

PROPELLER SHAFT ENDS — SINGLE ROTATION

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SHAFT ROTATION — EITHER DIRECTION
(SAME REQUIREMENTS APPLY)

APPLIES ONLY WHEN C DIA IS LESS THAN G DIA

INCOMPLETE THREAD MUST NOT GO BEYOND THIS SHOULDER

THREAD T NS
PITCH DIA S
SEE ALSO FIG. 2

DRILL W THRU
8 HOLES EQUALLY SPACED
CIRCUMFERENTIALLY
WITHIN .010 OF TRUE
LOCATION

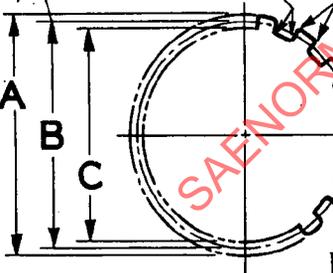
CENTER OPTIONAL
WITH MFR

CHAMFER 45° x .062

TAPER NOTE:
SURFACES AT DIA G AND H
NOT TO TAPER MORE THAN
.0005 PER INCH OF LENGTH

POINT OF TANGENCY (RADIUS AND SIDE OF
SPLINE) MUST BE ON OR INSIDE THIS DIA

.015 CHAMFER OR RADIUS
.005
.046 R
.020



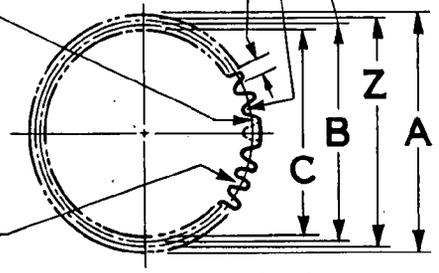
SECTION A-A
STRAIGHT SPLINES

WIDE SPLINE OR BLANKED
SLOT ON DIRECT DRIVE ENGINES.
SLOT MUST COME ON ϕ OF FIRST
THROW OF CRANKSHAFT
WITHIN 2 DEGREES.
WIDE SPLINE OR BLANKED SLOT
OPTIONAL ON ALL OTHER ENGINES
BUT NOT RECOMMENDED UNLESS
REQUIRED FOR SOME PHASING PURPOSES

X — SPLINES EQUALLY SPACED, OR SO
THAT ACCUMULATED ERRORS IN
SPACING, INVOLUTE FORM, AND
PARALLELISM ARE ABSORBED
WITHIN THE LIMITS SPECIFIED
FOR CHORDAL THICKNESS D

INVOLUTE TOOTH FORM MUST BE
TRUE OUTSIDE THIS DIA

CHORDAL THICKNESS D
V RADIUS



SECTION A-A
INVOLUTE SPLINES

CONCENTRICITY NOTE:

WITH SHAFT MOUNTED ON DIA G AND REAR BEARING SURFACE,
DIA H, OTHER BEARING SURFACES AND DIA A ON STRAIGHT
SPLINES SHALL BE CONCENTRIC WITHIN .001 FIR., THREAD T — PITCH
DIA S SHALL BE CONCENTRIC WITHIN .005 FIR., AND DIA Z ON INVOLUTE
SPLINES SHALL BE CONCENTRIC WITHIN .002 FIR.

SHAFT SPLINE DATA:
X TEETH INVOLUTE FORM
Y DIAMETRAL PITCH
Z PITCH DIA (THEO)
30° PRESSURE ANGLE

SEE FIG. 2, 3, 4, 5, 6, 7, AND 8 FOR OTHER
APPLICABLE DIMENSIONS.
SEE TABLE 1 FOR FIG. 1

FOR ADDITIONAL SINGLE ROTATION PROPELLER SHAFT SIZES
SEE ARP 374

BREAK SHARP EDGES .016

FIG. 1

UNLESS OTHERWISE SPECIFIED	
ALLOWABLE TOLERANCE ON:	
LINEAR DIMENSIONS	±.01
ANGULAR DIMENSIONS	±2°

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LET	STRAIGHT SPLINES							INVOLUTE SPLINES			
	TOL	NO.7 $\frac{1}{2}$	NO.10	NO.20	NO.30	NO.40**	NO.50**	TOL	NO.60** NO.60A	NO.70	NO.80
A	$\begin{matrix} +.000 \\ -.002 \end{matrix}$	1.625	1.992	2.367	2.617	3.117	3.804	$\begin{matrix} +.000 \\ -.005 \end{matrix}$	4.680	5.539	6.411
B	MAX	1.474	1.781	2.156	2.406	2.875*	3.554	MAX	4.436	5.294	6.151
C	MIN	1.382	1.689	2.064	2.314	2.783	3.462	$\begin{matrix} +.010 \\ -.020 \end{matrix}$	4.321	5.179	6.036
D	± 0.008	.1590	.1940	.2310	.2570	.3040	.3750	$\begin{matrix} +.0000 \\ -.0030 \end{matrix}$.2233	.2233	.2233
E	$\begin{matrix} +.000 \\ -.004 \end{matrix}$	1.370	1.682	2.057	2.307	2.807	3.432	$\begin{matrix} +.000 \\ -.004 \end{matrix}$	4.245	5.120	5.995
F	$\begin{matrix} +.000 \\ -.005 \end{matrix}$	1.250	1.562	1.938	2.188	2.688	3.312	$\begin{matrix} +.000 \\ -.005 \end{matrix}$	4.062	4.938	5.812
G	$\begin{matrix} +.000 \\ -.002 \end{matrix}$	1.375	1.687	2.062	2.312	2.812	3.500	$\begin{matrix} +.000 \\ -.002 \end{matrix}$	4.296	5.156	6.011
H	$\begin{matrix} +.000 \\ -.002 \end{matrix}$	1.636	2.000	2.375	2.625	3.125	3.812	$\begin{matrix} +.000 \\ -.002 \end{matrix}$	4.687	5.562	6.426
I	± 0.030	1.375	1.375	2.094	2.087	2.125	2.062	± 0.030	3.312	3.312	3.312
J	± 0.040	1.875	1.875	2.625	2.618	2.656	2.562	± 0.040	3.812	3.812	3.812
K	± 0.020	4.375	4.688	5.500	5.868	5.469	5.875	± 0.020	7.359	8.188	8.938
L	± 0.025	—	—	—	—	5.781	6.188	—	—	—	—
M	$\begin{matrix} +.010 \\ -. * \end{matrix}$	5.402	5.402	6.715	7.115	6.778	7.152	$\begin{matrix} +.010 \\ -. * \end{matrix}$	8.860	10.360	11.922
N	$\begin{matrix} +.010 \\ -.030 \end{matrix}$	6.068	6.068	7.548	7.948	7.611	8.318	$\begin{matrix} +.010 \\ -.030 \end{matrix}$	10.235	11.735	13.297
O	± 0.015	6.375	6.375	7.875	8.243	7.906	8.562	± 0.015	10.500	12.125	13.750
P	± 0.020	6.625	6.625	8.125	8.493	8.156	8.812	± 0.020	10.750	12.375	14.000
Q	± 0.020	5.312	5.312	6.625	7.025	6.688	7.062	± 0.020	8.750	10.250	11.812
R	MAX	1.530	1.530	1.530	1.530	1.530	1.530	MAX	2.030	2.030	2.030
	MIN	1.125	1.125	1.125	1.125	1.125	1.125	MIN	1.125	1.125	1.125
S	$\begin{matrix} +.000 \\ -.003 \end{matrix}$	1.319	1.631	2.006	2.256	2.756	3.381	$\begin{matrix} +.000 \\ -.005 \end{matrix}$	4.1668	5.0418	5.9168
T	—	1.375-12	1.6875-12	2.0625-12	2.3125-12	2.8125-12	3.4375-12	—	4.250-8	5.125-8	6.000-8
U	± 0.030	.170	.170	.170	.170	.170	.170	± 0.030	.250	.250	.250
V	—	—	—	—	—	—	—	APPROX	.068	.068	.068
W	—	.199	.2656	.2656	.2656	.2656	.2656	—	.2656	.2656	.2656
X	—	16	16	16	16	16	16	—	32	38	44
Y	—	—	—	—	—	—	—	—	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$
Z	—	—	—	—	—	—	—	THEO	4.5714	5.4286	6.2857

M DIMENSION, MAX LIMIT GIVES MIN FULL THREAD

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

TO OBTAIN DIMENSION FOR FULL NUMBER OF PITCHES, WHEN
DESIRED, DEDUCT BASIC **M** FROM BASIC **N**

M DIMENSION DOES NOT APPLY WHEN UNDERCUT IS USED

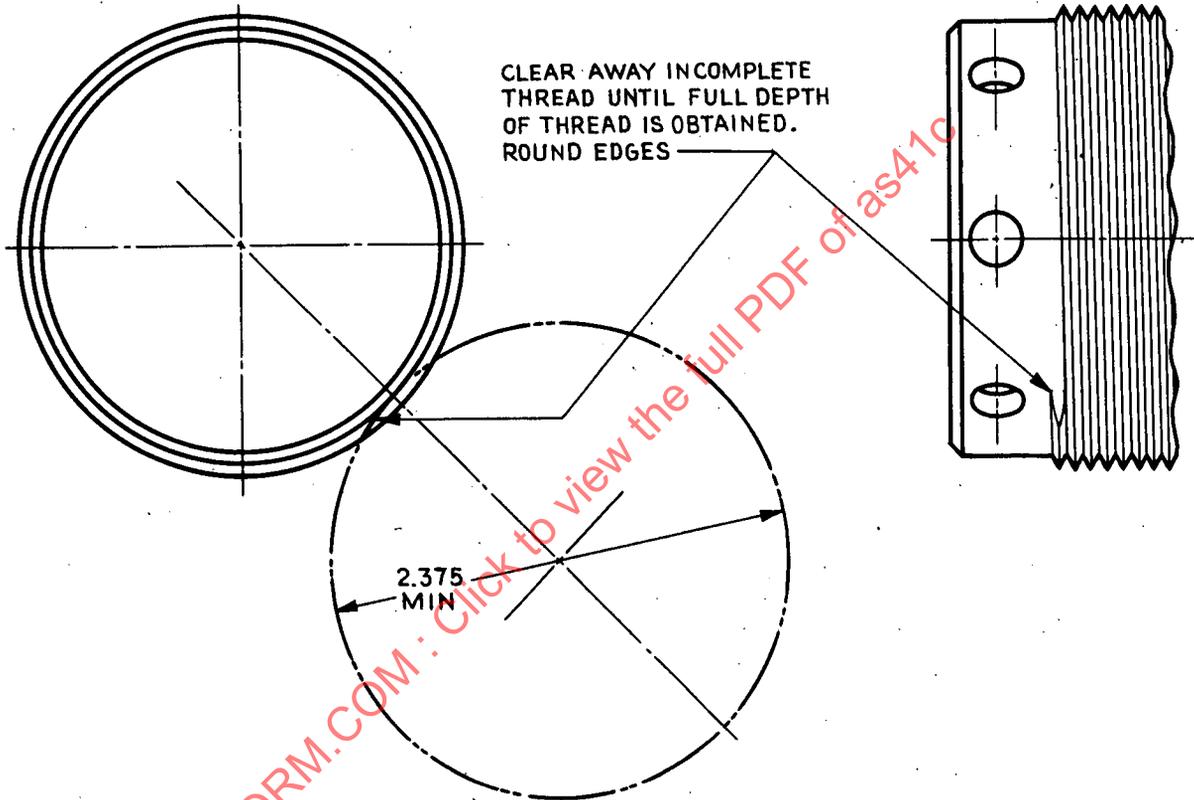
BREAK SHARP EDGES .016

TABLE I FOR FIG. 1

** INACTIVE FOR NEW DESIGN

UNLESS OTHERWISE SPECIFIED

ALLOWABLE TOLERANCE ON :-
LINEAR DIMENSIONS ± 0.01
ANGULAR DIMENSIONS $\pm 2^\circ$



REMOVAL OF INCOMPLETE THREAD
METHOD OF REMOVAL OPTIONAL

BREAK SHARP EDGES .016

FIG. 2

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

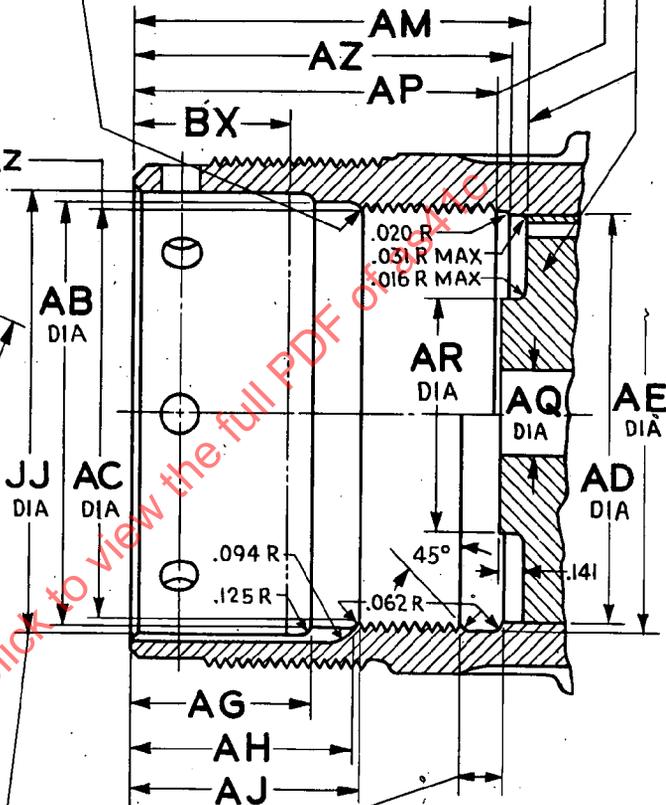
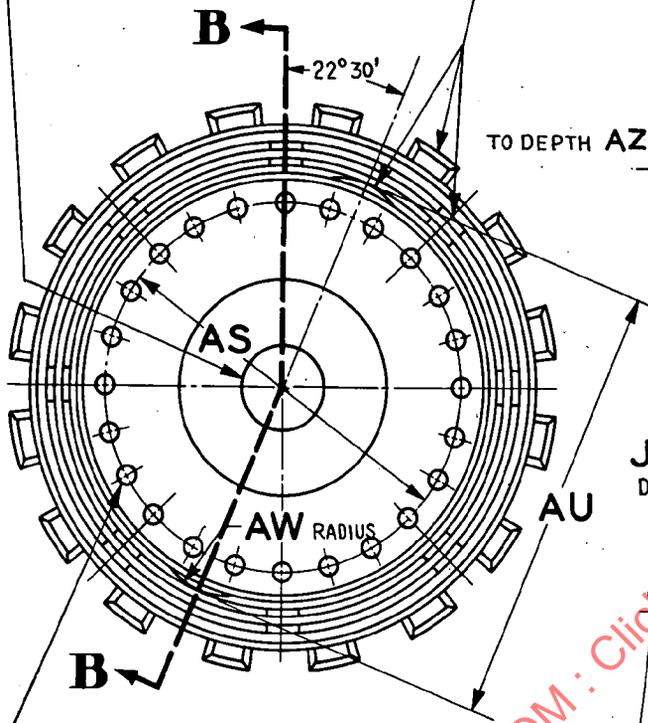
HOLE FOR PROPELLER OIL,
 CONNECTED AS PRESCRIBED BY
 DETAIL ENGINE SPECIFICATION

ANGULAR LOCATION OF LOCKING PIN
 HOLES WITH SPLINE AND SLOTS IS
 UNIMPORTANT PROVIDING SLOTS ARE
 HALF WAY BETWEEN ANY TWO HOLES

REMAINING PART OF DESIGN TO
 SUIT ENGINE MFR

MAX IS FULL OR IMPERFECT THD
 MIN IS FULL THD

THD AK NS-3, PITCH DIA AL.
 CHAMFER OR REMOVE FIRST INCOMPLETE
 THD, REMOVE SHARP EDGES



AT DIA, 24 HOLES EQUALLY SPACED AND
 EACH HOLE LOCATED WITHIN .020 OF
 TRUE POSITION. HIGH PRESSURE OIL
 SUPPLY FROM GOVERNOR

JJ DIA SHALL BE FREE FROM ENGINE PARTS
 FOR DEPTH BX WITH PROPELLER OIL HOLES
 IN SHAFT SUITABLY SEALED TO PREVENT
 LEAKAGE IN FLIGHT

WHEN OIL TRANSFER PLUG IS
 NOT USED ENGINE MFR TO PLUG
 SHAFT AS SHOWN IN FIG. 4

BREAK SHARP EDGES .016

AF THREAD UNDERCUT OPTIONAL
 THREADING METHOD OPTIONAL

SECTION B-B

CONCENTRICITY NOTE:
 DIA AD, AR, AL AND G DIA ON
 FIG. 1 MUST BE CONCENTRIC WITH
 EACH OTHER WITHIN .005 FIR.

SEE TABLE 2 FOR FIG. 3

FIG. 3

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

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WHEN OIL TRANSFER PLUG IS NOT USED
ENGINE MFR TO PLUG SHAFT
TO PREVENT LEAKAGE IN EITHER
DIRECTION UNDER 12 INCH HEAD OF SAE
NO.10 OIL. FRONT SURFACES OF THIS
PLUG TO BE WITHIN THIS LENGTH

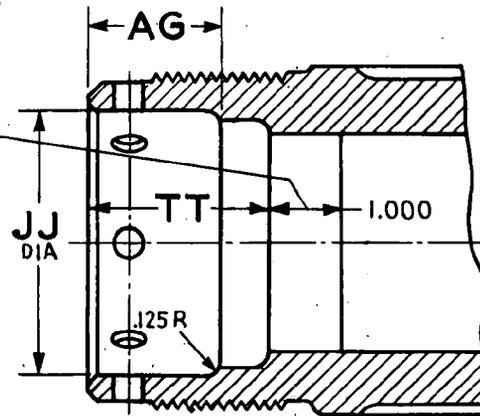


FIG. 4

LET	TOL	NO. 7½ NO. 10	NO. 20	NO. 30	NO. 40 **	NO. 50 **	NO. 60 ** NO. 60A	NO. 70	NO. 80
AB	+0.020 -0.000	—	1.516	1.766	2.266	2.891	3.516	—	—
AC	+0.005 -0.000	—	1.435	1.685	2.185	2.810	3.413	—	—
AD	+0.005 -0.000	—	1.430	1.680	2.180	2.805	3.408	—	—
AE	+0.020 -0.000	—	1.516	1.766	2.266	2.891	3.516	—	—
AF	±0.030	—	.125	.156	.156	.250	.250	—	—
AG	—	—	.500	.562	.562	1.219	1.219	1.219	1.219
AH	—	—	.656	.781	.781	1.531	1.344	—	—
AJ	—	—	.688	.812	.812	1.562	1.375	—	—
AK	—	—	1.500 -16	1.750 -16	2.250 -16	2.875 -16	3.500 -12	—	—
AL	—	—	1.4594 +0.0040 -0.0000	1.7094 +0.0041 -0.0000	2.2094 +0.0044 -0.0000	2.8344 +0.0046 -0.0000	3.4459 +0.0053 -0.0000	—	—
AM	±0.015	—	1.500	1.656	1.656	2.719	2.500	—	—
AZ	—	—	1.375	1.531	1.531	2.594	2.375	—	—
AP	MAX MIN	—	1.365 1.265	1.520 1.420	1.520 1.420	2.580 2.480	2.365 2.240	—	—
AQ	MIN	—	.375	.438	.547	.594	.594	—	—
AR	+0.000 -0.002	—	.609	.734	1.047	1.483	1.859	—	—
AS	BASIC	—	1.100	1.350	1.800	2.400	2.920	—	—
AT	—	—	.082	.082	.125	.1405	.1405	—	—
AU	—	—	1.688	1.938	2.438	3.062	3.688	—	—
AW	—	—	.375	.375	.500	.500	.500	—	—
BX	MIN	—	.500	.562	.562	.810	.810	—	—
JJ	+0.005 -0.000	—	1.625	1.875	2.375	3.062	3.625	4.375	5.156
TT	±0.030	—	2.000	2.000	2.000	3.000	3.000	3.000	3.000

AP DIMENSION MAX LIMIT GIVES MAX FULL OR IMPERFECT THREAD.
MIN LIMIT GIVES MIN FULL THREAD

AP DIMENSION DOES NOT APPLY WHEN UNDERCUT IS USED (ALL THREADS FULL)

BREAK SHARP EDGES .016

TABLE 2 FOR FIG. 3 AND FIG. 4

** INACTIVE FOR NEW DESIGN

UNLESS OTHERWISE SPECIFIED
ALLOWABLE TOLERANCE ON:-
LINEAR DIMENSIONS ±0.1
ANGULAR DIMENSIONS ±2°

CONCENTRICITY NOTE:

DIA H AND HH TO BE CONCENTRIC WITHIN .007 FIR.

SURFACE MUST BE SQUARE WITH DIA H WITHIN .015 FIR. AND FREE FROM HOLES AND SLOTS OTHER THAN THOSE SPECIFIED

SPACE BE RESERVED FOR MOUNTING PROPELLER ACCESSORIES. SPACER MAY BE REMOVED FROM ONE OR MORE STUDS OR BOLTS AT OPTION OF PROPELLER MFR

BK BOLT, CAP SCREW, OR STUD OPTIONAL WITH MFR
BL NUMBER OF PLACES

ENCLOSED SPACE EXCEPT FOR THAT SHOWN ON FIG.8 RESERVED FOR ENGINE NOSE MFR. BOLTS, CAP SCREWS, OR STUDS OPTIONAL WITH MFR

ENGINE PARTS AND ENGINE MOUNTED ACCESSORIES OR SAE ACCESSORY CLEARANCE ENVELOPES IF AVAILABLE, NOT TO EXTEND OUT-BOARD OF THIS LINE

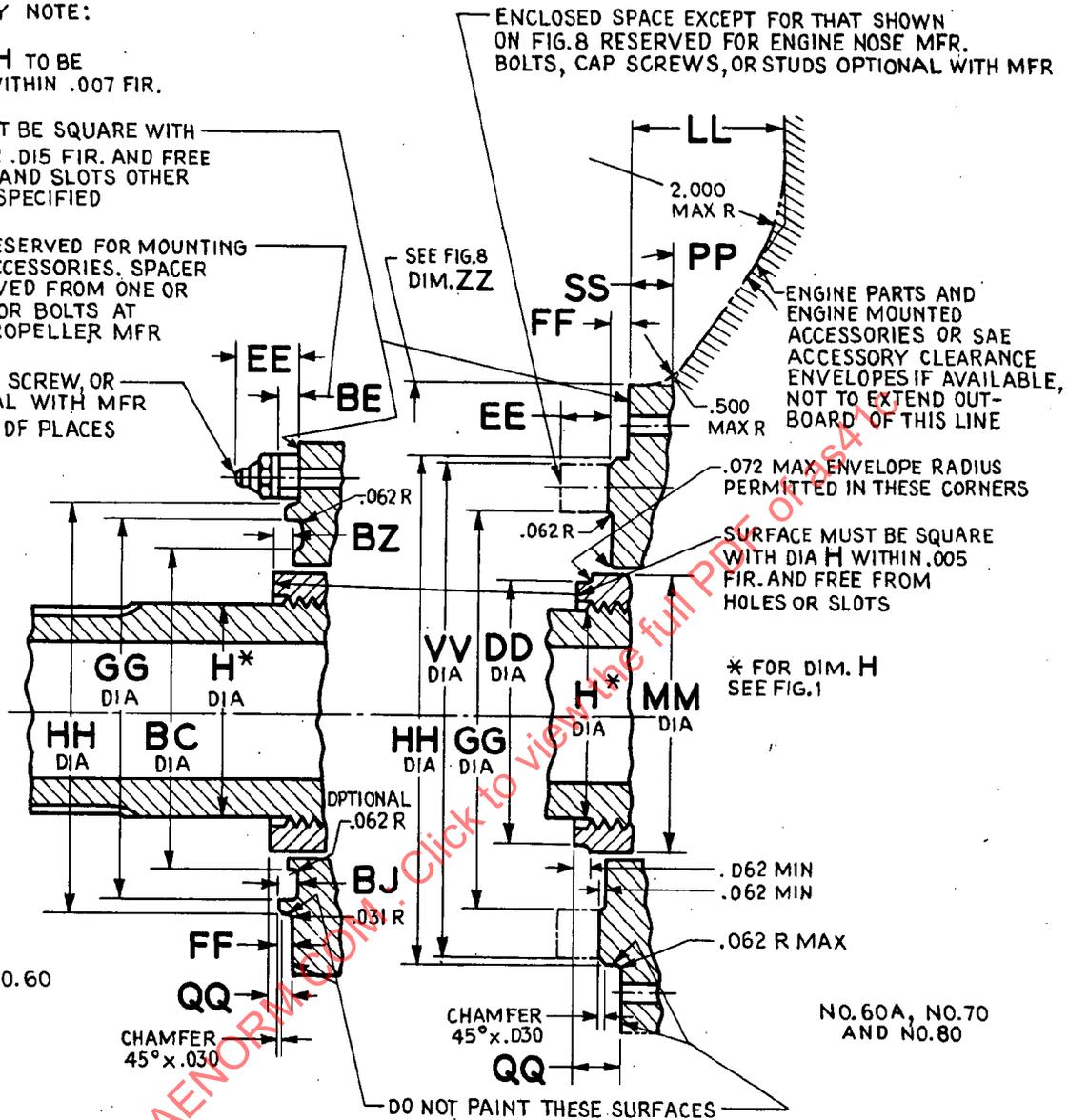
.072 MAX ENVELOPE RADIUS PERMITTED IN THESE CORNERS

SURFACE MUST BE SQUARE WITH DIA H WITHIN .005 FIR. AND FREE FROM HOLES OR SLOTS

* FOR DIM. H SEE FIG.1

NO. 7 1/2 THRU NO. 60

NO. 60A, NO. 70 AND NO. 80



SEE FIG.6,7 AND 8 FOR OTHER APPLICABLE DIMENSIONS. SEE TABLE 3 FOR FIG.5

REFER TO ARP 166 FOR RECOMMENDED PROPELLER CLEARANCE ENVELOPE FOR SIZES 7 1/2 THROUGH 50
BREAK SHARP EDGES .016

FIG. 5

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

LET	TOL	NO. 7½ NO. 10	NO. 20	NO. 30	NO. 40**	NO. 50**	NO. 60**	NO. 60A	NO. 70	NO. 80
BC	MAX	—	4.250	4.250	4.750	6.000	6.312	—	—	—
BE		.188	.312	.312	.375	.375	.375	—	—	—
BJ	MIN	.115	.250	.250	.125	.344	.219	—	—	—
BK	—	.3125	.375	.375	.375	.375	.4375	OPTIONAL	OPTIONAL	OPTIONAL
BL	—	4	6	7	6 or 12	10	8 or 16	OPTIONAL	OPTIONAL	OPTIONAL
BZ	MIN	.031	.031	.031	.031	.031	.320	—	—	—
DD		—	—	—	—	—	—	5.812	6.688	7.562
EE	MAX	.938	.938	.938	1.000	1.000	1.016	.750	.750	.750
FF		.188	.188	.188	.188	.250	.250	.312	.312	.312
GG	MIN	3.750	4.750	4.750	5.875	6.812	7.312	7.750	8.750	9.625
HH	±.001	3.998	4.998	4.998	6.248	7.248	7.748	10.123	11.123	12.625
LL	MIN	—	—	—	—	—	—	2.062 †	2.062 †	2.062 †
MM	MAX	—	—	—	—	—	—	6.188	7.062	7.938
PP	MIN	—	—	—	—	—	—	35° †	35° †	35° †
QQ	±.035	.312	.344	.425	.172	.406	.625	.938	.938	.938
SS	MIN	—	—	—	—	—	—	.500	.500	.500
V.V	MAX	—	—	—	—	—	—	10.102	11.072	12.574

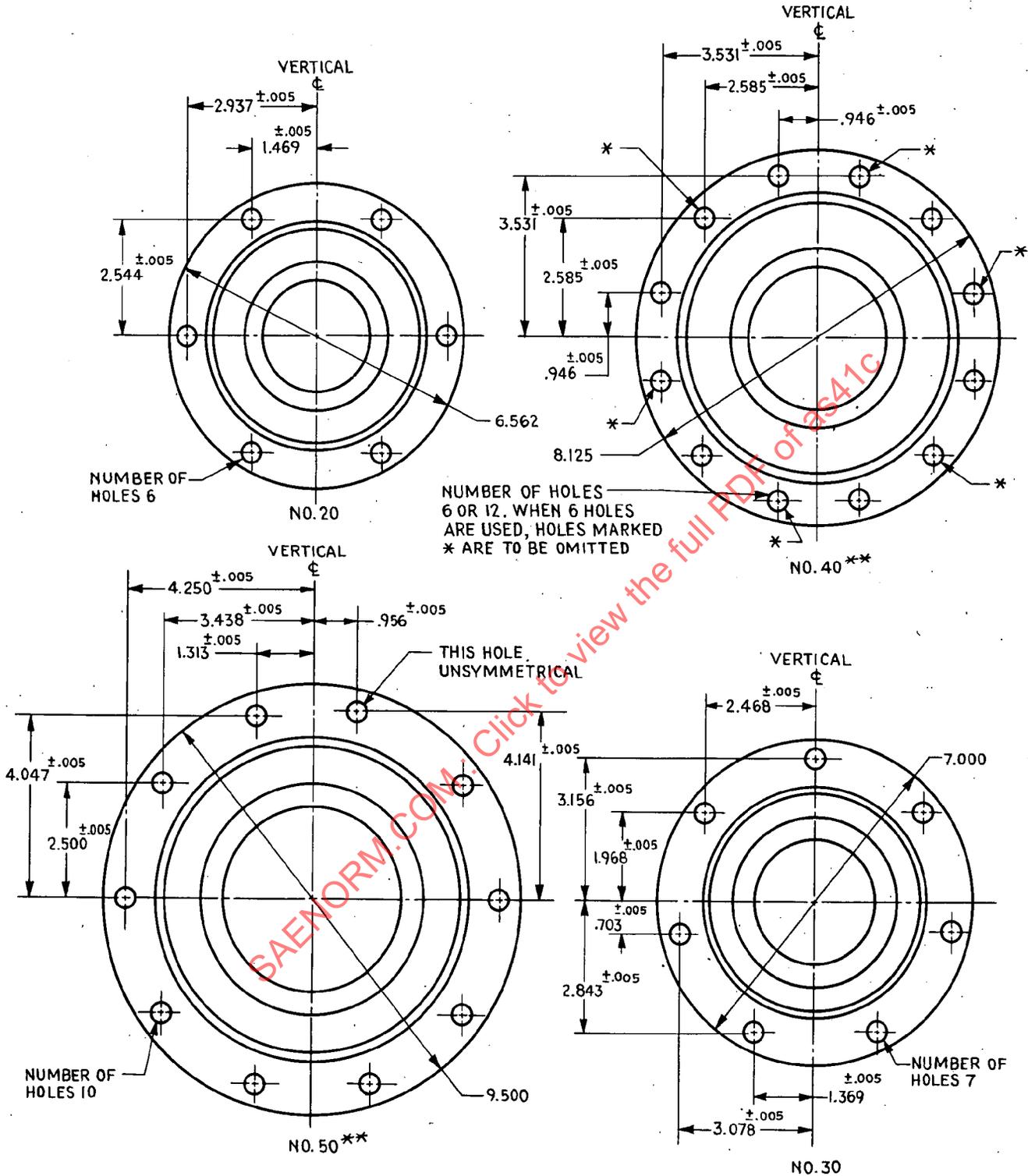
** INACTIVE FOR NEW DESIGN

† LL TO BE 4.000 AND PP TO BE 45° WHEN PRACTICABLE

BREAK SHARP EDGES .016

TABLE 3 FOR FIG. 5

UNLESS OTHERWISE SPECIFIED
ALLOWABLE TOLERANCE ON:—
LINEAR DIMENSIONS ±.01
ANGULAR DIMENSIONS ± 2°



SEE FIG.5 AND TABLE 3 FOR OTHER APPLICABLE DIMENSIONS
 HOLES ARE DIMENSIONED IN RELATION TO CENTER OF DIA HH (FIG.5)
 BREAK SHARP EDGES .016

FIG. 6

** INACTIVE FOR NEW DESIGN

UNLESS OTHERWISE SPECIFIED	
ALLOWABLE TOLERANCE ON:-	
LINEAR DIMENSIONS	$\pm .01$
ANGULAR DIMENSIONS	$\pm 2^\circ$