## AS568D - O-RINGS

MFP Seals produces O-Rings in inch and metric sizes. The inch sizes are produced to the AS568D (Aerospace Standard) published by the SAE (Society of Automotive Engineers). These inch size O-Rings are designated by a dash number referenced on the AS568D chart. This standard for O-Rings contains 379 sizes and MFP Seals stocks them in a wide range of materials. A list of available materials appears below.

This information is only to be used as a guide to the selection of seal compounds. Application, as well as temperature, pressures, media, and finishes, should all be considered when choosing seal compounds. Other compounds are available.


MFP PART NUMBER


COMPOUNDS FORMULATED FOR O-RINGS

| Compound Name | Designation | Hardness | Color | Temperature Range |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| E7101 | EPDM | 70 Shore A | Black | $-50^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | ( $-58{ }^{\circ} \mathrm{F}$ to $+212^{\circ} \mathrm{F}$ ) |
| E7102 | EPDM | 80 Shore A | Black | $-50^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | $\left(-58{ }^{\circ} \mathrm{F}\right.$ to $\left.+212^{\circ} \mathrm{F}\right)$ |
| E7103 (NSF61) | EPDM | 70 Shore A | Black | $-50^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | ( $-58{ }^{\circ} \mathrm{F}$ to $+212^{\circ} \mathrm{F}$ ) |
| E7105 (WRAS/NSF61) | EPDM | 70 Shore A | Black | $-50^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | ( $-58{ }^{\circ} \mathrm{F}$ to $+302^{\circ} \mathrm{F}$ ) |
| FC7500 - Fluorochem ${ }^{\ominus}$ | FKME | 75 Shore A | Black | $-22^{\circ} \mathrm{C}$ to $+250^{\circ} \mathrm{C}$ | $\left(-7^{\circ} \mathrm{F}\right.$ to $\left.+482^{\circ} \mathrm{F}\right)$ |
| FC7510 - Fluorochem ${ }^{\text {® }}$ | FKM | 75 Shore A | Black | $-20^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(-4^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| FC7525 - Fluorochem ${ }^{\ominus}$ | FFKM | 75 Shore A | Black | $-15^{\circ} \mathrm{C}$ to $+320^{\circ} \mathrm{C}$ | ( $+5^{\circ} \mathrm{F}$ to $+608^{\circ} \mathrm{F}$ ) |
| FC7550 - Fluorochem ${ }^{\text {® }}$ | FFKM | 75 Shore A | White | $-15^{\circ} \mathrm{C}$ to $+320^{\circ} \mathrm{C}$ | ( $+5^{\circ} \mathrm{F}$ to $+608^{\circ} \mathrm{F}$ ) |
| FC7575 - Fluorochem ${ }^{\ominus}$ | FFKM | 90 Shore A | Black | $-15^{\circ} \mathrm{C}$ to $+320^{\circ} \mathrm{C}$ | ( $+5^{\circ} \mathrm{F}$ to $+608^{\circ} \mathrm{F}$ ) |
| FC7600 - Fluorochem ${ }^{\text {® }}$ | FFKM | 90 Shore A | Black | $0^{\circ} \mathrm{C}$ to $+260^{\circ} \mathrm{C}$ | ( $+32^{\circ} \mathrm{F}$ to $+500^{\circ} \mathrm{F}$ ) |
| FC7625 - Fluorochem ${ }^{\ominus}$ | FFKM | 90 Shore A | Black | $-4^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(+25^{\circ} \mathrm{F}\right.$ to $\left.+446^{\circ} \mathrm{F}\right)$ |
| FC7650 - Fluorochem ${ }^{\text {® }}$ | FFKM | 70 Shore A | Black | $-20^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(-4^{\circ} \mathrm{F}\right.$ to $\left.+446^{\circ} \mathrm{F}\right)$ |
| FC7675 - Fluorochem ${ }^{\ominus}$ | FFKM | 75 Shore A | Black | $-4^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(+25^{\circ} \mathrm{F}\right.$ to $\left.+446^{\circ} \mathrm{F}\right)$ |
| FC7700 - Fluorochem ${ }^{\text {® }}$ | FFKM | 75 Shore A | Black | $-7^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(+20^{\circ} \mathrm{F}\right.$ to $\left.+446^{\circ} \mathrm{F}\right)$ |
| FC7725 - Fluorochem ${ }^{\ominus}$ | FFKM | 75 Shore A | White | $-7^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(+20^{\circ} \mathrm{F}\right.$ to $\left.+446^{\circ} \mathrm{F}\right)$ |
| FC7750 - Fluorochem ${ }^{\ominus}$ | FFKM | 75 Shore A | Black | $-6^{\circ} \mathrm{C}$ to $+300^{\circ} \mathrm{C}$ | ( $+21^{\circ} \mathrm{F}$ to $+570^{\circ} \mathrm{F}$ ) |
| FC7775 - Fluorochem ${ }^{\ominus}$ | FFKM | 75 Shore A | Black | $-7^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(+20^{\circ} \mathrm{F}\right.$ to $\left.+446^{\circ} \mathrm{F}\right)$ |
| FC7800 - Fluorochem ${ }^{\text {® }}$ | FFKM | 75 Shore A | Black | $-5^{\circ} \mathrm{C}$ to $+320^{\circ} \mathrm{C}$ | ( $+23^{\circ} \mathrm{F}$ to $+608^{\circ} \mathrm{F}$ ) |
| FS7101 | FVMQ | 70 Shore A | Blue | $-60^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(-76{ }^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| N6001 | NBR | 70 Shore A | Black | $-40^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | ( $-40^{\circ} \mathrm{F}$ to $+212^{\circ} \mathrm{F}$ ) |
| N6003 | NBR | 90 Shore A | Black | $-20^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | $\left(-4^{\circ} \mathrm{F}\right.$ to $\left.+212^{\circ} \mathrm{F}\right)$ |
| N6007 | HNBR | 70 Shore A | Black | $-40^{\circ} \mathrm{C}$ to $+125^{\circ} \mathrm{C}$ | $\left(-40^{\circ} \mathrm{F}\right.$ to $\left.+257^{\circ} \mathrm{F}\right)$ |
| N6008 | HNBR | 80 Shore A | Black | $-35^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | $\left(-31{ }^{\circ} \mathrm{F}\right.$ to $\left.+302^{\circ} \mathrm{F}\right)$ |
| N6009 | HNBR | 90 Shore A | Black | $-30^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | $\left(-22^{\circ} \mathrm{F}\right.$ to $\left.+302^{\circ} \mathrm{F}\right)$ |
| N6010 | HNBR | 70 Shore A | Green | $-40^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | $\left(-40^{\circ} \mathrm{F}\right.$ to $\left.+302^{\circ} \mathrm{F}\right)$ |
| N6011 | HNBR | 80 Shore A | Green | $-25^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | ( $-13{ }^{\circ} \mathrm{F}$ to $+302^{\circ} \mathrm{F}$ ) |
| N6012 | HNBR | 90 Shore A | Green | $-20^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | $\left(-4^{\circ} \mathrm{F}\right.$ to $\left.+302^{\circ} \mathrm{F}\right)$ |
| S7100* | SIL | 70 Shore A | Rust Red | $-55^{\circ} \mathrm{C}$ to $+240^{\circ} \mathrm{C}$ | $\left(-67^{\circ} \mathrm{F}\right.$ to $\left.+464^{\circ} \mathrm{F}\right)$ |
| T1000 | PTFE | 51-60 Shore D | White | $-200^{\circ} \mathrm{C}$ to $+260^{\circ} \mathrm{C}$ | $\left(-328^{\circ} \mathrm{F}\right.$ to $\left.+500^{\circ} \mathrm{F}\right)$ |
| U6865 | TPU | 70 Shore A | Natural | $-81^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | $\left(-115^{\circ} \mathrm{F}\right.$ to $\left.+212^{\circ} \mathrm{F}\right)$ |

COMPOUNDS FORMULATED FOR O-RINGS

| Compound Name | Designation | Hardness | Color | Temperature Range |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| U9251 | TPU | 90 Shore A | Natural | $-54^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ | $\left(-65^{\circ} \mathrm{F}\right.$ to $\left.+300^{\circ} \mathrm{F}\right)$ |
| V1125-Aflas ${ }^{\text {® }}$ | FKM | 80 Shore A | Black | $-0^{\circ} \mathrm{C}$ to $+230^{\circ} \mathrm{C}$ | $\left(+32^{\circ} \mathrm{F}\right.$ to $\left.+446{ }^{\circ} \mathrm{F}\right)$ |
| V7100 | FKM | 75 Shore A | Black | $-20^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(-4{ }^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7125 | FKM | 75 Shore A | Black | $-15^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(+5^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7150 | FKM | 75 Shore A | Black | $-15^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(+5^{\circ} \mathrm{F}\right.$ to $\left.+392{ }^{\circ} \mathrm{F}\right)$ |
| V7155 | FKM | 75 Shore A | Brown | $-15^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(+5^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7165 | FKM | 90 Shore A | Black | $-20^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(-4{ }^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7175 | FKM | 90 Shore A | Black | $-10^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(+14^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7200 | FKM | 90 Shore A | Black | $-30^{\circ} \mathrm{C}$ to $+250^{\circ} \mathrm{C}$ | $\left(-22^{\circ} \mathrm{F}\right.$ to $\left.+482^{\circ} \mathrm{F}\right)$ |
| V7250 | FKM | 75 Shore A | Green | $-15^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(+5^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7325 (AMS-R-83485) | FKM-GLT | 75 Shore A | Black | $-40^{\circ} \mathrm{C}$ to $+200^{\circ} \mathrm{C}$ | $\left(-40^{\circ} \mathrm{F}\right.$ to $\left.+392^{\circ} \mathrm{F}\right)$ |
| V7350 | FEPM | 90 Shore A | Black | $-20^{\circ} \mathrm{C}$ to $+220^{\circ} \mathrm{C}$ | $\left(-4^{\circ} \mathrm{F}\right.$ to $\left.+428^{\circ} \mathrm{F}\right)$ |

This information is only to be used as a guide to the selection of seal compounds. Application, as well as temperature, pressures, media, and finishes, should all be considered when choosing seal compounds. Other compounds may be available based on application. This is not a complete list of available compounds. For more information contact MFP Seals at sales@mfpseals.com or (248) 585-8170. Fluorochem ${ }^{\oplus}$ (2012) and Ultraflex® (2011) are registered trademarks of Martin Fluid Power Co., Inc. *FDA Grade w/o Certification. AFLAS is a registered trademark of the Asahi Glass Co., Ltd.


## NO MAX DIAMETER

The SMALLEST O-Ring that can be produced with this process:

```
C/S: 0.103 in.
    (2.62 mm)
I.D.: }7.874\textrm{in}
    (200 mm)
```

Minimum
Order: One
Physical and
Mechanical
Material Features
are Not Altered

## CONTINUOUSLY MOLDED

Green FKM O-Ring

The LARGEST O-Ring that can be produced with this process: C/S: 1.574 in. ( 40 mm ) I.D.: Unlimited

Maximum Order:
Unlimited
No Glues or Hot Vulcanization
used in this process.

Available Materials: EPDM. EPDM PX FEPM FKM FFKM CR, HNBR, NBR, VMQ


CONTACT YOUR MFP SEALS SALES REPRESENTATIVE FOR MORE INFORMATION

| DASH NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 1/32-CROSS SECTION |  |  |  |  |  |
| -001 | 1/32 | 3/32 | 1/32 | . $029 \pm .004$ | . $040 \pm .003$ |
| 3/64 - CROSS SECTION |  |  |  |  |  |
| -002 | 3/64 | 9/64 | 3/64 | . $042 \pm .004$ | . $050 \pm .003$ |
| 1/16-CROSS SECTION |  |  |  |  |  |
| -003 | 1/16 | 3/16 | 1/16 | . $056 \pm .004$ | . $060 \pm .003$ |
| -004 | 5/64 | 13/64 | 1/16 | $.070 \pm .005$ | . $070 \pm .003$ |
| -005 | 3/32 | 7/32 | 1/16 | $.101 \pm .005$ | . $070 \pm .003$ |
| -006 | 1/8 | 1/4 | 1/16 | $.114 \pm .005$ | . $070 \pm .003$ |
| -007 | 5/32 | 9/32 | 1/16 | . $145 \pm .005$ | . $070 \pm .003$ |
| -008 | 3/16 | 5/16 | 1/16 | . $176 \pm .005$ | . $070 \pm .003$ |
| -009 | 7/32 | 11/32 | 1/16 | $.208 \pm .005$ | . $070 \pm .003$ |
| -010 | 1/4 | 3/8 | 1/16 | $.239 \pm .005$ | . $070 \pm .003$ |
| -011 | 5/16 | 7/16 | 1/16 | $.301 \pm .005$ | . $070 \pm .003$ |
| -012 | 3/8 | 1/2 | 1/16 | . $364 \pm .005$ | . $070 \pm .003$ |
| -013 | 7/16 | 9/16 | 1/16 | $.426 \pm .005$ | . $070 \pm .003$ |
| -014 | 1/2 | 5/8 | 1/16 | $.489 \pm .005$ | . $070 \pm .003$ |
| -015 | 9/16 | 11/16 | 1/16 | $.551 \pm .007$ | . $070 \pm .003$ |
| -016 | 5/8 | 3/4 | 1/16 | $.614 \pm .009$ | . $070 \pm .003$ |
| -017 | 11/16 | 13/16 | 1/16 | $.676 \pm .009$ | . $070 \pm .003$ |
| -018 | 3/4 | 7/8 | 1/16 | . $739 \pm .009$ | . $070 \pm .003$ |
| -019 | 13/16 | 15/16 | 1/16 | $.801 \pm .009$ | . $070 \pm .003$ |
| -020 | 7/8 | 1 | 1/16 | $.864 \pm .009$ | . $070 \pm .003$ |
| -021 | 15/16 | 1-1/16 | 1/16 | $.926 \pm .009$ | . $070 \pm .003$ |
| -022 | 1 | 1-1/8 | 1/16 | $.989 \pm .010$ | . $070 \pm .003$ |
| -023 | 1-1/16 | 1-3/16 | 1/16 | $1.051 \pm .010$ | . $070 \pm .003$ |
| -024 | 1-1/8 | 1-1/4 | 1/16 | $1.114 \pm .010$ | . $070 \pm .003$ |
| -025 | 1-3/16 | 1-5/16 | 1/16 | $1.176 \pm .011$ | . $070 \pm .003$ |
| -026 | 1-1/4 | 1-3/8 | 1/16 | $1.239 \pm .011$ | . $070 \pm .003$ |
| -027 | 1-5/16 | 1-7/16 | 1/16 | $1.301 \pm .011$ | . $070 \pm .003$ |
| -028 | 1-3/8 | 1-1/2 | 1/16 | $1.364 \pm .013$ | . $070 \pm .003$ |
| -029 | 1-1/2 | 1-5/8 | 1/16 | $1.489 \pm .013$ | . $070 \pm .003$ |
| -030 | 1-5/8 | 1-3/4 | 1/16 | $1.614 \pm .013$ | . $070 \pm .003$ |
| -031 | 1-3/4 | 1-7/8 | 1/16 | $1.739 \pm .015$ | . $070 \pm .003$ |
| -032 | 1-7/8 | 2 | 1/16 | $1.864 \pm .015$ | . $070 \pm .003$ |
| -033 | 2 | 2-1/8 | 1/16 | $1.989 \pm .018$ | . $070 \pm .003$ |
| -034 | 2-1/8 | 2-1/4 | 1/16 | $2.114 \pm .018$ | . $070 \pm .003$ |
| -035 | 2-1/4 | 2-3/8 | 1/16 | $2.239 \pm .018$ | . $070 \pm .003$ |
| -036 | 2-3/8 | 2-1/2 | 1/16 | $2.364 \pm .018$ | . $070 \pm .003$ |
| -037 | 2-1/2 | 2-5/8 | 1/16 | $2.489 \pm .018$ | . $070 \pm .003$ |
| -038 | 2-5/8 | 2-3/4 | 1/16 | $2.614 \pm .020$ | . $070 \pm .003$ |
| -039 | 2-3/4 | 2-7/8 | 1/16 | $2.739 \pm .020$ | . $070 \pm .003$ |
| -040 | 2-7/8 | 3 | 1/16 | $2.864 \pm .020$ | . $070 \pm .003$ |
| -041 | 3 | 3-1/8 | 1/16 | $2.989 \pm .024$ | . $070 \pm .003$ |
| -042 | 3-1/4 | 3-3/8 | 1/16 | $3.239 \pm .024$ | . $070 \pm .003$ |
| -043 | 3-1/2 | 3-5/8 | 1/16 | $3.489 \pm .024$ | . $070 \pm .003$ |
| -044 | 3-3/4 | 3-7/8 | 1/16 | $3.739 \pm .027$ | . $070 \pm .003$ |
| -045 | 4 | 4-1/8 | 1/16 | $3.989 \pm .027$ | . $070 \pm .003$ |
| -046 | 4-1/4 | 4-3/8 | 1/16 | $4.239 \pm .030$ | . $070 \pm .003$ |
| -047 | 4-1/2 | 4-5/8 | 1/16 | $4.489 \pm .030$ | . $070 \pm .003$ |
| -048 | 4-3/4 | 4-7/8 | 1/16 | $4.739 \pm .030$ | . $070 \pm .003$ |
| -049 | 5 | 5-1/8 | 1/16 | $4.989 \pm .037$ | . $070 \pm .003$ |
| -050 | 5-1/4 | 5-3/8 | 1/16 | $5.239 \pm .037$ | . $070 \pm .003$ |


| DASH <br> NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 3/32-CROSS SECTION |  |  |  |  |  |
| -102 | 1/16 | 1/4 | 3/32 | . $049 \pm .005$ | $.103 \pm .003$ |
| -103 | 3/32 | 9/32 | 3/32 | $.081 \pm .005$ | $.103 \pm .003$ |
| -104 | 1/8 | 5/16 | 3/32 | $.112 \pm .005$ | $.103 \pm .003$ |
| -105 | 5/32 | 11/32 | 3/32 | $.143 \pm .005$ | $.103 \pm .003$ |
| -106 | 3/16 | 3/8 | 3/32 | $.174 \pm .005$ | $.103 \pm .003$ |
| -107 | 7/32 | 13/32 | 3/32 | $.206 \pm .005$ | $.103 \pm .003$ |
| -108 | 1/4 | 7/16 | 3/32 | . $237 \pm .005$ | $.103 \pm .003$ |
| -109 | 5/16 | 1/2 | 3/32 | $.299 \pm .005$ | $.103 \pm .003$ |
| -110 | 3/8 | 9/16 | 3/32 | $.362 \pm .005$ | $.103 \pm .003$ |
| -111 | 7/16 | 5/8 | 3/32 | $.424 \pm .005$ | $.103 \pm .003$ |
| -112 | 1/2 | 11/16 | 3/32 | $.487 \pm .005$ | $.103 \pm .003$ |
| -113 | 9/16 | 3/4 | 3/32 | $.549 \pm .007$ | $.103 \pm .003$ |
| -114 | 5/8 | 13/16 | 3/32 | $.612 \pm .009$ | $.103 \pm .003$ |
| -115 | 11/16 | 7/8 | 3/32 | . $674 \pm .009$ | $.103 \pm .003$ |
| -116 | 3/4 | 15/16 | 3/32 | . $737 \pm .009$ | $.103 \pm .003$ |
| -117 | 13/16 | 1 | 3/32 | $.799 \pm .010$ | $.103 \pm .003$ |
| -118 | 7/8 | 1-1/16 | 3/32 | $.862 \pm .010$ | $.103 \pm .003$ |
| -119 | 15/16 | 1-1/8 | 3/32 | $.924 \pm .010$ | $.103 \pm .003$ |
| -120 | 1 | 1-3/16 | 3/32 | . $987 \pm .010$ | $.103 \pm .003$ |
| -121 | 1-1/16 | 1-1/4 | 3/32 | $1.049 \pm .010$ | $.103 \pm .003$ |
| -122 | 1-1/8 | 1-5/16 | 3/32 | $1.112 \pm .010$ | $.103 \pm .003$ |
| -123 | 1-3/16 | 1-3/8 | 3/32 | $1.174 \pm .012$ | $.103 \pm .003$ |
| -124 | 1-1/4 | 1-7/16 | 3/32 | $1.237 \pm .012$ | $.103 \pm .003$ |
| -125 | 1-5/16 | 1-1/2 | 3/32 | $1.299 \pm .012$ | $.103 \pm .003$ |
| -126 | 1-3/8 | 1-9/16 | 3/32 | $1.362 \pm .012$ | $.103 \pm .003$ |
| -127 | 1-7/16 | 1-5/8 | 3/32 | $1.424 \pm .012$ | $.103 \pm .003$ |
| -128 | 1-1/2 | 1-11/16 | 3/32 | $1.487 \pm .012$ | $.103 \pm .003$ |
| -129 | 1-9/16 | 1-3/4 | 3/32 | $1.549 \pm .015$ | . $103 \pm .003$ |
| -130 | 1-5/8 | 1-13/16 | 3/32 | $1.612 \pm .015$ | $.103 \pm .003$ |
| -131 | 1-11/16 | 1-7/8 | 3/32 | $1.674 \pm .015$ | $.103 \pm .003$ |
| -132 | 1-3/4 | 1-15/16 | 3/32 | $1.737 \pm .015$ | . $103 \pm .003$ |
| -133 | 1-13/16 | 2 | 3/32 | $1.799 \pm .015$ | $.103 \pm .003$ |
| -134 | 1-7/8 | 2-1/16 | 3/32 | $1.862 \pm .015$ | . $103 \pm .003$ |
| -135 | 1-15/16 | 2-1/8 | 3/32 | $1.925 \pm .017$ | $.103 \pm .003$ |
| -136 | 2 | 2-3/16 | 3/32 | $1.987 \pm .017$ | $.103 \pm .003$ |
| -137 | 2-1/16 | 2-1/4 | 3/32 | $2.050 \pm .017$ | $.103 \pm .003$ |
| -138 | 2-1/8 | 2-5/16 | 3/32 | $2.112 \pm .017$ | $.103 \pm .003$ |
| -139 | 2-3/16 | 2-3/8 | 3/32 | $2.175 \pm .017$ | $.103 \pm .003$ |
| -140 | 2-1/4 | 2-7/16 | 3/32 | $2.237 \pm .017$ | $.103 \pm .003$ |
| -141 | 2-5/16 | 2-1/2 | 3/32 | $2.300 \pm .020$ | $.103 \pm .003$ |
| -142 | 2-3/8 | 2-9/16 | 3/32 | $2.362 \pm .020$ | $.103 \pm .003$ |
| -143 | 2-7/16 | 2-5/8 | 3/32 | $2.425 \pm .020$ | $.103 \pm .003$ |
| -144 | 2-1/2 | 2-11/16 | 3/32 | $2.487 \pm .020$ | $.103 \pm .003$ |
| -145 | 2-9/16 | 2-3/4 | 3/32 | $2.550 \pm .020$ | $.103 \pm .003$ |
| -146 | 2-5/8 | 2-13/16 | 3/32 | $2.612 \pm .020$ | $.103 \pm .003$ |
| -147 | 2-11/16 | 2-7/8 | 3/32 | $2.675 \pm .022$ | $.103 \pm .003$ |
| -148 | 2-3/4 | 2-15/16 | 3/32 | $2.737 \pm .022$ | $.103 \pm .003$ |
| -149 | 2-13/16 | 3 | 3/32 | $2.800 \pm .022$ | $.103 \pm .003$ |
| -150 | 2-7/8 | 3-1/16 | 3/32 | $2.862 \pm .022$ | $.103 \pm .003$ |
| -151 | 3 | 3-3/16 | 3/32 | $2.987 \pm .024$ | . $103 \pm .003$ |
| -152 | 3-1/4 | 3-7/16 | 3/32 | $3.237 \pm .024$ | . $103 \pm .003$ |
| -153 | 3-1/2 | 3-11/16 | 3/32 | $3.487 \pm .024$ | $.103 \pm .003$ |
| -154 | 3-3/4 | 3-15/16 | 3/32 | $3.737 \pm .028$ | . $103 \pm .003$ |


| DASH <br> DUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| NUD | OD | C/S | ID | C/S |  |
| $3 / 32-$ CROSS SECTION |  |  |  |  |  |
| -155 | 4 | $4-3 / 16$ | $3 / 32$ | $3.987 \pm .028$ | $.103 \pm .003$ |
| -156 | $4-1 / 4$ | $4-7 / 16$ | $3 / 32$ | $4.237 \pm .030$ | $.103 \pm .003$ |
| -157 | $4-1 / 2$ | $4-11 / 16$ | $3 / 32$ | $4.487 \pm .030$ | $.103 \pm .003$ |
| -158 | $4-3 / 4$ | $4-15 / 16$ | $3 / 32$ | $4.737 \pm .030$ | $.103 \pm .003$ |
| -159 | 5 | $5-3 / 16$ | $3 / 32$ | $4.987 \pm .035$ | $.103 \pm .003$ |
| -160 | $5-1 / 4$ | $5-7 / 16$ | $3 / 32$ | $5.237 \pm .035$ | $.103 \pm .003$ |
| -161 | $5-1 / 2$ | $5-11 / 16$ | $3 / 32$ | $5.487 \pm .035$ | $.103 \pm .003$ |
| -162 | $5-3 / 4$ | $5-15 / 16$ | $3 / 32$ | $5.737 \pm .035$ | $.103 \pm .003$ |
| -163 | 6 | $6-3 / 16$ | $3 / 32$ | $5.987 \pm .035$ | $.103 \pm .003$ |
| -164 | $6-1 / 4$ | $6-7 / 16$ | $3 / 32$ | $6.237 \pm .040$ | $.103 \pm .003$ |
| -165 | $6-1 / 2$ | $6-11 / 16$ | $3 / 32$ | $6.487 \pm .040$ | $.103 \pm .003$ |
| -166 | $6-3 / 4$ | $6-15 / 16$ | $3 / 32$ | $6.737 \pm .040$ | $.103 \pm .003$ |
| -167 | 7 | $7-3 / 16$ | $3 / 32$ | $6.987 \pm .040$ | $.103 \pm .003$ |
| -168 | $7-1 / 4$ | $7-7 / 16$ | $3 / 32$ | $7.237 \pm .045$ | $.103 \pm .003$ |
| -169 | $7-1 / 2$ | $7-11 / 16$ | $3 / 32$ | $7.487 \pm .045$ | $.103 \pm .003$ |
| -170 | $7-3 / 4$ | $7-15 / 16$ | $3 / 32$ | $7.737 \pm .045$ | $.103 \pm .003$ |
| -171 | 8 | $8-3 / 16$ | $3 / 32$ | $7.987 \pm .045$ | $.103 \pm .003$ |
| -172 | $8-1 / 4$ | $8-7 / 16$ | $3 / 32$ | $8.237 \pm .050$ | $.103 \pm .003$ |
| -173 | $8-1 / 2$ | $8-11 / 16$ | $3 / 32$ | $8.487 \pm .050$ | $.103 \pm .003$ |
| -174 | $8-3 / 4$ | $8-15 / 16$ | $3 / 32$ | $8.737 \pm .050$ | $.103 \pm .003$ |
| -175 | 9 | $9-3 / 16$ | $3 / 32$ | $8.987 \pm .050$ | $.103 \pm .003$ |
| -176 | $9-1 / 4$ | $9-7 / 16$ | $3 / 32$ | $9.237 \pm .055$ | $.103 \pm .003$ |
| -177 | $9-1 / 2$ | $9-11 / 16$ | $3 / 32$ | $9.487 \pm .055$ | $.103 \pm .003$ |
| -178 | $9-3 / 4$ | $9-15 / 16$ | $3 / 32$ | $9.737 \pm .055$ | $.103 \pm .003$ |

## 1/8-CROSS SECTION

| -201 | $3 / 16$ | $7 / 16$ | $1 / 8$ | $.171 \pm .005$ | $.139 \pm .004$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -202 | $1 / 4$ | $1 / 2$ | $1 / 8$ | $.234 \pm .005$ | $.139 \pm .004$ |
| -203 | $5 / 16$ | $9 / 16$ | $1 / 8$ | $.296 \pm .005$ | $.139 \pm .004$ |
| -204 | $3 / 8$ | $5 / 8$ | $1 / 8$ | $.359 \pm .005$ | $.139 \pm .004$ |
| -205 | $7 / 16$ | $11 / 16$ | $1 / 8$ | $.421 \pm .005$ | $.139 \pm .004$ |
| -206 | $1 / 2$ | $3 / 4$ | $1 / 8$ | $.484 \pm .005$ | $.139 \pm .004$ |
| -207 | $9 / 16$ | $13 / 16$ | $1 / 8$ | $.546 \pm .007$ | $.139 \pm .004$ |
| -208 | $5 / 8$ | $7 / 8$ | $1 / 8$ | $.609 \pm .009$ | $.139 \pm .004$ |
| -209 | $11 / 16$ | $15 / 16$ | $1 / 8$ | $.671 \pm .009$ | $.139 \pm .004$ |
| -210 | $3 / 4$ | 1 | $1 / 8$ | $.734 \pm .010$ | $.139 \pm .004$ |
| -211 | $13 / 16$ | $1-1 / 16$ | $1 / 8$ | $.796 \pm .010$ | $.139 \pm .004$ |
| -212 | $7 / 8$ | $1-1 / 8$ | $1 / 8$ | $.859 \pm .010$ | $.139 \pm .004$ |
| -213 | $15 / 16$ | $1-3 / 16$ | $1 / 8$ | $.921 \pm .010$ | $.139 \pm .004$ |
| -214 | 1 | $1-1 / 4$ | $1 / 8$ | $.984 \pm .010$ | $.139 \pm .004$ |
| -215 | $1-1 / 16$ | $1-5 / 16$ | $1 / 8$ | $1.046 \pm .010$ | $.139 \pm .004$ |
| -216 | $1-1 / 8$ | $1-3 / 8$ | $1 / 8$ | $1.109 \pm .012$ | $.139 \pm .004$ |
| -217 | $1-3 / 16$ | $1-7 / 16$ | $1 / 8$ | $1.171 \pm .012$ | $.139 \pm .004$ |
| -218 | $1-1 / 4$ | $1-1 / 2$ | $1 / 8$ | $1.234 \pm .012$ | $.139 \pm .004$ |
| -219 | $1-5 / 16$ | $1-9 / 16$ | $1 / 8$ | $1.296 \pm .012$ | $.139 \pm .004$ |
| -220 | $1-3 / 8$ | $1-5 / 8$ | $1 / 8$ | $1.359 \pm .012$ | $.139 \pm .004$ |
| -221 | $1-7 / 16$ | $1-11 / 16$ | $1 / 8$ | $1.421 \pm .012$ | $.139 \pm .004$ |
| -222 | $1-1 / 2$ | $1-3 / 4$ | $1 / 8$ | $1.484 \pm .015$ | $.139 \pm .004$ |
| -223 | $1-5 / 8$ | $1-7 / 8$ | $1 / 8$ | $1.609 \pm .015$ | $.139 \pm .004$ |
| -224 | $1-3 / 4$ | 2 | $1 / 8$ | $1.734 \pm .015$ | $.139 \pm .004$ |
| -225 | $1-7 / 8$ | $2-1 / 8$ | $1 / 8$ | $1.859 \pm .018$ | $.139 \pm .004$ |
| -226 | 2 | $2-1 / 4$ | $1 / 8$ | $1.984 \pm .018$ | $.139 \pm .004$ |
| -227 | $2-1 / 8$ | $2-3 / 8$ | $1 / 8$ | $2.109 \pm .018$ | $.139 \pm .004$ |


| DASH NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 1/8-CROSS SECTION |  |  |  |  |  |
| -228 | 2-1/4 | 2-1/2 | 1/8 | $2.234 \pm .020$ | . $139 \pm .004$ |
| -229 | 2-3/8 | 2-5/8 | 1/8 | $2.359 \pm .020$ | . $139 \pm .004$ |
| -230 | 2-1/2 | 2-3/4 | 1/8 | $2.484 \pm .020$ | . $139 \pm .004$ |
| -231 | 2-5/8 | 2-7/8 | 1/8 | $2.609 \pm .020$ | . $139 \pm .004$ |
| -232 | 2-3/4 | 3 | 1/8 | $2.734 \pm .024$ | . $139 \pm .004$ |
| -233 | 2-7/8 | 3-1/8 | 1/8 | $2.859 \pm .024$ | . $139 \pm .004$ |
| -234 | 3 | 3-1/4 | 1/8 | $2.984 \pm .024$ | . $139 \pm .004$ |
| -235 | 3-1/8 | 3-3/8 | 1/8 | $3.109 \pm .024$ | . $139 \pm .004$ |
| -236 | 3-1/4 | 3-1/2 | 1/8 | $3.234 \pm .024$ | . $139 \pm .004$ |
| -237 | 3-3/8 | 3-5/8 | 1/8 | $3.359 \pm .024$ | . $139 \pm .004$ |
| -238 | 3-1/2 | 3-3/4 | 1/8 | $3.484 \pm .024$ | . $139 \pm .004$ |
| -239 | 3-5/8 | 3-7/8 | 1/8 | $3.609 \pm .028$ | . $139 \pm .004$ |
| -240 | 3-3/4 | 4 | 1/8 | $3.734 \pm .028$ | . $139 \pm .004$ |
| -241 | 3-7/8 | 4-1/8 | 1/8 | $3.859 \pm .028$ | . $139 \pm .004$ |
| -242 | 4 | 4-1/4 | 1/8 | $3.984 \pm .028$ | . $139 \pm .004$ |
| -243 | 4-1/8 | 4-3/8 | 1/8 | $4.109 \pm .028$ | . $139 \pm .004$ |
| -244 | 4-1/4 | 4-1/2 | 1/8 | $4.234 \pm .030$ | . $139 \pm .004$ |
| -245 | 4-3/8 | 4-5/8 | 1/8 | $4.359 \pm .030$ | . $139 \pm .004$ |
| -246 | 4-1/2 | 4-3/4 | 1/8 | $4.484 \pm .030$ | . $139 \pm .004$ |
| -247 | 4-5/8 | 4-7/8 | 1/8 | $4.609 \pm .030$ | . $139 \pm .004$ |
| -248 | 4-3/4 | 5 | 1/8 | $4.734 \pm .030$ | . $139 \pm .004$ |
| -249 | 4-7/8 | 5-1/8 | 1/8 | $4.859 \pm .035$ | . $139 \pm .004$ |
| -250 | 5 | 5-1/4 | 1/8 | $4.984 \pm .035$ | . $139 \pm .004$ |
| -251 | 5-1/8 | 5-3/8 | 1/8 | $5.109 \pm .035$ | . $139 \pm .004$ |
| -252 | 5-1/4 | 5-1/2 | 1/8 | $5.234 \pm .035$ | . $139 \pm .004$ |
| -253 | 5-3/8 | 5-5/8 | 1/8 | $5.359 \pm .035$ | . $139 \pm .004$ |
| -254 | 5-1/2 | 5-3/4 | 1/8 | $5.484 \pm .035$ | . $139 \pm .004$ |
| -255 | 5-5/8 | 5-7/8 | 1/8 | $5.609 \pm .035$ | . $139 \pm .004$ |
| -256 | 5-3/4 | 6 | 1/8 | $5.734 \pm .035$ | . $139 \pm .004$ |
| -257 | 5-7/8 | 6-1/8 | 1/8 | $5.859 \pm .035$ | . $139 \pm .004$ |
| -258 | 6 | 6-1/4 | 1/8 | $5.984 \pm .035$ | . $139 \pm .004$ |
| -259 | 6-1/4 | 6-1/2 | 1/8 | $6.234 \pm .040$ | . $139 \pm .004$ |
| -260 | 6-1/2 | 6-3/4 | 1/8 | $6.484 \pm .040$ | . $139 \pm .004$ |
| -261 | 6-3/4 | 7 | 1/8 | $6.734 \pm .040$ | . $139 \pm .004$ |
| -262 | 7 | 7-1/4 | 1/8 | $6.984 \pm .040$ | . $139 \pm .004$ |
| -263 | 7-1/4 | 7-1/2 | 1/8 | $7.234 \pm .045$ | . $139 \pm .004$ |
| -264 | 7-1/2 | 7-3/4 | 1/8 | $7.484 \pm .045$ | . $139 \pm .004$ |
| -265 | 7-3/4 | 8 | 1/8 | $7.734 \pm .045$ | . $139 \pm .004$ |
| -266 | 8 | 8-1/4 | 1/8 | $7.984 \pm .045$ | . $139 \pm .004$ |
| -267 | 8-1/4 | 8-1/2 | 1/8 | $8.234 \pm .050$ | . $139 \pm .004$ |
| -268 | 8-1/2 | 8-3/4 | 1/8 | $8.484 \pm .050$ | . $139 \pm .004$ |
| -269 | 8-3/4 | 9 | 1/8 | $8.734 \pm .050$ | . $139 \pm .004$ |
| -270 | 9 | 9-1/4 | 1/8 | $8.984 \pm .050$ | . $139 \pm .004$ |
| -271 | 9-1/4 | 9-1/2 | 1/8 | $9.234 \pm .055$ | . $139 \pm .004$ |
| -272 | 9-1/2 | 9-3/4 | 1/8 | $9.484 \pm .055$ | . $139 \pm .004$ |
| -273 | 9-3/4 | 10 | 1/8 | $9.734 \pm .055$ | . $139 \pm .004$ |
| -274 | 10 | 10-1/4 | 1/8 | $9.984 \pm .055$ | . $139 \pm .004$ |
| -275 | 10-1/2 | 10-3/4 | 1/8 | $10.484 \pm .055$ | . $139 \pm .004$ |
| -276 | 11 | 11-1/4 | 1/8 | $10.984 \pm .065$ | . $139 \pm .004$ |
| -277 | 11-1/2 | 11-3/4 | 1/8 | $11.484 \pm .065$ | . $139 \pm .004$ |
| -278 | 12 | 12-1/4 | 1/8 | $11.984 \pm .065$ | . $139 \pm .004$ |
| -279 | 13 | 13-1/4 | 1/8 | $12.984 \pm .065$ | . $139 \pm .004$ |
| -280 | 14 | 14-1/4 | 1/8 | $13.984 \pm .065$ | $139 \pm .004$ |


| DASH NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 1/8-CROSS SECTION |  |  |  |  |  |
| -281 | 15 | 15-1/4 | 1/8 | $14.984 \pm .065$ | . $139 \pm .004$ |
| -282 | 16 | 16-1/4 | 1/8 | $15.955 \pm .075$ | . $139 \pm .004$ |
| -283 | 17 | 17-1/4 | 1/8 | $16.955 \pm .080$ | . $139 \pm .004$ |
| -284 | 18 | 18-1/4 | 1/8 | $17.955 \pm .085$ | . $139 \pm .004$ |

## 3/16 - CROSS SECTION

| -309 | $7 / 16$ | $13 / 16$ | $3 / 16$ | $.412 \pm .005$ | $.210 \pm .005$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -310 | $1 / 2$ | $7 / 8$ | $3 / 16$ | $.475 \pm .005$ | $.210 \pm .005$ |
| -311 | $9 / 16$ | $15 / 16$ | $3 / 16$ | $.537 \pm .007$ | $.210 \pm .005$ |
| -312 | $5 / 8$ | 1 | $3 / 16$ | $.600 \pm .009$ | $.210 \pm .005$ |
| -313 | $11 / 16$ | $1-1 / 16$ | $3 / 16$ | $.662 \pm .009$ | $.210 \pm .005$ |
| -314 | $3 / 4$ | $1-1 / 8$ | $3 / 16$ | $.725 \pm .010$ | $.210 \pm .005$ |
| -315 | $13 / 16$ | $1-3 / 16$ | $3 / 16$ | $.787 \pm .010$ | $.210 \pm .005$ |
| -316 | $7 / 8$ | $1-1 / 4$ | $3 / 16$ | $.850 \pm .010$ | $.210 \pm .005$ |
| -317 | $15 / 16$ | $1-5 / 16$ | $3 / 16$ | $.912 \pm .010$ | $.210 \pm .005$ |
| -318 | 1 | $1-3 / 8$ | $3 / 16$ | $.975 \pm .010$ | $.210 \pm .005$ |
| -319 | $1-1 / 16$ | $1-7 / 16$ | $3 / 16$ | $1.037 \pm .010$ | $.210 \pm .005$ |
| -320 | $1-1 / 8$ | $1-1 / 2$ | $3 / 16$ | $1.100 \pm .012$ | $.210 \pm .005$ |
| -321 | $1-3 / 16$ | $1-9 / 16$ | $3 / 16$ | $1.162 \pm .012$ | $.210 \pm .005$ |
| -322 | $1-1 / 4$ | $1-5 / 8$ | $3 / 16$ | $1.225 \pm .012$ | $.210 \pm .005$ |
| -323 | $1-5 / 16$ | $1-11 / 16$ | $3 / 16$ | $1.287 \pm .012$ | $.210 \pm .005$ |
| -324 | $1-3 / 8$ | $1-3 / 4$ | $3 / 16$ | $1.350 \pm .012$ | $.210 \pm .005$ |
| -325 | $1-1 / 2$ | $1-7 / 8$ | $3 / 16$ | $1.475 \pm .015$ | $.210 \pm .005$ |
| -326 | $1-5 / 8$ | 2 | $3 / 16$ | $1.600 \pm .015$ | $.210 \pm .005$ |
| -327 | $1-3 / 4$ | $2-1 / 8$ | $3 / 16$ | $1.725 \pm .015$ | $.210 \pm .005$ |
| -328 | $1-7 / 8$ | $2-1 / 4$ | $3 / 16$ | $1.850 \pm .015$ | $.210 \pm .005$ |
| -329 | 2 | $2-3 / 8$ | $3 / 16$ | $1.975 \pm .018$ | $.210 \pm .005$ |
| -330 | $2-1 / 8$ | $2-1 / 2$ | $3 / 16$ | $2.100 \pm .018$ | $.210 \pm .005$ |
| -331 | $2-1 / 4$ | $2-5 / 8$ | $3 / 16$ | $2.225 \pm .018$ | $.210 \pm .005$ |
| -332 | $2-3 / 8$ | $2-3 / 4$ | $3 / 16$ | $2.350 \pm .018$ | $.210 \pm .005$ |
| -333 | $2-1 / 2$ | $2-7 / 8$ | $3 / 16$ | $2.475 \pm .020$ | $.210 \pm .005$ |
| -334 | $2-5 / 8$ | 3 | $3 / 16$ | $2.600 \pm .020$ | $.210 \pm .005$ |
| -335 | $2-3 / 4$ | $3-1 / 8$ | $3 / 16$ | $2.725 \pm .020$ | $.210 \pm .005$ |
| -336 | $2-7 / 8$ | $3-1 / 4$ | $3 / 16$ | $2.850 \pm .020$ | $.210 \pm .005$ |
| -337 | 3 | $3-3 / 8$ | $3 / 16$ | $2.975 \pm .024$ | $.210 \pm .005$ |
| -338 | $3-1 / 8$ | $3-1 / 2$ | $3 / 16$ | $3.100 \pm .024$ | $.210 \pm .005$ |
| -339 | $3-1 / 4$ | $3-5 / 8$ | $3 / 16$ | $3.225 \pm .024$ | $.210 \pm .005$ |
| -340 | $3-3 / 8$ | $3-3 / 4$ | $3 / 16$ | $3.350 \pm .024$ | $.210 \pm .005$ |
| -341 | $3-1 / 2$ | $3-7 / 8$ | $3 / 16$ | $3.475 \pm .024$ | $.210 \pm .005$ |
| -342 | $3-5 / 8$ | 4 | $3 / 16$ | $3.600 \pm .028$ | $.210 \pm .005$ |
| -343 | $3-3 / 4$ | $4-1 / 8$ | $3 / 16$ | $3.725 \pm .028$ | $.210 \pm .005$ |
| -344 | $3-7 / 8$ | $4-1 / 4$ | $3 / 16$ | $3.850 \pm .028$ | $.210 \pm .005$ |
| -345 | 4 | $4-3 / 8$ | $3 / 16$ | $3.975 \pm .028$ | $.210 \pm .005$ |
| -346 | $4-1 / 8$ | $4-1 / 2$ | $3 / 16$ | $4.100 \pm .028$ | $.210 \pm .005$ |
| -347 | $4-1 / 4$ | $4-5 / 8$ | $3 / 16$ | $4.225 \pm .030$ | $.210 \pm .005$ |
| -348 | $4-3 / 8$ | $4-3 / 4$ | $3 / 16$ | $4.350 \pm .030$ | $.210 \pm .005$ |
| -349 | $4-1 / 2$ | $4-7 / 8$ | $3 / 16$ | $4.475 \pm .030$ | $.210 \pm .005$ |
| -350 | $4-5 / 8$ | 5 | $3 / 16$ | $4.600 \pm .030$ | $.210 \pm .005$ |
| -351 | $4-3 / 4$ | $5-1 / 8$ | $3 / 16$ | $4.725 \pm .030$ | $.210 \pm .005$ |
| -352 | $4-7 / 8$ | $5-1 / 4$ | $3 / 16$ | $4.850 \pm .030$ | $.210 \pm .005$ |
| -353 | 5 | $5-3 / 8$ | $3 / 16$ | $4.975 \pm .037$ | $.210 \pm .005$ |
| -354 | $5-1 / 8$ | $5-1 / 2$ | $3 / 16$ | $5.100 \pm .037$ | $.210 \pm .005$ |
| -2 |  |  |  |  |  |


| DASH NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 3/16-CROSS SECTION |  |  |  |  |  |
| -355 | 5-1/4 | 5-5/8 | 3/16 | $5.225 \pm .037$ | . $210 \pm .005$ |
| -356 | 5-3/8 | 5-3/4 | 3/16 | $5.350 \pm .037$ | . $210 \pm .005$ |
| -357 | 5-1/2 | 5-7/8 | 3/16 | $5.475 \pm .037$ | . $210 \pm .005$ |
| -358 | 5-5/8 | 6 | 3/16 | $5.600 \pm .037$ | . $210 \pm .005$ |
| -359 | 5-3/4 | 6-1/8 | 3/16 | $5.725 \pm .037$ | . $210 \pm .005$ |
| -360 | 5-7/8 | 6-1/4 | 3/16 | $5.850 \pm .037$ | . $210 \pm .005$ |
| -361 | 6 | 6-3/8 | 3/16 | $5.975 \pm .037$ | . $210 \pm .005$ |
| -362 | 6-1/4 | 6-5/8 | 3/16 | $6.225 \pm .040$ | . $210 \pm .005$ |
| -363 | 6-1/2 | 6-7/8 | 3/16 | $6.475 \pm .040$ | . $210 \pm .005$ |
| -364 | 6-3/4 | 7-1/8 | 3/16 | $6.725 \pm .040$ | . $210 \pm .005$ |
| -365 | 7 | 7-3/8 | 3/16 | $6.975 \pm .040$ | . $210 \pm .005$ |
| -366 | 7-1/4 | 7-5/8 | 3/16 | $7.225 \pm .045$ | . $210 \pm .005$ |
| -367 | 7-1/2 | 7-7/8 | 3/16 | $7.475 \pm .045$ | . $210 \pm .005$ |
| -368 | 7-3/4 | 8-1/8 | 3/16 | $7.725 \pm .045$ | . $210 \pm .005$ |
| -369 | 8 | 8-3/8 | 3/16 | $7.975 \pm .045$ | . $210 \pm .005$ |
| -370 | 8-1/4 | 8-5/8 | 3/16 | $8.225 \pm .050$ | . $210 \pm .005$ |
| -371 | 8-1/2 | 8-7/8 | 3/16 | $8.475 \pm .050$ | . $210 \pm .005$ |
| -372 | 8-3/4 | 9-1/8 | 3/16 | $8.725 \pm .050$ | . $210 \pm .005$ |
| -373 | 9 | 9-3/8 | 3/16 | $8.975 \pm .050$ | . $210 \pm .005$ |
| -374 | 9-1/4 | 9-5/8 | 3/16 | $9.225 \pm .055$ | . $210 \pm .005$ |
| -375 | 9-1/2 | 9-7/8 | 3/16 | $9.475 \pm .055$ | . $210 \pm .005$ |
| -376 | 9-3/4 | 10-1/8 | 3/16 | $9.725 \pm .055$ | . $210 \pm .005$ |
| -377 | 10 | 10-3/8 | 3/16 | $9.975 \pm .055$ | . $210 \pm .005$ |
| -378 | 10-1/2 | 10-7/8 | 3/16 | $10.475 \pm .060$ | . $210 \pm .005$ |
| -379 | 11 | 11-3/8 | 3/16 | $10.975 \pm .060$ | . $210 \pm .005$ |
| -380 | 11-1/2 | 11-7/8 | 3/16 | $11.475 \pm .065$ | . $210 \pm .005$ |
| -381 | 12 | 12-3/8 | 3/16 | $11.975 \pm .065$ | . $210 \pm .005$ |
| -382 | 13 | 13-3/8 | 3/16 | $12.975 \pm .065$ | . $210 \pm .005$ |
| -383 | 14 | 14-3/8 | 3/16 | $13.975 \pm .070$ | . $210 \pm .005$ |
| -384 | 15 | 15-3/8 | 3/16 | $14.975 \pm .070$ | . $210 \pm .005$ |
| -385 | 16 | 16-3/8 | 3/16 | $15.955 \pm .075$ | . $210 \pm .005$ |
| -386 | 17 | 17-3/8 | 3/16 | $16.955 \pm .080$ | . $210 \pm .005$ |
| -387 | 18 | 18-3/8 | 3/16 | $17.955 \pm .085$ | . $210 \pm .005$ |
| -388 | 19 | 19-3/8 | 3/16 | $18.955 \pm .090$ | . $210 \pm .005$ |
| -389 | 20 | 20-3/8 | 3/16 | $19.955 \pm .095$ | . $210 \pm .005$ |
| -390 | 21 | 21-3/8 | 3/16 | $20.955 \pm .095$ | . $210 \pm .005$ |
| -391 | 22 | 22-3/8 | 3/16 | $21.955 \pm .100$ | . $210 \pm .005$ |
| -392 | 23 | 23-3/8 | 3/16 | $22.940 \pm .105$ | . $210 \pm .005$ |
| -393 | 24 | 24-3/8 | 3/16 | $23.940 \pm .110$ | . $210 \pm .005$ |
| -394 | 25 | 25-3/8 | 3/16 | $24.940 \pm .115$ | . $210 \pm .005$ |
| -395 | 26 | 26-3/8 | 3/16 | $25.940 \pm .120$ | . $210 \pm .005$ |

## 1/4-CROSS SECTION

| -400 | $1-3 / 8$ | $1-7 / 8$ | $1 / 4$ | $1.350 \pm .014$ | $.275 \pm .006$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -401 | $1-1 / 2$ | 2 | $1 / 4$ | $1.475 \pm .014$ | $.275 \pm .006$ |
| -402 | $1-5 / 8$ | $2-1 / 8$ | $1 / 4$ | $1.600 \pm .015$ | $.275 \pm .006$ |
| -403 | $1-3 / 4$ | $2-1 / 4$ | $1 / 4$ | $1.725 \pm .016$ | $.275 \pm .006$ |
| -404 | $1-7 / 8$ | $2-3 / 8$ | $1 / 4$ | $1.850 \pm .016$ | $.275 \pm .006$ |
| -405 | 2 | $2-1 / 2$ | $1 / 4$ | $1.975 \pm .017$ | $.275 \pm .006$ |
| -406 | $2-1 / 8$ | $2-5 / 8$ | $1 / 4$ | $2.100 \pm .018$ | $.275 \pm .006$ |
| -407 | $2-1 / 4$ | $2-3 / 4$ | $1 / 4$ | $2.225 \pm .018$ | $.275 \pm .006$ |
| -408 | $2-3 / 8$ | $2-7 / 8$ | $1 / 4$ | $2.350 \pm .020$ | $.275 \pm .006$ |


| DASH NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 1/4-CROSS SECTION |  |  |  |  |  |
| -409 | 2-1/2 | 3 | 1/4 | $2.475 \pm .020$ | . $275 \pm .006$ |
| -410 | 2-5/8 | 3-1/8 | 1/4 | $2.600 \pm .020$ | . $275 \pm .006$ |
| -411 | 2-3/4 | 3-1/4 | 1/4 | $2.725 \pm .022$ | . $275 \pm .006$ |
| -412 | 2-7/8 | 3-3/8 | 1/4 | $2.850 \pm .022$ | . $275 \pm .006$ |
| -413 | 3 | 3-1/2 | 1/4 | $2.975 \pm .024$ | . $275 \pm .006$ |
| -414 | 3-1/8 | 3-5/8 | 1/4 | $3.100 \pm .024$ | . $275 \pm .006$ |
| -415 | 3-1/4 | 3-3/4 | 1/4 | $3.225 \pm .024$ | . $275 \pm .006$ |
| -416 | 3-3/8 | 3-7/8 | 1/4 | $3.350 \pm .026$ | . $275 \pm .006$ |
| -417 | 3-1/2 | 4 | 1/4 | $3.475 \pm .026$ | . $275 \pm .006$ |
| -418 | 3-5/8 | 4-1/8 | 1/4 | $3.600 \pm .026$ | . $275 \pm .006$ |
| -419 | 3-3/4 | 4-1/4 | 1/4 | $3.725 \pm .028$ | . $275 \pm .006$ |
| -420 | 3-7/8 | 3-3/8 | 1/4 | $3.850 \pm .028$ | . $275 \pm .006$ |
| -421 | 4 | 4-1/2 | 1/4 | $3.975 \pm .028$ | . $275 \pm .006$ |
| -422 | 4-1/8 | 4-5/8 | 1/4 | $4.100 \pm .030$ | . $275 \pm .006$ |
| -423 | 4-1/4 | 4-3/4 | 1/4 | $4.225 \pm .030$ | . $275 \pm .006$ |
| -424 | 4-3/8 | 4-7/8 | 1/4 | $4.350 \pm .030$ | . $275 \pm .006$ |
| -425 | 4-1/2 | 5 | 1/4 | $4.475 \pm .033$ | . $275 \pm .006$ |
| -426 | 4-5/8 | 5-1/8 | 1/4 | $4.600 \pm .033$ | . $275 \pm .006$ |
| -427 | 4-3/4 | 5-1/4 | 1/4 | $4.725 \pm .033$ | . $275 \pm .006$ |
| -428 | 4-7/8 | 5-3/8 | 1/4 | $4.850 \pm .033$ | . $275 \pm .006$ |
| -429 | 5 | 5-1/2 | 1/4 | $4.975 \pm .037$ | . $275 \pm .006$ |
| -430 | 5-1/8 | 5-5/8 | 1/4 | $5.100 \pm .037$ | . $275 \pm .006$ |
| -431 | 5-1/4 | 5-3/4 | 1/4 | $5.225 \pm .037$ | . $275 \pm .006$ |
| -432 | 5-3/8 | 5-7/8 | 1/4 | $5.350 \pm .037$ | . $275 \pm .006$ |
| -433 | 5-1/2 | 6 | 1/4 | $5.475 \pm .037$ | . $275 \pm .006$ |
| -434 | 5-5/8 | 6-1/8 | 1/4 | $5.600 \pm .037$ | . $275 \pm .006$ |
| -435 | 5-3/4 | 6-1/4 | 1/4 | $5.725 \pm .037$ | . $275 \pm .006$ |
| -436 | 5-7/8 | 6-3/8 | 1/4 | $5.850 \pm .037$ | . $275 \pm .006$ |
| -437 | 6 | 6-1/2 | 1/4 | $5.975 \pm .037$ | . $275 \pm .006$ |
| -438 | 6-1/4 | 6-3/4 | 1/4 | $6.225 \pm .040$ | . $275 \pm .006$ |
| -439 | 6-1/2 | 7 | 1/4 | $6.475 \pm .040$ | . $275 \pm .006$ |
| -440 | 6-3/4 | 7-1/4 | 1/4 | $6.725 \pm .040$ | . $275 \pm .006$ |
| -441 | 7 | 7-1/2 | 1/4 | $6.975 \pm .040$ | . $275 \pm .006$ |
| -442 | 7-1/4 | 7-3/4 | 1/4 | $7.225 \pm .045$ | . $275 \pm .006$ |
| -443 | 7-1/2 | 8 | 1/4 | $7.475 \pm .045$ | . $275 \pm .006$ |
| -444 | 7-3/4 | 8-1/4 | 1/4 | $7.725 \pm .045$ | . $275 \pm .006$ |
| -445 | 8 | 8-1/2 | 1/4 | $7.975 \pm .045$ | . $275 \pm .006$ |
| -446 | 8-1/2 | 9 | 1/4 | $8.475 \pm .055$ | . $275 \pm .006$ |
| -447 | 9 | 9-1/2 | 1/4 | $8.975 \pm .055$ | . $275 \pm .006$ |
| -448 | 9-1/2 | 10 | 1/4 | $9.475 \pm .055$ | . $275 \pm .006$ |
| -449 | 10 | 10-1/2 | 1/4 | $9.975 \pm .055$ | . $275 \pm .006$ |
| -450 | 10-1/2 | 11 | 1/4 | $10.475 \pm .060$ | . $275 \pm .006$ |
| -451 | 11 | 11-1/2 | 1/4 | $10.975 \pm .060$ | . $275 \pm .006$ |
| -452 | 11-1/2 | 12 | 1/4 | $11.475 \pm .060$ | . $275 \pm .006$ |
| -453 | 12 | 12-1/2 | 1/4 | $11.975 \pm .060$ | . $275 \pm .006$ |
| -454 | 12-1/2 | 13 | 1/4 | $12.475 \pm .060$ | . $275 \pm .006$ |
| -455 | 13 | 13-1/2 | 1/4 | $12.975 \pm .060$ | . $275 \pm .006$ |
| -456 | 13-1/2 | 14 | 1/4 | $13.475 \pm .070$ | . $275 \pm .006$ |
| -457 | 14 | 14-1/2 | 1/4 | $13.975 \pm .070$ | . $275 \pm .006$ |
| -458 | 14-1/2 | 15 | 1/4 | $14.475 \pm .070$ | . $275 \pm .006$ |
| -459 | 15 | 15-1/2 | 1/4 | $14.975 \pm .070$ | . $275 \pm .006$ |
| -460 | 15-1/2 | 16 | 1/4 | $15.475 \pm .070$ | . $275 \pm .006$ |


| DASH NUMBER | NOMINAL SIZE |  |  | ACTUAL SIZE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | ID | OD | C/S | ID | C/S |
| 1/4-CROSS SECTION |  |  |  |  |  |
| -461 | 16 | 16-1/2 | 1/4 | $15.955 \pm .075$ | . $275 \pm .006$ |
| -462 | 16-1/2 | 17 | 1/4 | $16.455 \pm .075$ | . $275 \pm .006$ |
| -463 | 17 | 17-1/2 | 1/4 | $16.955 \pm .080$ | . $275 \pm .006$ |
| -464 | 17-1/2 | 18 | 1/4 | $17.455 \pm .085$ | . $275 \pm .006$ |
| -465 | 18 | 18-1/2 | 1/4 | $17.955 \pm .085$ | . $275 \pm .006$ |
| -466 | 18-1/2 | 19 | 1/4 | $18.455 \pm .085$ | . $275 \pm .006$ |
| -467 | 19 | 19-1/2 | 1/4 | $18.955 \pm .090$ | . $275 \pm .006$ |
| -468 | 19-1/2 | 20 | 1/4 | $19.455 \pm .090$ | . $275 \pm .006$ |
| -469 | 20 | 20-1/2 | 1/4 | $19.955 \pm .095$ | . $275 \pm .006$ |
| -470 | 21 | 21-1/2 | 1/4 | $20.955 \pm .095$ | . $275 \pm .006$ |
| -471 | 22 | 22-1/2 | 1/4 | $21.955 \pm .100$ | . $275 \pm .006$ |
| -472 | 23 | 23-1/2 | 1/4 | $22.940 \pm .105$ | . $275 \pm .006$ |
| -473 | 24 | 24-1/2 | 1/4 | $23.940 \pm .110$ | . $275 \pm .006$ |
| -474 | 25 | 25-1/2 | 1/4 | $24.940 \pm .115$ | . $275 \pm .006$ |
| -475 | 26 | 26-1/2 | 1/4 | $25.940 \pm .120$ | . $275 \pm .006$ |



