S A E

AERONAUTICAL INFORMATION

REPORT

NO. 26

NUMBER 70-90, 70L-90, 80-100 AND 80L-100 PROPELLER SHAFT ENDS

DUAL ROTATION (PROPELLER SUPPLIED BEARING)

May 1, 1949

PREPARED BY

Committee E-21, Standard Components for Aircraft Engines
and
Committee P-6, Propeller Standards

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NUMBER 70-90, 70L-90, 80-100 AND 80L-100 PROPELLER SHAFT ENDS

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INTRODUCTION

1. PURPOSE:

1.1 The purpose of this report is to preserve for record purposes the dimensions for the No. 70-90, 70L-90, 80-100 and 80L-100 dual rotation propeller shaft ends, which have been deleted from Aeronautical Recommended Practice ARP 375.

2. BACKGROUND:

2.1 Aeronautical Recommended Practice ARP 375, initially issued November 1, 1948, included dimensions and data for No. 70-90, 70L-90, 80-100 and 80L-100 dual rotation shafts. The 70-90 and 70L-90 shafts were intended for use with engines of 8,000 to 12,000 HP. However, at about this time it became apparent that the 70 and 70L shafts in these combinations were critically loaded due to gyroscopic and 1XP continuous bending moments being encountered in modern high-speed high wing-loading aircraft. Therefore, dimensions for the 80-90 shafts were developed for inclusion in the revised ARP 375. Since it appeared that the 70-90, 70L-90, 80-100 and 80L-100 shafts would not be used, it was decided to delete them from ARP 375 and include them in an Aeronautical Information Report.

2.2 Although SAE Committees E-21 and P-6 had established the designations 70-90 for the shafts having a P dimension of 23.250 and 70L-90 for the shafts having a P dimension of 29.250, the Air Force and Navy in issuing AND10152, Shaft Ends - Propeller, revision 1, chose to show only the combination with the P dimension of 29.250 and to designate this as 70-90. In view of the previous correspondence, layouts, etc., which showed this combination as the 70L-90, the tables included herein do not agree with AND10152 in this regard, but retain the original designation from ARP 375. The above is noted to prevent future confusion concerning these particular shaft designations.

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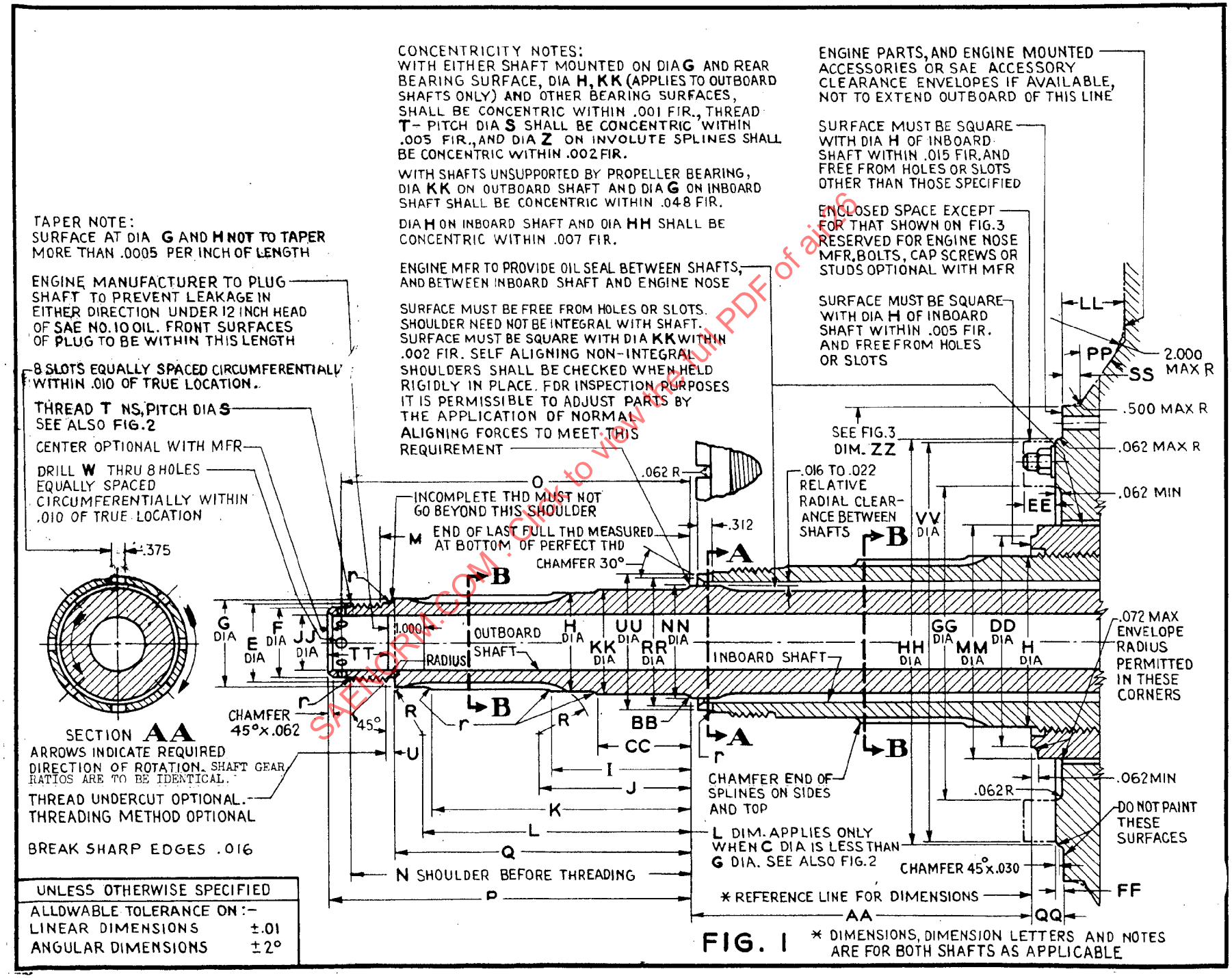

FIG. 1

* DIMENSIONS, DIMENSION LETTERS AND NOTES ARE FOR BOTH SHAFTS AS APPLICABLE

LET	TOLERANCE		70 — 90		70L — 90		80 — 100		80L — 100	
	OUT-BOARD SHAFT	IN-BOARD SHAFT	INVOLUTE SPLINES	INVOLUTE SPLINES	INVOLUTE SPLINES	INVOLUTE SPLINES	INVOLUTE SPLINES	INVOLUTE SPLINES	INVOLUTE SPLINES	INVOLUTE SPLINES
A	+.000	−.005	5.539	7.554	5.539	7.554	6.411	8.667	6.411	8.667
B	MAX		5.294	7.294	5.294	7.294	6.151	8.313	6.151	8.313
C	+.000	−.020	—	—	—	—	—	—	—	—
	+.010	−.020	5.179	7.179	5.179	7.179	6.036	8.199	6.036	8.199
D	+.0000	−.0030	.2233	.2234	.2233	.2234	.2233	.2607	.2233	.2607
E	+.000	−.004	5.120	7.120	5.120	7.120	5.995	8.120	5.995	8.120
F	+.000	−.005	4.938	6.938	4.938	6.938	5.812	7.938	5.812	7.938
G	+.000	−.002	5.156	7.156	5.156	7.156	6.011	8.174	6.011	8.174
H	+.000	−.002	5.562	7.570	5.562	7.570	6.426	8.682	6.426	8.682
I	±.020	±.025	14.188	3.312	20.188	3.312	15.875	3.500	23.875	3.500
J	±.030	±.040	14.688	3.812	20.688	3.812	16.375	4.000	24.375	4.000
K	±.020		19.062	8.000	25.062	8.000	21.500	9.000	29.500	9.000
L	±.020	—	—	—	—	—	—	—	—	—
M	+.000	+.010 *	21.235	11.610	27.235	11.610	24.485	13.735	32.485	13.735
N	+.010	−.030	22.610	13.110	28.610	13.110	25.860	15.235	33.860	15.235
O	±.015	—	23.000	—	29.000	—	26.312	—	34.312	—
P	±.020		23.250	14.062	29.250	14.062	26.562	15.875	34.562	15.875
Q		±.020	21.125	11.500	27.125	11.500	24.375	13.625	32.375	13.625
R	MAX		2.030	3.030	2.030	3.030	2.030	3.030	2.030	3.030
	MIN		1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125
r	+.030	−.000	.062	.062	.062	.062	.062	.062	.062	.062
S	+.0000	−.0030	—	—	—	—	—	—	—	—
	+.0000	−.0050	5.0418	—	5.0418	—	5.9168	—	5.9168	—
	+.0000	−.0080	—	7.0418	—	7.0418	—	8.0418	—	8.0418
T	—		5.125-8	7.125-8	5.125-8	7.125-8	6.000-8	8.125-8	6.000-8	8.125-8
U	±.030		.250	.250	.250	.250	.250	.250	.250	.250
V	APPROX		.068	.068	.068	.068	.068	.080	.068	.080
W	—	—	.2656	—	.2656	—	.2656	—	.2656	—
X	—		38	52	38	52	44	51	44	51
Y	—		7/16	7/16	7/16	7/16	7/16	6/12	7/16	6/12
Z	THEO		5.4286	7.4286	5.4286	7.4286	6.2857	8.5000	6.2857	8.5000
AA	±.030		14.125		14.125		15.938		15.938	
BB	MAX	—	.094	—	.094	—	.094	—	.094	—
CC	±.020	—	6.000	—	6.000	—	6.000	—	6.000	—
DD			8.750		8.750		10.000		10.000	
EE	MAX		1.000		1.000		1.000		1.000	
FF			.312		.312		.375		.375	
GG	MIN		11.375		11.375		13.000		13.000	
HH	±.001		14.373		14.373		15.248		15.248	
JJ	+.005 −.008	—	4.375	—	4.375	—	5.156	—	5.156	—
KK	+.0000 −.0005	—	5.5908 (142MM BRG)		5.5908 (142MM BRG)		6.4567 (164 MM BRG)		6.4567 (164 MM BRG)	
LL	MIN		4.000		4.000		4.000		4.000	
MM	MAX		9.125		9.125		10.875		10.875	
NN	MIN	—	6.250	—	6.250	—	7.125	—	7.125	—
PP	MIN		45°		45°		45°		45°	
QQ	±.025		.938		.938		1.062		1.062	
RR			—	6.750	—	6.750	—	7.750	—	7.750
SS	MIN		.500		.500		.500		.500	
TT	±.030	—	3.000	—	3.000	—	3.000	—	3.000	—
UU			—	6.875	—	6.875	—	7.875	—	7.875
VV	MAX		14.250		14.250		15.125		15.125	

INBOARD AXIAL DIMENSIONS ARE FROM THRUST NUT

M DIM. MAX LIMIT GIVES MIN FULL THREAD

* MINUS VALUE DEPENDS ON METHOD OF THREADING AND THD RUNOUT RELATION TO SHOULDER Q

TO OBTAIN DIM. FOR FULL NUMBER OF PITCHES, WHEN DESIRED, DEDUCT BASIC M FROM BASIC N

M DIM. DOES NOT APPLY WHEN UNDERCUT IS USED

UNLESS OTHERWISE SPECIFIED

ALLOWABLE TOLERANCE ON:-
LINEAR DIMENSIONS ±.01
ANGULAR DIMENSIONS ±.2°

TABLE FOR FIG. 1 AND 2