INCH-POUND

MS14171C(AS)
5 March 1997
SUPERSEDING
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31 July 1987

MS SPECIFICATION SHEET

TIRE, PNEUMATIC, AIRCRAFT, 30 X 11.50-14.50, TYPE VIII, (NAVY), FABRIC REINFORCED TREAD

This specification is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of MIL-T-5041 listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation.

SIZE	PLY RATING 1/	STATIC LOAD RATING LB.	VERT LOAD LB.	INFL PRESS PSI RATED	BURST PRESS PSI MIN. 2/	BEAD WIDTH IN. MAX.	WEIGHT LB. MAX.	STATIC UNBAL +1/2 OZ.	TREAD 3/	MOLD SKID DEPTH MIN.	DEFLC +3% -4%
30 X 11.50-14.50	26TL	25,000	88,000	245	1225	2.75	75.0	19	RIB	4/	35%

1/ TL = tubeless
2/ New tire
3/ The tire shall have not less than four and not more than seven ribs. The tread grooves shall be shaped to prevent foreign objects from being trapped between the ribs. Fabric reinforced tread.
4/ As necessary to establish a suitable life cycle index.

TIRE AND RIM DATA . See figure 1

The tire covered by this MS specification sheet shall be used for life cycle cost indexing evaluation and shall provide reasonable service life during all normal operations at takeoff and landing speeds indicated herein on all types of runways and on aircraft carriers.

Five tires shall be used for qualification. All tires shall be built using the same compounds and processing techniques. The tires shall be examined as follows:

Dimensions: All tires shall be inflated to rated inflation pressure and measured for dimensional compliance. Tires shall then be allowed to stand 12 hours minimum at room temperature after which the pressure loss due to growth shall be replaced and the tire measured for dimensional compliance. Tire dimensions at 350 psi shall then be measured for grown compliance. In addition, each of the tires used for dynamic testing shall be measured during testing for grown and thrown compliance (see figure 2)

TIRES 1 & 2: Tires 1 and 2 shall be inflated to 245 psi, corrected for flywheel diameter. Each tire shall complete sequence 1 through 7 as defined below for a total of 51 simulated land based missions. One tire shall be subjected to the high speed takeoff (test G) and the other tire shall be subjected to the single engine takeoff (test I). Five of the 51 missions shall be with 0.25g aircraft turns (tests B1, D1) and the remainder shall be with 0.10g turns (tests B2, D2). The high speed, aborted, and single engine takeoff mission taxi-outs and taxi-ins may be with 0.10g turns.

SEQUENCE	NUMBER OF CYCLES	TEST	TEST DESCRIPTIONOPERATION
1	48	A - F	TAXI OUT - NORMAL TAKEOFF
2	1	E - F	EXTENDED TAXI - NORMAL TAKEOFF
3	1	A - G (or A - I)	TAXI OUT - HIGH SPEED TAKEOFF (OR SINGLE ENGINE TAKEOFF)
4	50	H - C	LANDING - TAXI IN
5	51	B1 or B2	TAXI OUT TURN
6	51	D1 or D2	TAXI IN TURN
7	1	A - J -A	TAXI OUT - ABORTED TAKEOFF STOP - TAXI OUT

The tire shall show no evidence of slippage that would damage the air seal between the tire and rim.

TIRE 3: Tire 3 shall withstand test K, then 5 cycles of test L, one cycle of test H, one cycle of test C, then for information test M. Inflation pressure, corrected for flywheel diameter, shall be 280 psi (20 percent under-inflated carrier pressure) for test K, and 350 psi for test L, test H, and test C.

TIRE 4: Tire 4 shall be inflated to 245 psi, corrected for flywheel diameter, and subjected to the yawed landing condition on figure 2 . The test shall be run within the limitations of existing test equipment. The vertical load shall be varied to obtain the side load time history defined. The tire shall subsequently complete one sequence of test A, test B2, test F, test H, test C, and test D2.

TIRE 5: A new tire shall withstand test M.

TEST A - Taxi out. The tire shall be taxied on the flywheel at 30 knots for 9,000 feet with 22,000 pounds radial load.

TEST B - Taxi out turn, 10 kts	No. turns	Radial load (lbs)	Side load (lbs)
B1, 0.25g, 56 feet/turn	2 (inbd)	29,570	-7,390
	2 (outbd)	12,975	3,225
B2, 0.10g, 140 feet/turn	2 (inbd)	24,290	-2,430
	2 (outbd)	19,435	1,945

TEST C - Taxi in. The tire shall be taxied on the flywheel at 30 knots for 9,000 feet with 16,030 pounds radial load.

TEST D - Taxi in turn, 15 kts	No. turns	Radial load (lbs)	Side load (lbs)
D1, 0.25g, 126 feet/turn	2 (inbd)	17,900	-4,480
	2 (outbd)	10,130	2,530
D2, 0.10g, 315 feet/turn	2 (inbd)	15,570	-1,555
	2 (outbd)	12,460	1,245

TEST E - Extended taxi out. The tire shall be taxied on the flywheel at 30 knots for 25,000 feet with 22,000 pounds radial load.

TEST F - Normal takeoff. The tire shall be landed against the flywheel with a load of 22,000 pounds and a speed of zero knots. The load shall then be decreased and the speed increased as shown in table I.

TEST G - High speed takeoff. The tire shall be landed against the flywheel with a load of 22,000 pounds and a speed of zero knots. The load shall then be decreased and the speed increased as shown in table II.

TEST H - Normal landing. The tire shall be landed against the flywheel rotating at a peripheral speed of 160 knots. The load shall then be increased and the speed decreased as shown in table III.

TEST I - Single engine takeoff. The tire shall be landed against the flywheel with a load of 22,000 pounds and a speed of zero knots. The load shall then be decreased and the speed increased as shown in table IV.

TEST J - Aborted takeoff stop. The tire shall be landed against the flywheel with the load and speed varied as shown in table V.

TEST K - Cable bruise test. The tire shall be loaded against a 1.625 inch diameter steel cable resting on a flat plate at a 11.4° camber angle. A vertical load of 100,000 pounds shall be applied, released, and re-applied at a location 180° from the initial load position.

TEST L - Catapult takeoff. The tire shall be landed against the flywheel with a constant load of 3,000 pounds as the flywheel is accelerated from zero to 73 knots. The initial load shall then be increased to 37,500 pounds at a constant speed of 73 knots for 300 feet. The tire shall then be unlanded.

TEST M - Burst test. The tire shall be subjected to a hydrostatic burst test. The pressure shall be increased until the tire fails. The failing pressure, description of failure and location shall be recorded.

TABLE I Normal takeoff.

POINT	TIME (SECS.)	LOAD (LBS.)	SPEED (KTS.)	ACCUMULATED DISTANCE (FEET)
1	0.0	22,000	0.0	0.0
2	5.0	21,000	0.0	211.0
3	10.0	19,100	100.0	847.0
4	18.0	16,000	167.0	2,654.0
5	19.0	13,700	175.0	2,943.0
6	25.0	0	215.0	4,917.0

TABLE II. High speed takeoff.

POINT	TIME (SECS.)	LOAD (LBS.)	SPEED (KTS.)	ACCUMULATED DISTANCE (FEET)
1	0.0	22,000	0.0	0.0
2	7.0	21,000	9.5	51.0
3	10.0	20,300	85.0	717.0
4	22.0	17,400	160.0	3,198.0
5	30.0	15,500	206.0	5,667.0
6	32.5	0	220.0	6,565.0

TABLE III. Normal landing.

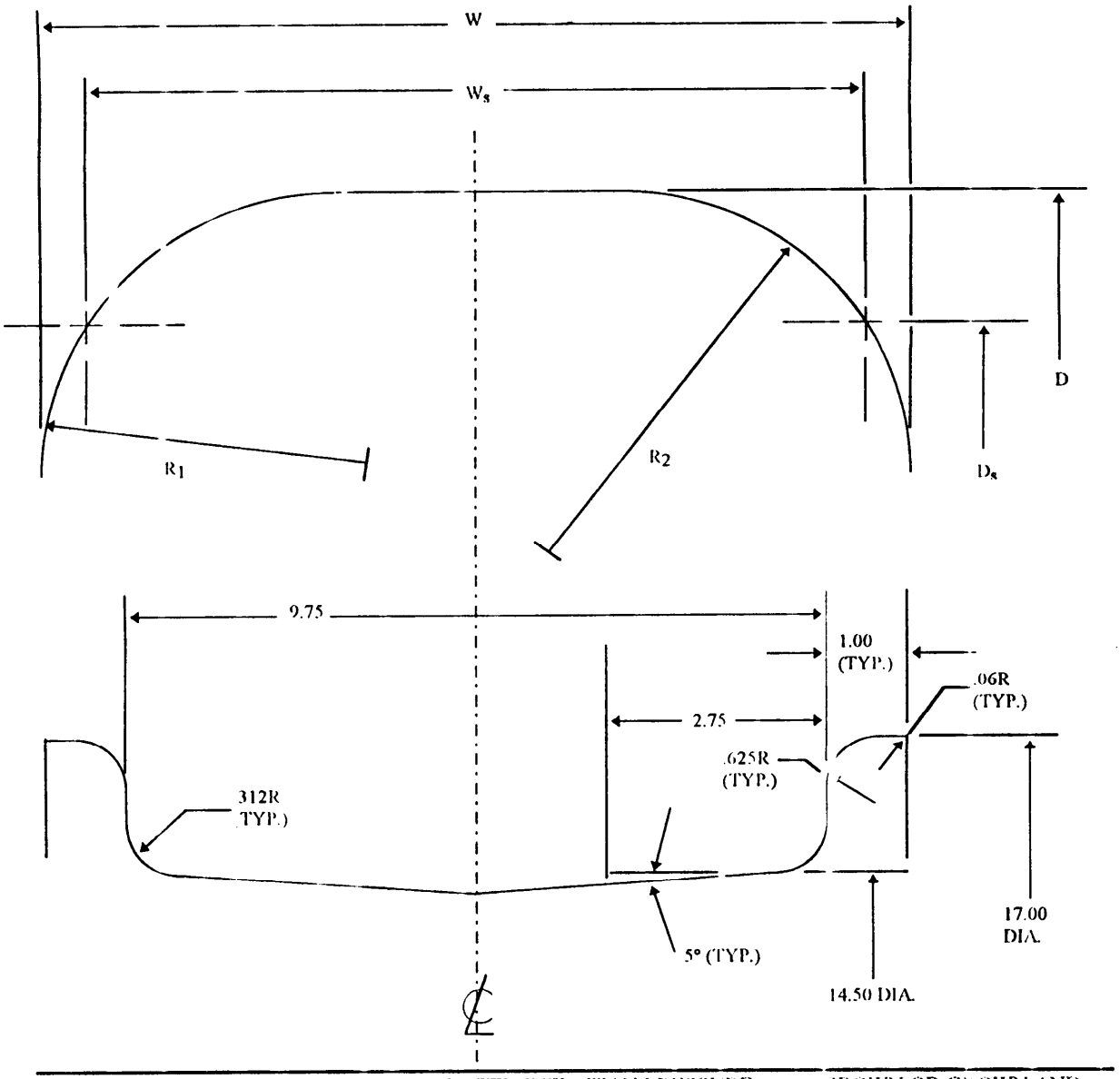
POINT	TIME (SECS.)	LOAD (LBS.)	SPEED (KTS.)	ACCUMULATED DISTANCE (FEET)
1	0.0	0	160.0	0.0
2	1.0	6,500	156.0	267.0
3	8.0	9,865	130.0	1,958.0
4	14.0	12,750	100.0	3,122.0
5	22.0	13,500	65.0	4,236.0
6	31.0	13,500	0.0	4,739.0

TABLE IV. Single engine takeoff.

POINT	TIME (SECS.)	LOAD (LBS.)	SPEED (KTS.)	ACCUMULATED DISTANCE (FEET)
1	0.0	22,000	0.0	0.0
2	7.0	21,000	52.5	310.0
3	10.0	20,300	75.0	633.0
4	22.0	17,400	170.0	3,114.0
5	29.0	15,700	200.0	5,300.0
6	32.0	15,000	202.0	6,319.0
7	39.0	11,000	208.0	8,741.0
8	42.0	0	210.0	9,798.0

TABLE V. Aborted takeoff.

POINT	TIME (SECS.)	LOAD (LBS.)	SPEED (KTS.)	ACCUMULATED DISTANCE (FEET)
1	0.0	22,000	0.0	0.0
2	5.0	21,000	50.0	211.0
3	10.0	19,100	100.0	844.0
4	18.0	16,000	167.0	2,646.0
5	19.0	14,500	175.0	2,935.0
6	22.0	9,000	195.0	3,872.0
7	23.0	11,000	195.0	4,201.0
8	60.0	22,000	0.0	10,290.0



TIRE DIMENSIONS (INCHES)	RATED INFLATION PRESSURE		GROWN OR GROWN AND
	MIN.	MAX	THROWN MAX.
OUTSIDE DIA. (D_O)	28.75	29.75	31.00
SECTION WIDTH (W)	11.00	11.50	11.95
SHOULDER DIA. (D_S)	-	-	28.54
SHOULDER WIDTH (W_S)	-	-	10.60
RADIUS (R_1)	-	-	5.15
RADIUS (R_2)	-	-	5.30

THE CONTOUR OF THE AIRCRAFT TIRE SHALL NOT EXCEED THE ENVELOPE SHOWN ABOVE. THIS CONDITION MUST BE MET BEFORE, DURING, AND AFTER THE DYNAMIC TESTING PORTION OF QUALIFICATION TESTING AND WHILE THE TIRE IS ROTATING EQUIVALENT TO GROUND SPEEDS RANGING FROM 0 TO 235 KNOTS WITH THE TIRE INFLATED TO THE REQUIRED PRESSURES. THE TIRE SHALL FIT A WHEEL OF SUITABLE MATERIAL WITH A CONTOUR PER THE DIMENSIONS AND OUTLINE SHOWN ABOVE WITHOUT CHAFFING OF THE SIDEWALL WHEN TESTED TO THE DYNAMIC PORTION OF THIS DRAWING.

FIGURE 1. Tire grown and thrown dimensions.

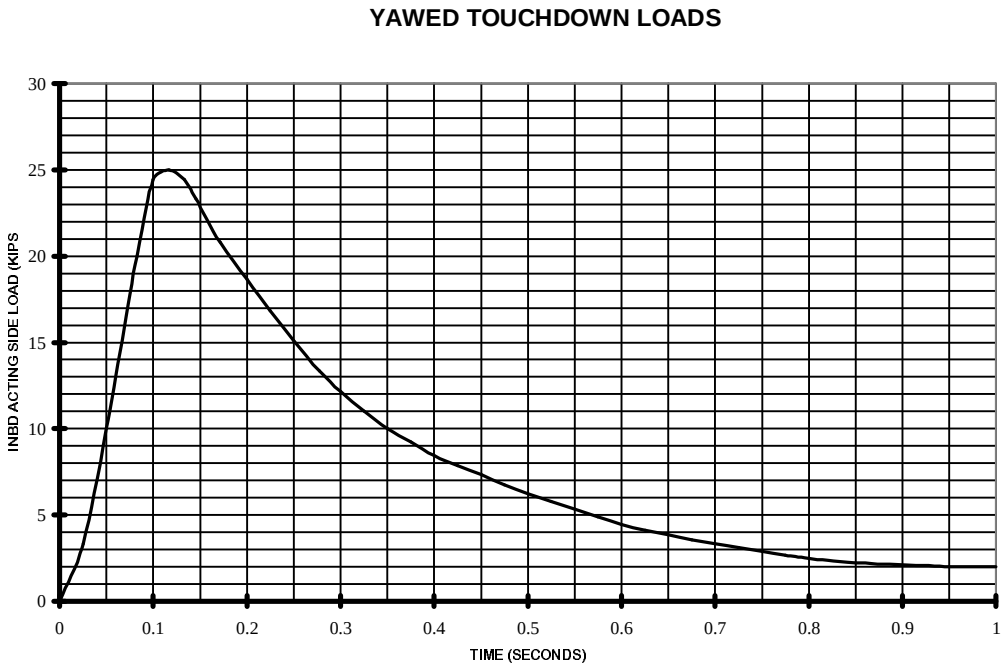


FIGURE 2. Yawed touchdown loads.

CONCLUDING MATERIAL

Preparing Activity:
Navy - AS

(Project 2620-N312)