

PROPELLER SHAFT ENDS — SINGLE ROTATION

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PAGE 1 OF 10

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

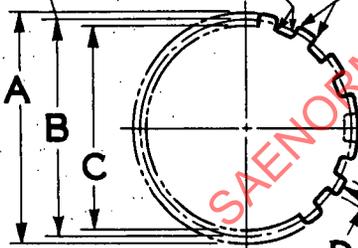
.015
.005
.046
.020
CHAMFER OR RADIUS
R

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

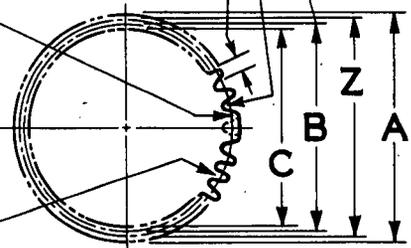
X — SPLINES EQUALLY SPACED, OR SO THAT ACCUMULATED ERRORS IN SPACING, INVOLUTE FORM, AND PARALLELISM ARE ABSORBED WITHIN THE LIMITS SPECIFIED FOR CHORDAL THICKNESS D

INVOLUTE TOOTH FORM MUST BE TRUE OUTSIDE THIS DIA

CHORDAL THICKNESS D
V RADIUS



SECTION A-A
STRAIGHT SPLINES



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 SINGLE ROTATION PROPELLER SHAFT ENDS FOR NO. 41, 51, 51A, 90 AND 100 INVOLUTE SPLINES, AND 50A STRAIGHT SPLINES, 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. 7½	NO. 10	NO. 20	NO. 30	NO. 40	NO. 50	TOL	NO. 60 NO. 60A	NO. 70	NO. 80
A	+0.000 -.002	1.625	1.992	2.367	2.617	3.117	3.804	+0.000 -.005	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	+0.010 -.020	4.321	5.179	6.036
D	±.0008	.1590	.1940	.2310	.2570	.3040	.3750	+0.0000 -.0030	.2233	.2233	.2233
E	+0.000 -.004	1.370	1.682	2.057	2.307	2.807	3.432	+0.000 -.004	4.245	5.120	5.995
F	+0.000 -.005	1.250	1.562	1.938	2.188	2.688	3.312	+0.000 -.005	4.062	4.938	5.812
G	+0.000 -.002	1.375	1.687	2.062	2.312	2.812	3.500	+0.000 -.002	4.296	5.156	6.011
H	+0.000 -.002	1.636	2.000	2.375	2.625	3.125	3.812	+0.000 -.002	4.687	5.562	6.426
I	±.030	1.375	1.375	2.094	2.087	2.125	2.062	±.030	3.312	3.312	3.312
J	±.040	1.875	1.875	2.625	2.618	2.656	2.562	±.040	3.812	3.812	3.812
K	±.020	4.375	4.688	5.500	5.868	5.469	5.875	±.020	7.359	8.188	8.938
L	±.025	—	—	—	—	5.781	6.188	—	—	—	—
M	+0.010 -*	5.402	5.402	6.715	7.115	6.778	7.152	+0.010 -*	8.860	10.360	11.922
N	+0.010 -.030	6.068	6.068	7.548	7.948	7.611	8.318	+0.010 -.030	10.235	11.735	13.297
O	±.015	6.375	6.375	7.875	8.243	7.906	8.562	±.015	10.500	12.125	13.750
P	±.020	6.625	6.625	8.125	8.493	8.156	8.812	±.020	10.750	12.375	14.000
Q	±.020	5.312	5.312	6.625	7.025	6.688	7.062	±.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	+0.000 -.003	1.319	1.631	2.006	2.256	2.756	3.381	+0.000 -.005	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	±.030	.170	.170	.170	.170	.170	.170	±.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	—	—	—	—	—	—	—	—	7/16	7/16	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 UNOERCUT IS USED

BREAK SHARP EDGES .016

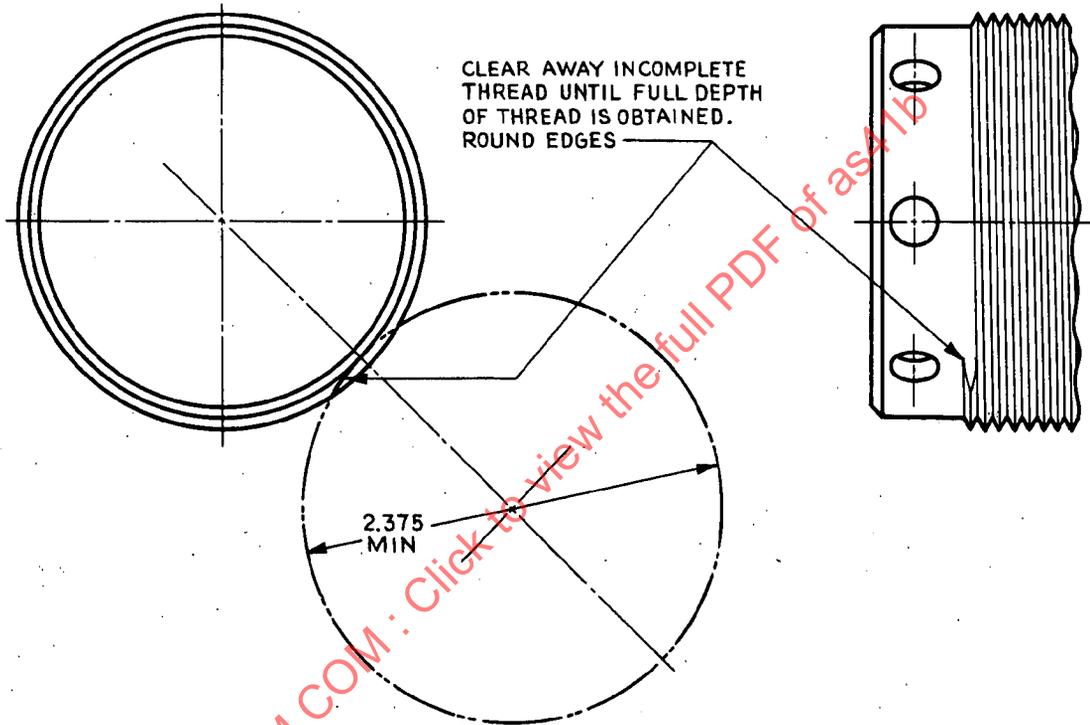
TABLE I FOR FIG. I

UNLESS OTHERWISE SPECIFIED

ALLOWABLE TOLERANCE ON:-

LINEAR DIMENSIONS ±.01

ANGULAR DIMENSIONS ± 2°



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°

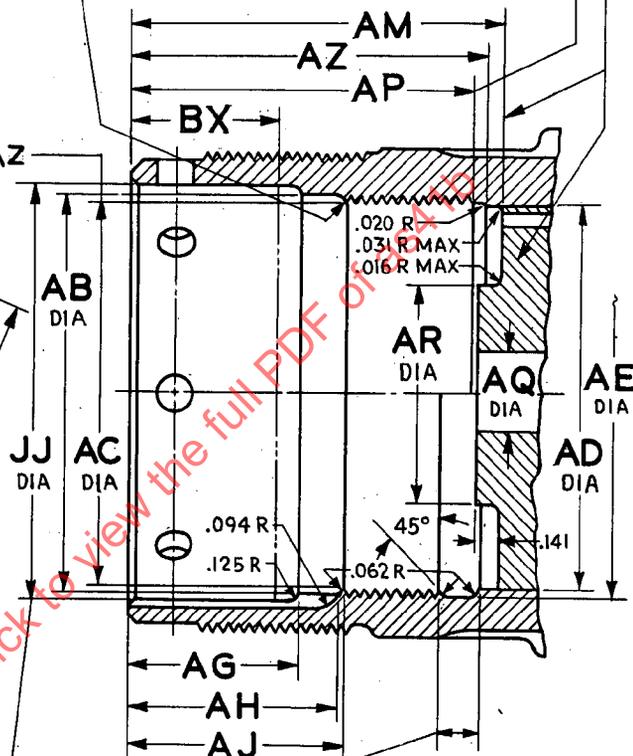
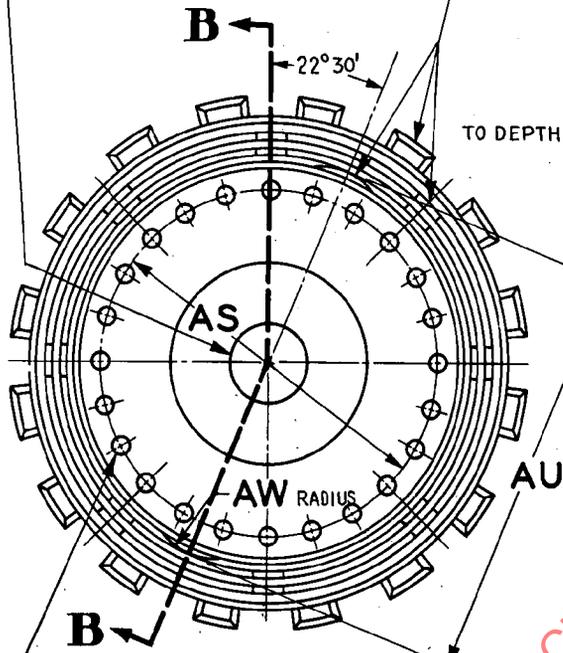
HOLE FOR PROPELLER OIL,
CONNECTED AS PRESCRIBED BY
DETAIL ENGINE SPECIFICATION

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°

- 5 -

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

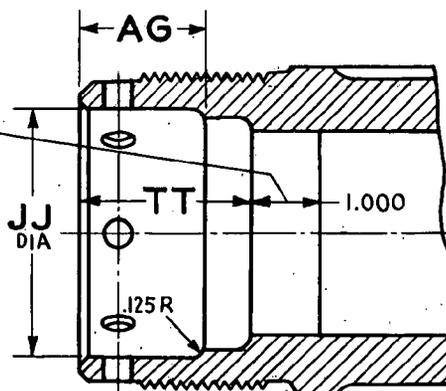


FIG. 4

LET	TOL	NO. 7 1/2 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	1.666	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

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

CONCENTRICITY NOTE:

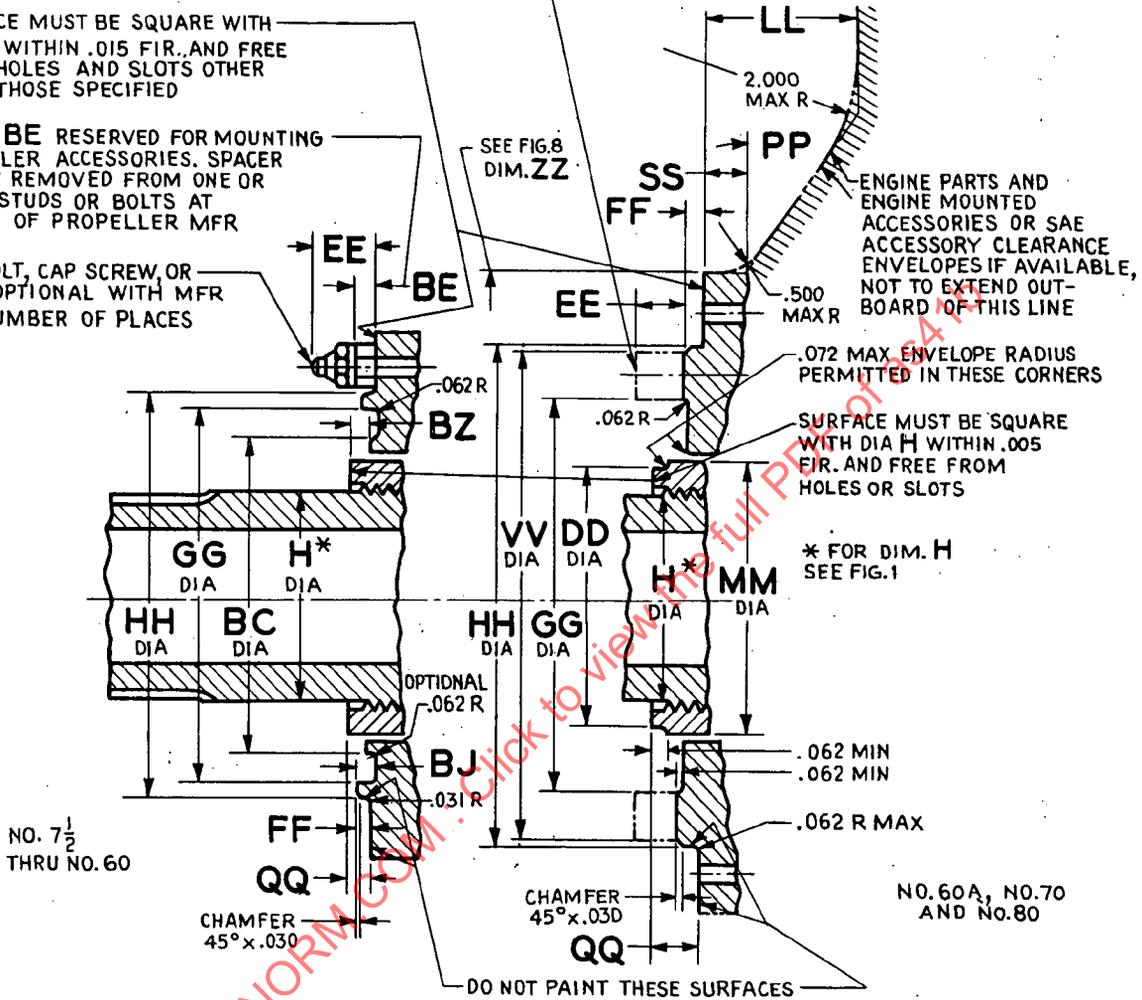
DIA H AND HH TO BE CONCENTRIC WITHIN .007 FIR.

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



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	±.025	.312	.344	.406	.172	.406	.625	.938	.938	.938
SS	MIN	—	—	—	—	—	—	.500	.500	.500
VV	MAX	—	—	—	—	—	—	10.102	11.072	12.574

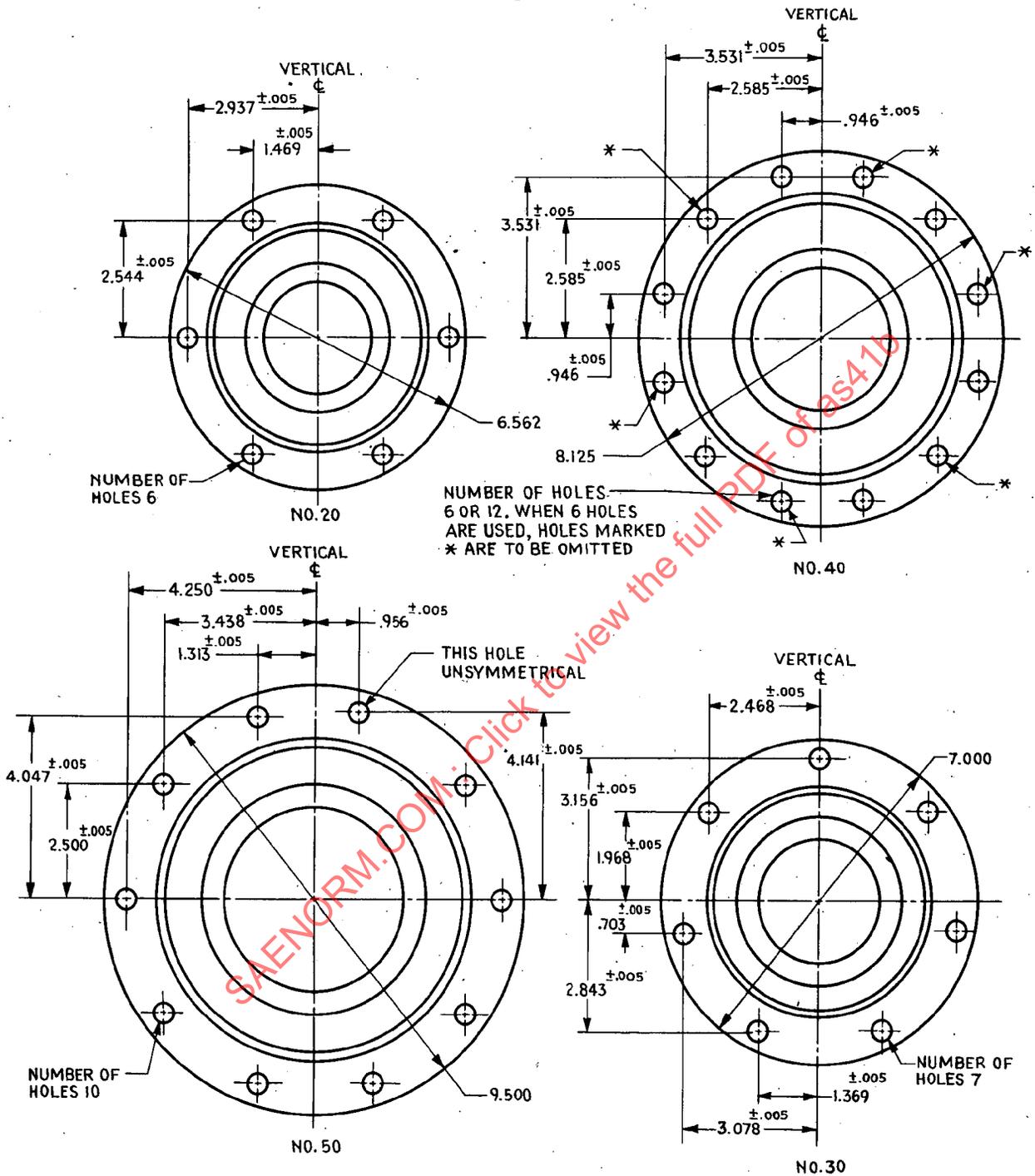
* INACTIVE FOR DESIGN PURPOSES

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

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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

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