The Engineering Society For Advancing Mobility Land Sea Air and Space®
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SURFACE VEHICLE RECOMMENDED PRACTICE

An American National Standard

SAE J1578

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(R) MOTORCYCLE SIDE STAND RETRACTION TEST PROCEDURE

***Foreword*—**This document has been changed to comply with the new SAE Technical Standards Board format. Section 2 is now References which makes all the other section numbers change. Also 7.8 has been revised.

1. Scope

1.1 This test procedure provides a standard method for evaluating the side stand retraction performance of a side stand/motorcycle combination.

1.2 This test procedure applies to any two-wheeled motorcycle without a sidecar, equipped with a side stand, and intended for highway use. (See SAE J213.)

1.3 This SAE Recommended Practice is intended as a guide toward standard practice but may be subject to frequent change to keep pace with experience and technical advances. This should be kept in mind when considering the use of this document.

2. References

2.1 Applicable Publications—The following publication forms a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J213—Definitions—Motorcycles
SAE J1846—Characterizing a Test Surface for Motorcycle Side Stand Retraction Performance Testing

2.2 Related Publication—The following publication is provided for information purposes only and is not a required part of this document.

2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1579—Motorcycle Side Stand Retraction Performance Requirements

TO PLACE A DOCUMENT ORDER; (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS http://www.sae.org

3. *Definitions*

3.1 **Side Stand—**A device attached to the motorcycle that provides support, in conjunction with the motorcycle's two tires, for unattended parking of the motorcycle. Three-point ground support for unattended parking is provided by leaning the motorcycle toward the side stand until the side stand and the two tires are in contact with the ground.

3.2 **Deployed Position—**The position of a side stand in which it provides support, in conjunction with the two tires, for unattended parking of a motorcycle.

3.3 **Stowed Position—**The position of a side stand for driving a motorcycle, from which it shall neither interfere with the operator's control nor return unaided to a deployed position.

3.4 **Retract—**For a side stand to move from a deployed position to a stowed position.

3.5 **Longitudinal Plane of Symmetry—**A vertical plane as defined in SAE J213.

4. *Test Vehicle*

4.1 **Suspension Setting—**The suspension components shall be set to the motorcycle manufacturer's recommended damping and preload settings for the vehicle load and speed under the conditions of the test. If recommendations for suspension adjustment are not provided by the motorcycle manufacturer, suspension settings for damping and preload shall each be at the midpoint of their adjustment range, or if the adjustment increments include no midpoint setting, at the next setting below the midpoint of the range.

4.2 **Tire Pressure—**The tire pressure shall be set to the motorcycle manufacturer's recommended pressure for the vehicle load and speed under the conditions of the test.

4.3 **Fuel Level—**The fuel tank shall be filled to at least 75% of the nominal fuel tank capacity.

4.4 **Fluid Levels—**The lubricants, coolants, and other fluids shall be at the normal full levels.

5. *Test Operator*

5.1 The test operator shall be skilled at motorcycle operation, and shall be experienced with the machine under test and this test procedure before conducting any test runs.

5.2 For solo test conditions, the combined mass of the test operator, protective equipment, instrumentation, and other items added to the motorcycle for testing shall be 75 to 90 kg (165 to 198 lb).

5.2.1 Protective equipment for the operator shall include helmet, eye protection, abrasion resistant jacket and trousers, gloves, and boots.

6. *Test Site*

6.1 The test site on which the test course is laid out shall be a level area. Space shall be provided for acceleration, deceleration, and out of course excursion of the test vehicle.

6.2 **Test Course**

6.2.1 The test course consists of a target test path and 1.5 m (4 ft, 11 in) lane width centered upon the target test path.

6.2.2 The target test path shall be laid out as shown in Figure 1 according to the coordinates specified in Table 1. The target test path may be marked by a coating such as chalk. The test course perimeter as shown in Figure 1 may be identified by a coating such as chalk or tape, or by small objects such as flexible cones which would not destabilize a motorcycle passing over them.

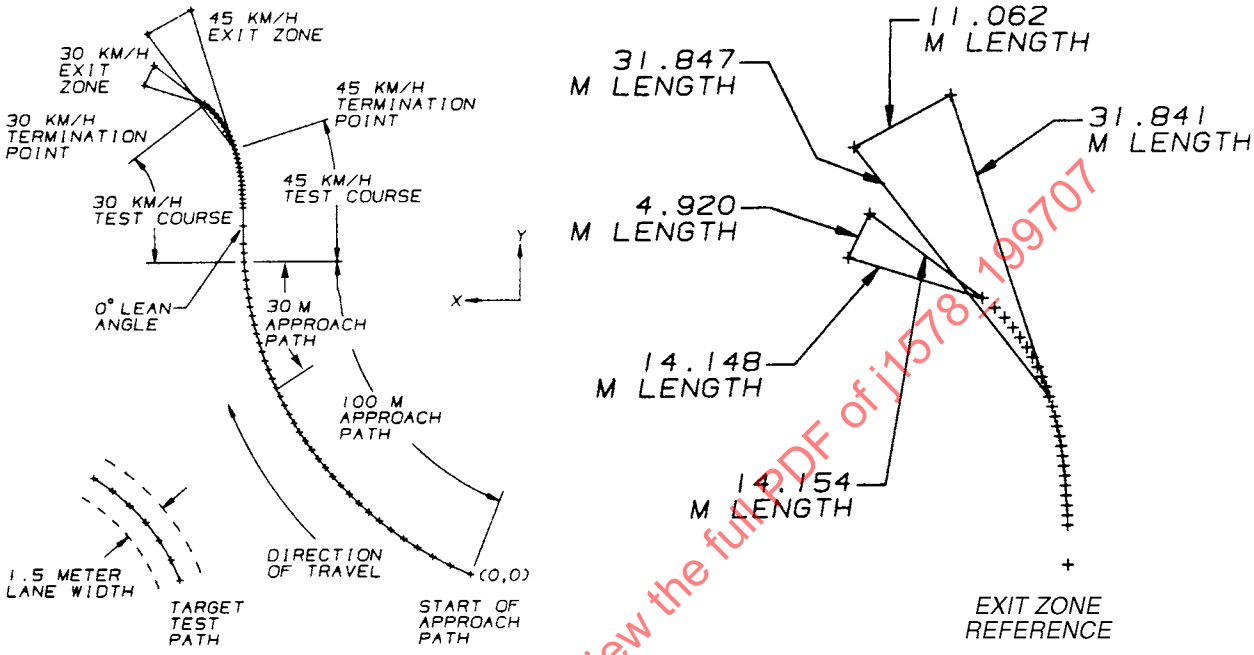

FIGURE 1—TEST COURSE LAYOUT

TABLE 1—APPROACH, TEST PATH, AND STOPPING ZONE COORDINATES

Point	Y m	Y ft	Y in	X m	X ft	X in	Comment
1	0		0	0		0	Beginning of optional 100 m–Approach Path
2	2	6	6-3/4	4.58	15	0-5/16	
3	4	13	1-1/2	8.52	27	11-7/16	
4	6	19	8-1/4	11.99	39	4-1/16	
5	8	26	2-15/16	15.11	49	6-7/8	
6	10	32	9-11/16	17.95	58	10-11/16	
7	12	39	4-7/16	20.55	67	5-1/16	
8	14	45	1-13/16	22.94	75	3-1/8	
9	16	52	5-15/16	25.16	82	6-9/16	
10	18	59	0-5/8	27.22	89	3-5/8	
11	20	65	7-3/8	29.15	95	7-5/8	
12	22	72	2-1/8	30.95	101	6-1/2	
13	24	78	8-7/8	32.63	107	0-5/8	
14	26	85	3-5/8	34.20	112	2-7/16	
15	28	91	10-3/8	35.68	117	0-3/4	
16	30	98	5-1/8	37.07	121	7-7/16	
17	32	104	11-13/16	38.37	125	10-5/8	
18	34	111	6-9/16	39.58	129	10-1/4	
19	36	118	1-5/16	40.73	133	7-9/16	
20	38	124	8-1/16	41.79	137	1-1/4	
21	40	131	2-13/16	42.79	140	4-5/8	
22	42	139	9-9/16	43.75	143	6-7/16	
23	44	144	4-1/4	44.58	146	3-1/8	
24	46	150	11-0	45.38	148	10-5/8	
25	48	157	5-3/4	46.12	151	3-3/4	Beginning of 30 m–Approach Path
26	50	164	0-1/2	46.80	153	6-1/2	
27	52	170	7-1/4	47.42	155	6-15/16	
28	54	177	2-0	47.99	157	5-3/8	
29	56	183	8-3/4	48.50	159	1-7/16	
30	58	190	3-7/16	48.96	160	7-9/16	
31	60	196	10-3/16	49.36	161	11-5/16	
32	62	203	4-15/16	49.71	163	1-1/16	
33	64	209	11-5/8	50.01	164	0-7/8	
34	66	216	6-7/16	50.26	164	10-3/4	
35	68	223	1-3/16	50.46	165	6-5/8	
36	70	229	7-7/8	50.62	166	0-15/16	Starting Point–Beginning of Roll Toward Side Stand
37	72	236	2-5/8	50.72	166	4-7/8	
38	74	242	9-3/8	50.77	166	6-13/16	
39	78	255	10-7/8	50.79	166	7-5/8	0 degree–Lean Angle
40	82	269	0-5/16	50.81	166	8-3/8	
41	83	272	3-3/4	50.83	166	9-3/16	
42	84	275	7-1/16	50.86	166	10-3/8	
43	85	278	10-7/16	50.90	166	11-15/16	
44	86	282	1-13/16	50.97	167	2-11/16	
45	87	285	5-3/16	51.04	167	5-7/16	
46	88	288	8-9/16	51.14	167	9-3/8	
47	89	291	11-15/16	51.25	168	1-11/16	
48	90	295	3-5/16	51.39	168	0-5/8	
49	91	298	6-11/16	51.56	169	1-15/16	
50	92	301	10-1/16	51.75	169	9-3/8	
51	93	305	1-7/16	51.98	170	6-7/16	
52	94	308	4-13/16	52.24	171	4-11/16	
53	95	311	8-1/8	52.54	172	4-1/2	45 km/h—Termination Point

TABLE 1—APPROACH, TEST PATH, AND STOPPING ZONE COORDINATES (CONTINUED)

Point	Y m	Y ft	Y in	X m	X ft	X in	Comment
54	96	314	11-1/2	52.88	173	5-7/8	
55	97	318	2-7/8	53.27	174	9-1/4	
56	98	321	6-1/2	53.71	176	2-9/16	
57	99	324	9-5/8	54.21	177	10-1/4	
58	100	328	1-0	54.77	179	8-5/16	
59	101	331	4-3/8	55.42	181	1-1/4	
60	102	334	7-3/4	56.15	184	2-5/8	
61	103	337	11-1/8	57.00	187	0-1/8	
62	104	341	2-1/2	58.00	190	3-7/16	
63	105	344	5-7/8	59.19	194	2-5/16	30 km/h—Termination Point
64	125.34	411	2-5/8	62.20	204	0-13/16	45 km/h—Exit Zone Boundaries
65	120.21	394	4-13/16	72.00	236	2-5/8	45 km/h—Exit Zone Boundaries
66	113.55	372	6-1/2	70.47	231	2-3/8	30 km/h—Exit Zone Boundaries
67	109.17	358	2-1/16	72.71	238	6-9/16	30 km/h—Exit Zone Boundaries

6.2.3 The target test path is defined by the points given in Table 1 and laid out as shown in Figure 1. The origin (0,0) of the (Y,X) coordinate system is the beginning of the 100 m approach path.

6.2.3.1 *100 m Approach Path*—Points 1 through 36.

6.2.3.2 *30 km/h Test Path*—Points 36 through 63.

6.2.3.3 *45 km/h Test Path*—Points 36 through 53.

6.2.4 For simplicity, Figure 1 shows the target test path and the test course as laid out for a test motorcycle with a side stand on the left side. The target test path and test course for a test motorcycle with a side stand on the right side shall be a mirror image of Figure 1.

6.2.5 The exit zones provided allow deceleration at 1/4 g from the test speeds. The side boundaries of the exit zones are the tangent to the test path at the respective termination point and a line 20 degrees to the inside of the tangent.

6.3 Test Surface

6.3.1 The test surface is the 1.5 m (4 ft, 11 in) lane width between points 36 and 63 of Table 1. The test surface shall consist of one or more coats of a coal-tar water emulsion, without aggregate, applied uniformly over a base surface of bituminous asphalt concrete with a carpet sled ratio (CSR) less than or equal to 0.80 before coating, measured according to SAE J1846. The minimum number of coats required to achieve the CSR specified in 6.3.3.1 shall be used.

6.3.2 The test surface shall be dry and free of surface discontinuities which could engage side stands during tests and influence retraction. This requirement includes indentations or gouges created during previous tests.

6.3.3 The carpet sled ratio (CSR) of the test surface shall be measured according to SAE J1846, on 10 surface specimens of the test course at the locations given as follows:

a. Test specimen Location Point from Table 1:

36
39
42
45
48
51
54
57
60
63

6.3.3.1 The average CSR value for the 10 measurements shall be not less than 0.50 and not more than 0.55. No individual CSR value shall be less than 0.45 or more than 0.60.

6.3.3.2 The specified CSR measurement points provide a consistent procedure for judging the suitability of test surface characteristics. Any specimen of the test surface should produce a CSR value between the highest and lowest values produced at the 10 specified locations.

6.3.3.3 If 30 days or more have elapsed since measurement of the test surface CSR, it shall be verified per 6.3.3 before conducting further side stand retraction tests. Visual inspection of surface condition in accordance with 6.3.2 shall be made also. Alternatives for surfaces no longer meeting specifications are: coating a new base surface, stripping and reapplying the coating, or applying a new coating over the existing coating. No single alternative is preferred; the individual constraints of each situation must be considered.

6.3.4 SURFACE TEMPERATURE—The surface temperature of the test course shall be within the range of 10 to 38 °C (50 to 100 °F) during the test runs.

7. Procedure

7.1 Each test run shall include the required 30 m approach path, and the applicable test course and exit zone for the 30 km/h or 45 km/h test speeds. The 100 m approach path may be used if desired.

7.2 For each test motorcycle with a maximum speed of 50 km/h (31.1 mph) or more, two test runs shall be made at each test speed of 30 and 45 km/h (18.6 and 28.0 mph). For each test motorcycle with a maximum speed of less than 50 km/h (31.1 mph), two test runs shall be made at a test speed of 30 km/h (18.6 mph). Data for all runs shall be recorded.

7.3 For each test run, the motorcycle shall enter the test course at the test speed with the side stand in the deployed position.

7.4 For a test run to be valid, the motorcycle shall complete the course with an average speed within ±2.0 km/h (1.2 mph) of the nominal test speed. The average speed shall be determined by measuring the elapsed time between the starting and termination points for the applicable test course, or entrance and exit speeds at the same staring and termination points, respectively.