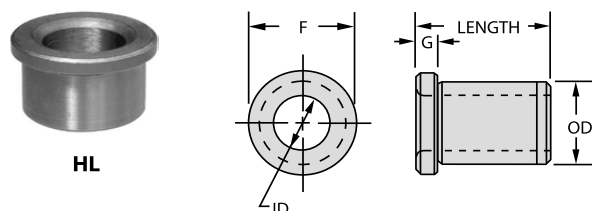


## HEAD LINER BUSHINGS



### INCH

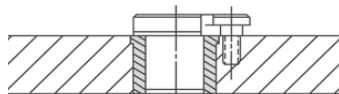
| BODY OD | F DIA | G    |
|---------|-------|------|
| 1/2     | 5/8   | 3/32 |
| 3/4     | 7/8   | 3/32 |
| 1       | 1-1/8 | 1/8  |
| 1-3/8   | 1-1/2 | 1/8  |
| 1-3/4   | 1-7/8 | 3/16 |
| 2-1/4   | 2-3/8 | 3/16 |
| 2-3/4   | 2-7/8 | 3/16 |

### METRIC

| BODY OD | F DIA | G   |
|---------|-------|-----|
| 12mm    | 15mm  | 3mm |
| 15mm    | 18mm  | 3mm |
| 18mm    | 22mm  | 4mm |
| 22mm    | 26mm  | 4mm |
| 26mm    | 30mm  | 4mm |
| 30mm    | 34mm  | 5mm |
| 35mm    | 39mm  | 5mm |
| 42mm    | 46mm  | 5mm |
| 48mm    | 52mm  | 5mm |
| 55mm    | 59mm  | 5mm |
| 62mm    | 66mm  | 6mm |
| 70mm    | 74mm  | 6mm |
| 78mm    | 82mm  | 6mm |
| 85mm    | 90mm  | 6mm |
| 95mm    | 100mm | 6mm |

### APPLICATIONS:

Similar to an L bushing, but with a head to resist heavy axial loads. Head liners are permanent bushings used to hold renewable drill bushings. The head liner's ID has a precise sliding fit with the renewable bushing's OD. The hardened head liner accurately locates the renewable bushing and protects the jig plate from wear caused by frequent bushing replacement. Note: The "length" listed for a head liner refers to its overall length, not its length under the head. Metric head-liner bushings are the same as metric head-press-fit bushings.



### ORDERING EXAMPLES:

|                |                                                               |
|----------------|---------------------------------------------------------------|
| HL-32-16       | Standard inch liner bushing                                   |
| HL-32-16U      | Unground OD                                                   |
| HM-18-25-12.00 | Standard metric liner bushing (same as metric press-fit type) |

### STANDARD LINER ID TOLERANCES:

|        |               |             |                 |
|--------|---------------|-------------|-----------------|
| 5/16"  | +0.001/+0.004 | 8 to 10mm   | +0.005/+0.014mm |
| 1/2"   | +0.002/+0.005 | 12 to 18mm  | +0.006/+0.017mm |
| 3/4"   | +0.003/+0.006 | 22 to 30mm  | +0.007/+0.020mm |
| 1"     | +0.004/+0.007 | 35 to 48mm  | +0.009/+0.025mm |
| 1-3/8" | +0.006/+0.010 | 55 to 78mm  | +0.010/+0.029mm |
| 1-3/4" | +0.008/+0.012 | 85 to 105mm | +0.012/+0.034mm |
| 2-1/4" | +0.010/+0.015 |             | (G6 tolerance)  |

| ID    | OD                                          | LENGTH | ANSI PART NO. |
|-------|---------------------------------------------|--------|---------------|
| 5/16  | 1/2<br>.5017-.5014<br>(.520-.515 UNG)       | 5/16   | HL-32-5       |
|       |                                             | 3/8    | HL-32-6       |
|       |                                             | 1/2    | HL-32-8       |
|       |                                             | 3/4    | HL-32-12      |
|       |                                             | 1      | HL-32-16      |
|       |                                             | 1-3/8  | HL-32-22      |
| 1/2   | 3/4<br>.7518-.7515<br>(.770-.765 UNG)       | 5/16   | HL-48-5       |
|       |                                             | 3/8    | HL-48-6       |
|       |                                             | 1/2    | HL-48-8       |
|       |                                             | 3/4    | HL-48-12      |
|       |                                             | 1      | HL-48-16      |
|       |                                             | 1-3/8  | HL-48-22      |
|       |                                             | 1-1/2  | HL-48-24      |
|       |                                             | 1-3/4  | HL-48-28      |
| 3/4   | 1<br>1.0018-1.0015<br>(1.020-1.015 UNG)     | 2-1/8  | HL-48-34      |
|       |                                             | 1/2    | HL-64-8       |
|       |                                             | 3/4    | HL-64-12      |
|       |                                             | 1      | HL-64-16      |
|       |                                             | 1-3/8  | HL-64-22      |
|       |                                             | 1-1/2  | HL-64-24      |
|       |                                             | 1-3/4  | HL-64-28      |
|       |                                             | 2-1/8  | HL-64-34      |
|       |                                             | 2-1/2  | HL-64-40      |
|       |                                             | 3      | HL-64-48      |
| 1     | 1-3/8<br>1.3772-1.3768<br>(1.395-1.390 UNG) | 1/2    | HL-88-8       |
|       |                                             | 3/4    | HL-88-12      |
|       |                                             | 1      | HL-88-16      |
|       |                                             | 1-3/8  | HL-88-22      |
|       |                                             | 1-1/2  | HL-88-24      |
|       |                                             | 1-3/4  | HL-88-28      |
|       |                                             | 2-1/8  | HL-88-34      |
|       |                                             | 2-1/2  | HL-88-40      |
| 1-3/8 | 1-3/4<br>1.7523-1.7519<br>(1.770-1.765 UNG) | 3      | HL-88-48      |
|       |                                             | 3/4    | HL-112-12     |
|       |                                             | 1      | HL-112-16     |
|       |                                             | 1-3/8  | HL-112-22     |
|       |                                             | 1-1/2  | HL-112-24     |
|       |                                             | 1-3/4  | HL-112-28     |
|       |                                             | 2-1/8  | HL-112-34     |
|       |                                             | 2-1/2  | HL-112-40     |
| 1-3/4 | 2-1/4<br>2.2525-2.2521<br>(2.270-2.265 UNG) | 3      | HL-112-48     |
|       |                                             | 3/4    | HL-144-12     |
|       |                                             | 1      | HL-144-16     |
|       |                                             | 1-3/8  | HL-144-22     |
|       |                                             | 1-1/2  | HL-144-24     |
|       |                                             | 1-3/4  | HL-144-28     |
|       |                                             | 2-1/8  | HL-144-34     |
|       |                                             | 2-1/2  | HL-144-40     |
| 2-1/4 | 2-3/4<br>2.7526-2.7522<br>(2.770-2.765 UNG) | 3      | HL-144-48     |
|       |                                             | 3/4    | HL-176-12     |
|       |                                             | 1      | HL-176-16     |
|       |                                             | 1-3/8  | HL-176-22     |
|       |                                             | 1-1/2  | HL-176-24     |
|       |                                             | 1-3/4  | HL-176-28     |
|       |                                             | 2-1/8  | HL-176-34     |
|       |                                             | 2-1/2  | HL-176-40     |
|       |                                             | 3      | HL-176-48     |

## HEAD LINER BUSHINGS – ETRIC



HM

| ID (G6) | OD (s6)                 | LENGTH | ANSI PART NO.  |
|---------|-------------------------|--------|----------------|
| 8mm     | 12mm<br>12.039-12.028mm | 10mm   | HM-12-10-8.00  |
|         |                         | 16mm   | HM-12-16-8.00  |
|         |                         | 12mm   | HM-15-12-10.00 |
| 10mm    | 15mm<br>15.039-15.028mm | 20mm   | HM-15-20-10.00 |
|         |                         | 25mm   | HM-15-25-10.00 |
|         |                         | 12mm   | HM-18-12-12.00 |
| 12mm    | 18mm<br>18.039-18.028mm | 20mm   | HM-18-20-12.00 |
|         |                         | 25mm   | HM-18-25-12.00 |
|         |                         | 16mm   | HM-22-16-15.00 |
| 15mm    | 22mm<br>22.048-22.035mm | 28mm   | HM-22-28-15.00 |
|         |                         | 36mm   | HM-22-36-15.00 |
|         |                         | 16mm   | HM-26-16-18.00 |
| 18mm    | 26mm<br>26.048-26.035mm | 28mm   | HM-26-28-18.00 |
|         |                         | 36mm   | HM-26-36-18.00 |
|         |                         | 20mm   | HM-30-20-22.00 |
| 22mm    | 30mm<br>30.048-30.035mm | 36mm   | HM-30-36-22.00 |
|         |                         | 45mm   | HM-30-45-22.00 |
|         |                         | 20mm   | HM-35-20-26.00 |
| 26mm    | 35mm<br>35.059-35.043mm | 36mm   | HM-35-36-26.00 |
|         |                         | 45mm   | HM-35-45-26.00 |
|         |                         | 25mm   | HM-42-25-30.00 |
| 30mm    | 42mm<br>42.059-42.043mm | 45mm   | HM-42-45-30.00 |
|         |                         | 56mm   | HM-42-56-30.00 |
|         |                         | 25mm   | HM-48-25-35.00 |
| 35mm    | 48mm<br>48.059-48.043mm | 45mm   | HM-48-45-35.00 |
|         |                         | 56mm   | HM-48-56-35.00 |
|         |                         | 30mm   | HM-55-30-42.00 |
| 42mm    | 55mm<br>55.072-55.053mm | 56mm   | HM-55-56-42.00 |
|         |                         | 67mm   | HM-55-67-42.00 |
|         |                         | 30mm   | HM-62-30-48.00 |
| 48mm    | 62mm<br>62.072-62.053mm | 56mm   | HM-62-56-48.00 |
|         |                         | 67mm   | HM-62-67-48.00 |
|         |                         | 30mm   | HM-70-30-55.00 |
| 55mm    | 70mm<br>70.078-70.059mm | 56mm   | HM-70-56-55.00 |
|         |                         | 67mm   | HM-70-67-55.00 |
|         |                         | 35mm   | HM-78-35-62.00 |
| 62mm    | 78mm<br>78.078-78.059mm | 67mm   | HM-78-67-62.00 |
|         |                         | 78mm   | HM-78-78-62.00 |

| ID (G6) | OD (s6)                    | LENGTH | ANSI PART NO.     |
|---------|----------------------------|--------|-------------------|
| 70mm    | 85mm<br>85.093-85.071mm    | 35mm   | HM-85-35-70.00    |
|         |                            | 67mm   | HM-85-67-70.00    |
|         |                            | 78mm   | HM-85-78-70.00    |
| 78mm    | 95mm<br>95.093-95.071mm    | 40mm   | HM-95-40-78.00    |
|         |                            | 78mm   | HM-95-78-78.00    |
|         |                            | 105mm  | HM-95-105-78.00   |
| 85mm    | 105mm<br>105.101-105.079mm | 40mm   | HM-105-40-85.00   |
|         |                            | 78mm   | HM-105-78-85.00   |
|         |                            | 105mm  | HM-105-105-85.00  |
| 95mm    | 115mm<br>115.101-115.079mm | 45mm   | HM-115-45-95.00   |
|         |                            | 89mm   | HM-115-89-95.00   |
|         |                            | 112mm  | HM-115-112-95.00  |
| 105mm   | 125mm<br>125.117-125.092mm | 45mm   | HM-125-45-105.00  |
|         |                            | 89mm   | HM-125-89-105.00  |
|         |                            | 112mm  | HM-125-112-105.00 |

Note: Metric head-liner bushings are the same as metric head-press-fit bushings.