 10-40 # REAR for STOPS 1 THRU 4. FIFTH STOP MUST BE WITHIN [illegible] # to [illegible] # FRONT AND 7 # to 31 # REAR.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR	REMARKS
1	35	[illegible]	[illegible]	[illegible]	
2	20	[illegible]	61	82	
3	13	[illegible]	[illegible]	[illegible]	
4	10	[illegible]	[illegible]	[illegible]	
5	26	[illegible]	[illegible]	[illegible]	
* 6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE: _____

SpotCheck EFFECTIVENESS TEST

AFTER WATER RECOVERY

VEHICLE NO.: H-D

TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-[illegible] PAGE _____ of _____

DOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN._____

IND: VELOCITY 7 DIRECTION 5.0 DRIVER R. [illegible] OBSERVER _____

EST LOCATION_____ SKID NO._____

0 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 ~~5~~ stops from mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: PERFORM immediately after last water recovery stop

NO TEMP REQUIREMENTS

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ~~5~~ LANE: YES ✓ NO ____

REMARKS:

REBURNISH TEST

VEHICLE NO.: Harley Davidson
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-5-75 PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX. 40 MIN. 40
DRIVER: E Stinchcomb

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. (IBT 10°F FRONT TO REAR DIFFERENTIAL)

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCES		BR. TEMPS.		REMARKS
	FRONT	REAR	FRONT	REAR	
1	14	18	51	111	
10	14	10	140	143	
20	12	10	136	140	
30	11	7	136	144	
35	12	5	144	147	

REMARKS:

FIRST EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 10-6-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. [illegible]
WIND: VELOCITY 2 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 54 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]	[illegible]	[illegible]						[illegible]	[illegible]						
2	[illegible]	[illegible]	[illegible]	45.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

~~FIRST~~ EFFECTIVENESS TEST

VEHICLE NO.: ____
TEST NO.: ____

PAGE ____ of ____

DATA TAKEN FROM: VISUAL READOUT ____ TAPE READOUT ____ DATE ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. 70 MIN. ____
WIND: VELOCITY 2 DIRECTION [illegible] DRIVER R [illegible] OBSERVER ____
TEST LOCATION ____ SKID NO. ____

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 216 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	150						
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]						
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]						
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]						
5	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]	[illegible]						
6	51	37	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]						

VEHICLE IN 12' LANE: YES ✓ NO ____
REMARKS: ____

FIRST EFFECTIVENESS TEST

VEHICLE NO.: HONDA
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 10-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 70 MIN. _____
WIND: VELOCITY 0 DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 121 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	54		130													
2																
3																
4																
5																
6																

VEHICLE IN '8' LANE: YES ✓ NO ____
REMARKS: _____

FIRST EFFECTIVENESS TEST

VEHICLE NO.: Honda
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 10-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 70 MIN. _____
WIND: VELOCITY 2 DIRECTION S DRIVER R. [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 48' FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

32

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: _____

FIRST EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 70 MIN. [illegible]
WIND: VELOCITY 0 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 121 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

33

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: _____

FIRST EFFECTIVENESS TEST

VEHICLE NO.: 1004
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 60 MIN. 50
WIND: VELOCITY 2 DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

60 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 484 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CO.R. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS:

SECOND EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 60 MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM-S X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 45 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	8		[illegible]	[illegible]	[illegible]	1.1	[illegible]	[illegible]	[illegible]	[illegible]						
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
4	[illegible]	[illegible]	[illegible]	[illegible]	50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

Second EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-5-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 62 MIN. [illegible]
WIND: VELOCITY 5 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

37

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]						
2	39		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]						
3		18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]						
4			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]						
5			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]						
6			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]						

VEHICLE IN [illegible] LANE: YES [illegible] NO ____
REMARKS: _____

~~Second~~ EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

80 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 ~~6~~ stops from ~~80~~ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMAERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 345 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SAE CORR. DIST.	FRONT	REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS:_____

Second EFFECTIVENESS TEST

VEHICLE NO.: __________
TEST NO.: __________

DATA TAKEN FROM: VISUAL READOUT ______ TAPE READOUT ______ DATE ______ PAGE ____ of ____
ODOM: FINISH ______ START ______ TOTAL MILES ______ AMB. TEMP.: MAX. ______ MIN. ______
WIND: VELOCITY ______ DIRECTION ______ DRIVER ______ OBSERVER ______
TEST LOCATION ______ SKID NO. ______

___ MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: __________

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN LANE: YES ____ NO ____
REMARKS: __________

FADE BASELINE AND RECOVERY TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-5-__ PAGE_____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX.__ MIN._____
WIND: VELOCITY_____ DIRECTION_____ DRIVER_____ OBSERVER_____
TEST LOCATION:_____

BASELINE

THE FRONT TO REAR BRAKE TEMPERATURE DIFFERENTIAL MUST BE 10° F OR LESS FOR THE FIRST STOP.

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. Conduct applications at 10 TO 11 FPSPS (DECEL WITH CLUTCH DISENGAGED.) Test Requirements: FRONT ACTUATOR Force 5-55 #; REAR ACTUATOR FORCE 10-90 #.

STOP NO.	MAX ACTUATOR FORCE		BK. TEMPS	
	FRONT	REAR	FRONT	REAR
1	14		4	41
2	13		4	2
3	14			

REMARKS

Average max. ACTUATOR force for Baseline Checks: FRONT 1__ # REAR __ #

Requirement for Recovery Test: Max. A.F. Limits: FRONT ___ # + 20 # = ___ # REAR 1__ # + 20 # = ___ #
Min. A.F. Limits: FRONT ___ # - 10 # = ___ # REAR ___ # - 10 # = ___ #

40

RECOVERY TEST (See next page for Fade Results)

Conduct 5 recovery stops at 30 to 0 mph at 10 (to 11) fpsps and at 1.0 mile intervals. Record maximum ACTUATOR forces (FRONT AND REAR) for each stop.
Test Requirements: ACTUATOR force not to exceed 55 lbs FRONT (AND 90 lbs REAR) for stops 1 through 4, Fifth (5th) recovery stop must be within ____ # to ____ # A.F. inclusive for the FRONT BRAKE AND ____ # to ____ # A.F. INCLUSIVE FOR THE REAR BRAKE.

STOP NO.	MAX. ACTUATOR FORCE		BK. TEMPS.	
	FRONT	REAR		
1		1__	1__	1__
2		1__	1__	2__
3		__	1__	1__
4		__	1__	__
5		__	12	11
6				
7				
8				
9				
10				

REMARKS

SUMMARY OF PERFORMANCE:_____

FADE TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX._____ MIN._____
WIND: VELOCITY_____ DIRECTION_____ DRIVER_____ OBSERVER_____
TEST LOCATION_____

Conduct 10 stops from 60 to 0 mph with an I.B.T. of 130°F to 150°F at 15 fpsps WITH NO MORE THAN A 10°F FRONT TO REAR TEMP. DIFF. FOR THE INITIAL APPLICATION and not to exceed maximum ACTUATOR FORCES OF 55# FRONT AND 40# REAR. Attain the 15 deceleration AS QUICKLY AS POSSIBLE AND MAINTAIN FOR AT LEAST THREE-FOURTHS CLUTCH DISENGAGED of the stop. Brake application to application to be a 0.4 mile interval.

After the last fade stop, drive for 1.0 mile at 30 mph and immediately start the recovery test.

SPECIAL INSTRUCTIONS:_____

41

STOP NO.	MAX. ACTUATOR FORCES		BK. TEMPERATURE		REMARKS
	FRONT	REAR	FRONT	REAR	
1	16	30			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
MAX. SOAK TEMPERATURES					

SUMMARY OF PERFORMANCE:_____

SPOT CHECK EFFECTIVENESS TEST AFTER FADE RECOVERY

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-5-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30
20 MPH FULL SYSTEM X FRONTS ONLY ___ REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 stops from 60 mph with initial brake temperature between ~~150°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F.~~ ~~FRONT ACTUATOR FORCE LIMITS ARE~~ 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.

TEST REQUIREMENT: ___ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: PERFORM ~~immediately~~ after last ~~stop~~ FADE RECOVERY STOP
NO TEMP REQUIREMENTS

42

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2																
3																
4																
5																
6																

VEHICLE IN [illegible] LANE: YES ✓ NO ___
REMARKS: _____

FIRST REBURNISH TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-5 PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX._____ MIN._____
DRIVER: _____

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. (BT 10°F FRONT TO REAR DIFFERENTIAL)

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCES		BR. TEMPS.												REMARKS
	FRONT	REAR	FRONT	REAR											
1															
10															
20															
30															
35															

REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _X_ FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1						1.1										
2						1.1										
3						1.1										
4						1.1										
5						1.1										
6						1.1										

VEHICLE IN LANE: YES ____ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY [illegible] DIRECTION _____ DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM: X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

45

STOP NO.	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							REMARKS
	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR		[illegible]				
1																
2																
3																
4																
5																
6																

VEHICLE IN [illegible] LANE: YES [illegible] NO _____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-3-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY 6 DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

80 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 80 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 345 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN LANE: YES ____ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

4-8 UNDER TOP SPEED
___ MPH FULL SYSTEM-1 X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

47

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR					REMARKS
1															
2															
3															
4															
5															
6															

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS:

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT [illegible] TAPE READOUT _____ DATE 11-5-25 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 72 MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: 42 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

48

STOP NO.	ACTUATOR FORCE MAX. FRONT	MAX. REAR	INITIAL SPEED IND.	ACT.	STOPPING DISTANCE MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	BK. TEMPS FRONT	REAR						REMARKS
1	47															
2	41															
3	44															
4	42															
5	50															
6	48															

VEHICLE IN [illegible] LANE: YES ___ NO ___
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT [illegible] TAPE READOUT _____ DATE 11 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 358 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]															
2	44															
3	41															
4	[illegible]															
5	[illegible]															
6	[illegible]															

VEHICLE IN [illegible]' LANE: YES _____ NO _____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 70 MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 92 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

50

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN [illegible] LANE: YES ✓ NO _____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 68 MIN. [illegible]
WIND: VELOCITY 6 DIRECTION [illegible] DRIVER R. Reimer OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 338 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS. FRONT	BK. TEMPS. REAR						REMARKS
1		[illegible]		[illegible]						[illegible]						
2		[illegible]		[illegible]												
3		[illegible]	[illegible]6	[illegible]												
4		[illegible]		[illegible]												
5		[illegible]		[illegible]												
6		[illegible]		[illegible]												

VEHICLE IN [illegible]' LANE: YES ✓ NO _____
REMARKS: _____

WATER RECOVERY TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 55 MIN. [illegible]
WIND: VELOCITY ? DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION: _____

BASELINE

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. ALL STOPS ARE TO BE MADE WITH THE CLUTCH DISENGAGED AT A DECEL. LEVEL of 10 to 11 FPSPS. RECORD MAX ACTUATOR FORCES.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR	REMARKS
1	[illegible]	[illegible]			
2	[illegible]	[illegible]			
3	[illegible]	[illegible]			

Average maximum pedal forces for Baseline Checks: FRONT AVG. [illegible] # REAR AVG. [illegible] #

Requirement for Recovery Test: MAX. ACTUATOR Forces: FRONT [illegible] # + 20 # = [illegible] # REAR [illegible] # + 20 # = [illegible] #

MIN. ACTUATOR Forces: FRONT [illegible] # − 10 # = [illegible] # REAR [illegible] # − 10 # = [illegible] #

52

RECOVERY TEST

IMMEDIATELY AFTER PERFORMING THE WETTING PROCEDURE ACCELERATE AT THE MAXIMUM RATE TO 30 MPH AND CONDUCT A STOP AT A DECEL. LEVEL OF 10 TO 11 FPSPS WITH THE CLUTCH DISENGAGED. AFTER EACH STOP, IMMEDIATELY ACCELERATE THE VEHICLE AT THE MAXIMUM RATE AND REPEAT FOR A TOTAL OF 5 STOPS. RECORD MAXIMUM ACTUATOR FORCES FOR EACH STOP. TEST REQUIREMENTS: 5-55# FRONT AND 10-40# REAR FOR STOPS 1 THRU 4. FIFTH STOP MUST BE WITHIN [illegible] # TO [illegible] # FRONT AND [illegible] # TO [illegible] # REAR.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR	REMARKS
1	[illegible]	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	[illegible]	[illegible]	
4	[illegible]	[illegible]	[illegible]	[illegible]	
5	[illegible]	[illegible]	[illegible]	[illegible]	
* 6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE: _____

SPOT CHECK EFFECTIVENESS TEST

AFTER WATER RECOVERY

VEHICLE NO.: [illegible]

TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-6-[illegible] PAGE _____ of _____

ROOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 6[illegible] MIN.[illegible]

WIND: VELOCITY[illegible] DIRECTION _____ DRIVER _____ OBSERVER _____

TEST LOCATION_____ SKID NO._____

[illegible] MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN [illegible]°F, FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.

TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: PERFORM immediately after last water recovery stop

NO TEMP REQUIREMENTS

53

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	50	34	[illegible]	44.7	[illegible]				[illegible]						[illegible]	
2	[illegible]	[illegible]	[illegible]	44.6	[illegible]				[illegible]						[illegible]	
3	[illegible]	[illegible]	[illegible]	44.0	[illegible]				[illegible]						[illegible]	
4																
5																
6																

VEHICLE IN [illegible] LANE: YES ✓ NO ____

REMARKS:

REBURNISH TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-5-75 PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX. 40 MIN. 42
DRIVER: E. STRICKER

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. IBT 10°F FRONT TO REAR DIFFERENTIAL

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCES		BR. TEMPS.												REMARKS
	FRONT	REAR	FRONT	REAR											
1	12	8	86	77											
10	7	12	114	101											
20	7	12	128	126											
30	5	10	126	125											
35	5	5	115	126											

REMARKS:

1ST EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 1/ _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 54 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

55

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	58			41.3		1.2										
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ✓ NO _____
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11 [illegible] PAGE _____ of _____
DOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN._____
IND: VELOCITY_____ DIRECTION _____ DRIVER [illegible] OBSERVER _____
EST LOCATION_____ SKID NO._____

0 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 0°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 216 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

56

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR						REMARKS
1	48	[illegible]	268.4			[illegible]	[illegible]	[illegible]	[illegible]							
2	48	[illegible]	2 3	[illegible]		[illegible]	[illegible]	[illegible]								
3	48	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]								
4	[illegible]		2728			[illegible]							[illegible]			[illegible]
5	46	[illegible]	2742	[illegible]		[illegible]		[illegible]					[illegible]			
6	[illegible]	[illegible]	2721	[illegible]		[illegible]		[illegible]					[illegible]			

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS:

1ST EFFECTIVENESS TEST

VEHICLE NO.: K
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-1 PAGE _____ of _____
OM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
IND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
ST LOCATION_____ SKID NO._____

OMPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 121 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

57

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP Time			REMARKS
1	51												2.5#			
2	52															
3	50		1355													
4	52		6													
5													2.6			
6	1.2															

VEHICLE IN [illegible] LANE: YES ___ NO ___
REMARKS:

1st EFFECTIVENESS TEST

VEHICLE NO.: K
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11/ PAGE _____ of _____
OOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX, _____ MIN. /
IND: VELOCITY_____ DIRECTION _____ DRIVER P. Perino OBSERVER _____
EST LOCATION_____ SKID NO._____

0 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
0°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 484 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

58

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1													5.63			
2	5												5.46			
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ✓ NO ____
REMARKS:

1st EFFECTIVENESS TEST

VEHICLE NO.: 6
TEST NO.:

A TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 1 PAGE _____ of _____
M: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN. 1
D: VELOCITY_____ DIRECTION / DRIVER _____ OBSERVER _____
T LOCATION_____ SKID NO._____

MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

: tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph
:h initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
'F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
T REQUIREMENT: 121 FT. STOPPING DISTANCE.

PECIAL INSTRUCTIONS:

59

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							REMARKS
TOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR			STOP Time			
1		40				1.2										
2		42				1.1							3.6			
3		38											5			
4		37											4.2			
5		37	13			1.2										
6		40				1.1										

VEHICLE IN ' LANE: YES ✓ NO ____
REMARKS:

1ST EFFECTIVENESS TEST

VEHICLE NO.: /
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11- _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 11 _____ MIN. _____
WIND: VELOCITY 7 _____ DIRECTION S _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 454 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ✓ NO ____
REMARKS: _____

BURNISH

VEHICLE NO.: _____
TEST NO.: _____
PAGE _____ of _____

ODOM: FINISH _____ START 17 TOTAL MILES _____ DATE 11-13
AMB. TEMP.: MAX. 42 MIN. 40

With the vehicle at loaded test weight, conduct 200 burnish stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F or the distance of 1 mile, whichever occurs first. Record initial brake temperature and ACTUATOR force every 20th stop.

ALL STOPS MADE WITH THE CLUTCH DISENGAGED.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR									DRIVER	REMARKS
1														
20														
40														
60														
80														
100														
120														
140														
160														
180														
200														

REMARKS: _____

SERVICE BRAKE ADJUSTMENTS

Adjust all service brakes to the manufacturers specification. Note any operations performed and problem areas if any.

BRAKE ADJUSTMENT NOTES: _____

2nd EFFECTIVENESS TEST

VEHICLE NO.: K[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 69 MIN. [illegible]
WIND: VELOCITY 8 DIRECTION So. DRIVER R. Eilman OBSERVER _____
TEST LOCATION_____ SKID NO._____

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 70°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]								
2	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]								
3	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]								
4	[illegible]	[illegible]	33	[illegible]		[illegible]	[illegible]	[illegible]								
5	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]								
6	[illegible]	[illegible]	32.0	44.1		[illegible]	[illegible]	[illegible]								

VEHICLE IN [illegible] LANE: YES / NO ____
REMARKS: _____

2nd EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-17-75 PAGE _____ of _____
OOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 69 MIN. [illegible]
IND: VELOCITY 2-8 DIRECTION So. DRIVER [illegible] OBSERVER _____
EST LOCATION_____ SKID NO._____

O MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

63

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	60									137						
2	55															
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ✓ NO ____
REMARKS:

2nd EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY 2- DIRECTION So. DRIVER R. Tennant OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~80~~ 75 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct ~~6~~ 4 stops from ~~80~~ 75 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: ~~245~~ 305 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

64

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	50	2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
2	50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
4	40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
5																
6																

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

2nd EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____
4-8 under Top Speed
___ MPH FULL SYSTEM _X_ FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct ~~3~~ 4 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR					REMARKS
1															
2															
3															
4															
5															
6															

VEHICLE IN ' ' LANE: YES ____ NO ____
REMARKS:_____

FADE BASELINE AND RECOVERY TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE_____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX. [illegible] MIN. [illegible]
WIND: VELOCITY_____ DIRECTION_____ DRIVER [illegible] OBSERVER_____
TEST LOCATION:_____

BASELINE

THE FRONT TO REAR BRAKE TEMPERATURE DIFFERENTIAL MUST BE 10° F OR LESS FOR THE FIRST STOP.

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. Conduct applications at 10 TO 11 FPSPS Test Requirements: FRONT ACTUATOR FORCE 5-55 #; REAR ACTUATOR FORCE 10-90 #. (DECEL WITH CLUTCH DISENGAGED.

STOP NO.	MAX ACTUATOR FORCE		BK TEMP		REMARKS
	FRONT	REAR	FRONT	REAR	
1	17	8	135		
2	16	17	132	-	
3	16	17	[illegible]	[illegible]	

Average max. ACTUATOR force for Baseline Checks: FRONT _____ # REAR _____ #
Requirement for Recovery Test: Max. A.F. Limits: FRONT _____ # + 20 # = _____ # REAR _____ # + 20 # = _____ #
Min. A.F. Limits: FRONT _____ # - 10 # = _____ # REAR _____ # - 10 # = _____ #

99

RECOVERY TEST (See next page for Fade Results)

Conduct 5 recovery stops at 30 to 0 mph at 10 to 11 fpsps and at 1.0 mile intervals. Record maximum ACTUATOR forces FRONT AND REAR for each stop.
Test Requirements: ACTUATOR force not to exceed 55 lbs FRONT for stops 1 through 4. Fifth (5th) recovery stop must be within 5.6 # to _____ # A.F. inclusive for the FRONT BRAKE AND (AND 90 lbs REAR _____ # to _____ # A.F. INCLUSIVE for the REAR BRAKE.

STOP NO.	MAX. ACTUATOR FORCE		BK. TEMPS.		REMARKS
	FRONT	REAR			
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE:_____

FADE TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX. [illegible] MIN. [illegible]
WIND: VELOCITY_____ DIRECTION_____ DRIVER_____ OBSERVER_____
TEST LOCATION_____

Conduct ____ stops from 60 to 0 mph with an I.B.T. of 130°F to 150°F at 15 fpsps WITH NO MORE THAN A 10°F FRONT TO REAR TEMP. DIFF. FOR THE INITIAL APPLICATION and not to exceed - maximum ACTUATOR FORCES OF 55# FRONT AND 90# REAR. Attain the 15 deceleration AS QUICKLY AS POSSIBLE AND MAINTAIN FOR ATLEAST THREE-FOURTHS of the stop. Brake CLUTCH DISENGAGED application to application to be a 0.4 mile interval.

After the last fade stop, drive for 1.0 mile at 30 mph and immediately start the recovery test.

SPECIAL INSTRUCTIONS:_____

STOP NO.	MAX. ACTUATOR Forces		BK. TEMPERATURE		REMARKS
	FRONT	REAR	FRONT	REAR	
1	/				
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
MAX. SOAK TEMPERATURES					

SUMMARY OF PERFORMANCE:_____

SPOT CHECK EFFECTIVENESS TEST AFTER FADE RECOVERY

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-15 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 50 MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM X FRONTS ONLY ___ REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 stops from 60 mph with initial brake temperature between ~~150°F~~ to 150°F. ~~FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.~~
TEST REQUIREMENT: ___ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: PERFORM ~~immediately~~ after last ~~FADE~~ FADE RECOVERY STOP
NO TEMP REQUIREMENTS

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ✓ NO ___
REMARKS: _____

1ST REBURNISH TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE_____ PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX._____ MIN._____
DRIVER: _____

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. (BT 10°F FRONT TO REAR DIFFERENTIAL)

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCES		BK. TEMPS.											REMARKS
	FRONT	REAR	FRONT	REAR										
1														
10														
20														
30														
35														

REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR						REMARKS
1				44.8		1.2										
2						1.1										
3																
4	58															
5																
6						1.2										

VEHICLE IN [illegible] LANE: YES _____ NO _____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION SO. DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	50															
2																
3																
4																
5																
6																

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: K[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-18-25 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN. _____
WIND: VELOCITY 7 DIRECTION SO DRIVER P. REIMAN OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~80~~ 75 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct ~~6~~ 4 stops from 80 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ~~245~~ 303 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	47															
2	54			103.6												
3	55			101.2												
4	54			101.6												
5																
6																

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: 75 MPH (110 [illegible])

FINAL EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

4-8 under Top Speed
___ MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct ~~3~~ 4 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

73

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS:_____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION _____ DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 92 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR							REMARKS
1																	
2																	
3	58																
4	57																
5																	
6																	

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: K[illegible]1
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-18-75 PAGE _____ of _____
DOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
IND: VELOCITY 8 DIRECTION S or _____ DRIVER [illegible] OBSERVER _____
EST LOCATION_____ SKID NO._____

0 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 388 FT. STOPPING DISTANCE.

PECIAL INSTRUCTIONS:

75

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1				[illegible]			[illegible]	[illegible]								
2				59.6				[illegible]								
3				[illegible]				[illegible]								
4				[illegible]				[illegible]								
5			5	[illegible]			[illegible]	[illegible]								
6	[illegible]			57.1				[illegible]								

VEHICLE IN 8' LANE: YES / NO _____
REMARKS:

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. [illegible]
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 92 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR						REMARKS
1			[illegible]	40.2		1.1	[illegible]	[illegible]								
2			3	43.9		1.1	[illegible]	[illegible]								
3			3	44.3	[illegible]	[illegible]	[illegible]	44.5		[illegible]						
4			[illegible]	42.7	[illegible]	[illegible]	[illegible]	42.2		[illegible]						
5			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								All brakes
6			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]								

VEHICLE IN 9' LANE: YES ___ NO ___
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-15-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' ' LANE: YES ✓ NO ____
REMARKS: _____

WATER RECOVERY TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION: _____

BASELINE

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. ALL STOPS ARE TO BE MADE WITH THE CLUTCH DISENGAGED AT A DECEL. LEVEL OF 10 to 11 FPSPS. RECORD MAX ACTUATOR FORCES.

STOP NO.	ACTUATOR FORCES		BK. TEMPS.		REMARKS
	FRONT	REAR	FRONT	REAR	
1	15				
2	15				
3	20				

Average maximum pedal forces for Baseline Checks: FRONT AVG. _____ # REAR AVG. _____ #

Requirement for Recovery Test: MAX. ACTUATOR FORCES: FRONT _____ # + 20 # = _____ # REAR _____ # + 20 # = _____ #

MIN. ACTUATOR FORCES: FRONT _____ # − 10 # = _____ # REAR _____ # − 10 # = _____ #

78

RECOVERY TEST

IMMEDIATELY AFTER PERFORMING THE WETTING PROCEDURE ACCELERATE AT THE MAXIMUM RATE TO 30 MPH AND CONDUCT A STOP AT A DECEL. LEVEL OF 10 to 11 FPSPS WITH THE CLUTCH DISENGAGED. AFTER EACH STOP, IMMEDIATELY ACCELERATE THE VEHICLE AT THE MAXIMUM RATE AND REPEAT FOR A TOTAL OF 5 STOPS. RECORD MAXIMUM ACTUATOR FORCES FOR EACH STOP. TEST REQUIREMENTS: 5-55 # FRONT AND 10-40 # REAR FOR STOPS 1 thru 4. FIFTH STOP MUST BE WITHIN ____ # to ____ # FRONT AND 2____ # to 3____ # REAR.

STOP NO.	ACTUATOR FORCES		BK. TEMPS.		REMARKS
	FRONT	REAR	FRONT	REAR	
1					
2					
3					
4					
5					
* 6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE: _____

SPOT CHECK EFFECTIVENESS TEST

AFTER WATER RECOVERY

VEHICLE NO.: _____
TEST NO.: _____

TA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
OM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
ND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
ST LOCATION _____ SKID NO. _____

MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

t tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 stops from mph
th initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F, FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
ST REQUIREMENT: ____ FT. STOPPING DISTANCE.

PECIAL INSTRUCTIONS: PERFORM immediately after last water recovery stop
NO TEMP REQUIREMENTS

TOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN . ' LANE: YES ✓ NO ____
REMARKS: _____

REBURNISH TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-4-75 PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX. 50 MIN. 20
DRIVER: E. STASKER

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH (DISENGAGED). Record initial brake temperatures and ACTUATOR forces. (IBT 10°F FRONT TO REAR DIFFERENTIAL)

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCES		AM. TEMPS.												REMARKS
	FRONT	REAR	FRONT	REAR											
1	26	22	94	92											
10	28	24	95	93											
20	32	30	115	115											
30	5	18	122	118											
35	25	20	118	118											

REMARKS:

1ST EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN. 11
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 54 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	54	[illegible]	140.8	[illegible]	41	1.[illegible]	.[illegible]	[illegible]	130	[illegible]			2.06			
2	54	[illegible]	139.3	[illegible]	46	[illegible]	[illegible]	[illegible]	134	134			2.11			
3	55	[illegible]	141.7	[illegible]	45	[illegible]	[illegible]	[illegible]	137	142			2.09			
4	54	[illegible]	141.4	[illegible]	42	[illegible]	[illegible]	[illegible]	138	142			2.05			
5	54	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	138	[illegible]			1.99			
6	56	[illegible]	[illegible]	[illegible]	43	[illegible]	[illegible]	[illegible]	135	[illegible]			2.03			

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS:_____

1ST EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~60~~ 50 MPH FULL SYSTEM: X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ~~60~~ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: ~~210~~ FT. STOPPING DISTANCE

SPECIAL INSTRUCTIONS: _____

82

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	44		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]			3.6				
2	44			[illegible]								5				
3	51															
4	50			[illegible]					134	130						
5	49							[illegible]								
6	52											3.				[illegible]

VEHICLE IN ' LANE: YES ___ NO ___
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 121 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	55		134													
2	50															
3	53															
4	51															
5	51															
6																

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ROAD: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

60 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: ~~355~~ 351 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1			35?													
2																
3																
4	56															
5																
6																

VEHICLE IN LANE: YES ✓ NO ____
REMARKS: _____

1st EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 42 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		[illegible]														
2		[illegible]														
3		[illegible]								[illegible]						
4		[illegible]														
5		[illegible]														
6		[illegible]								[illegible]						

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: _____

1ST EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 6[illegible] MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~60~~ 50 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ~~60~~ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: ~~355~~ 331 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE COR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED COR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1																
2										13[illegible]						
3													5.13			
4													5.0[illegible]			
5																
6																

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: _____

BURNISH

VEHICLE NO.:_____
TEST NO.:_____

ODOM: FINISH _____ START _____ TOTAL MILES _____ DATE 11/ _____ PAGE _____ of _____
AMB. TEMP.: MAX._____ MIN. _____

With the vehicle at loaded test weight, conduct 200 burnish stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F or the distance of 1 mile, whichever occurs first. ALL STOPS MADE WITH THE CLUTCH DISENGAGED. Record initial brake temperature and ACTUATOR force every 20th stop.

STOP NO.	ACTUATOR FORCES		BK. TEMPS.										DRIVER	REMARKS
	FRONT	REAR	FRONT	REAR										
1														
20														
40														
60														
80														
100														
120														
140														
160														
180														
200														

REMARKS:_____

_____

87

SERVICE BRAKE ADJUSTMENTS

Adjust all service brakes to the manufacturers specification. Note any operations performed and problem areas if any.

BRAKE ADJUSTMENT NOTES:_____

_____

_____

2nd EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION SO. DRIVER K. REIMAN OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	50												2.05			
2													2.28			
3	44												2.01			
4	44									144						
5	48		14													
6	53		32													

VEHICLE IN LANE: YES / NO ____
REMARKS: _____

2nd EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~60~~ MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ~~60~~ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: ~~133~~ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN LANE: YES ____ NO ____
REMARKS: _____

2nd EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

50 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 stops from 50 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 242 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE COR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED COR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN LANE: YES ____ NO ____
REMARKS:_____

2nd EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____
4-8 under top speed
___ MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 7 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR					REMARKS
1															
2															
3															
4															
5															
6															

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: _____

FADE BASELINE AND RECOVERY TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11/18-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY 5 DIRECTION SO DRIVER R [illegible] OBSERVER _____
TEST LOCATION: _____

BASELINE

THE FRONT TO REAR BRAKE TEMPERATURE DIFFERENTIAL MUST BE 10°F OR LESS FOR THE FIRST STOP.

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. Conduct applications at 10 TO 11 FPSPS Test Requirements: FRONT ACTUATOR Force 5-55 #; REAR ACTUATOR Force 10-80 #. (DECEL WITH CLUTCH DISENGAGED.

STOP NO.	MAX ACT FORCES FRONT	MAX ACT FORCES REAR	BK TEMP FRONT	BK TEMP REAR	REMARKS
1					
2					
3					

Average max. ACTUATOR force for Baseline Checks: FRONT _____ # REAR _____ #
Requirement for Recovery Test: Max. A.F. Limits: FRONT _____ # + 20 # = _____ # REAR 14 # + 20 # = 34 #
Min. A.F. Limits: FRONT _____ # - 10 # = _____ # REAR 14 # - 10 # = 4 #

92

RECOVERY TEST (See next page for Fade Results)

Conduct 5 recovery stops at 30 to 0 mph at 10 (to 11) fpsps and at 1.0 mile intervals. Record maximum ACTUATOR forces (FRONT AND REAR) for each stop.
Test Requirements: ACTUATOR force not to exceed 55 lbs FRONT (AND 90 lbs REAR) for stops 1 through 4. Fifth (5th) recovery stop must be within 11 # to 41 # A.F. inclusive for the FRONT BRAKE AND 4 # to 34 # A.F. INCLUSIVE FOR THE REAR BRAKE.

STOP NO.	MAX. ACTUATOR FORCE FRONT	MAX. ACTUATOR FORCE REAR	BK. TEMPS.		REMARKS
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE: _____

FADE TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX._____ MIN._____
WIND: VELOCITY_____ DIRECTION_____ DRIVER_____ OBSERVER_____
TEST LOCATION_____

Conduct ____ stops from 60 to 0 mph with an I.B.T. of 130°F to 150°F (WITH NO MORE THAN A 10°F FRONT TO REAR TEMP. DIFF. FOR THE INITIAL APPLICATION) at 15 fpsps (CLUTCH DISENGAGED) and not to exceed maximum (ACTUATOR FORCES OF 55# FRONT AND 90# REAR.) Attain the 15 deceleration (AS QUICKLY AS POSSIBLE AND MAINTAIN FOR AT LEAST THREE-FOURTHS) of the stop. Brake application to application to be a 0.4 mile interval.

After the last fade stop, drive for 1.0 mile at 30 mph and immediately start the recovery test.

SPECIAL INSTRUCTIONS:_____

STOP NO.	MAX. ACTUATOR FORCES		BK. TEMPERATURE		REMARKS
	FRONT	REAR	FRONT	REAR	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
MAX. SOAK TEMPERATURES					

SUMMARY OF PERFORMANCE:_____

SPOT CHECK EFFECTIVENESS TEST AFTER FADE RECOVERY

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

60 MPH FULL SYSTEM X FRONTS ONLY ___ REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 3 stops from 60 mph with initial brake temperature between ~~150°F to 150°F~~. ~~FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F.~~ ~~FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#.~~ REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ___ FT. STOPPING DISTANCE

SPECIAL INSTRUCTIONS: PERFORM immediately ~~from~~ after last ~~Para~~ FADE RECOVERY STOP
NO TEMP REQUIREMENTS

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP [illegible]			REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN [illegible] LANE: YES ✓ NO ___
REMARKS:_____

94

1ST REBURNISH TEST

VEHICLE NO.: S-1
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11 PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX. 71 MIN._____
DRIVER: _____

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. IBT 10°F FRONT TO REAR DIFFERENTIAL)

SPECIAL INSTRUCTIONS:_____

95

STOP NO.	ACTUATOR FORCES		BK. TEMPS.												REMARKS
	FRONT	REAR	FRONT	REAR											
1															
10															
20															
30															
35															

REMARKS:_____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-19-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 45 MIN. _____
WIND: VELOCITY 5 DIRECTION [illegible] DRIVER R. R[illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	55		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Start [illegible]				
2	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	199				
3	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
4	55	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
5	55		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	143	[illegible]	[illegible]	[illegible]				
6	54		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				

VEHICLE IN LANE: YES ✓ NO ____
REMARKS: [illegible]

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~60~~ 50 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ~~60~~ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: ~~150~~ 195 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	47	[illegible]	[illegible]	[illegible]												
2	50	[illegible]	235.4	[illegible]												
3	[illegible]	32	[illegible]	[illegible]						3						
4	41	29	[illegible]	[illegible]									3.53			
5	50	33	[illegible]	[illegible]									3.41			
6	[illegible]	35	[illegible]	[illegible]												

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

80 MPH FULL SYSTEM: X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 4 stops from 80 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 100°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 310 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS:_____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____
4-S under Top Speed

_____ MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct ~~6~~ 4 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: _____ FT. STOPPING DISTANCE

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR					REMARKS
1															
2															
3															
4															
5															
6															

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 4[illegible] MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER R. Reimer OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMP. FRONT	BK. TEMP. REAR						REMARKS
1	[illegible]															
2	[illegible]															
3	[illegible]															
4	[illegible]															
5																
6	[illegible]															

VEHICLE IN [illegible]' LANE: YES ✓ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

~~60~~ 50 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ~~60~~ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ~~300~~ 400 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

101

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	55			[illegible]		[illegible]	[illegible]									
2	[illegible]			[illegible]			[illegible]									
3	[illegible]															
4	[illegible]															
5	[illegible]															
6	[illegible]															

VEHICLE IN ' LANE: YES ✓ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY _____ DIRECTION _____ DRIVER R. Reiman OBSERVER _____
TEST LOCATION _____ SKID NO. _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

102

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		[illegible]														
2		[illegible]														
3		50	5							[illegible]						
4		51								[illegible]						
5		52								150						
6		50														

VEHICLE IN ' LANE: YES ____ NO ____
REMARKS: _____

FINAL EFFECTIVENESS TEST

VEHICLE NO.: 5[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 45 MIN. 45
WIND: VELOCITY 5 DIRECTION SO. DRIVER R[illegible] OBSERVER _____
TEST LOCATION_____ SKID NO._____

~~60~~ 50 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ~~245~~ 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		44														
2		52											115			
3																
4																
5																
6																

VEHICLE IN LANE: YES X NO ____
REMARKS: _____

WATER RECOVERY TEST

VEHICLE NO.: S...
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-19-75 PAGE_____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES_____ AMB. TEMP.: MAX. 64 MIN. 54
WIND: VELOCITY_____ DIRECTION Sw. DRIVER R. Reinhart OBSERVER_____
TEST LOCATION:_____

BASELINE

Set tires to specified pressure. With the vehicle at loaded test weight conduct 3 stops from 30-0 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. ALL STOPS ARE TO BE MADE WITH THE CLUTCH DISENGAGED AT A DECEL. LEVEL OF 10 to 11 FPSPS. RECORD MAX ACTUATOR FORCES.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR	REMARKS
1	13	15	134	144	
2	15	13	132	140	
3	15	13	140	150	

Average maximum pedal forces for Baseline Checks: FRONT AVG. 1433 # REAR AVG. _____ #

Requirement for Recovery Test: MAX. ACTUATOR FORCES: FRONT 1433# + 20# = 1453# REAR 1366# + 20# = 1386#

MIN. ACTUATOR FORCES: FRONT 1433# − 10# = 1423# REAR 1366# − 10# = 1356#

RECOVERY TEST

IMMEDIATELY AFTER PERFORMING THE WETTING PROCEDURE ACCELERATE AT THE MAXIMUM RATE TO 30 MPH AND CONDUCT A STOP AT A DECEL. LEVEL OF 10 to 11 FPSPS WITH THE CLUTCH DISENGAGED. AFTER EACH STOP, IMMEDIATELY ACCELERATE THE VEHICLE AT THE MAXIMUM RATE AND REPEAT FOR A TOTAL OF 5 STOPS. RECORD MAXIMUM ACTUATOR FORCES FOR EACH STOP.

TEST REQUIREMENTS: 5-55# FRONT AND 10-40# REAR FOR STOPS 1 THRU 4. FIFTH STOP MUST BE WITHIN ___# to ___# FRONT AND ___# to ___# REAR.

STOP NO.	ACTUATOR FORCES FRONT	ACTUATOR FORCES REAR	BK. TEMPS. FRONT	BK. TEMPS. REAR	REMARKS
1					
2					
3					
4					
5					
* 6					
7					
8					
9					
10					

SUMMARY OF PERFORMANCE:_____

SPOTCHECK EFFECTIVENESS TEST

AFTER WATER RECOVERY

VEHICLE NO.: S
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-19-75 PAGE ____ of ____
)OM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 60 MIN. 50
:ND: VELOCITY _____ DIRECTION SO. DRIVER R. Kenning OBSERVER _____
:ST LOCATION _____ SKID NO. _____

MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

:t tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct ~~6~~ 3 stops from mph
.th initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F, FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: ____ FT. STOPPING DISTANCE.

PECIAL INSTRUCTIONS: PERFORM immediately after last water recovery stop
NO TEMP REQUIREMENTS

105

TOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN LANE: YES ✓ NO ____
REMARKS: CA

REBURNISH TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-3-25 PAGE _____ of _____
ODOM: FINISH_____ START _____ TOTAL MILES_____ AMB. TEMP.: MAX. 33 MIN. [illegible]
DRIVER: E. STRIPER

With the vehicle at loaded test weight, conduct 35 stops, 30-0 mph at 12 fpsps. Stop interval to be the distance necessary to maintain initial brake temperature between 130°F and 150°F, or the distance of 1 mile, whichever occurs first. Make stops WITH CLUTCH DISENGAGED. Record initial brake temperatures and ACTUATOR forces. IBT 10°F FRONT TO REAR DIFFERENTIAL)

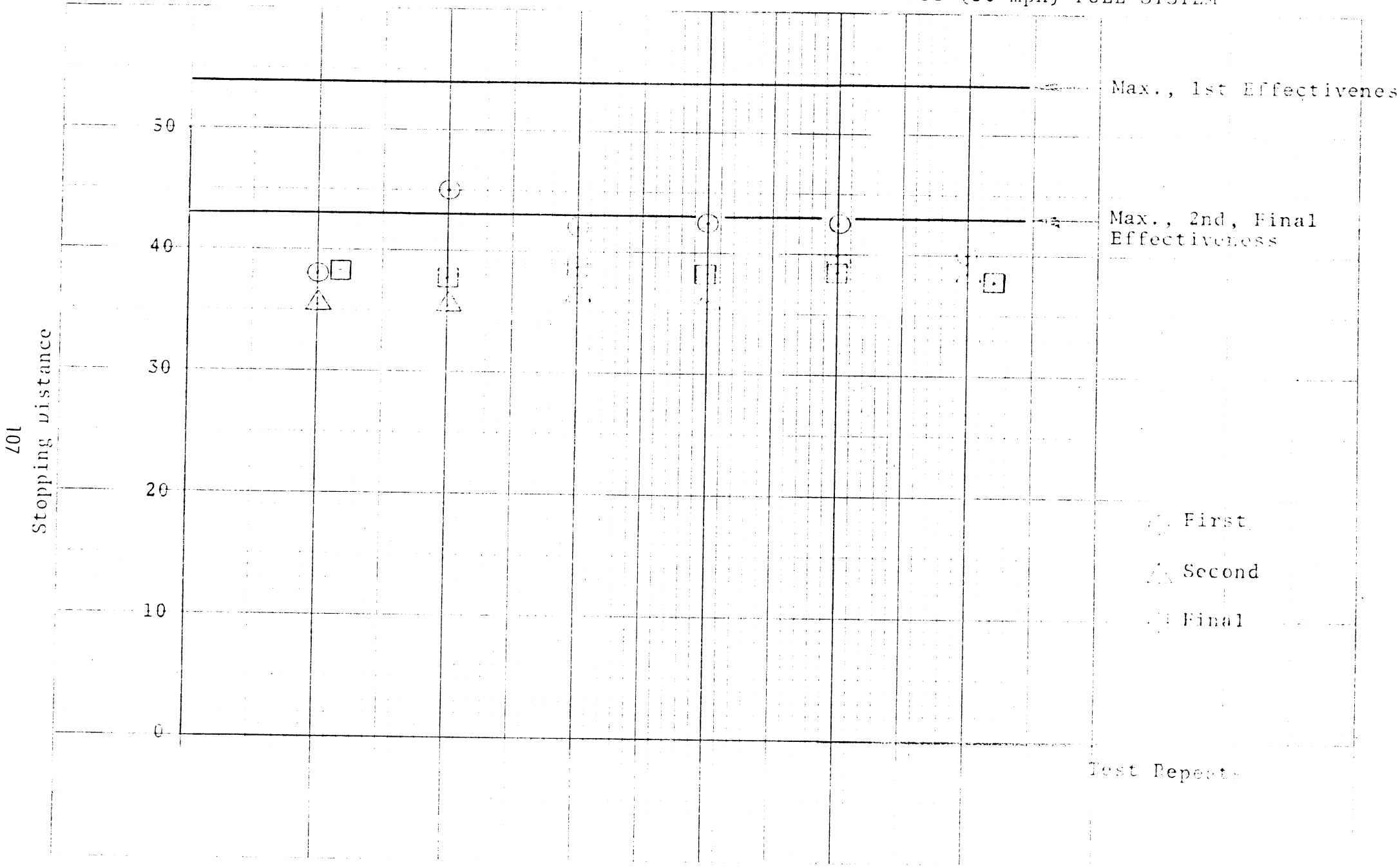
SPECIAL INSTRUCTIONS:

901

STOP NO.	ACTUATOR FORCES		BK. TEMPS.											REMARKS
	FRONT	REAR	FRONT	REAR										
1	12	24	58	67										
10	12	10	63	76										
20	12	9	72	100										
30	11	10	74	101										
35	11	8	63	100										

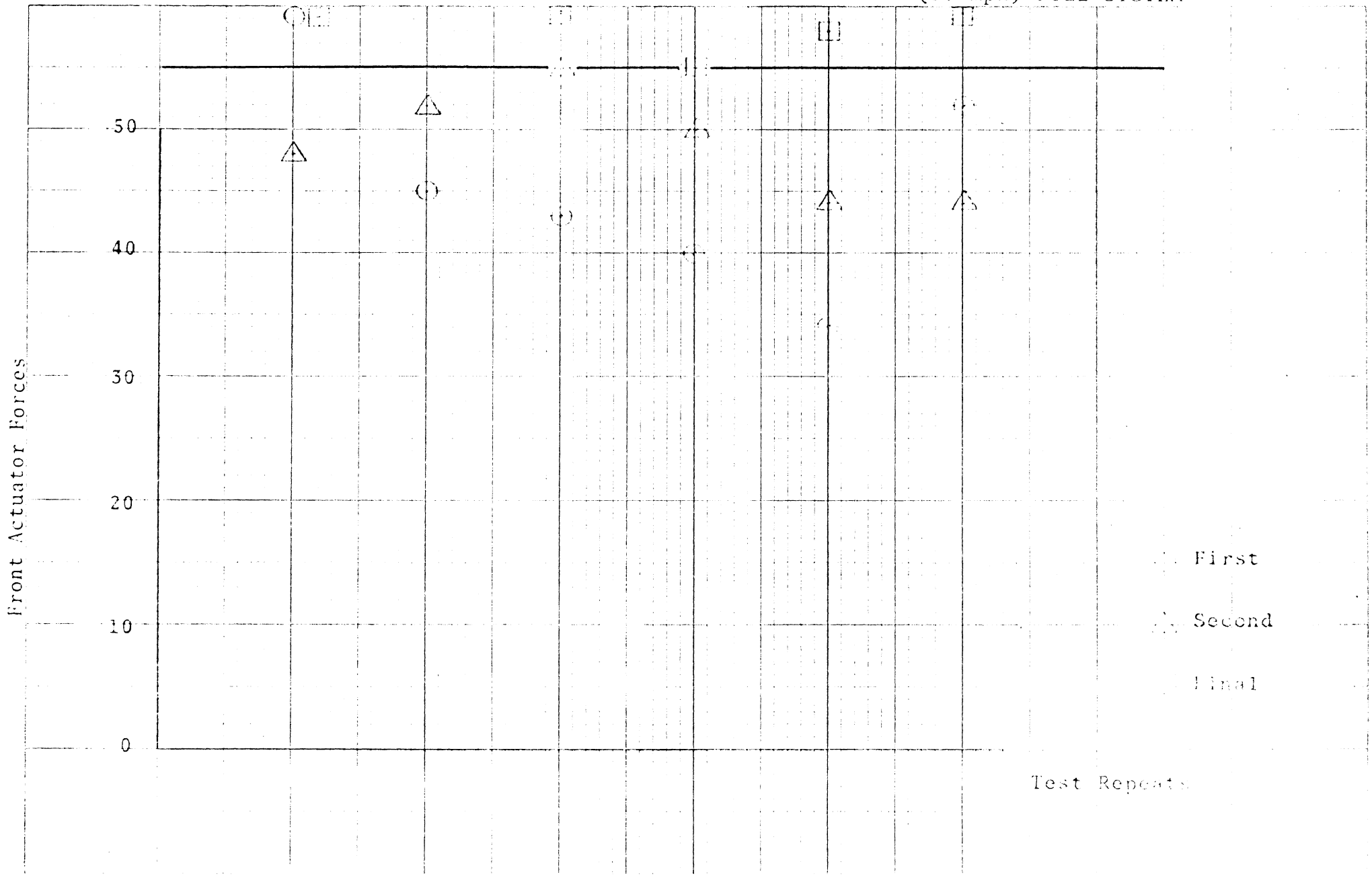
REMARKS:

HARLEY-DAVIDSON FIRST, SECOND, AND FINAL EFFECTIVENESS (30 mph) FULL SYSTEM

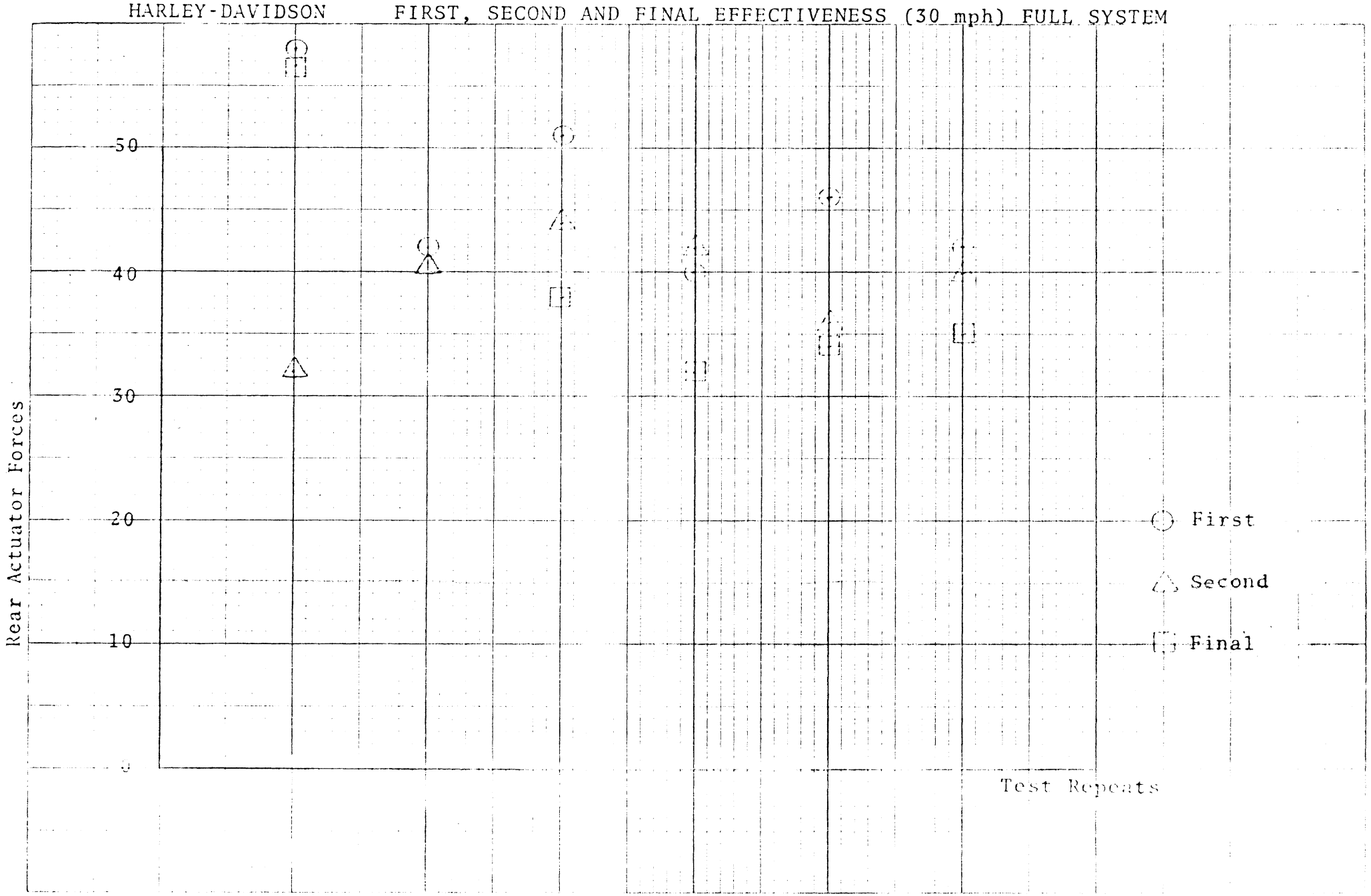


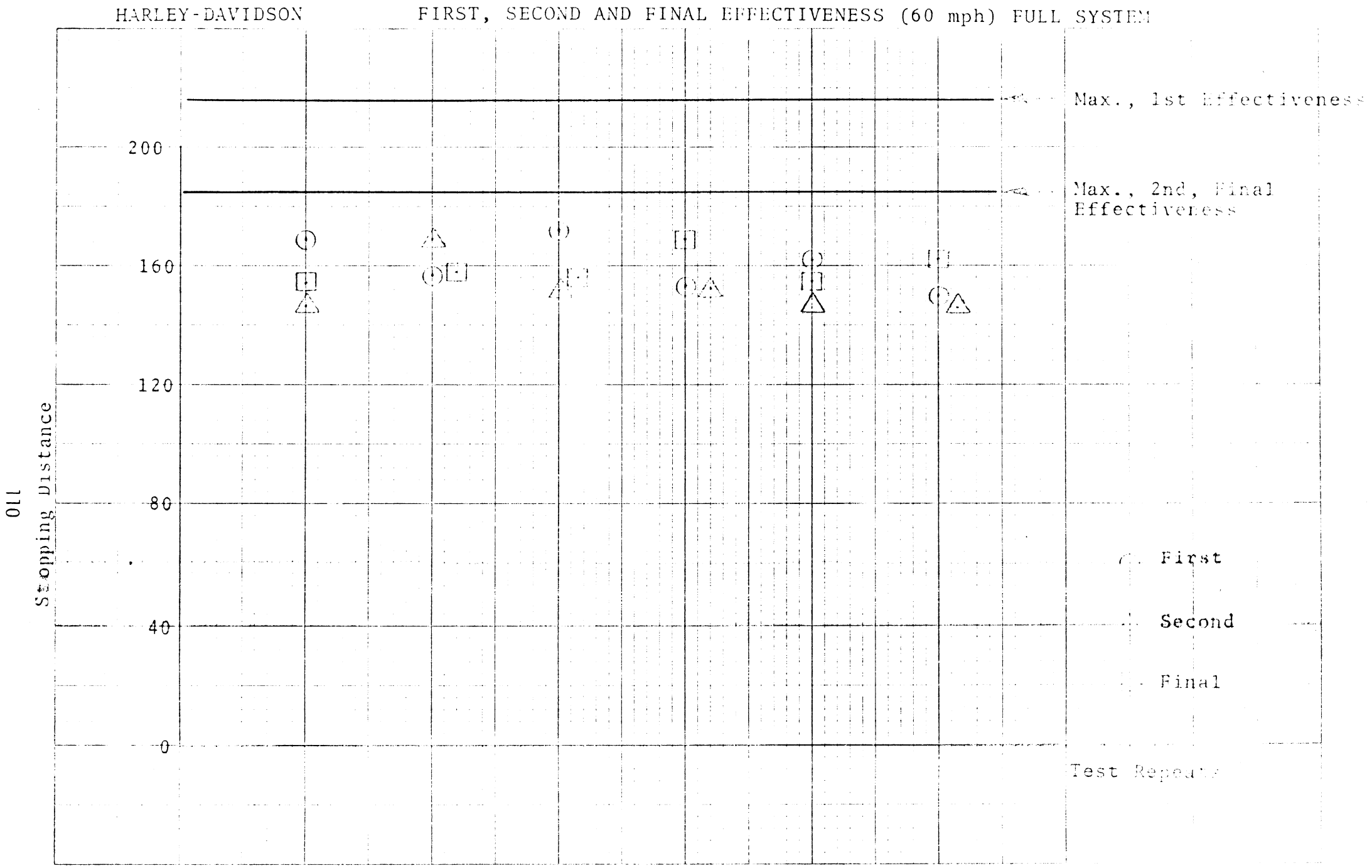
107

HARLEY-DAVIDSON FIRST, SECOND AND FINAL EFFECTIVENESS (30 mph) FULL SYSTEM

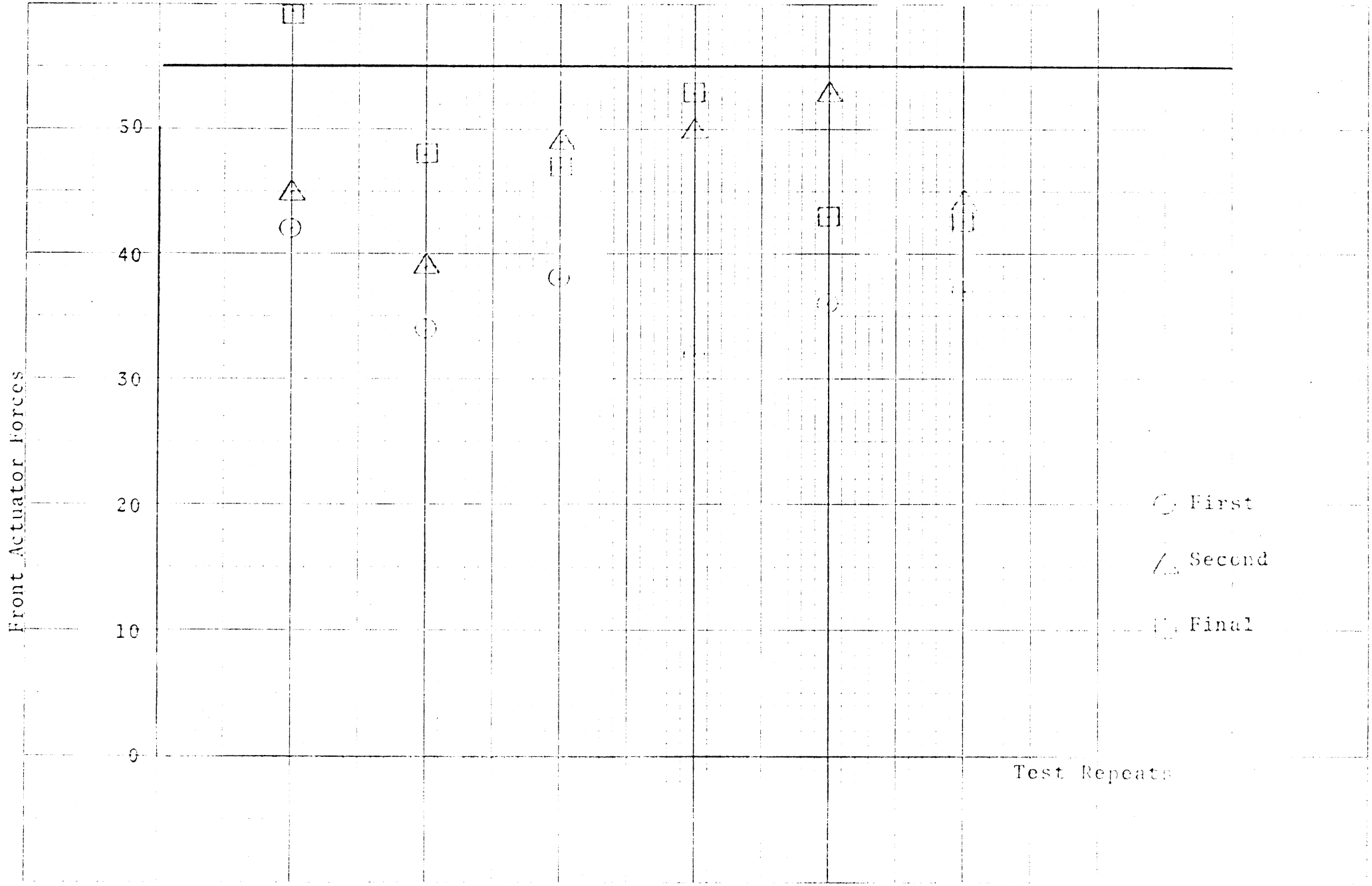


801

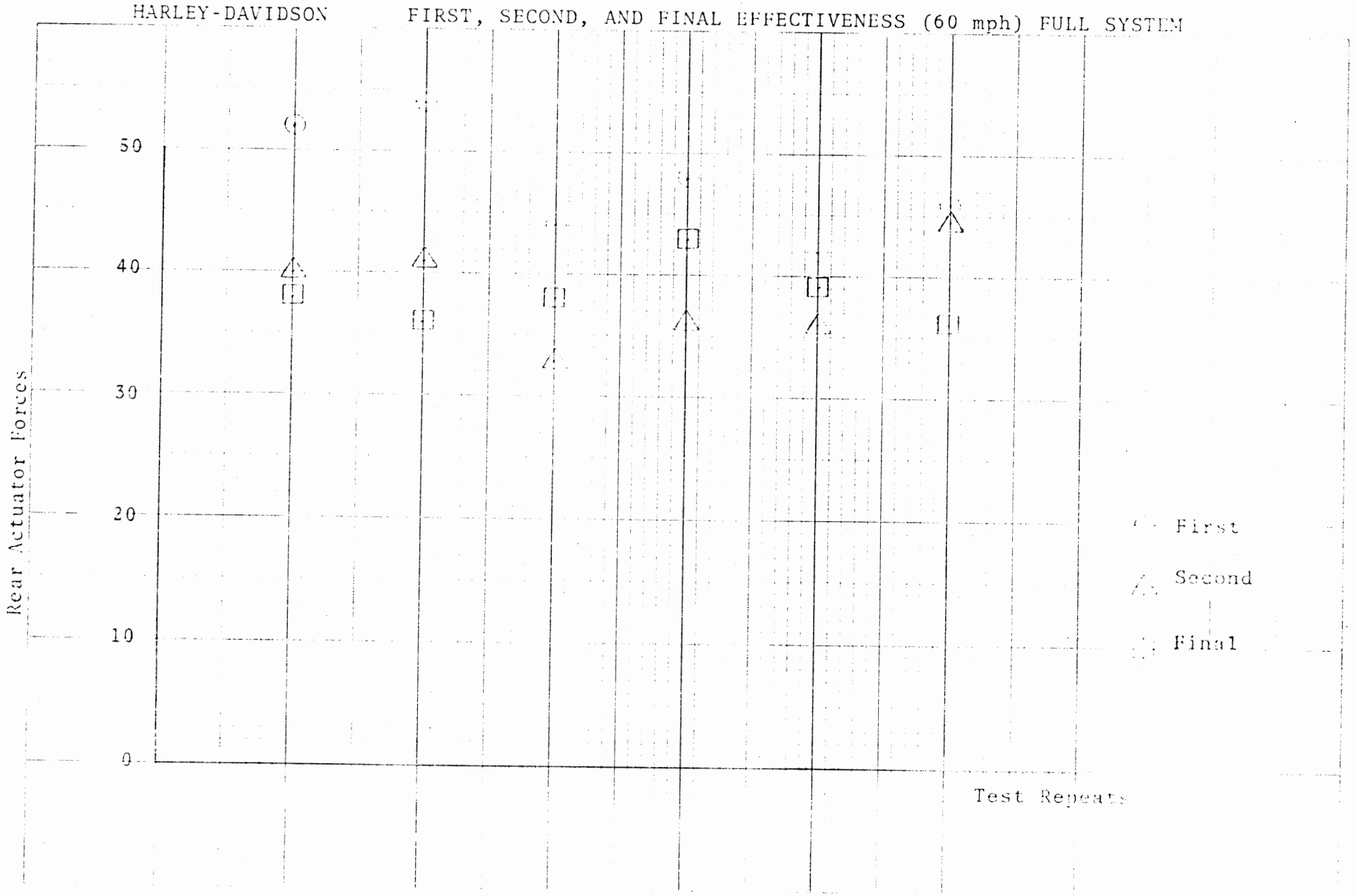

HARLEY-DAVIDSON FIRST, SECOND AND FINAL EFFECTIVENESS (30 mph) FULL SYSTEM
Rear Actuator Forces
50
40
30
20
10
0
First
Second
Final
Test Repeats


HARLEY-DAVIDSON
FIRST, SECOND AND FINAL EFFECTIVENESS (60 mph) FULL SYSTEM
Max., 1st Effectiveness
Max., 2nd, Final Effectiveness
200
160
120
80
40
0
Stopping Distance
110
First
Second
Final
Test Repeats

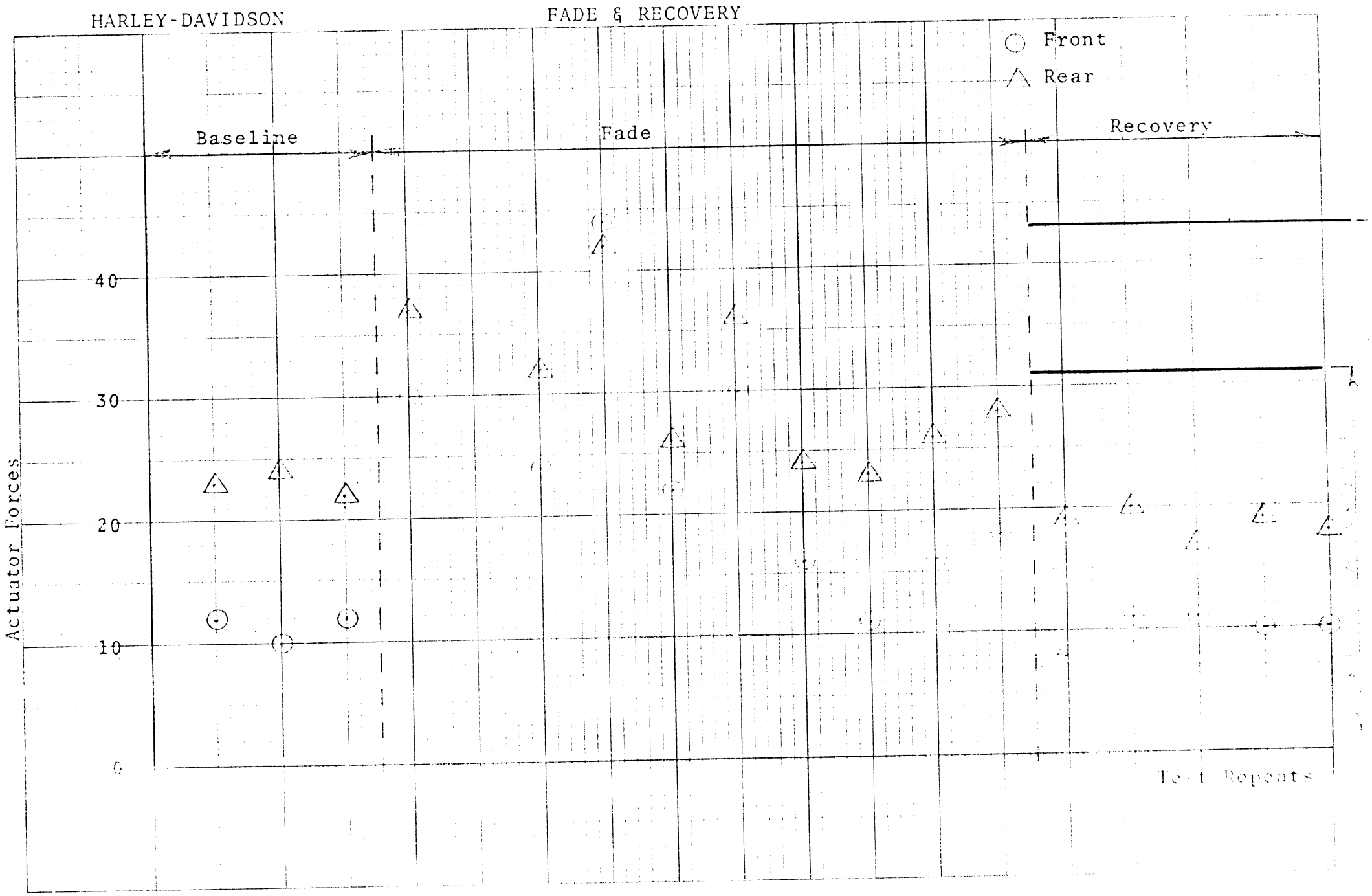
HARLEY-DAVIDSON FIRST, SECOND AND FINAL EFFECTIVNESS (60 mph) FULL SYSTEM

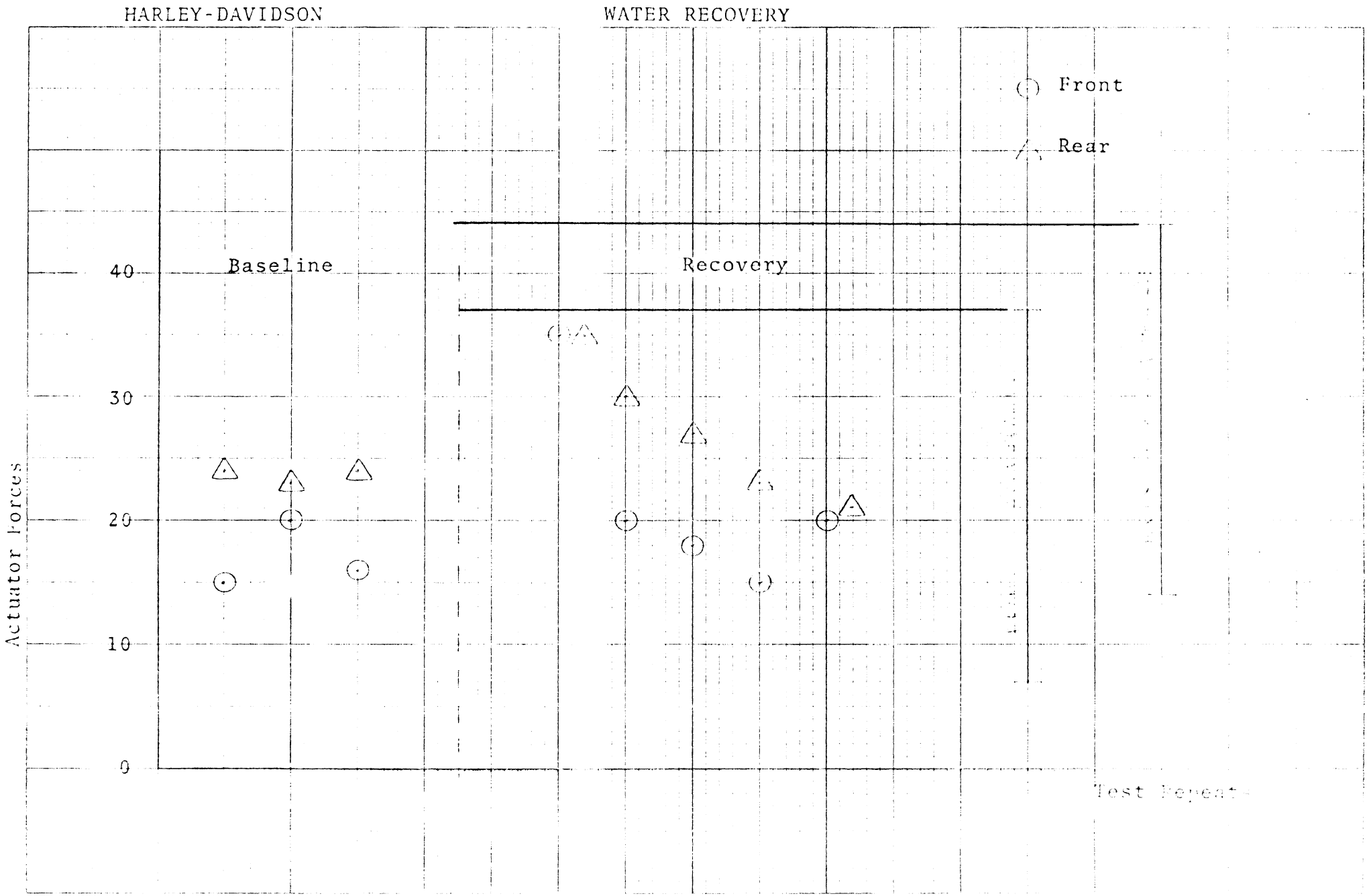


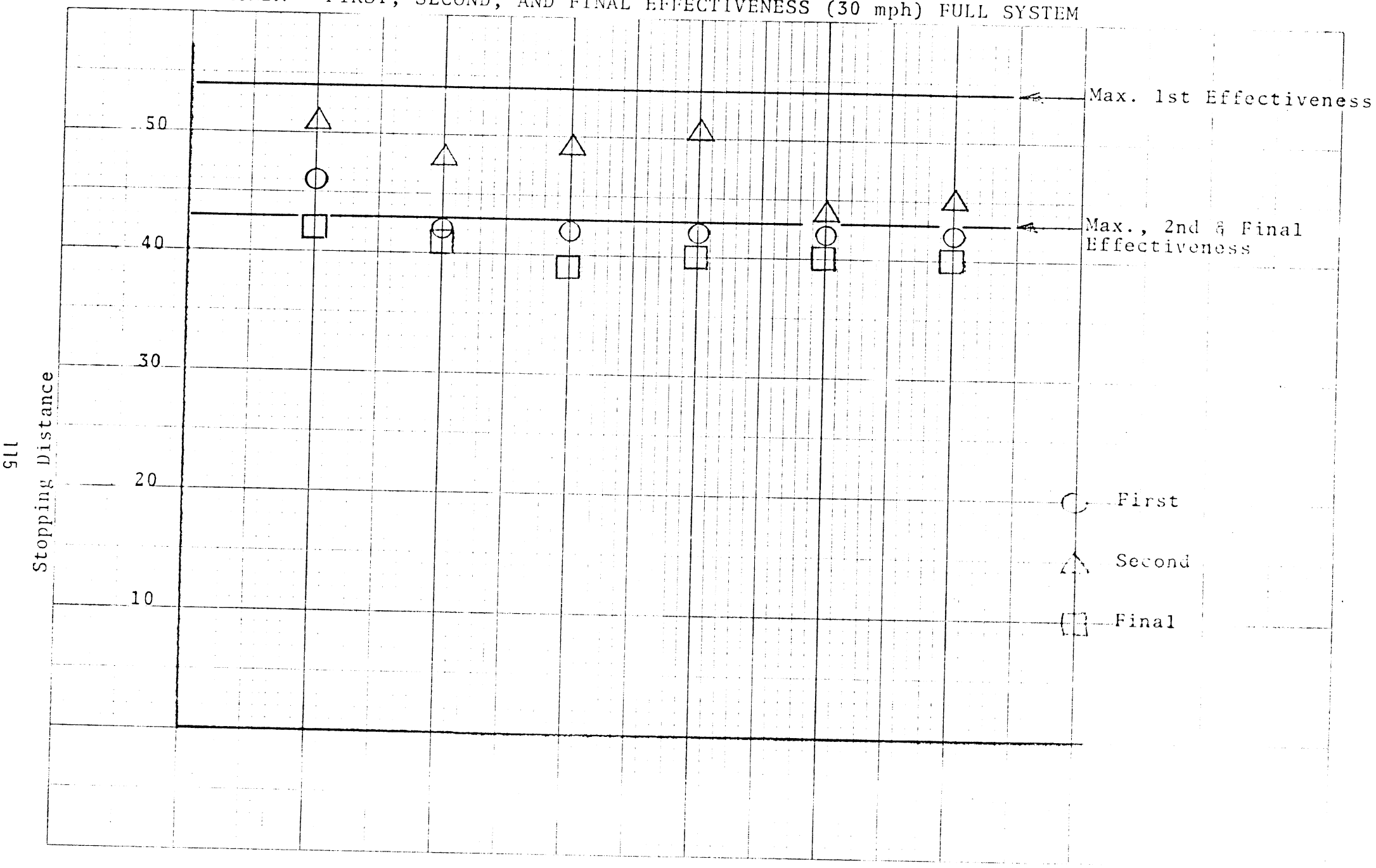
111

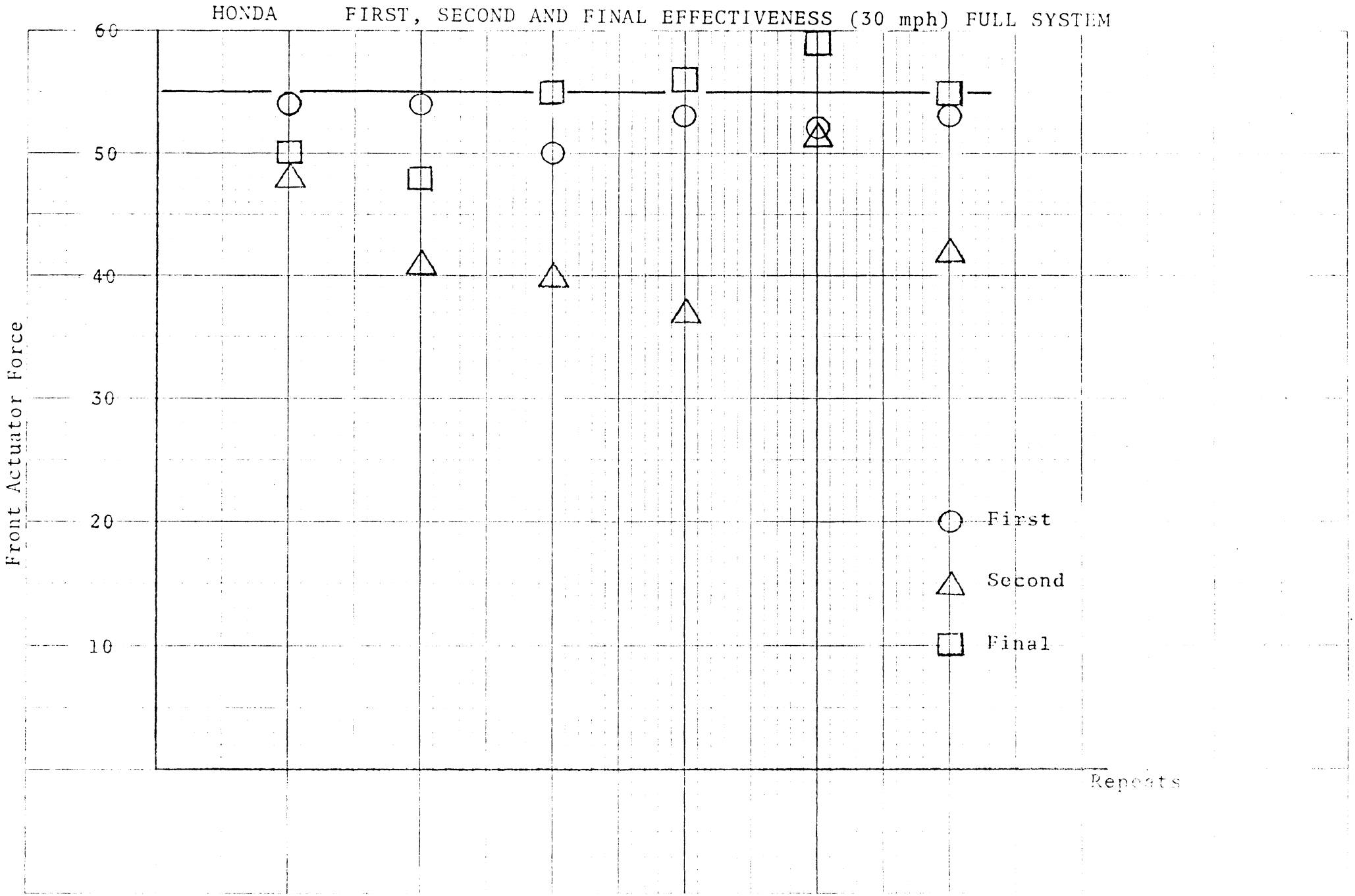

HARLEY-DAVIDSON
FIRST, SECOND, AND FINAL EFFECTIVENESS (60 mph) FULL SYSTEM
Rear Actuator Forces
50
40
30
20
10
0
Test Repeats
First
Second
Final

112

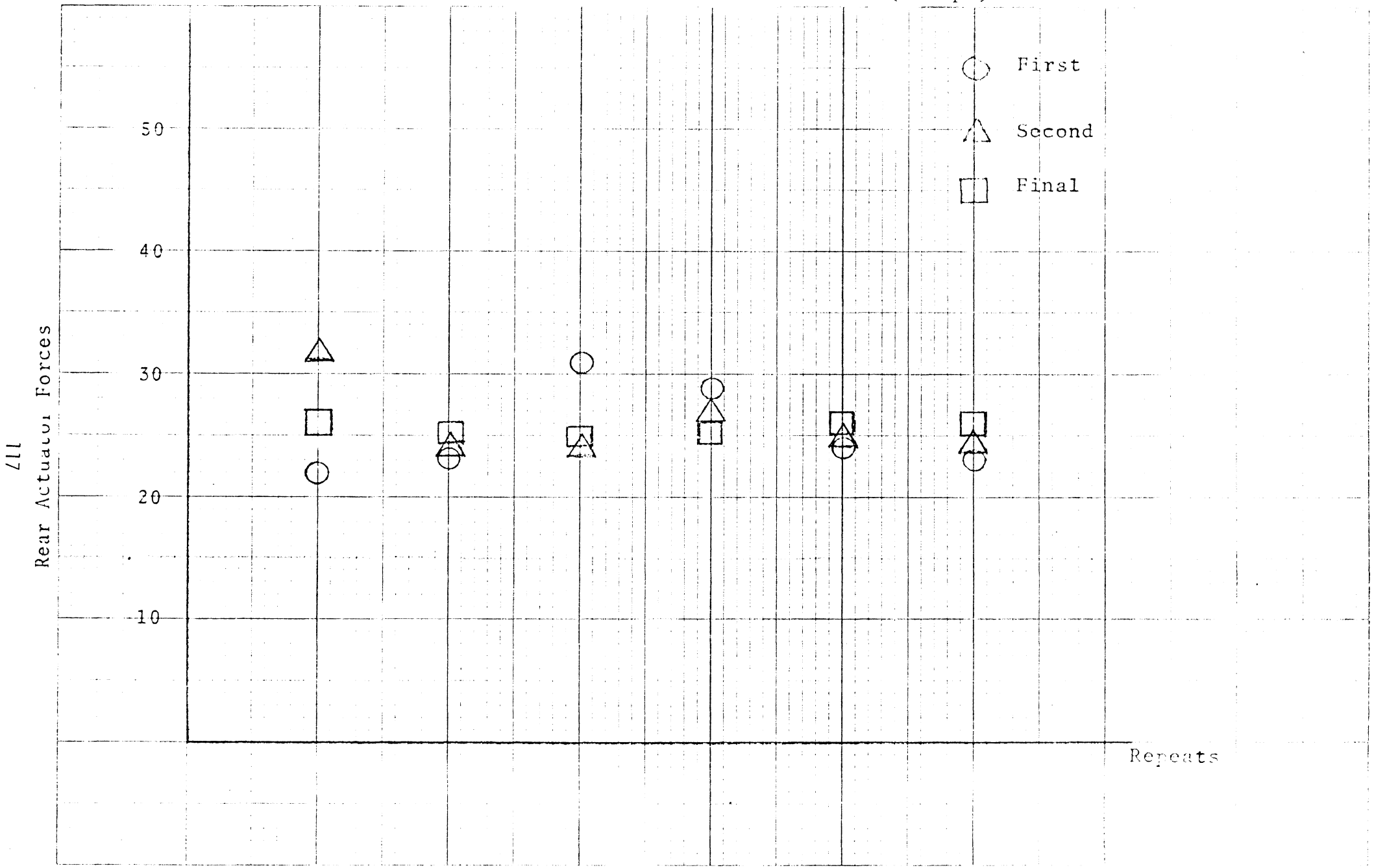

HARLEY-DAVIDSON
FADE & RECOVERY
Front
Rear
Baseline
Fade
Recovery
40
30
20
10
0
Actuator Forces
Test Repeats


HARLEY-DAVIDSON
WATER RECOVERY
Front
Rear
Baseline
Recovery
40
30
20
10
0
Actuator forces
Test Repeat

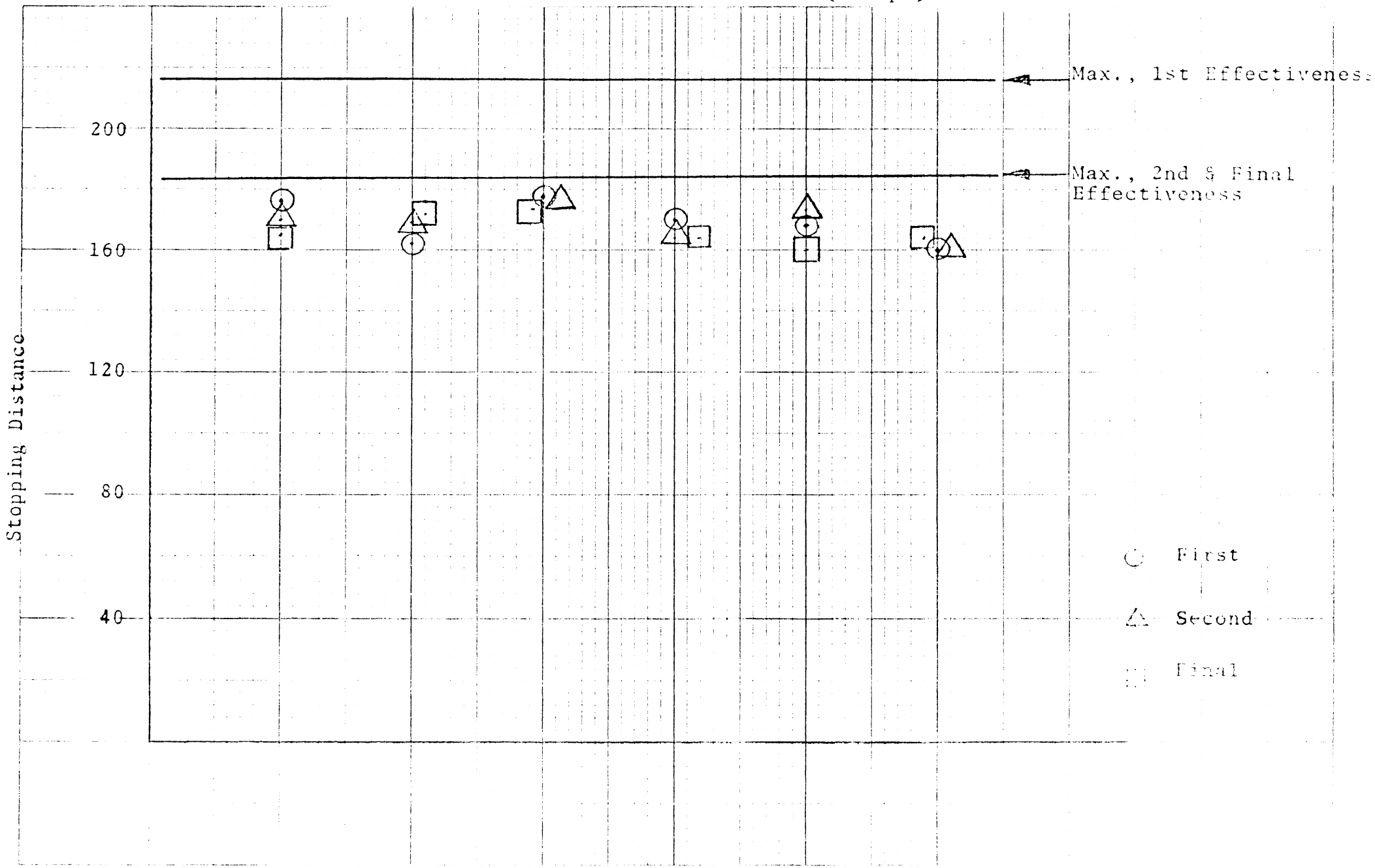

HONDA FIRST, SECOND, AND FINAL EFFECTIVENESS (30 mph) FULL SYSTEM
Stopping Distance
115
50
40
30
20
10
Max. 1st Effectiveness
Max., 2nd & Final Effectiveness
First
Second
Final


HONDA FIRST, SECOND AND FINAL EFFECTIVENESS (30 mph) FULL SYSTEM
60
50
40
30
20
10
Front Actuator Force
Repeats
First
Second
Final

HONDA FIRST, SECOND AND FINAL EFFECTIVENESS (30 mph) FULL SYSTEM

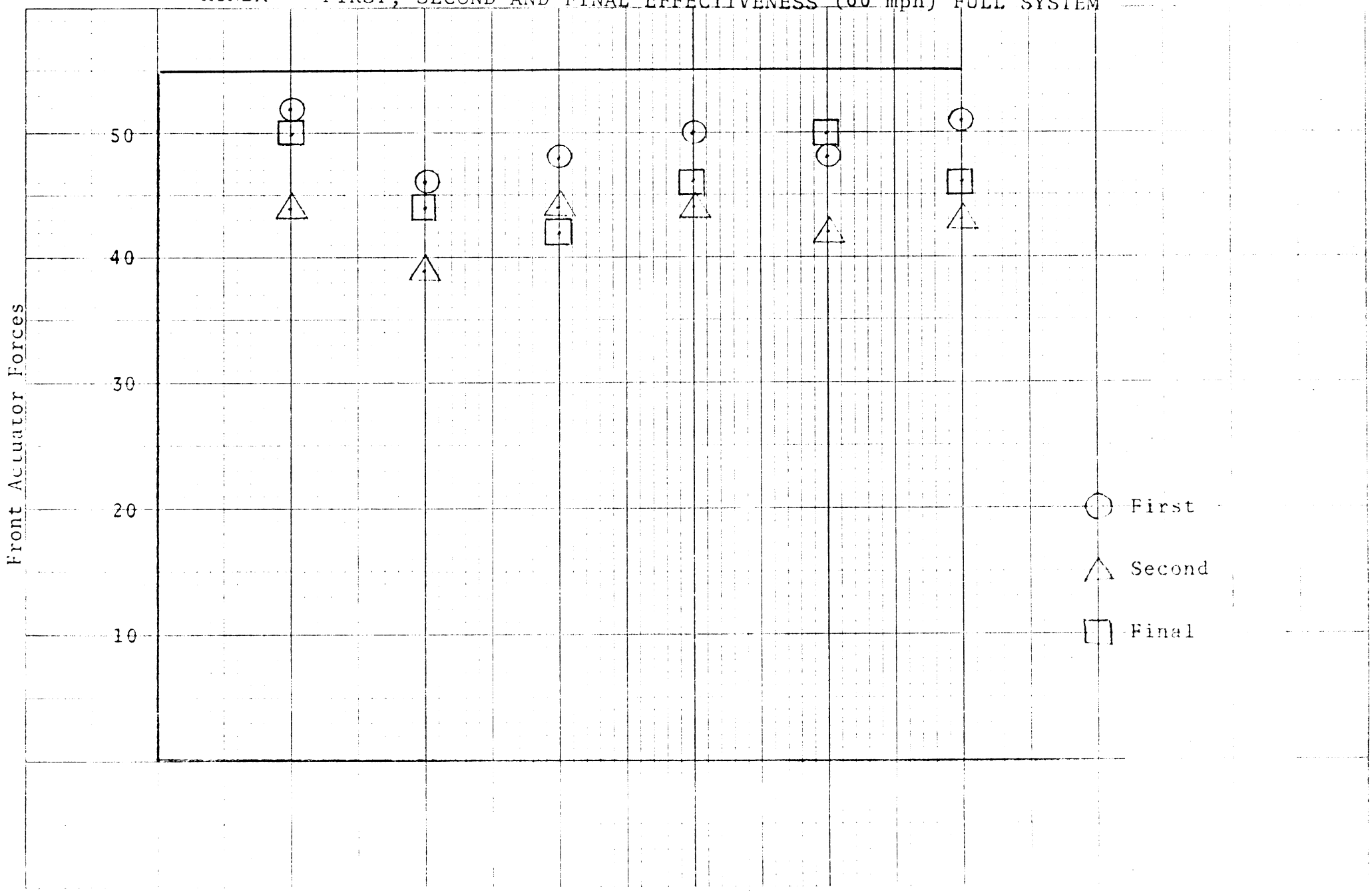


HONDA FIRST, SECOND AND FINAL EFFECTIVENESS (60 mph) FULL SYSTEM

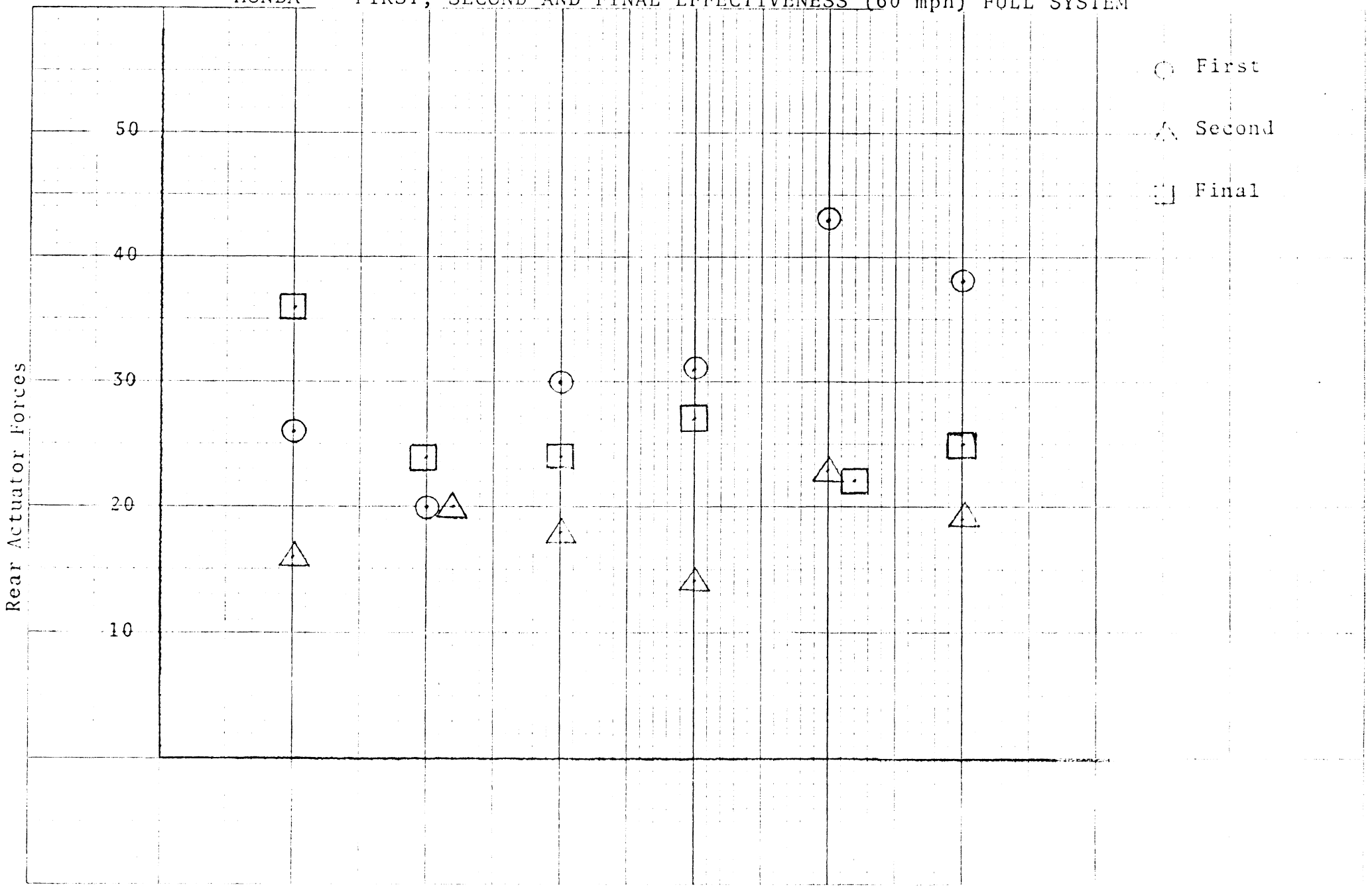


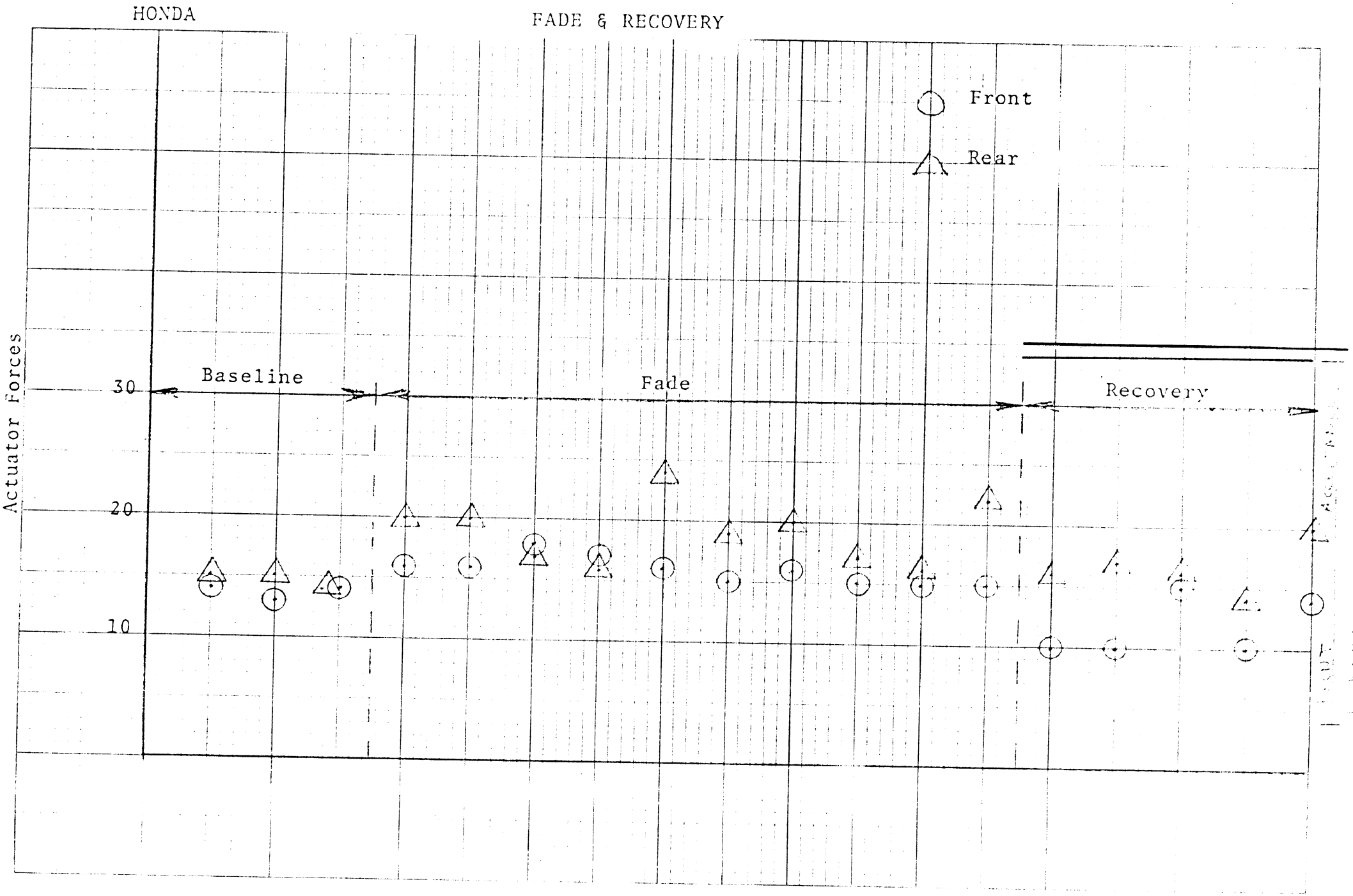
118

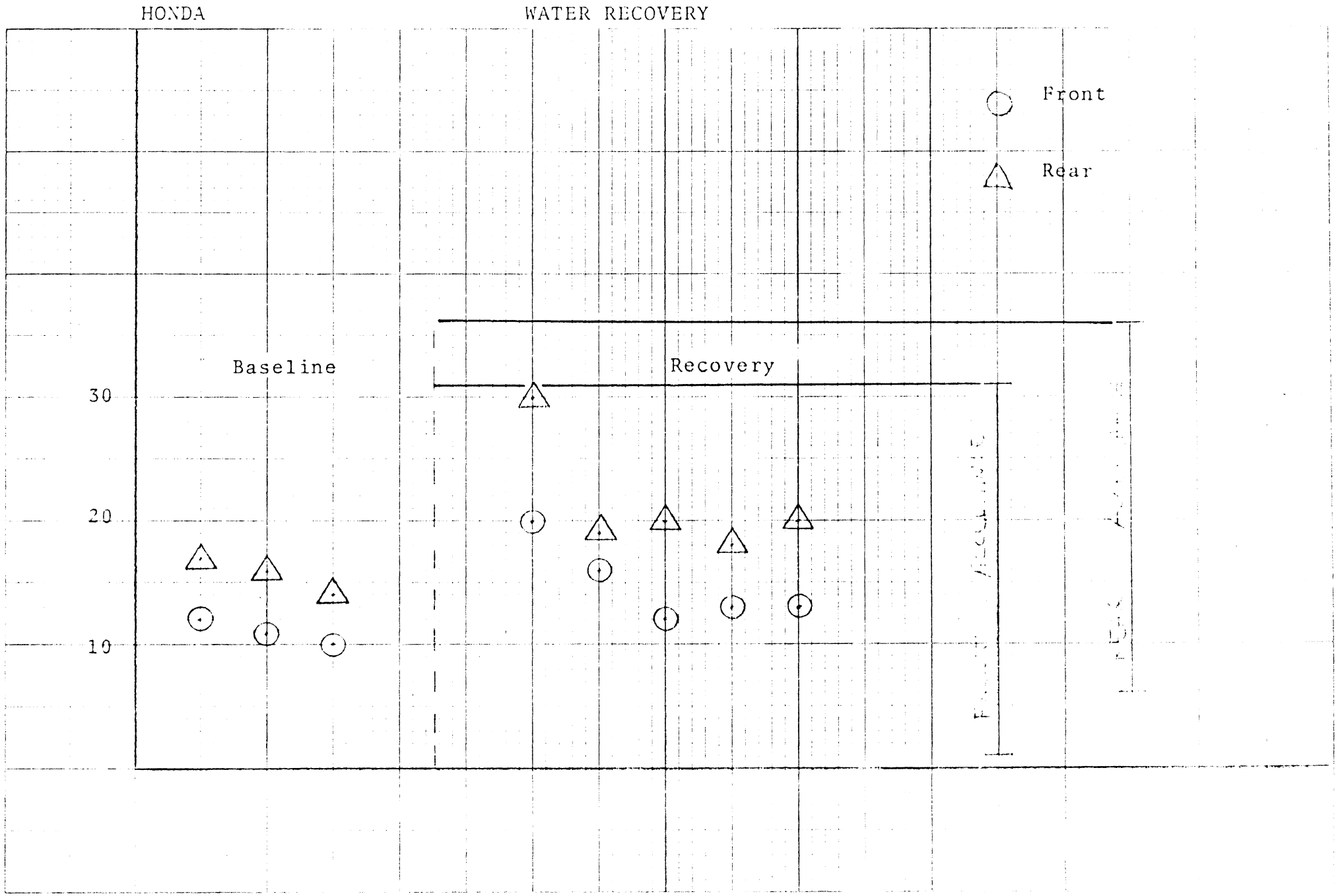
HONDA FIRST, SECOND AND FINAL EFFECTIVENESS (60 mph) FULL SYSTEM



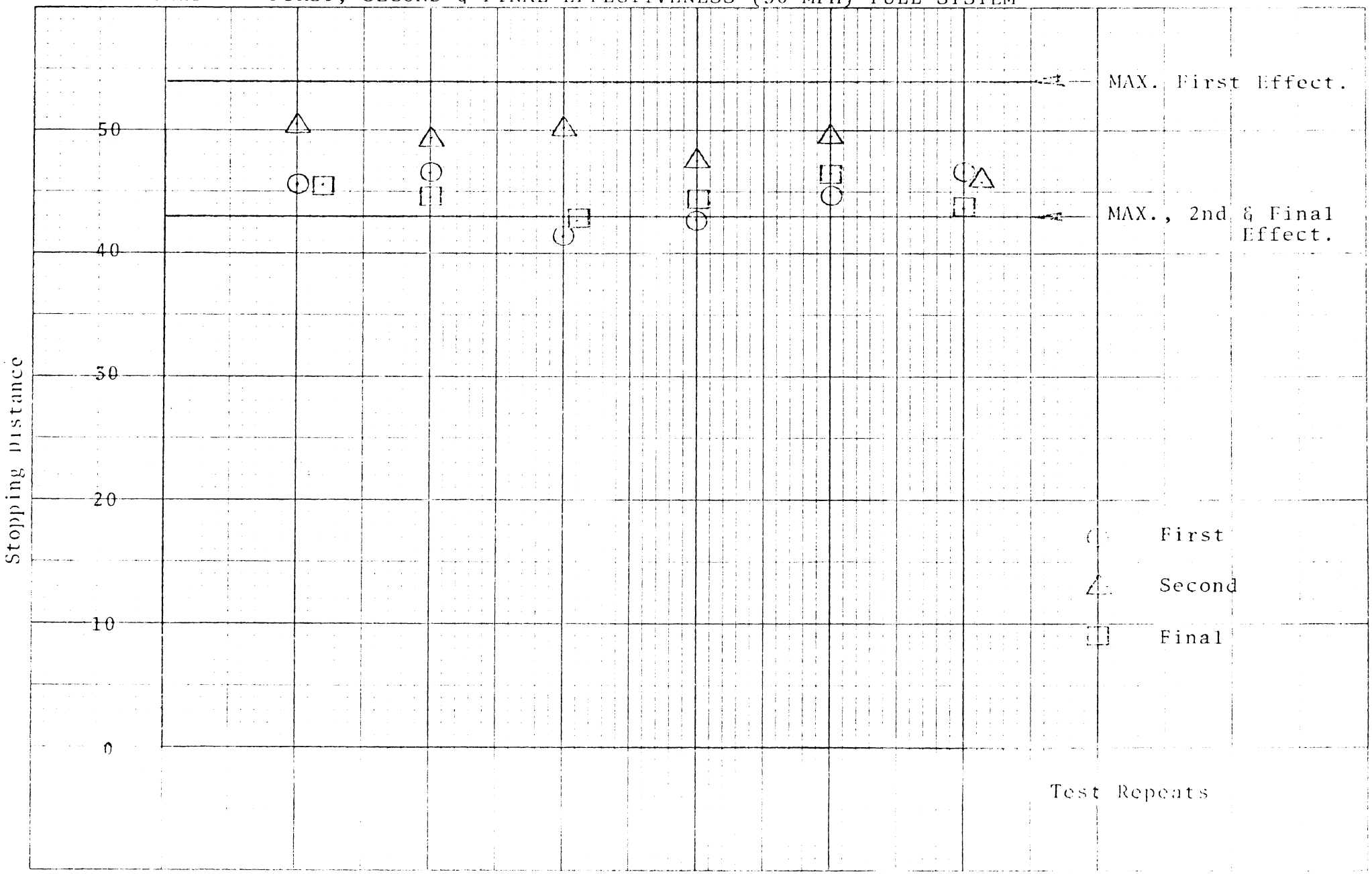
HONDA FIRST, SECOND AND FINAL EFFECTIVENESS (60 mph) FULL SYSTEM





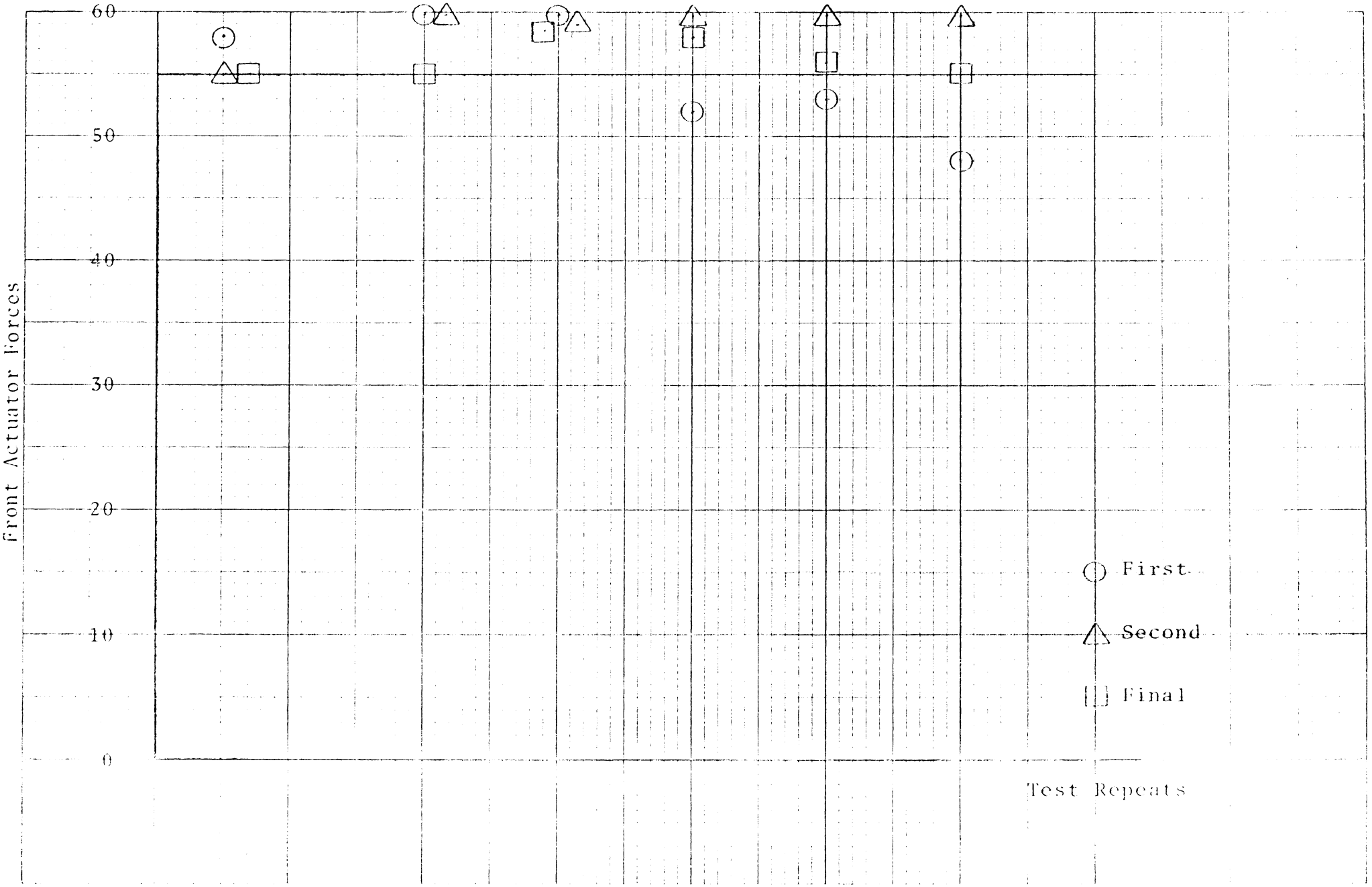

HONDA
WATER RECOVERY
Front
Rear
Baseline
Recovery
30
20
10
Actuator Forces

KAWASAKI FIRST, SECOND & FINAL EFFECTIVENESS (30 MPH) FULL SYSTEM

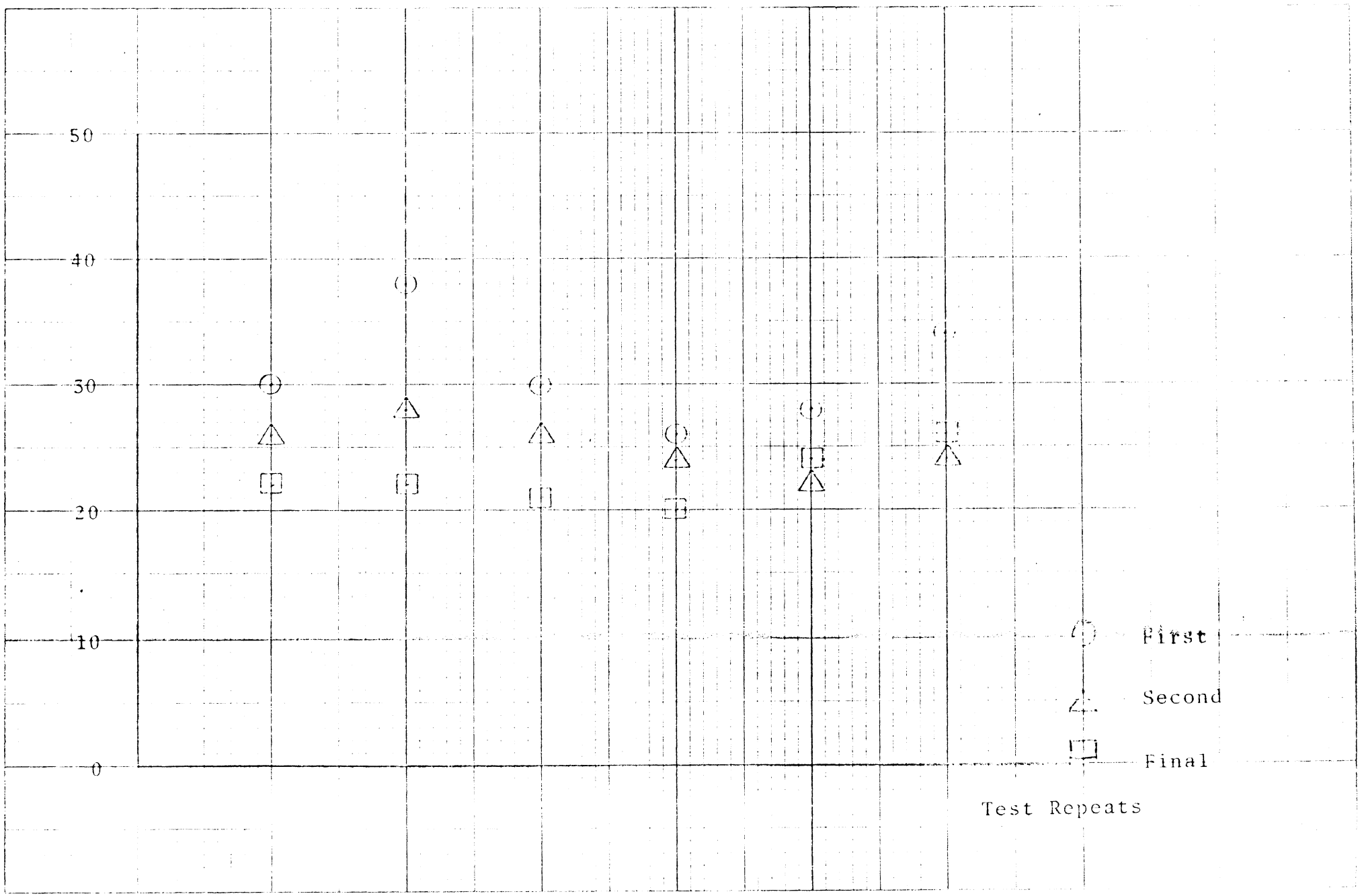


4 82

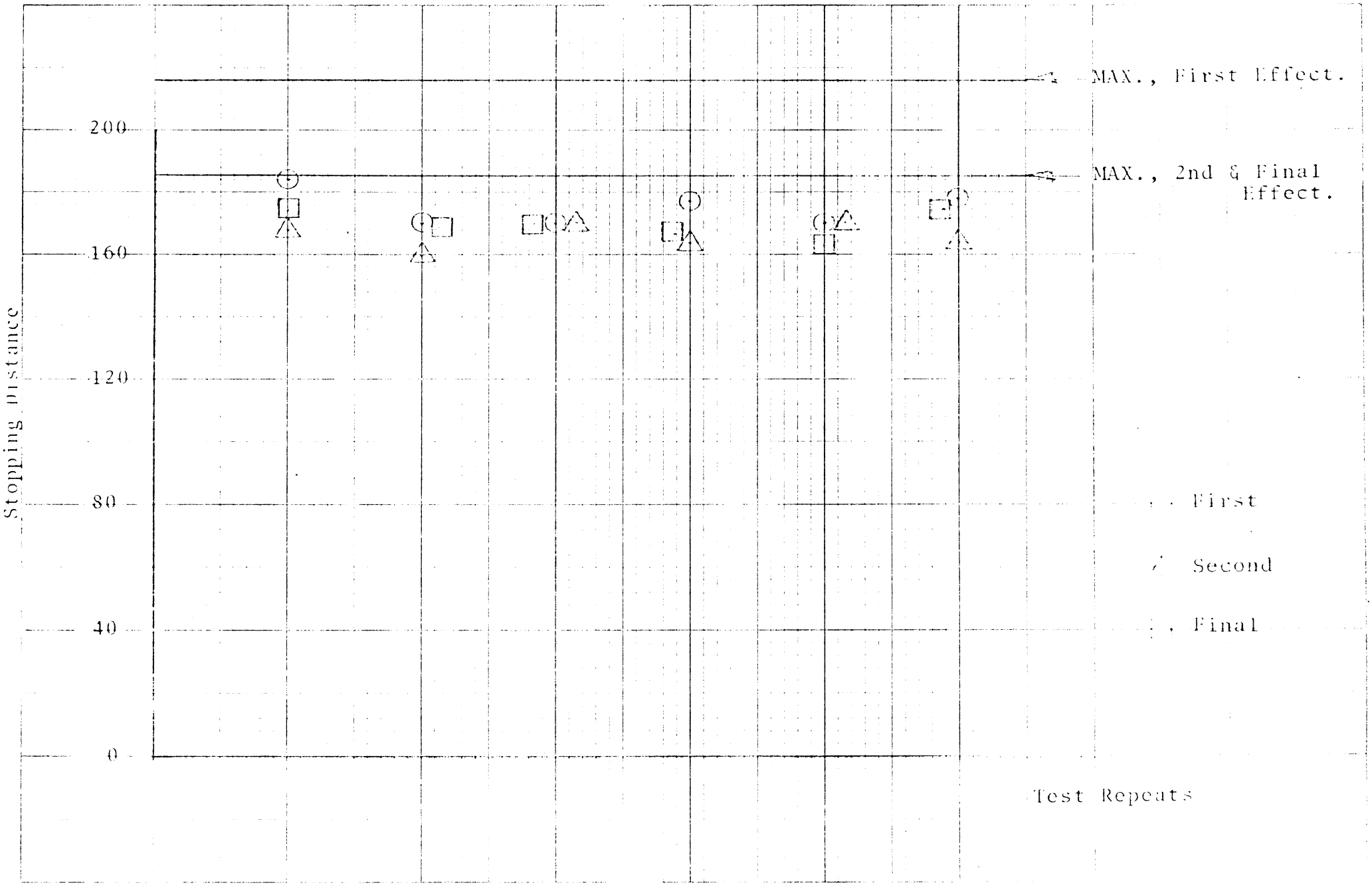
KAWASAKI FIRST, SECOND, & FINAL EFFECTIVENESS (30 MPH) FULL SYSTEM



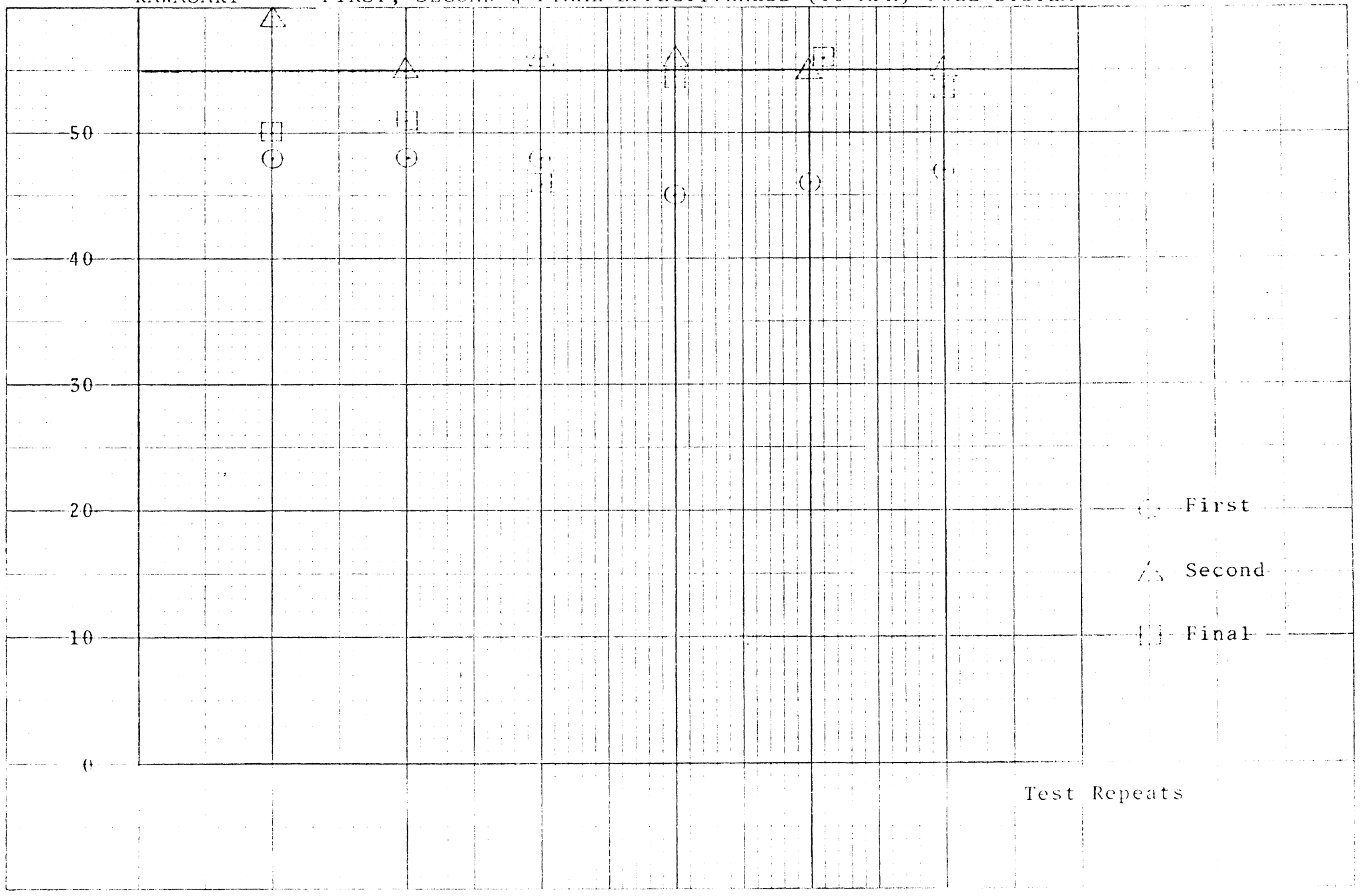
KAWASAKI FIRST, SECOND & FINAL EFFECTIVENESS (30 MPH) FULL SYSTEM

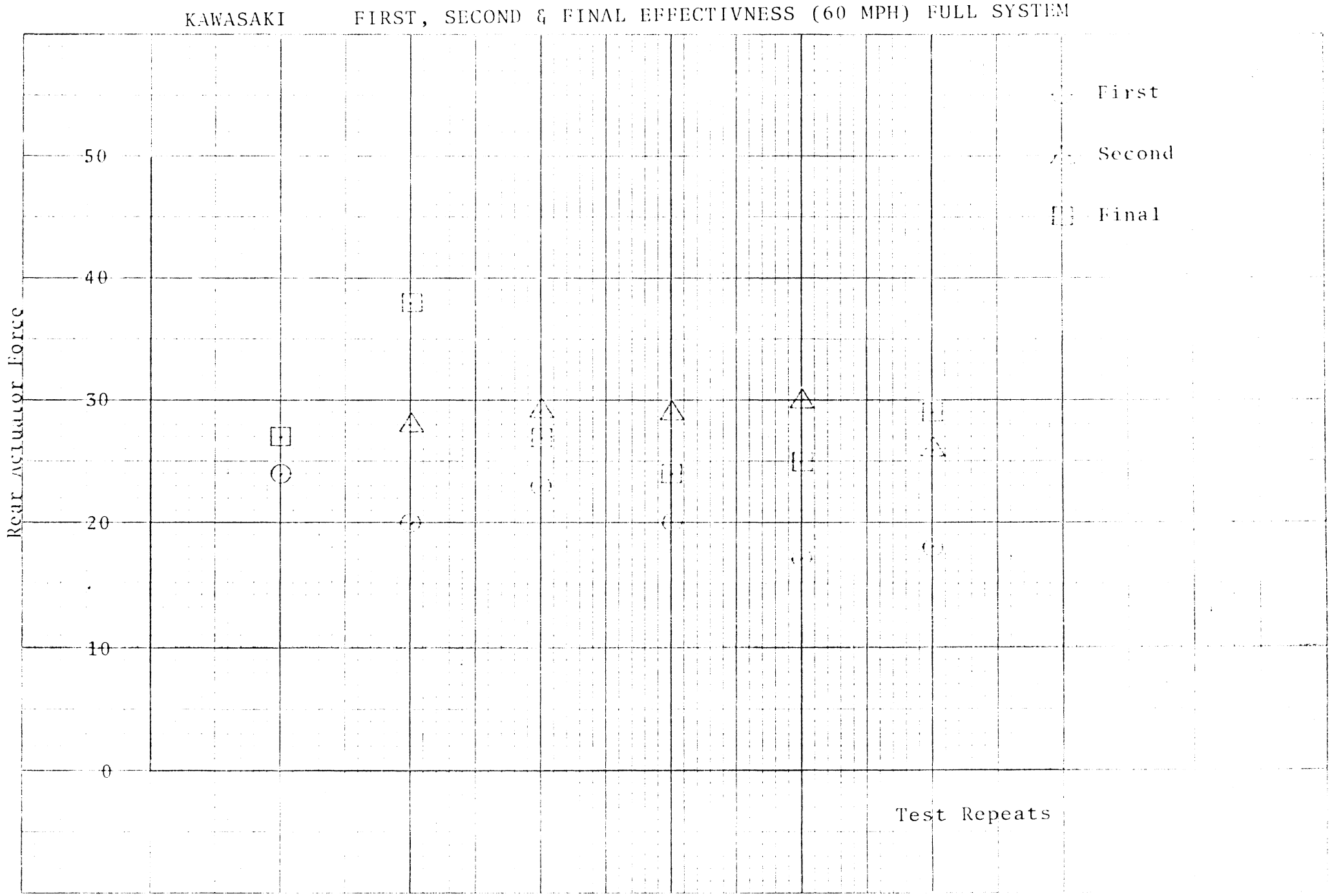


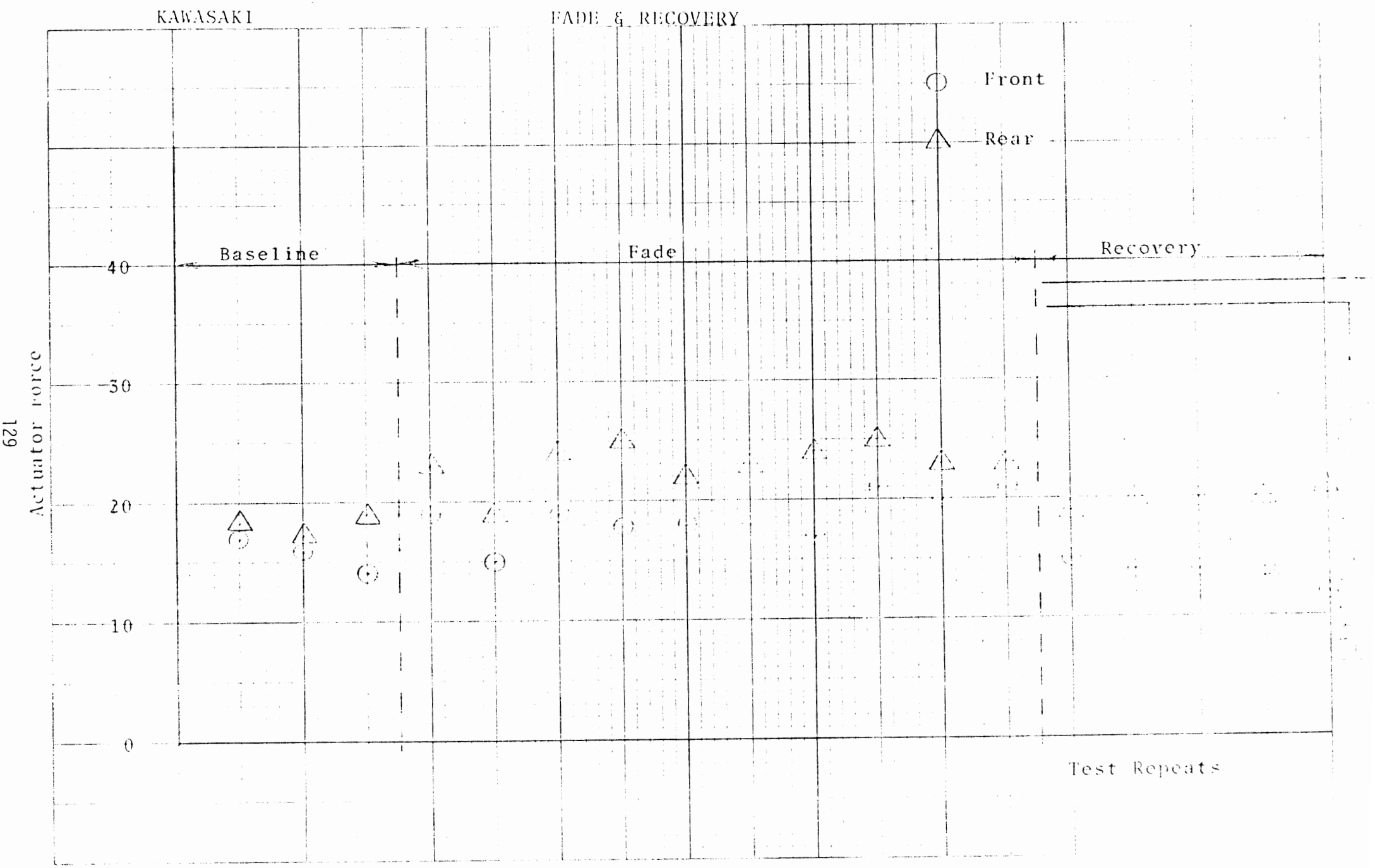
KAWASAKI FIRST, SECOND & FINAL EFFECTIVENESS (60 MPH) FULL SYSTEM

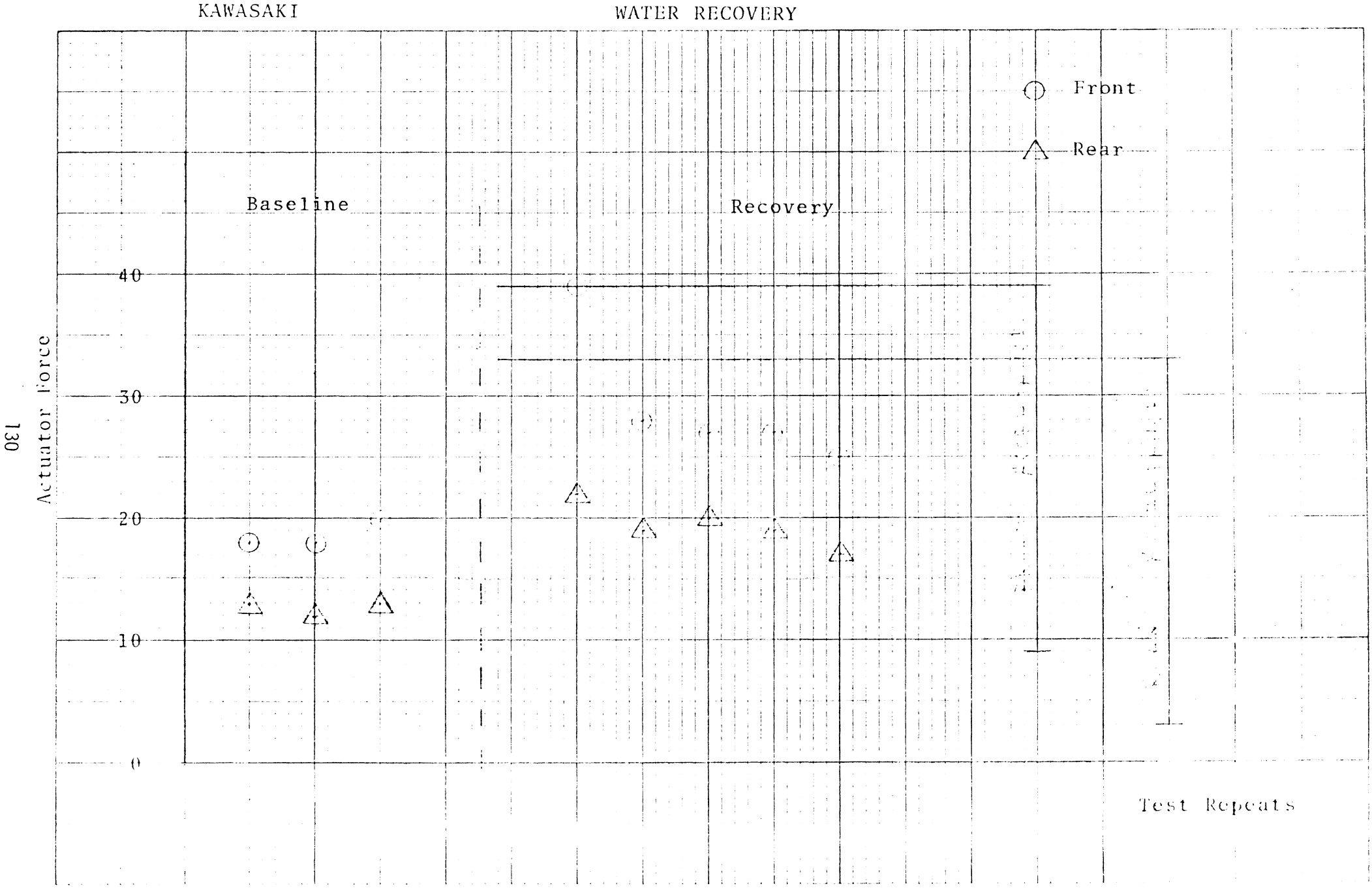


KAWASAKI FIRST, SECOND & FINAL EFFECTIVENESS (60 MPH) FULL SYSTEM



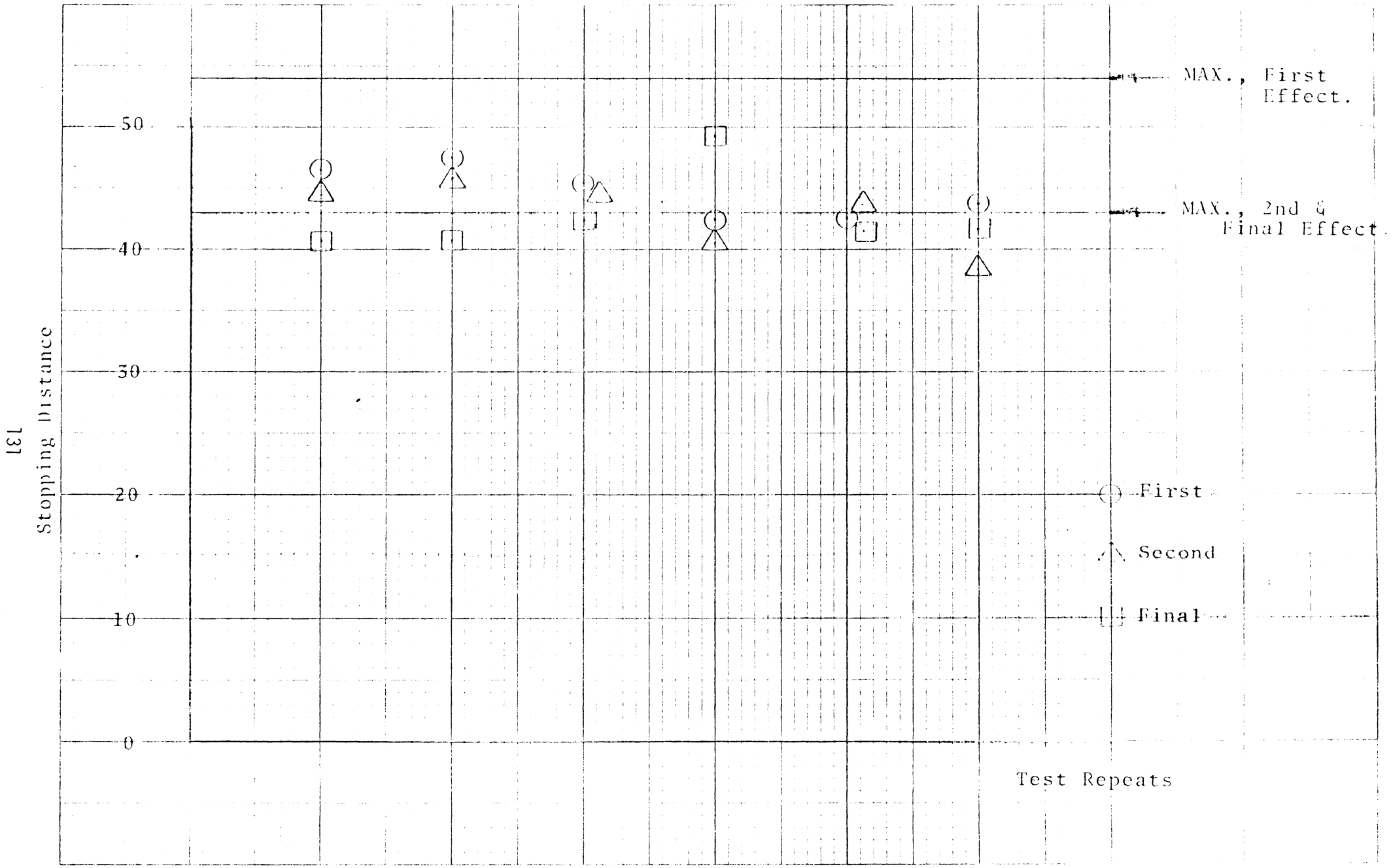

KAWASAKI FIRST, SECOND & FINAL EFFECTIVNESS (60 MPH) FULL SYSTEM
First
Second
Final
50
40
30
20
10
0
Rear Actuator Force
Test Repeats


KAWASAKI
FADE & RECOVERY
Front
Rear
Baseline
Fade
Recovery
40
30
20
10
0
Actuator force
Test Repeats

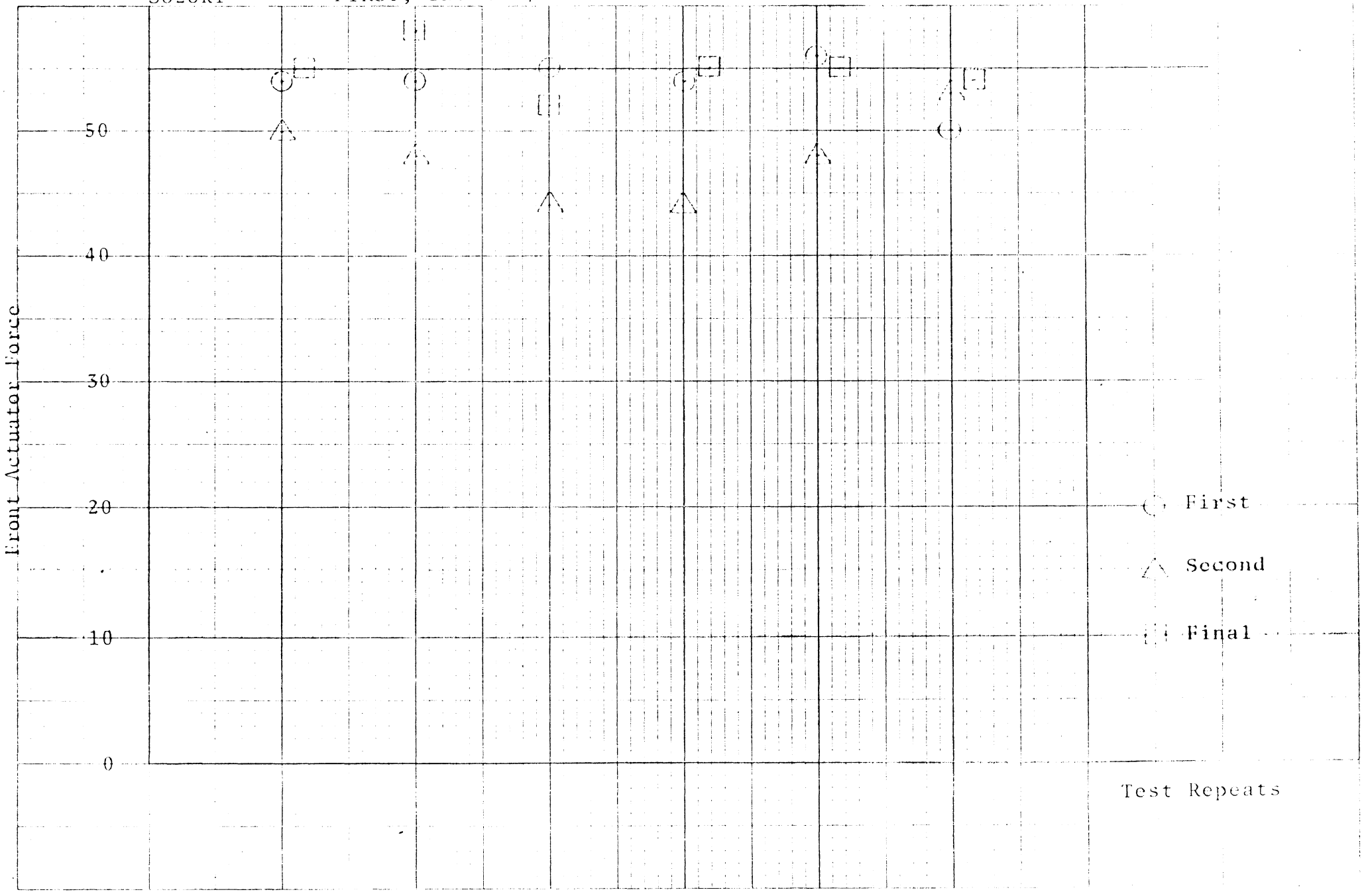

KAWASAKI
WATER RECOVERY
Front
Rear
Baseline
Recovery
40
30
20
10
0
Actuator force
Test Repeats

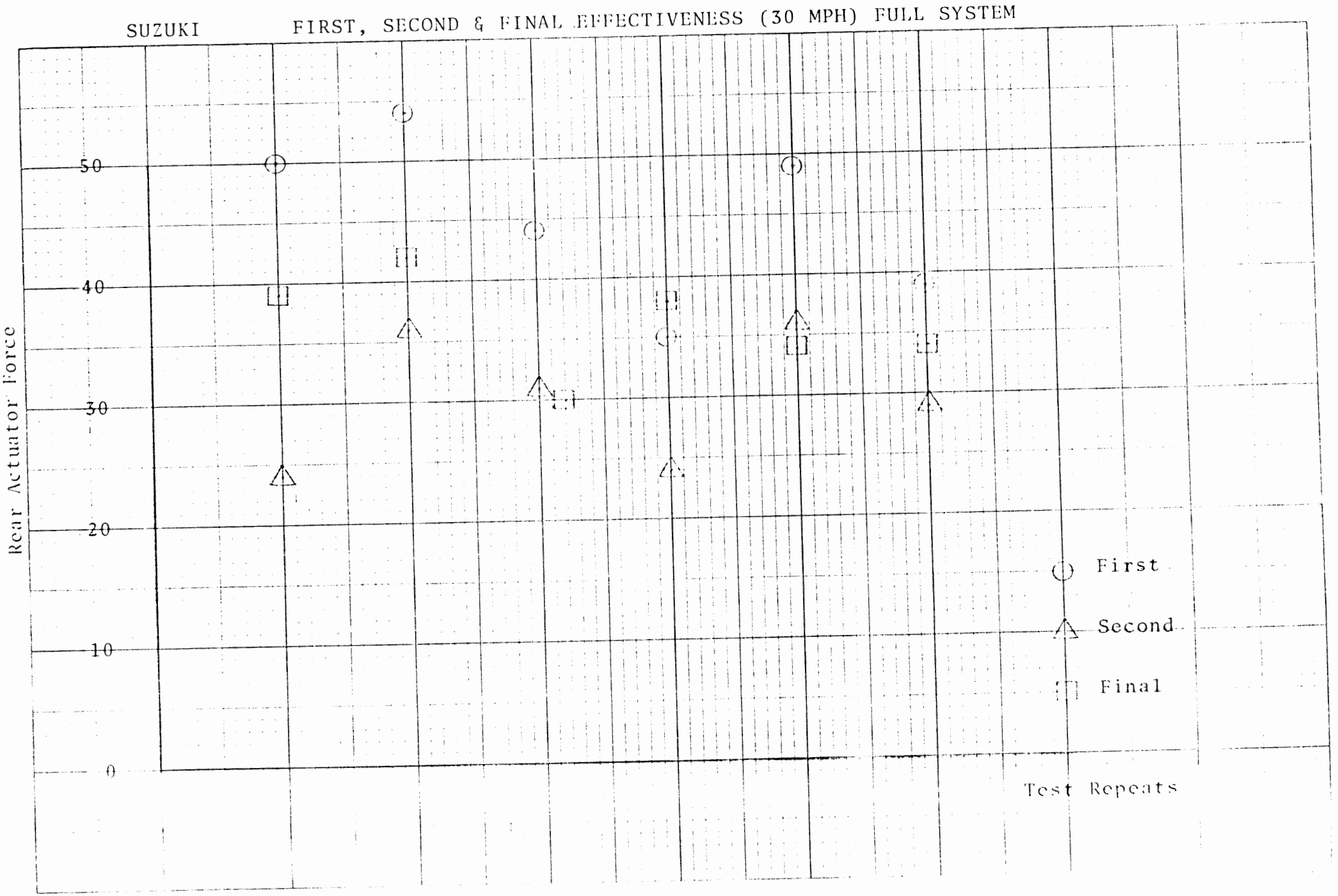
130

SUZUKI FIRST, SECOND & FINAL EFFECTIVENESS (30 MPH) FULL SYSTEM



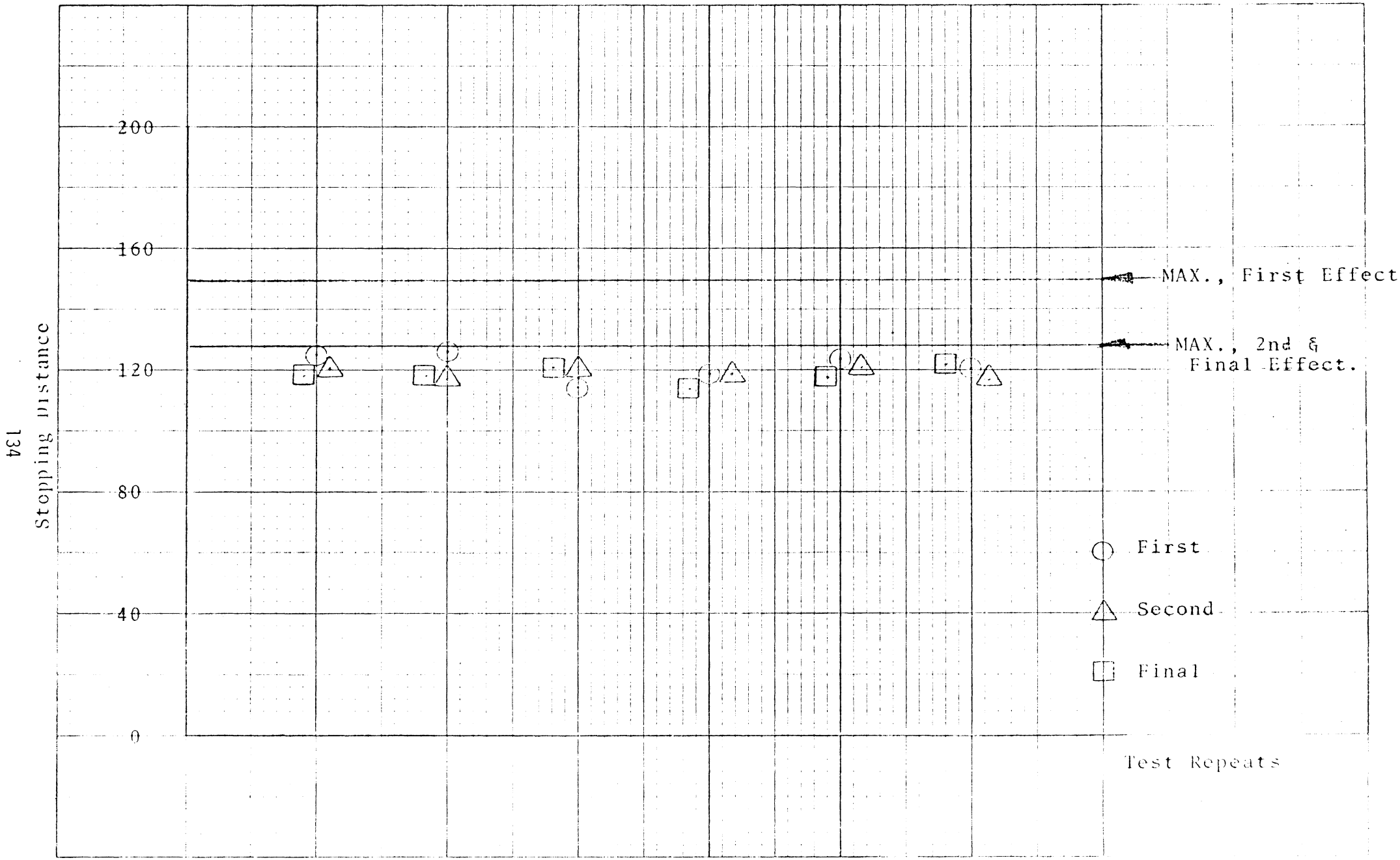
SUZUKI FIRST, SECOND & FINAL EFFECTIVENESS (30 MPH) FULL SYSTEM



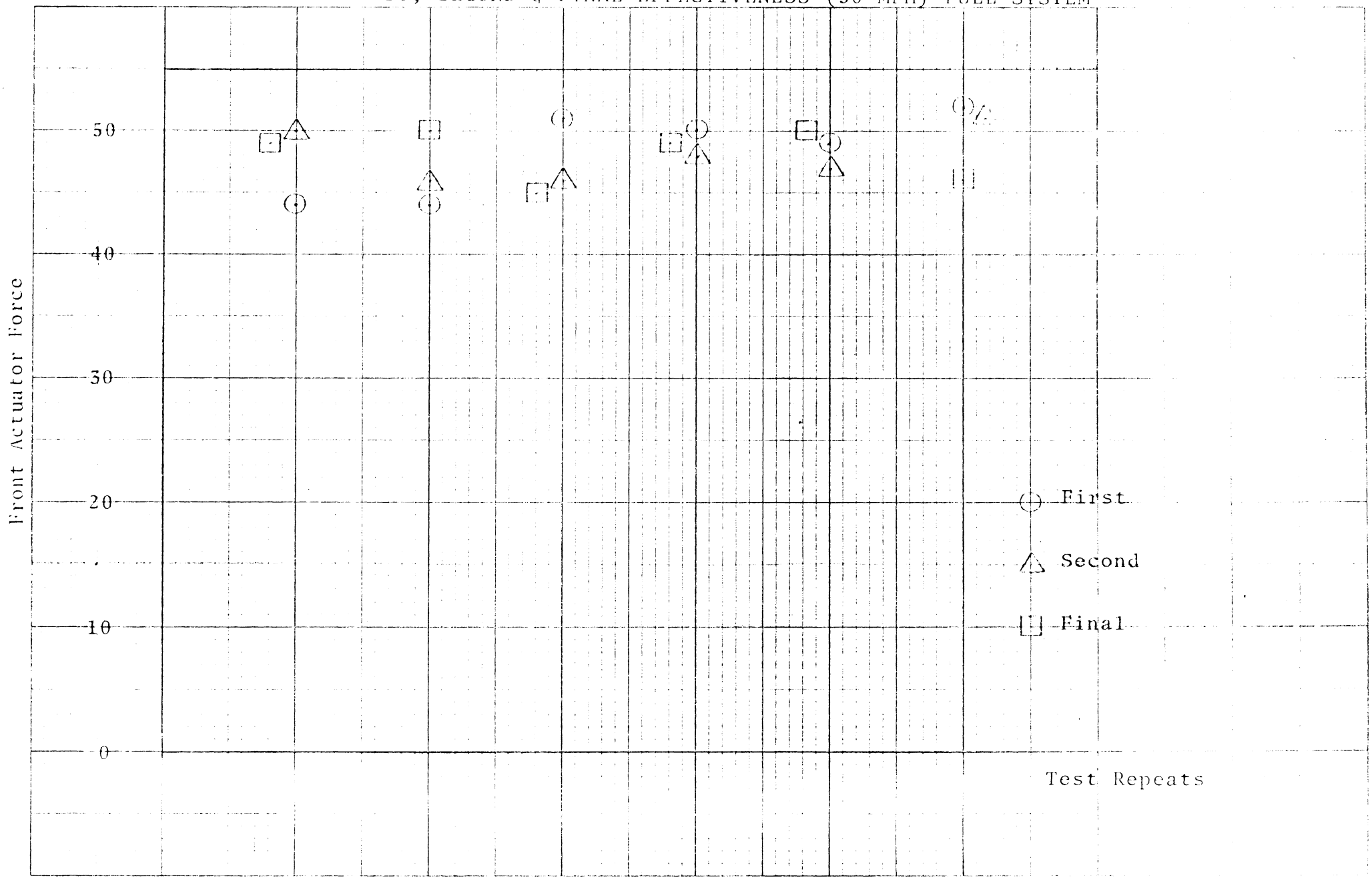

SUZUKI
FIRST, SECOND & FINAL EFFECTIVENESS (30 MPH) FULL SYSTEM
Rear Actuator Force
50
40
30
20
10
0
First
Second
Final
Test Repeats

(Top Speed 55 mph)

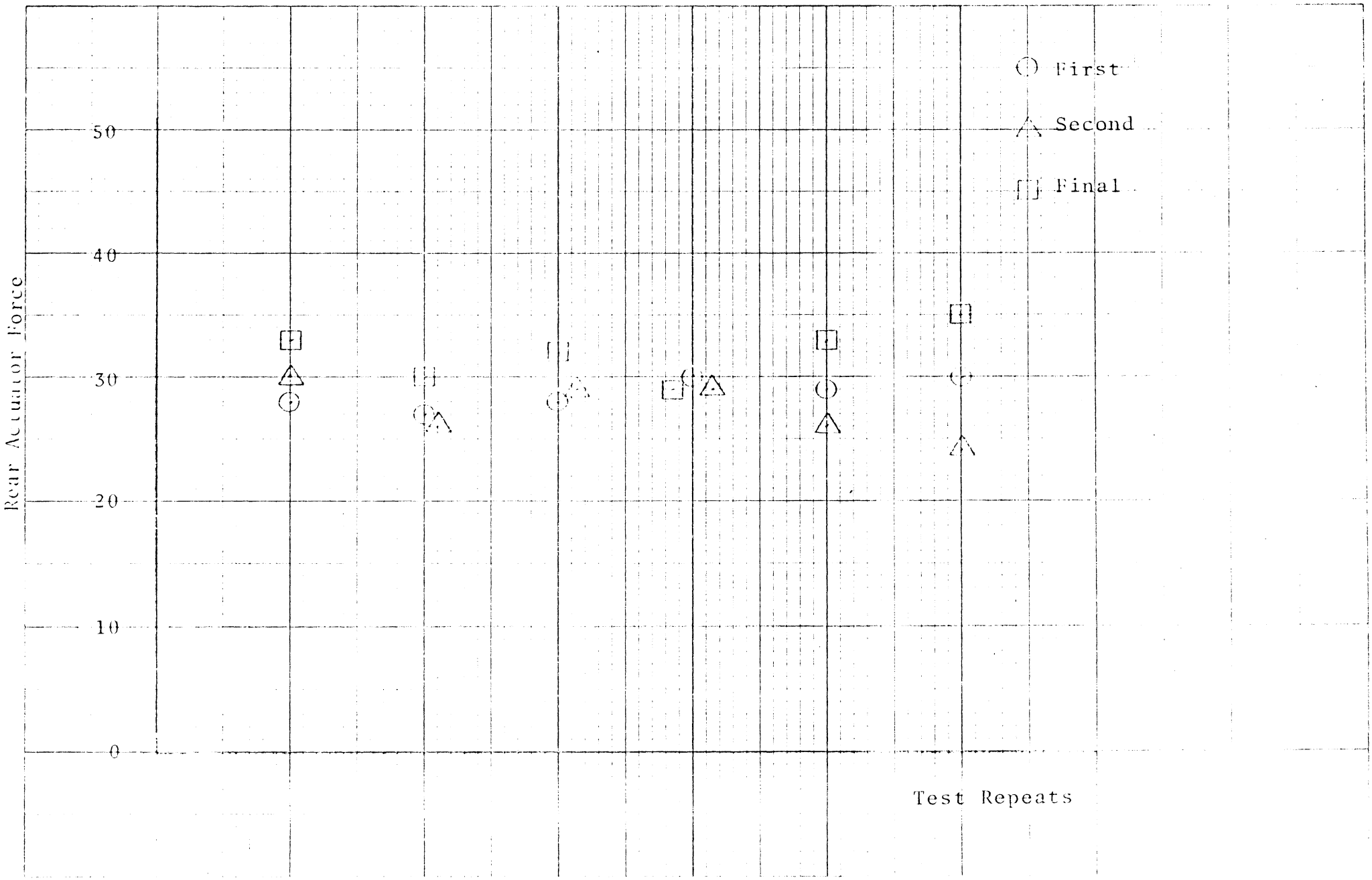
SUZUKI FIRST, SECOND & FINAL EFFECTIVENESS (50 MPH) FULL SYSTEM

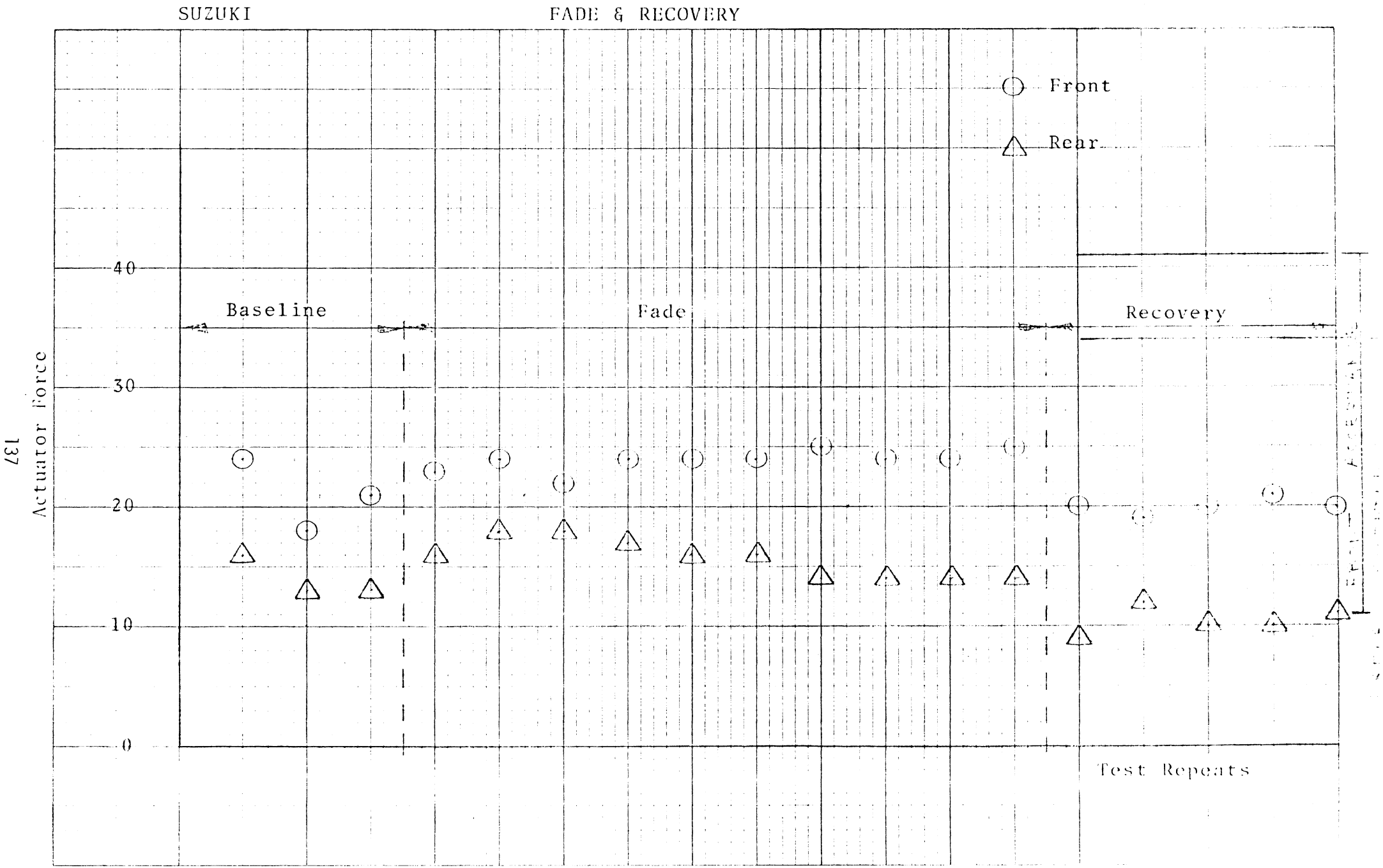


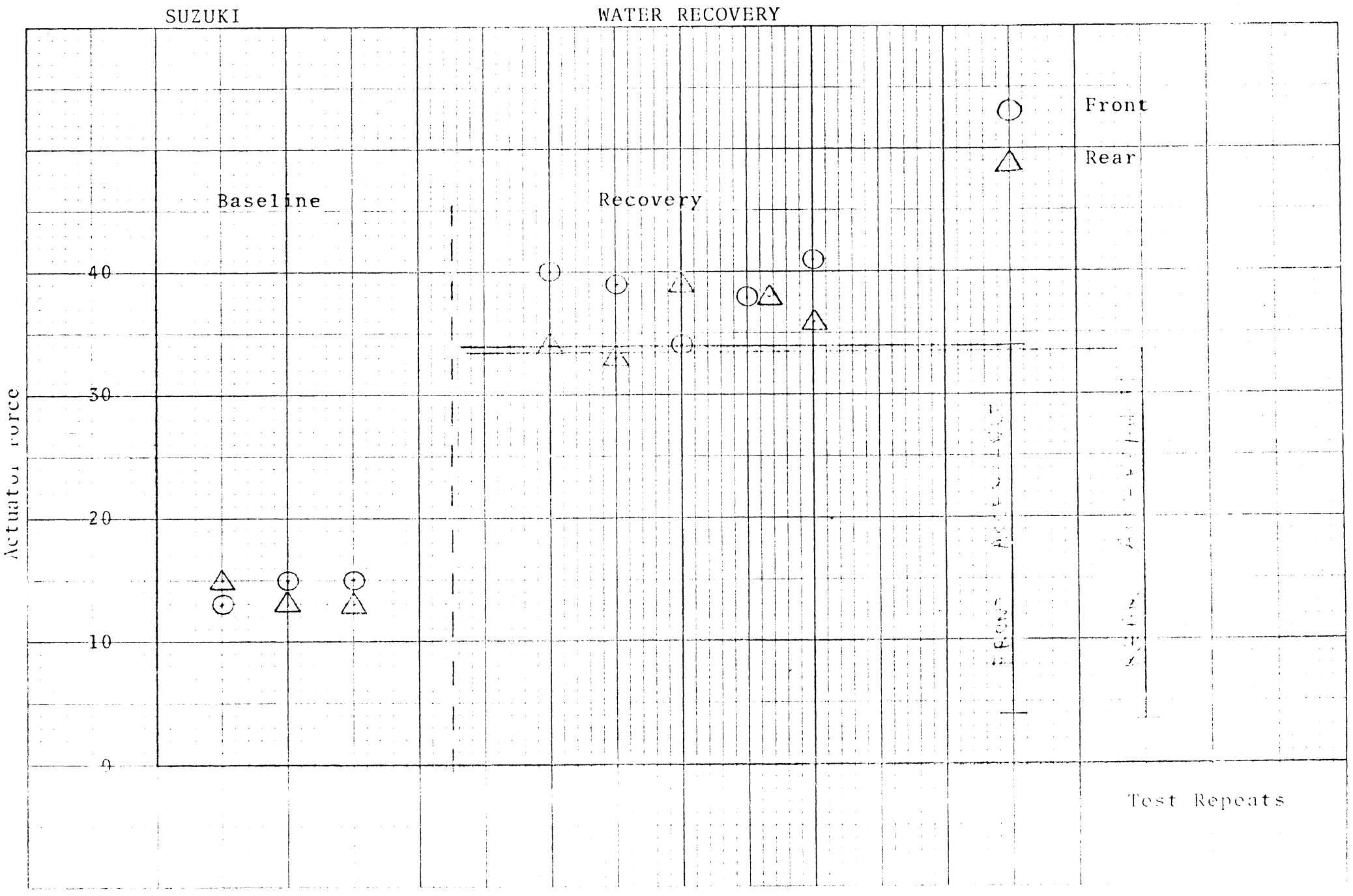
SUZUKI FIRST, SECOND & FINAL EFFECTIVENESS (50 MPH) FULL SYSTEM



SUZUKI FIRST, SECOND & FINAL EFFECTIVENESS (50 MPH) FULL SYSTEM




SUZUKI
FADE & RECOVERY
Front
Rear
Baseline
Fade
Recovery
Actuator Force
40
30
20
10
0
Test Repeats


SUZUKI
WATER RECOVERY
Front
Rear
Baseline
Recovery
40
30
20
10
0
Actuator force
Test Repeats

APPENDIX A.2

RIDER SKILL SENSITIVITY TEST DATA (BAPS)

The rider skill sensitivity data presented in this appendix show the results of minimum stopping distance tests using three riders classified as (a) professional, (b) skilled, and (c) novice. Each skill level classification reflects a general riding experience for each of the three test riders. Resumes for each of the riders appear at the end of this appendix.

The data is presented as log sheet listings in the same manner as the FMVSS 122 data of Appendix A.1. The effectiveness test format sheets are used and show full system, front only, and rear only results for each rider.

The full system results are also summarized on data plots similar to those used in Appendix A.1. These data plots follow the test log sheet listings.

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley-D...
TEST NO.:

TA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ______ DATE 11-11-75 PAGE ____ of ____
OM: FINISH ______ START ______ TOTAL MILES ______ AMB. TEMP.: MAX. 63 MIN. 63
ND: VELOCITY 62 DIRECTION West DRIVER R. Reimpel OBSERVER ______
ST LOCATION ______ SKID NO. ______ PREF X SKIDED ___ NONE ___

MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

t tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph
th initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
ST REQUIREMENT: 43 FT. STOPPING DISTANCE.

PECIAL INSTRUCTIONS:

140

STOP NO.	ACTUATOR FORCE MAX. FRONT	MAX. REAR	INITIAL SPEED IND.	ACT.	STOPPING DISTANCE MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	BK. TEMPS FRONT	REAR			STOP TIME			REMARKS
1	74	31	118.8	43.9	31	1.0	[illegible]	30.2	130	131			1.35			
2	[illegible]	[illegible]	120.3	44.4	31.5	1.0	[illegible]	31.8	140	140			1.43			
3	[illegible]	30	[illegible]	43.5	31	1.0	[illegible]	30.8	132	135			1.61			
4	55	32	118.7	43.9	31	1.0	[illegible]	31.2	134	140			1.53			
5	[illegible]	[illegible]	[illegible]	43.1	31	1.0	[illegible]	[illegible]	134	[illegible]			1.66			
6	[illegible]	[illegible]	[illegible]	44.6	[illegible]	1.0	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS:
[illegible]

RIVER HILL

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Malibu Classic

TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-11-75 PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 63 MIN. 63

WIND: VELOCITY 2 DIRECTION W DRIVER A. Raines OBSERVER _____

TEST LOCATION _____ SKID NO. _____

P X S _ N

60 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
TEST REQUIREMENT: 152 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

141

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	60	33	240.5	58.8	158	2.6	161	157.6	130	140			3.4			
2	48	36	237.7	58.5	153	2.6	160	155.2	134	143			3.32			
3	47	38	236.4	58.5	154	2.6	160	156.3	131	142			3.43			
4	53	43	235.1	56.9	163	2.6	163	161.1	143	142			3.36			
5	43	36	233.3	57.1	150	2.6	157	153.2	140	142			3.52			
6	43	36	233.3	58.4	162	2.6	164	160.2	145	150			3.43			

VEHICLE IN ⟨ LANE: YES ✓ NO _____

REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley-D
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-12-25 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN. 45
WIND: VELOCITY 7 DIRECTION S DRIVER R.Kemm OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P X S ___ N ___

60 MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

142

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	52		235.5	58.1	211	1.06	213	212.6	132				4.66			
2	52		233.1	58.1	216.5	1.06	218.5	218.0	142				4.61			
3	55		237.2	57.4	218	1.06	220	219	151				4.65			
4	52		238.6	57.4	212	1.06	217	217.4	156				4.44			
5	49		235.6	57.4	172	1.06	174	174.4	135				4.01			
6	48		236.2	58.2	176	1.06	178	178.5	130				4.11			

VEHICLE IN 5' LANE: YES ✓ NO ___
REMARKS: _____

RIDER FRILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-12-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 12 MIN. 42
WIND: VELOCITY 7 DIRECTION SE DRIVER R Remund OBSERVER _____
TEST LOCATION _____ SKID NO. _____
P X S _____ N _____

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 50# to 350#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 42 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

143

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	64		117.6	114.5	34	1.0	34	2.2	140				2.22			
2	29		118.8	115.7	31	1.0	32	32.3	142				2.13			
3	50		120.8	117.6	34	1.0	34	34.3	150				2.25			
4	42		118.1	115.0	33	1.0	33	33.3	145				2.11			
5	76		117.7	114.6	34	1.0	32	32.3	132				2.16			
6	50		120.1	116.6	33	1.0	34	34.3	144				2.1			

VEHICLE IN ✓ LANE: YES ✓ NO _____
REMARKS: _____

R.NER TKILL

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]

TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-12-25 PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN. 42

WIND: VELOCITY 7 DIRECTION [illegible] DRIVER R. RICHARD OBSERVER _____

TEST LOCATION _____ SKID NO. _____ P X S ___ N ___

30 MPH FULL SYSTEM ___ FRONTS ONLY ___ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 47 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

144

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		51	118.8	43.7	24	1.0	24	22.1		140			3.31			
2		53	120.2	44.4	25	1.0	25	22.6		145			3.38			
3		51	119.6	44.2	24	1.0	24	22.4		137			3.34			
4		49	120.2	44.6	22	1.0	23	21.0		141			3.41			
5		49	120.3	44.1	23	1.0	24	22.1		137			3.3			
6		49	119.9	44.3	23	1.0	23	22.5		135			3.41			

VEHICLE IN 5 LANE: YES 1 NO ___

REMARKS: _____

RIDER "FEEL"
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Heavy Duty
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ____ TAPE READOUT ____ DATE 11-12-75 PAGE ____ of ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. -12 MIN. -12
WIND: VELOCITY 7 DIRECTION S.E. DRIVER R. Rowan OBSERVER ____
TEST LOCATION ____ SKID NO. ____
P X S ____ N ____
66 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 66 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		51	234.3	58.4	30-1	2.0	306	300.6		138			6.86			
2		54	236.9	57.5	212	2.0	217	210.3		132			6.69			
3		54	240.2	58.2	224	2.0	228.1	226.5		134-1			6.43			
4		50	232.7	57.8	230	2.0	232	233.4		133-1			6.41			
5		52	238.1	58.0	225	2.0	230	231.4		132			6.47			
6		51	238.5	58.1	228	2.0	230	231.4		1-12			6.69			

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: ____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley Davidson
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 38 MIN. 28
WIND: VELOCITY 15 DIRECTION NO. DRIVER B Rider OBSERVER _____
TEST LOCATION_____ SKID NO._____ P__ S X N__

30 MPH FULL SYSTEM X FRONTS ONLY_____ REARS ONLY_____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

146

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	36	44	120.2	49.4	51	1.0	51.0	51.0	141	146			2.07			
2	38	42	123.3	45.5	44	1.0	44.0	44.2	133	137			2.00			
3	43	45	119.8	44.2	47	1.0	47.0	47.2	131	140			1.81			
4	41	40	120.2	44.4	42	1.0	42.0	42.2	136	144			1.81			
5	42	51	118.3	43.1	40	1.0	41.0	41.2	145	135			1.76			
6	42	47	113.6	41.2	45	.9	40.1	41.1	148	140			1.73			

VEHICLE IN LANE: YES X NO ____
REMARKS:

RIDER - KILE
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 39 MIN. 34
WIND: VELOCITY 5-6 DIRECTION SC DRIVER B. PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P — S X N —

___ MPH FULL SYSTEM X FRONTS ONLY ___ REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 166 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

147

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR					REMARKS
1	46	45	[illegible]	86.2	163	[illegible]	165	141.9	150	150			[illegible]		
2	45	44	231.9	83.0	163	2.0	165	141.3	145	150					
3	45	47	232.4	83.7	155	2.0	165	142.1	145	150			4.10		[illegible]
4	48	48	231.7	80.6	166	2.0	165	144.3	156	150			3.33		
5	44	46	235.5	81.1	167	2.0	167	123.0	147	148			3 41		
6	52	44	235.4	83.0	159	2.0	161	141	147	150			3 25		

VEHICLE IN ✓ LANE: YES ✓ NO ___
REMARKS: _____

P.NER TKLL.

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: HARLEY DAVIDSON
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 78 MIN. 38
WIND: VELOCITY 15 DIRECTION NE DRIVER B. PIERCE OBSERVER _____
TEST LOCATION_____ SKID NO._____

P___ S X N___

30 MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 42 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

148

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	45		119.2	44.0	53	1.0	53.0	54.0	138				2.2			
2	45		119.7	44.2	53	1.0	54.0	63.4	135				2.71			Memory Test 1,6
3	50		119.2	44.0	50	1.0	51.0	57.1	144				2.6			
4	50		133.6	49.6	51	1.0	52.0	53.6	140				1.4			
5	50		131.5	48.6	52	1.1	61.1	62.3	140				1.51			
6	50		112.6	41.6	51	1.1	56.1	62.6	140				2.1			

VEHICLE IN 3 LANE: YES 6 NO ___
REMARKS:

RIDER TRIM
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley Prototype
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ____ TAPE READOUT ____ DATE 1-23-76 PAGE ____ of ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. 35 MIN. 35
WIND: VELOCITY 4 DIRECTION SO DRIVER B PIERCE OBSERVER ____
TEST LOCATION ____ SKID NO. ____
P ___ S X N ___

60 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 338 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ____

149

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	45		241.6	59.2	235.2	1.0	235.2	231	147							
2	45		241.4	59.2	214	1.0	214	210.1	125							
3	46		235.3	56.8	228	1.0	228.8	224.4	149				5.09			
4	41		236.2	57.2	233	1.0	233	229	149				4.58			
5	45		235.3	58.0	227	1.0	227	224	147				4.61			
6	45		242.3	57.9	234	1.0	234	230	134				4.3			

VEHICLE IN 5th LANE: YES ✓ NO ____
REMARKS: ____

RINGER "KILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 39 MIN. 32
WIND: VELOCITY 15 DIRECTION NC DRIVER B PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____
P S X N

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMAERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 92 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

150

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		74	1427	52.7	8.2	[illegible]	[illegible]	57.2		145			3.42			[illegible]
2		55	122.2	42.1	7.2	[illegible]	76.0	72.3		145			3.24			
3		25	111.4	41.1	5.2	[illegible]	[illegible]	76.1		148			3.54			
4		56	113.6	41.7	15	.1	23.1	21.6		150			3.34			
5		57	122.1	45.1	13	[illegible]	[illegible]	[illegible]		156			3.27			
6		52	119.6	44.2	22	[illegible]	[illegible]	72.3		150			3.36			

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

RIDER "KILL"
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ____ TAPE READOUT ____ DATE 1-23-76 PAGE ____ of ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. 35 MIN. -3.5
WIND: VELOCITY 4 DIRECTION SE DRIVER Bruce OBSERVER ____
TEST LOCATION ____ SKID NO. ____ P S X R

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 358 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ____

151

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		80	233.8	56.6	241	2.6	247	346.7		144			6.52			
2		72	241.1	57.0	321	2.6	329	360.8		147			6.52			
3		68	240.2	58.7	295	3.2	327	341.4		156			6.51			
4		69	243.6	61.6	333	3.6	353	336.1		156			7.07			
5		61	241.5	56.4	327	2.6	335	350.6		145			6.31			
6		56	237.2	57.6	351	2.6	359	358.0		149			6.51			

VEHICLE IN 5' LANE: YES ✓ NO ____
REMARKS: ____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Har[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ______ DATE 12-16-75 PAGE ____ of ____
ODOM: FINISH ______ START ______ TOTAL MILES ______ AMB. TEMP.: MAX. 33° MIN. 32°
WIND: VELOCITY 2-5 DIRECTION SSE DRIVER E. Strycker OBSERVER [illegible]
TEST LOCATION [illegible] SKID NO. ______
P — S — N X

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

152

STOP NO.	ACTUATOR FORCE (55) MAX. FRONT	ACTUATOR FORCE (90) MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	62	32	115.5	43.[illegible]	37.[illegible]	1.0	[illegible]	35.2	14[illegible]	[illegible]			1.58			[illegible]
2	[illegible]	2[illegible]	[illegible]	47.5	[illegible]	1.0	[illegible]	34.6	[illegible]	[illegible]			1.56			[illegible]
3	[illegible]5	[illegible]	[illegible]	47.0	[illegible]	1.0	[illegible]	[illegible]	[illegible]	[illegible]						
4	[illegible]		[illegible]	4[illegible]	[illegible]	1.0	[illegible]	[illegible]	146	1[illegible]						
5		[illegible]	[illegible]	43.[illegible]	[illegible]	1.0	[illegible]	37.[illegible]	[illegible]	[illegible]			[illegible]			[illegible]
6	5		[illegible]	44.1		1.0	[illegible]	41.3	[illegible]	[illegible]			[illegible]			

VEHICLE IN 8' LANE: YES X NO ____
REMARKS: [illegible]

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

ATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-16-25 PAGE _____ of _____
DOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 28 MIN. _____
IND: VELOCITY _____ DIRECTION _____ DRIVER [illegible] OBSERVER [illegible]
EST LOCATION [illegible] SKID NO. _____ P - S - N X

O MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
?°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#.
EST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

153

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP [illegible]			REMARKS
1				59.1	177	2.0	177	177.0					3.58			
2		34		56.7	180	2.0	180	180.0					3.4			
3		37		57.6	177	2.0	177	177.0					3.42			
4				57.4	177	2.0	177	177.0					3.52			
5				57.8	176	2.0	176	176.0					3.45			
6		46		56.6	176	2.0	176	176.0					3.35			

VEHICLE IN 5 LANE: YES ✓ NO ____
REMARKS: _____

RIDER "KILL"
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley - Davidson
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT X TAPE READOUT _____ DATE 12-16-75 PAGE _____ of _____
ROOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 32 MIN. 32
WIND: VELOCITY _____ DIRECTION South DRIVER E. Stryckser OBSERVER D. Eckstein
TEST LOCATION Pits SKID NO. _____ P ___ O X N ___

30 MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 50°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

55 119.1

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS. FRONT	BK. TEMPS. REAR			STOP TIME			REMARKS
1	50			42.3												
2	48			44.7												
3				44.1												
4	51		119.6	44.2									1.59			
5	52		120.0	44.3												
6	50		119.5	44.1									1.59			

VEHICLE IN LANE: YES X NO ___
REMARKS: _____

RIDER TRAILER
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley Davidson
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT X TAPE READOUT _____ DATE 12-16-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 28 MIN. 25
WIND: VELOCITY 5 DIRECTION S.W. DRIVER E. Stycos OBSERVER D. Eckhardt
TEST LOCATION Pomona SKID NO. _____ P S N X

60 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 398 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

155

55

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	50			59.6		2.6		2.17	13				4			
2				57.4		3.0		218.7	1							
3				58.2		2.6		245.4								
4	47		59.1	58.0		2.6		221.6								
5	45		59.1	56.3		2.6		216.3					201			
6				57.8		2.6		207.7					150			

VEHICLE IN 3' LANE: YES X NO ____
REMARKS: _____

RIDER "KILL"
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley Davidson
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION _____ DRIVER [illegible] OBSERVER D. Eckstein
TEST LOCATION [illegible] SKID NO. _____ P ___ S ___ N X

30 MPH FULL SYSTEM ___ FRONTS ONLY ___ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

156

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		40	119.2	44.2	[illegible]	1.0	77.2	76.3		[illegible]			[illegible]			
2		61	118.2	43.7		1.0	77	76.0		[illegible]			3.2	[illegible]	[illegible]	
3		55	[illegible]	44.7	[illegible]	1.0	76.2	74.1		146			[illegible]			
4			120.8	44.6	[illegible]	1.0	77.2	76.1		[illegible]			3.41	[illegible]	[illegible]	
5		40	[illegible]	44.1	[illegible]	1.0	76.0	64.6		134						
6		59	120.2	43.0	[illegible]	1.0	75.2	73.0		148						

VEHICLE IN [illegible] LANE: YES X NO ___
REMARKS: _____

RIDER TRIP
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Harley
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 2-26-76 PAGE _____ OF _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 44° MIN. 44
WIND: VELOCITY 4 DIRECTION S DRIVER A. Shaffer OBSERVER _____
TEST LOCATION _____ SKID NO. _____
P — S — N X

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 388 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

157

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		70	234.2	55.3	331.0	1.0	331.0	302.8		141						
2		71	240.1	55.7	illegible	1.0	illegible	illegible		148			6.74			
3		56	231.4	53.6	illegible	1.0	illegible	321.2		150			6.77			
4		58	238.1	52.0	illegible	1.0	illegible	illegible		146			6.74			
5		illegible	246.6	illegible	illegible	1.0	illegible	illegible		148			7.22			
6		75	246.7	55.4	303.0	1.0	illegible	329.1		148			7.21			

VEHICLE IN 5th LANE: YES ✓ NO ____
REMARKS:

10-27-75

HARLEY DAVIDSON

MPH	INDICATED	FT/SEC
30	119.1	44
35	138.9	51.3
40	158.8	58.6
45	178.6	66.0
50	198.5	73.4
55	218.3	80.6
60	238.2	88
65	258.0	95.4
70	277.9	102.7
75	297.7	110.0
80	317.6	117.4
85	337.5	124.7
90	357.3	132.0
95	377.1	139.4
100	397.0	146.7
105	416.8	154.0
110	436.7	161.4
115	456.5	168.7
120	476.4	176.0
125	496.2	183.4
130	516.1	190.7

3.97 gallons per mile per Navco

2.7 gallons per foot per second

1 [illegible] = 3.48 gallons per [illegible]

E-7K "K1"
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: HONDA
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 73 MIN. 73
WIND: VELOCITY 6 DIRECTION SE DRIVER R. REIMAN OBSERVER _____
TEST LOCATION _____ SKID NO. _____ ART ✓ SKILLED _____ NOVICE _____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

159

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	50	26	134.9	44.4	42	1.1	43.1	42.3	140	132			1.8			
2	48	25	133.9	44.0	40	1.1	41.1	41.1	134	138			1.74			
3	55	24	133.8	44.0	38	1.1	39.1	39.1	132	132			2.0			
4	54	26	134.5	44.2	37	1.1	38.1	38.1	145	135			1.54			
5	54	25	131.7	43.3	35	1.1	39.1	40.4	142	140			1.9			[illegible]
6	55	26	132.2	43.5	37	1.1	38.1	40.4	135	140			1.97			

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS: _____

[illegible] SKID
SENSITIVITY
EFFECTIVENESS TEST

VEHICLE NO.: HONDA
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 73 MIN. 73
WIND: VELOCITY 6 DIRECTION SW DRIVER R. ROMAN OBSERVER _____
TEST LOCATION _____ SKID NO. _____ PAT — SANDED — NONE —

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

160

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	56	36	268.2	88.2	164	2.3	166.3	165.1	130	137			3.56			
2	44	24	267.1	87.8	168	2.3	170.3	171.1	142	145			3.68			
3	42	28	265.4	87.3	164	2.3	166.3	171.6	138	144			3.63			
4	46	27	261.9	86.1	162	2.3	164.3	169.0	140	130			3.51			
5	50	22	259.6	85.4	148	2.3	150.3	157.5	132	137			3.41			
6	46	25	266.7	87.7	161	2.3	163.3	164.7	170	145			3.5			

VEHICLE IN 3 LANE: YES ✓ NO ____
REMARKS: _____

R-FR "KI"
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Honda
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 72 MIN. 28
WIND: VELOCITY 6 DIRECTION SE DRIVER R. Reiman OBSERVER _____
TEST LOCATION _____ SKID NO. _____ FRT ___ SKIDD ___ NOISE ___

30 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 91 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

191

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	49		136.0	41.7	51	1.2	61.2	[illegible]	152				2.13			
2	47		135.1	45.3	49	1.1	54.1	[illegible]	[illegible]				2.08			
3	44		134.0	44.0	50	1.1	54.1	54.1	134				2.01			
4	44		134.0	44.0	49	1.1	54.1	54.1	142				2.03			
5	50		135.4	45.4	47	1.1	52.1	[illegible]	145				1.95			
6	48		136.1	43.0	44	1.1	49.1	49.1	142				2.20			

VEHICLE IN ~~S~~ LANE: YES ✓ NO ____
REMARKS: _____

POOR SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 70° MIN. 28°
WIND: VELOCITY 6 DIRECTION SE DRIVER R. Reiman OBSERVER _____
TEST LOCATION _____ SKID NO. _____ Surface 1 Skidpad Asphalt

60 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

162

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			Stop Time			REMARKS
1	52		263.3	54.6	3[illegible]	2.2	3[illegible]	[illegible]	140				4.24			
2	44		263.7	54.4	320	2.3	[illegible]	[illegible]	140				4.63			
3	41		263.1	54.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]			
4	44		266.4	54.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				4.34			
5	44		264.5	54.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				4.72			
6	47		264.2	54.2	11[illegible]	2.3	[illegible]	[illegible]	134				4.24			

VEHICLE IN 5 LANE: YES ✓ NO _____
REMARKS: _____

PEAK SKID SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 70 MIN. 28
WIND: VELOCITY 6 DIRECTION S DRIVER R. Reiman OBSERVER _____
TEST LOCATION _____ SKID NO. _____ RUN _____ SPEED _____ MODE _____

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: _____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		30	127.0	111.8	95	1.0	95	84.0		132						
2		34	130.6	44.9		1.1				132						
3		32	126.4	42.6	50	1.1				134						
4		32	128.2	43.0	23	1.1				140						
5		32	124.7	41.2	49	1.1				134						
6		30	125.4	42.9	96	1.1	101	91.		135						

VEHICLE IN 3 LANE: YES ✓ NO ____
REMARKS: _____

1 EK TK''.

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-5-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 68 MIN. [illegible]
WIND: VELOCITY 6 DIRECTION SE. DRIVER K.REIMAN OBSERVER _____
TEST LOCATION _____ SKID NO. _____ PAD ✓ SEALED _____ NOSED _____

60 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY ✓

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: _____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

164

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		44	266.1	57.1	215	2.3	211.3	212.2		130			1.56			
2		44	258.4	54.8	214	2.4	213.1	214.1		145			7.25			
3		37	262.4	56.1	214	2.3	216.2	216.5		138			6.37			
4		42	266.0	57.2	226	2.3	224.3	225.1		133			6.9			
5		46	266.5	57.8	231	2.3	224.2	225.2		143			6.41			
6		40	276.2	60.5	231	2.3	224.3	225.2		139			6.33			

VEHICLE IN 3 LANE: YES ✓ NO _____
REMARKS: _____

1.. EK 3K .

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Honda

TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-6-75 PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 34 MIN. 34

WIND: VELOCITY 6 DIRECTION _____ DRIVER B PIERCE OBSERVER _____

TEST LOCATION _____ SKID NO. _____ PAVE — SKIDDY — MOIST _____

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

165

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	35	31	134.6	44.3	54	1.1	55.1	57.4	140	144			2.24			
2	41	31	135.4	44.5	49	1.1	50.1	45.1	140	138			2.17			
3	43	26	133.6	43.9	51	1.1	52.1	52.3	140	140			2.17			
4	42	24	131.5	43.3	45	1.1	46.1	42.6	140	130			2.12			
5	43	17	131.8	43.3	44	1.1	45.1	46.5	134	138			2.17			Left 1/2 of Step
6	51	35	134.5	44.2	50	1.1	51.1	50.4	144	143			2.01			

VEHICLE IN S.T. LANE: YES ✓ NO _____

REMARKS: _____

THE STOP
SENSITIVITY
EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12 6 75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 34 MIN. 30
WIND: VELOCITY 8 DIRECTION NW DRIVER B PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ Prof ___ Skilled ___ Novice ___

60 MPH FULL SYSTEM X FRONTS ONLY ___ REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHI 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

166

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	32	24	58.7	58.4	194	2.3	201.3	199.0	134	137			4.23			
2	31	27	60.6	60.0	191	2.3	193.3	193.3	130	141			4.2			
3	35	26	60.7	60.0	185	2.3	187.3	187.3	148	139			3.91			
4	37	32	60.2	59.2	180	2.3	182.3	185.6	150	148			3.86			
5	30	23	57.1	56.6	215	2.3	217.3	212.3	130	144			4.54			
6	34	33	59.4	59.1	181.5	2.3	183.5	180.3	150	148			3.75			

VEHICLE IN 8' LANE: YES ✓ NO ___
REMARKS: _____

P.NEK SKILL

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12 6 75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 34 MIN. 34
WIND: VELOCITY 8 DIRECTION NO DRIVER B. PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ PROF — SKIDPAD — NOISE —

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

167

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			ACT TIME			REMARKS
1	52		133.0	45.1		1.1	[illegible]	[illegible]								
2	53		143.2	42.1		1.2	[illegible]	[illegible]								
3	51		134.4	41.2		1.1	[illegible]	[illegible]								
4	54		132.4	42.4		1.1	[illegible]	[illegible]								
5	52		125.3	41.7		1.1	[illegible]	[illegible]								
6	57		132.2	43.1		1.1	[illegible]	[illegible]								

VEHICLE IN [illegible] LANE: YES X NO ____
REMARKS: _____

??E? SK??? [illegible]

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ______ DATE 12 6 75 PAGE ____ of ____
ODOM: FINISH ______ START ______ TOTAL MILES ______ AMB. TEMP.: MAX. 36 MIN. 34
WIND: VELOCITY 4 DIRECTION [illegible] DRIVER ______ OBSERVER ______
TEST LOCATION ______ SKID NO. ______ [illegible] ______ SKILLED [illegible] ______

60 MPH FULL SYSTEM ______ FRONTS ONLY ✓ REARS ONLY ______

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 238 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ______

168

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	48		[illegible]	54.4	[illegible]	2.3	[illegible]	[illegible]	150				4.5			
2	53		228.5	55.1	181	2.3	183.3	[illegible]	150				3.51			
3	54		[illegible]	57.7	[illegible]	2.3	[illegible]	[illegible]	150				3.48			
4	58		[illegible]	[illegible]	170	2.2	172.2	[illegible]	150				3.37			
5	54		[illegible]	55.2	[illegible]	2.3	[illegible]	176.4	150				3.33			
6	55		[illegible]	[illegible]	191.5	2.3	[illegible]	[illegible]	144				4.16			

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS: ______

[illegible] SKID SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____ [illegible] SPEED [illegible]

30 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 47 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

169

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		[illegible]	[illegible]	42.6	[illegible]	1.1	[illegible]	[illegible]		134			[illegible]			
2		31	[illegible]	44.4	[illegible]	1.1	[illegible]	[illegible]		144			[illegible]			
3		41	[illegible]	42.4	[illegible]	1.1	[illegible]	[illegible]		15[illegible]			[illegible]			
4		[illegible]	[illegible]	43.8	[illegible]	1.1	[illegible]	[illegible]		141			[illegible]			
5		[illegible]	[illegible]	43.6	[illegible]	1.1	[illegible]	[illegible]		[illegible]			[illegible]			
6		[illegible]	[illegible]	44.1	[illegible]	1.1	[illegible]	[illegible]		[illegible]			[illegible]			

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS: _____

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: _____
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-6-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN. _____
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____ Put — skewed & noise —

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY ✓

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

170

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		[illegible]	[illegible]	59.1	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
2		[illegible]	[illegible]	59.5	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
3		[illegible]	[illegible]	58.8	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
4		[illegible]	[illegible]	56.6	[illegible]	[illegible]	216.2	[illegible]		[illegible]			[illegible]			
5		[illegible]	[illegible]	56.3	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
6		[illegible]	[illegible]	55.6	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

DE SI[illegible]
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 38 MIN. 38
WIND: VELOCITY 15 DIRECTION NW DRIVER E. STRYCKER OBSERVER _____
TEST LOCATION_____ SKID NO._____ PAT SKIDD NOSE

30 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE COER. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	[illegible]	[illegible]	[illegible]	42.6	40	1.1	44.1	43.8	[illegible]	[illegible]			[illegible]			
2	[illegible]	[illegible]	136.0	44.7	40	[illegible]	44.1	43.8	[illegible]	[illegible]			1.[illegible]			
3	[illegible]	[illegible]	128.0	42.1	36	1.0	36.0	40.4	[illegible]	[illegible]			1.[illegible]			
4	[illegible]	[illegible]	134.6	45.1	36	1.2	43.2	34.2	[illegible]	[illegible]			1.[illegible]			
5	[illegible]	[illegible]	130.5	43.0	32.5	1.1	35.8	35.0	[illegible]	[illegible]			[illegible]			
6	[illegible]	[illegible]	130.4	44.5	41	1.1	45.1	41.2	[illegible]	[illegible]			[illegible]			

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS:

[illegible] SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: HONDA
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 39 MIN. 39
WIND: VELOCITY 15 DIRECTION N/C DRIVER E STRYKER OBSERVER _____
TEST LOCATION_____ SKID NO._____ RAF_____ SQUED_____ MERCE_____

60 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 155 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

172

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]	[illegible]	[illegible]	57.2	[illegible]	2.3	146.3	204.9	[illegible]	[illegible]						
2	[illegible]	[illegible]	[illegible]	41.2	[illegible]	2.3	216.3	304.1	[illegible]	[illegible]						
3	[illegible]	[illegible]	[illegible]	57.5	[illegible]	2.3	214.3	313.3	[illegible]	[illegible]						
4	[illegible]	[illegible]	[illegible]	72.5	[illegible]	2.4	211.4	175.5	[illegible]	[illegible]						
5	[illegible]	[illegible]	[illegible]	55.1	[illegible]	2.2	122.4	197.2	[illegible]	[illegible]						
6	[illegible]	[illegible]	[illegible]	81.4	[illegible]	2.3	206.5	300.9	[illegible]	[illegible]						

VEHICLE IN 5 LANE: YES ✓ NO ____
REMARKS: _____

[illegible] SKID SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Honda
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 38 MIN. 38
WIND: VELOCITY 15 DIRECTION NW DRIVER E. STREYCKER OBSERVER _____
TEST LOCATION _____ SKID NO. _____ PAT — SKIDDED — NOISE —

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 42 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

173

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	[illegible]		[illegible]	45.0	[illegible]	1.1	41.1	[illegible]	118				1.93			
2	[illegible]		[illegible]	44.7	[illegible]	1.1	41.1	[illegible]	130				2.0			[illegible]
3	[illegible]		[illegible]	43.1	[illegible]	1.1	41.1	[illegible]	144				1.72			
4	[illegible]		130.1	44.1	[illegible]	1.1	41.1	46.8	148				1.93			
5	[illegible]		[illegible]	44.3	[illegible]	1.1	41.1	42.1	140				1.9			
6	[illegible]		[illegible]	43.5	[illegible]	1.1	41.1	[illegible]	134				1.86			

VEHICLE IN [illegible] LANE: YES / NO ____
REMARKS: _____

P-SK SK'''.

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: H...A

TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-6-75 PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 34 MIN. 34

WIND: VELOCITY 15 DIRECTION NO. DRIVER E SIRYCKER OBSERVER _____

TEST LOCATION _____ SKID NO. _____ P-F ___ SK/CO ___ N-S/C ___

60 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

174

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1				57		2.3	232.3	232.3								
2				51.3		2.3	212.1	212.1								
3				52.3		2.3	216.6	216.6								
4				56.4		2.2	233.9	233.9								
5				53.4		2.2	221.1	221.1								
6				55.7		2.3	212.6	212.6								

VEHICLE IN 5 LANE: YES ✓ NO ____

REMARKS: _____

P-SK III
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-6-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 34 MIN. 34
WIND: VELOCITY 15 DIRECTION N DRIVER E SIRYCKER OBSERVER _____
TEST LOCATION _____ SKID NO. _____ Rear SKIDS

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

175

	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							
STOP NO.	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	COER. FAC.	ACT. DIST.	SPEED COER. DIST.	FRONT	REAR			STOP TIME			REMARKS
1		64	134.5	44.2	30	1.1	33.1	32.4		131			3.85			
2		66	133.7	44.0	93	1.1	34.1	34.1		137			4.30			
3		68	130.1	43.0	18	1.1	20.1	22.8		141			3.60			
4		74	135.4	44.2	83	1.1	34.1	36.3		147			3.30			
5		66	131.7	43.4	14	1.1	15.1	16.2		134			3.66			
6		67	131.5	43.3	30	1.1	33.1	34.4		145			3.53			

VEHICLE IN 8' LANE: YES ✓ NO _____
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: ____________

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ____________ DATE 12-6-75 PAGE ______ of ______
ODOM: FINISH ________ START ____________ TOTAL MILES ____________ AMB. TEMP.: MAX. 31 MIN. 31
WIND: VELOCITY 15 DIRECTION NO DRIVER E. STRYCKER OBSERVER ____________
TEST LOCATION ____________ SKID NO. ____________ [illegible] SKILLED [illegible]

60 MPH FULL SYSTEM ______ FRONTS ONLY ______ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 388 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ____________

176

STOP NO.	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							REMARKS
	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR			STOP TIME			
1		67	261.0	55.8	306.5	2.2	[illegible]	[illegible]		149			7.02			
2		66	264.6	57.0	308	2.3	[illegible]	[illegible]		150			7.13			
3		65	263.1	56.7	334	2.2	[illegible]	[illegible]		147			7.19			
4		57	261.5	56.6	334	2.2	[illegible]	[illegible]		149			7.3			
5		55	265.4	55.3	331	2.3	[illegible]	[illegible]		149			[illegible]			
6		[illegible]	267.9	51.1	255	2.3	[illegible]	[illegible]		139			[illegible]			

VEHICLE IN 5' LANE: YES ✓ NO ____
REMARKS: ____________

The speed calibration on the Honda CB 400F was done by clocking against a 5th wheel on the road vehicle. The Motorcycle stayed beside the calibration vehicle and the velocity readouts were noted at 30, 40, 50, and 60 mph. The output of the speedometer drive system on the Honda provides a 4.46 counts/1 MPH. Below is a correlation chart for speed.

MPH	Ft/Sec	Display
30	44.0	133.8
35	51.3	156.1
40	58.7	178.4
45	66.0	200.7
50	73.3	223.0
55	80.7	245.3
60	88.0	267.6
65	95.3	289.9
70	102.7	312.2
75	110.0	334.5
80	117.3	356.8
85	124.7	379.1
90	132.0	401.1
95	139.3	423.7
100	146.7	446.0

PINER SKILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: KAWASAKI
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-18-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 56 MIN. 56
WIND: VELOCITY 7 DIRECTION SE DRIVER R. ROMAN OBSERVER _____
TEST LOCATION_____ SKID NO._____ PX S___ N___

30 MPH FULL SYSTEM X FRONTS ONLY_____ REARS ONLY_____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

178

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	55	33	126.4	44.3	42	1.2	46.2	46.5	138	132			1.45			
2	52	32	127.7	47.8	42	1.1	46.2	44.1	140	138			1.45			
3	54	31	126.5	44.3	42	1.2	46.2	42.6	140	142			1.42			
4	53	30	133.2	45.1	43	1.1	44.1	44.1	144	138			1.81			
5	56	34	126.4	47.3	42	1.2	46.2	46.5	144	138			1.46			
6	53	30	126.7	44.3	42	1.2	46.2	46.5	146	132			1.43			

VEHICLE IN 5 LANE: YES ✓ NO ____
REMARKS:

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: ______

DATA TAKEN FROM: VISUAL READOUT ______ TAPE READOUT ______ DATE 11-18-75 PAGE ____ of ____
ODOM: FINISH ______ START ______ TOTAL MILES ______ AMB. TEMP.: MAX. 65 MIN. 65
WIND: VELOCITY 7 DIRECTION 50 DRIVER [illegible] OBSERVER ______
TEST LOCATION ______ SKID NO. ______ P X S __ N __

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 185 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ______

179

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	56	31	267.6	[illegible]	166	2.3	[illegible]	[illegible]	140	132			3.66			
2	51	30	272.3	[illegible]	165	2.3	[illegible]	[illegible]	136	142			3.51			
3	46	27	224.5	[illegible]	174	2.3	[illegible]	122.4	147	145			3.44			
4	55	24	273.6	80.3	166	2.3	[illegible]	121.1	145	140			[illegible]			
5	56	25	[illegible]	82.2	158	2.3	[illegible]	[illegible]	[illegible]	140			3.72			
6	54	21	272.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	147	[illegible]			[illegible]			

VEHICLE IN 3' LANE: YES ✓ NO ____
REMARKS: ______

RIDE CKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: KAWASAKI
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-18-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN. 64
WIND: VELOCITY 8 DIRECTION 30 DRIVER R. Reimund OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P X S — N —

30 MPH FULL SYSTEM ____ FRONTS ONLY X REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 92 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

180

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP Time			REMARKS
1	56		130.6	44.6	42	1.1	46.1	44.1	134				2.21			
2	66		134.4	46.6	50	1.1	55.1	53.6	140				2.25			
3	58		134.2	46.8	50	1.1	55.1	53.8	138				2.27			
4	54		130.3	44.8	42	1.1	46.1	44.6	146				2.18			
5	54		130.1	44.6	40	1.1	44.1	42.1	144							
6	56		131.3	45.6	41	1.1	45.1	43.1	138				2.19			

VEHICLE IN 3.5 LANE: YES ✓ NO ____
REMARKS: _____

RIDER SKILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: K[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-18-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 65 MIN. 65
WIND: VELOCITY 8 DIRECTION SE DRIVER R. Rauen OBSERVER _____
TEST LOCATION_____ SKID NO._____ P X S ___ N ___

60 MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 325 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

181

STOP NO.	ACTUATOR FORCE MAX. FRONT	MAX. REAR	INITIAL SPEED IND.	ACT.	STOPPING DISTANCE MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	BK. TEMPS FRONT	REAR			STOP TIME			REMARKS
1	56		1235	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				5.61			
2	61		2[illegible]	52.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]			
3	57		27[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]			
4	[illegible]		264.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]			
5	54		255	51.2	226	2.3	[illegible]	311.1	[illegible]				[illegible]			
6	64		3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]			

VEHICLE IN [illegible] LANE: YES ✓ NO ___
REMARKS:

RIDE - SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: KAWASAKI
TEST NO.: ______

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ______ DATE 11-18-75 PAGE ____ of ____
ODOM: FINISH ______ START ______ TOTAL MILES ______ AMB. TEMP.: MAX. 65 MIN. 64
WIND: VELOCITY 8 DIRECTION Se DRIVER R. Romano OBSERVER ______
TEST LOCATION ______ SKID NO. ______

P X S __ N __

30 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ______

182

STOP NO.	ACTUATOR FORCE		INITIAL SPEED		STOPPING DISTANCE				BK. TEMPS							REMARKS
	MAX. FRONT	MAX. REAR	IND.	ACT.	MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	FRONT	REAR			STOP TIME			
1		44	136.3	41.2	78	1.1	79.1	[illegible]		138			3.49			
2		46	135.4	43.9	81	1.1	[illegible]	82.5		144			3.51			
3		44	137.2	44.5	75	1.2	[illegible]	74.5		138			3.10			
4		44	135.1	43.5	74.5	1.1	75.6	74.2		145			3.36			
5		[illegible]	133.1	43.4	77	1.1	[illegible]	[illegible]		143			[illegible]			[illegible]
6		44	[illegible]	[illegible]	75	1.1	76.1	76.7		140			3.43			

VEHICLE IN S. LANE: YES ✓ NO ____
REMARKS: ______

RIDER SKILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Kawasaki
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ____ DATE 11-18-75 PAGE ____ of ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. 65 MIN. 65
WIND: VELOCITY 8 DIRECTION SE DRIVER [illegible] OBSERVER ____
TEST LOCATION ____ SKID NO. ____

P X S ____ N ____

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITH 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 322 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

183

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			SPT TIME			REMARKS
1		46	77.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		138			6.96			
2		56	77.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		148			6.34			
3		48	77.7	[illegible]	262	[illegible]	[illegible]	[illegible]		150			6.3			
4		43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		150			6.01			
5		45	77.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		142			6.08			
6		77	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		142			5.79			

VEHICLE IN 8 LANE: YES ✓ NO ____
REMARKS:

P-E -SKID SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: KAWASAKI
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-4-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 52 MIN. 50
WIND: VELOCITY 0 DIRECTION — DRIVER B. PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P ___ S X N ___

30 MPH FULL SYSTEM X FRONTS ONLY ___ REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR				STOP TIME		REMARKS
1	32	[illegible]	131.2	42.5	[illegible]	1.1	31.1	[illegible]	144	144				2.25		REAR L.C. 3/4 STP
2	40	46	137.1	44.5	51	1.1	52.1	47.8	135	138				2.32		
3	42	40	136.4	44.4	46	1.1	47.1	46.2	142	146				2.47		
4	37	55	137.0	44.4	45	1.1	46.1	45.2	131	140				2.65		
5	47	48	137.2	44.5	43	1.1	44.1	44.1	146	141.2				2.47		
6	50	50	134.9	43.4	44	1.2	43.2	43.4	136	131				1.96		

VEHICLE IN LANE: YES ___ NO ___
REMARKS: _____

RIDER SKILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-4-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 49 MIN. 44
WIND: VELOCITY 6 DIRECTION SE DRIVER R PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P S X N

60 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 100°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 135 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

185

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	[illegible]	[illegible]	[illegible]	58.0	[illegible]	2.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	55.6	[illegible]	2.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	[illegible]	51.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
4	[illegible]	[illegible]	[illegible]	51.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
5	[illegible]	[illegible]	[illegible]	51.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
6	[illegible]	[illegible]	[illegible]	50.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

VEHICLE IN 8' LANE: YES ✓ NO ____
REMARKS: _____

RIDE SKILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: KAWASAKI
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-4-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 5[illegible] MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER G PIERCE OBSERVER _____
TEST LOCATION_____ SKID NO._____

P S X N

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHI 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 77 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

186

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE COR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1			[illegible]	44.0		[illegible]	[illegible]	51.1								
2			[illegible]	44.2		[illegible]	[illegible]	51.4	[illegible]							
3	47		132	42.1	[illegible]	[illegible]	[illegible]	51.4	[illegible]							
4	[illegible]		[illegible]	44.2		[illegible]	[illegible]	[illegible]								
5	53		[illegible]	43.3	[illegible]	[illegible]	[illegible]	51.2	[illegible]							
6	57		[illegible]	43.5		[illegible]	[illegible]	51.2								

VEHICLE IN 6 LANE: YES ✓ NO ____
REMARKS:

SIDE SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE [illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 44 MIN. [illegible]
WIND: VELOCITY [illegible] DIRECTION [illegible] DRIVER [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____
P S X N

60 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITH 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 252 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

187

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	[illegible]		[illegible]	31.3			[illegible]	[illegible]	[illegible]				[illegible]			
2	[illegible]		[illegible]	33.6			[illegible]	[illegible]	[illegible]				[illegible]			
3	[illegible]		[illegible]	31.3			[illegible]	[illegible]	[illegible]				[illegible]			
4	[illegible]			31.1			[illegible]	[illegible]	[illegible]				[illegible]			
5	[illegible]		[illegible]	31.4			[illegible]	[illegible]	[illegible]				[illegible]			
6	[illegible]		[illegible]	30.9			[illegible]	[illegible]	[illegible]				[illegible]			

VEHICLE IN S. LANE: YES ✓ NO ____
REMARKS: _____

RIDER SKILL

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-[illegible] PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 50 MIN. 35
WIND: VELOCITY 4 DIRECTION _____ DRIVER B [illegible] OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P S X N

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		[illegible]	[illegible]	43.4		[illegible]	71.6	[illegible]		[illegible]			[illegible]			
2		[illegible]	[illegible]	40.7	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
3		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
4		[illegible]	[illegible]	1.7	18	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
5		45	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			
6		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE _____ PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN. _____
WIND: VELOCITY [illegible] DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____

P SX N

60 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 288 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

181

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE COR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1				37.5		2.3	273.3	276.3		136						
2				85.6		2.3	212.3	214.4		141						
3				90.6		2.3	216.5	218.4		147						
4				90.3		2.3	214.5	216.5		150						
5				90.6		2.3	214.5	216.6		152						
6				88.5		2.3	213.3	215.3		154						

VEHICLE IN 3.5 LANE: YES ✓ NO ____
REMARKS: _____

RIDER SKILL

S_ '51. '17.

EFFECTIVENESS TEST

VEHICLE NO.:_____
TEST NO.:_____

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX._____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____ P_ S_ N X

30 MPH FULL SYSTEM X FRONTS ONLY_____ REARS ONLY_____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 55# to 65#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:_____

190

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			SPD Time			REMARKS
1				42.6		1.1	51.1	41.7					1			
2				44.5		1.1	42.1	40.6								
3				43.6		1.1	41.1	43.6					2			
4				44.2		1.1	40.1	44.1	170	150						
5				45.2		1.1	42.1	44.3								
6				43.6		1.1	40.1	42.3								

VEHICLE IN C LANE: YES ✓ NO ___
REMARKS:_____

RIDER - SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE [illegible] PAGE _____ of _____
OOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
IND: VELOCITY [illegible] DIRECTION _____ DRIVER _____ OBSERVER _____
EST LOCATION_____ SKID NO._____ P S N X

MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph
ith initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN
°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 150 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

191

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1																
2																
3																
4																
5																
6																

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS:

RIDE1 - SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: K[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-1[illegible] PAGE _____ of _____
ROAD: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. [illegible] MIN._____
WIND: VELOCITY 12 DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____ P S NX

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 50°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

192

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	[illegible]		[illegible]	43.6		1.1	[illegible]	[illegible]	136							
2	[illegible]		[illegible]	42.6	[illegible]	1.1	[illegible]	[illegible]	[illegible]							
3	[illegible]		[illegible]	42.7	[illegible]	1.1	[illegible]	[illegible]	[illegible]							
4	[illegible]		[illegible]	42.2	[illegible]	1.1	[illegible]	[illegible]	[illegible]							
5	[illegible]		[illegible]	44.7	[illegible]	1.1	[illegible]	[illegible]	[illegible]							
6	[illegible]		[illegible]	43.7	[illegible]	1.1	[illegible]	[illegible]	[illegible]							

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS:

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: 1
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

P___ S___ N X

___ MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from ___ mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

193

STOP NO.	ACTUATOR FORCE MAX. FRONT	MAX. REAR	INITIAL SPEED IND.	ACT.	STOPPING DISTANCE MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	BK. TEMPS FRONT	REAR			STOP TIME			REMARKS
1				52.4		2.3		216.3								
2				54.3		2.3		216								
3				55.3		2.3		214.5								
4				52.6		2.3		176.5								
5				52.1		2.3		202								
6				53.3		2.3		212.1								

VEHICLE IN 3" LANE: YES ✓ NO ___
REMARKS:

RIDER-SKILL SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-5-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX._____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____ P__ S__ N X

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

194

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE COER. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED COER. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		42	30.3	43.6		1.1	36.1	87.6		114						
2		54	30.4	44.7		1.1	38.1	86.3		118						
3		41	30.1	42.5		1.1	33.1	77.3		121						
4			30.2	44.2		1.1	34.1	73.4		124						
5		51	30.0	44.6	68	1.1	64.1	76.1		114						
6		45		44.4		1.1	44.1	76.1		111						

VEHICLE IN 3.5 LANE: YES ✓ NO ____
REMARKS:

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: KAWASAKI
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE _____ PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. _____ MIN._____
WIND: VELOCITY_____ DIRECTION _____ DRIVER _____ OBSERVER _____
TEST LOCATION_____ SKID NO._____

P__ S__ N X

60 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 60 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 355 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

195

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1				59.0												
2				59.6												
3				57.2												
4				61.1												
5				59.6												
6				58.2												

VEHICLE IN 3 LANE: YES ✓ NO ____
REMARKS:

30	99.0	130.6
[illegible]	5.12	87.2
[illegible]	95.3	[illegible]
70	[illegible]	314.4
[illegible]	110.0	334.[illegible]
[illegible]	117.3	361.6
[illegible]	[illegible]	334.2
90	132.0	401.[illegible]

4.52 pulses per [illegible]

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-19-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 45 MIN. [illegible]
WIND: VELOCITY 5 DIRECTION 60 DRIVER K. Krumm OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P X S __ N. __

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

197

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	55	31	14.8	14.2	42	1.1	41.1	41.1	130	130			1.77			
2	54	32	14.3	14.2	42	1.1	41.1	41.1	132	132			2.41			
3	52	30	14.3	14.4	42	1.1	41.1	42.3	140	140			1.11			
4	55	33	14.6	14.1	41.5	1.1	40.6	41.3	146	146			2.20			
5	55	34	14.5	14.1	41	1.1	40.1	41.3	148	151			2.41			
6	54	31	14.2	14.2	41.5	1.1	40.6	41.6	141	144			2.[illegible]			

VEHICLE IN [illegible] LANE: YES ✓ NO ____
REMARKS: _____

REAR SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: S[illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-19-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 45 MIN. 45
WIND: VELOCITY 5 DIRECTION SE DRIVER _____ OBSERVER _____
TEST LOCATION _____ SKID NO. _____ PX S_ N__

50 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 50 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 128 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

198

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	41	32	232.7	73.4	116.5	1.1	127.4	128	132	142						[illegible]
2	55	36	232.4	73.4	115	1.1	126.5	128	136	152			3.53			
3	45	32	234.6	73.5	120	1.1	131.1	131.1	152	144			3.55			
4	49	27	232.2	72.5	112.5	1.1	123.4	123.1	151	151			3.41			[illegible]
5	50	33	231.3	73.1	112.5	1.1	123.4	125.3	145	135			3.4			[illegible]
6	46	35	232.8	73.1	119	1.1	130.9	134.2	140	141			3.63			

VEHICLE IN S LANE: YES ✓ NO ____
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 11-19-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 75 MIN. [illegible]
WIND: VELOCITY 5 DIRECTION S. DRIVER R. Kennedy OBSERVER _____
TEST LOCATION_____ SKID NO._____ P X S _ N _

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 47 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1	51		134.9	45.2	51	1.1	56.1	53.3	138				2.43			
2	55		134.6	45.3	53	1.1	58.3	54.3	144				2.5			
3	52		134.7	43.8	52	1.1	57.1	53.2	147				2.43			
4	53		142.5	44.1	54.5	1.1	59.9	55.3	141				2.54			
5	55		140.4	44.1	52	1.1	57.1	52.8	139				2.52			
6	57		141.7	44.2	52	1.1	57.1	53.4	140				2.51			

VEHICLE IN S. LANE: YES X NO ____
REMARKS: _____

RIMFR SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: S [illegible] K1
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-19-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 45 MIN. [illegible]
WIND: VELOCITY 5 DIRECTION SE DRIVER R RUMPH OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P X S ___ N ___

50 MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 5 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

200

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	52		234.2	23.5	150.5	1.7	[illegible]	[illegible]	[illegible]				4.64			
2	51		235.0	23.8	149.2	1.7	[illegible]	[illegible]	[illegible]				4.76			
3	56		235.9	23.4	151	1.7	[illegible]	[illegible]	[illegible]				4.55			
4	54		234.8	23.7	153	1.7	[illegible]	[illegible]	[illegible]				4.49			
5	56		235.4	23.3	146.2	1.7	[illegible]	[illegible]	[illegible]				4.53			
6	55		232.2	23.6	144.5	1.7	[illegible]	[illegible]	[illegible]				4.52			

VEHICLE IN [illegible] LANE: YES ✓ NO ___
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: Stock
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 11-19-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 42 MIN. 28
WIND: VELOCITY 5 DIRECTION SE DRIVER R Reimer OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P ✓ S — N —

30 MPH FULL SYSTEM — FRONTS ONLY — REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 100°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 91 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

201

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		52	146.6	43.1	72	1.1	79.1	78.4		142			3.49			
2		53	141.3	44.3	69	1.1	75.9	74.2		136			3.3			
3		50	140.3	44.2	68	1.1	74.8	73.4		133			3.24			
4		51	140.4	44.1	69	1.1	75.9	74.2		137			3.41			
5		52	139.0	43.6	72	1.1	79.2	78.4		135			3.41			
6		50	140.4	44.1	68	1.1	74.8	73.2		140			3.26			

VEHICLE IN 5th LANE: YES ✓ NO —
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: S... K1
TEST NO.: ____

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT ____ DATE 11-19-75 PAGE ____ of ____

ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. 45 MIN. 45

WIND: VELOCITY 5 DIRECTION 30 DRIVER R. Reiman OBSERVER ____

TEST LOCATION ____ SKID NO. ____ PX 5 N ____

30 MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# TO 55#. REAR PEDAL FORCE LIMITS ARE 10# TO 90#. TEST REQUIREMENT: 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ____

202

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		64	233.2	73.2	192.5	1.9	[illegible]	194.1		139			5.45			
2		52	233.8	73.4	176	1.9	[illegible]	171.3		137			5.69			
3		50	232.8	73.1	180	1.9	181.7	182.8		140			5.29			[illegible]
4		54	233.8	73.4	177.5	1.9	[illegible]	178.3		130			[illegible]			
5		58	232.3	72.3	[illegible]	1.9	[illegible]	[illegible]		143			[illegible]			
6		52	231.9	72.5	176.5	1.9	[illegible]	[illegible]		149			[illegible]			

VEHICLE IN 3 LANE: YES ✓ NO ____

REMARKS: ____

RIDER SKILL
SENSITIVITY
EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ____ TAPE READOUT ____ DATE 12-4-75 PAGE ____ of ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. 42 MIN. 42
WIND: VELOCITY 4-6 DIRECTION SE DRIVER B. PIERCE OBSERVER ____
TEST LOCATION ____ SKID NO. ____ P ___ S X N ___

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: ____ FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: ____

203

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			SKID TIME			REMARKS
1	33	35	142.4	46.4	53	1.2	[illegible]	45.2	138	140						
2	33	26	142.2	47.6	47	[illegible]	[illegible]	46.8	131	134			2.22			2 L ½ Lg
3	33	34	141.2	44.3	45	[illegible]	[illegible]	43.2	142	145			2.21			
4	35	27	143.7	45.2	49	[illegible]	[illegible]	46.5	142	145			2.23			4-6 ½ Sq
5	42	33	141.6	41.5	42	[illegible]	[illegible]	40.5	131	141			2.2?			
6	43	49	143.5	45.6	52	[illegible]	[illegible]	45.3	141	133			2.34			

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS: ____

RIDER STYLE

S_ 51 '77.

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-4-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 44 MIN. 44
WIND: VELOCITY 5 DIRECTION SC DRIVER R DIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P _ S X N _

50 MPH FULL SYSTEM X FRONTS ONLY _____ REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from [illegible] mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 129 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

204

STOP NO.	ACTUATOR FORCE MAX. FRONT	MAX. REAR	INITIAL SPEED IND.	ACT.	STOPPING DISTANCE MEAS. DIST.	CORR. FAC.	ACT. DIST.	SPEED CORR. DIST.	BK. TEMPS FRONT	REAR			Stop Time			REMARKS
1	32	13	230.2	72.3	142	1.8	[illegible]	[illegible]	145	146			4.14			
2	32	12	229.2	71.5	147	1.8	[illegible]	[illegible]	144	145			4.31			[illegible]
3	33	11	233.2	74.2	136	1.9	[illegible]	[illegible]	144	145			4.14			
4	24	12	234.2	72.4	133	1.8	[illegible]	[illegible]	145	146			3.14			
5	35	15	236.0	74.1	143	1.9	[illegible]	[illegible]	144	147			4.16			
6	41	16	232.5	73.0	133	1.9	[illegible]	[illegible]	146	146			3.57			

VEHICLE IN 5T LANE: YES ✓ NO _____
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: 5.12.K1
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-4-75 PAGE _____ of _____
DOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 43 MIN. 42
IND: VELOCITY 4 DIRECTION SO DRIVER R PIERCE OBSERVER _____
EST LOCATION _____ SKID NO. _____ P S X N

0 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

et tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 0°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
EST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

205

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	49		143.2	44.9	54	1.2	64.8	63	144				2.83			
2	53		139.1	43.7	51	1.1	56.1	55.1	148				2.62			
3	54		142.4	44.7	52	1.1	57.1	56.4	141				2.46			
4	52		141.5	44.5	53	1.2	63.6	63.6	143				2.75			
5	47		146.4	45.9	63	1.2	75.6	74.1	144				2.96			
6	55		141.9	44.6	48	1.1	52.8	51.2	142				2.46			

VEHICLE IN 4 LANE: YES ✓ NO ____
REMARKS: _____

PINER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: S...KI
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-4-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 43 MIN. 43
WIND: VELOCITY 5 DIRECTION S DRIVER B. PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____ L S X R _____

50 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 50 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

206

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1	50		226.7	71.2	149.5	1.1	116.3	155.5	144				4.93			
2	52		231.7	73.7	168	1.1	160.9	165.0	144				4.96			
3	52		224.4	71.6	162	1.1	153.9	169.2	145				4.82			
4	50		233.7	73.4	157	1.1	123.1	135.4	134				4.71			
5	60		237.0	74.4	163	1.1	164.9	180.9	150				4.92			
6	55		232.7	73.0	147	1.1	145.9	160.0	150				4.5			

VEHICLE IN 3 LANE: YES ✓ NO ____
REMARKS:

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-7-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 43 MIN. 43
WIND: VELOCITY 5 DIRECTION SE DRIVER B PIERCE OBSERVER _____
TEST LOCATION _____ SKID NO. _____
P S X N

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 47 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

207

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		34	138.8	43.6	70	1.1	77.1	73.4		150			3.34			
2		30	144.3	44.4	67	1.1	73.7	70.2		140			3.41			
3		29	134.2	42.7	70	1.1	77.1	73.4		144			3.29			
4		32	140.9	44.2	73	1.1	80.3	76.4		143			3.44			Lo 34 of Steps
5		31	132.2	43.3	70	1.1	77.1	73.4		150			3.31			
6		34	141.1	44.3	69	1.1	75.9	72.2		148			3.34			

VEHICLE IN 3 LANE: YES ✓ NO ____
REMARKS:

RIDER SKILL

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]

TEST NO.: _____

DATA TAKEN FROM: VISUAL READOUT ~ TAPE READOUT _____ DATE 12-4-75 PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 45 MIN. 45

WIND: VELOCITY 0-2 DIRECTION ~0 DRIVER K PIERCE OBSERVER _____

TEST LOCATION _____ SKID NO. _____ P SX N _____

50 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 50 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

208

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS. FRONT	BK. TEMPS. REAR			STOP TIME			REMARKS
1		51	234.6	71.9	181	1.9	[illegible]	[illegible]		150			5.19			
2		48	234.5	72.3	186	1.9	[illegible]	[illegible]		144			5.55			
3		56	227.7	71.2	192	1.9	[illegible]	[illegible]		144			5.19			Adj. Brks.
4		70	232.4	74.2	156	1.9	[illegible]	[illegible]		139			5.31			
5		51	227.1	71.6	182	1.9	[illegible]	[illegible]		140			5.22			
6		53	231.9	72.1	181	1.9	[illegible]	[illegible]		145			5.11			

VEHICLE IN ~ LANE: YES ~ NO _____

REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-3-75 PAGE _____ of _____
ODOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 38 MIN. [illegible]
WIND: VELOCITY 6 MPH DIRECTION N/C. DRIVER E. STRYKER OBSERVER _____
TEST LOCATION_____ SKID NO._____ P__ S__ N X

30 MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from [illegible] mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 43 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

209

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR		STP TIME				REMARKS
1	42	56	134.0	43.4	25	1.1	26.1	36.4	121	136		2.71				[illegible]
2	43	35	132.2	43.0	26	1.1	27.1	40.8	135	123		2.54				
3	41	16	140.9	44.3	40	1.1	41.1	42.5	130	132		2.31				
4	46	13	140.5	44.2	26.5	1.1	29.2	36.1	141	141		3.22				
5	42	12	139.5	43.9	22.5	1.1	24.8	33.8	141	149		2.31				
6	46	46	142.3	44.7	21.0	1.1	23.1	36.1	132	131		3.64				

VEHICLE IN [illegible] LANE: YES X NO ____
REMARKS:

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: 2
TEST NO.:

ATA TAKEN FROM: VISUAL READOUT_____ TAPE READOUT_____ DATE 12-3-75 PAGE _____ of _____
DOM: FINISH_____ START_____ TOTAL MILES _____ AMB. TEMP.: MAX. 34 MIN. 35
IND: VELOCITY 4 DIRECTION N/C DRIVER E. STRICKLAND OBSERVER _____
EST LOCATION_____ SKID NO._____ P S W X

MPH FULL SYSTEM X FRONTS ONLY ____ REARS ONLY ____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 50°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 128 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

210

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP Time			REMARKS
1	40	22	233.6	73.2	140	1.0	140.1	140.1	133	142			3.93			
2	35	25	230.9	72.5	141	1.1	155.1	155.1	142	144			4.14			
3	43	39	227.5	71.4	111	1.2	133.2	135.1	145	141			3.49			
4	41	56	230.0	72.2	106	1.3	138.1	140.1	146	149			3.73			Lt.
5	46	44	227.2	71.4	119	1.3	154.8	157.3	135	137			3.64			Lt.
6	37	31	233.5	73.3	144	1.1	158.4	158.4	131	146			4.09			

VEHICLE IN 5TH LANE: YES ✓ NO ____
REMARKS:

RIDER SKILL
SENSITIVITY
EFFECTIVENESS TEST

VEHICLE NO.: 5 11
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-3 75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 40 MIN. 4(
WIND: VELOCITY 4 DIRECTION N DRIVER E Stephens OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P J S N X

30 MPH FULL SYSTEM _____ FRONTS ONLY X REARS ONLY _____

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 72 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

211

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SKID CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			SKID TIME			REMARKS
1	20		133.5	43.5	44	1.1	48.4	48.4	141				2.2.4			
2	50		137.5	42.4	52	1.1	57.2	63.0	144				2.46			
3	55		134.3	43.1	46.5	1.1	51.6	56.8	141				2.24			
4	23		134.8	42.3	45	1.1	49.1	54.1	144				2.17			
5	22		142.1	44.6	51	1.1	56.1	61.7	137				2.24			
6	52		138.4	43.5	48	1.1	52.8	58.2	142				2.40			

VEHICLE IN 5 LANE: YES ✓ NO _____
REMARKS: _____

R.NER SKILL

SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]

TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ✓ TAPE READOUT _____ DATE 12-3-75 PAGE _____ of _____

ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 38 MIN. 38

WIND: VELOCITY 4 DIRECTION SE DRIVER E. Stuyker OBSERVER _____

TEST LOCATION _____ SKID NO. _____ P ___ S ___ N X

50 MPH FULL SYSTEM ___ FRONTS ONLY X REARS ONLY ___

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from [illegible] mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#. TEST REQUIREMENT: 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS: _____

212

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			SKID TIME			REMARKS
1	46		230.8	72.3	146	1.7	146.1	1.3	147				4.77			
2	54		232.8	73.1	131	1.7	131.9	12.6	140				4.19			
3	48		230.8	72.5	137	1.7	138.9	14.1	144				4.7			
4	49		230.6	72.2	131	1.7	132.8	13.9	136				4.47			
5	46		232.2	72.3	122	1.7	123.1	13.6	146				4.58			
6	45		229.4	72.5	156	1.7	157.1	12.6	132				4.43			

VEHICLE IN [illegible] LANE: YES ✓ NO ___

REMARKS: _____

RIDER SKILL
SENSITIVITY
EFFECTIVENESS TEST

VEHICLE NO.: Stock
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT _____ TAPE READOUT _____ DATE 12-3-75 PAGE _____ of _____
ODOM: FINISH _____ START _____ TOTAL MILES _____ AMB. TEMP.: MAX. 38 MIN. 35
WIND: VELOCITY 4 DIRECTION NE DRIVER E Stryker OBSERVER _____
TEST LOCATION _____ SKID NO. _____ P S N X

30 MPH FULL SYSTEM _____ FRONTS ONLY _____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from 30 mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 97 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

213

STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR						REMARKS
1		113	146.7	44.2	77	1.1	84.7	77.4		146			3.49			
2		51	139.8	43.4	72	1.1	79.2	72.0		135			3.50			
3		55	141.6	44.2	73	1.1	80.3	73.0		144			3.59			
4		52	138.6	43.5	74	1.1	81.4	74.0		133			3.54			
5		51	142.6	44.6	81	1.1	89.1	81.0		132			3.54			
6		46	140.4	44.1	76	1.1	83.6	76.0		145			3.48			

VEHICLE IN 5TH LANE: YES ✓ NO ____
REMARKS: _____

RIDER SKILL
SENSITIVITY

EFFECTIVENESS TEST

VEHICLE NO.: [illegible]
TEST NO.:

DATA TAKEN FROM: VISUAL READOUT ____ TAPE READOUT ____ DATE 12-3 15 PAGE ____ of ____
ODOM: FINISH ____ START ____ TOTAL MILES ____ AMB. TEMP.: MAX. [illegible] MIN. [illegible]
WIND: VELOCITY 0 DIRECTION — DRIVER [illegible] OBSERVER ____
TEST LOCATION ____ SKID NO. ____

P S N X

MPH FULL SYSTEM ____ FRONTS ONLY ____ REARS ONLY X

Set tires to specified pressure. With vehicle at loaded test weight and CLUTCH DISENGAGED, conduct 6 stops from mph with initial brake temperature between 130°F to 150°F. FIRST APPLICATION FRONT TO REAR TEMPERATURE SPREAD MUST BE WITHIN 10°F. FRONT ACTUATOR FORCE LIMITS ARE 5# to 55#. REAR PEDAL FORCE LIMITS ARE 10# to 90#.
TEST REQUIREMENT: 264 FT. STOPPING DISTANCE.

SPECIAL INSTRUCTIONS:

214

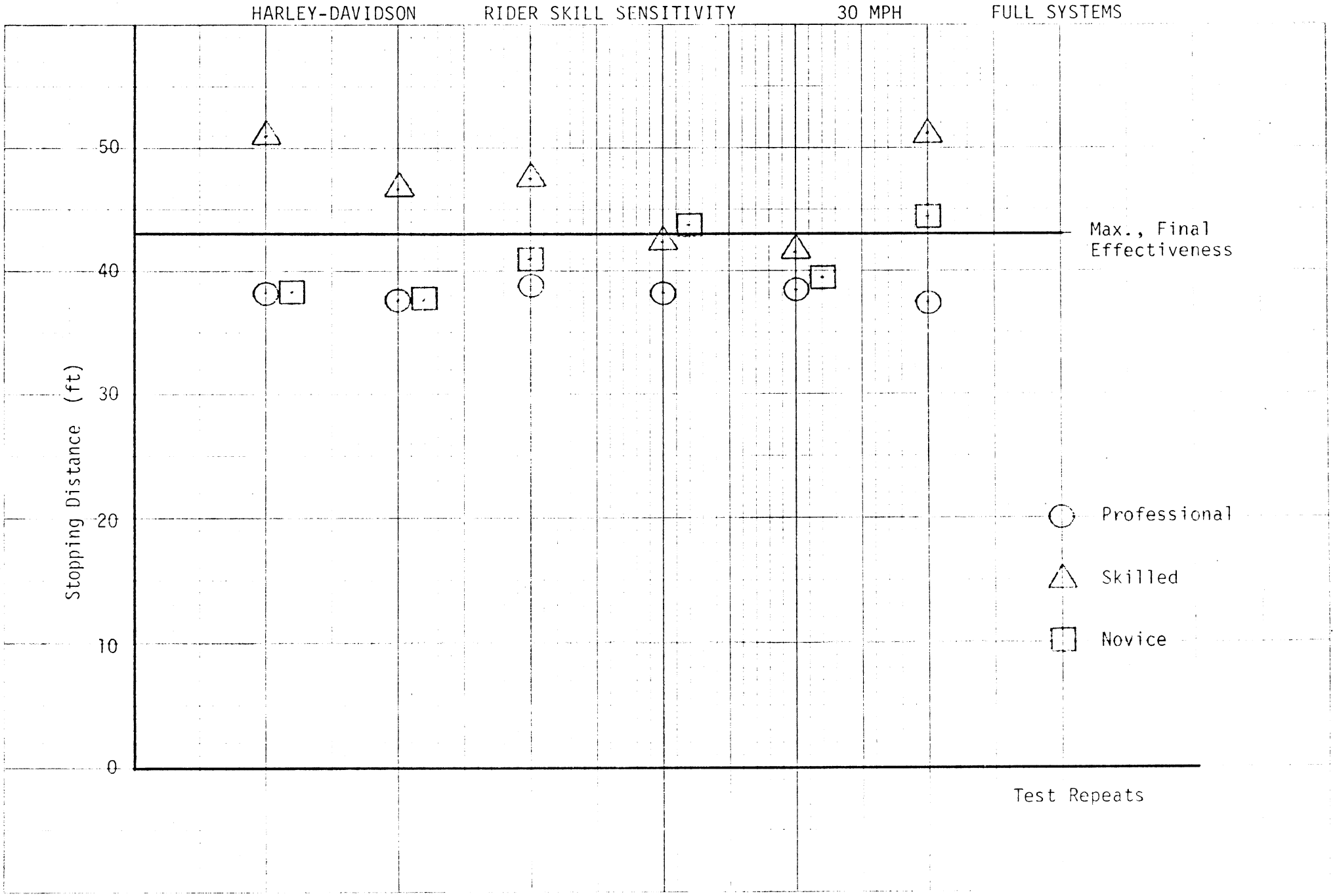
STOP NO.	ACTUATOR FORCE MAX. FRONT	ACTUATOR FORCE MAX. REAR	INITIAL SPEED IND.	INITIAL SPEED ACT.	STOPPING DISTANCE MEAS. DIST.	STOPPING DISTANCE CORR. FAC.	STOPPING DISTANCE ACT. DIST.	STOPPING DISTANCE SPEED CORR. DIST.	BK. TEMPS FRONT	BK. TEMPS REAR			STOP TIME			REMARKS
1		60	233	72.2	202	1.1	[illegible]	[illegible]		130			[illegible]			
2		42	226.6	71.3	194	[illegible]	170	112.2		131			5.14			
3		54	233.4	73.2	203	[illegible]	211.4	211.4		141			5.88			
4		43	230	72.2	176	[illegible]	177.1	202.8		143			5.32			
5		44	228.3	71.7	156.0	1.1	[illegible]	176.1		146			5.56			
6		45	231.2	72.6	148.2	1.1	[illegible]	[illegible]		131			5.45			

VEHICLE IN [illegible] LANE: YES ____ NO ____
REMARKS: ____

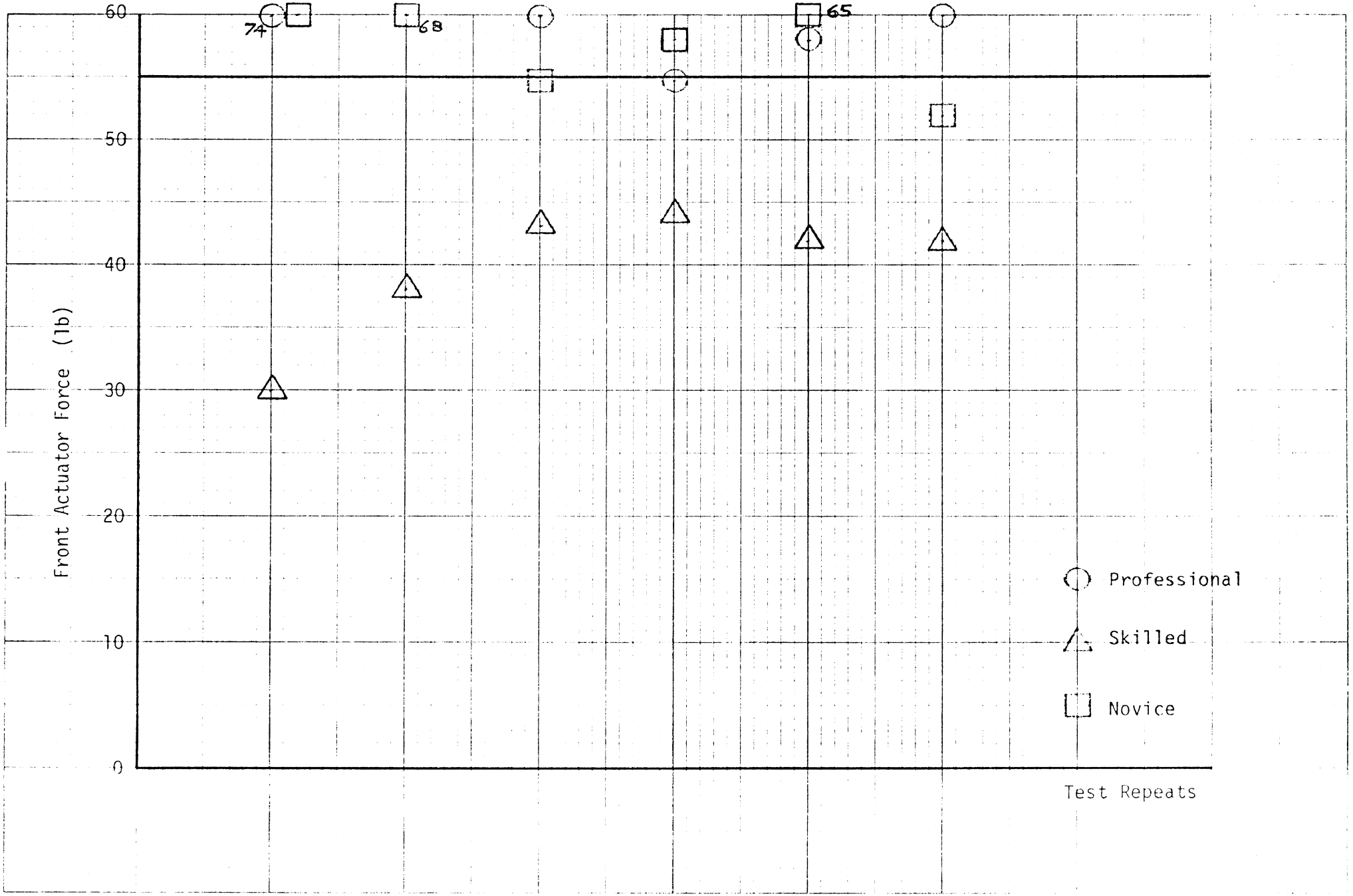
SPEED CHART

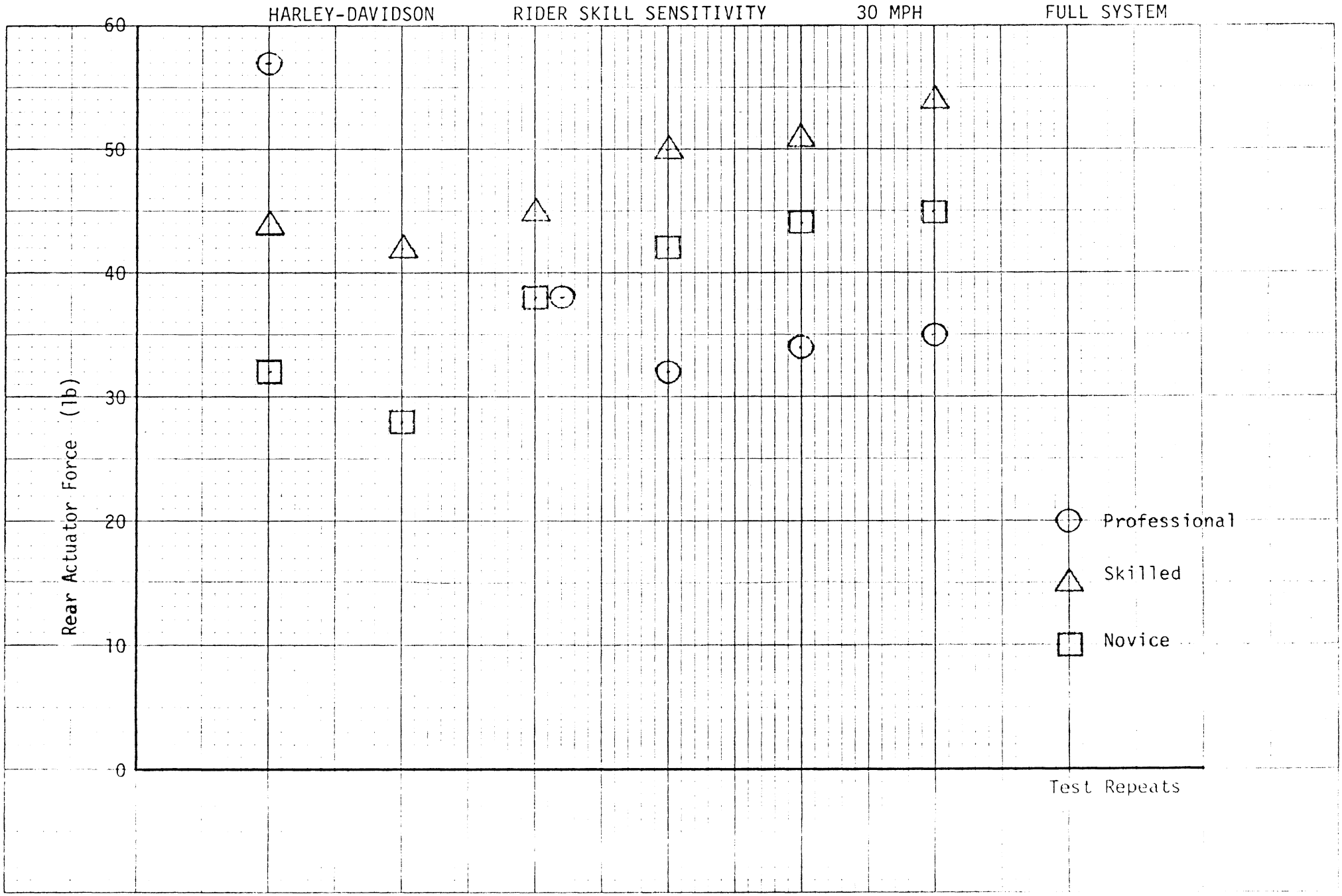
MPH	RPM	PULSES
30	44	146.1
35	51.2	163.4
40	58.5	180.8
45	66.0	210.1
50	73.3	233.5
55	80.7	256.8
60	88	280.2

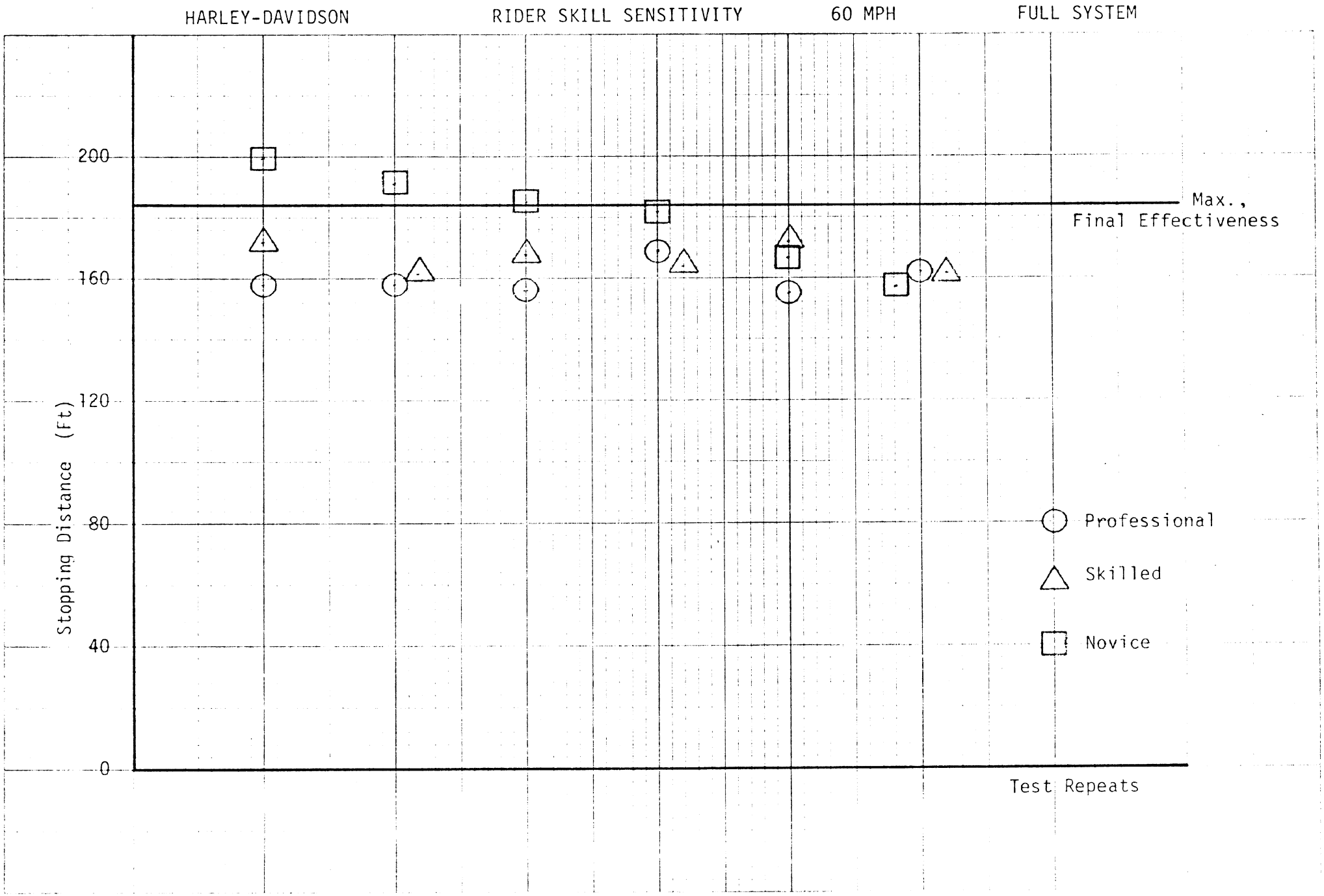
4.67 pulses per mile per hour

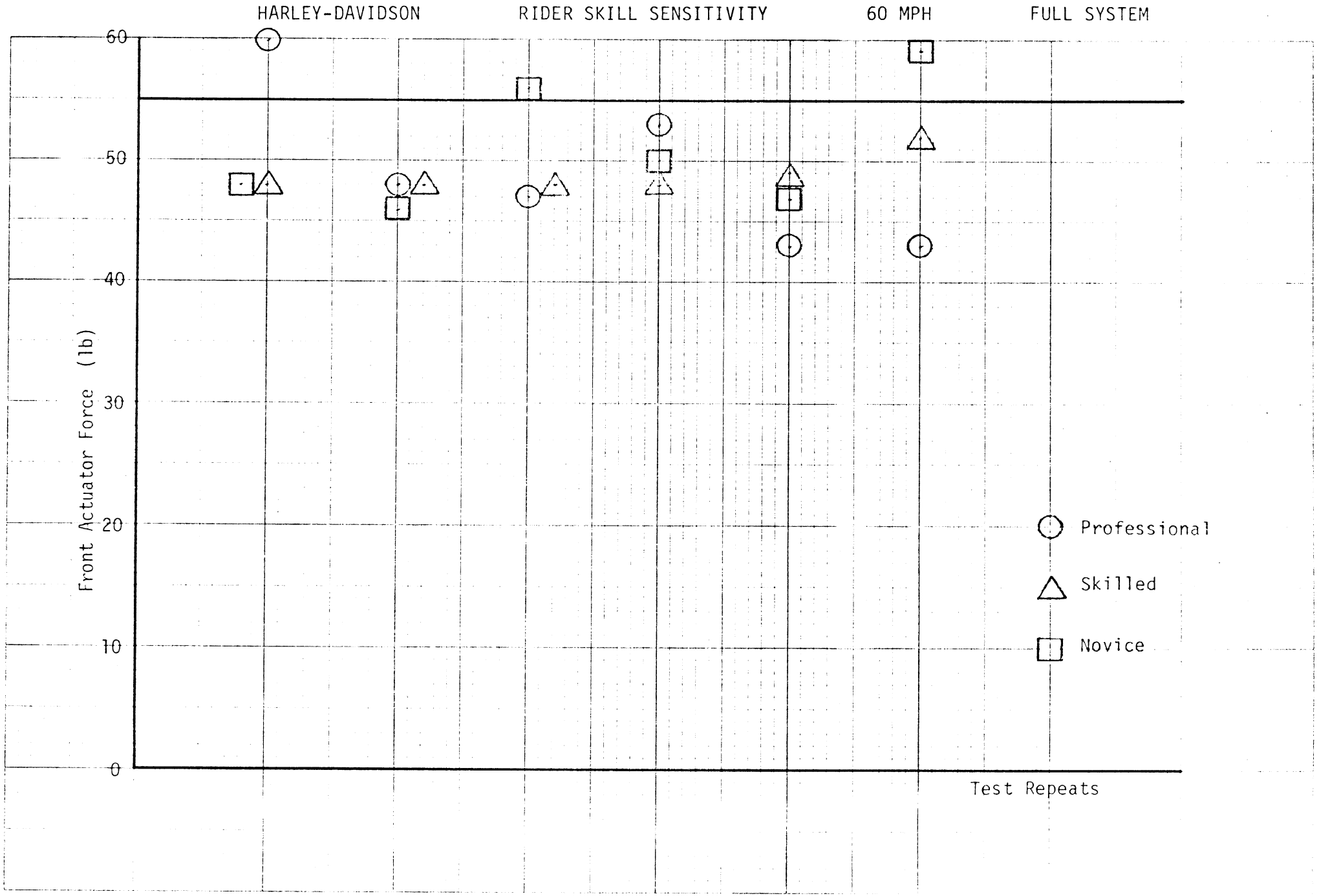

HARLEY-DAVIDSON
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEMS
Stopping Distance (ft)
50
40
30
20
10
0
Max., Final Effectiveness
Professional
Skilled
Novice
Test Repeats

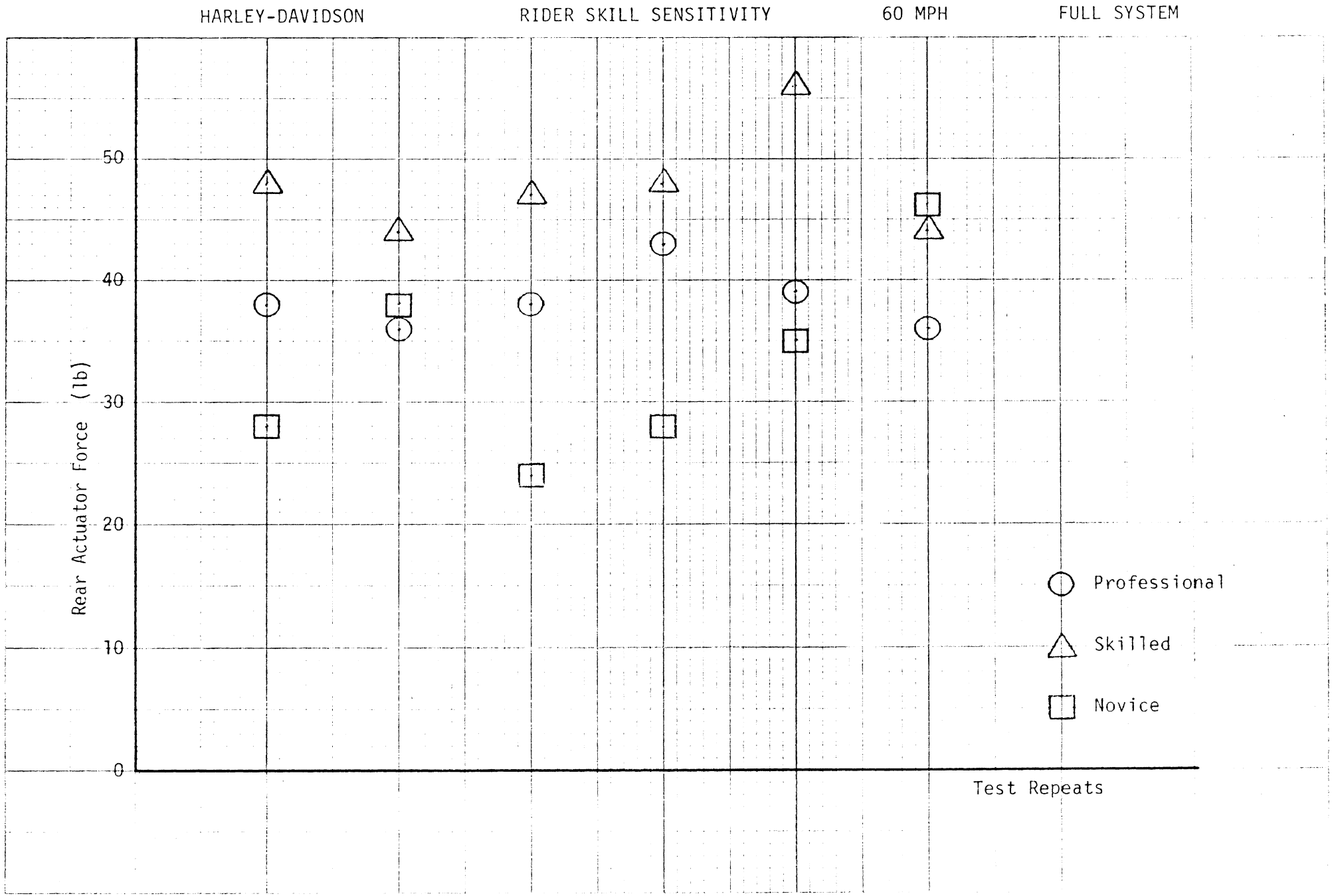
HARLEY-DAVIDSON RIDER SKILL SENSITIVITY 30 MPH FULL SYSTEM

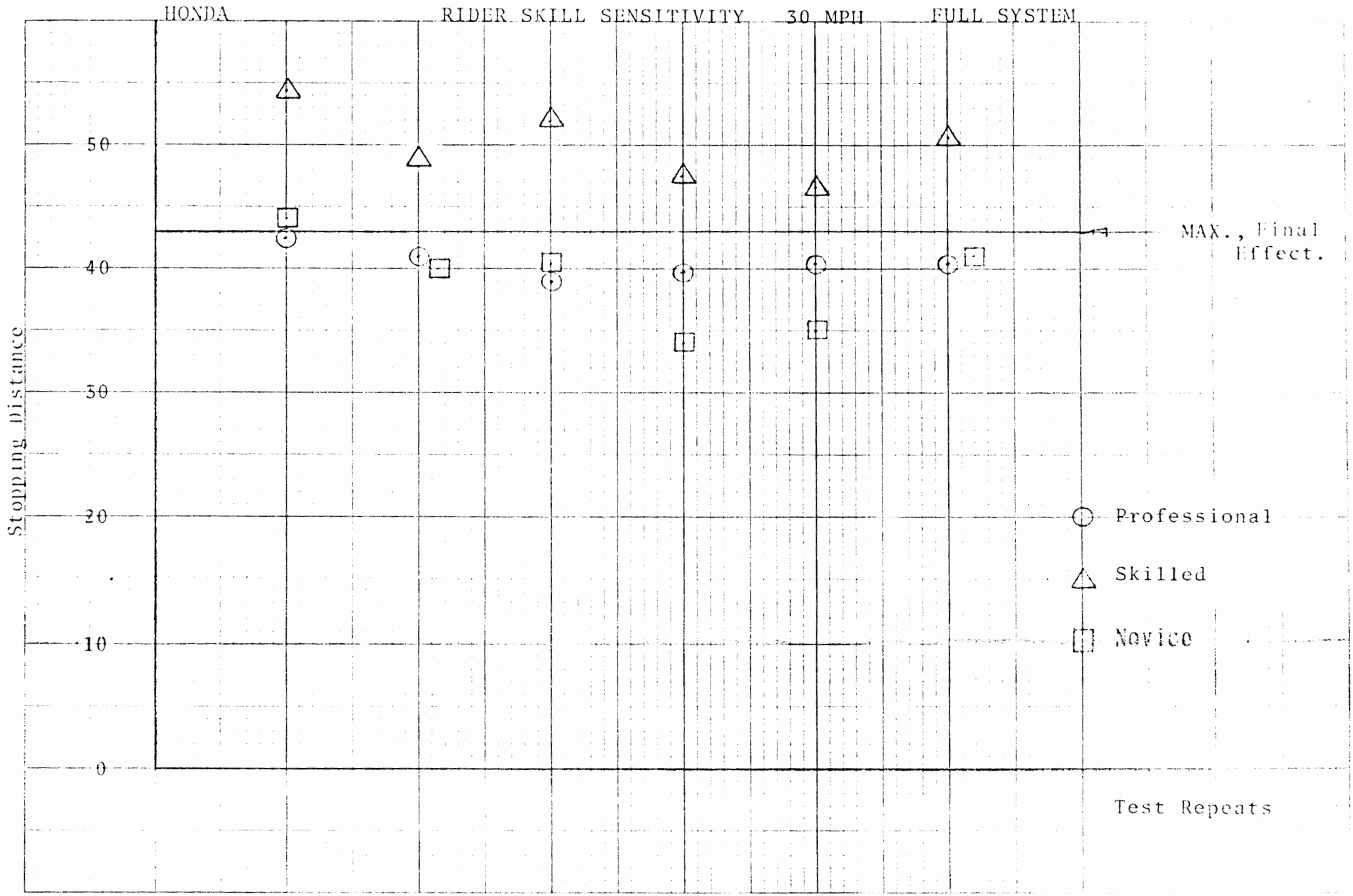


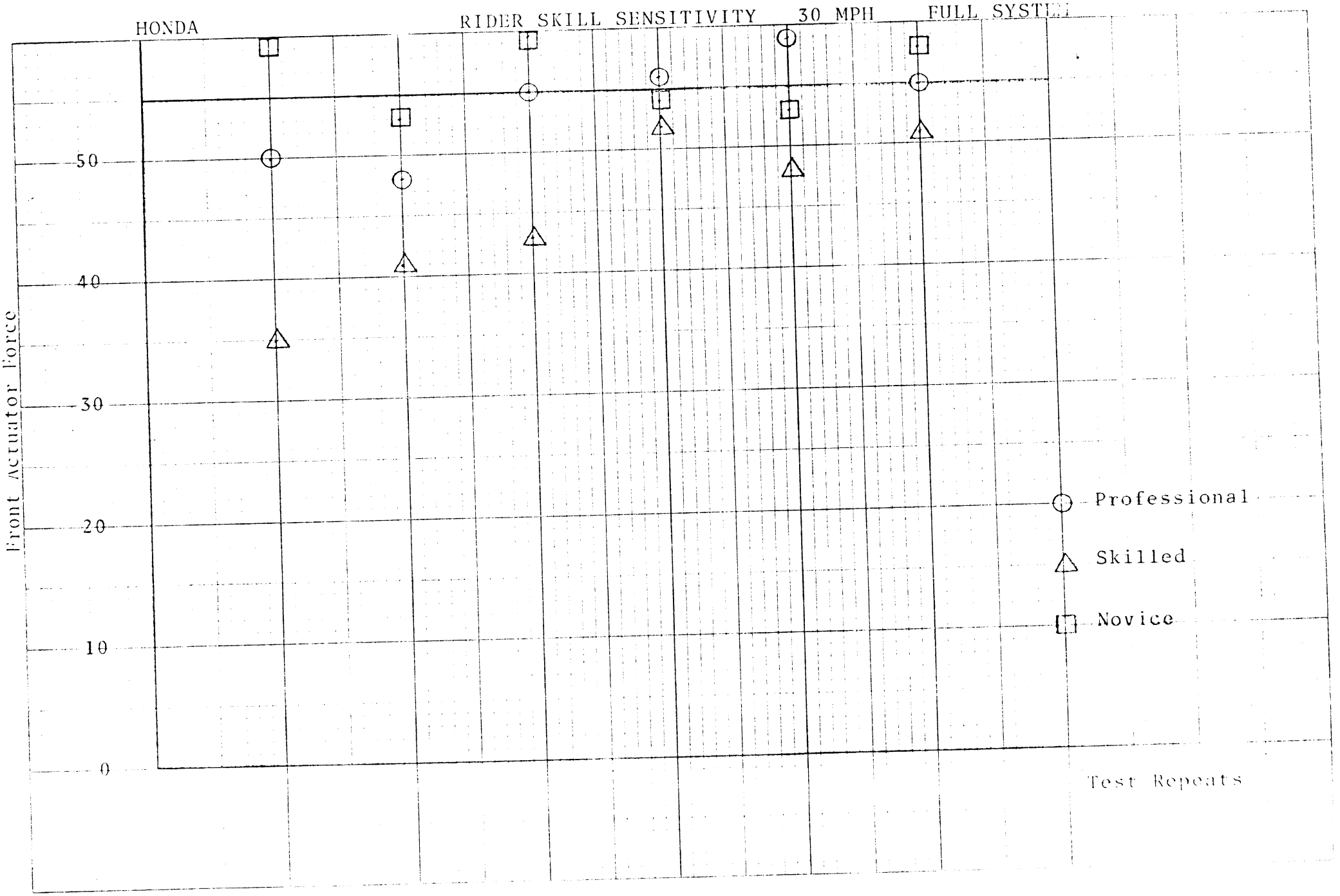

HARLEY-DAVIDSON
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
Rear Actuator Force (lb)
60
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice

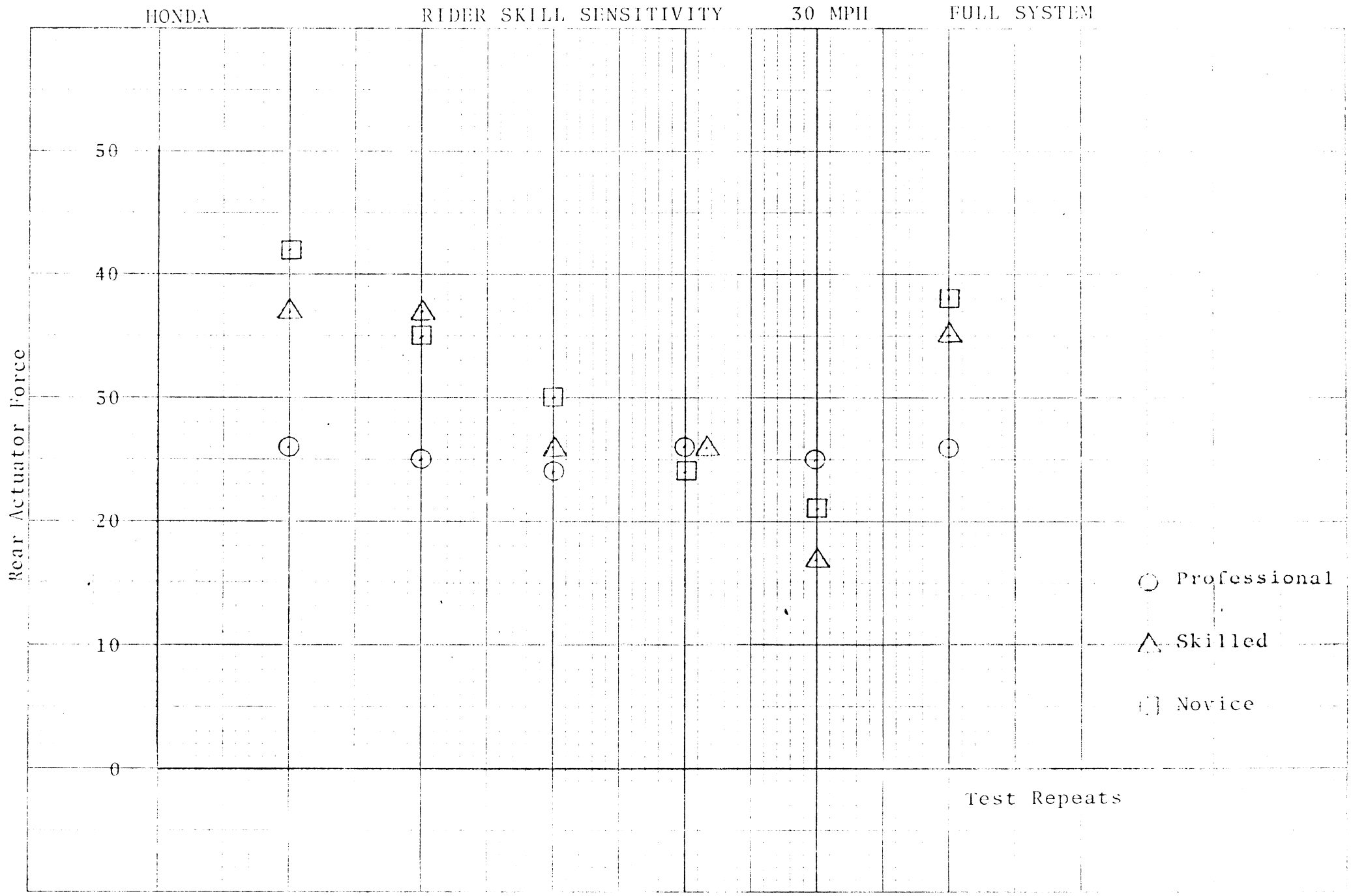

HARLEY-DAVIDSON
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
200
160
120
80
40
0
Stopping Distance (Ft)
Max.,
Final Effectiveness
Professional
Skilled
Novice
Test Repeats

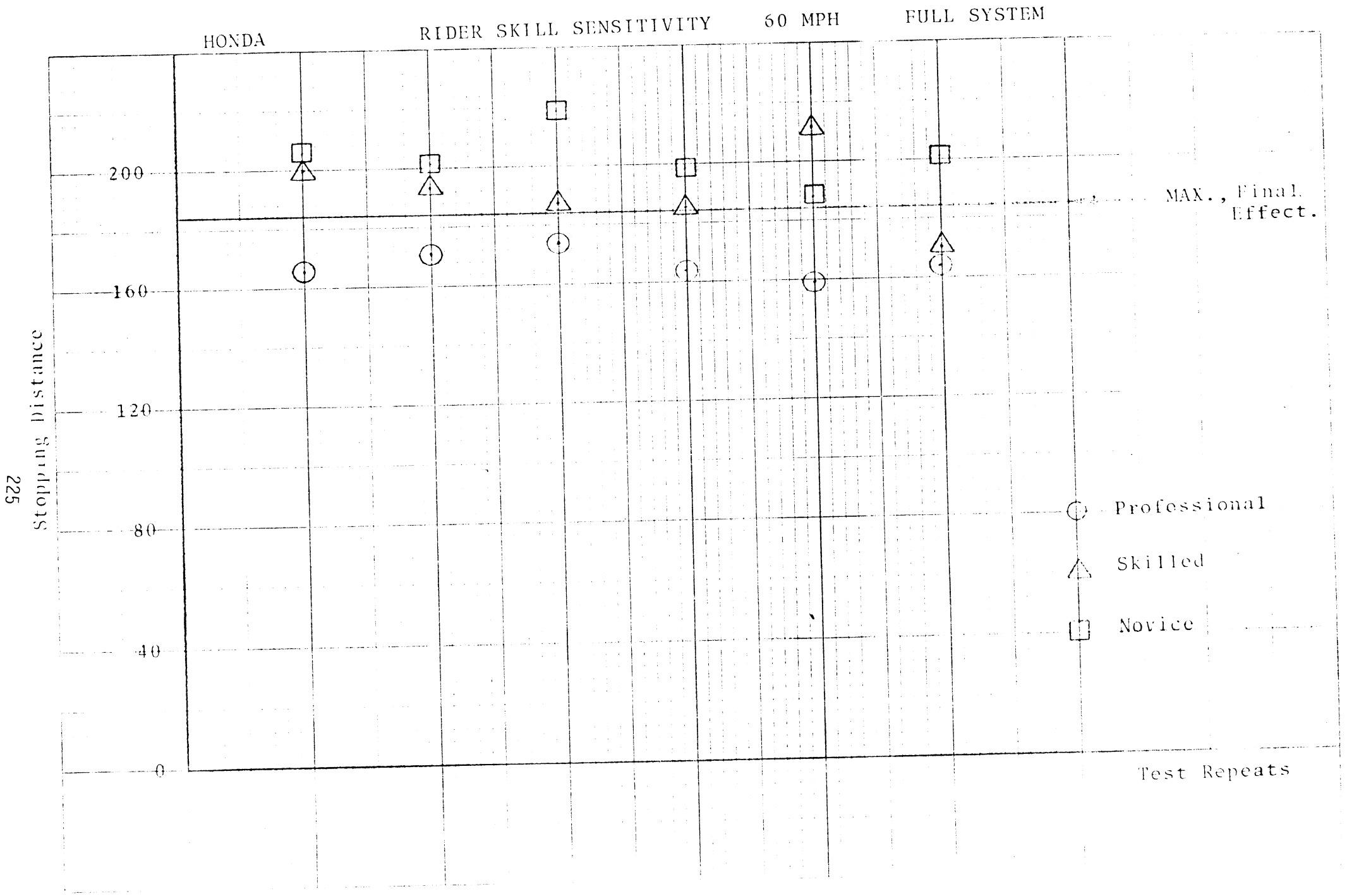

HARLEY-DAVIDSON
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
60
50
40
30
20
10
0
Front Actuator Force (lb)
Test Repeats
Professional
Skilled
Novice

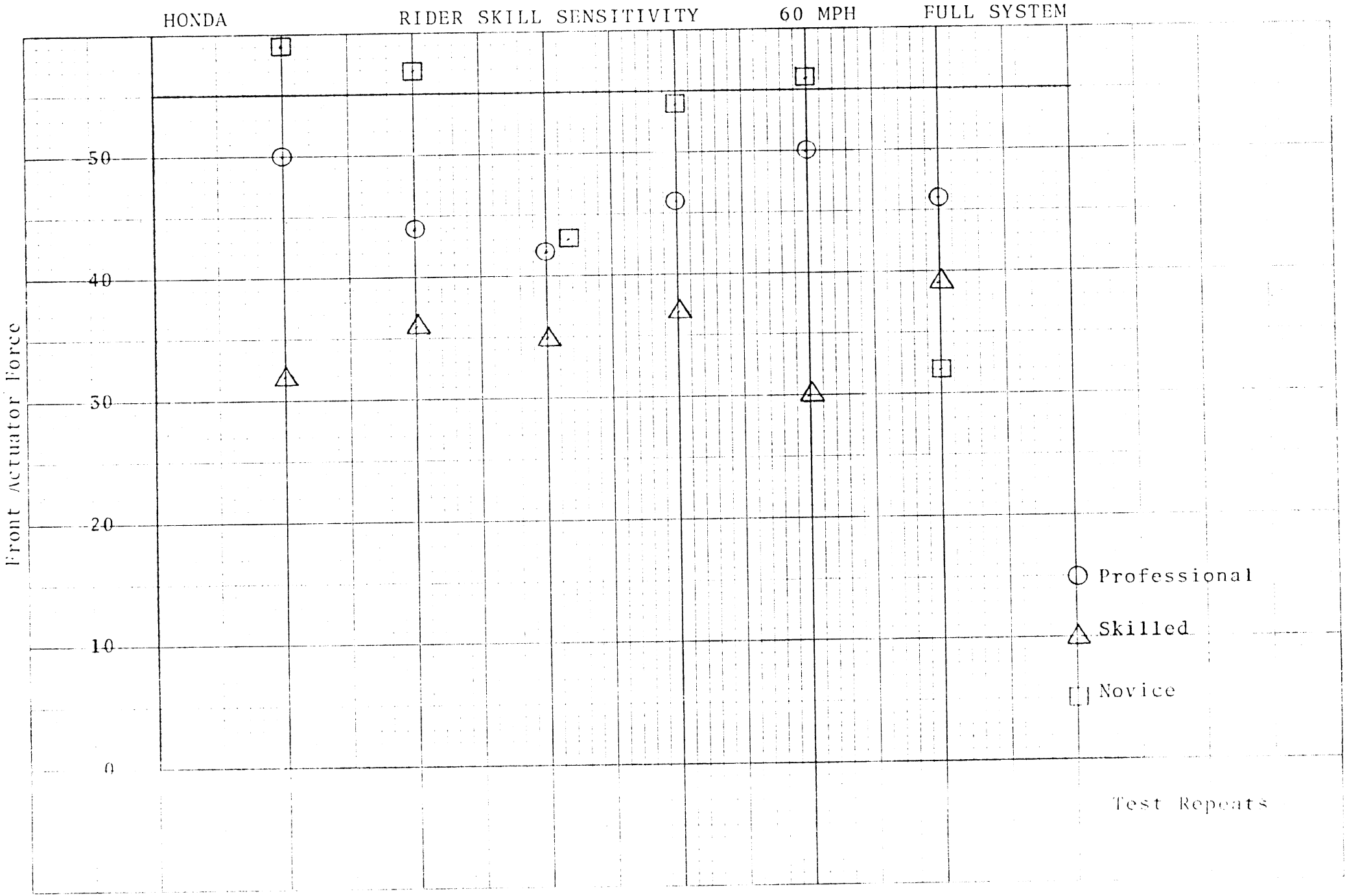

HARLEY-DAVIDSON
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
Rear Actuator Force (lb)
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice

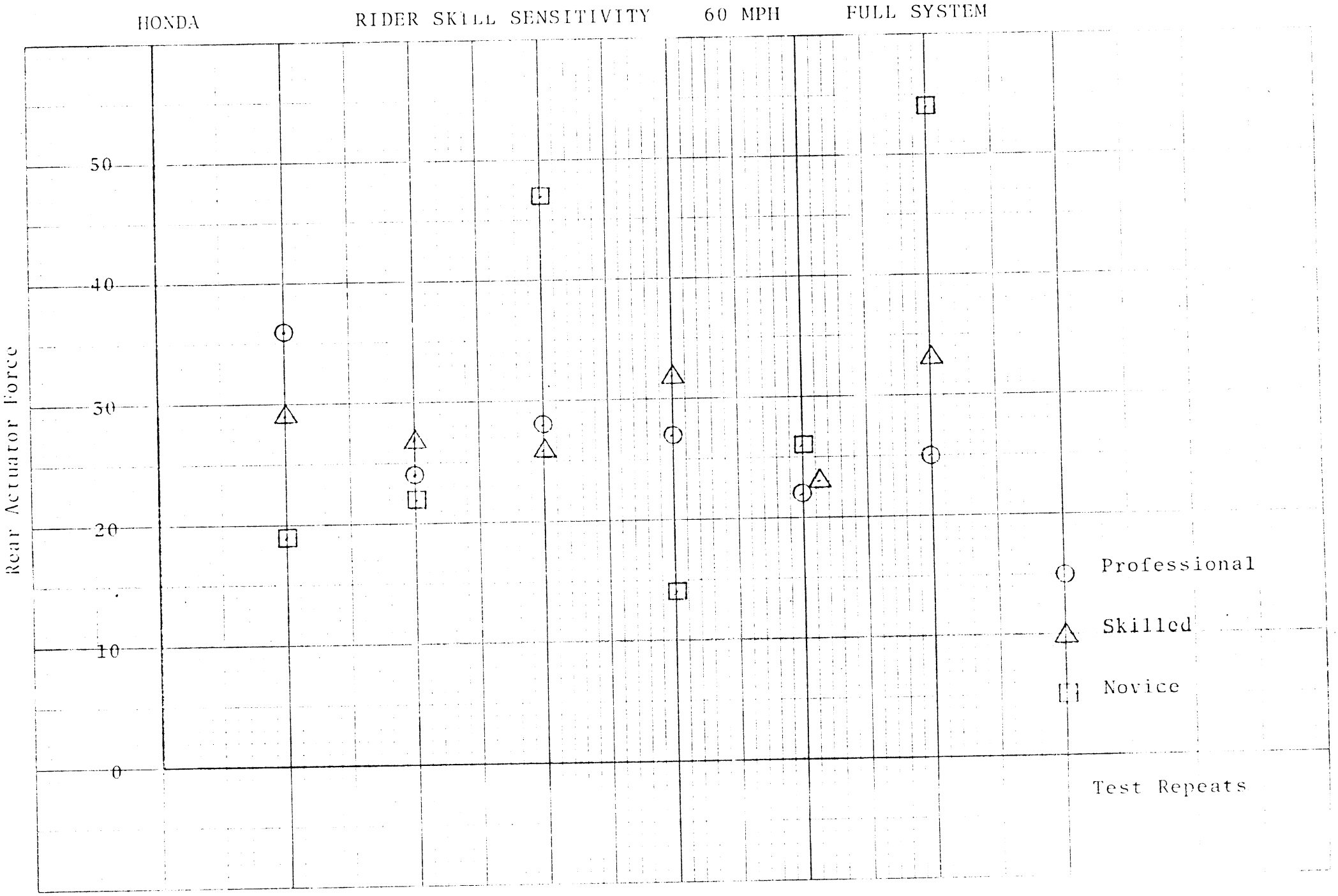

HONDA
RIDER SKILL SENSITIVITY 30 MPH FULL SYSTEM
Stopping Distance
50
40
30
20
10
0
MAX., Final Effect.
Professional
Skilled
Novice
Test Repeats

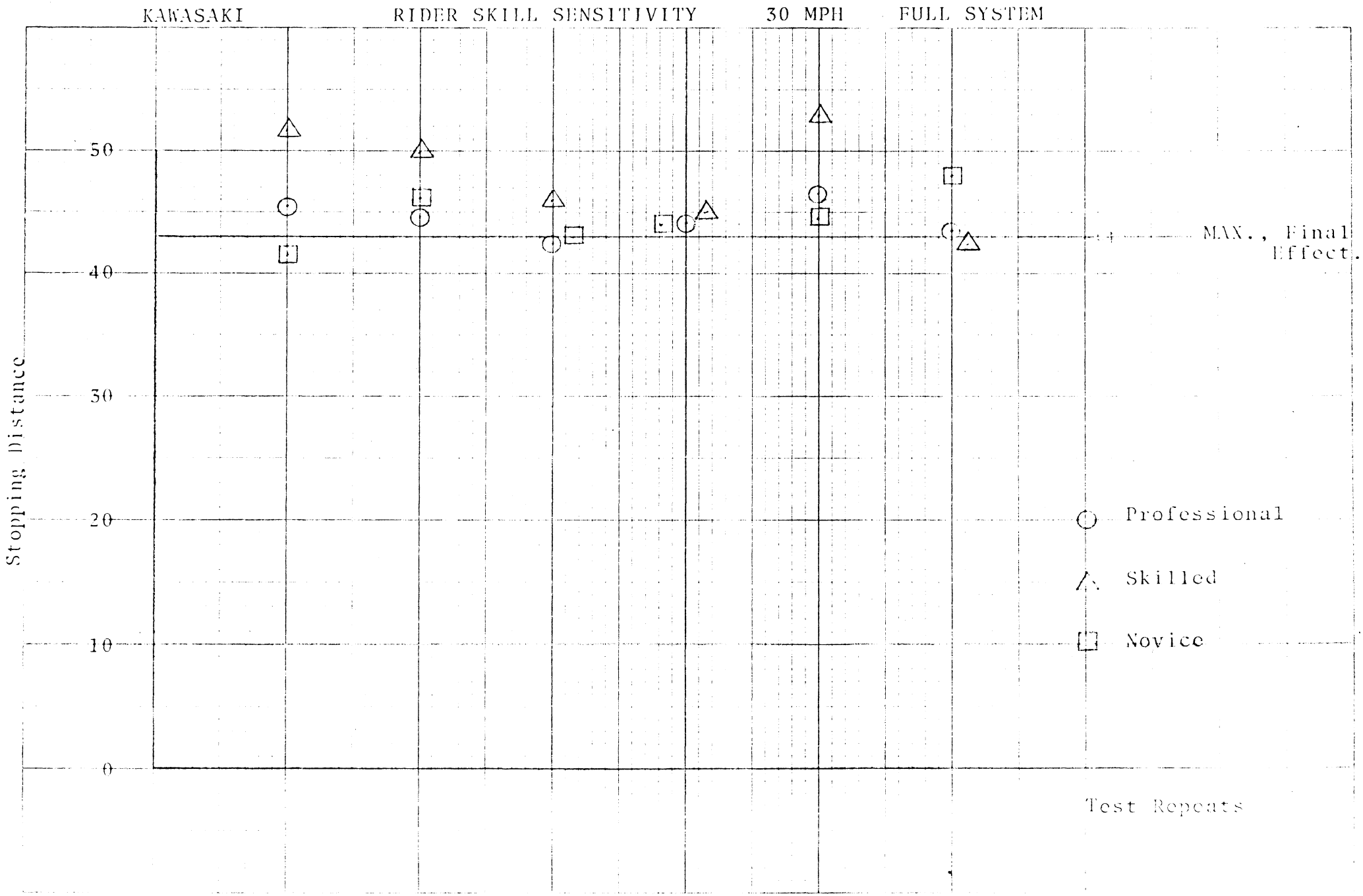

HONDA
RIDER SKILL SENSITIVITY 30 MPH FULL SYSTEM
Front Actuator Force
50
40
30
20
10
0
Professional
Skilled
Novice
Test Repeats

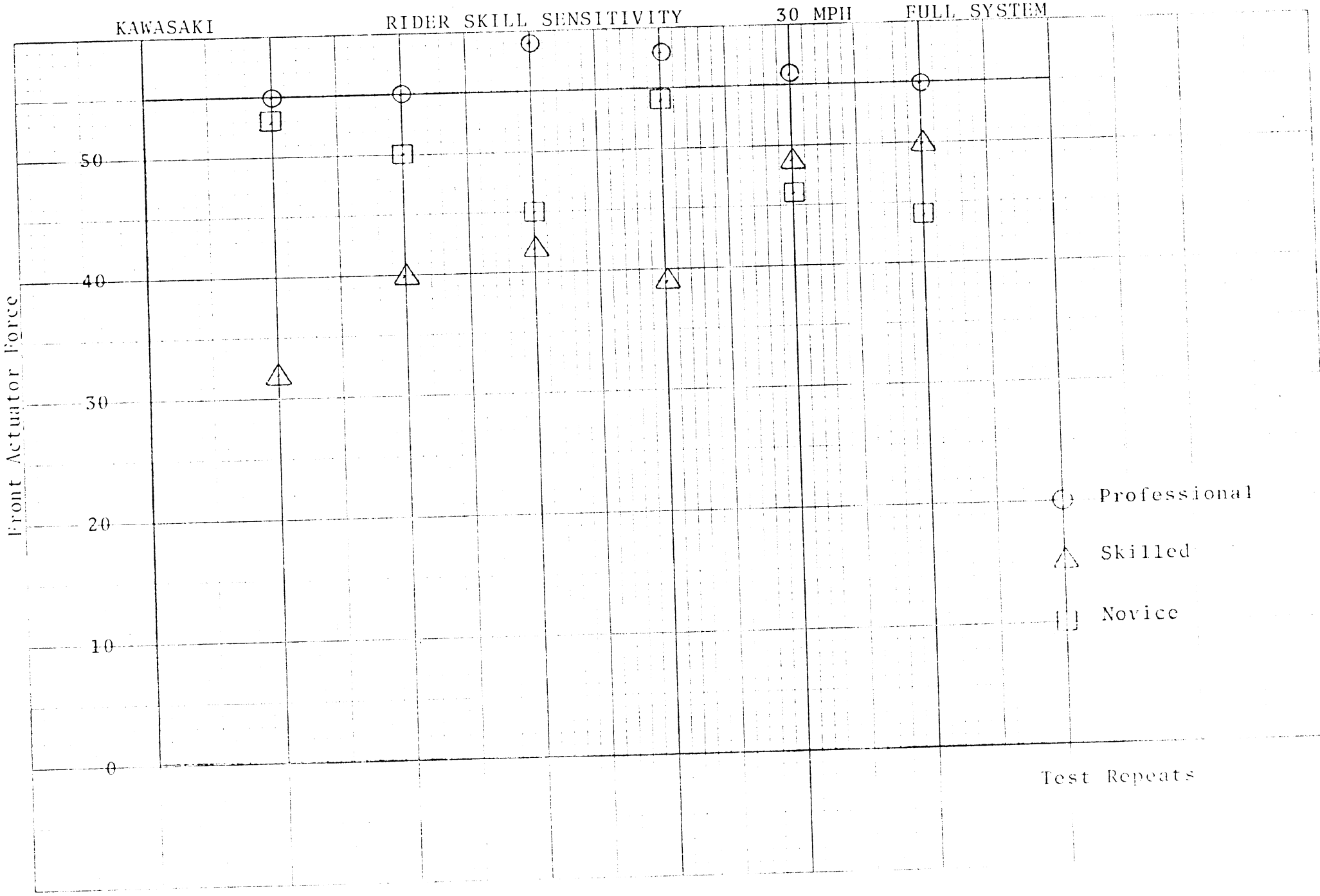

HONDA
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
Rear Actuator Force
224
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice

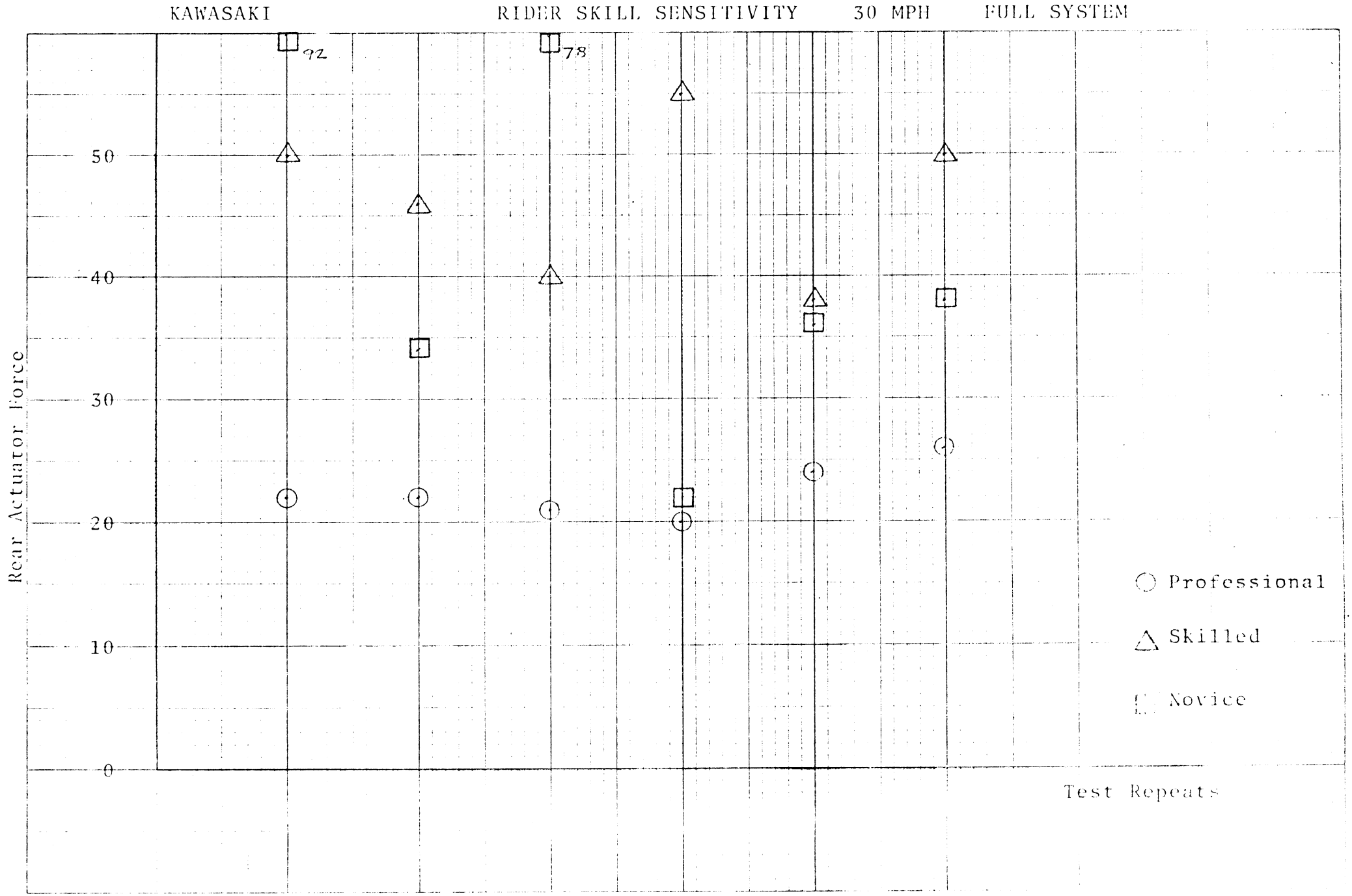

HONDA
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
200
160
120
80
40
0
Stopping Distance
225
MAX., Final Effect.
Professional
Skilled
Novice
Test Repeats

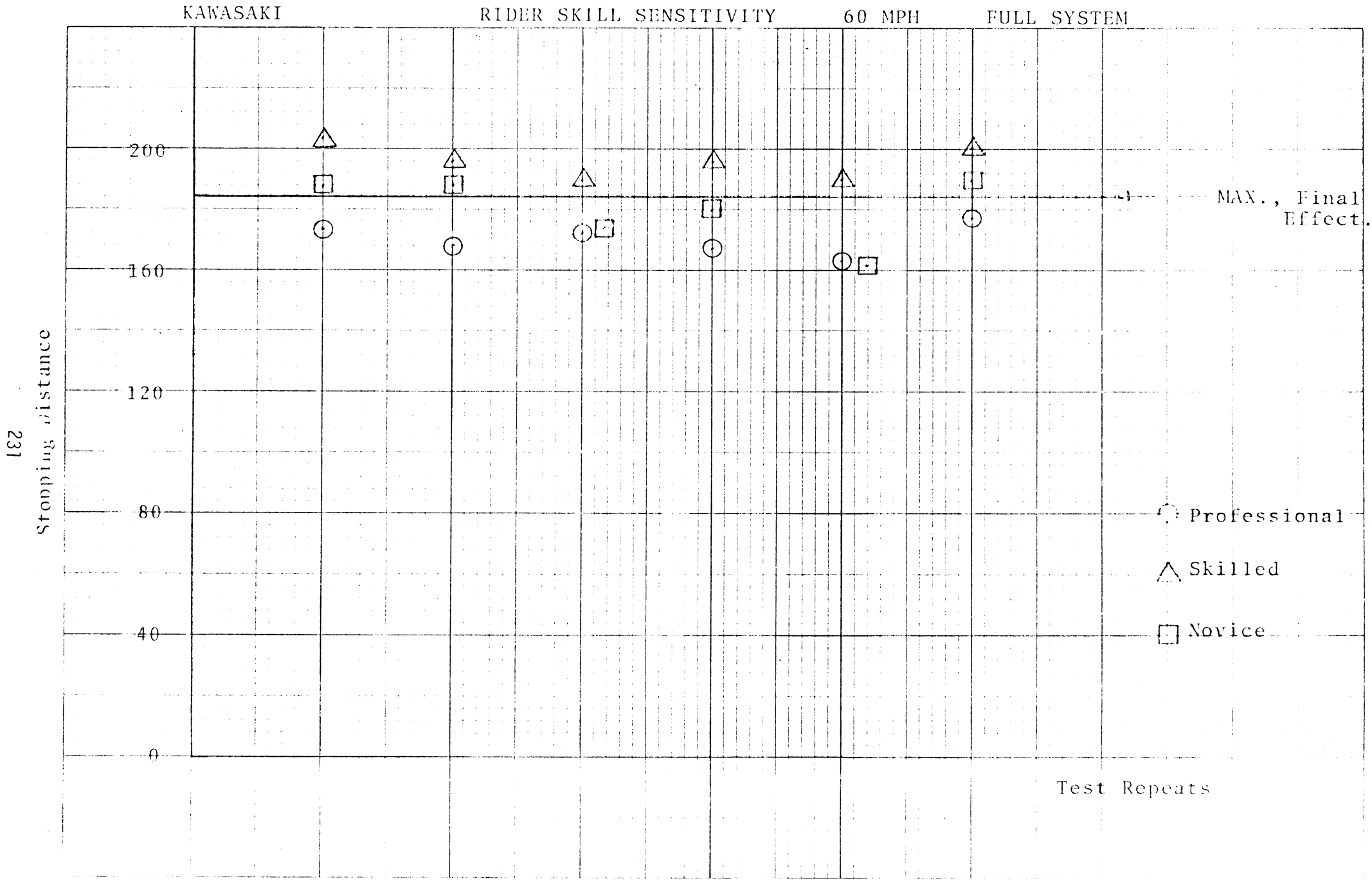


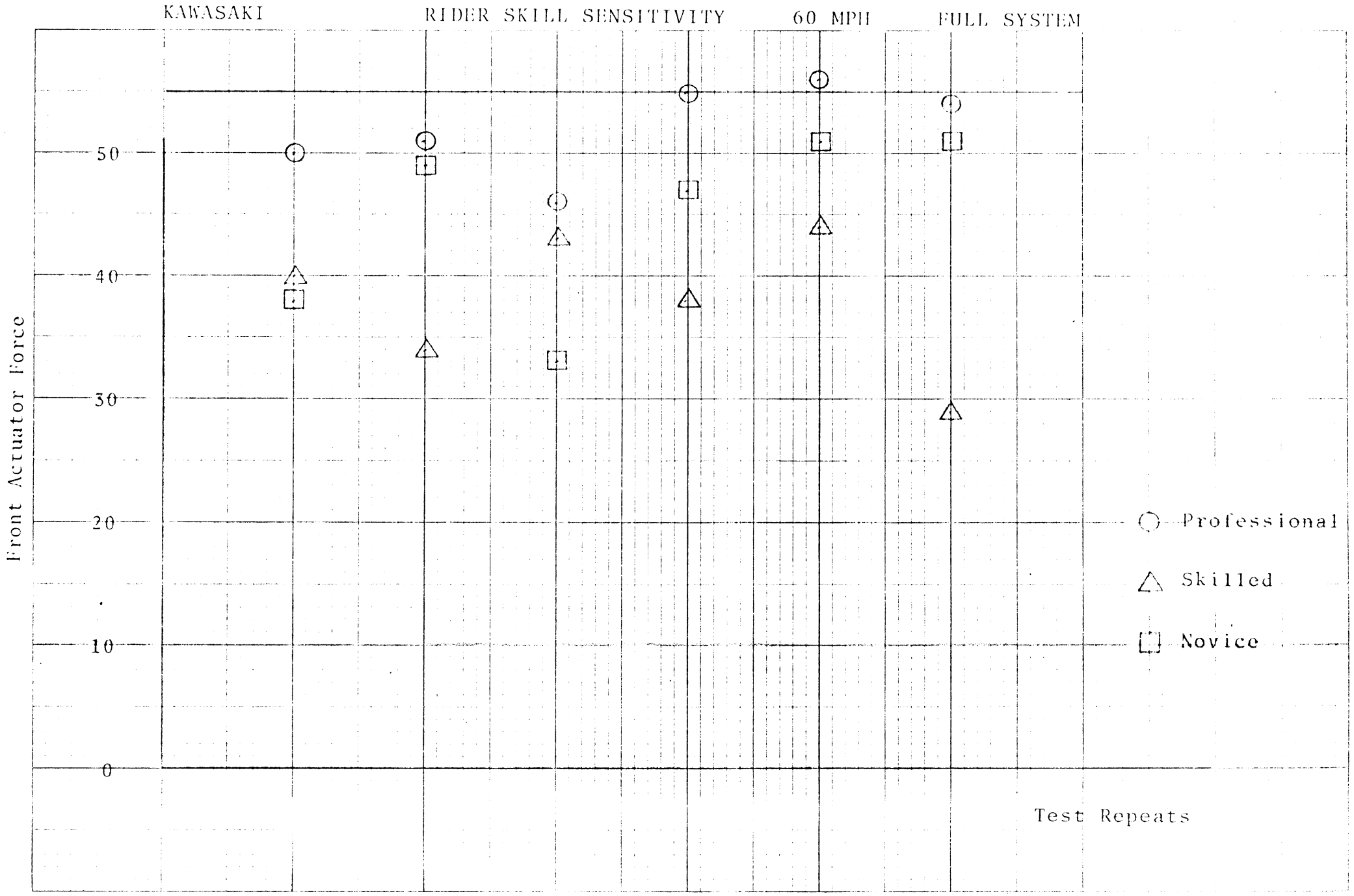

HONDA
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
Rear Actuator Force
50
40
30
20
10
0
Professional
Skilled
Novice
Test Repeats

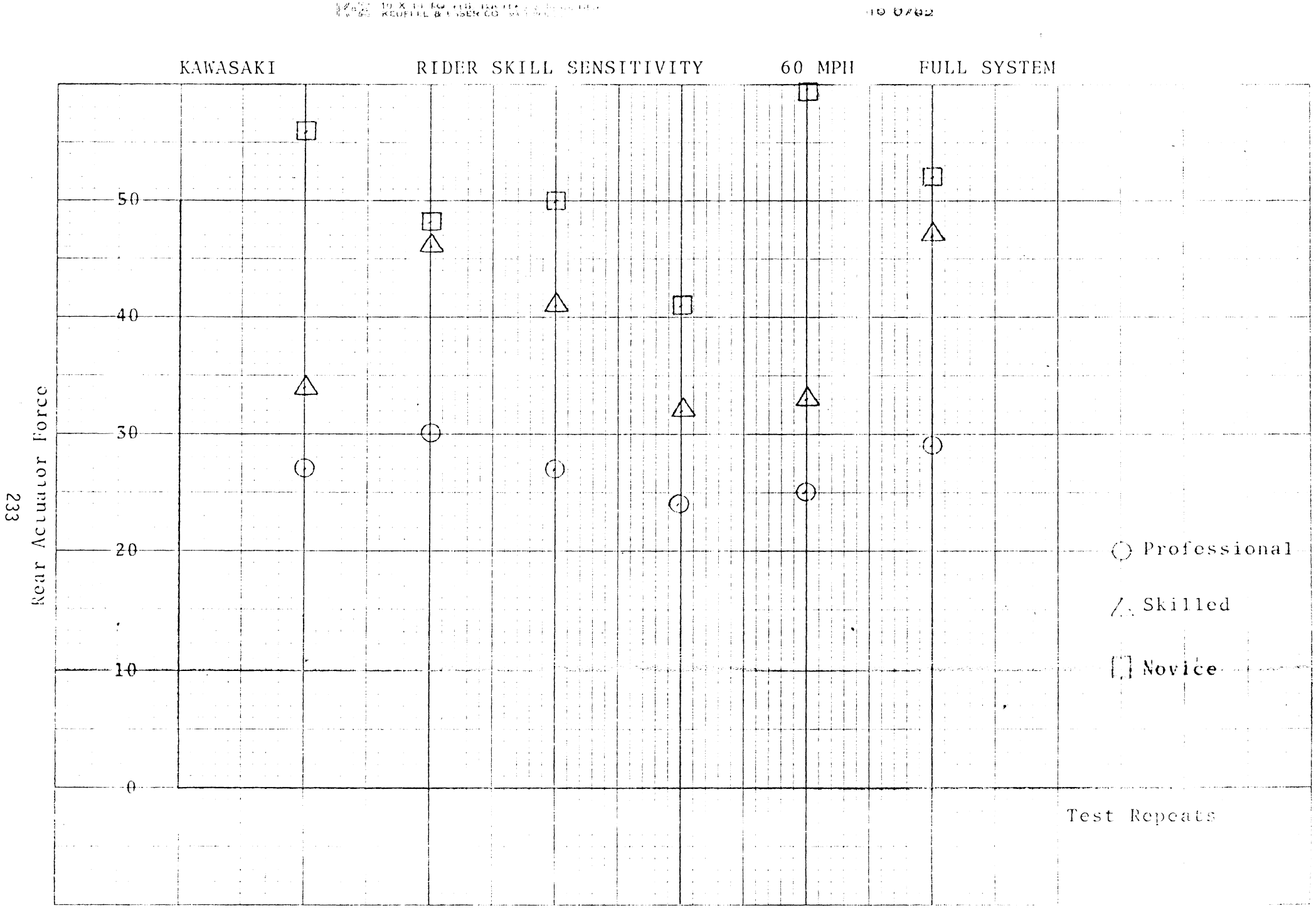


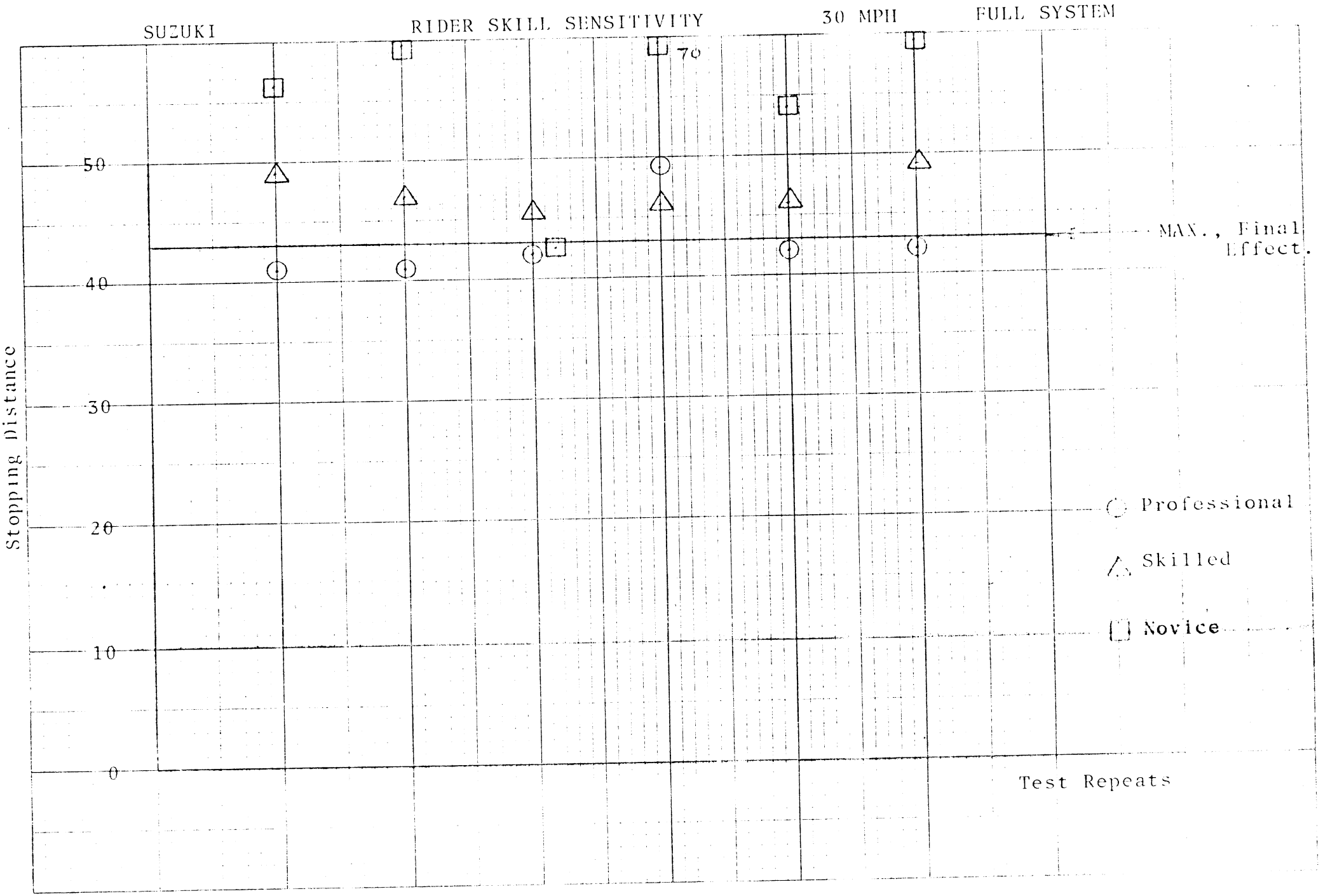

KAWASAKI
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
Front Actuator Force
50
40
30
20
10
0
Professional
Skilled
Novice
Test Repeats

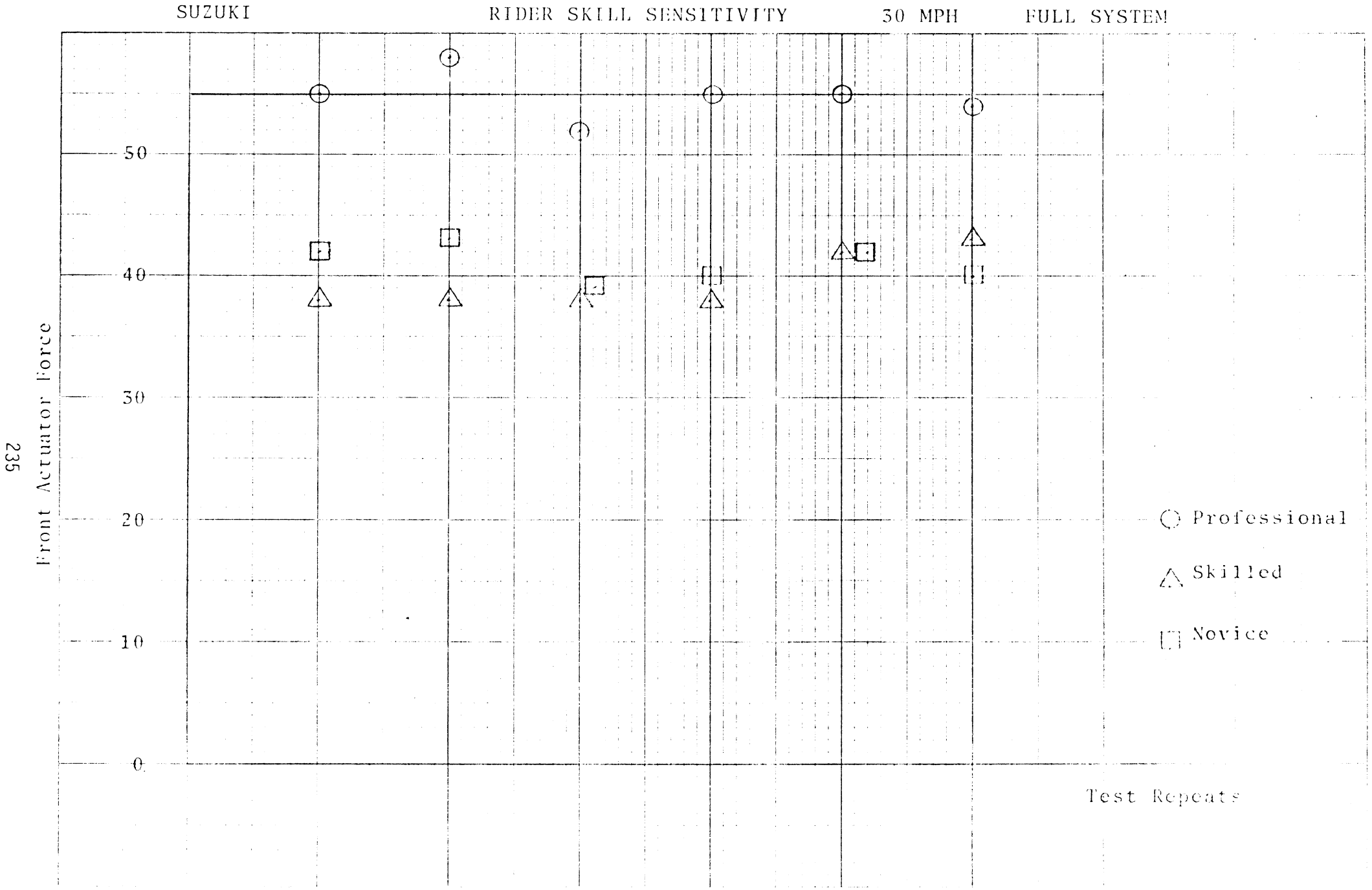

KAWASAKI
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
92
78
50
40
30
20
10
0
Rear Actuator Force
Test Repeats
Professional
Skilled
Novice

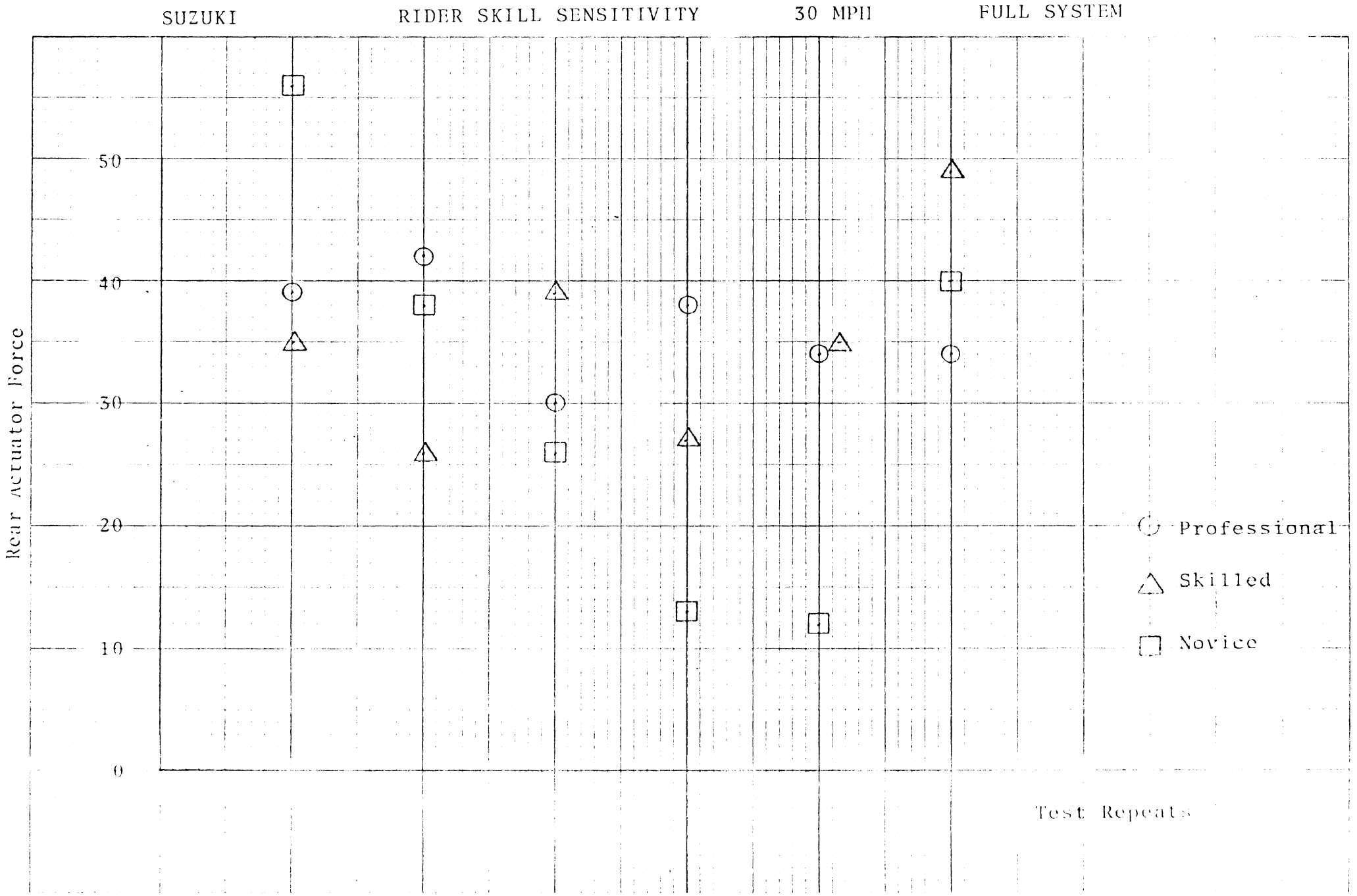

KAWASAKI
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
Stopping Distance
231
200
160
120
80
40
0
MAX., Final Effect.
Professional
Skilled
Novice
Test Repeats


KAWASAKI
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
Front Actuator Force
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice

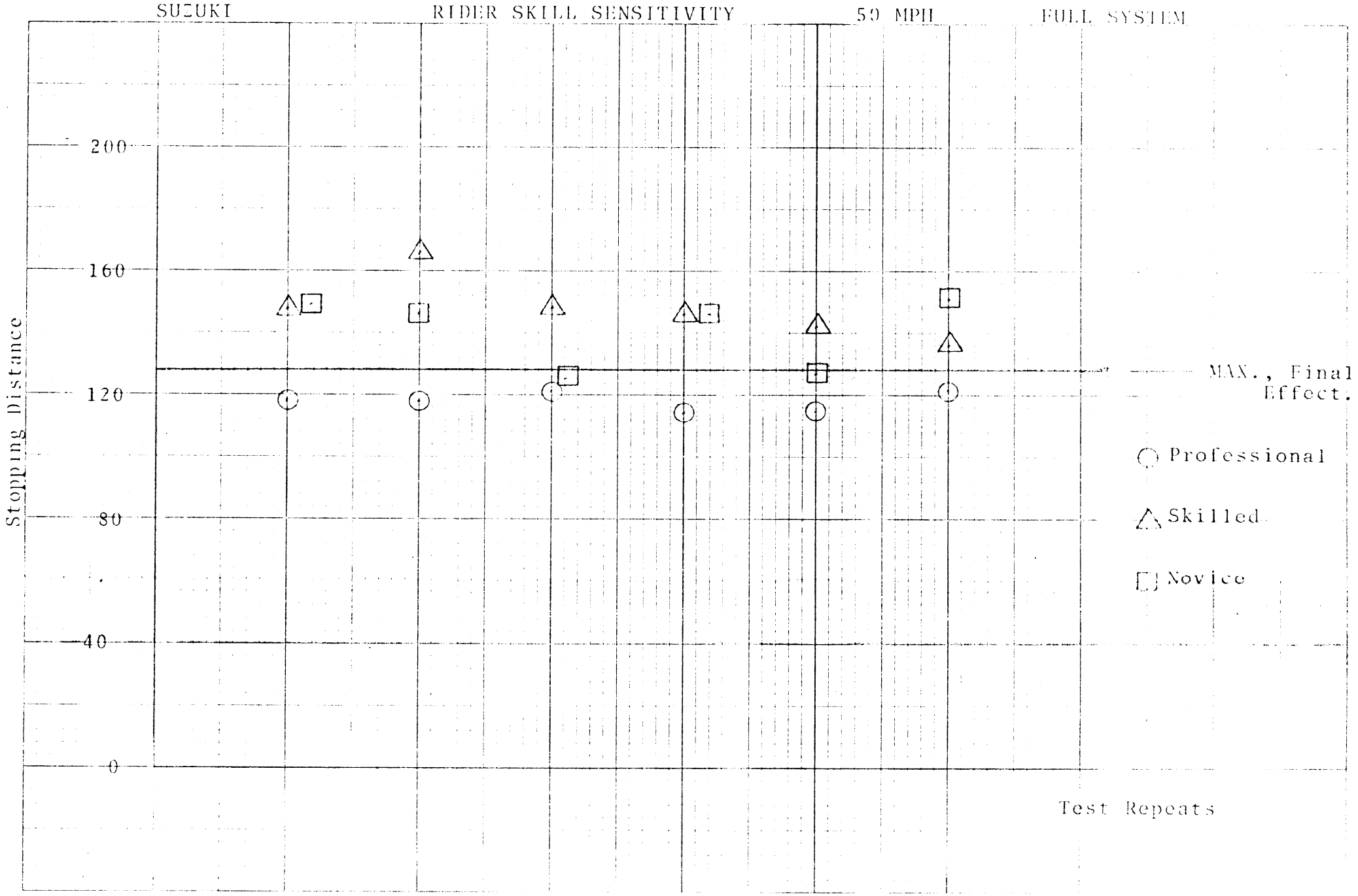

KAWASAKI
RIDER SKILL SENSITIVITY
60 MPH
FULL SYSTEM
Rear Actuator Force
50
40
30
20
10
0
Professional
Skilled
Novice
Test Repeats

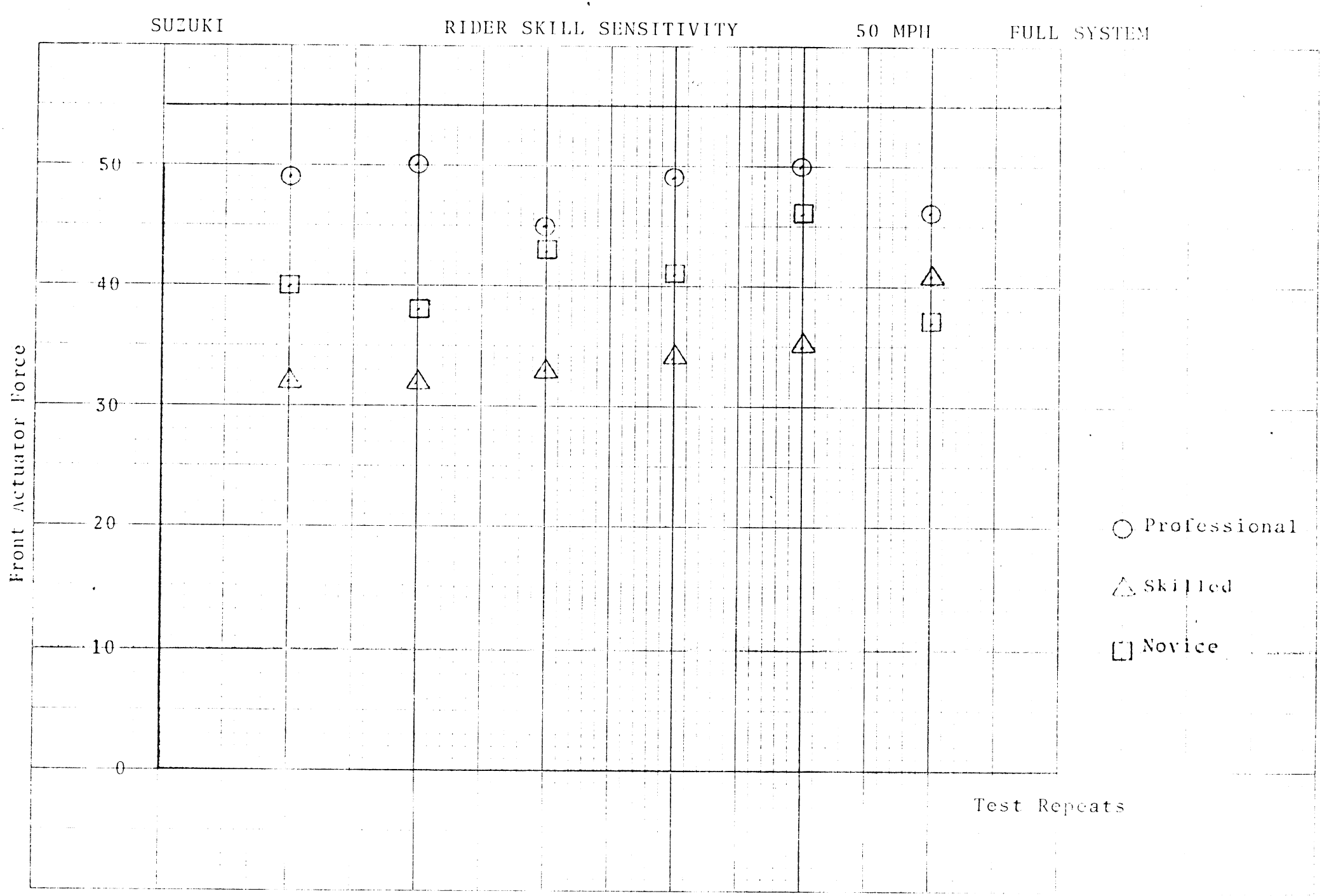

SUZUKI
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
70
50
40
30
20
10
0
Stopping Distance
MAX., Final Effect.
Professional
Skilled
Novice
Test Repeats

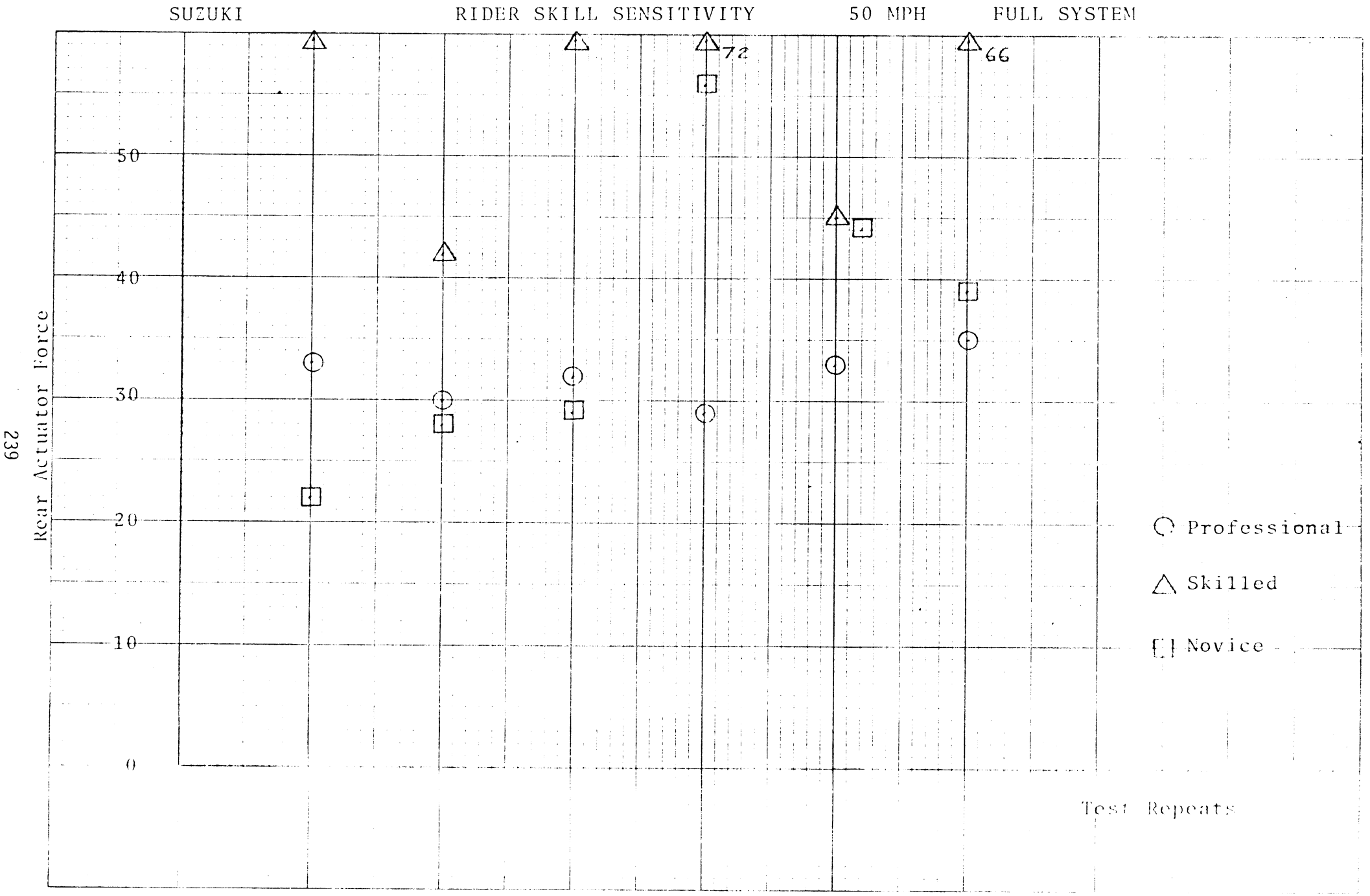

SUZUKI
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
Front Actuator Force
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice


SUZUKI
RIDER SKILL SENSITIVITY
30 MPH
FULL SYSTEM
Rear Actuator Force
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice

(Top Speed 55 mph)




SUZUKI
RIDER SKILL SENSITIVITY
50 MPH
FULL SYSTEM
Front Actuator Force
50
40
30
20
10
0
Test Repeats
Professional
Skilled
Novice


SUZUKI
RIDER SKILL SENSITIVITY
50 MPH
FULL SYSTEM
72
66
50
40
30
20
10
0
Rear Actuator Force
Test Repeats
Professional
Skilled
Novice

RESUMES OF RIDING EXPERIENCE POSSESSED
BY 122 TEST RIDERS

Professional Rider - Roger Riemann

Age: 35 yrs.
(est) Height: 5'9"
Weight: 155 lbs

-Mr. Riemann has had extensive experience in conducting the FMVSS 122 test procedure for both foreign and domestic motorcycle manufacturers. Mr. Reimann competes regularly in various racing events and owns a motorcycle shop. He further has distinguished himself as the builder of motorcycles employed by Mr. Evel Knievel in his nefarious feats. Moreover, Mr. Reimann is commonly known within the professional sector of the motorcycle community as an especially capable and experienced test rider.

Experienced, Non-Professional Rider - Lloyd Pierce

Age: 43
Height: 5'8"
Weight: 145 lbs

-Mr. Pierce, an employee of the Bendix Automotive Development Center, has ridden motorcycles for 20 years, though never in a test capacity. He is presently riding as a primary means of personal transportation and participates in a cycle club with competitive involvement in dirt track racing, hill climbing, and moto cross events. Mr. Pierce has personally owned motorcycles covering the full range of sizes and engine displacements, from 125 cc to 1200 cc.

Novice Rider - Ed Strychker

Age: 37
Height: 5'9"
Weight: 165 lbs

-Mr. Strychker has had one year of riding experience—five years prior to his involvement in the test program in this study. During his single year of riding, he operated only one vehicle, a 1200 cc Harley-Davidson machine.

UM-HSRI-76-30-3

MOTORCYCLE BRAKING PERFORMANCE

Contract Number DOT-HS-5-01264

Appendices B, C, D, E, F

Robert D. Ervin
Charles C. MacAdam
Yoshinori Watanabe

Highway Safety Research Institute
The University of Michigan

December, 1976

APPENDIX B

KAWASAKI F9C AND HARLEY-DAVIDSON FXE-1200 DEMONSTRATION TOW-TEST DATA

The demonstration tow-test results appearing in this appendix were conducted in accordance with the procedures recommended in the "Plan for Demonstration Tests." The only departure from that plan involved a modification of the rear-only friction coefficient calculation to include the effects of an aerodynamic pitching moment. The rationale for that modification is included in the introductory observations of this appendix.

The demonstration tests were conducted using the Kawasaki and Harley-Davidson motorcycles at the Dana Corporation test track facility near Ottawa Lake, Michigan. Each bike occupied less than two days of testing with the burnish procedure accounting for about half the total test time.

Prior to presentation of the test results, a brief history of some observations and minor tow-test hardware modifications which occurred during the testing of the first bike (Kawasaki) is reviewed. The following remarks have bearing only for the effectiveness tests.

Examination of the effectivenss data, following testing of the Kawasaki, did indicate an inexplicably large variation of rear friction coefficient, μ_r, with tow height. Higher tow heights (lower rear-wheel loads) produced smaller μ_r values than lower tow heights. In search of a reason to explain this variation, the additional weight of the tow hardware assembly, supported by the bike and inadvertently neglected, was measured and found to be about 100 lb. The additional 100-lb weight was positioned slightly ahead of the front axle so as to produce a small pitch moment as well as tare weight acting upon the bike. The net result of this additional weight

and moment was to add 114 lb on the front wheel and unload the rear wheel by 14 lb from the normal static condition. While this artificial pre-loading failed to explain μ_r variation, its main effect was to place in question the front wheel effectiveness tests. To remedy the artificial tare weight condition, a counter-balance boom and weight was added to the tow-test rig as shown in Figure B.1. Following its installation, a final series of effectiveness tests was performed primarily as a check on the previous results. The main concern at that time was that the Kawasaki would now display (with 114 lb less front wheel load) a traction-limited front wheel in contrast to the previous torque-limited test results. This did not occur and the tow force values obtained during these effectiveness re-tests coincided with the original results. These retests appear as part of the post-burnish effectiveness results although their chronological order in the testing sequence was last.

Still of some concern following the Kawaski effectiveness retests was the presence of some interaction between high tow heights, as occur during rear-wheel effectiveness tests, and μ_r variations. The size of this variation was clearly outside any reasonable range for μ_r-vertical load sensitivities of the tire. The explanation was found in the neglect of the moment induced by the aerodynamic and rolling resistance forces, FT_o, for high tow heights. Referring to Figure B.2, the height, h_{FT_o}, at which is applied the resultant drag force, FT_o, is not explicitly known, but is clearly in the vicinity of the c.g. height. For Kawasaki rear-only tests the tow height, h_{t_r}, is on the order of the wheelbase, ℓ, thus producing an additional moment, M_{FT_o}, heretofore neglected, equal to $FT_o(h_{t_r} - h_{FT_o})$. The result is an unloading of the rear wheel, during rear-wheel-only tests, approximated by the amount,

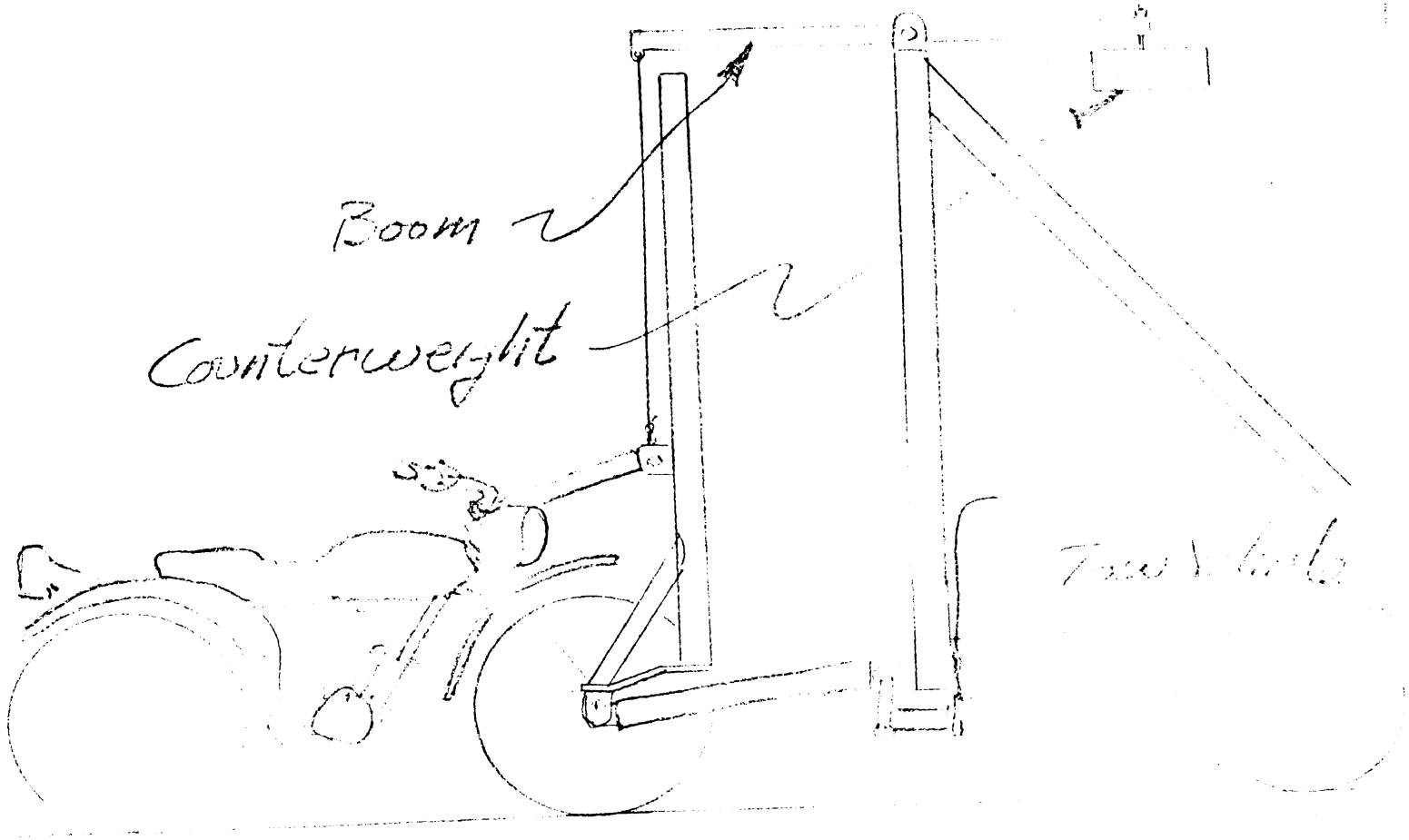


Figure B.1

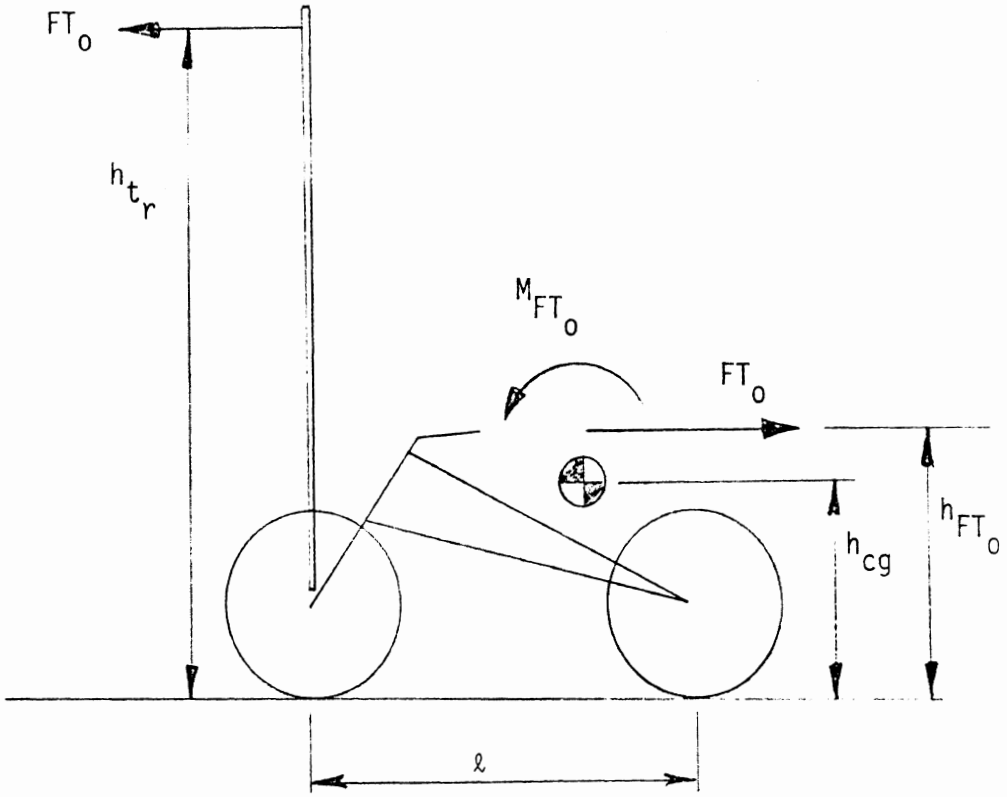


Figure B.2 Aerodynamic and rolling resistance pitch moments for high tow heights.

$$\left(\frac{h_{t_r} - h}{\ell}\right) FT_o \approx FT_o$$

assuming here $h_{FT_o} \approx h$ and $(h_{t_r} - h) \approx \ell$. Since FT_o values obtained for the Kawasaki at 40 mph show an average of about 40 lb, the effect upon the μ_r calculation is significant. Including the total drag effect in the μ_r calculation results in a new expression for the Equation (12) of the "Plan for Demonstration Tests,"

$$\mu_r = \frac{FT_R}{W_R + \frac{h}{\ell} FT_o - \frac{h_{t_r}}{\ell} (FT_R + FT_o)} \qquad (B.1)$$

The neglect of the $-\frac{h_{t_r}}{\ell} FT_o$ term appearing in the denominator of the new μ_r expression, explains the erroneous trend displayed in the original μ_r calculations. Using this new μ_r equation and an FT_o average value of 40 lb, the Kawasaki μ_r values were re-calculated. The new μ_r values indicated no significant dependence on tow height and are shown in the following section for the Kawasaki test results.

The new μ_r expression (B.1), was also used during the effectiveness testing of the Harley-Davidson bike. However, for the Harley-Davidson, actual total drag values, FT_o, were recorded during each test and then averaged to obtain the FT_o value appearing in the Harley-Davidson μ_r calculations.

B.1 Kawasaki Demonstration Tow Test Data

Pre-Burnish Effectiveness - 40 mph

Warm-up Application: Rear = 69 lb

First Rear-Only Test: h_T = 60"

Test Repeat	T_r	A_r	FT_r
1	130°	26	120
2	130°	30	130
3	136°	32	120
4	144°	32	132

FT_r average = 125

$$\mu_r = \frac{125}{279^* + \frac{27}{55.5}(40) - \frac{60}{55.5}(125+40)}$$

$$= \frac{125}{120} = 1.04$$

*The 279 figure represents the actual rear static weight, (293-14), produced by the additional hardware tare weight and moment prior to installation of the compensating counterweight and boom.

Warm-up Application: Front = 75 lb

Front-Only Tests: $h_T = 27 + 6 = 33"$

Test Repeat	T_f	A_f	FT_f	
1	153	44	185	FT_f average = 189
2	172	46	190	
3	166	44	192	

The $\mu_r = 1.05$ table (Appendix B.3) indicated a next front tow height = 45":

Test Repeat	T_f	A_f	FT_f	
1	133	54	220	FT_f average = 221
2	155	55	220	
3	178	54	222	

The $\mu_r = 1.05$ table indicated a corresponding rear only tow height = 55":

Test Repeat	T_r	A_r	FT_r	
1	140	8	120	FT_r average = 125
2	153	18	130	
3	173	16	125	

$$\mu_r = \frac{125}{279 + \frac{27}{55.5}(40) - \frac{55}{55.5}(125+40)}$$

$$= \frac{125}{134} = .93$$

The $\mu_r = .95$ table indicated a front-only tow height of 42" for an anticipated tow force of 221 lb.

Test Repeat	T_f	A_f	FT_f	
1	135	54	220	FT_f average = 222
2	152	50	221	
3	173	54	224	

The μ_r = .95 table indicated a rear-axle tow height = 60". Since the 60" rear-only test had been perviously performed and the last two front-only tests showed good agreement, the pre-burnish effectiveness testing was considered completed. The results showed a front wheel force capability of 222 lb and a μ_r value of 0.95 or 119 lb, using the equation:

$$FT_p = \left(W_r - \frac{h_t}{\ell} FT_f\right) \mu_r \qquad (B.2)$$

Burnish Procedure - 40 mph

Application #	T_f	A_f	FT_f	T_r	A_r	FT_r
1	130	--	--	130		
10	255	16	105	273	16	75
16	450	23	85	300	21	75

Following the first sixteen burnish applications the front brake temperature was approaching 450°F and still increasing while the rear brake had reached an equilibrium condition in the range of 300°F. The burnishing was interrupted at this point and both brake assemblies inspected. Brake drag was noted on both wheels while still hot but tended to diminish with cooling. At this time, the front brake was disassembled and inspected. No unusual mechanical wear or indications of the source of the excessive heating, other than mild brake lining wear, were noted. The front brake was re-assembled and both brake cables

were re-adjusted. Subsequent tests of the front brake produced the same brake drag phenomenon but only when the temperature exceeded about 200°F. Beyond this point the drag increased in severity with increased temperature. At about 230°F, slack or free-play normally present in the brake cable at ambient temperatures was completely taken up. The most probable explanation lies in the differential thermal expansion between brake shoes and drum thereby reducing and nearly eliminating the shoe/drum clearance set at lower temperatures during brake cable adjustment. As an expeditious resolution to this problem cable adjustments were relaxed on both brakes eliminating all brake drag during the remaining burnish applications.

Application #	T_f	A_f	FT_f	T_r	A_r	FT_r
20	143	12	95	140	16	80
40	184	17	100	157	20	80
60	181	16	100	163	26	77
80	186	15	100	161	22	78
100	185	13	95	152	22	80
120	187	17	97	159	14	80
140	194	18	90	164	12	85
160	176	17	95	166	13	80
180	168	17	95	164	13	85
200	169	16	98	174	21	83

Post-Burnish Effectiveness

Rear-Only Test, Tow Height = 60"

Test Repeat	T_r	A_r	FT_r	
1	135	40	118	
2	140	40	125	FT_r average = 121
3	130	40	120	

$$\mu_r = \frac{121}{279 + 19 - \frac{60}{55.5}(121+40)}$$

$$= \frac{121}{124} = .97$$

First front-only test performed with tow height = 40" (indicated by μ_r = .95 table and an expected front tow force of 220 lb).

Test Repeat	T_f	A_f	FT_f	
1	140		245	
2	160	54	245	FT_f average = 242
3	175	53	237	

The remainder of the post-burnish effectiveness tests at this point in time demonstrated a suspicious μ_r sensitivity to large tow heights. The μ_r sensitivity problem resulted in an incorrect sequence of tow height adjustments and force measurements which followed, and hence are not presented here as part of the normal sequence of effectiveness tests.

Effectiveness re-tests (following installation of the counterweight and boom) were subsequently performed to verify the torque limitation of the front wheel and the same effectiveness results obtained during the initial tests. These re-test results are presented here as part of the post-burnish effectiveness testing although their chronological order was, in fact, last.

Effectiveness Retests

Rear-Only Test, Tow Height = 60"

Test Repeat	T_r	A_r	FT_r	
1	135	28	120	FT_r average = 126
2	140	21	125	
3	150	26	130	
4	150	29	128	

$$\mu_r = \frac{126}{293^* + \frac{27}{55.5}(40) - \frac{60}{55.5}(125+40)}$$

$$= \frac{126}{133} = .95$$

The front-only test was next performed with a starting tow height of 27 + 6 = 33".

Test Repeat	T_f	A_f	FT_f	
1	170	55	242	(front lockup)

This front wheel peak force occurred during a lockup (the only Kawasaki front wheel lockup achieved) at the low initial tow height of 33". The μ_r = .95 table indicated a next front tow height of 39".

Test Repeat	T_f	A_f	FT_f	
1	175	50	246	FT_f average = 246
2	177	46	244	
3	175	49	247	

*The rear static load (293) of the cycle and rider is now used following the installation of the counterweight and boom.

The torque-limited 246-lb tow force value indicated a corresponding rear-only tow height of 68":

Test Repeat	T_r	A_r	FT_r	
1	147	20	120	FT_r average = 119
2	143	22	118	
3	150	26	118	

$$\mu_r = \frac{119}{293 + 19 - \frac{68}{55.5}(119+40)}$$

$$= \frac{119}{117} = 1.02$$

The μ_r = 1.00 table indicated a front-only tow height of 39" for an expected front tow force of 246 lb:

Test Repeat	T_f	A_f	FT_f	
1	178	55	248	FT_f average = 247
2	178	48	246	
3	179	52	247	

These last tests agreed with the last front-only tests performed and served as the final average for the front wheel effectiveness tests.

The rear-only tests were repeated to obtain a final average using the last rear-only tow height of 68".

Test Repeat	T_r	A_r	FT_r	
1	175	28	115	FT_r average = 115
2	178	34	114	
3	179	22	115	

$$\mu_r = \frac{115}{312 - \frac{68}{55.5}(115+40)}$$

$$= \frac{115}{122} = .94$$

The final Kawasaki effectiveness tests indicate a front wheel force capability of 247 lb and a rear wheel peak friction capability of 0.94 (113 lb) , using Equation (B.2).

Thermal Loading - 30 mph

Tow Height = 27"

FT_f = 131 lb, FT_r = 88 lb for 4 seconds/application

Baseline Tests	T_f	FT_f	A_f	T_r	FT_r	A_r
1	145	130	21	141	90	27
2	155	130	23	144	95	25
3	180	140	24	155	90	26
Thermal Loading Tests	(6-second applications every .4 mile)					
1	144	135	22	139	95	23
2	158	137	21	145	90	27
3	165	135	22	152	90	27
4	186	137	22	163	93	28
5	204	135	19	172	96	25
6	222	136	20	179	93	26
7	239	138	21	187	93	25
8	258	135	20	197	95	27
9	275	130	19	201	90	28
10	294	135	20	215	90	28

Wetted Brake Performance (30 mph)

Tow Height = 27" , FT_f = 75 lb, FT_r = 69 lb
for 4 seconds every 0.5 mile

Dry Baseline Tests	T_f	FT_f	A_f	T_r	FT_r	A_r
1	134	80	11	132	67	21
2	140	75	11	135	70	21
3	140	74	10	140	70	21

Water Exposure Tests	(10 Minutes After Start of Water)			
1	80	8	72	20
2	77	10	73	19
3	75	10	75	21

Kawasaki Test Data Summary

Pre-Burnish Effectiveness:

Front wheel force capability = 222 lb

Rear wheel force capability = 119 lb

Total pre-burnish deceleration capability = $\frac{222 + 119}{465}$

= .73 g's

When translated to 60 mph (88 ft/sec) stopping distance: $D = \frac{(88)^2}{(64.4)(.73)}$

= 165 ft

Post-Burnish Effectiveness:

Front wheel force capability = 247 lb

Rear wheel force capability = 113 lb

$$\text{Total post-burnish deceleration} = \frac{247 + 113}{465}$$

$$= .78 \text{ g's}$$

When translated to 60 mph stopping distance: $D = \frac{(88)^2}{(64.4)(.78)}$

$$= 154 \text{ ft.}$$

Thermal Capacity:

$$\text{Front Baseline Gain} = \frac{130 + 130 + 140}{21 + 23 + 24}$$

$$= 5.9$$

$$\text{Rear Baseline Gain} = \frac{90 + 95 + 90}{27 + 25 + 26}$$

$$= 3.5$$

Thermal Loading Gains

Application	Front	Rear
1	6.1	4.1
2	6.5	3.3
3	6.1	3.3
4	6.2	3.3
5	7.1	3.8
6	6.8	3.6
7	6.6	3.7
8	6.7	3.5
9	6.8	3.2
10	6.7	3.2

Wetted Brake Performance:

$$\text{Front Baseline Gain (Dry)} = \frac{80 + 75 + 74}{11 + 11 + 10}$$

$$= 7.1$$

$$\text{Rear Baseline Gain (Dry)} = \frac{67 + 70 + 70}{21 + 21 + 21}$$

$$= 3.3$$

Wetted Brake System Gains

Application	Front	Rear
1	10.0	3.6
2	7.7	3.8
3	7.5	3.6

B.2 Harley-Davidson Demonstration Tow-Test Data

Pre-Burnish Effectiveness (40 mph)

Warm-up Application: Rear = 121 lb

Rear-Only Test: h_T = 60"

Test Repeat	T_r	A_r	FT_o		FT_r	
1	172	40	51	51 average	210	202 average
2	179	45	46		200	
3	179	43	56		195	

$$\mu_r = \frac{202}{460 + \frac{19.2}{63.3}(51) - \frac{60}{63.3}(202+51)}$$

$$= \frac{202}{235} = .86$$

The first front-only test was performed with a tow height of 19 + 6 = 25":

Test Repeats	T_f	A_f	FT_f	
1	131	38	346	FT_f average = 346
2	168	33	346	

346 lb indicated a next front-only tow height of 32" in the μ_r = .85 table (Appendix B.4):

Test Repeats	T_f	A_f	FT_f	
1	170	42	403	FT_f average = 405
2	179	40	408	

405 lb indicates a next front-only tow height of 30":

Test Repeats	T_f	A_f	FT_f	
1	169	42	401	FT_f average = 407
2	178	40	413	

The 407-lb measurement indicated convergence for the front wheel tests. The μ_r = .85 table indicated a corresponding rear-only tow height of 46":

Test Repeats	T_r	A_r	FT_o		FT_r	
1	142	45	56	57 average	225	227 average
2	178	44	58		230	

$$\mu_r = \frac{227}{460 + \frac{19.2}{63.3}(57) - \frac{46}{63.3}(227 + 57)}$$

$$= \frac{227}{271} = .84$$

Since the same μ_r value as before was obtained, the effectiveness tests were considered completed. The results indicated a front wheel force capability of 407 lb and a rear μ_r = .84 or 224 lb. using Equation (B.2).

Burnish Procedure (40 mph)

FT_f = 142 lb , FT_r = 139 lb for 4 seconds/application

Application #	T_f	A_f	FT_f	T_r	A_r	FT_r
1	134	14	140	142		140
10	150	13	140	215	27	140
20	156	15	135	231	25	135
30	155	14	140	262	28	135
40	160	15	140	242	28	150
50	167	14	145	243	28	140
60	166	15	140	252	27	145
70	173	15	135	255	28	140
80	165	16	145	245	28	135
90	139	15	135	162	27	135
100	140	13	145	190	27	130
110	146	14	140	197	28	140
120	154	16	140	212	27	130
130	152	16	145	213	27	135
140	152	16	135	188	29	135
150	154	18	135	206	28	130
160	159	16	140	205	29	140
170	147	15	145	195	29	135
180	153	16	140	207	29	140
190	151	15	140	215	27	145
200	154	15	145	219	28	145

Post-Burnish Effectiveness

Rear-Only Test, Tow Height = 46" (from pre-burnish effectiveness results)

Test Repeats	T_r	A_r	FT_o		FT_r	
1	142	42	47	51 Average	219	221 Average
2	176	25	44		225	
3	178	30	62		218	

$$\mu_r = \frac{221}{460 + \frac{19.2}{63.3}(51) - \frac{46}{63.3}(221+51)}$$

$$= \frac{221}{277} = .80$$

The μ_r = .80 table indicated a front-only tow height of 29-30" for an expected front tow force of about 407 lb. Using 29":

Test Repeats	T_f	A_f	FT_f	
1	140	44	387	FT_f average = 407
2	160	42	428	
3	176	44	406	

The 30" tow height setting resulted in:

Test Repeats	T_f	A_f	FT_f	
1	170	44	410	FT_f average = 420
2	179	49	430	
3	167	49	420	

Since convergence was evident, the rear-only test was repeated for the corresponding rear-only tow height of 48" in the μ_r table:

Test Repeats	T_f	A_f	FT_o		FT_r	
1	145	35	52		215	
2	173		52	52 Average	220	217 Average
3	178		57		215	
4	176		46		220	

$$\mu_r = \frac{217}{460 + \frac{19.2}{63.3}(52) - \frac{48}{63.3}(217+52)}$$

$$= \frac{217}{271} = .80$$

yielding the same μ_r value as before.

The front-only tests were performed again with the 30" tow height to attain a final average for the front wheel:

Test Repeats	T_f	A_f	FT_f	
1	151	45	425	
2	155	46	430	FT_f average = 422
3	172	45	410	

The post-burnish effectiveness tests indicate a front wheel force capability of 422 lbs and a rear wheel μ_r = .80 or 208 lb.

Thermal Loading (30 mph)

Tow Height = 19"

FT_f = 191 lb, FT_r = 166 lb for 4 seconds/application

Baseline Tests	T_f	FT_f	A_f	T_r	FT_r	A_r
1	130	195	20	147	160	28
2	151	190	20	165	160	30
3	155	188	20	175	163	18
Thermal Loading Tests						
1	147	195	20	154	159	27
2	172	185	22	192	158	27
3	207	185	20	222	165	26
4	221	185	20	262	160	25
5	246	190	20	296	157	25
6	259	190	20	306	160	20
7	283	190	20	326	163	18
8	269	182	19	344	164	22
9	275	182	20	367	166	15
10	276	181	18	384	164	24

Wetted Brake Performance (30 mph)

Tow Height = 19" , FT_f = 115 lb , FT_r = 121 lb

4 second applications every 0.5 mile

Dry Baseline Tests	T_f	FT_f	A_f	T_r	FT_r	A_r
1	131	110	10	130	114	20
2	150	116	10	189	119	26
3	151	114	12	190	113	27

Water Exposure Tests	T_f	FT_f	A_f	T_r	FT_r	A_r
1	73	115	14	101	115	21
2	89	110	13	113	114	22
3	94	115	13	124	121	23

Harley-Davidson Test Data Summary

Pre-Burnish Effectiveness:

Front wheel force capability = 407 lb

Rear wheel force capability = 224 lb

Total pre-burnish deceleration capability = $\frac{407 + 224}{760}$

= .83 g's

When translated to 60 mph (88 ft/sec) stopping distance: $D = \frac{(88)^2}{(64.4)(.834)}$

= 144 ft.

Post-Burnish Effectiveness:

Front wheel force capability = 422 lb

Rear wheel force capability = 208 lb

Total post-burnish deceleration capability = $\frac{422 + 208}{760}$

= .83 g's

yielding the same 60 mph stopping distance, 144 ft, as obtained for the pre-burnish effectiveness. This result is understandable since the Harley-Davidson was not torque limited, thereby reducing the braking performance capability of the bike to a matter of relatively static tire traction properties.

Thermal Capacity:

$$\text{Front Brake Gain} = \frac{195 + 190 + 188}{20 + 20 + 20}$$

$$= 9.5$$

$$\text{Rear Brake Gain} = \frac{160 + 160 + 163}{28 + 30 + 18}$$

$$= 6.4$$

Thermal Loading Gains

Applications	Front	Rear
1	9.7	5.9
2	8.4	5.9
3	9.2	6.3
4	9.2	6.4
5	9.5	6.3
6	9.5	8.0
7	9.5	9.1
8	9.6	7.4
9	9.1	11.1
10	10.0	6.8

Wetted Brake Performance:

$$\text{Front Baseline Gain (Dry)} = \frac{110 + 116 + 114}{10 + 10 + 12}$$

$$= 10.6$$

$$\text{Rear Baseline Gain (Dry)} = \frac{114 + 119 + 113}{20 + 26 + 27}$$

$$= 4.7$$

Wetted Brake System Gains

Applications	Front	Rear
1	8.2	5.5
2	8.5	5.2
3	8.8	5.3

B.3 Kawasaki Tow-Test Iterative Table

>TOW TEST ITERATION TABLE >HAWAIAN I F-9C 3500D

>A = 35.0 B = 20.5 HCG = 27.0 WF = 171.8 WR = 293.2

>

>PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
> 200.0	39	73
> 225.0	37	82
> 250.0	36	93
> 275.0	34	105
> 300.0	33	119
> 325.0	32	135
> 350.0	31	155
> 375.0	31	179
> 400.0	30	209
> 425.0	30	248
> 450.0	29	299
> 475.0	29	371
> 500.0	28	477

>
>
>
>

♦♦♦ MU-REAR = 0.60 ♦♦♦

T I TEST ITERATION TABLE KAWASAKI F-90 35000

A = 35.0 B = 20.5 HCG = 27.0 WF = 171.8 WR = 293.2

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	40	69
225.0	38	78
250.0	36	88
275.0	35	99
300.0	34	112
325.0	33	127
350.0	32	145
375.0	31	168
400.0	30	195
425.0	30	231
450.0	29	278
475.0	29	344
500.0	28	442

♦♦♦ MU-REAR = 0.65 ♦♦♦

>TOW TEST ITERATION TABLE KAWASAKI P-9C 35000

> = 35.0 B = 20.5 HCG = 27.0 WF = 171.8 WR = 293.2

>

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	41	66
225.0	39	74
250.0	37	83
275.0	35	94
300.0	34	106
325.0	33	120
350.0	32	137
375.0	31	158
400.0	30	183
425.0	30	217
450.0	29	261
475.0	29	322
500.0	28	413

>
>
>
> ♦♦♦ MU-REAR = 0.70 ♦♦♦

>TOW TEST ITERATION TABLE KAWASAKI C-90 35000

>A = 35.0 B = 20.5 HDG = 27.0 WF = 171.8 WR = 293.2

>

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	42	64
225.0	39	71
250.0	37	79
275.0	36	89
300.0	34	100
325.0	33	114
350.0	32	129
375.0	31	149
400.0	31	173
425.0	30	204
450.0	29	245
475.0	29	302
500.0	28	387

>

>

>

> ♦♦♦ MU-REAR = 0.75 ♦♦♦

>TOW TEST ITERATION TABLE HAWAIANI F-9C 35000

> = 35.0 B = 20.5 HOG = 27.0 WF = 171.8 WR = 293.2

>

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	42	61
225.0	40	68
250.0	38	76
275.0	36	85
300.0	35	96
325.0	33	108
350.0	32	123
375.0	32	141
400.0	31	164
425.0	30	193
450.0	30	231
475.0	29	285
500.0	29	365

>
>
>
> ♦♦♦ MU-REAR = 0.80 ♦♦♦

>TOW TEST ITERATION TABLE KAWASAKI E-9C 35000

>L = 35.0 B = 20.5 HCG = 27.0 WF = 171.8 WR = 293.2

>

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	43	59
225.0	40	66
250.0	38	73
275.0	36	82
300.0	35	92
325.0	34	103
350.0	33	117
375.0	32	134
400.0	31	156
425.0	30	183
450.0	30	219
475.0	29	270
500.0	29	345

>
>
>
> ♦♦♦ MU-REAR = 0.85 ♦♦♦

> JW TEST ITERATION TABLE KAWASAKI F-9C 3500C

>A = 35.0 B = 20.5 HCG = 27.0 WF = 171.8 WR = 293.2

>

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	44	58
225.0	41	64
250.0	39	71
275.0	37	79
300.0	35	88
325.0	34	99
350.0	33	112
375.0	32	129
400.0	31	149
425.0	30	174
450.0	30	209
475.0	29	256
500.0	29	327

>
>
>
> ♦♦♦ MU-REAR = 0.90 ♦♦♦

TOW TEST ITERATION TABLE KAWASAKI F-90 35000

A = 35.0 B = 30.5 HOG = 27.0 WF = 171.8 WR = 293.2

PERCENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	44	56
225.0	41	62
250.0	39	68
275.0	37	76
300.0	36	85
325.0	34	95
350.0	33	108
375.0	32	123
400.0	31	142
425.0	31	167
450.0	30	199
475.0	29	244
500.0	29	311

◆◆◆ MU-REAR = 0.95 ◆◆◆

90 TEST ITERATION TABLE KAWASAKI F-90 35000

A = 35.0 B = 20.5 HOG = 27.0 WF = 171.8 WR = 293.2

PERCENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	45	55
225.0	42	60
250.0	39	66
275.0	38	74
300.0	36	82
325.0	35	92
350.0	33	104
375.0	32	118
400.0	31	136
425.0	31	160
450.0	30	190
475.0	29	233
500.0	29	297

>
>
>
>

◆◆◆ MU-REAR = 1.00 ◆◆◆

TOW TEST ITERATION TABLE KAWASAKI F-9C 35000

F = 35.0 B = 20.5 HCG = 27.0 WF = 171.8 WR = 293.2

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	45	53
225.0	42	58
250.0	40	64
275.0	38	71
300.0	36	79
325.0	35	89
350.0	34	100
375.0	33	114
400.0	32	131
425.0	31	153
450.0	30	183
475.0	29	223
500.0	29	284

♦♦♦ MU-REAR = 1.05 ♦♦♦

TOW TEST ITERATION TABLE KAWASAKI F-90 35000

A = 35.0 B = 30.5 HOG = 27.0 MF = 171.8 MR = 293.2

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
200.0	46	52
225.0	43	57
250.0	40	63
275.0	38	69
300.0	36	77
325.0	35	86
350.0	34	97
375.0	33	110
400.0	32	127
425.0	31	148
450.0	30	176
475.0	30	215
500.0	29	272

♦♦♦ MU-REAR = 1.10 ♦♦♦

B.4. Harley-Davidson Tow-Test Iterative Table

JD. TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	31	45
325.0	30	48
350.0	29	51
375.0	28	54
400.0	27	57
425.0	27	60
450.0	26	64
475.0	26	67
500.0	25	71
525.0	25	75
550.0	24	79
575.0	24	84
600.0	24	88

◆◆◆ MU-REAR = 0.60 ◆◆◆

> OW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

> = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

>

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	32	43
325.0	31	46
350.0	30	48
375.0	29	51
400.0	28	54
425.0	27	57
450.0	27	60
475.0	26	64
500.0	26	67
525.0	25	71
550.0	25	75
575.0	24	79
600.0	24	83

>
>
>
> ♦♦♦ MU-REAR = 0.65 ♦♦♦

> OW TEST ITERATION TABLE: HARLEY-DAVIDION FXE 1200CC

>A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

>

>RESENT TOW FORCE NEXT TOW HEIGHT CORRESPONDING REAR-ONLY TOW HEIGHT

300.0	33	42
325.0	32	44
350.0	30	46
375.0	29	49
400.0	29	52
425.0	28	54
450.0	27	57
475.0	27	61
500.0	26	64
525.0	26	67
550.0	25	71
575.0	25	75
600.0	24	79

♦♦♦ MU-REAR = 0.70 ♦♦♦

JW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

= 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

RE ENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	34	40
325.0	32	42
350.0	31	45
375.0	30	47
400.0	29	49
425.0	28	52
450.0	28	55
475.0	27	58
500.0	26	61
525.0	26	64
550.0	25	67
575.0	25	71
600.0	25	75

♦♦♦ MU-REAR = 0.75 ♦♦♦

TOW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

WF = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	34	39
325.0	33	41
350.0	32	43
375.0	31	45
400.0	30	48
425.0	29	50
450.0	28	53
475.0	27	55
500.0	27	58
525.0	26	61
550.0	26	64
575.0	25	68
600.0	25	71

♦♦♦ MU-REAR = 0.80 ♦♦♦

TOW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	35	38
325.0	34	40
350.0	32	42
375.0	31	44
400.0	30	46
425.0	29	48
450.0	29	51
475.0	28	53
500.0	27	56
525.0	27	59
550.0	26	62
575.0	26	65
600.0	25	68

♦♦♦ MU-REAR = 0.85 ♦♦♦

> OW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

>A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

>

>PRESENT TOW FORCE NEXT TOW HEIGHT CORRESPONDING REAR-ONLY TOW HEIGHT

>	300.0	36	37
>	325.0	34	38
>	350.0	33	40
>	375.0	32	42
>	400.0	31	44
>	425.0	30	47
>	450.0	29	49
>	475.0	28	51
>	500.0	28	54
>	525.0	27	57
>	550.0	26	59
>	575.0	26	62
>	600.0	25	65

>
>
>
> ♦♦♦ MU-REAR = 0.90 ♦♦♦

>TOW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

>A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

>

>PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
> 300.0	37	36
> 325.0	35	37
> 350.0	33	39
> 375.0	32	41
> 400.0	31	43
> 425.0	30	45
> 450.0	29	47
> 475.0	29	50
> 500.0	28	52
> 525.0	27	55
> 550.0	27	57
> 575.0	26	60
> 600.0	26	63

>
>
>
> ♦♦♦ MU-REAR = 0.95 ♦♦♦

>,OW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

> = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

>

> RESENT TOW FORCE NEXT TOW HEIGHT CORRESPONDING REAR-ONLY TOW HEIGHT

>	300.0	37	35
>	325.0	36	36
>	350.0	34	38
>	375.0	33	40
>	400.0	32	42
>	425.0	31	44
>	450.0	30	46
>	475.0	29	48
>	500.0	28	50
>	525.0	28	53
>	550.0	27	55
>	575.0	27	58
>	600.0	26	61

>
>
>
> ♦♦♦ MU-REAR = 1.00 ♦♦♦

TOW TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	38	34
325.0	36	36
350.0	35	37
375.0	33	39
400.0	32	41
425.0	31	43
450.0	30	45
475.0	29	47
500.0	29	49
525.0	28	51
550.0	27	54
575.0	27	56
600.0	26	59

♦♦♦ MU-REAR = 1.05 ♦♦♦

TC - TEST ITERATION TABLE: HARLEY-DAVIDSON FXE 1200CC

A = 38.3 B = 25.0 HCG = 19.2 WF = 300.4 WR = 459.6

PRESENT TOW FORCE	NEXT TOW HEIGHT	CORRESPONDING REAR-ONLY TOW HEIGHT
300.0	39	33
325.0	37	35
350.0	35	36
375.0	34	38
400.0	33	40
425.0	32	42
450.0	31	44
475.0	30	45
500.0	29	48
525.0	28	50
550.0	28	52
575.0	27	54
600.0	27	57

♦♦♦ MU-REAR = 1.10 ♦♦♦

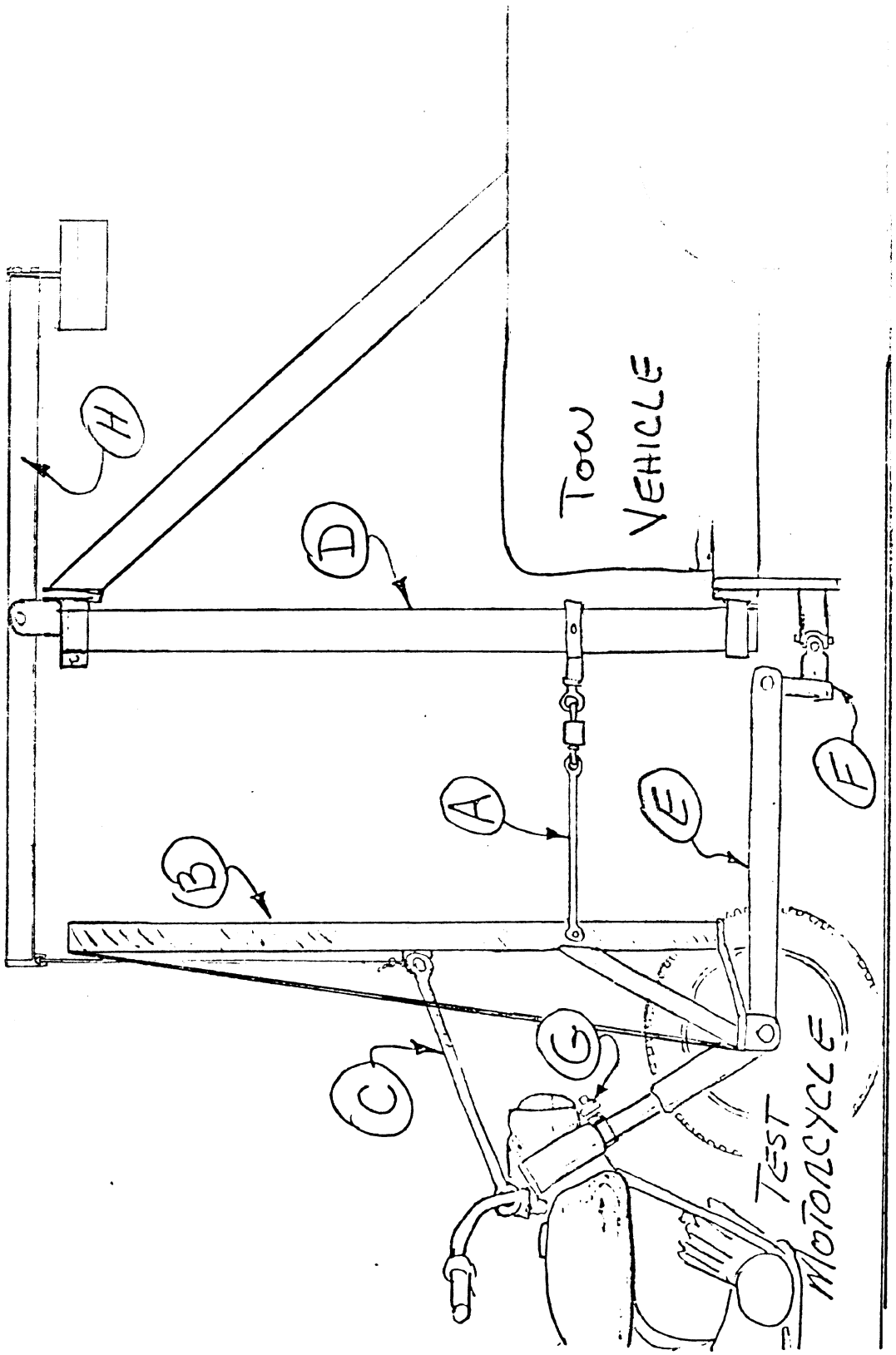
APPENDIX C

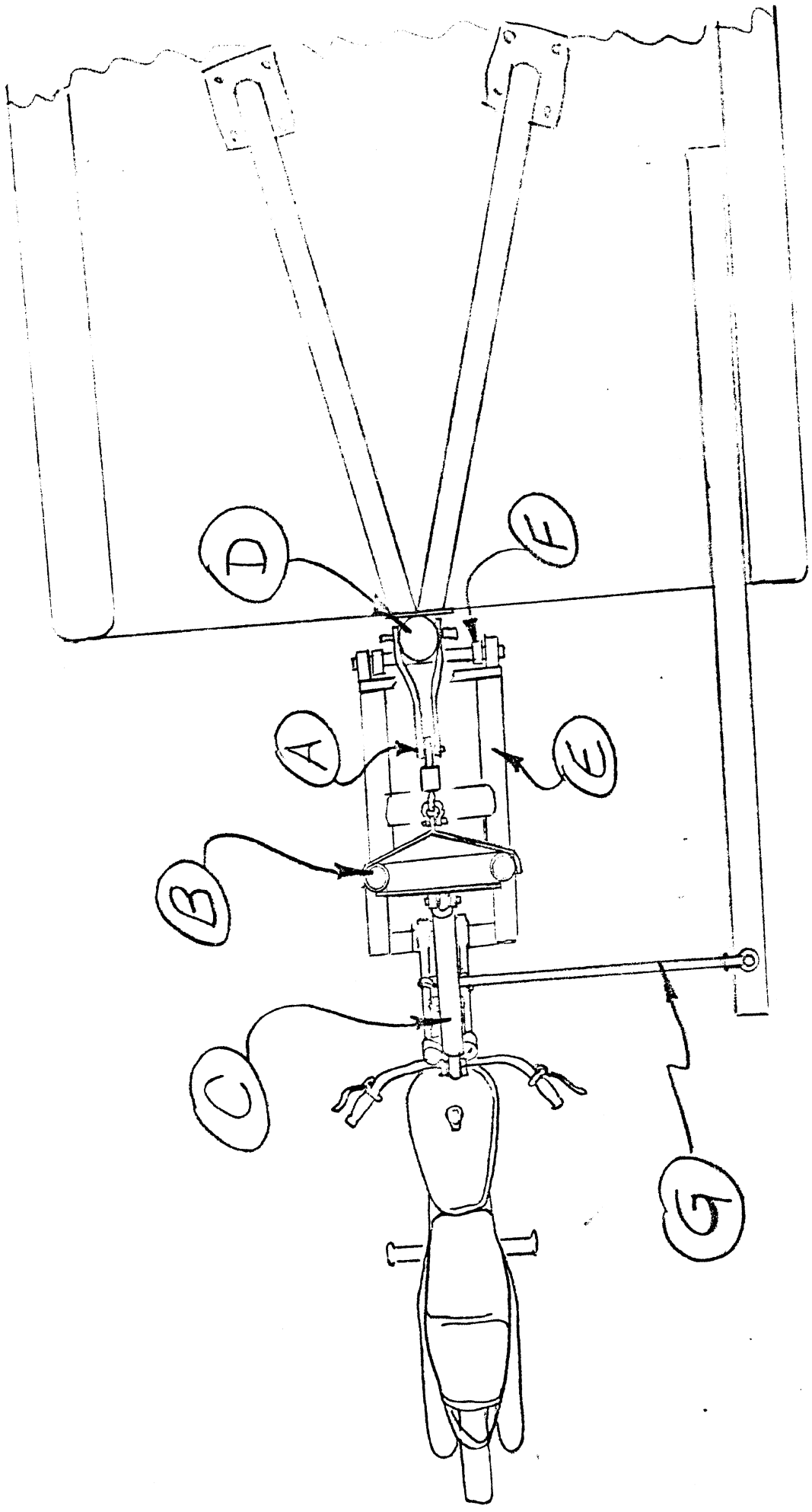
DESCRIPTION OF TOW-TEST HARDWARE

The hardware system employed to conduct the tow method of brake performance testing was comprised of a mechanical tow linkage and an electronic data acquisition package. The towing function was afforded by a 1/2-ton pickup truck which was outfitted with the towing linkage and with mobile support services, including water storage tank, air compressor, and electrical power converter.

The linkage system was devised to assure a very rigid constraint of the roll and lateral motions of the test motorcycle. The linkage, diagrammed in Figures C.1 and C.2, can be explained in terms of members which are employed to tow the motorcycle and which thereby constitute a longitudinal constraint, and members which serve to provide all other constraints. The towing force is applied through a purely tensile link (A) to the motorcycle-mounted frame (links B and C). The vertical member, B, provides a graduated beam permitting precision settings of tow height. At the bottom of this member, a fastening is made to the modified front axle shaft of the test motorcycle. Link C provides the second element in the application of a pitching couple to the motorcycle. This tensile link is oriented to arrive at a right angle relationship with the fork tubes when the front suspension is compressed halfway between its static and fully-deflected location. With such an arrangement, the vertical posture of link B is least influenced by front fork deflection. This feature is desirable because it serves to sustain the crucial tow height variable at its selected value.

The tow force applied by link A is reacted at the towing vehicle by another graduated beam, element D. This beam is rigidly fixed on the tow vehicle and has its graduations calibrated to correspond with tow height readings on link B.


H
D
TOW
VEHICLE
A
E
F
B
C
G
TEST
MOTORCYCLE


D
F
A
E
B
C
G

Other constraint members which are shown comprise the attachment trailing from the truck frame to the motorcycle's front axle. This assembly is incapable of reacting longitudinal forces as a result of the "idling link," F. Thus the tow force reading deriving from the load cell installed in link A is, indeed, representative of the total force needed to react motorcycle retardation forces. Links E and F constitute a roll-rigid coupling and, in the motorcycle test mode, provide front wheel steer and lateral position constraints as well. The forward terminus of link F comprises a double-yoke universal joint whose degree of freedom about the vertical pin is "locked out" during motorcycle brake testing. However, when the tow vehicle/motorcycle system is being maneuvered around tight corners and into a garage, for example, the free articulation (in yaw) of links E and F is permitted.

The final motorcycle constraint is provided by the single lateral link, G, supported by a solid beam protruding from the back of the tow vehicle and fastening to the motorcycle frame at the solid fork tube support just below the steering head. This link is terminated at both ends with spherical rod-end-type fixtures and provides a solid roll-stiffening complement to the lateral constraint provided at the front wheel center by link E. The lateral link is sufficiently long that it becomes negligibly displaced in the lateral (and thus, roll) direction as the forks deflect during brake application.

A non-constraining element is positioned at the top of the vertical beam, D, to permit application of a counterweight force through the short cable fastened to link B. The size of the counterweight is established as that weight which completely relieves the motorcycle's front axle of the artificial load driving from the weight of the linkage assembly. Thus motorcycle tire loads during testing are those purely afforded by the motorcycle and rider masses themselves.

The fastening of a given motorcycle to the basic linkage assembly requires preparation of three parts, namely

1) A clevis-type bracket fastened by extended handle-bar bolt to provide the aft connection of link C,

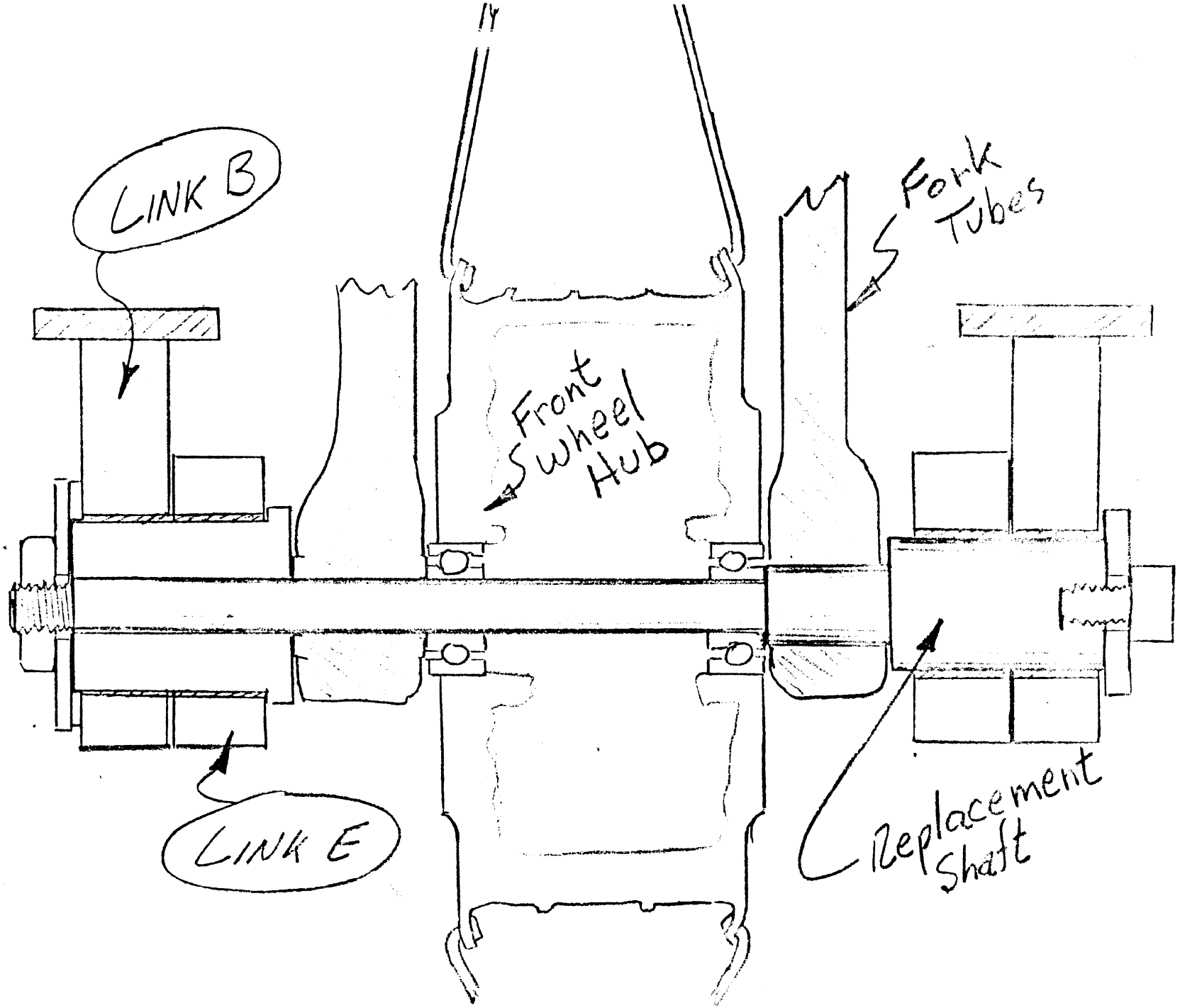
2) a small strap permitting the attachment of the in-board spherical rod end of link G to the motorcycle, just below the steering head, and

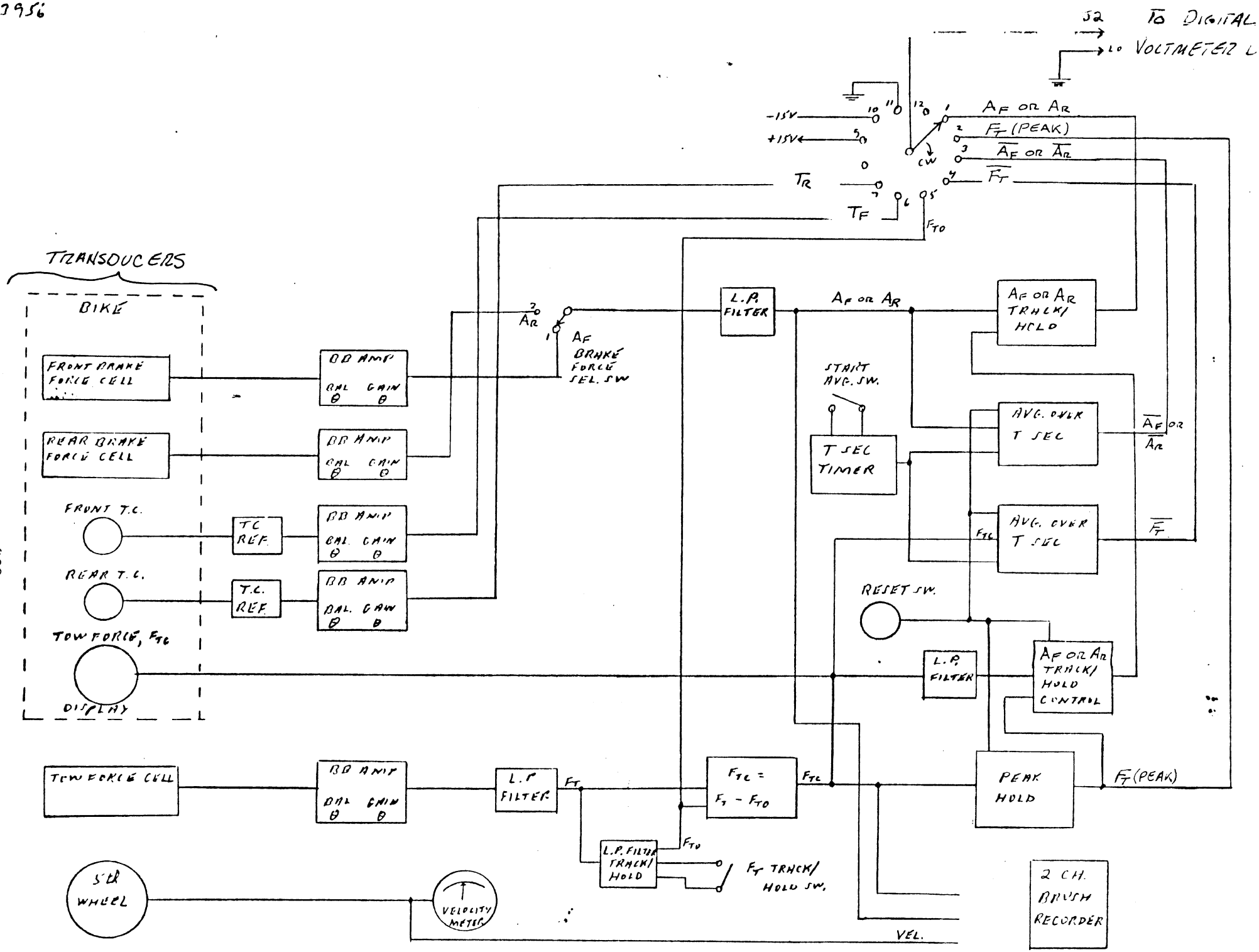
3) a replacement front axle pin which accommodates the combined attachments of links B and E.

As shown in Figure C.3, a typical front axle shaft is simply a non-rotating pin which is clamped at the end of each fork tube and which supports the inner race of the front wheel bearings. The replacement version of this shaft then provides for achieving the bearing preload while otherwise affording the running surfaces, together with the adaptor spool at the left, for locating the pivots of links B and E.

In addition to the tow linkage assembly, the test system further incorporated the electronic data acquisition system diagrammed in Figure C.4. As shown on the left side of this figure, transducers provide for direct measure of the variables shown on page

Various analog and digital circuit elements on the right side of Figure C.4 provide the following numeric presentations of the foregoing variables.


LINK B
Fork Tubes
Front Wheel Hub
LINK E
Replacement Shaft



Data Acquisition System

Description of Variable	Symbol	Transducer Type	Measurement Range	Estimated Overall Accuracy
1. Force applied to brake control element, front -	A_f	strain gauge*	0-100 lbs	1%
2. Force applied to brake control element, rear -	A_r	strain gauge (packaged pedal force cell)	0-300 lbs	0.5% of F.S.
3. Brake lining temperature, front	T_f	iron-constantan thermocouple	0-500°	0.5% of F.S.
4. Brake lining temperature, rear	T_r	iron-constantan thermocouple	0-500°	0.5% of F.S.
5. Tow force	F_T	strain gauge (packaged load cell)	0-500 lbs	0.5% of F.S.
6. Test vehicle velocity	V	DC tachometer & fifth wheel assembly	0-100 mph	0.5% of F.S.

*for mechanically-actuated front brake, hand lever is strain-gauged; for hydraulically-actuated front brake, force-calibrated pressure transducer is used.

1. Average value of A_f (or A_r) measured over a 2-second interval following activation of an initiating switch. (For use in measuring sustained inputs such as in burnish, fade, and water recovery sequences.)

2. Average value of F_T measured coincident with the 2-second sampling time initiated by the switch described above.

3. Peak value of tow force achieved following activation of a reset switch. (For use in measuring the peak traction force generated by a front or rear tire.)

4. Value of tow force achieved during front wheel braking coincident with the occurrence of a 55-lb value of A_f. (For use in characterizing the maximum braking force obtainable by a torque-limited front braking system.)

5. Instantaneous value of lining temperatures, T_f and T_r.

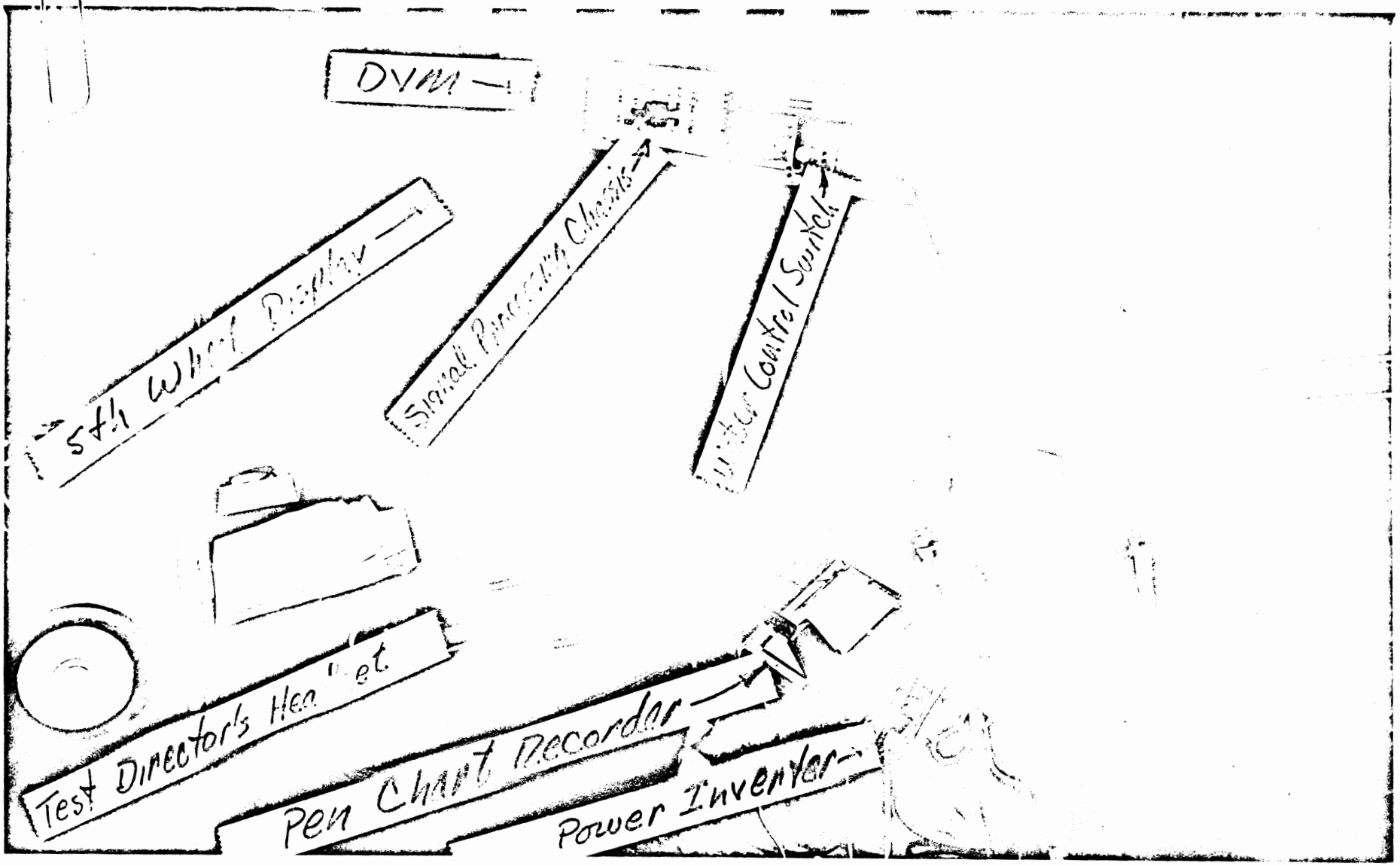
6. Instantaneous display (on an analog meter) of vehicle velocity, V.

The instrument system also included a 2-pen chart recorder used for visual check of the A_f (or A_r) and F_T time histories during each brake application. An additional manipulation of the tow force signal is obtained using the track/hold circuit identified at the bottom of Figure C.4. This circuit renders a tow force reading which is independent of small changes in grade along the test course and independent of the prevailing aerodynamic drag (which is somewhat unrepresentative of the drag performance of the motorcycle in a free air field because of turbulence induced by the towing vehicle). The track/hold circuit is thus employed to store the "zero" value of tow force (F_{T_0}) which prevails just prior to brake application. A difference-circuit then provides a tow force signal whose average peak numerics represent the tow forces obtained with respect to the stored F_{T_0} value. Prior to subsequent brake applications, the F_{T_0} hold circuit is reset and an updated value is obtained and stored.

A photo of the instrumentation installed in the tow vehicle is shown in Figure C.5. The only instrumentation display provided to the test rider is the instantaneous value of tow force presented on the meter shown in the photo of Figure C.6. Meter damping was selected so as to reduce the noise content of the display while avoiding an excessive level of phase lag such as was found to disrupt the rider's ability to accurately apply a step function of tow force.

The tow system was also outfitted with water delivery apparatus to permit a dynamic brake-wetting test. This apparatus, consisting of a 200-gallon tank and associated plumbing, provides water flow directly onto the pavement (by way of a gravity-fed nozzle aligned ahead of the motorcycle's tire path) and also in the form of an atomized spray which is directed at the motorcycle's brake assemblies. The gravity-fed nozzle delivers water at a nominal rate of 14 gal/min, which, at 30 mph, yields a water depth of .020 inch. An 0.020 in. water depth was selected as representing a water cover associated with a severe rainfall rate on a crowned tangent section of primary highway in the U.S. Although greater water depths are possible in the case of unusual deluge conditions and on poorly drained sections of roadway, the selection of 0.020 in. was deemed a reasonable choice—considering the limited water volume which can be carried on a light truck, and considering the fact that wetting of the wheel path is seen merely as a mechanism for permitting the transfer of water onto the inside fender surfaces and thence onto the brake assemblies.

The airborne spray directed at the test motorcycle derives from air atomizing nozzles which aspirate water from the on-board storage tank. Compressed air delivered to each of two nozzles is pressure-regulated to obtain a flow rate equivalent to the travel of a motorcycle at 30 mph through a rain field characterized by a 1 in/hr rainfall rate. To account for the additional density of



Instrumentation in Truck

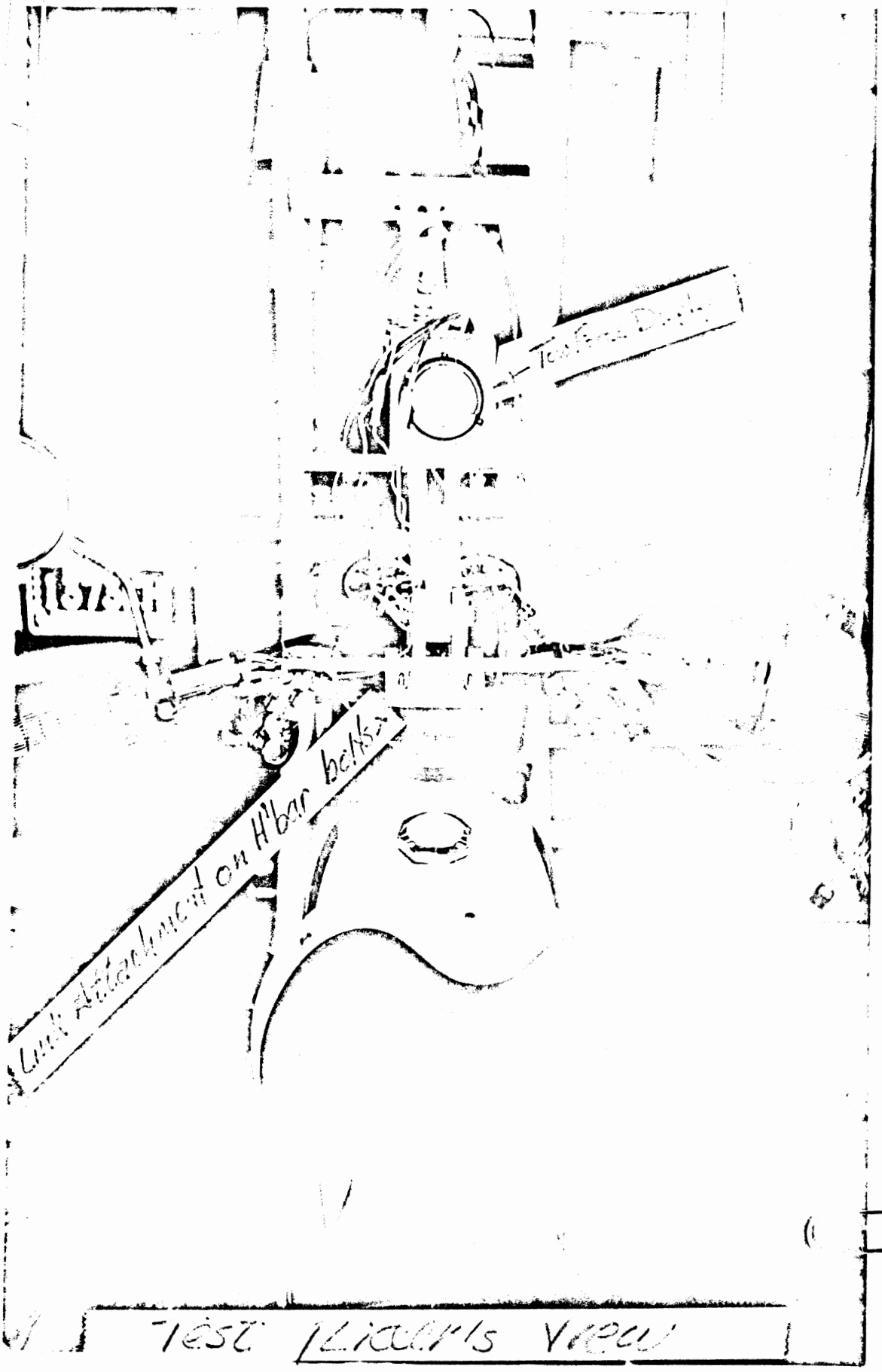

Test Force Direction
Link Attachment on H'bar beam
Test Rig View

Figure C.6

air-suspended water deriving from the spray churned up by moving vehicles on a trafficked, rain-covered highway, the test motorcycle encounters an airborne spray of three times the nominal density of the one in/hr rain field itself. The two spray heads in this system are arranged to cause a more or less natural flow—impinging directly on the front brake, but only via turbulent "backwash" around the rider's legs to the rear brake.

APPENDIX D

COMMENTS OF MOTORCYCLE MANUFACTURERS CONCERNING EVOLUTION OF BRAKE TECHNOLOGY

In this appendix, four documents are presented as received from certain motorcycle manufacturing companies. The documents are in response to an inquiry which was submitted to the Motorcycle Industry Council, Inc. (MIC) requesting information on the expected trends in motorcycle brake system design. In the following pages are presented:

1) the questionnaire, itself, which was submitted to the MIC

2) responses provided by the Kawasaki, Suzuki, Honda, and Premier Corporations.

QUESTIONNAIRE ON THE LIKELY ADVANCEMENTS IN MOTORCYCLE BRAKING TECHNOLOGY

The purpose of this questionnaire is to solicit certain views of corporations involved in the manufacture of motorcycles and their braking-related components. Specifically, the following questions are directed to identifying the character and timing of significant advancements in motorcycle braking systems which may evolve over, say, the next 10 years. The provided response to this request will be employed in a research program which seeks to recommend to the National Highway Traffic Safety Administration an advanced method for measuring motorcycle braking performance. The questions address motorcycle braking systems in a mechanistic fashion, going from the vehicle's control input devices (hand lever and foot pedal) to the final output element, the pneumatic tire.

The Highway Safety Research Institute of The University of Michigan requests that cooperating parties respond as fully as they see fit. We recognize that, in some instances, proprietary interests may conflict with the divulgence of certain information. Our primary interest is not in the identification of specific hardware improvements, but rather in the prediction of generic advancements. Thus a manufacturer is not necessarily encouraged to cite advancements which he foresees in his own product line, but rather in the market in general. Further, respondents may submit information on an anonymous basis if they wish.

1) Please cite design concepts, not currently in common use but which are likely to be marketed in the next 10 years, which will influence:

   a) The manner in which brake control input elements are applied (e.g., force or stroke specification changes, other (or fewer) control elements).

   b) The manner by which control input efforts become delivered to and distributed among the friction brake elements (e.g., fixed proportioning single element control, partially proportioned systems, power-assisted brake actuators).

   c) The torque production properties of friction brakes (e.g., major changes in brake actuating mechanisms, lining friction gain or thermal/water sensitivity).

   d) The control of brake torque so as to avoid wheel locking (e.g., antilock systems).

   e) The traction limits of installed tires (e.g., tire design for optimizing shear force production, vehicle mass center location as it determines dynamic tire loading).

2) With each item (a-e), please cite the time period within which you would (a) first expect to see the cited advancements marketed and (b) expect to see the advancement in common usage.

3) With each item (a-e), please cite the ball park cost which you would expect to accompany the retail sales price of each cited advancement.

KAWASAKI HEAVY INDUSTRIES, LTD.

KHI ANSWERS TO THE HSRI QUESTIONNAIRE ON THE LIKELY ADVANCEMENTS IN MOTORCYCLE BRAKING TECHNOLOGY

Our general view regarding future technological developments in motorcycle braking systems - Apart from the case of small - sized motor - driven cycles such as mopeds, looking back upon the past ten years, we think that the following can be cited as major technological developments that have been accomplished in the braking systems for motorcycles :

(1) First of all, conventional, mechanically controlled front drum brakes have successfully been developed into oil pressure controlled disc brakes;

(2) Recently, the same type of disc brakes are being adoped in the rear brake systems in place of the conventional drum type brakes.; and

(3) More recently, the mechanically controlled disc brakes are seen provided on some particular production motorcycles.

We think that these are things that can be considered as an event that has altered the conventional design concepts of the motorcycle braking devices.

Come to think of it, however, these concepts are nothing but the ones that have been taken from those which have long been used on four-wheeled vehicles.

In consideration of the foregoing, and on the premise that there would be no change in the way in which the motorcycle is used, we would assume that there would be no change in the fundamental design concepts of the braking systems for motorcycles which will come into the market in the next ten years.

Although some research work on the new braking devices is currently being conducted by some enthusiasts and research workers, and some of the devices have already been tested on the machine for effectiveness, this would not go beyond the range of the fundamental design concepts mentioned above.

The following are our answers to the HSRI's specific questions :

Question 1-a) -- Because input energy required for application of brakes on current motorcycles is rider's hand brake and foot brake forces, there is a limit to the manner in which brake control input elements are applied in terms of braking effectiveness, a degree of braking, controllability, etc.. Therefore, we would assume that there would be no major changes in force or stroke specification unless very effective braking systems are developed including pads. It is expected, however, that there may be some minor changes in order to acquire a balance between braking systems and a type of vehicle to be developed.

Question 1-b) -- Proportioned systems: It should be kept in mind that the motorcycle braking systems, unlike those for four-wheeled vehicles, may lead to producing a dangerous situation where the motorcycle may fall down if the balance of the braking forces is lost between the front and rear wheels.

In addition, for motorcycles, the range of characteristics of road surfaces on which the motorcycle is run are very wide as compared with those of four-wheeled vehicles because of its nature. This makes it very difficult to automatically distribute the braking forces in proportion to road surface conditions and the rider's posture at the time of brake application.
No matter how excellent they may be, the systems without considering this very crucial point may invite a dangerous situation in which the motorcycle may fall down. It is assumed, therefore, that chances are very slim that this very fundamental problem could be solved in the next ten years.

Power - assisted brake actuators : The trouble is where the braking energy is stored. Considering that the motorcycle itself is simple and small in size, this is a very difficult problem to solve. The motorcycle would become a very dangerous vehicle if such a system were provided that works only when the engine is in operation. For this reason, it is very difficult for us to predict how the technology of this type of devices will evolve in the next ten years.

Question 1-c) -- The brake systems that used to be of drum type have been changed to those of disc type. This, we believe, has made great contribution to betterment of brake effectiveness and fade recovery performance. The brake systems of this type, however, are not without any problems. In fact, there are problems such as squeal noise which has a lot to do with marketability of the systems. Currently, research work is being conducted on the water sensitivity problem as well as this squeal noise problem. This may produce some minor changes in the disc brake systems.

Question 1-d) -- Although we see a research study of the anti-lock systems being conducted in many places, we think that we are still in the stage of a feasibility study. We believe that establishment of reliability is the fundamental problem with these systems that must first be tackled. To this end, a further research study should be made of such problems as mentioned below :

(1) Adquate fail - safety systems must be developed ;

(2) Can how many accidents of the fall of a vehicle be prevented with the system ?

(3) Could too much reliance on the system not lead to more accidents ?

(4) The system must be developed in such a way that it is compact and simple in its structure so that it may be marketable.

We do not think that all of these problems could be solved and the motorcycle with this type of system could be put into market within the next ten years except for motorcycles of very particular type.

Question 1-e) -- It is felt that the current rubber tire specification would remain unchanged in the foreseeable distant future. Even now, work for betterment of the tire traction limits is being conducted by tire manufacturers with the rubber tire specification kept as it is. It is, therefore, expected that there would be gradual improvements in this field.

Question 2) and 3) -- We regret that the situation mentioned above makes it hesitant for us to make a clear statement. This, however, does not mean that we are lazily negligent of making efforts to improve on the motorcycle braking systems. On the contrary, we are day and night making our best efforts to make improvements in performance for brake effectiveness, fade and wet brake recoveries. It is our constant policy that we translate the result of our efforts into production machines as we confirm its reliability and offer them for sale so that more safety may be assured to the users.

J.S. SUZUKI Motor Corporation

/ FREEWAY DRIVE, SANTA FE SPRINGS, CALIFORNIA 90670

SUZUKI

CABLE ADDRESS "COLLEDA"
TELEX: 667-410 SUZUKI CO. SFES
P. O. BOX 2107 TEL.. (213) 921-4461

Response of SMC to question No.:

1. a. At this time Suzuki envisions little or no change in either the operation, design or forces required to operate the brake systems of motorcycles. We feel that braking will continue to be accomplished by hand and foot activated systems and as a result the size and shape of the levers and pedals and forces required to activate the systems will remain the same as on current models.

   b. The operational characteristics of a motorcycle require the separated operation of the front and rear brakes. We feel that a simple linked brake system which utilizes a portioned input force (either foot or hand) has potential for the future, however only a portion of this input element can be diverted and it must ultimately be supplemented by another input force to obtain the maximum braking effect at both wheels.

   c. We don't expect major changes in the basic design of brake systems. Automatic adjustment of the brake linings is one feature Suzuki is examining for possible inclusion on certain models. Suzuki doesn't expect any changes in the frictional characteristics of the brake lining material although improvements in the materials characteristics for water and heat dissipation are anticipated.

d. Some type of anti-lock brake system may be employed in the future. Several systems are currently being evaluated including a mechanical type, electric-oil pressure type and an electric-air type. Once these systems have been evaluated they may be applied to a particular model after first resolving the size, weight and cost problems associated with each system.

e. Overall improvements in tire traction are expected but this development is going to be gradual. Suzuki does however expect significant improvements in the wet traction capabilities of tires in the near future.

2. Linked braking system (proportioned)

   a. system is already in market

   Anti-lock brake system

   a. 1981

   b. 1983

3. We expect the retail price of a motorcycle equipped with an anti-lock brake system to be about $170.00 above the price of motorcycles currently in the same size and use category.

HONDA'S RESPONSE TO THE HSRI QUESTIONAIRE ON THE LIKELY ADVANCEMENTS IN MOTORCYCLE BRAKING TECHNOLOGY

The performance-oriented modern motorcycles have adopted more and more hydraulic disc brake systems in place of drum brake systems in recent years with the latest introduction of the so-called mechanical disc brake sytems which are considered most suitable for motorcycle application in terms of reliability, maintenability, light weight and cost.

Motorcycle brake systems, mainly one of the applications of automotive systems so far, would be developed in the future to meet more specific technical requirements derived from the inherent characteristics of motorcycles.

As shown below, we don't see at present, based on the same inherent characteristics, any major changes in basic concepts of the brake system design adopted on the motorcycles to be marketed in the next ten years.

One point to be noted, which might be irrelevant to the raised questionarie, is the increasing needs for studying the software aspects of motorcycle braking like the correct usage of the hardware in various riding contitions encountered.

Presented below are Honda's responses to the HSRI's questionaire:

1) a) The manner in which brake control input elements are applied.

As long as typical motorcycles must be supported by rider's foot for standing still and sometimes pushed forward by a rider, braking input has to be applied by rider's hand or hand-foot combination.

Therefore, the improvements in the area of stroke specifications, element rigidity, element configuration, and so on from human engineering standpoint can be expected with no major change of the overall mechanism anticipated in the near future.

b) The manner by which control input efforts become delivered to and distributed among the friction brake elements.

Proportioned single element control·

Considering the required delicate balancing of front and rear brake forces and based on our own experiences with this type of systems, it is felt that there would

be little chance, if any, of marketing the proportioned brake systems uncoupled with the anti-lock brake systems to be described in 1) d).

Power-assisted brake actuators:

Straightforward adoption of power-assisted actuators to argument the input force or to increase the braking capacity is not anticipated as the rider's direct reaction feeling is one of the key points in motorcycle riding.

Brake effectiveness will be improved on mass production basis rather by such means as optimizing water sensitivity and heat dissipation, developing the better materials for torque producing components, improving the delivery efficiency, and hopefully by developing the system which utilizes the wheel rotating force or brake reaction force.

It can be said, therefore, that the power-assisted systems will be seriously considered only after the practical refinement of the above mentioned items has been completed.

c) The torque production properties of friction brakes.

No major change can be anticipated although pad and disc/drum will be improved for better water/fade recovery, noise and durability characteristics.

d) The control of brake torque so as to avoid wheel locking.

The anti-lock brake systems, which have been pursued for other transportation vehicles, can be considered desirable for motorcycle application as well.

However, we don't think it likely to be able to market the motorcycle anti-lock brake systems in the next ten years from the technological feasibility stand point such as system reliability, size, weight and cost.

In parallel with the research works on the system hardwares, it would be imperative to try to identify both the merits and demerits when those hardwares are introduced into the real world of motorcycle usage.

e) The traction limits of installed tires.

Except for the moderate improvements of the tire traction limits, especially those under the wet conditions, no major change would be anticipated.

2) and 3) The time period and ball park cost

As could be understood from the above description, it would be impossible at present to forecast the marketing time period and ball park cost of the possible advancements as requested.

Research and development works on the motorcycle braking system are underway at our R & D Center in the various efforts both to improve the current systems and to develop the new devices with the possible effects to other vehicle performance like stability characteristics taken into considerations.

Which one of them is likely to be put into practice? And when? To our regret, it is hardly to be identified.

MOTO GUZZI

INTEGRAL BRAKING

(PATENTED)

THE INTEGRAL BRAKING STANDARD

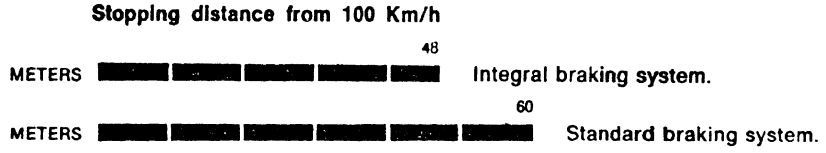
To date all motorcycle braking systems have been based on the necessity to use two separate levers when wishing to slow down, or stop. The front brake being operated by a lever on the right of the handle-bar, and the rear brake by a foot pedal, which is fitted to the left or right hand side of the machine.
Braking power has been considerably improved in recent years by the addition of twin leading shoe mechanism's, disc brake systems, and more recently the better big machines now carry twin front discs, and a single rear disc. Whilst these more improved brakes have much greater stopping power, they do not overcome the danger of the rider over braking on the front or rear brake. Over braking on one or both of these will cause loss of adhesion between tyre and road, resulting in many cases with the machine sluing sideways, causing the rider to fall from the machine.
The possibility of this happening is magnified with wet road conditions, particularly on some machines fitted with stainless steel disc brakes. These require the brake to be operated some seconds before they actually produce braking power, when conditions are wet.

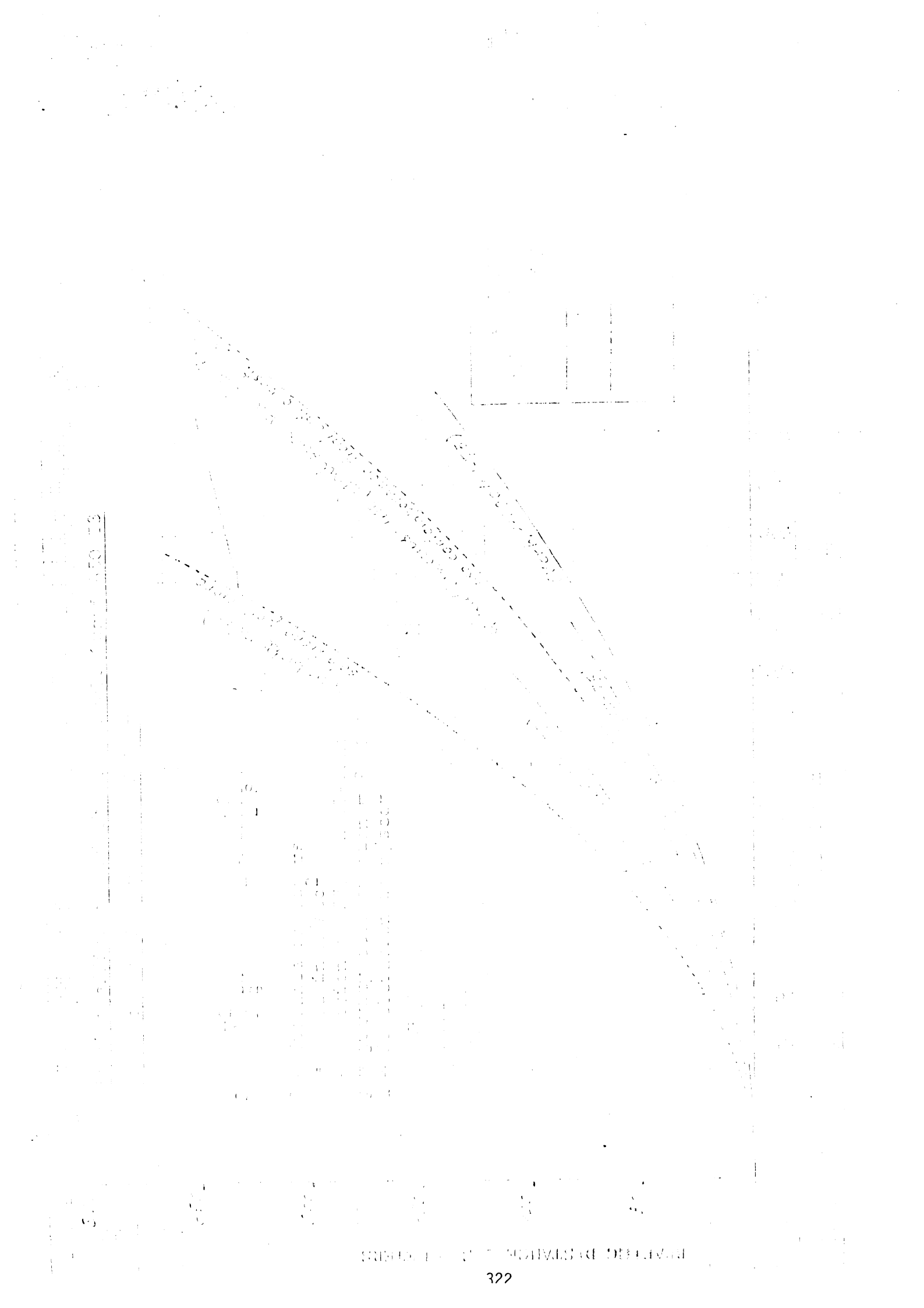
IN SUMMARY all machines to date require the rider to apply the correct amount of power to each separate lever, and to maintain separately with hand and foot the required independant loads, to bring the machine to a controlled halt.

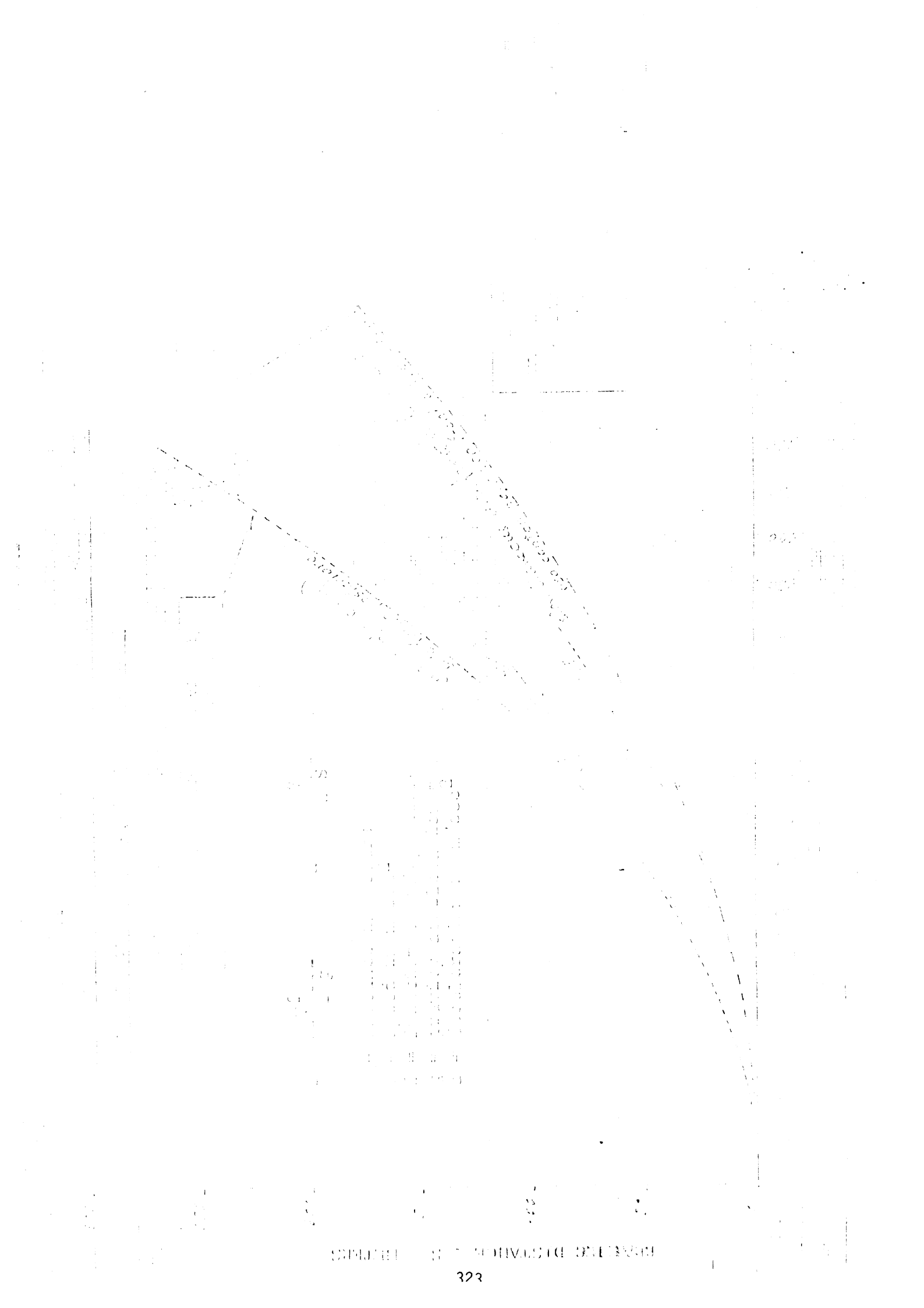
THE INTEGRAL BRAKING SYSTEM - AS FITTED TO THE MOTO-GUZZI MODELS

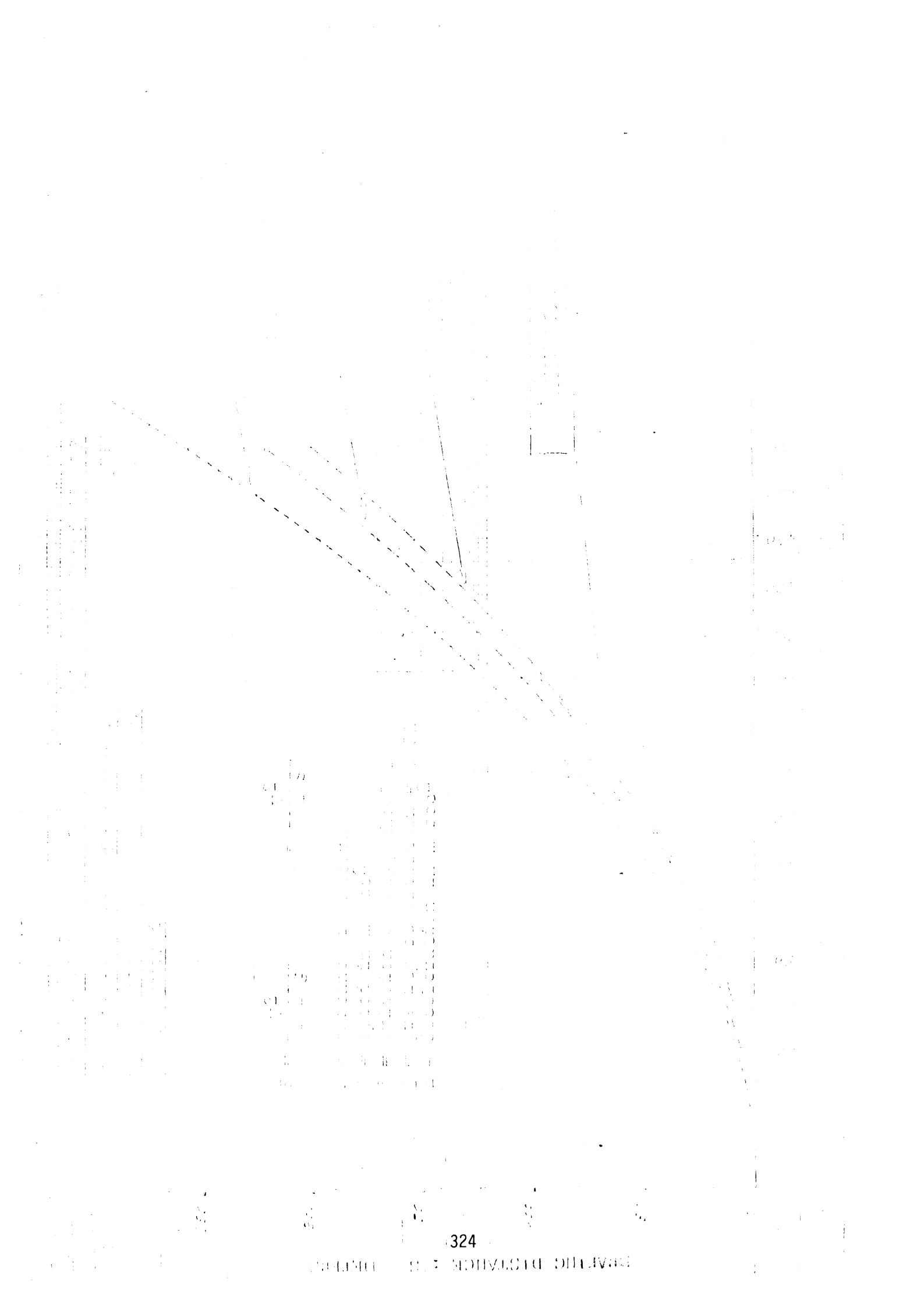
This has a triple disc system with double front discs, and single disc layout of a cast iron material, eliminating the pause in wet conditions, suffered by the stainless steel variety. The integral brake system is operated by the foot pedal on the right hand side of the machine, and the pressure on this pedal operates the brake pads on the rear and one front disc. This system produces automatically the correct amount of power for maximum braking efficiency, to the front and rear discs, and removes any responsibility from the rider to co-ordinate hand and foot pressures. This means that in normal braking conditions the machine will maintain it's natural line, without the rear or front of the machine breaking adhesion with the road surface, and eliminates the possibility of dangerous skidding. Even in the case of heavy emergency braking, the integral system is set so that only in the last few feet, and only at the rear wheel, will there be some loss of adhesion. At this stage the machine has almost come to a stop.

IN SUMMARY the Moto-Guzzi integral braking system offers the most powerful braking system available irrespective of the riders ability, and is without doubt the most major contribution to motorcycle safety in recent years. The availability of the third disc operated by use of the normal hand lever offers a desirable alternative for extra braking power in dire emergencies from extremely high speeds.









pressure

ratio of ... control lever | ...,3

3) Calipers

Description of caliper components		Front ...	Rear ...
Hand brake caliper	No.	[illegible]	
... caliper	No.	[illegible]	
Hand brake caliper plungers	No.	2	
... caliper plungers	No.	2	
...		...,34	
... pressure	Kg/cm²	[illegible]	
... pressure			
Hand brake	Kg.	[illegible]	
... brake		[illegible]	
... pad surface (...)			
Effective mean ...			
... of pads (r)			
... hand brake	mm.	[illegible]	
... brake	mm.	[illegible]	
Friction coefficient, pad ...		0,3	

4) Computing the deceleration and distribution of loads ...

... allowable ...

... for the ...

c) ... deceleration ... 9,81 m/sec²

5) Establishing the load on the spindles during the braking action of the motorcycle (fig. 82) T:

Applying the equation : $v = \frac{Pp \times f \times h}{L}$

- Motorcycle with driver only:

$v = \frac{[illegible]}{1,[illegible]7} = 52,7$ Kg.

The position of the loads at the instant of the braking action will be :

[illegible] 138 + 52,7 = Kg. 190,7 [illegible]

[illegible] Kg. 1[illegible]

- Motorcycle with driver and passenger:

$v = \frac{[illegible] 672}{[illegible]7} = [illegible]8$ Kg.

The position of the loads at the instant of the braking action will be:

[illegible] wheel [illegible] 142 + 88,8 = Kg. 2[illegible]

[illegible] wheel [illegible] 88,8 = Kg. 15[illegible]

6) [illegible] the discs

[illegible]

where:

P = total pressure perpendicular to the di[illegible]

W = total weight on the braked wheels [illegible]

f = friction coefficient [illegible] tyre road

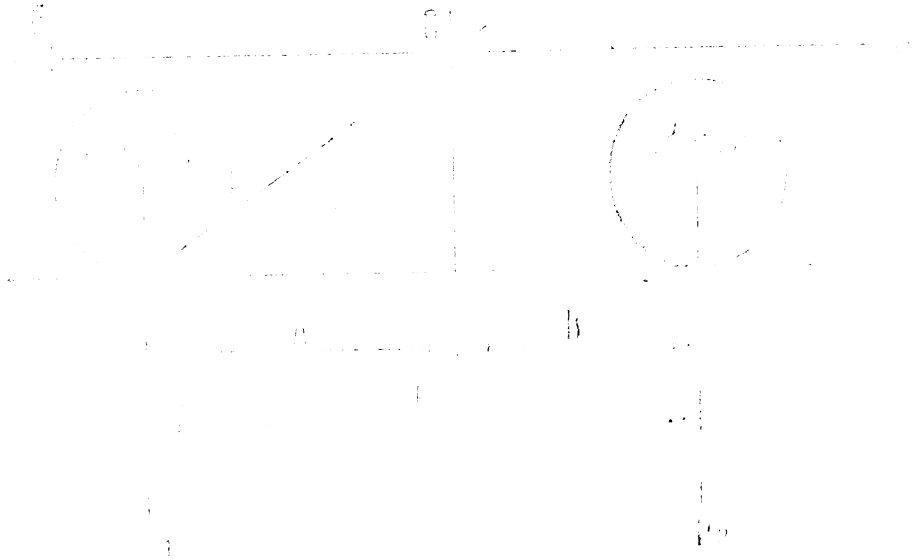
$$E = \frac{\qquad\qquad}{\qquad\qquad} = 1,46 \text{ Kj}.$$

(excluded the mechanical efficiency)

- Motorcycle with driver and passenger

(excluded the mechanical efficiency)

11) Front brake - hand operated



therefore:

- for the vehicle with driver only

- for the vehicle with driver and passenger

b) Checking the load bed on the pad with

- for the vehicle with driver only

- for the vehicle with driver and passenger

APPENDIX E

ANALYTIC DEVELOPMENT OF THE TOW-TEST CONCEPT

This appendix contains three sub-appendices which address in some detail the principal conceptual concerns posed by the single-wheel tow-test methodology. The first sub-appendix, E.1, looks at the effect which tow height errors can have on the determination of total bike deceleration. The second sub-appendix, E.2, confronts the question of rate of convergence for a tow height iteration scheme employing a Newton-Raphson strategy. The last sub-appendix, E.3, presents the simulation results of a small-scale computer study which examined the influence of randomness in tow force measurements and brake torque inputs on the iteration procedure.

E.1 Analysis of Tow Height Error

Errors in tow height can be viewed in terms of vertical load errors by considering the load transfer equation, (5), for front-only braking,

$$F_{z_f} = W_f + \frac{h_f}{\ell} F'_{x_f} \quad ,$$

where primes denote measured values.

By letting $F'_{x_f} = F_{z_f} \mu_f$, and assuming μ_f is constant for small tow height variations, the above becomes

$$F_{z_f} = \left(W_f + \frac{h_f}{\ell} F_{z_f} \right) \mu_f$$

or

$$F_{z_f} = \frac{W_f}{1 - \frac{h_f}{\ell}\,\mu_f} \quad .$$

The error in vertical load resulting from an approximation of correct tow height, h*, by some other tow height, h, results in the expression

$$F^*_{z_f} - F_{z_f} = \frac{W_f \left[\frac{(h^*_f - h_f)\,\mu_f}{\ell}\right]}{\left(1 - \frac{h^*_f}{\ell}\,\mu_f\right)\left(1 - \frac{h_f}{\ell}\,\mu_f\right)}$$

$\Delta\mu_T = (F^*_{z_f} - F_{z_f})\beta\, F^*_{z_f}/W$ represents the error in total normalized braking force as a result of front-wheel-only tow height error (β representing the tire's μ-load sensitivity). Substituting from above, $\Delta\mu_T$ becomes:

$$\frac{\beta\, W_f^2}{(\ell)W} \; \frac{(h^*_f - h_f)\,\mu_f}{\left(1 - \frac{h^*_f}{\ell}\,\mu_f\right)^2 \left(1 - \frac{h_f}{\ell}\,\mu_f\right)}$$

For $h^*_f/\ell \approx h_f/\ell \approx .5$, $\mu_f \approx 1.0$, $W_f/W \approx .5$, $\Delta\mu_T$ becomes

$$\frac{4\beta\, W_f(h^*_f - h_f)}{\ell}$$

With β as large as $.10/W_f$, $\ell = 50"$, a 1" error in front tow height gives

$$\Delta\mu_T = \frac{1}{125} = .008 \quad .$$

For rear-only braking,

$$F_{z_r} = W_r - \frac{h_r}{\ell} F'_{x_r}$$

$$= W_r - \frac{h_r}{\ell} F_{z_r} \mu_r$$

$$\Rightarrow \quad F_{z_r} = \frac{W_r}{1 + \frac{h_r}{\ell} \mu_r}$$

$$F^*_{z_r} - F_{z_r} = \frac{W_r}{1 + \frac{h^*_r}{\ell} \mu_r} - \frac{W_r}{1 + \frac{h_r}{\ell} \mu_r}$$

$$= \frac{W_r \cdot \frac{(h_r - h^*_r)}{\ell} \mu_r}{\left(1 + \frac{h^*_r}{\ell} \mu_r\right)\left(1 + \frac{h_r}{\ell} \mu_r\right)}$$

For an $n_f\%$ - $n_r\%$, front-rear braking distribution ($n_f/n_r = F^*_{x_f}/F^*_{x_r}$) in the free-stopping case, h^*_r is given by

$$h^*_r = h\left(1 + \frac{n_f}{n_r}\right) .$$

Assuming h_r is constrained to a height of less than 2h by geometric and/or dynamic coupling considerations, $F^*_{z_r} - F_{z_r}$ becomes

$$\frac{\dfrac{W_r\, h\left(1 - \dfrac{n_f}{n_r}\right)}{\ell}\,\mu_r}{\left(1 + \dfrac{\left(1 + \dfrac{n_f}{n_r}\right) h\,\mu_r'}{\ell}\right)\left(1 + \dfrac{2h}{\ell}\,\mu_r\right)}\,,$$

The expression, $\Delta\mu_T = (F^*_{z_r} - F_{z_r}) \cdot \beta \cdot F^*_{z_r}/W$, represents the error in total normalized braking force resulting from the rear-only tow height approximation 2h, where β is the μ-load sensitivity. Using the above result for $F^*_{z_r} - F_{z_r}$ and substituting for $F^*_{z_r}$ and h^*_r, the $\Delta\mu_T$ expression becomes:

$$\Delta\mu_T = \beta \cdot \frac{W_r^2}{W} \cdot \frac{\dfrac{h}{\ell}\left(1 - \dfrac{n_f}{n_r}\right)\mu_r}{\left[1 + \dfrac{\left(1 + \dfrac{n_f}{n_r}\right) h\,\mu_r}{\ell}\right]^2 \left[1 + \dfrac{2h}{\ell}\,\mu_r\right]}$$

which is zero for $n_f/n_r = 1$ ($h^*_r = 2h$ case), and $\to 0$ as $n_f/n_r \to \infty$ (rear wheel unloaded case). An extremum of $\Delta\mu_T$ occurs for some $(n_f/n_r)^o$ between 1 and ∞ given by the expression

$$\left(\frac{n_f}{n_r}\right)^o = \frac{\ell}{\mu_r \cdot h} + 3\,.$$

For most motorcycles, $(\ell/h) \approx 2$, high friction surface $\mu_r \approx 1.0$, and $W_r \approx .5W$,

$$\Rightarrow \left(\frac{n_f}{n_r}\right)^o \approx 5 \qquad \text{and}$$

$|\Delta\mu_T)_{max}|$ becomes equal to $\beta W_r/32$. For μ-load sensitivites, β, as large as $.10/W_r$, $|\Delta\mu_T)_{max}| = 1/320 = .003$.

This result is interesting since it suggests that for rear-only tow heights even as conservative as 2h, the maximum error in total normalized braking force resulting from such an approximation, is virtually negligible, lying well within the error bounds imposed for most engineering measurements. The practical significance of this result for the rear-only tow test is that any reasonable tow height selection for rear-only tests is about as valid as another, thus eliminating the need for any iterations for the rear-wheel tests. Clearly, then, the accuracy of the rear-tire friction coefficient will be a function primarily of the randomness surrounding the tow force measurements.

E.2 Analysis of the Convergence of Tow Height Iterations

The following analysis is directed at the problem of determining rate of convergence of the tow height iteration for the front-wheel-only tests. The tow height adjustment for subsequent iterations depends upon the difference between the vertical load, F'_{z_f}, deriving from measurement [Equation (5)], and F_{z_f} which occurs during free stopping.

The expressions for F_{z_f} and F'_{z_f} in the ith iteration are,

$$F^i_{z_f} = \frac{W_f + \frac{h}{\ell}\left[F^{i,}_{x_f} + \mu'_r W\right]}{\left(1 + \frac{h}{\ell}\ \mu'_r\right)} \qquad (E.1)$$

and

$$F^{i,}_{z_f} = W_f + \frac{h^i_f}{\ell}\ F^{i,}_{x_f} \qquad (E.2)$$

The difference of Equation (E.1) and (E.2) yields the expression, $\psi(h_f^i)$, for vertical load error of the front-wheel-only case in terms of tow height, h_f^i, and tow force, $F_{x_f}^{i\prime}$, in the ith iteration:

$$\psi\left(h_f^i,\ F_{x_f}^{i\prime}\right) = \frac{h_f^i}{\ell}\ F_{x_f}^{i\prime} + W_f\left[1 - \frac{\ell}{(\ell + h\mu_r')}\right] - \frac{h\left[F_{x_f}^{i\prime} + \mu_r' W\right]}{(\ell + h\mu_r')} \tag{E.3}$$

Since the purpose of the iteration is to drive $\psi \to 0$ by finding the correct h_f^i (and hence $F_{x_f}^{i\prime}$), a suitable numerical technique can be used to find the root of the above equation.

The Newton-Raphson method suggests an iteration scheme of the form:

$$h_f^{i+1} = h_f^i - \frac{\psi(h_f^i)}{\psi'(h_f^i)} \tag{E.4}$$

where ψ' denotes the derivative of ψ with respect to h_f^i.

It can be shown for this method that if real positive bounds A, B, and C can be found such that

$$\left|\frac{1}{\psi'(h_f^0)}\right| \leq A \quad , \quad \left|\frac{\psi(h_f^0)}{\psi'(h_f^0)}\right| \leq B$$

and

$$|\psi''(h_f^*)| \leq C \leq \frac{1}{2AB}$$

whenever $|h_f^* - h_f^0| \leq \frac{1}{AC}\left(1 - \sqrt{1-2ABC}\right)$

then the root, h_f^*, satisfies the last inequality, and the convergence rate is given by:

$$|h_f^* - h_f^i| \leq \frac{B}{2^{i-1}} (2ABC)^{2^{i-1}} \qquad (E.5)$$

In applying this result to the $\psi(h_f^i, F_{x_f}^{i\prime})$ expression, two distinct cases emerge. The first case occurs for the torque-limited (front-wheel) bike for which no variation in $F_{x_f}^i$ occurs for adjustments in tow height. Hence, in the torque-limited case, $F_{x_f}^i$ is not a function of h_f^i and the $\psi(h_f^i, F_{x_f}^{i\prime})$ expression can be simply differentiated with respect to h_f^i to provide the first two derivatives, viz.,

$$\psi'(h_f^i) = \frac{F_{x_f}^i}{\ell} \qquad (E.6)$$

and

$$\psi''(h_f^i) = 0 .$$

By inspection, the C bound is equal to zero therefore guaranteeing by the convergence rate expression (E.5), a one-step iteration. Thus for torque-limited bikes, only one initial test at some guessed tow height is needed to predict the correct convergent tow height.

For the case of traction-limited bikes, adjustments of tow height, h_f^i, result in corresponding changes in peak $F_{x_f}^i$. However, the relationship between peak vertical load and traction force can be described by:

$$F_{x_f}^{i\prime} = \mu_f F_{z_f}^{i\prime} ,$$

where μ_f is assumed constant.

Substituting in Equations (E.1) and (E.2) for $F^{i'}_{x_f}$ results in two alternate expressions for $F^{i}_{z_f}$ and $F^{i'}_{z_f}$ free of $F^{i'}_{x_f}$:

$$F^{i}_{z_f} = \frac{W_f + \frac{h}{\ell}\mu_r W}{1 + \frac{h}{\ell}(\mu_r - \mu_r)} \tag{E.7}$$

and

$$F^{i'}_{z_f} = \frac{W_r}{1 - \frac{h^i_f}{\ell}\mu_f} \tag{E.8}$$

The difference of these two expressions provides the vertical load error expression for the traction-limited case as a function of h^i_f alone:

$$\psi(h^i_f) = \frac{\ell W_r}{\ell - h^i_f \mu_f} - \frac{\ell W_f + h \mu_r W}{\ell + h(\mu_r - \mu_f)} \tag{E.9}$$

The first two derivatives with respect to h^i_f become:

$$\psi'(h^i_f) = \frac{\mu_f \ell W_r}{(\ell - h^i_f \mu_f)^2}$$

$$\psi''(h^i_f) = \frac{2\mu_f{}^2 \ell W_r}{(\ell - h^i_f \mu_f)^3}$$

Suitable bounds A, B, and C can then be attained by inspection of ψ, ψ', and ψ'':

$$\left|\frac{1}{\psi'(h_f^o)}\right| \leq A = \frac{(\ell - h\,\mu_f)^2}{\mu_f\,\ell\,W_r}$$

$$\left|\frac{\psi(h_f^o)}{\psi'(h_f^o)}\right| \leq B = \frac{\mu_f W(h_f^o - h_f^*)/\ell}{\mu_f \ell\, W_r/(\ell - h\mu_f)^2} = \frac{W(h_f^o - h_f^*)(\ell - h\mu_f)^2}{W_r\,\ell^2}$$

$$|\psi''(h_f^i)| \leq C = \frac{2\,\mu_f^2\,\ell\,W_r}{(\ell - h\mu_f)^3}$$

For numerical values (Harley-Davidson) of:

$W = 760$ lb

$h = 19"$

$\ell = 63"$

$\mu_f = .80$

$W_f = 300$ lb

$W_r = 460$ lb

$\mu_r = .80$

A, B, and C become

$A = .10$

$B = 5.7$, assuming $|h_f^o - h_f^*| = 6"$

$C = .34$

With the convergence inequalities being satisfied for these values, the following bounds occur for the first three iterations:

$$|h_f^* - h_f^1| \leq 2AB^2C = 2.2"$$

$$|h_f^* - h_f^2| \leq 2A^2B^3C^2 = .44"$$

$$|h_f^* - h_f^3| \leq 4A^4B^5C^4 = .035"$$

Note that the rate of convergence is largely influenced by the initial guess. If, for example, $|h^* - h^0| = 4"$, the second iteration would be within .15" of h_f^*. Even for initial guess errors as large as $|h^* - h^0| = 12"$, the third iteration would be within 1.1" of h_f^* for this method.

Finally, the iterative formula for selecting subsequent tow heights, h_{i+1}, based upon the present tow force measurement, $F^i_{x_f}$, is given by Equation (E.4) after substituting from Equations (E.4) and (E.6):

$$h_{i+1} = \frac{\ell\left[\left(W_r\mu_r' + F^{i,}_{x_f}\right)\left(\frac{h}{\ell + h\,\mu_r}\right)\right]}{F^{i,}_{x_f}} \qquad (E.10)$$

This formula is used for both torque-limited and traction-limited cases. For torque-limited bikes, $F^{i,}_{x_f}$ will not vary with tow height, thus resulting in a one step iteration.

E.3 Computer Simulation Study

The simulated results of the tow-test iterations shown in this appendix were obtained by employing a simple pitch-plane model of the cycle/rider. The pitch-plane dynamics were simulated with a simple two-degree-of-freedom (pitch and bounce) model augmented with front and rear wheel speed degrees of freedom.

A Newton-Raphson method (E.2) was used for selecting subsequent tow heights during each iteration sequence. Tire load sensitivity and effects of randomness in tow force "measurement" and brake torque input were also included. ("Measurement," here meaning simulated measurement—that value of peak tow force, etc., which occurs during a simulation run.)

For each simulated test sequence, one rear-only test with a fixed tow height of six feet was performed first to obtain an estimate of rear tire peak friction coefficient, μ_{p_r}. This value was then used in the iteration computation performed for the front-wheel-only tests shown in the following figures. During an iteration sequence, each new tow height was determined by the present tow force measurement in accordance with Equation (E.10).

The first three figures, E.1, E.2, and E.3, show results of a preliminary study, prior to any full-scale parameter measurement or testing activity, aimed at the question of how randomness in tow force measurements and brake torque inputs might influence the convergence behavior of the tow-test iteration scheme. The simulations were performed for the Harley-Davidson using estimates of the various parameter data.

Figure E.1 shows the front-wheel-only simulated test assuming no randomness in brake torque input (brake torque was ramped in at about 400 ft-lbs/sec) or tow force measurement. The assumed tire traction peak and slide coefficients are 1.0 and 0.7, respectively, at static loads. The convergence to the correct tow height of 29.6 inches from the initial guess of 24 inches is quite rapid. The front tire peak traction coefficient, μ_{p_f}, and corresponding tow force at each iteration is also shown. (The c.g. location was assumed located at 21.5 inches.)

Figure E.2 demonstrates the effect on the iteration scheme when a ±30% randomness in brake torque application and ±5% randomness in peak tow force measurement is assumed throughout an intentionally long (10 iteration) simulated test sequence.

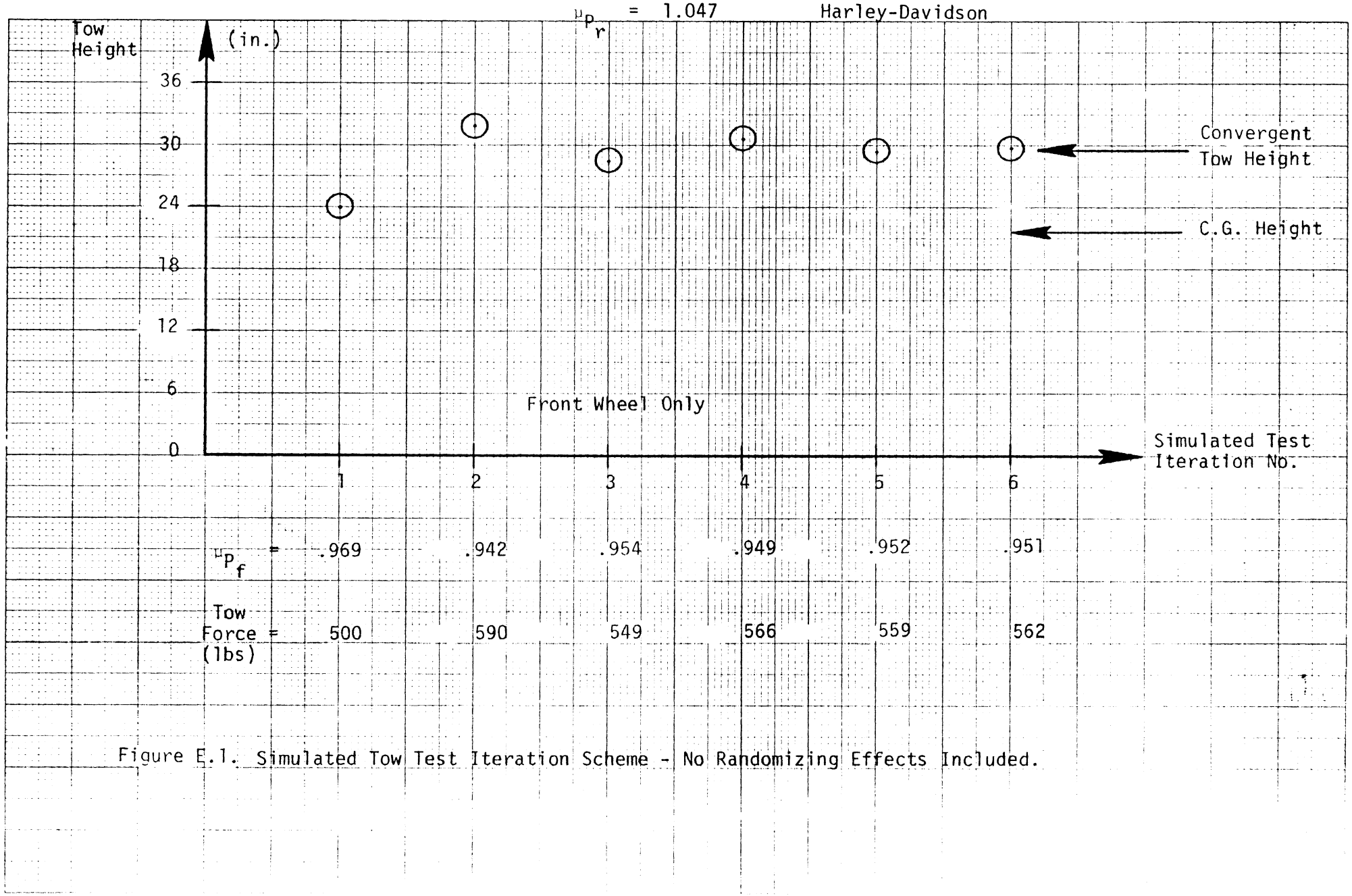


Figure E.1. Simulated Tow Test Iteration Scheme - No Randomizing Effects Included.

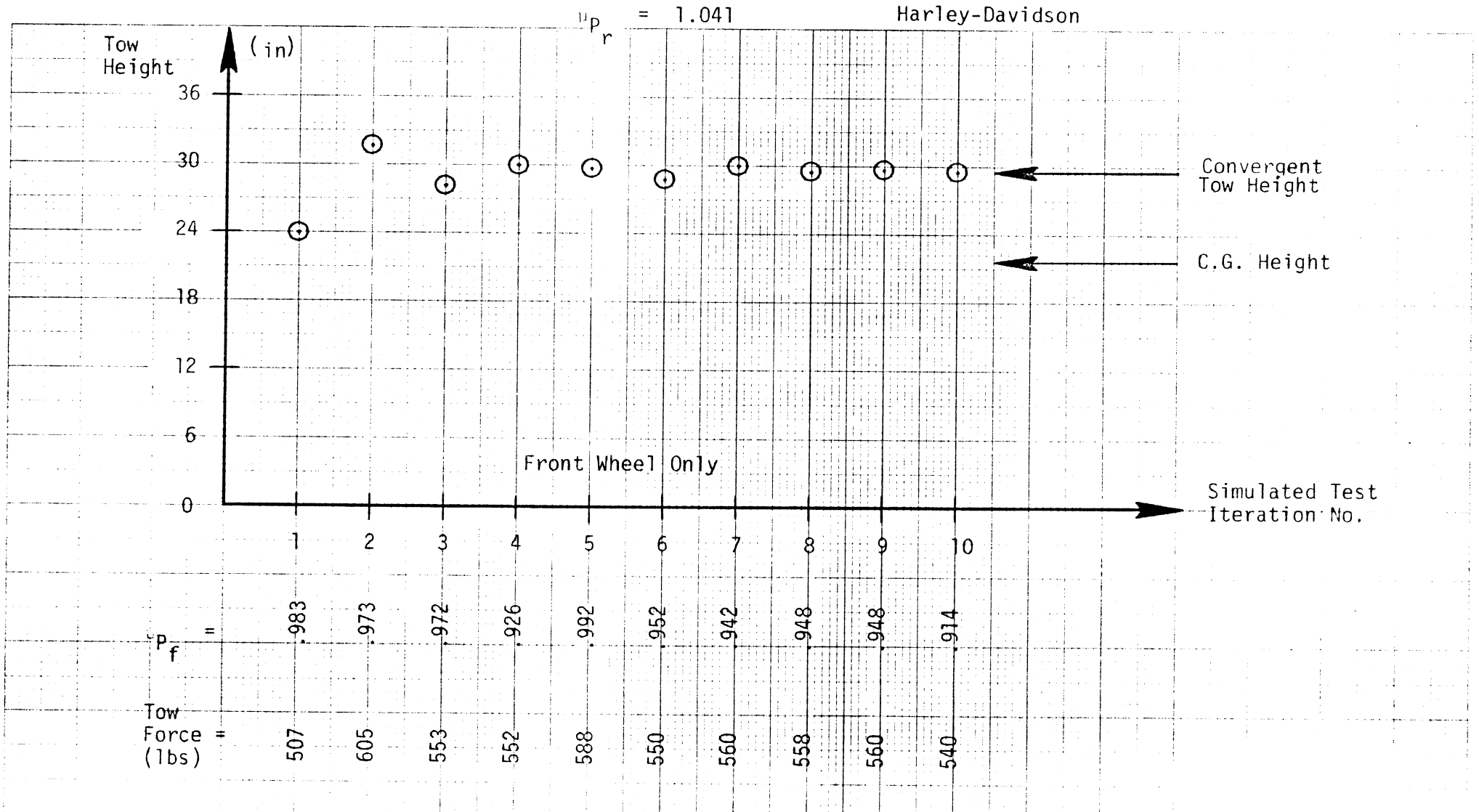


Figure E.2. Simulated Tow Test Iteration Scheme, ±30% Random Brake Torque, ±5% Random Tow Force Measurement.

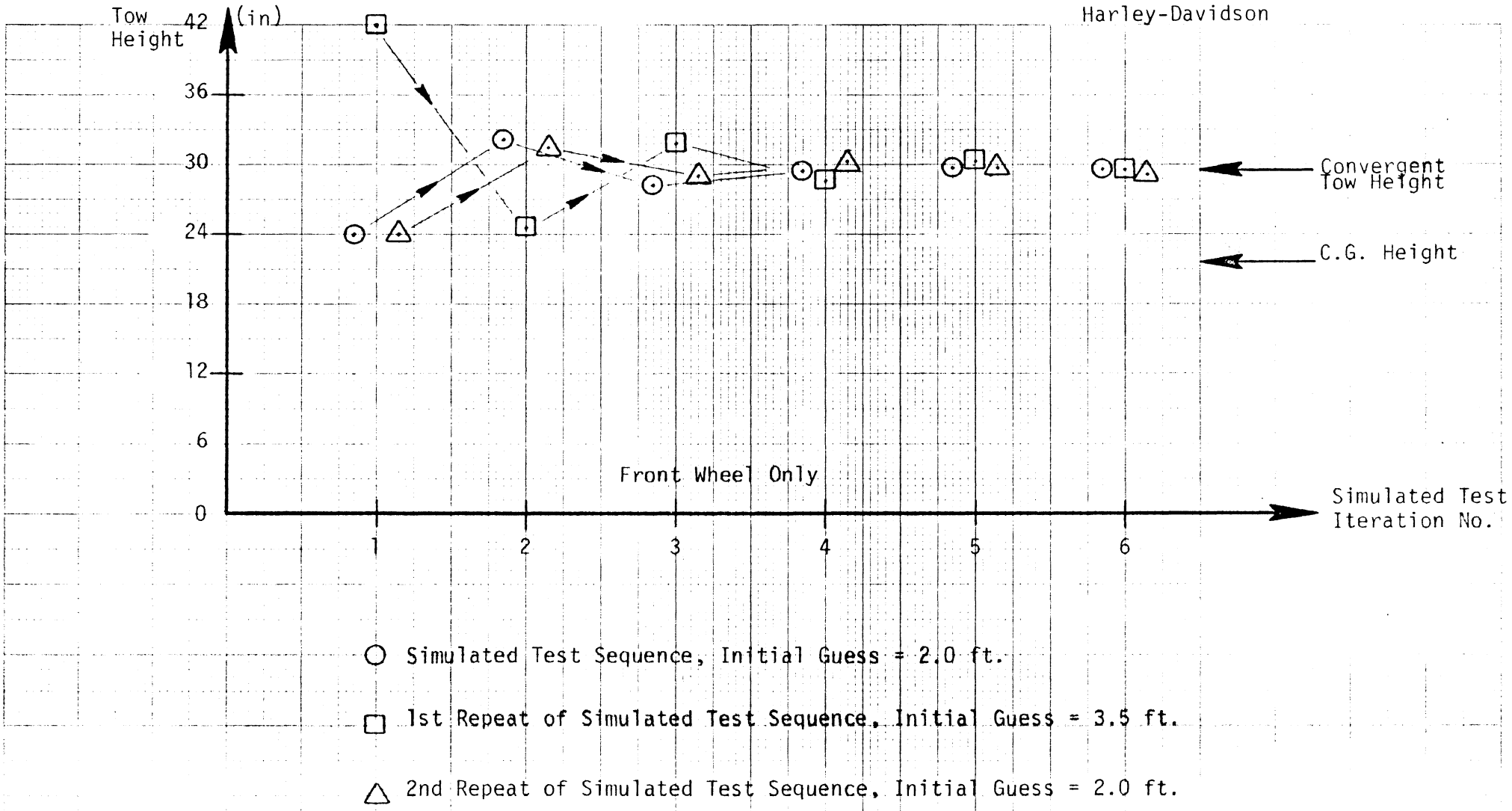
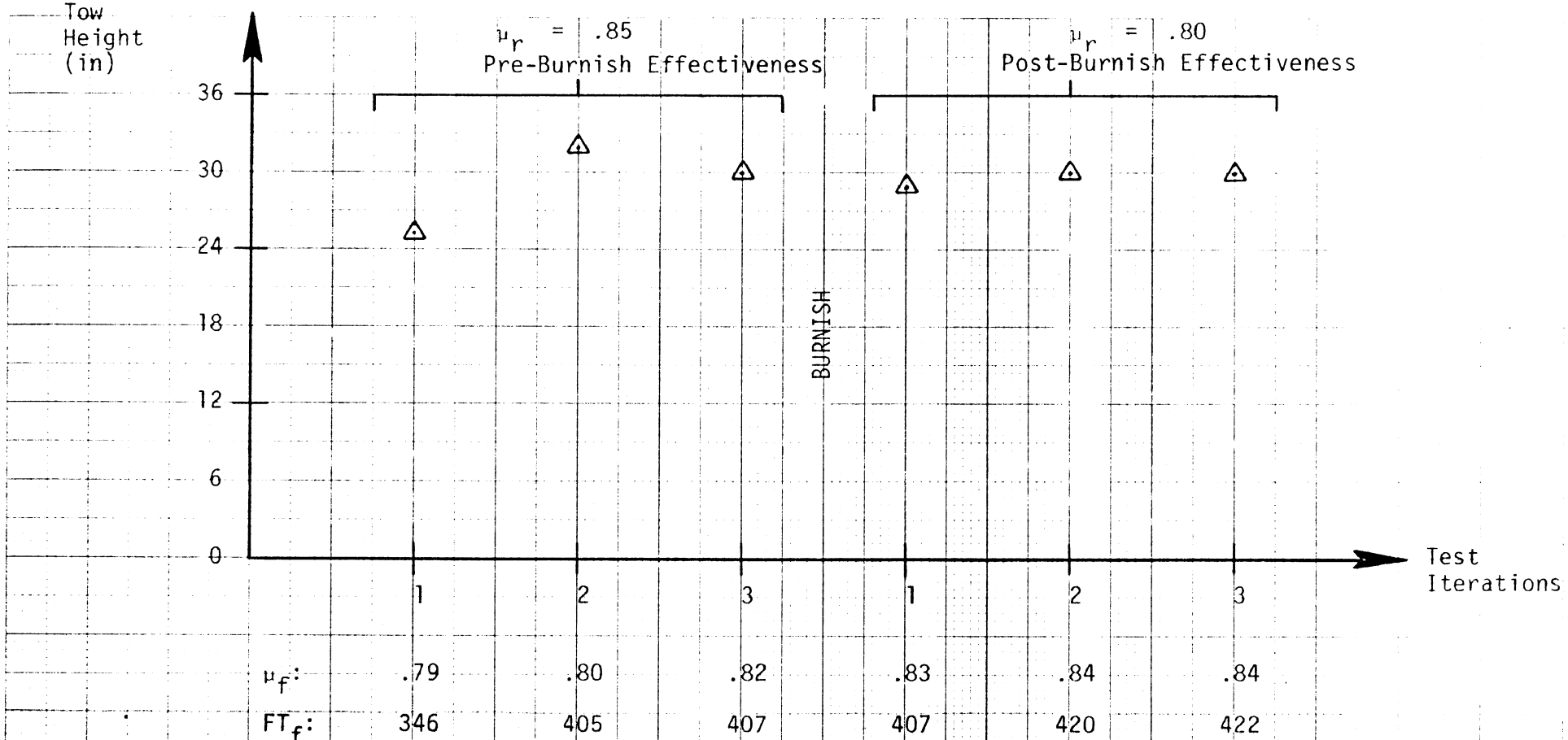


Figure E.3. Three Simulated Test Sequence Repeats

Finally, Figure E.3 shows the same result as Figure E.2 but for three simulated test sequence repeats. (Two of the sequences start with an initial guess tow height of 24 inches, the other with an initial guess height of 42 inches.)

These results suggested that even for sizeable random error effects the proposed iterative test procedure can achieve rapid convergence to a tow height whose accuracy is strictly a function of the random effects and measurements involved in the test procedure. The maximum expected error for a given iteration was primarily dominated by the accuracy surrounding the tow force measurement. Reasonably large brake torque input rates and their associated randomness appeared only as a second order effect, producing small dynamic lags between tow force build-up and load transfer.

The final two figures provide an interesting comparison of actual test results and the simulation. Figure E.4 is a summary of the first three iterations for the pre-burnish and post-burnish effectiveness test results for the Harley-Davidson. The corresponding simulation result is shown in Figure E.5, now using measured parameter data (c.g. height = 19.2", wheelbase = 63.3", etc.) and final peak friction coefficient values, μ_f = .84, μ_r = .80, obtained during the full-scale effectiveness tests. The agreement between the simulation and the tow tests is very close, showing less than an inch difference in final convergent tow height.



μ_f:	.79	.80	.82	.83	.84	.84
FT_f:	346	405	407	407	420	422

Figure E.4. Harley-Davidson Effectiveness Tests Summary.

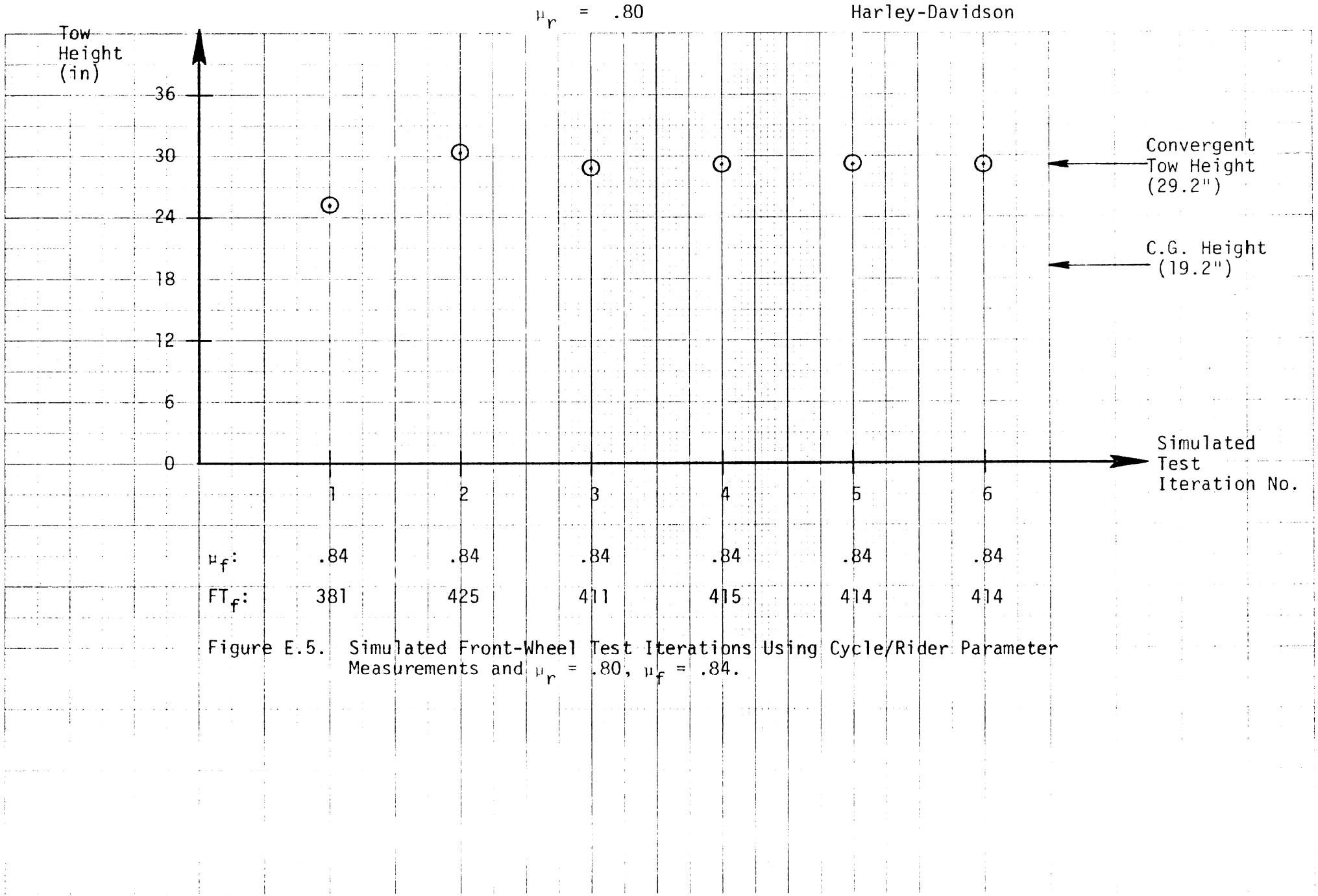


Figure E.5. Simulated Front-Wheel Test Iterations Using Cycle/Rider Parameter Measurements and μ_r = .80, μ_f = .84.

APPENDIX F

COMBINED SLIP TRACTION DATA OF MOTORCYCLE TIRES

In this appendix, data are presented as measured for four motorcycle tires on the HSRI Flat-Bed Tire Test Machine. The data describe the lateral traction response of each tire to conditions of combined angular slip and longitudinal slip or combined inclination (camber) angle and longitudinal slip. While the basic purpose for gathering these data stems from a desire to examine the need for a motorcycle braking-in-a-turn measure, the data are provided here as a general resource.

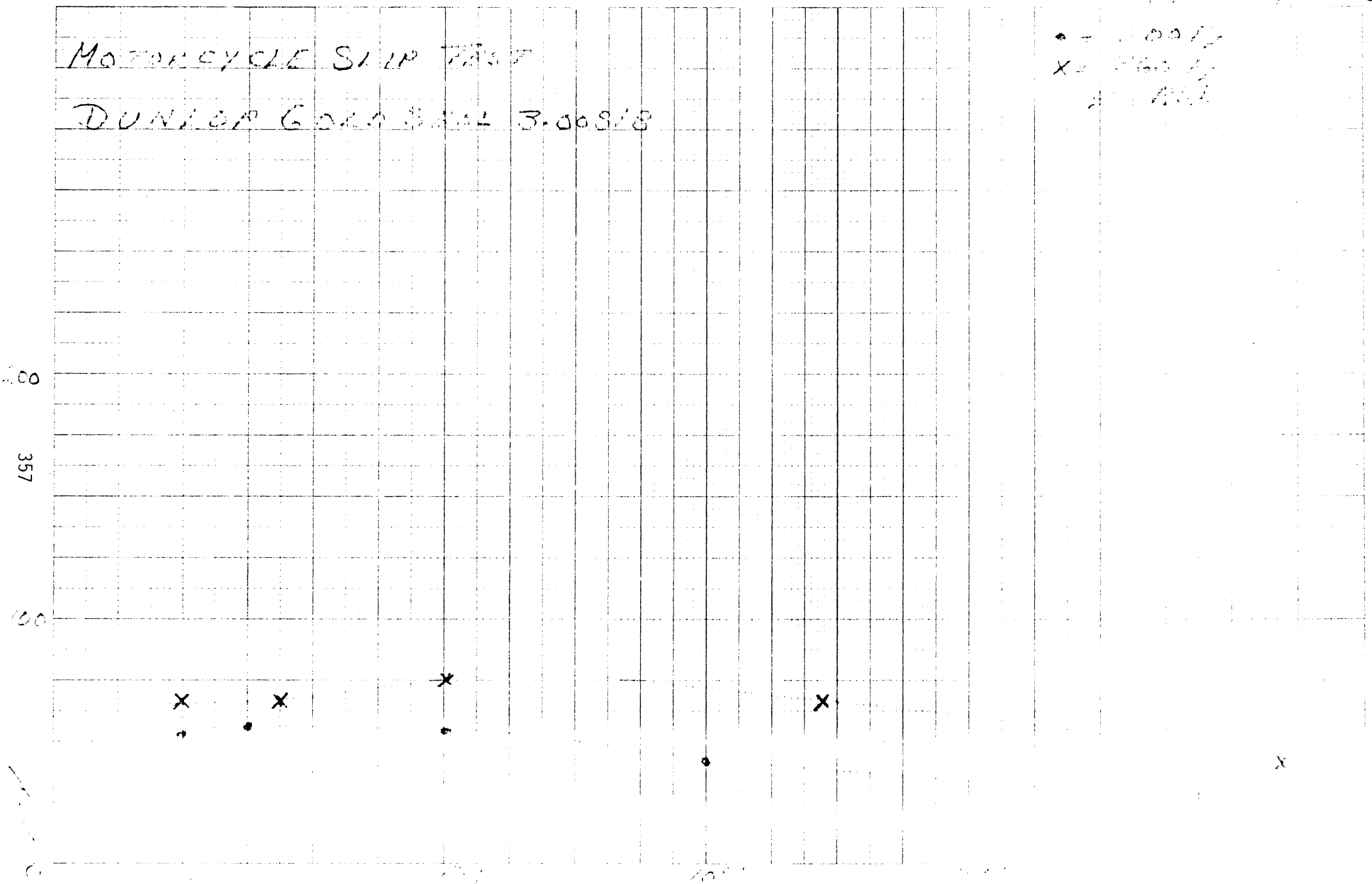
The four selected tires, shown in the following list, were examined at load values which were determined on the basis of their respective probable usage as either front or rear tires.

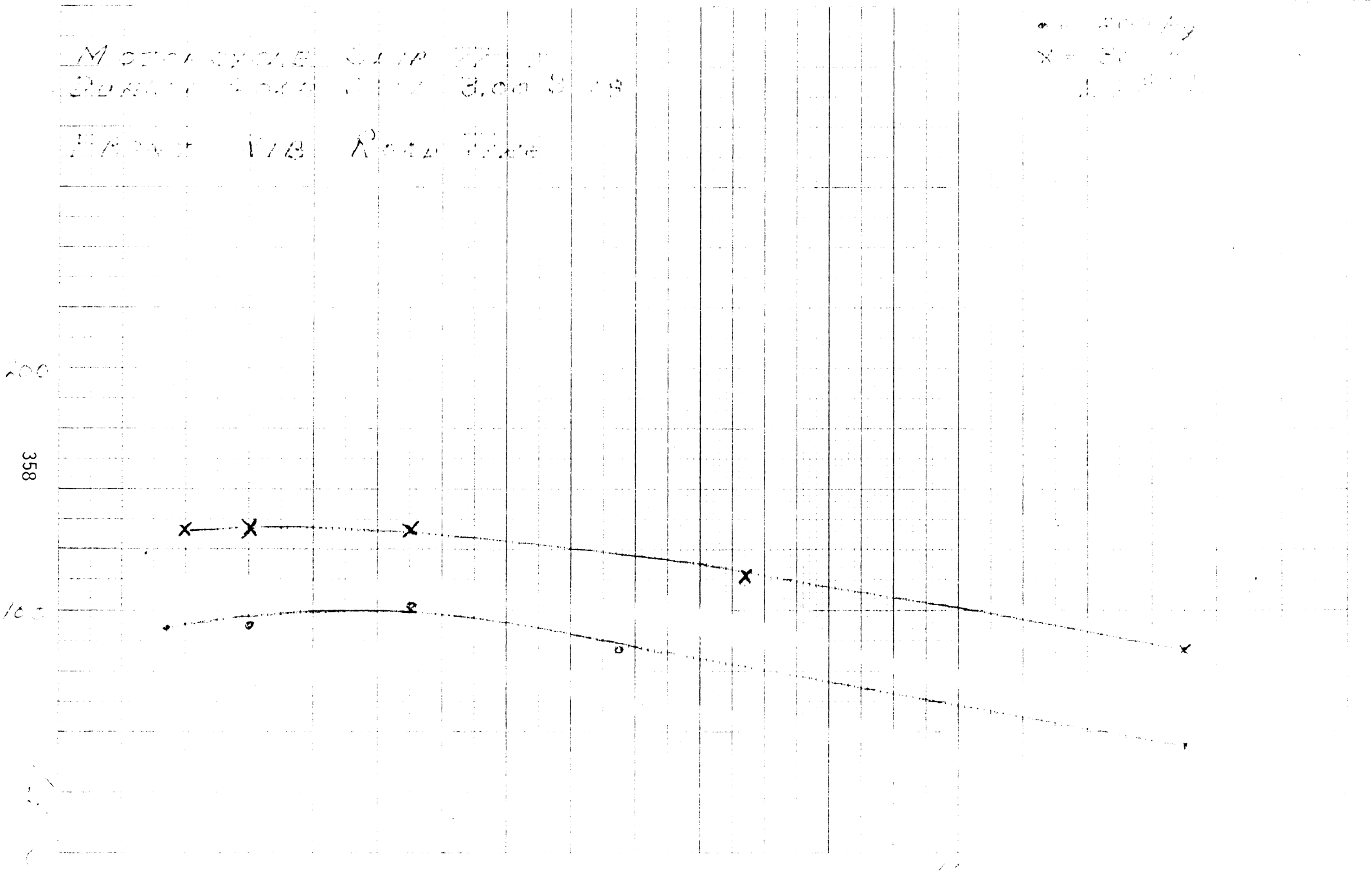
For tires presumed to be typical for front installation on mid-sized motorcycles, (tires 1 and 2) load values were selected to cover a reasonable front static load as well as an upward increment in that load representing the load increase deriving under heavy braking. Conversely, for the two rear-type tires (numbers 3 and 4), loads were selected to represent the rear static condition as well as a greatly reduced value corresponding to a heavy braking condition.

The data obtained for each tire is arranged in four groups of plots, namely,

1) two-dimensional plots of F_y versus s at varying values of α
2) carpet plots of F_y versus α and F_z for each value of s
3) two-dimensional plots of F_y versus s at varying values of γ
4) carpet plots of F_y versus γ and F_z for each value of s.

Manufacturer	Tire Size	Tread Type	Load Values (lb)	Slip Angles (deg)	Camber Angles (deg)	Longitudinal Slip (%)
1. Dunlop F7	3.00-18	Street Rib	200 360	0,1,2	0,4,12,20	0,2,5,10,15,20
2. Dunlop K70	2.75-18	Street/Trail	150 270	0,1,2	0,4,12,20	0,2,5,10,15,20
3. Cheng Shin	3.50-18	Universal Trials	300 150	0,1,2	0,4,12,20	0,2,5,10,20
4. Continental K112	4.00-18	Street	350 175 88	0,1,2,4,8	0,2,4,8,12,20	0,2,5,10,20


MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 3.00S/B
100
357
100


358

LATERAL FORCE VS VERTICAL LOAD & SLIP ANGLE @ 0° CAMBER

MOTORCYCLE CAMP TIRES
DUNLOP GOLD SEAL 3.00S18
FRONT RIG 26PSI

200

359

100

2° 360 #

1°

0°

LATERAL FORCE V. VERTICAL & SLIP ANGLE @ 5°

MOTORCYCLE SAIP TEST
DUNLOP GOLD SEAL 3.00 S18
FRONT RIB 26 PSI

200
360
100

2° 360#

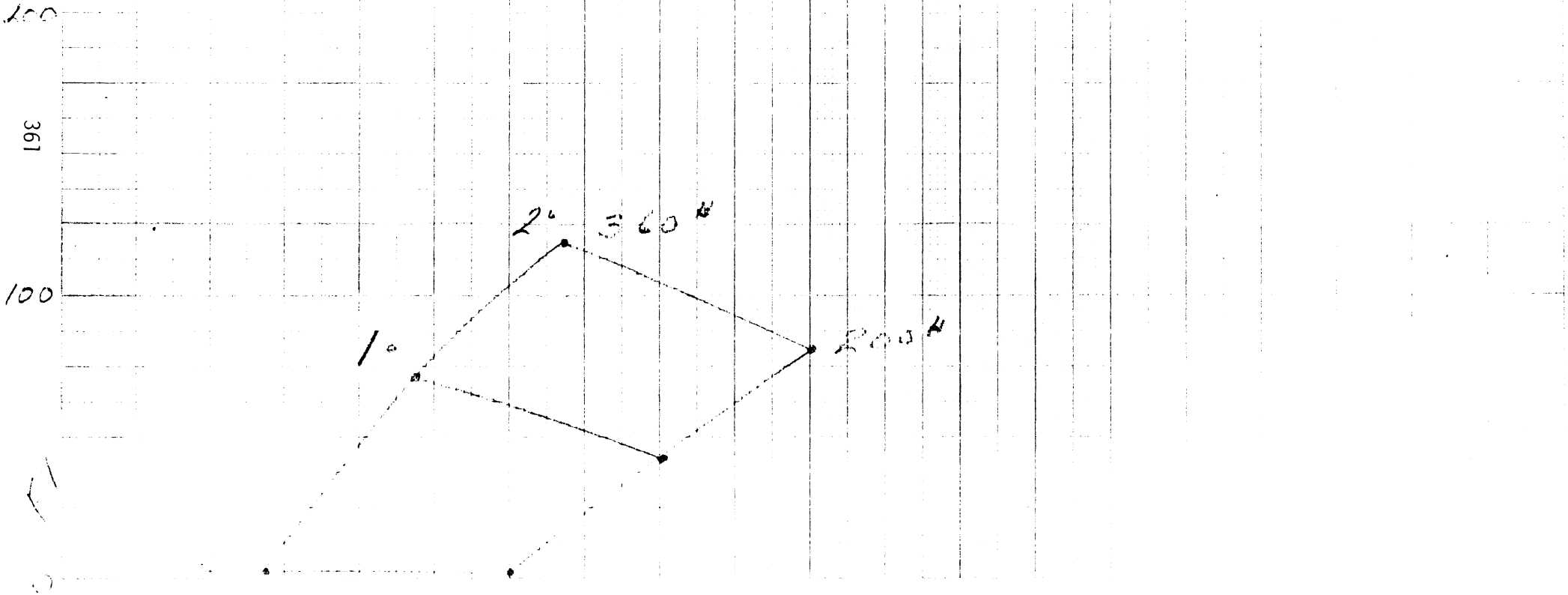
200#

1°

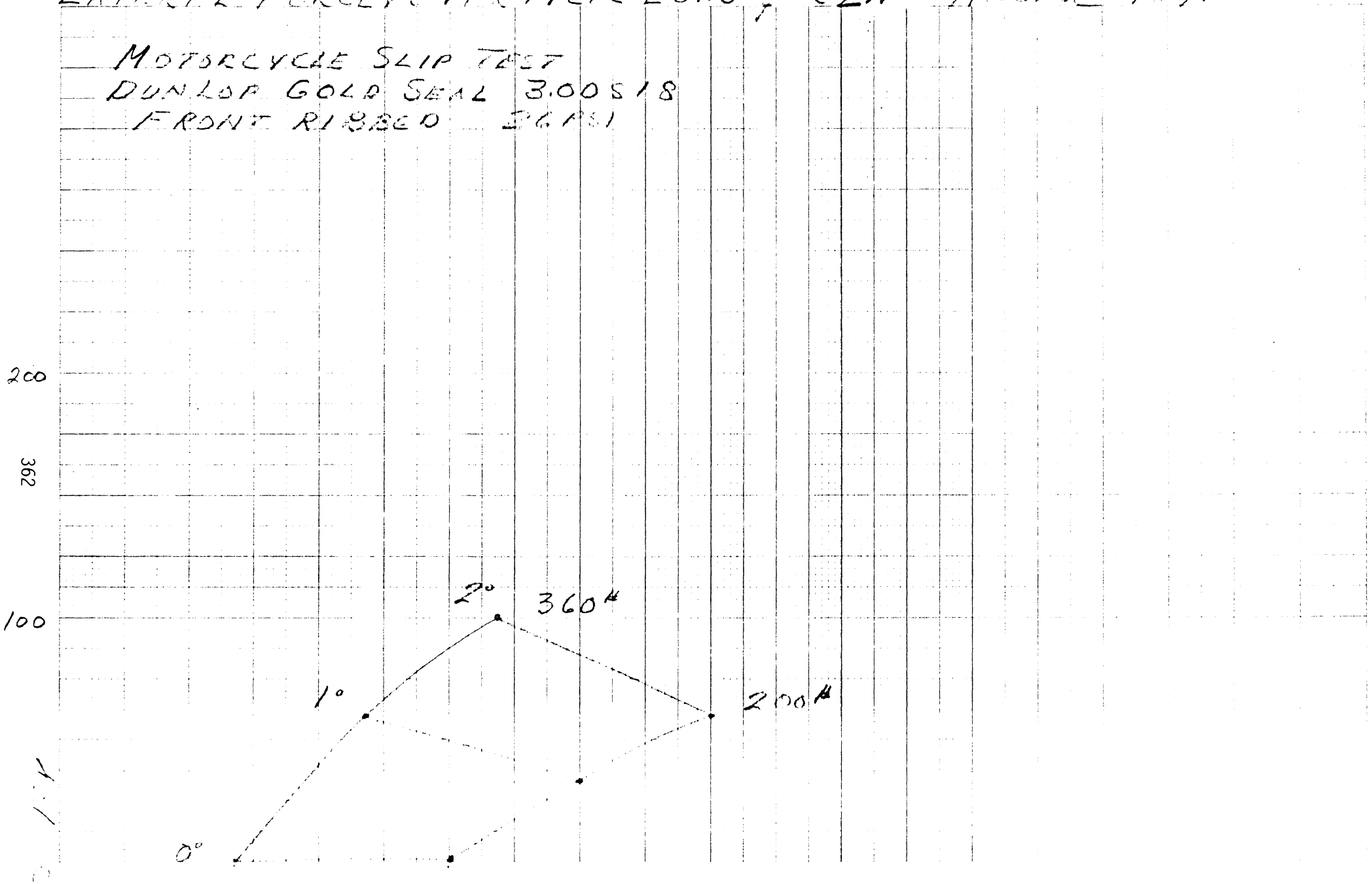
0

LATERAL FORCE VS [illegible]

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 3.00 S 18
FRONT PRESS 26 PSI

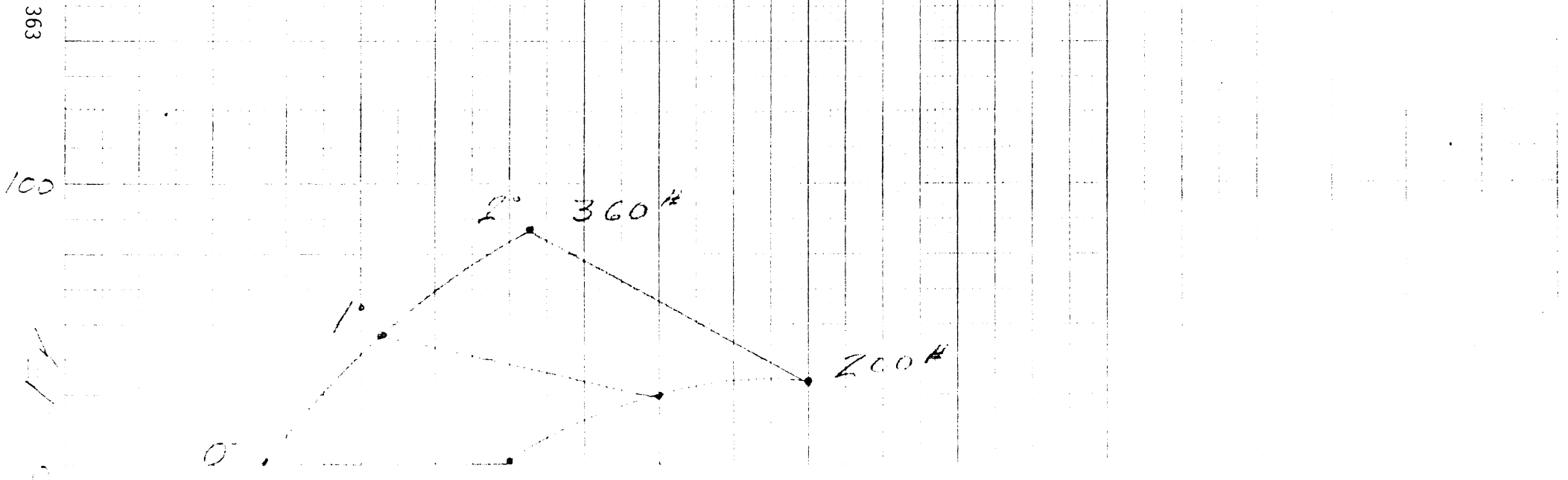


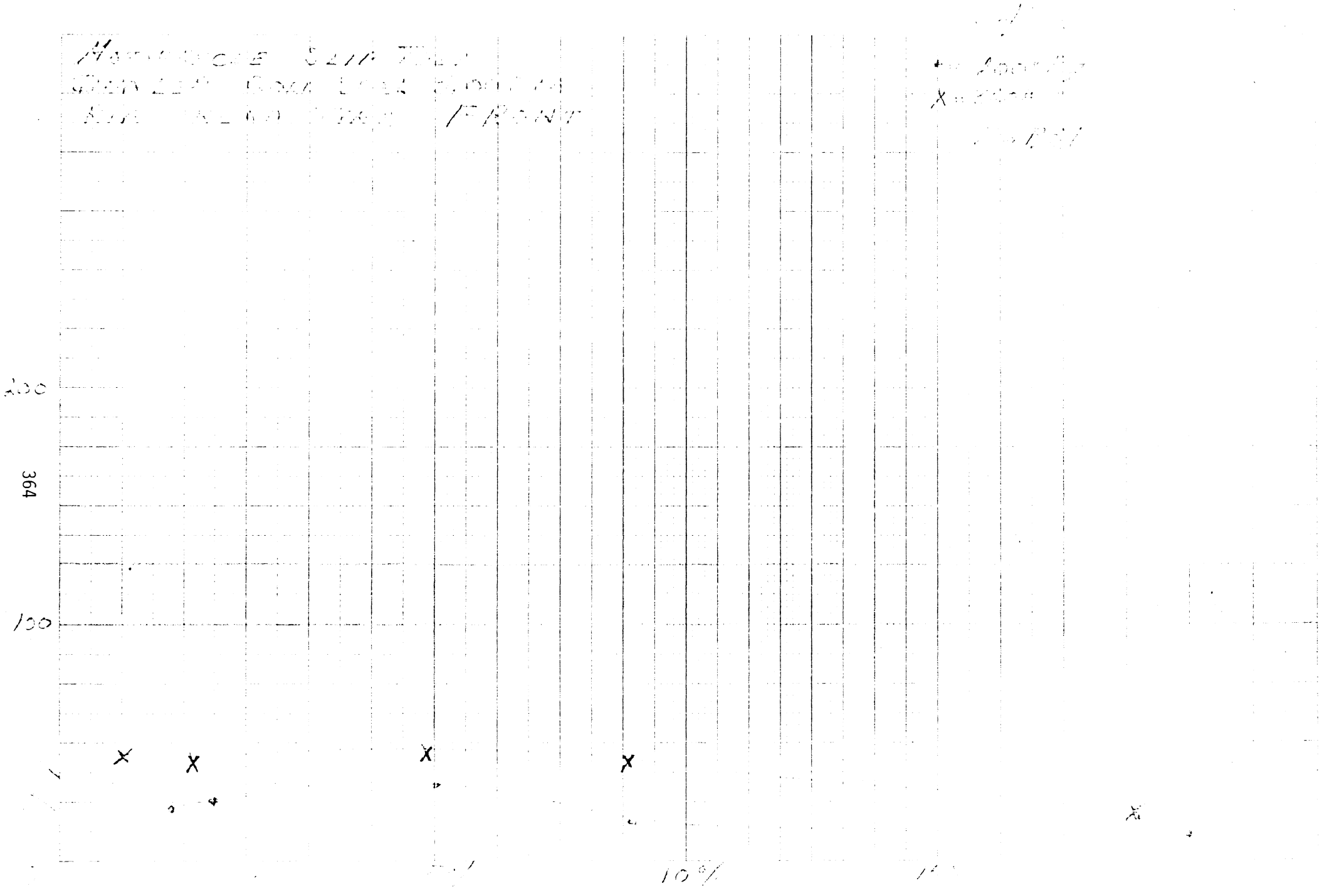
LATERAL FORCE VS VERTICAL LOAD @ SLIP ANGLE 15° - 0°



LATERAL STIFFNESS VS VERTICAL LOAD & SLIP ANGLE

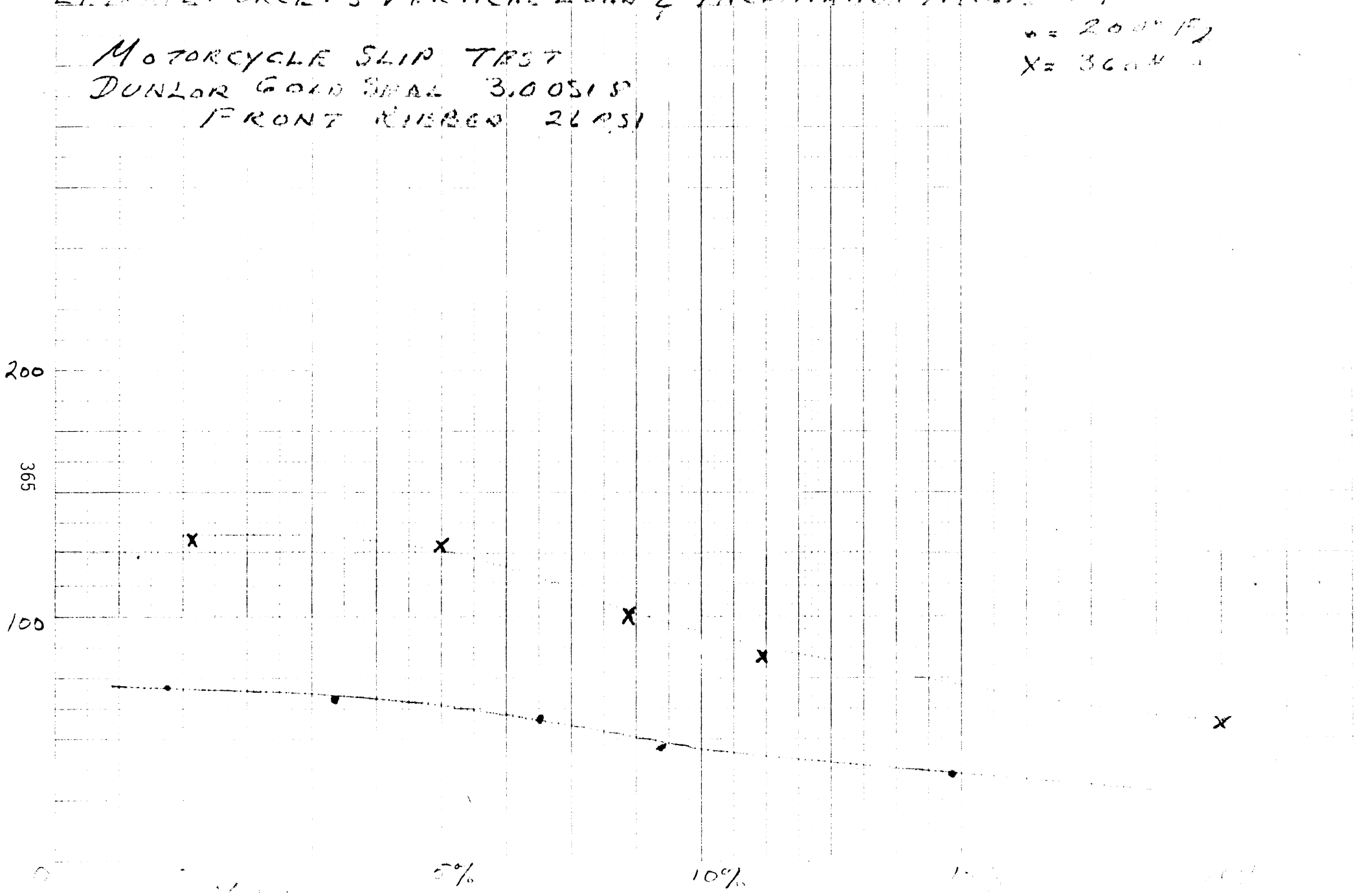
MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 3.00X18
FRONT RIBBED 26 PSI

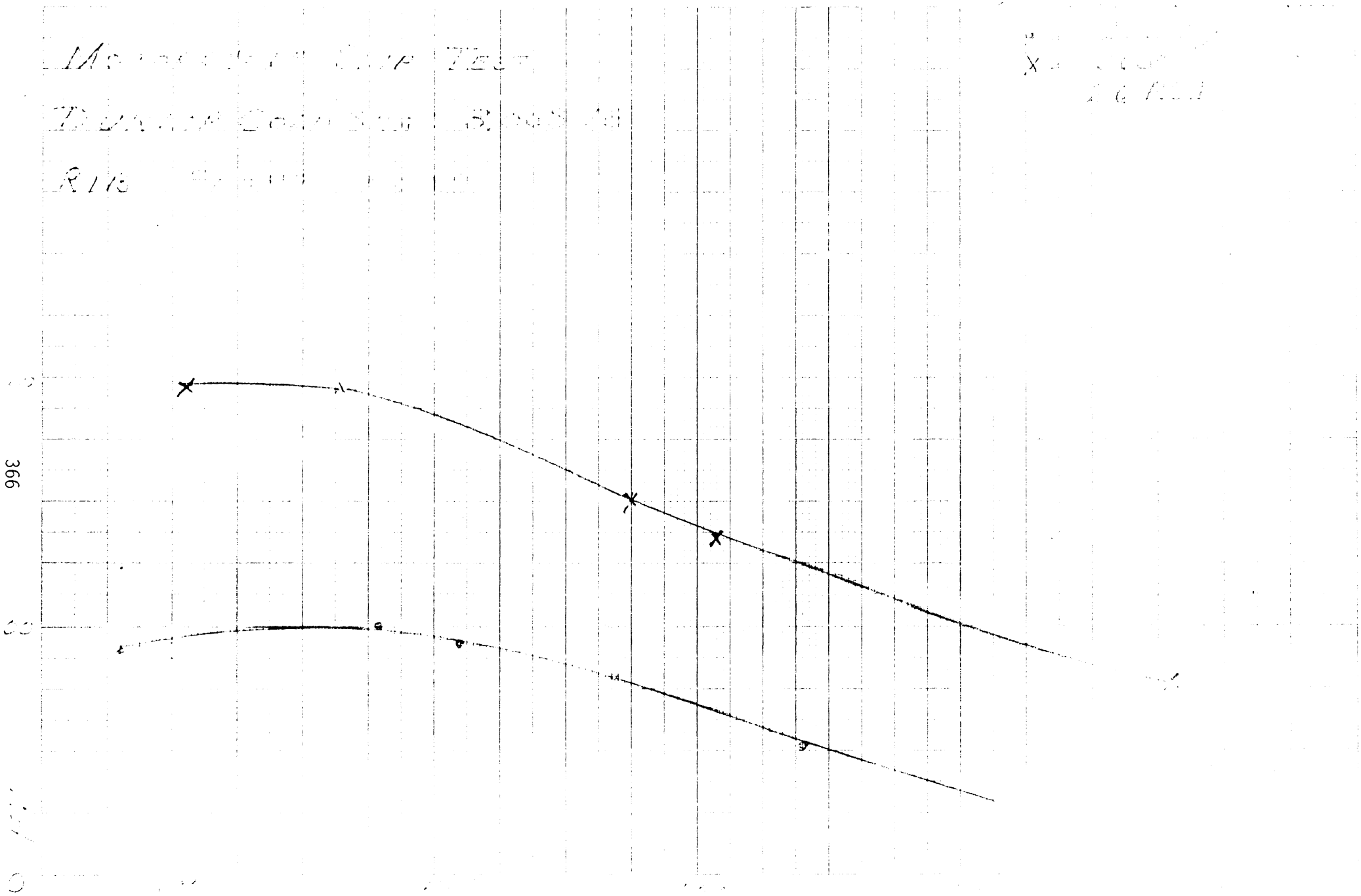


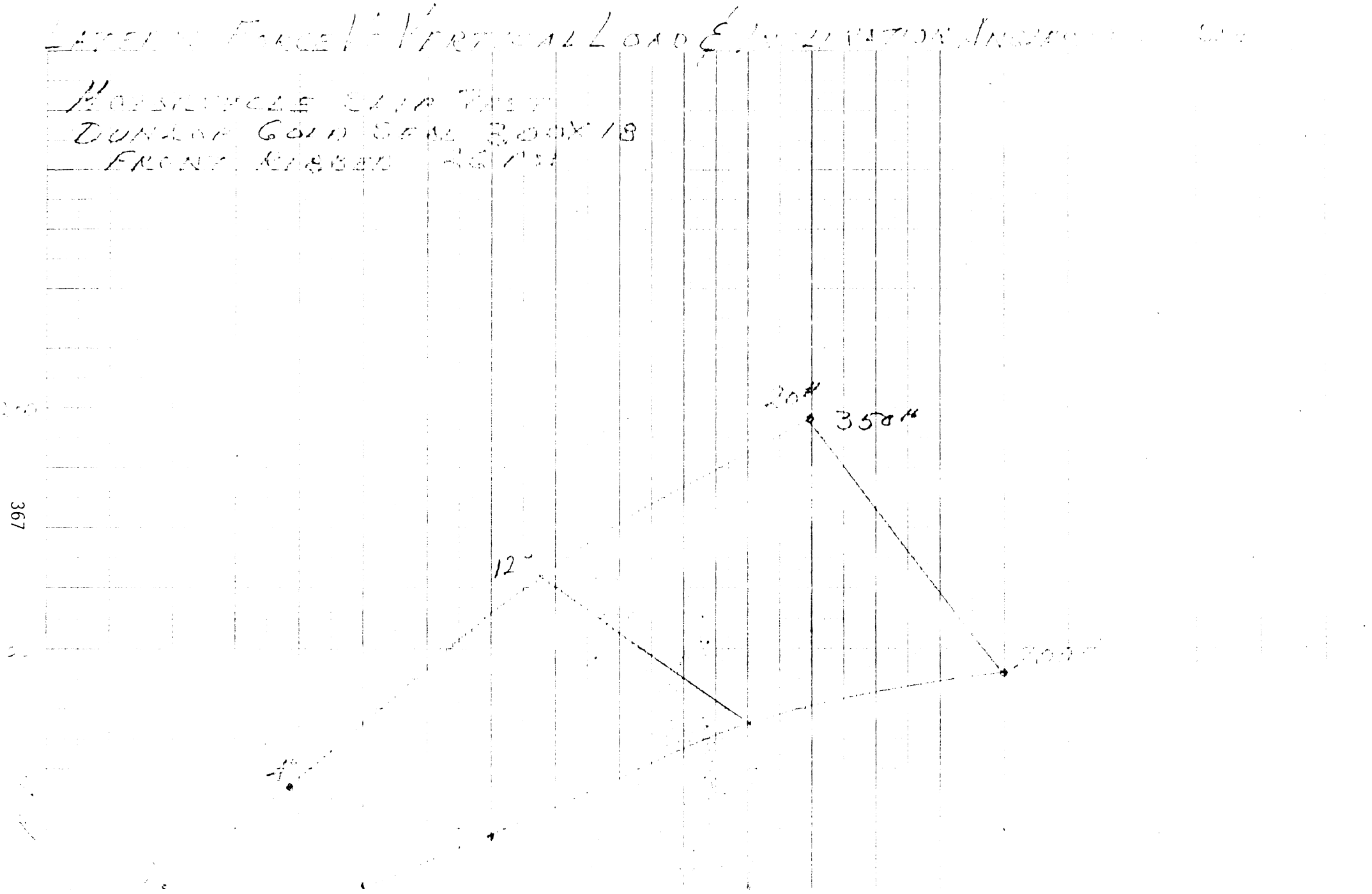

200
364
100

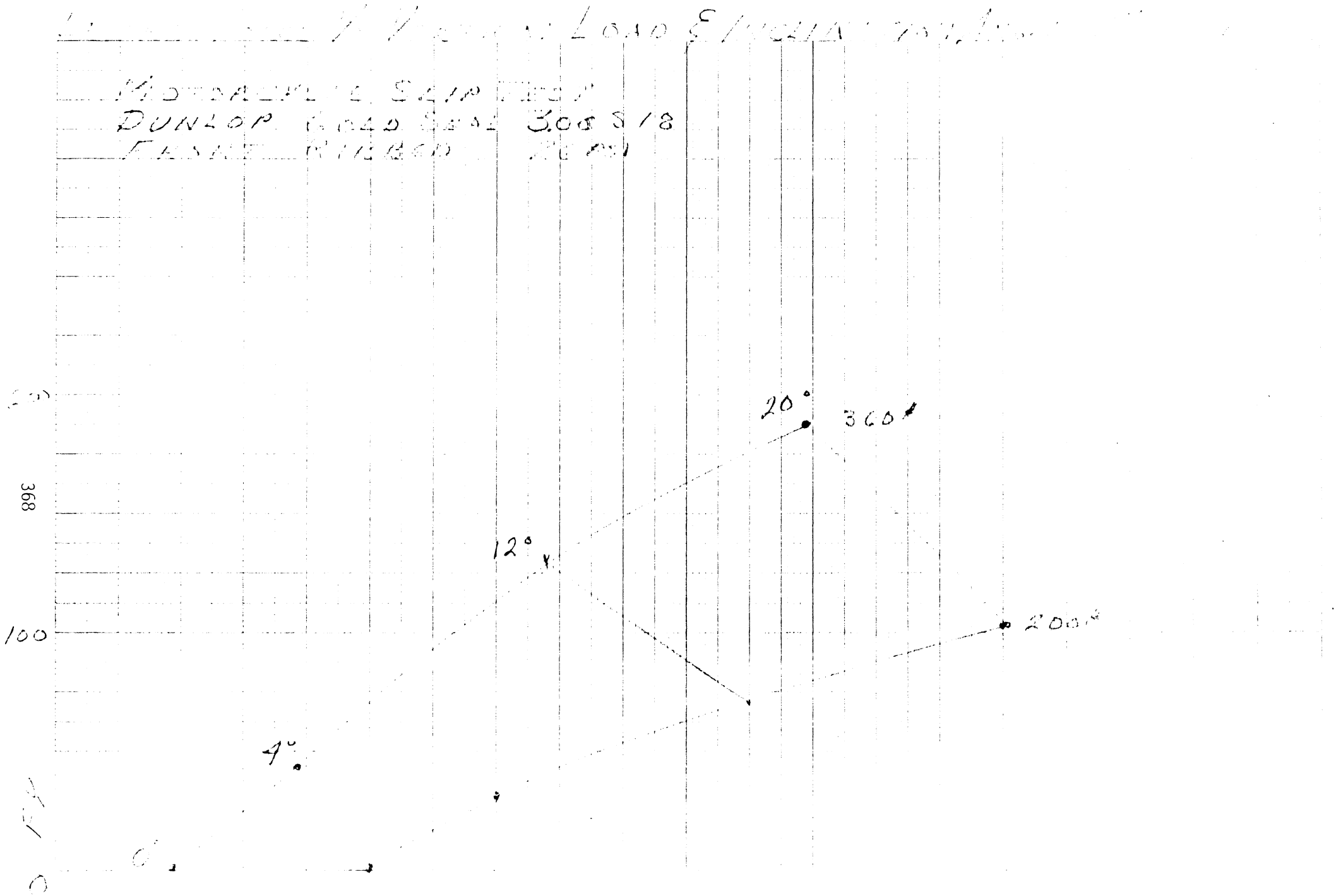
LATERAL FORCE V/S VERTICAL LOAD & INCLINATION ANGLE @ 15° INCLINATION

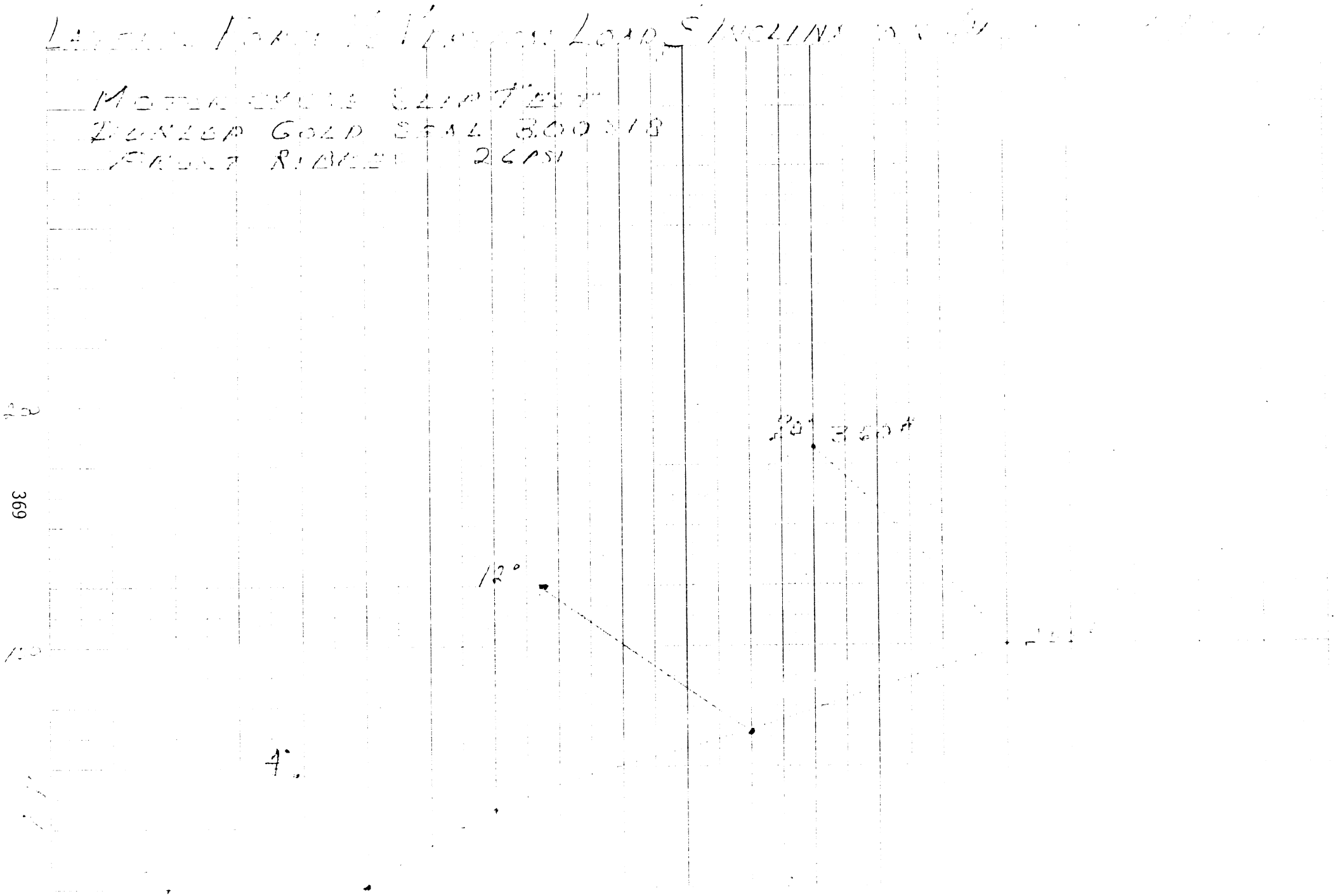
MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 3.00 S1 S
FRONT RIBBED 26 PSI

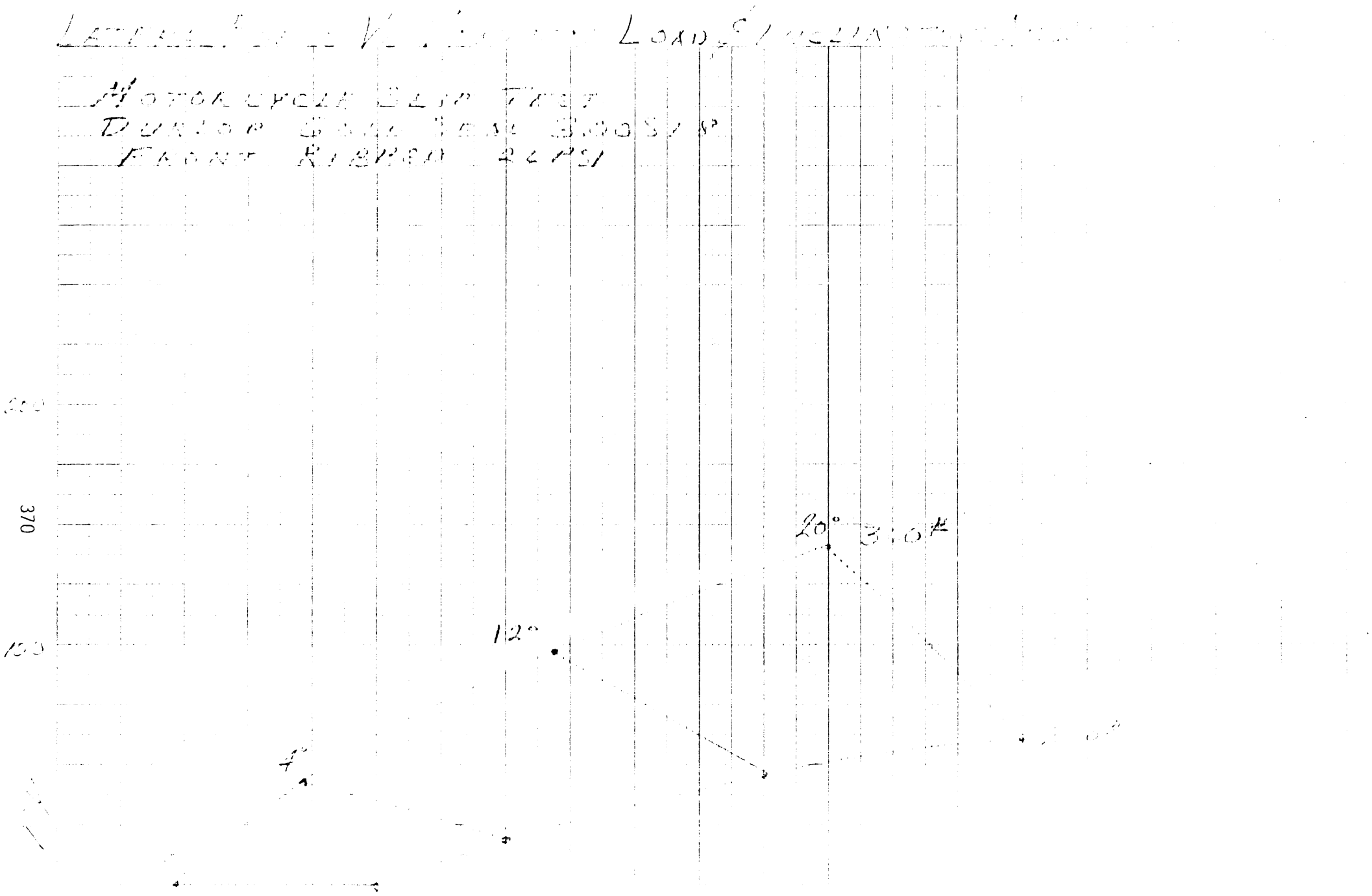





367
12
358


20°
300#
12°
200#
4°
368
100
0

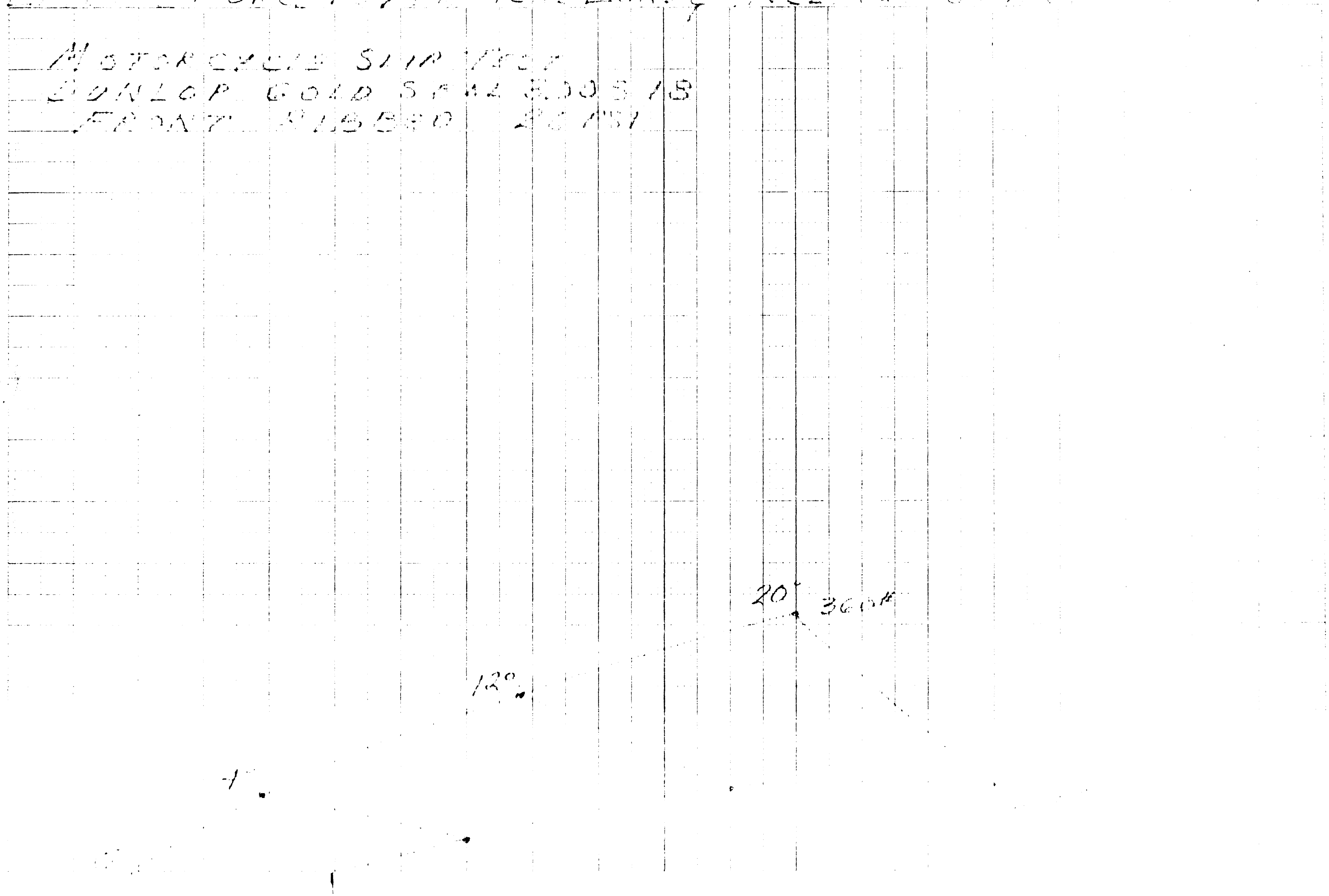


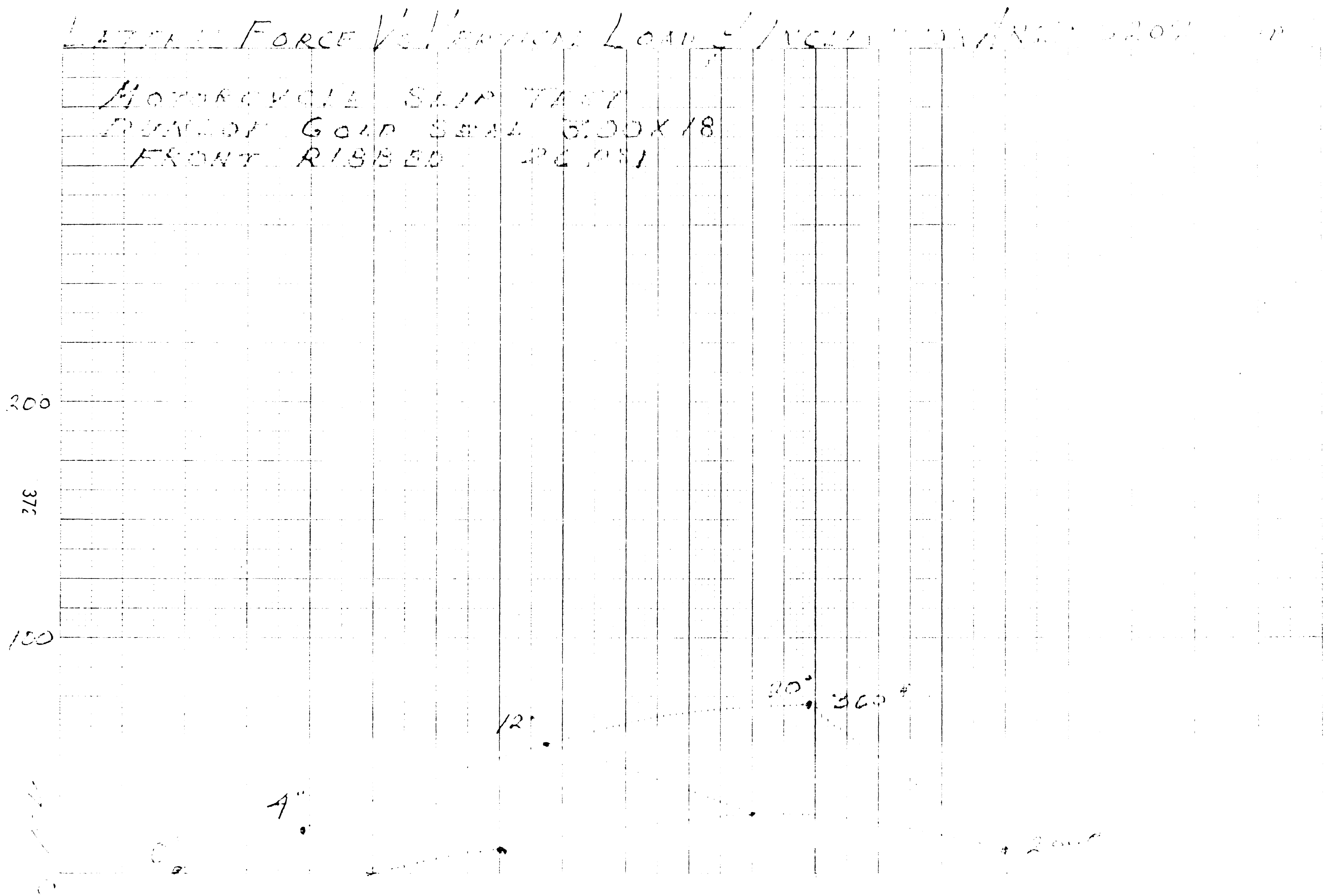

370
120°
20° 3:0 A
4°

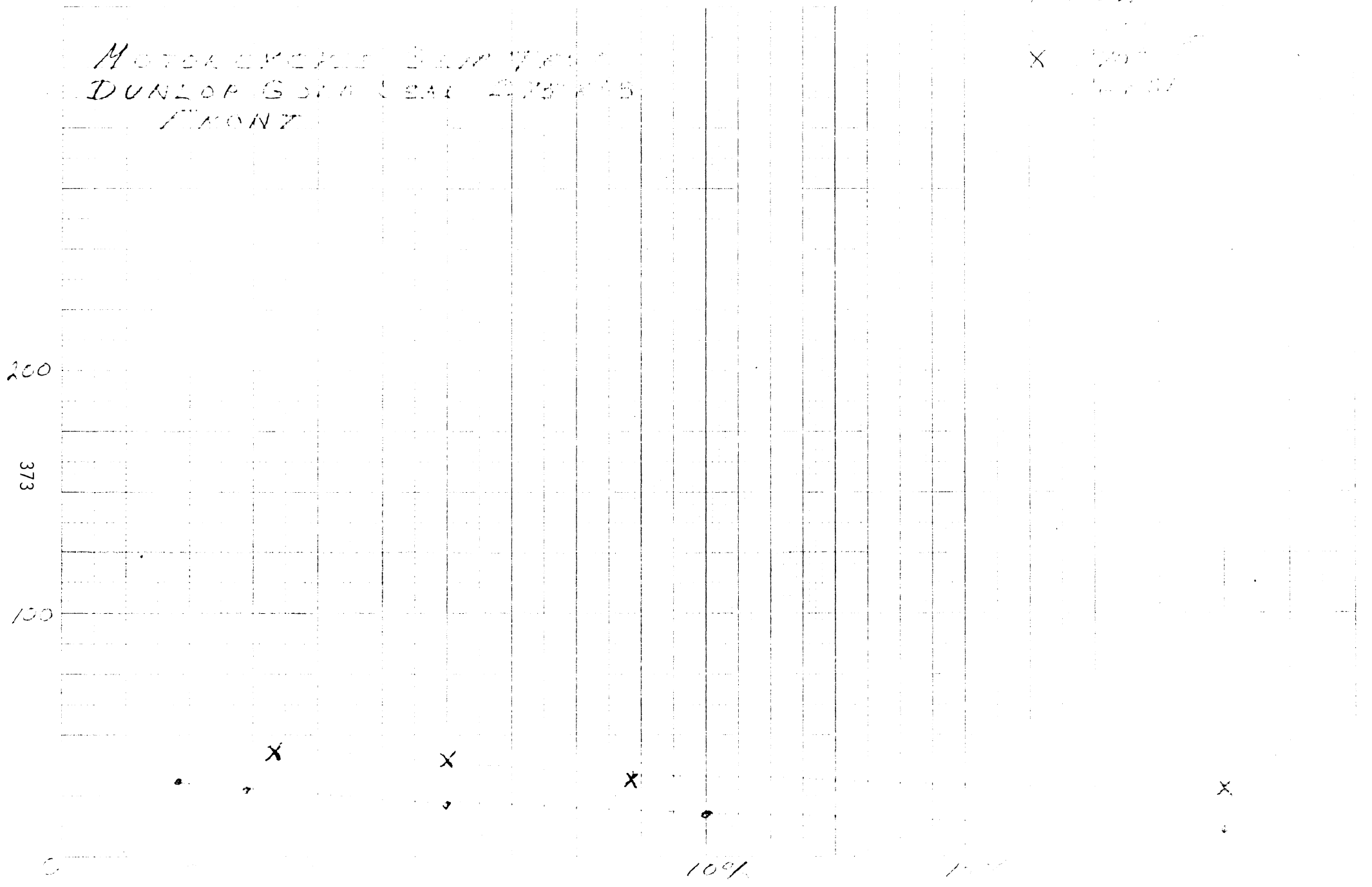
S 13

LATERAL FORCE VS VERTICAL LOAD & INCLINATION [illegible]

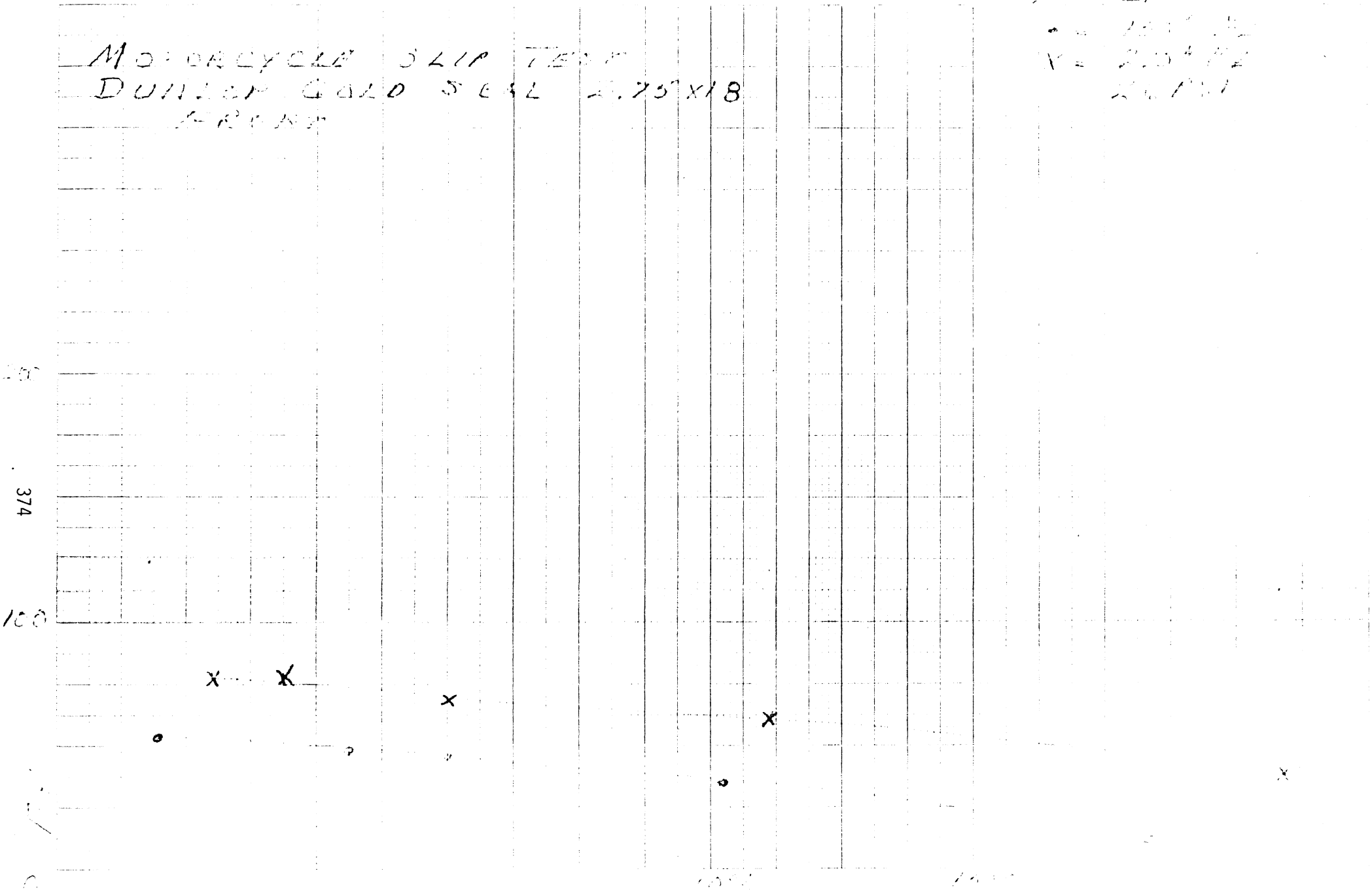
MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 3.00 S 18
FRONT RIBBED 28 PSI




FORCE VS.
MOTORCYCLE SLIP TEST
GOLD SEAL 3.00X18
FRONT RIBBED
200
100
12°
20°
300#
4°


MOTOR CYCLE TYRE TEST
DUNLOP GRAND PRIX
200
373
100
0
109

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 4.25 X 18
REAR



LATERAL FORCE [illegible] LIP @ 0.[illegible]

MOTORCYCLE SLIP FACT
DUNLOP GOLD SEAL [illegible]
FRONT

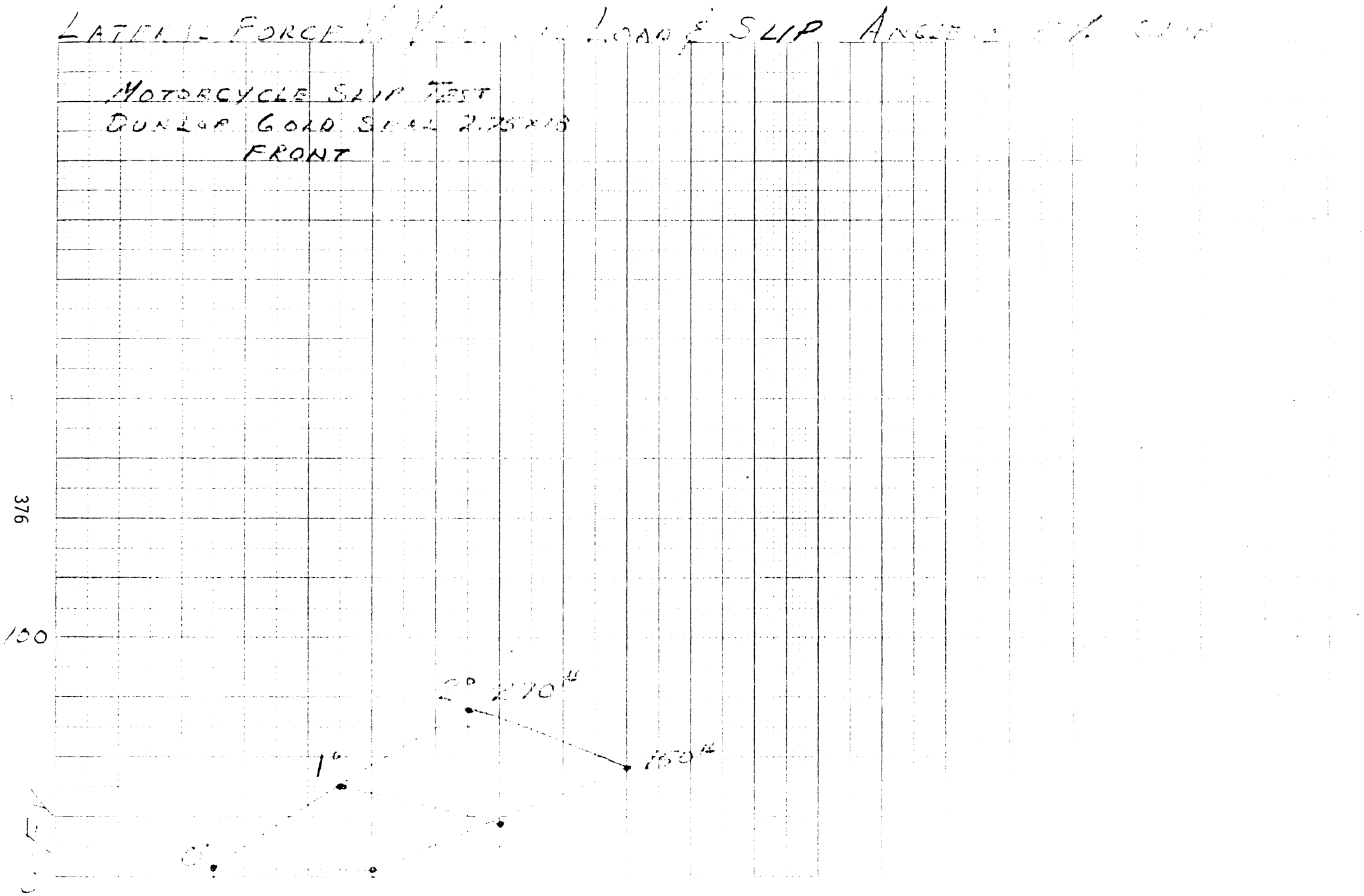
375

100

1° 2'10"

150 #

1°


LATERAL FORCE
SLIP ANGLE
MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.25 x 18
FRONT
376
100

LATERAL FORCE V. VERTICAL LOAD & SLIP ANGLE

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.75×18
FRONT

377

100

2° 270#

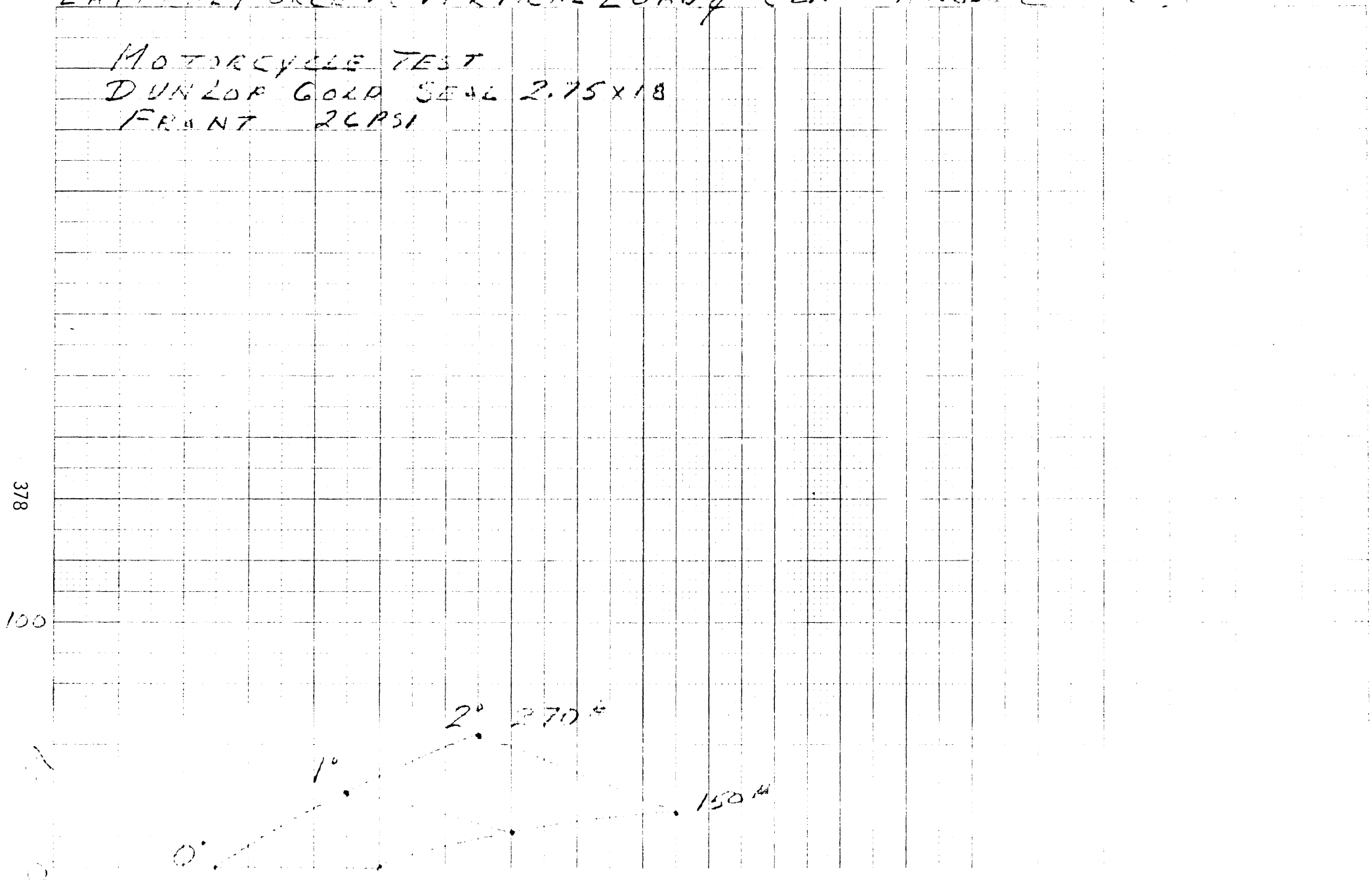
1°

150#

0°

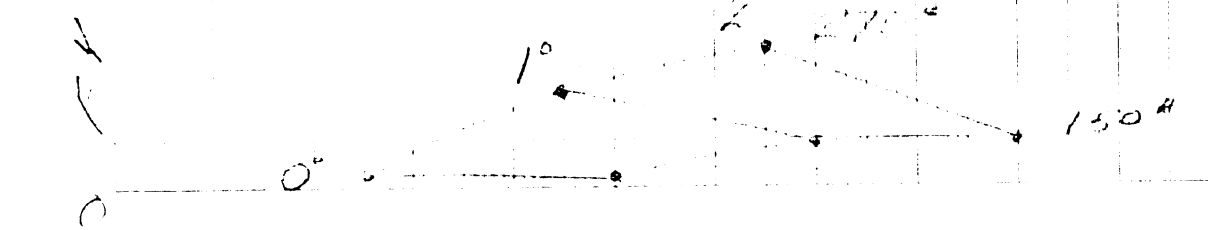
LATERAL FORCE V. VERTICAL LOAD @ SLIP ANGLES @ 15°

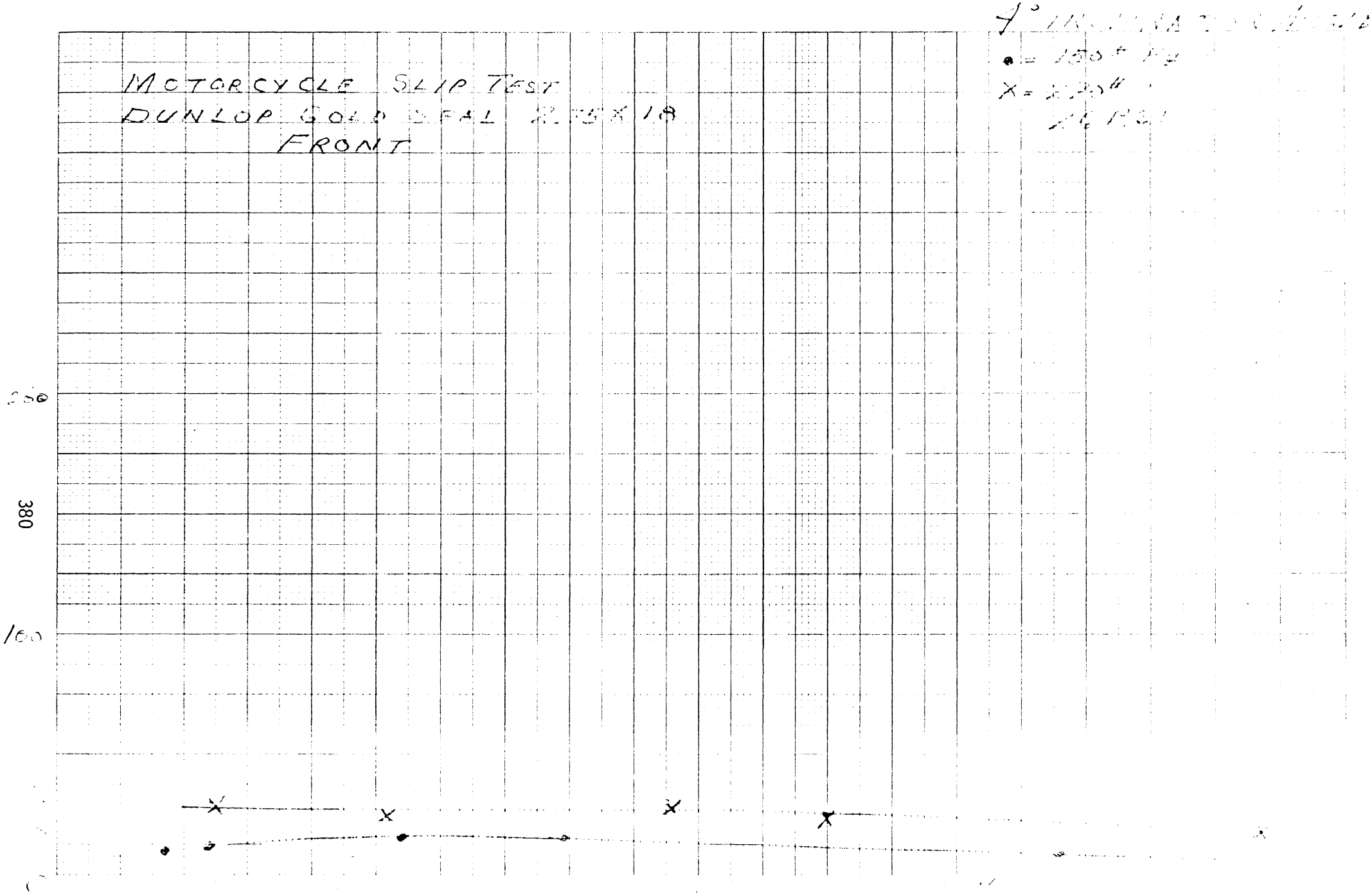
MOTORCYCLE TEST
DUNLOP GOLD SEAL 2.75x18
FRONT 26PSI

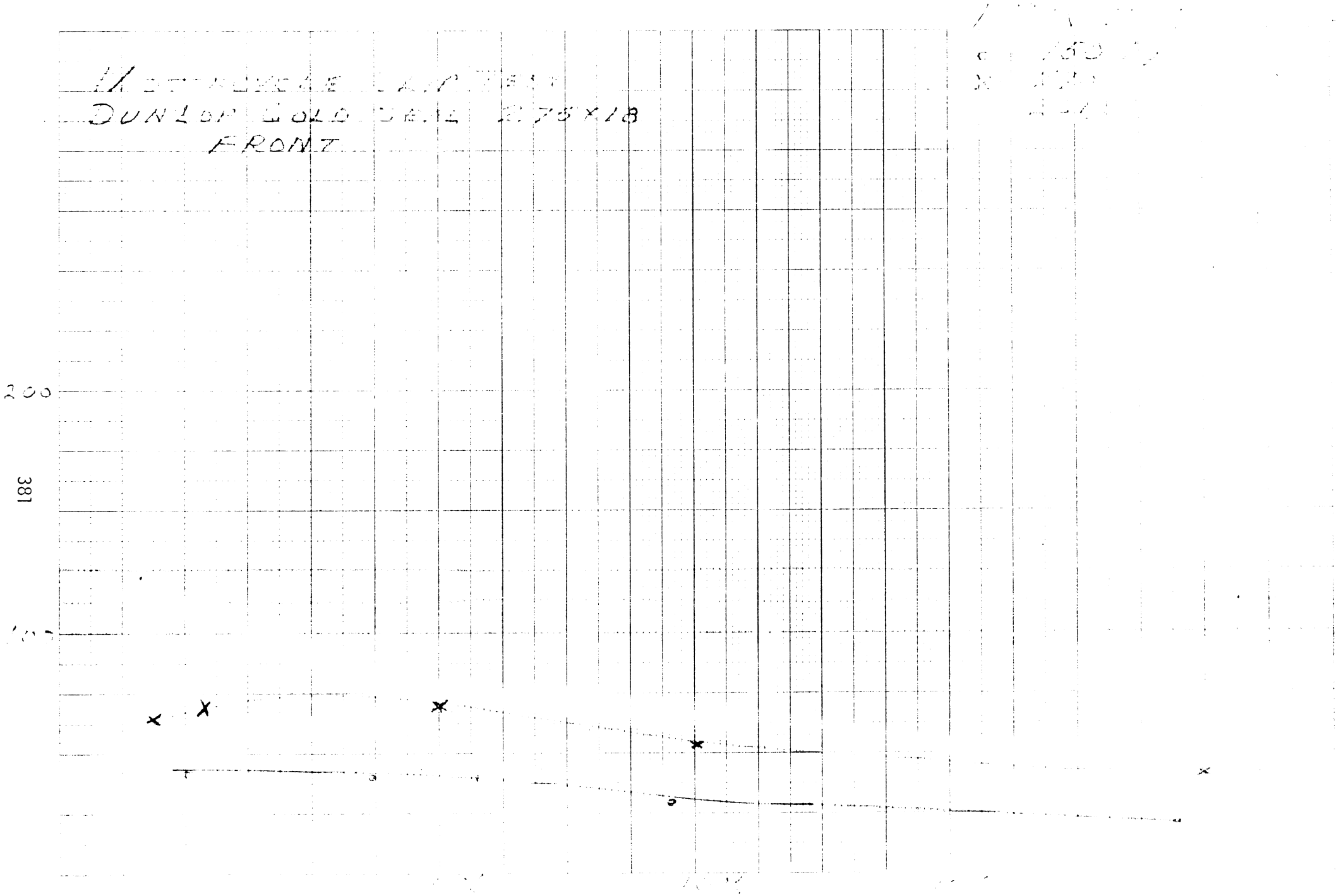


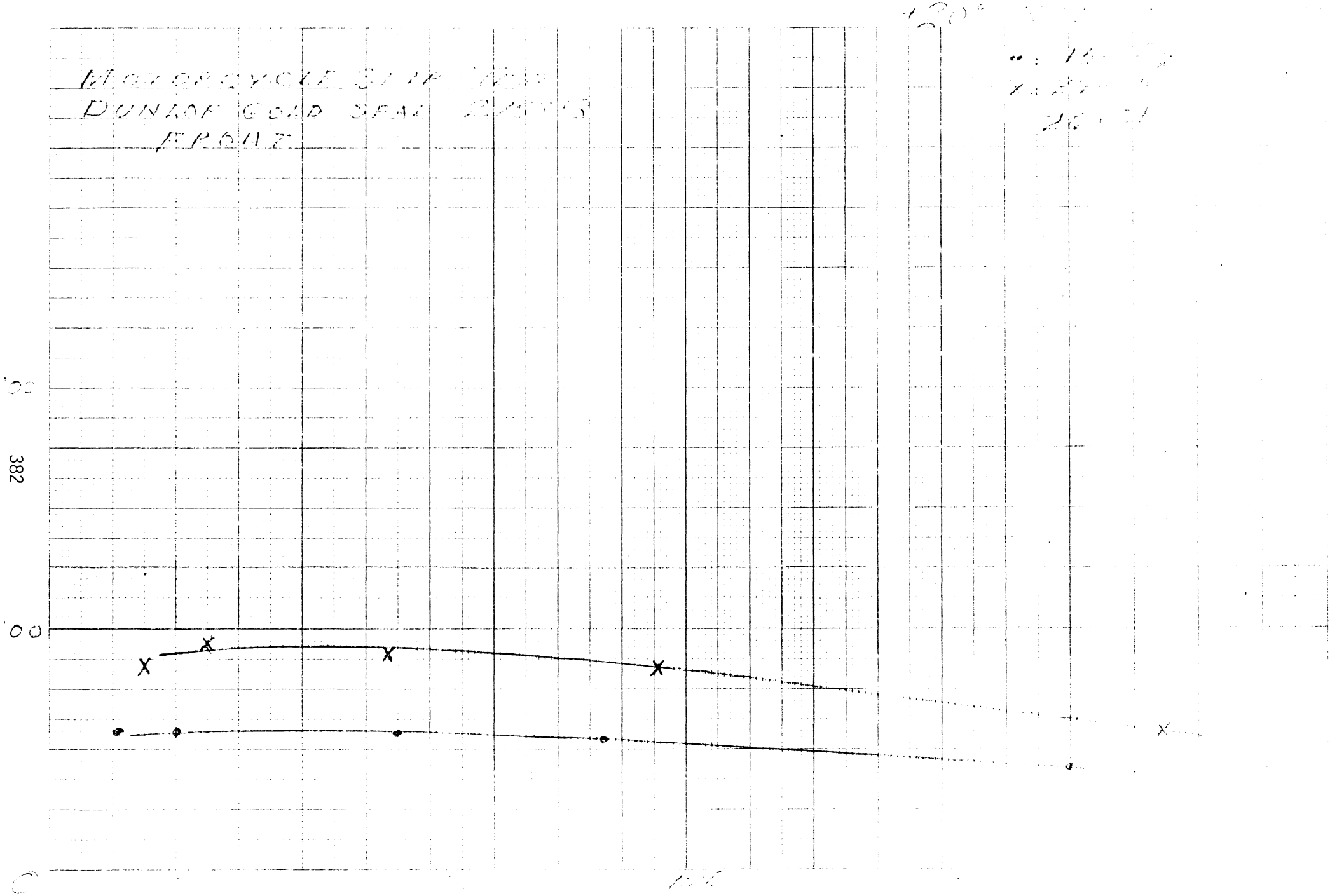
LATERAL FORCE VS VERTICAL LOAD & SLIP ANGLE

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.75 X 18
FRONT



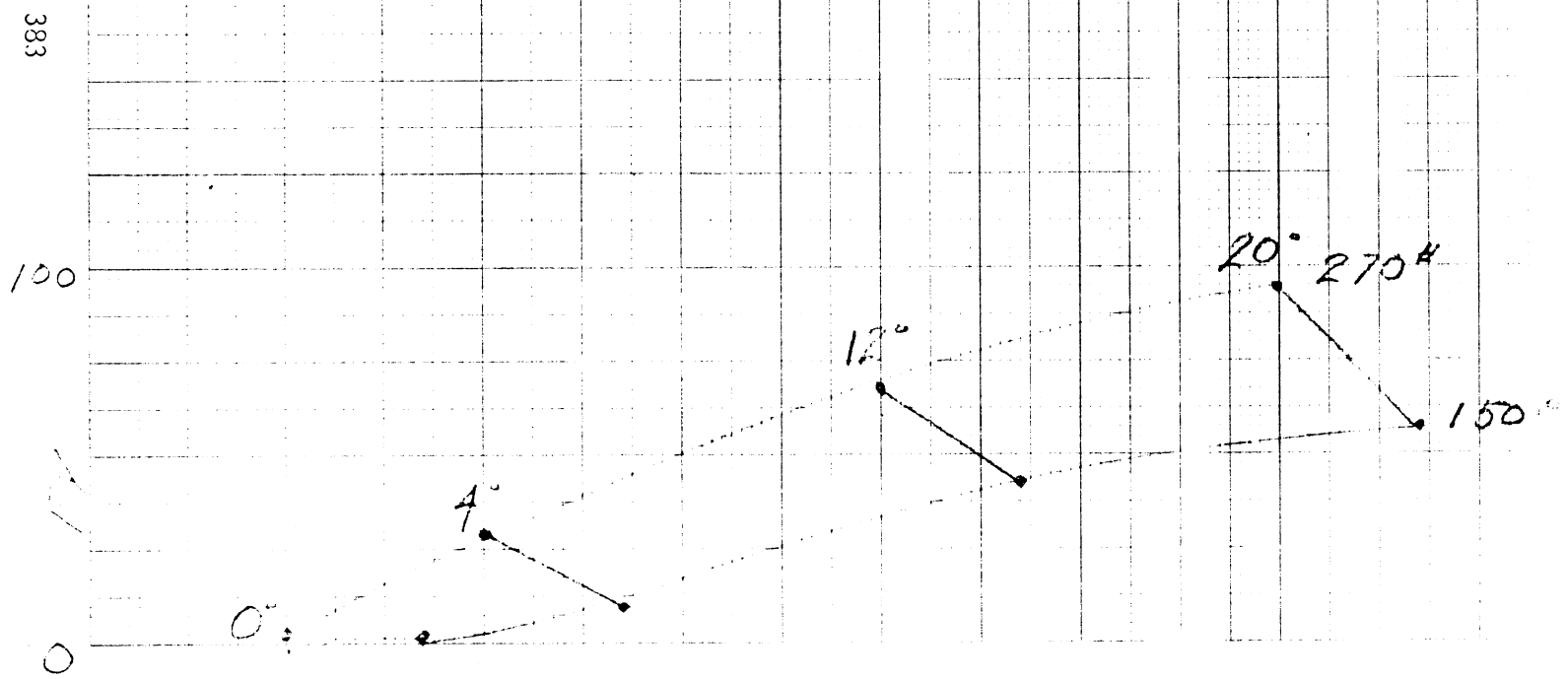

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL
FRONT
380
160


DUNLOP GOLD SEAL 225×18
FRONT
200
381


382

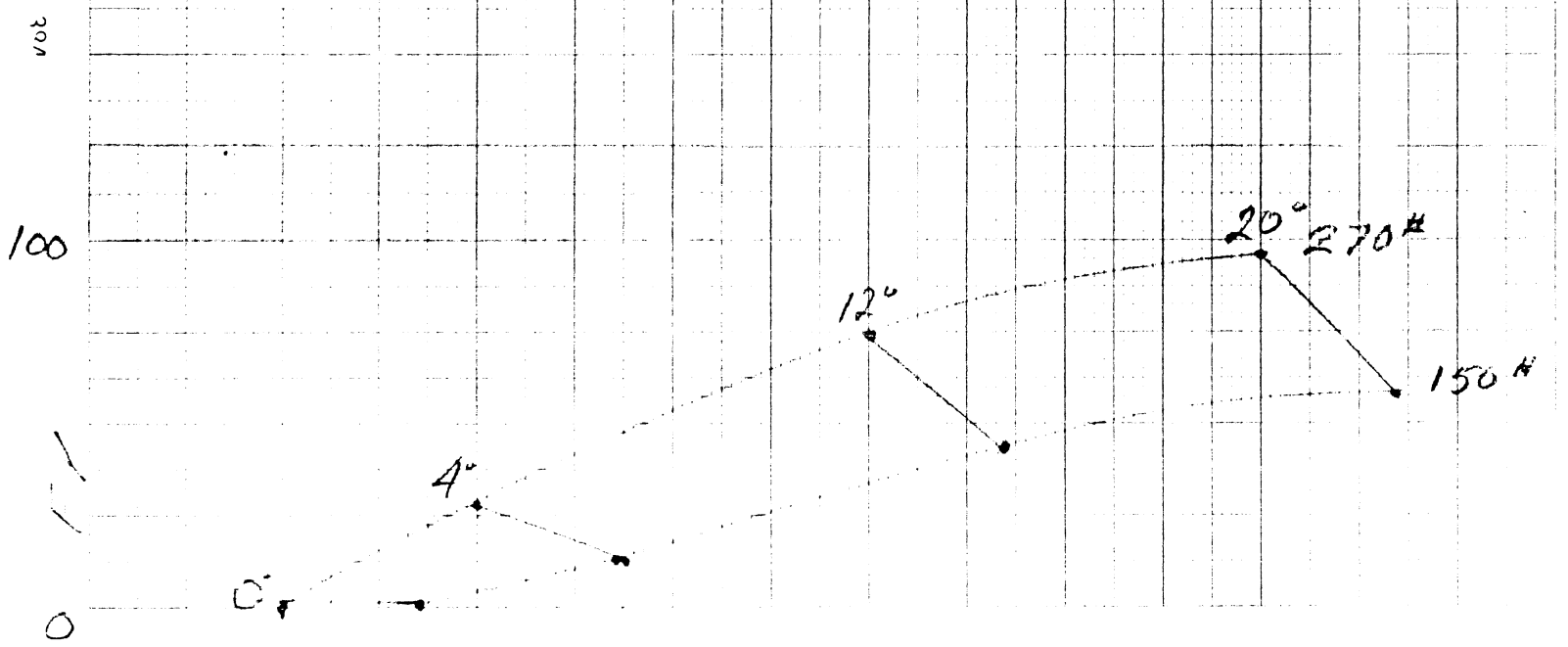
LATERAL FORCE VS VERTICAL LOAD AT INCLINATION ANGLE OF ZERO

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.75 X 18
FRONT



LATERAL FORCE VS VERTICAL LOAD & INCLINATION ANGLE

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.75 X 18
FRONT



LATERAL FORCE VS VERTICAL LOAD & INCLINATION

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.75" X 18
RADIAL

385

100

20° 270#

12°

145#

4°

LATERAL FORCE VS VERTICAL LOAD & INCLINATION ANGLE 10" - 11"

MOTORCYCLE SLIP TEST

DUNLOP GOLD SEAL 2.75"x18
FRONT 26PSI

386

100

20° 270#

12°

180#

4°

0°

LATERAL FORCES VERTICAL LOAD & INCLINATION ANGLE

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 5.75 x 18
FRONT

20° 220#

13°

180#

LATERAL FORCE VS VERTICAL LOAD & INCLINATION AT 15 & 20% SLIP

MOTORCYCLE SLIP TEST
DUNLOP GOLD SEAL 2.75 X 18
FRONT 26 PSI

388

100

0°

1°

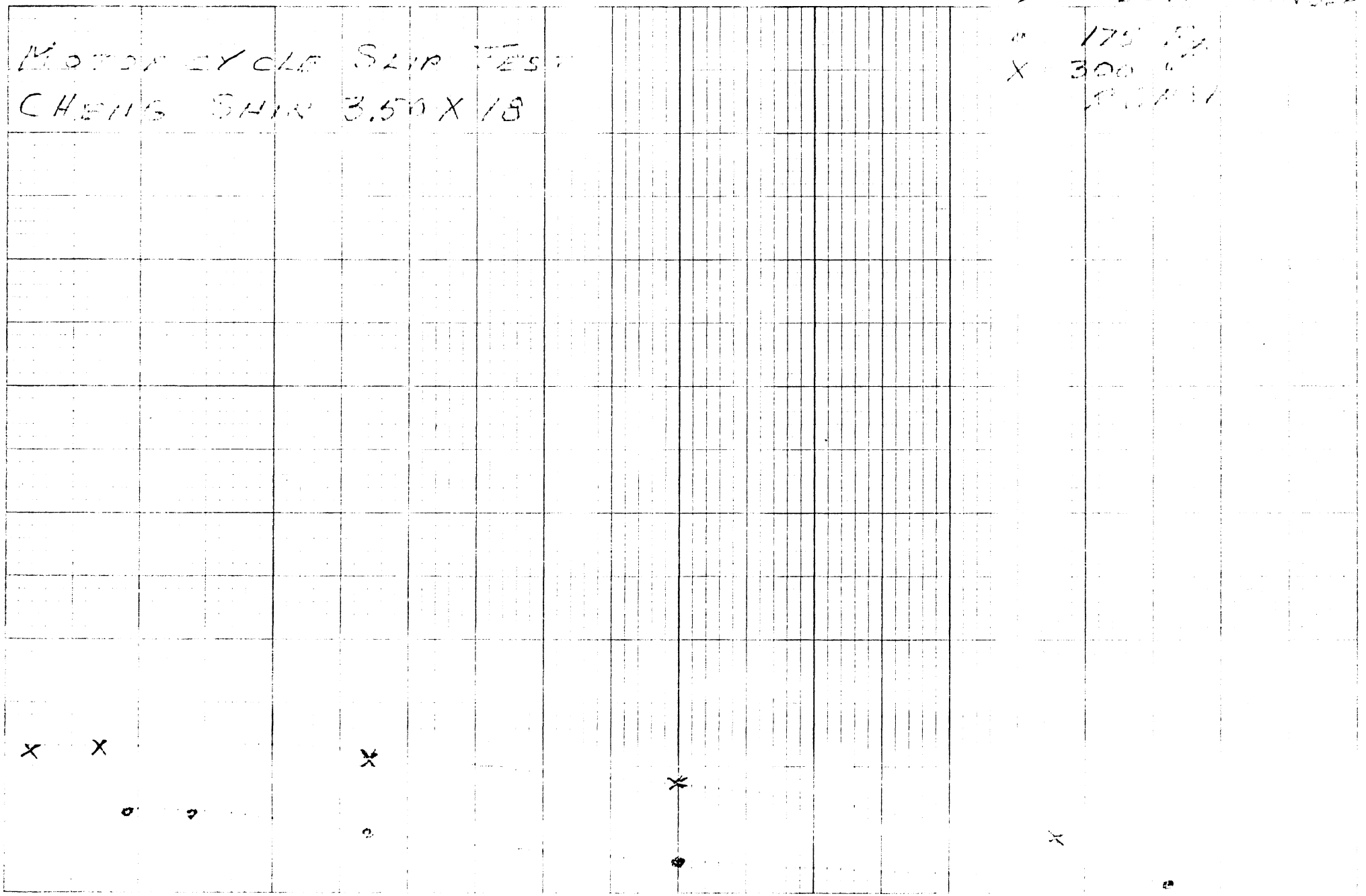
12°

20° 270 #

150 #

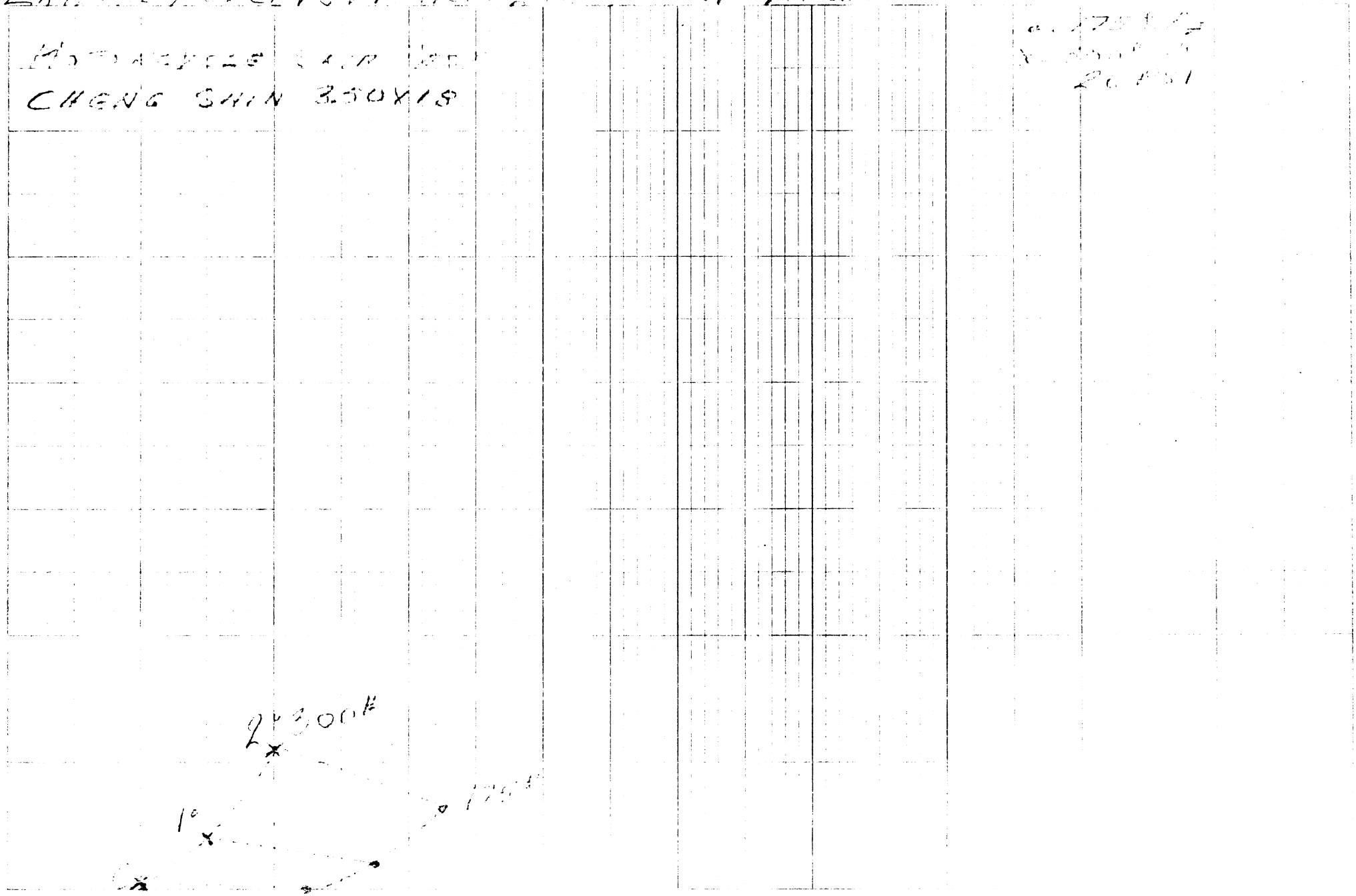
MOTORCYCLE SLIP TEST

CHENG SHIN 3.50 X 18

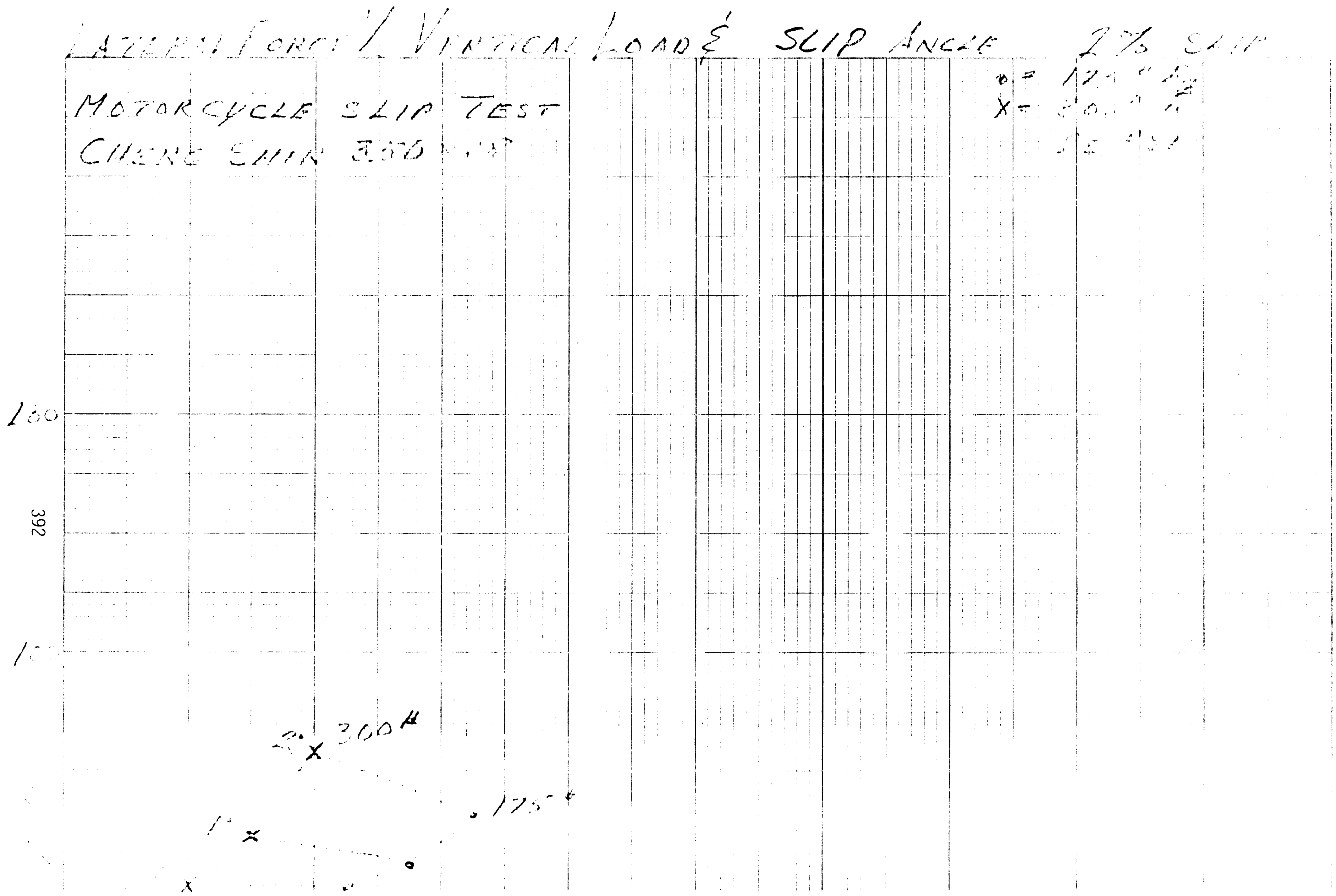

MOTOR CYCLE SLIP TEST
CHENG SHIN 3.50 X 18
390
100

LATERAL FORCE VS VERTICAL SLIP ANGLE

MATERIALS LAB
CHENG SHIN RUBBER



46 0782



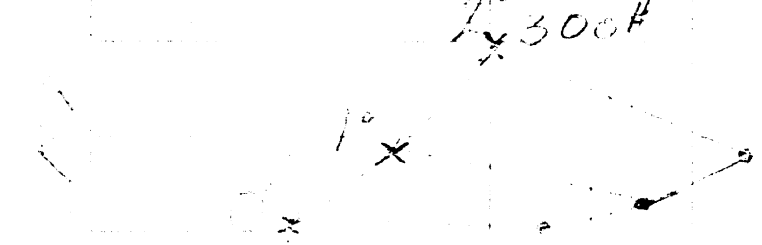
LATERAL FORCE VS SLIP ANGLE

MOTORCYCLE SLIP TEST
CHENG SHIN 3.50 X 18

200

393

100



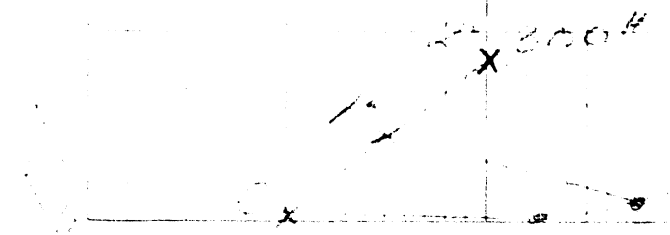
LATERAL LOAD VS. LOAD & SLIP

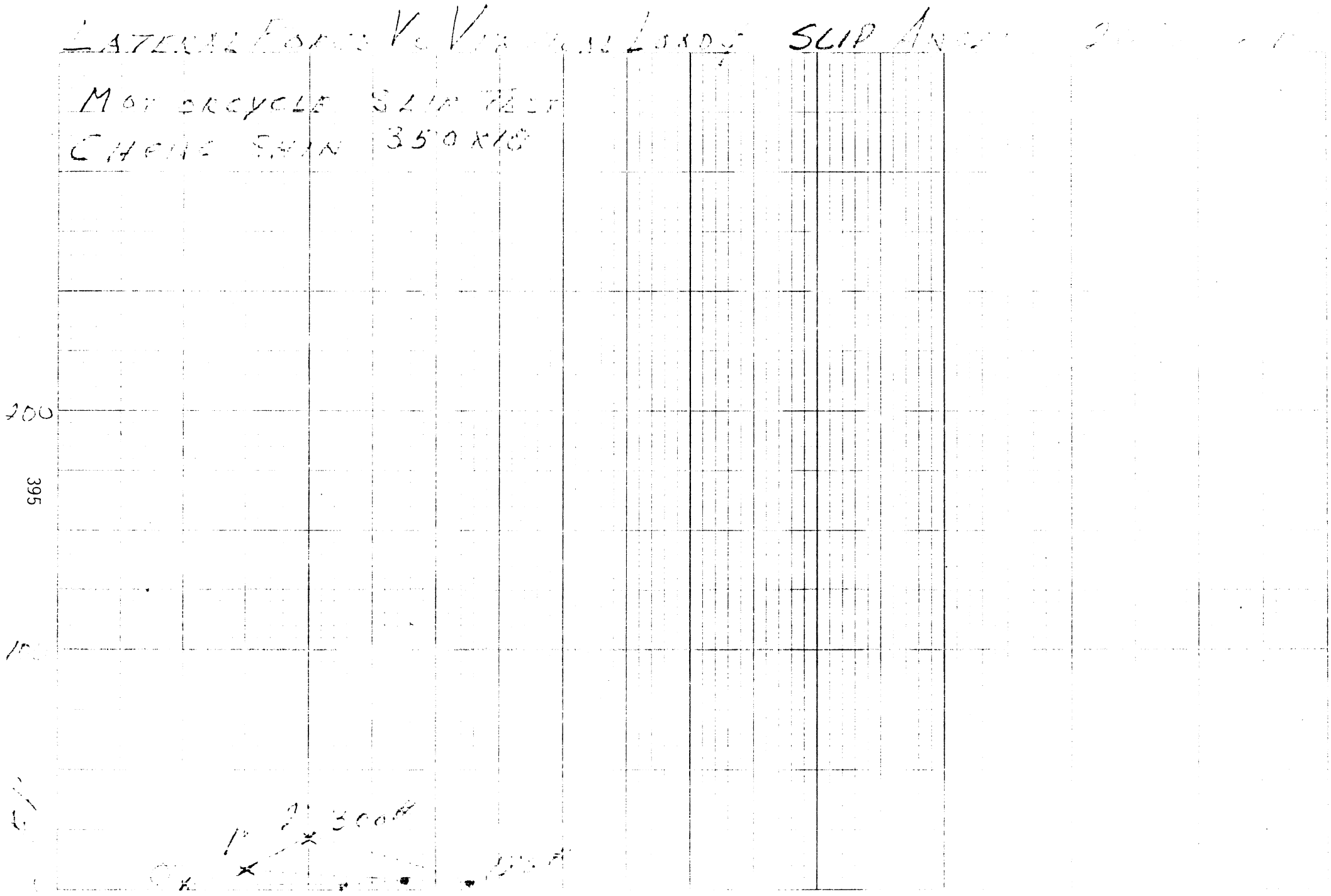
MOTORCYCLE SLIP TEST
CHENG SHIN 300-18

200

394

100

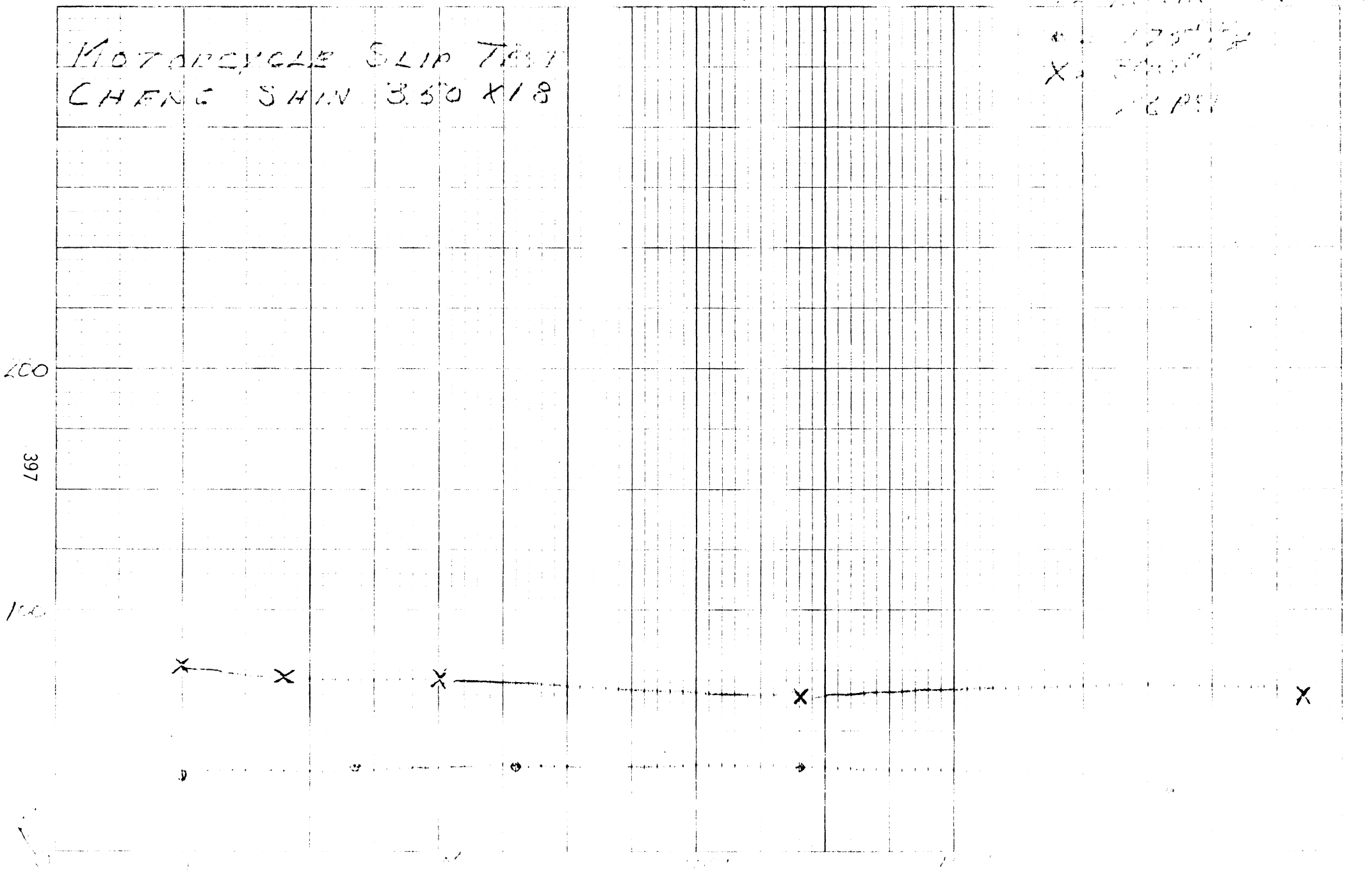


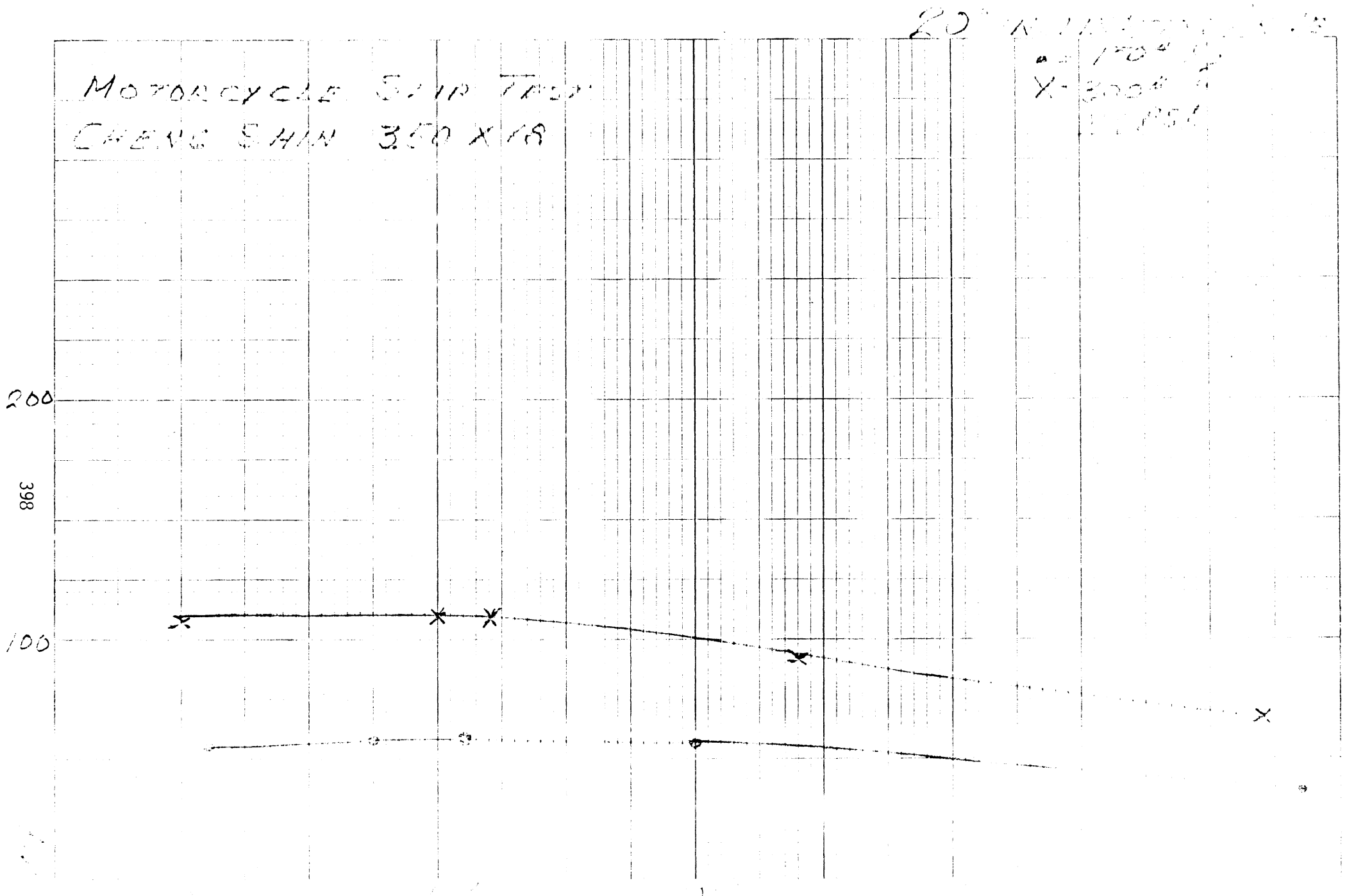

MOTORCYCLE SAW BELT
CHAIN SAW 350 X 10
200
395

MOTORCYCLE SKIN PATH
CHENG SHIN 3.50X18

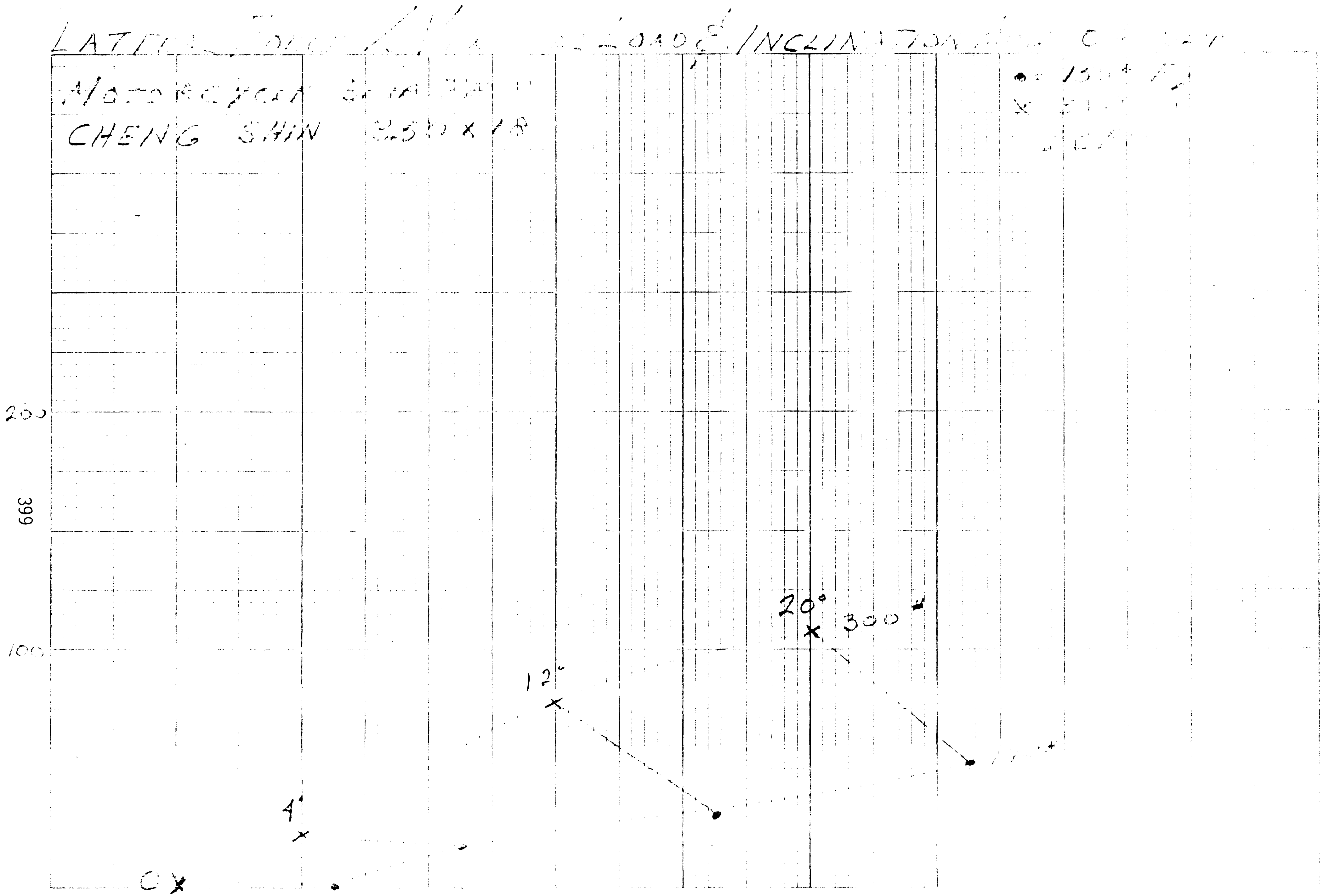
396

MOTORCYCLE SLIP TEST
CHENG SHIN 350 X 18

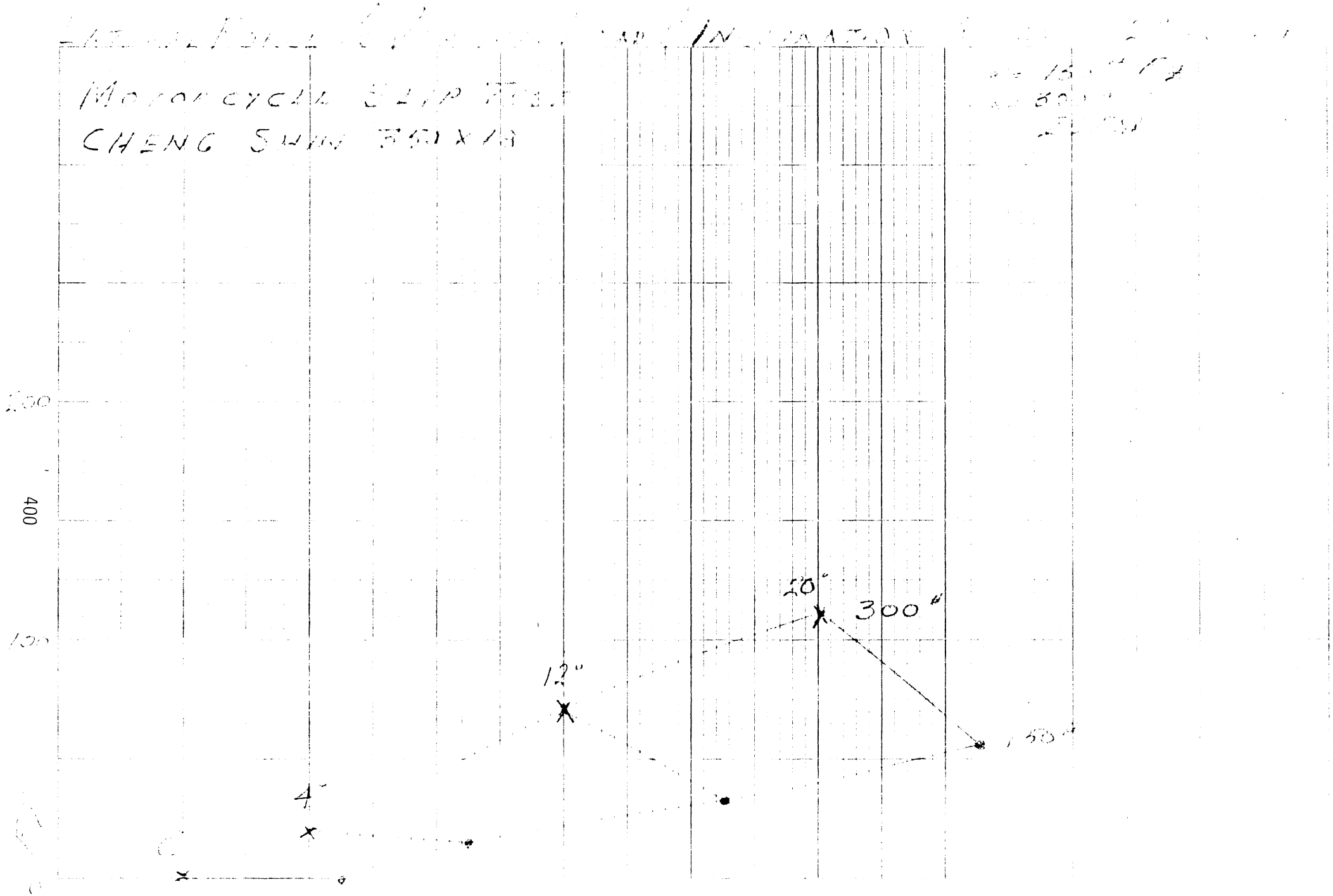


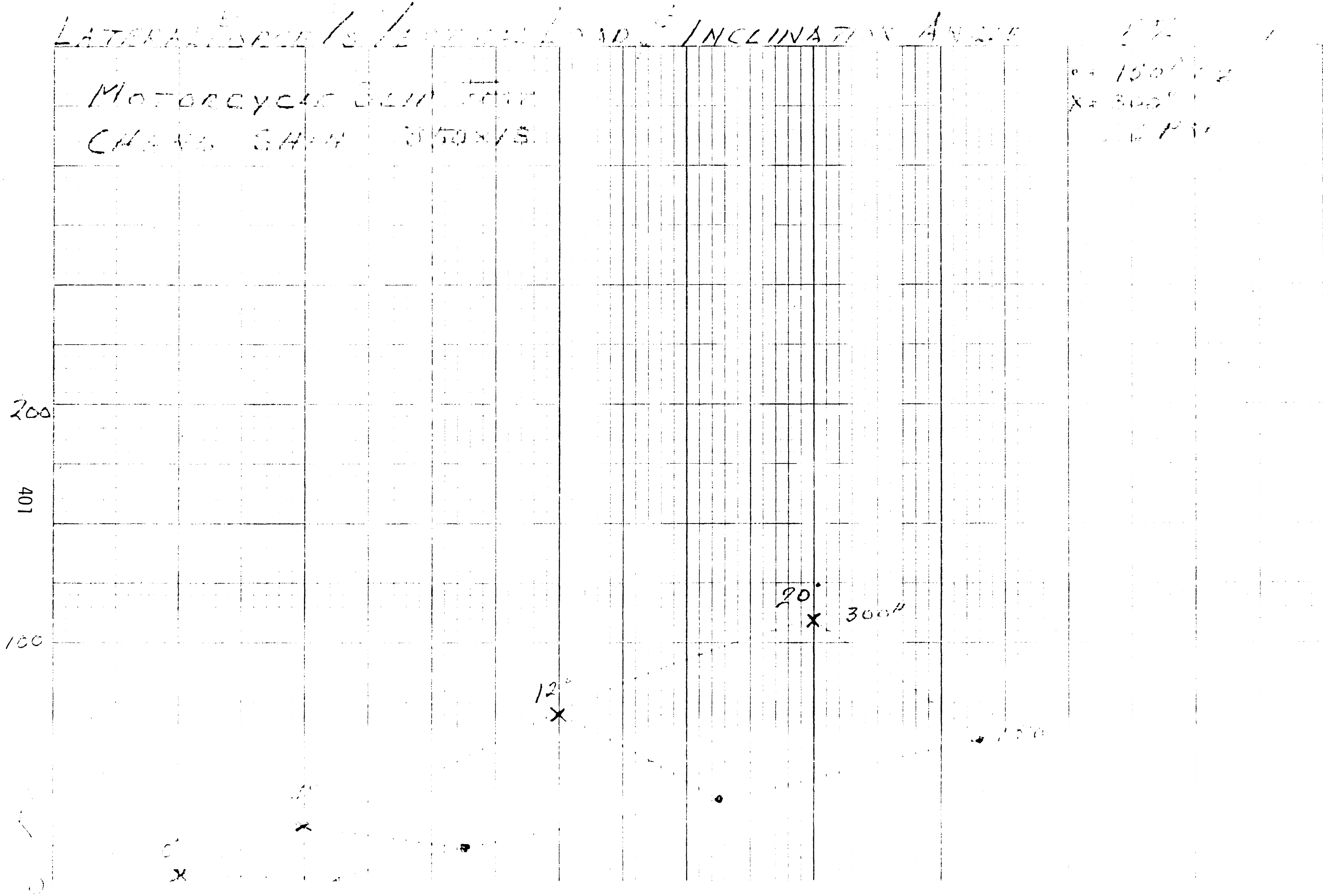

200
398
100

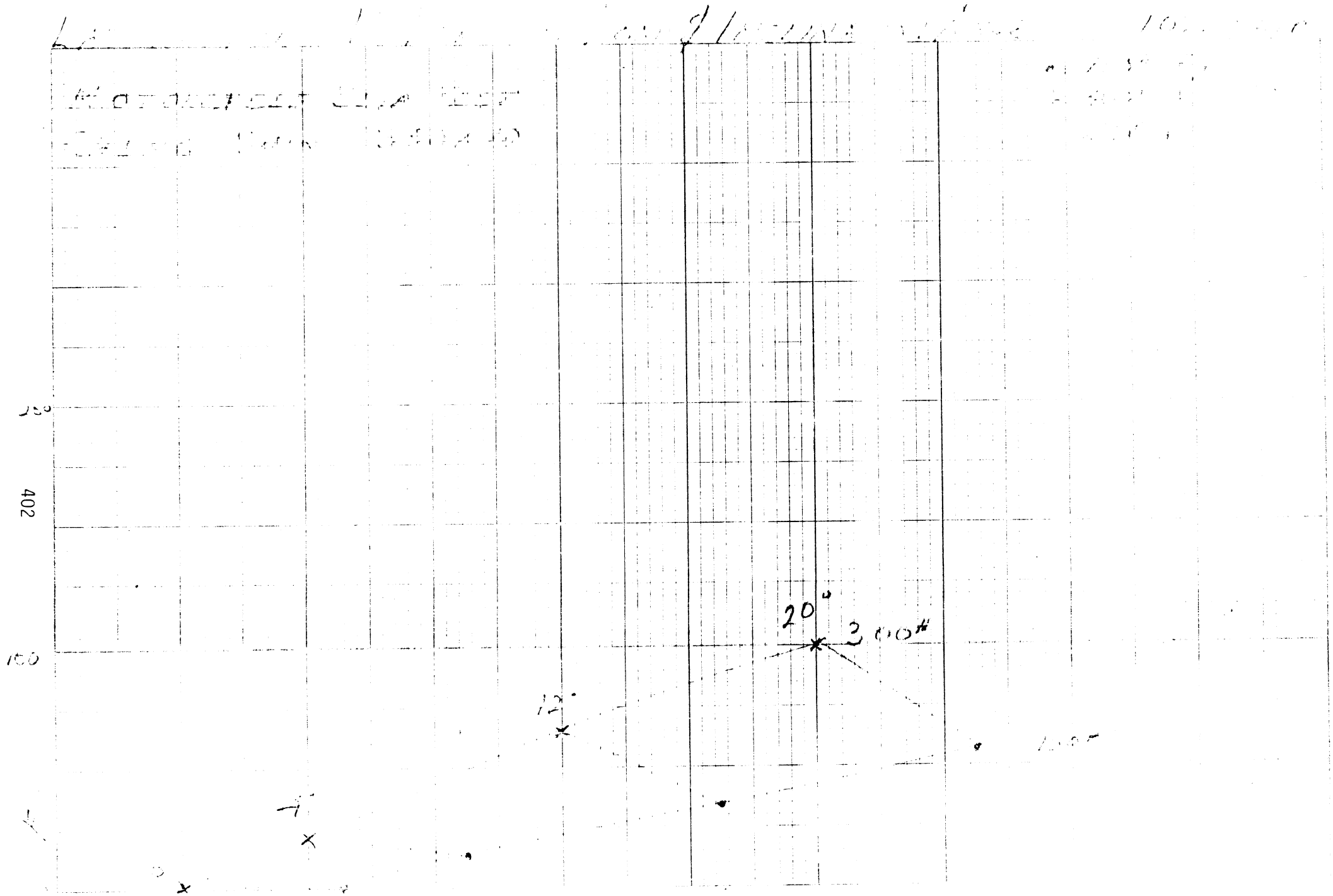
4G 0782

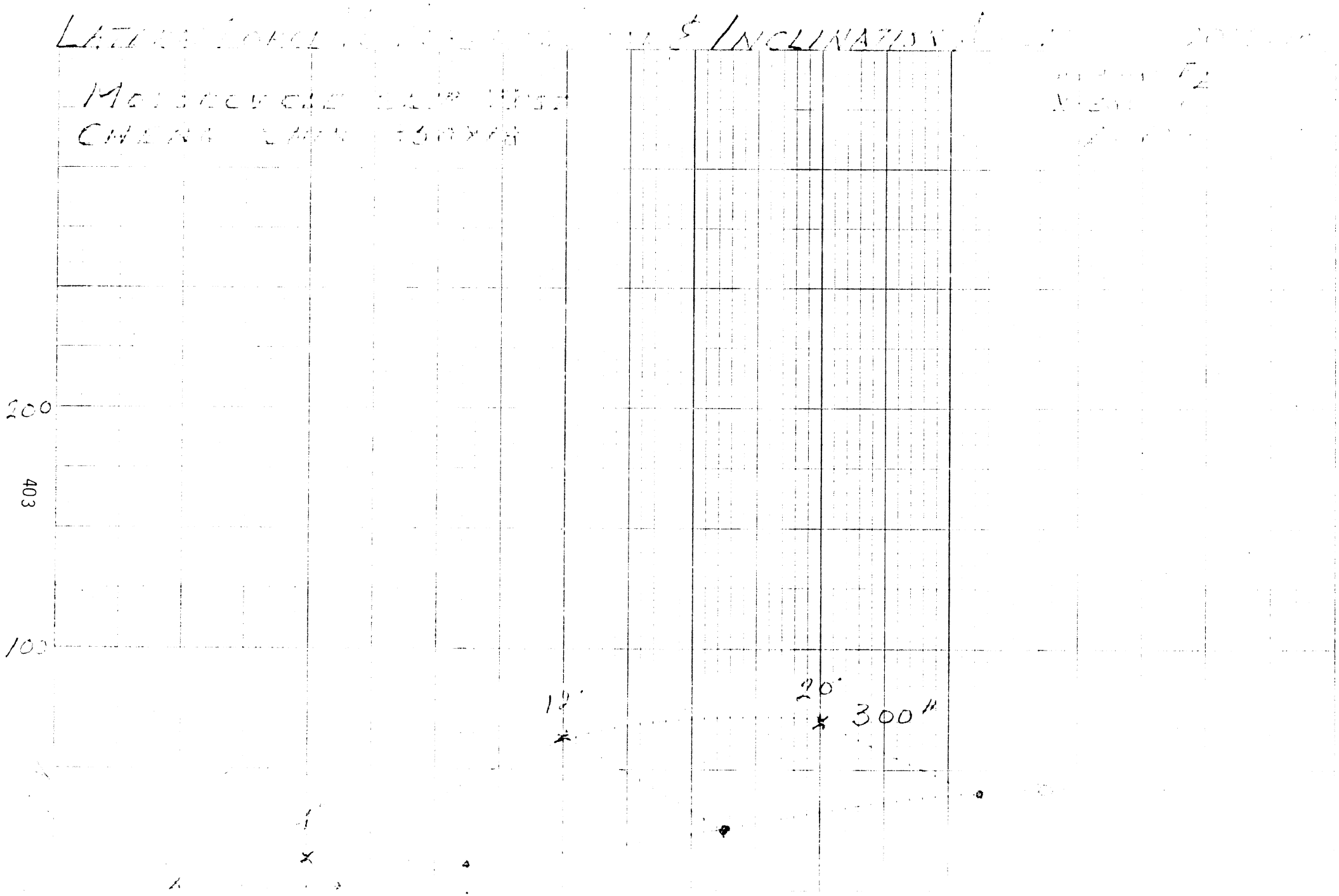


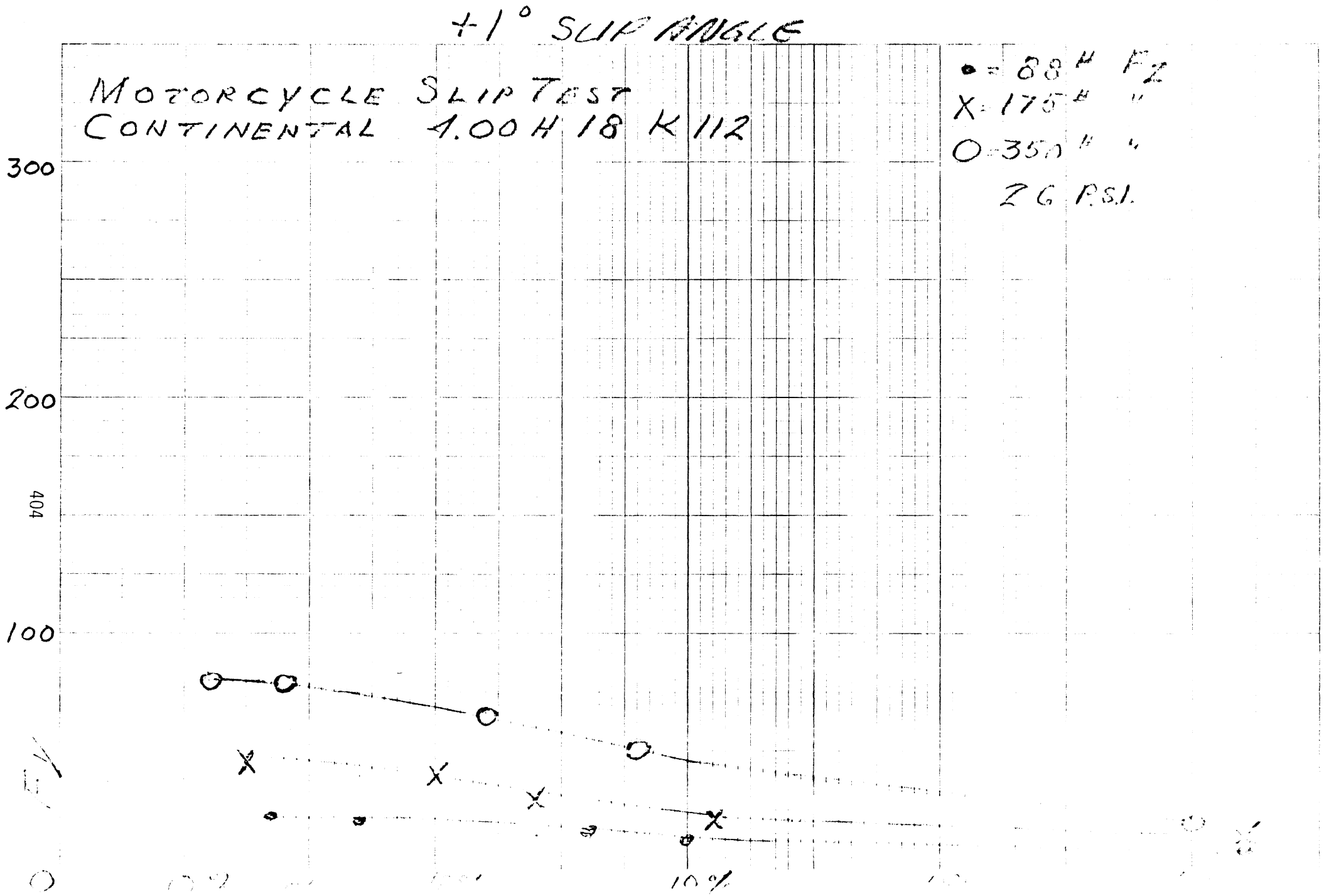
MOTORCYCLE SLIP TEST
CHENG SHIN RUBBER




INCLINATION
MOTORCYCLE
200
100
20°
300#
12°


402
20°
3 000#


200
100
20°
300 ft


+1° SLIP ANGLE
MOTORCYCLE SLIP TEST
CONTINENTAL 4.00 H 18 K 112
● = 68 LB Fz
X = 175 LB "
O = 350 LB "
26 P.S.I.
300
200
100
404
10%

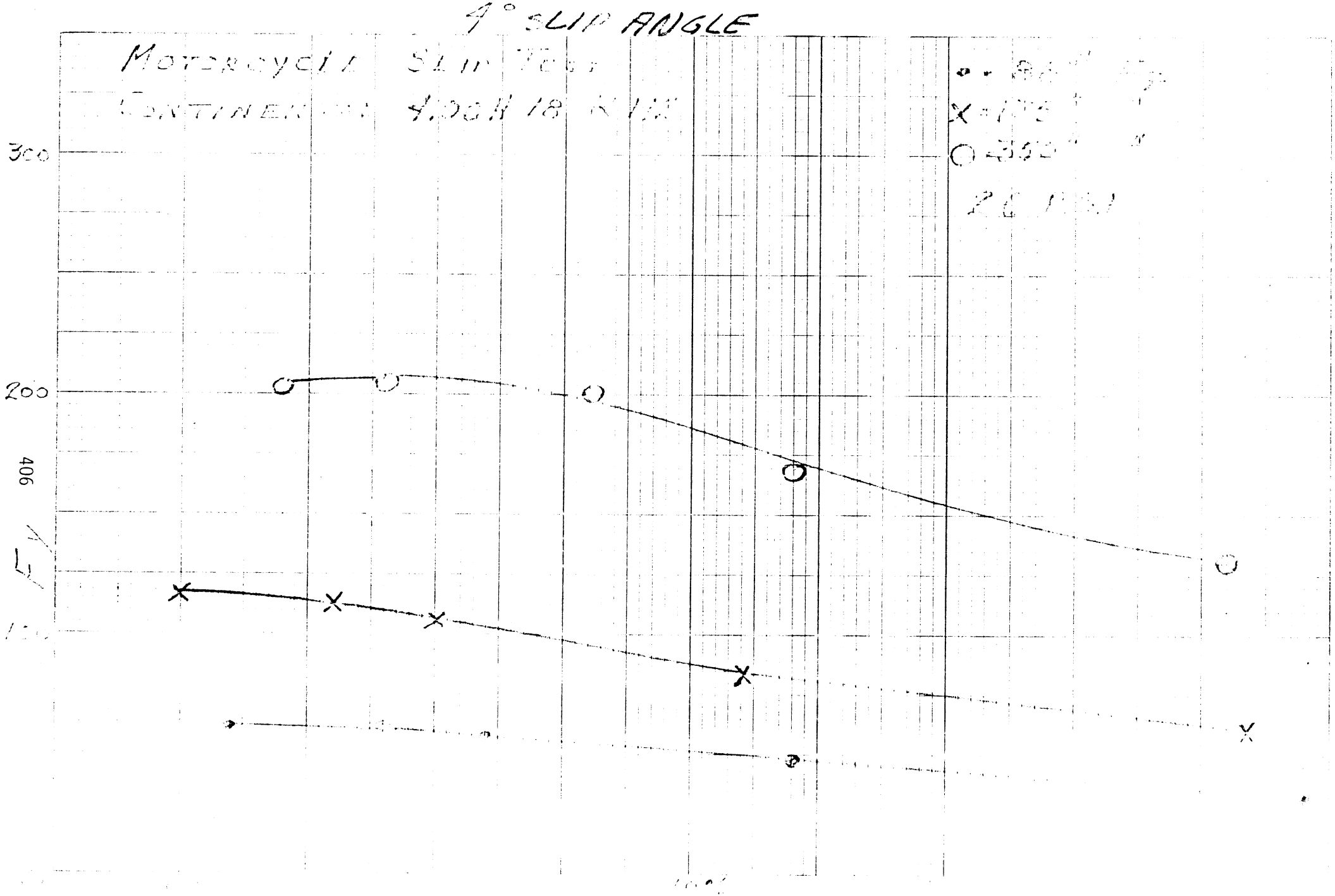
2° SLIP ANGLE

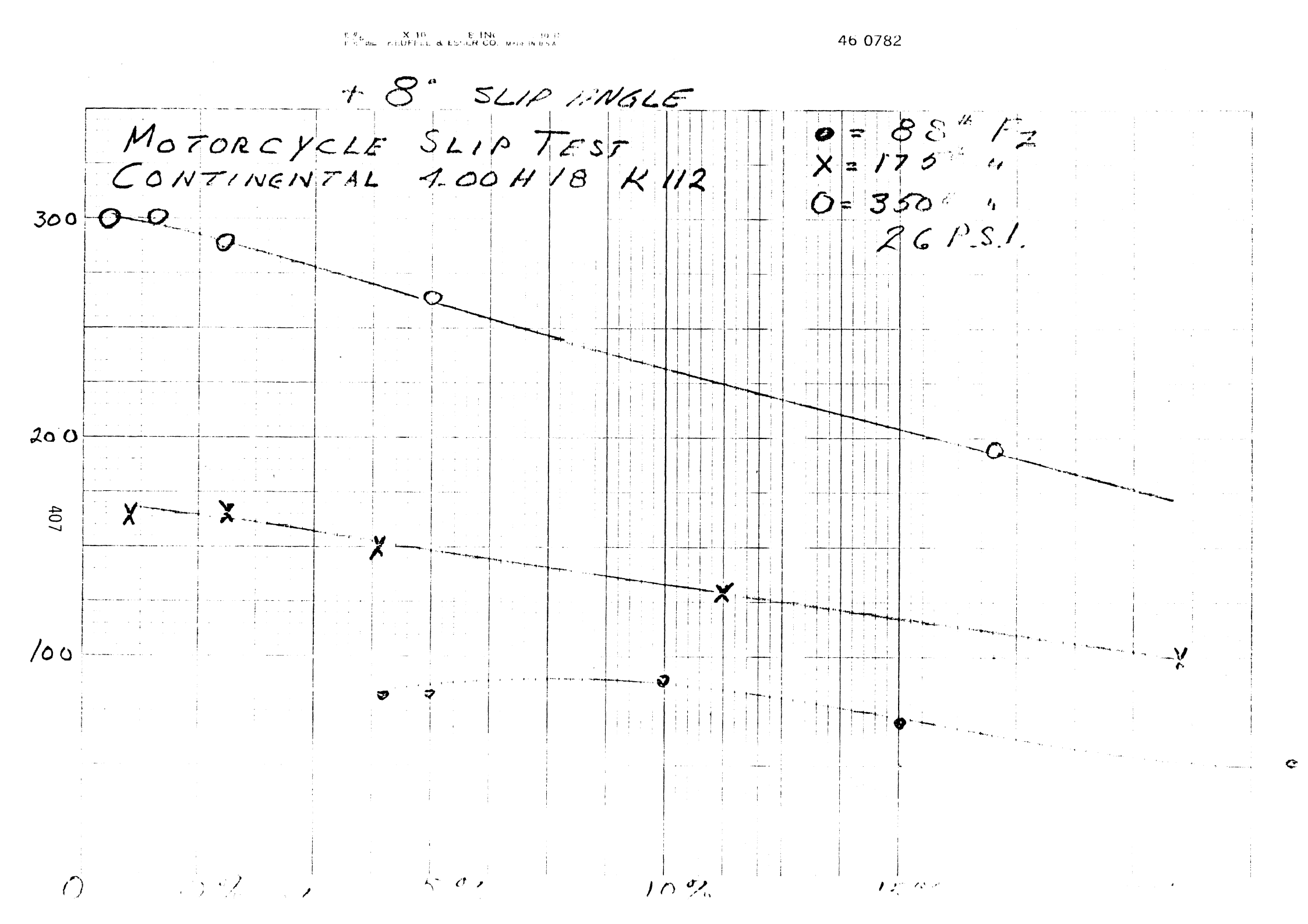
MOTORCYCLE SLIP TEST
CONTINENTAL 4.00H18 K112

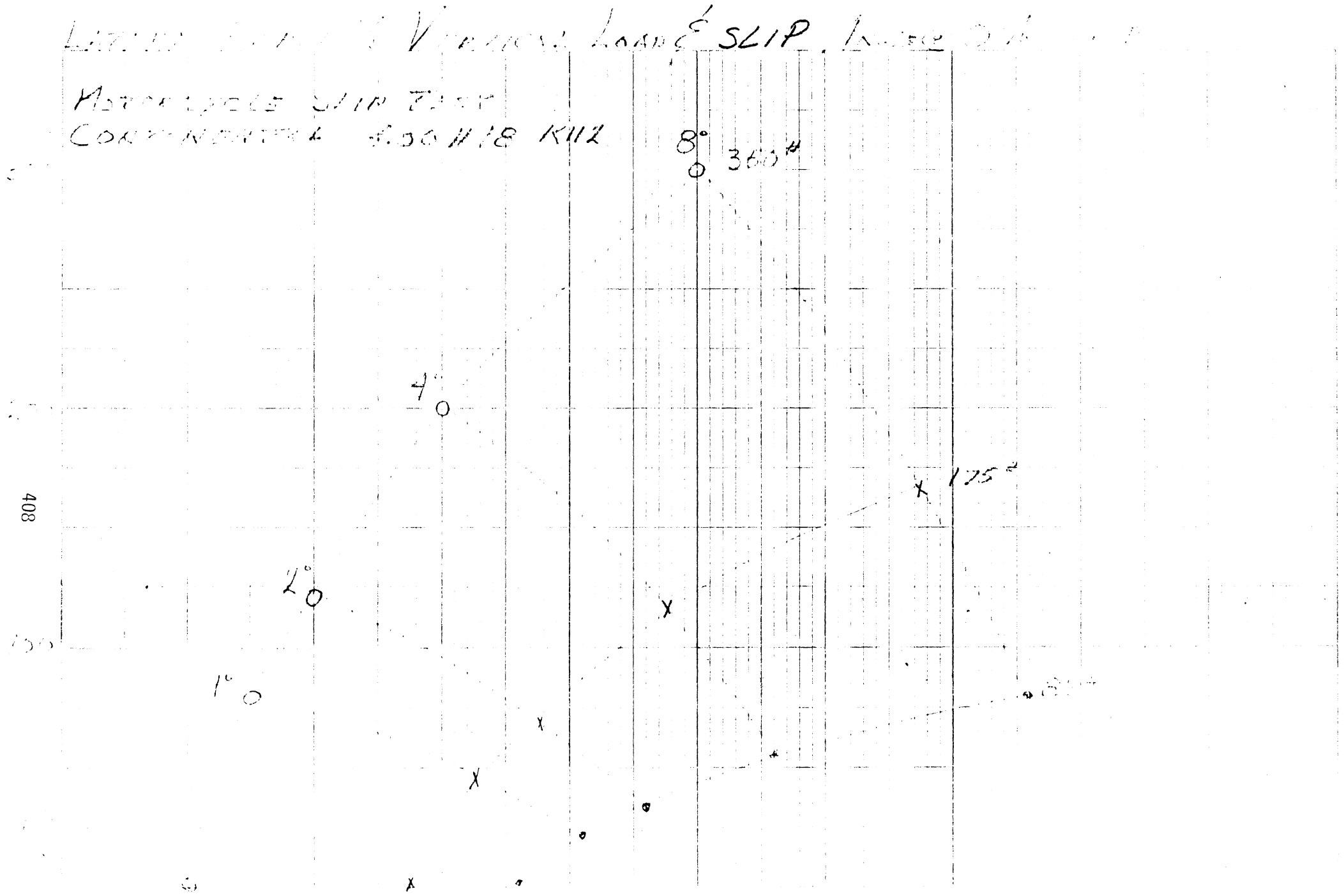
● = 80 PSI
X = 170 "
O = 350 "

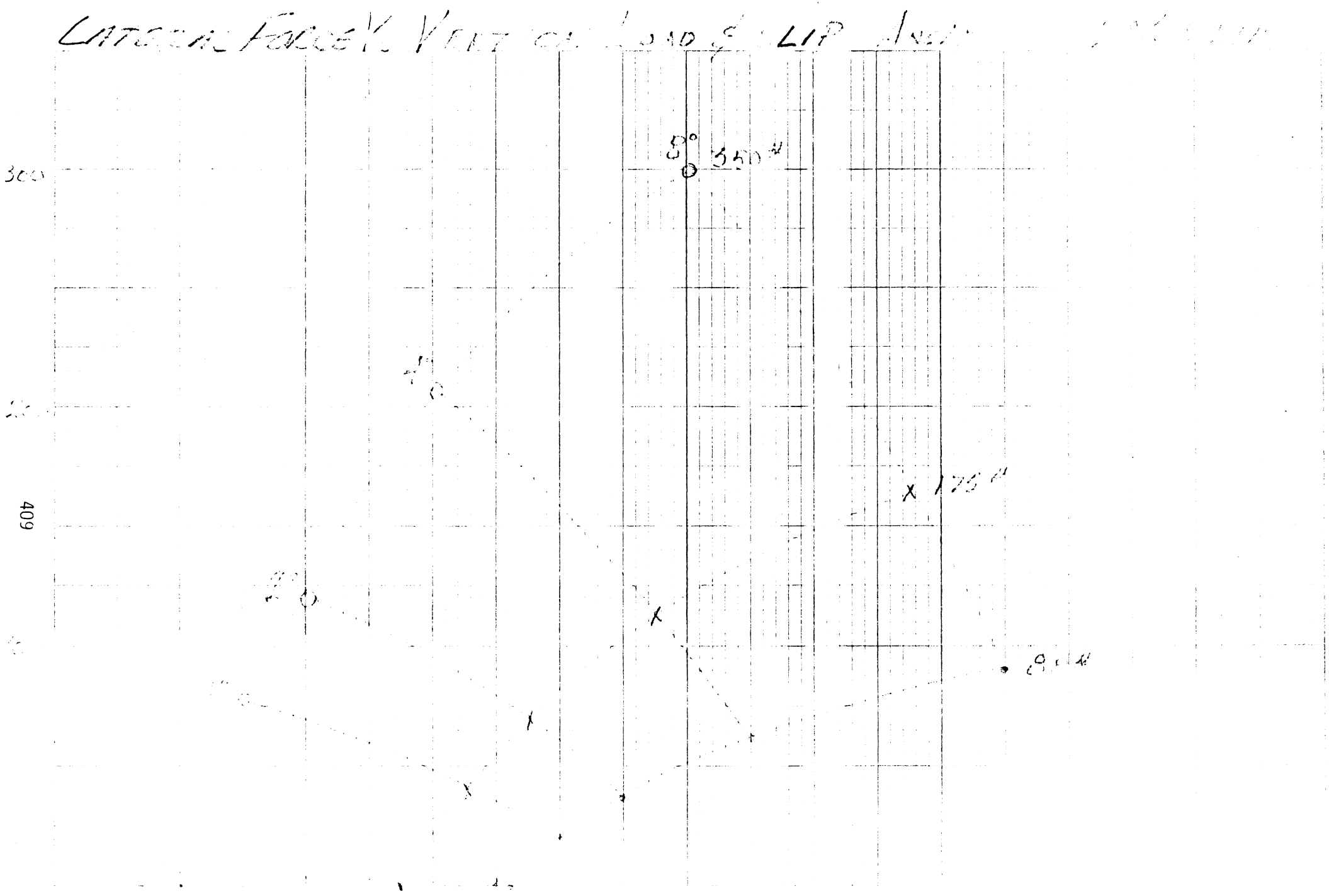
20 PSI

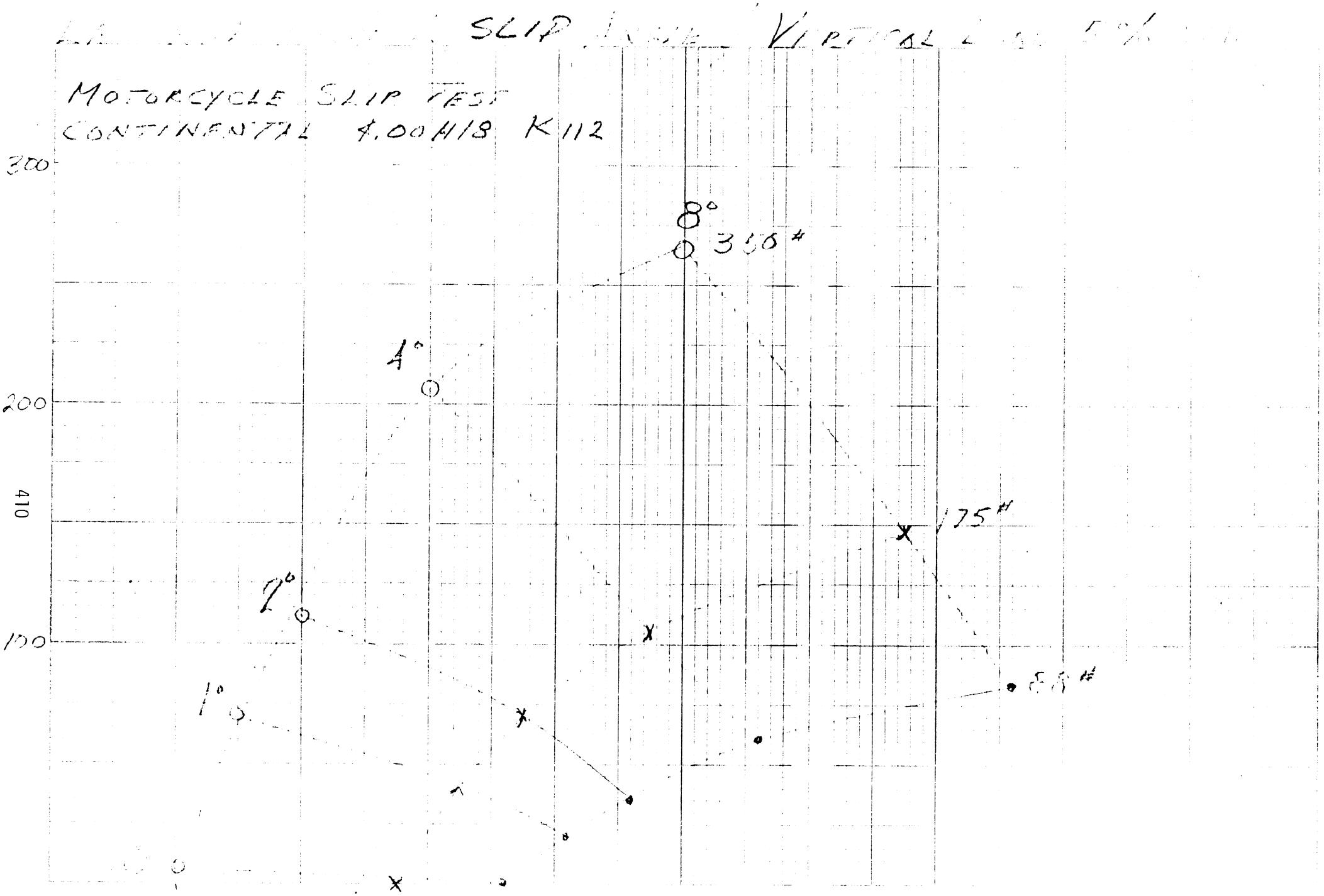
405


4° SLIP ANGLE
MOTORCYCLE SLIP TEST
CONTINENTAL 4.00 H 18 K/AV
300
200
406


+ 8° SLIP ANGLE
MOTORCYCLE SLIP TEST
CONTINENTAL 4.00H 18 K112
● = 85 lbs Fz
X = 175 "
O = 350 "
26 P.S.I.
300
200
100
407
0
5°
10°


8°
0
360#
4°
0
X 175#
2°
0
X
1°
0
X
X
X
408


300
409
5° 350 #
X 175 #


SLIP
MOTORCYCLE SLIP TEST
CONTINENTAL 4.00H18 K112
300
200
100
410
8°
350#
4°
175#
7°
1°

LATERAL FORCE VS. LOAD & SLIP ANG. 10% SLIP

MOTORCYCLE SIZE TIRE

CONTINENTAL 4.00H-18 4PR

200

100

8° 350#

4°

2°

1°

175#

411

LATERAL FORCE Vs VERTICAL LOAD & SLIP ANGLE 20% ↓↑

MOTORCYCLE SLIP TEST
CONTINENTAL 4.00 H 18 K 112

300
200
412
100
0

8° 350#
4°
2°
1°
0°
175#

+2° INCLINATION ANGLE

MOTORCYCLE SLIP TEST
CONTINENTAL 4.00H K112

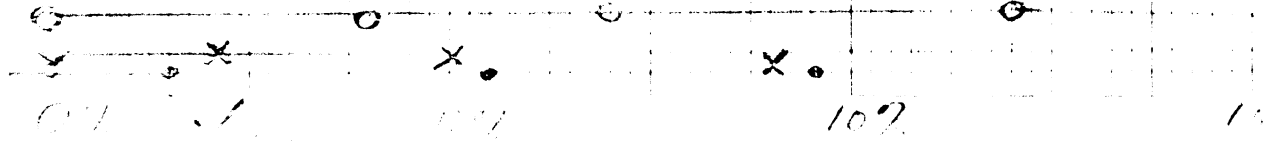
● = 88° F
X = 175° "
O = 340° "
2.6 PSI

300

200

100

413



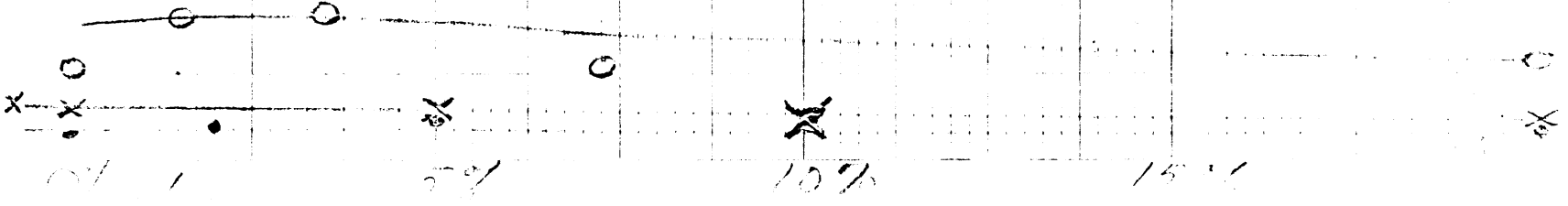
4° INCLINATION ANGLE

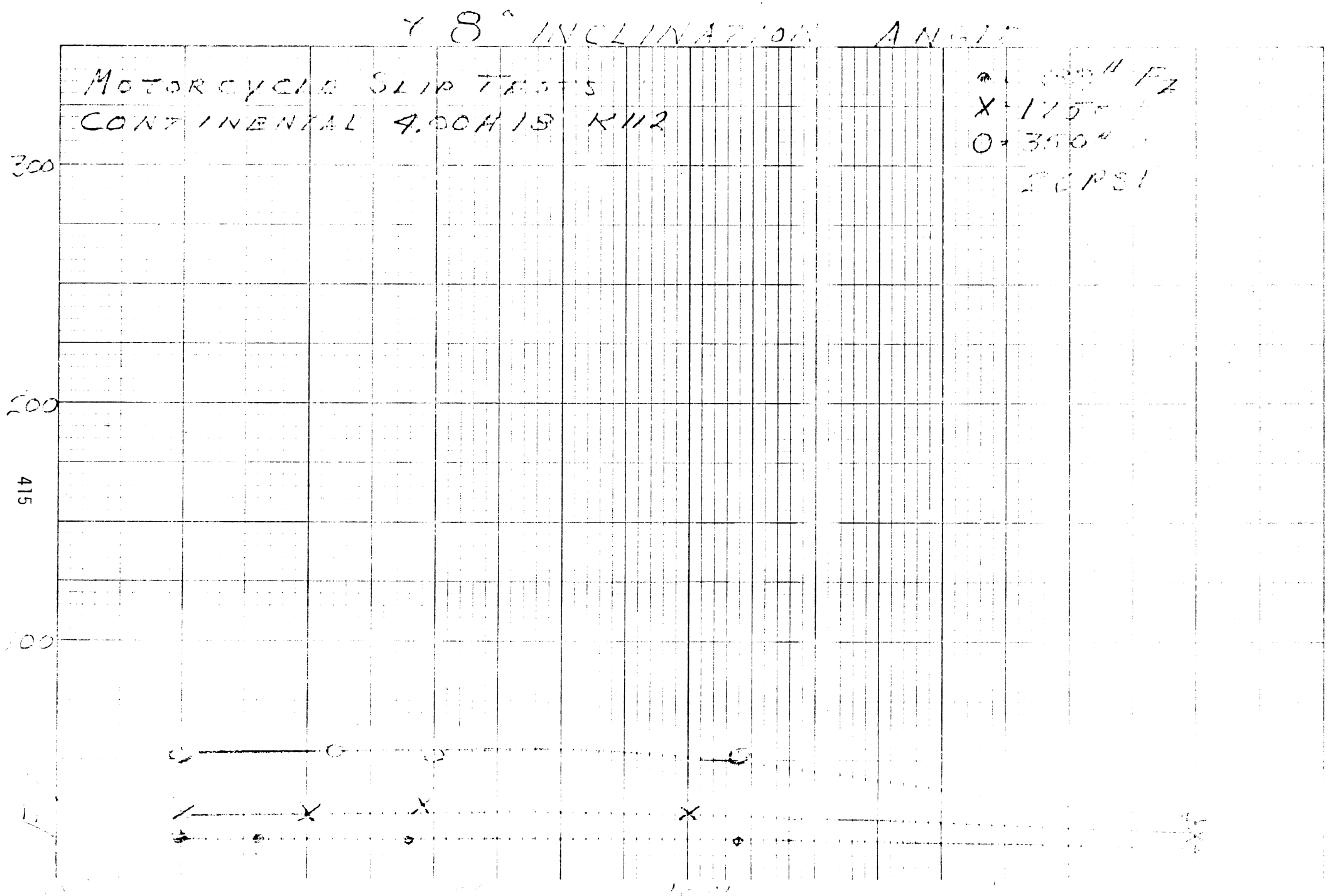
MOTOR CYCLE SLIP TESTS
CONTINENTAL 4.00H18 K112

θ = 88°
X - 175 #
O - 350 #
26 P.S.I.

300
200
100
0

414





+/2° INCLINATION ANGLE

MOTORCYCLE SLIP TEST
CONTINENTAL 400H 18 K112

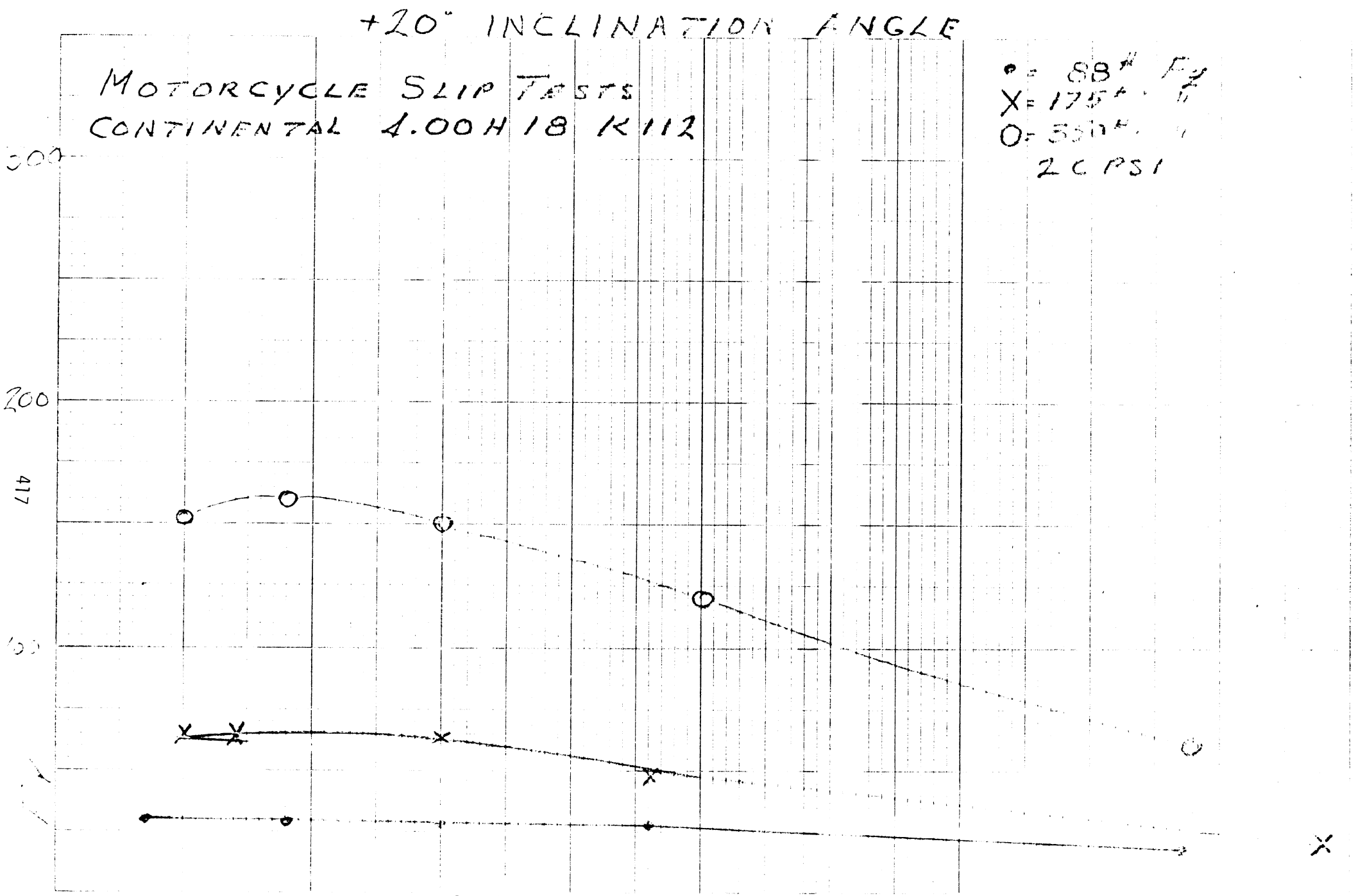
●= 89^H
X=175^H
O=350^H

26 PSI

300
200
100
0

FY

416


+20° INCLINATION ANGLE
MOTORCYCLE SLIP TESTS
CONTINENTAL 4.00H 18 K112
● = 88# F
X = 175# F
O = 350# F
20 PSI
300
200
417

LATERAL FORCE Vs VERTICAL LOAD & INCLINATION ANGLE 0% SLIP

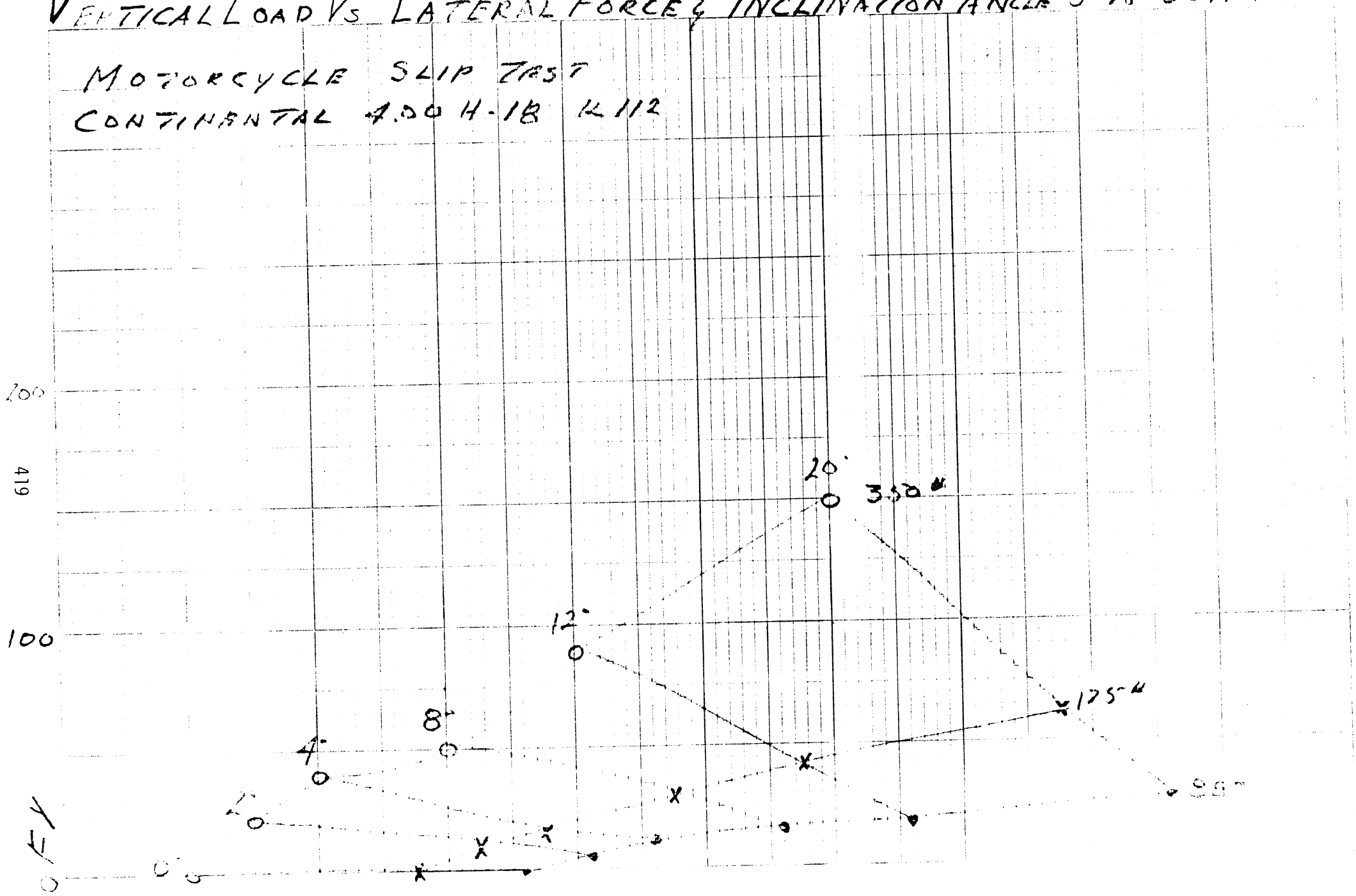
MOTORCYCLE SLIP TEST
CONTINENTAL 4.00H 18 K112

200
418
100
0

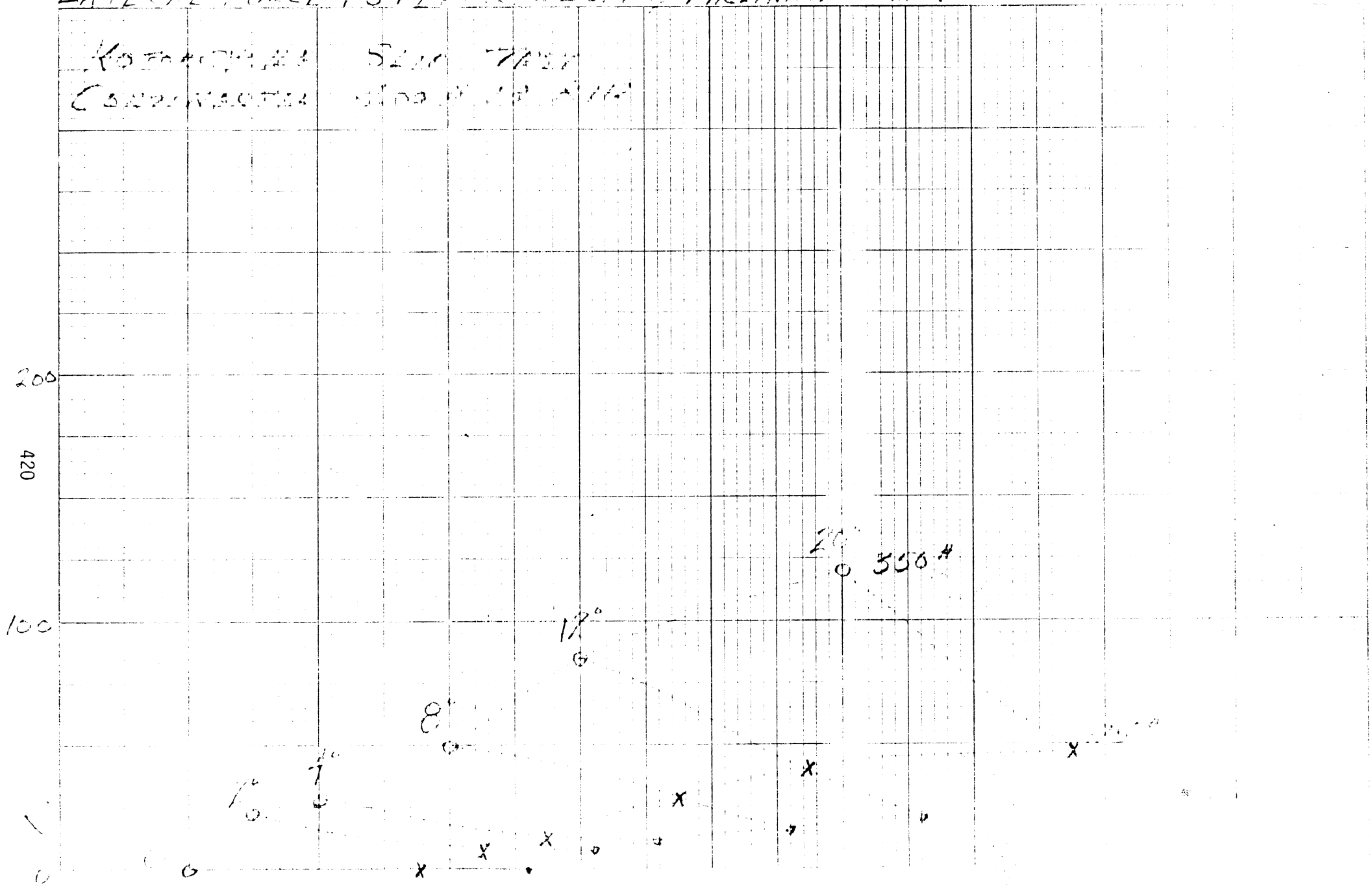
20° 350#
12° 0
8° 0
4° 0
2° 0
0°
175#
88#

VERTICAL LOAD VS LATERAL FORCE & INCLINATION ANGLE 5% SLIP.

MOTORCYCLE SLIP TEST
CONTINENTAL 4.00 H-18 K112



LATERAL FORCE VS VERTICAL - SAG & INCLINATION ANGLE



LATERAL FORCE Vs VERTICAL LOAD & INCLINATION ANGLE

MOTORCYCLE SLIP TEST
CONTINENTAL 400 H 18 K-112