

## NATIONAL AEROSPACE STANDARD

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC., 1725 DE SALES STREET, N.W., WASHINGTON, D. C. 20036

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FED. SUP CLASS

TABLE I  
NAS 541  
40/80 DIAMETRAL PITCH

| 2nd DASH<br>NO. OR NO.<br>OF TEETH | PITCH DIA<br>REF | BASE<br>CIRCLE DIA<br>REF | MAJOR<br>DIA<br>+.0020<br>-.0000 | MINOR<br>DIA<br>+.0020<br>-.0000 | TRUE<br>INVOLUTE<br>FORM DIA<br>MAX | CIRCULAR SPACE WIDTH |                  | MEAS BETWEEN PINS |        |
|------------------------------------|------------------|---------------------------|----------------------------------|----------------------------------|-------------------------------------|----------------------|------------------|-------------------|--------|
|                                    |                  |                           |                                  |                                  |                                     | DIMENSIONAL<br>MAX   | EFFECTIVE<br>MIN | MAX               | MIN    |
| -40-39                             | .9750            | .6894                     | 1.0100                           | .9600                            | 1.0025                              | .0470                | .0443            | .9051             | .9041  |
| -40-44                             | 1.1000           | .7778                     | 1.1350                           | 1.0850                           | 1.1275                              | .0470                | .0443            | 1.0309            | 1.0299 |
| -40-49                             | 1.2250           | .8662                     | 1.2600                           | 1.2100                           | 1.2525                              | .0470                | .0443            | 1.1553            | 1.1543 |
| -40-54                             | 1.3500           | .9546                     | 1.3850                           | 1.3350                           | 1.3775                              | .0471                | .0443            | 1.2811            | 1.2801 |
| -40-59                             | 1.4750           | 1.0430                    | 1.5100                           | 1.4600                           | 1.5025                              | .0471                | .0443            | 1.4055            | 1.4045 |

CIRCULAR PITCH -.0785  
ADDENDUM -.0075CIRCULAR TOOTH THICK  
DEDENDUM -.0175MEASURING PIN DIA -.0480  
MAX FILLET RAD -.011TABLE II  
NAS 541  
48/96 DIAMETRAL PITCH

| 2nd DASH<br>NO. OR NO.<br>OF TEETH | PITCH DIA<br>REF | BASE<br>CIRCLE DIA<br>REF | MAJOR<br>DIA<br>+.0020<br>-.0000 | MINOR<br>DIA<br>+.0020<br>-.0000 | TRUE<br>INVOLUTE<br>FORM DIA<br>MAX | CIRCULAR SPACE WIDTH |                  | MEAS BETWEEN PINS |       |
|------------------------------------|------------------|---------------------------|----------------------------------|----------------------------------|-------------------------------------|----------------------|------------------|-------------------|-------|
|                                    |                  |                           |                                  |                                  |                                     | DIMENSIONAL<br>MAX   | EFFECTIVE<br>MIN | MAX               | MIN   |
| -48-26                             | .5417            | .3830                     | .5709                            | .5292                            | .5646                               | .0396                | .0369            | .4844             | .4834 |
| -48-29                             | .6042            | .4272                     | .6333                            | .5917                            | .6271                               | .0396                | .0369            | .5461             | .5451 |
| -48-32                             | .6667            | .4714                     | .6959                            | .6542                            | .6896                               | .0396                | .0369            | .6095             | .6085 |
| -48-35                             | .7292            | .5156                     | .7583                            | .7167                            | .7521                               | .0396                | .0369            | .6713             | .6703 |
| -48-38                             | .7917            | .5598                     | .8209                            | .7792                            | .8146                               | .0396                | .0369            | .7345             | .7335 |
| -48-41                             | .8542            | .6040                     | .8833                            | .8417                            | .8771                               | .0396                | .0369            | .7965             | .7955 |
| -48-44                             | .9167            | .6482                     | .9459                            | .9042                            | .9396                               | .0396                | .0369            | .8596             | .8586 |

CIRCULAR PITCH -.0654  
ADDENDUM -.0063CIRCULAR TOOTH THICK -.0285  
DEDENDUM -.0145MEASURING PIN DIA -.0400  
MAX FILLET RAD -.009TABLE III  
NAS 541  
64/128 DIAMETRAL PITCH

| 2nd DASH<br>NO. OR NO.<br>OF TEETH | PITCH DIA<br>REF | BASE<br>CIRCLE DIA<br>REF | MAJOR<br>DIA<br>+.0020<br>-.0000 | MINOR<br>DIA<br>+.0020<br>-.0000 | TRUE<br>INVOLUTE<br>FORM DIA<br>MAX | CIRCULAR SPACE WIDTH |                  | MEAS BETWEEN PINS |       |
|------------------------------------|------------------|---------------------------|----------------------------------|----------------------------------|-------------------------------------|----------------------|------------------|-------------------|-------|
|                                    |                  |                           |                                  |                                  |                                     | DIMENSIONAL<br>MAX   | EFFECTIVE<br>MIN | MAX               | MIN   |
| -64-19                             | .2969            | .2100                     | .3188                            | .2875                            | .3141                               | .0303                | .0277            | .2536             | .2526 |
| -64-23                             | .3594            | .2541                     | .3813                            | .3500                            | .3766                               | .0304                | .0277            | .3163             | .3153 |
| -64-27                             | .4219            | .2983                     | .4438                            | .4125                            | .4391                               | .0304                | .0277            | .3790             | .3780 |
| -64-31                             | .4844            | .3425                     | .5063                            | .4750                            | .5016                               | .0304                | .0277            | .4416             | .4406 |

CIRCULAR PITCH -.0491  
ADDENDUM -.0047CIRCULAR TOOTH THICK -.0214  
DEDENDUM -.0109MEASURING PIN DIA -.0300  
MAX FILLET RAD -.007TABLE IV  
NAS 541  
80/160 DIAMETRAL PITCH

| 2nd DASH<br>NO. OR NO.<br>OF TEETH | PITCH DIA<br>REF | BASE<br>CIRCLE DIA<br>REF | MAJOR<br>DIA<br>+.0020<br>-.0000 | MINOR<br>DIA<br>+.0020<br>-.0000 | TRUE<br>INVOLUTE<br>FORM DIA<br>MAX | CIRCULAR SPACE WIDTH |                  | MEAS BETWEEN PINS |       |
|------------------------------------|------------------|---------------------------|----------------------------------|----------------------------------|-------------------------------------|----------------------|------------------|-------------------|-------|
|                                    |                  |                           |                                  |                                  |                                     | DIMENSIONAL<br>MAX   | EFFECTIVE<br>MIN | MAX               | MIN   |
| -80-11                             | .1375            | .0972                     | .1550                            | .1300                            | .1513                               | .0247                | .0221            | .1027             | .1016 |
| -80-14                             | .1750            | .1237                     | .1925                            | .1675                            | .1888                               | .0247                | .0221            | .1415             | .1404 |
| -80-16                             | .2000            | .1414                     | .2175                            | .1925                            | .2138                               | .0247                | .0221            | .1666             | .1655 |
| -80-19                             | .2375            | .1679                     | .2550                            | .2300                            | .2513                               | .0247                | .0221            | .2034             | .2023 |

CIRCULAR PITCH -.0393  
ADDENDUM -.0038CIRCULAR TOOTH THICK -.0172  
DEDENDUM -.0088MEASURING PIN DIA -.0240  
MAX FILLET RAD -.006

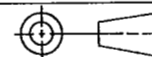
## NOTE:

1. VALUES SHOWN FOR FILLET RADIUS REPRESENT MAX SINGLE TANGENTIAL RADIUS OF CUTTER.
2. VALUES FOR MEASUREMENT BETWEEN PINS ARE FOR MAX AND MIN DIMENSIONAL SPACE WIDTH (MACHINING HIGH AND LOW LIMITS).
3. ALLOWANCES FOR LEAD ERROR ARE NOT INCLUDED. TO ALLOW FOR LEAD ERROR, ADD 60% OF THE ERROR, MULTIPLIED BY FACTOR "F", TO MAX AND MIN MEAS BETWEEN PINS.
4. DRAWINGS OF PLATED SERRATIONS SHALL SPECIFY THAT ALL DIMENSIONS ARE TO BE MET BEFORE PLATING.

2

INACTIVE FOR NEW DESIGN AFTER AUGUST 1983  
USE ANSI B92.1 - 1970.LIST OF ACTIVE SHEETS  
SHEET NO 1  
2  
REV NO 2  
2

CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE

THIRD  
ANGLE  
PROJECTIONPROCUREMENT  
SPECIFICATION

TITLE

INVOLUTE SERRATIONS - INTERNAL

45° PRESSURE ANGLE LOOSE FIT

CLASSIFICATION  
STANDARD PRACTICE

NONE

Documents

NAS 541

SHEET 1 OF 2

1 May 1964 2 7 Sept 1983

REVISION

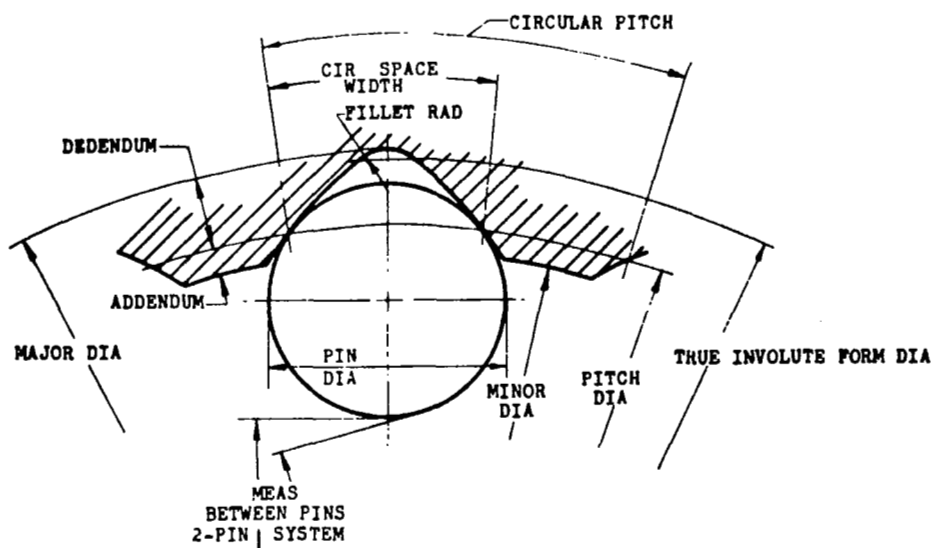
APPROVAL DATE 7/15/54

APPROVAL DATE

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## ALLOWABLE ERRORS

TABLE V

| DIAMETRAL PITCH | INVOLUTE PROFILE ERRORS | ACCUMULATED PITCH ERROR BETWEEN ANY TWO TEETH | LEAD ERRORS          |              |              |              |              |              |
|-----------------|-------------------------|-----------------------------------------------|----------------------|--------------|--------------|--------------|--------------|--------------|
|                 |                         |                                               | LENGTH OF SEERRATION |              |              |              |              |              |
|                 |                         |                                               | 0 TO 0.49            | 0.50 TO 1.24 | 1.25 TO 2.49 | 2.50 TO 3.99 | 4.00 TO 5.24 | 5.25 TO 6.50 |
| ALL             | .0005                   | .0015                                         | 0                    | .0003        | .0003        | .0004        | .0005        | .0006        |

TABLE VI

| DIAMETRAL PITCH | NO. TEETH | OUT OF ROUNDNESS | FACTOR F | NO. TEETH | OUT OF ROUNDNESS | FACTOR F |
|-----------------|-----------|------------------|----------|-----------|------------------|----------|
| ALL             | 11        | .0008            | 1.111    | 32        | .0008            | 1.032    |
|                 | 14        | .0008            | 1.089    | 35        | .0009            | 1.028    |
|                 | 16        | .0008            | 1.075    | 38        | .0009            | 1.027    |
|                 | 19        | .0008            | 1.058    | 39        | .0009            | 1.025    |
|                 | 23        | .0008            | 1.047    | 41        | .0009            | 1.023    |
|                 | 26        | .0008            | 1.041    | 44        | .0009            | 1.022    |
|                 | 27        | .0008            | 1.039    | 49        | .0009            | 1.020    |
|                 | 29        | .0008            | 1.036    | 54        | .0009            | 1.018    |
|                 | 31        | .0008            | 1.032    | 59        | .0009            | 1.016    |

- ② NOTES: 1. VALUES SHOWN IN THE TABLES TAKEN DIRECTLY FROM AMERICAN STANDARD FOR INVOLUTE SEERRATIONS, ASA B5.26 - 1950, WITH THE EXCEPTION OF MINIMUM MEASUREMENT BETWEEN PINS WHICH IS THE VALUE FOR THE LOW LIMIT OF THE MACHINING TOLERANCE.
2. FOR RECOMMENDED DESIGN PRACTICE SEE NAS 540.

② INACTIVE FOR NEW DESIGN AFTER AUGUST 1983  
USE ANSI B92.1 - 1970.

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST DATE OF APPROVAL SHOWN HEREON.

APPROVAL DATE 7/15/54  
REVISION ① 1 May 1964 ② 7 Sept 1983