## Malleable Iron Hex Bushing

**FIGURE 383**
**Hex Bushing**

Outside Hex
Type A

Inside Hex
Type B

See Cast Iron section on next page for other available sizes.

| Size | | | | | Unit Weight | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Black | | Galv. | |
| NPS | *DN* | Hex Type | NPS | *DN* | lbs | *kg* | lbs | *kg* |
| ¾ | *10* | A | ⅛ | *6* | 0.12 | *0.05* | 0.12 | *0.05* |
| | | A | ¼ | *8* | 0.14 | *0.06* | 0.14 | *0.06* |
| | | A | ⅜ | *10* | 0.11 | *0.05* | 0.11 | *0.05* |
| | | A | ½ | *15* | 0.09 | *0.04* | 0.09 | *0.04* |
| 1 | *25* | B | ⅛ | *6* | 0.24 | *0.11* | 0.24 | *0.11* |
| | | B | ¼ | *8* | 0.18 | *0.08* | 0.18 | *0.08* |
| | | B | ⅜ | *10* | 0.18 | *0.08* | 0.18 | *0.08* |
| | | A | ½ | *15* | 0.20 | *0.09* | 0.20 | *0.09* |
| | | A | ¾ | *20* | 0.16 | *0.07* | 0.16 | *0.07* |
| 1¼ | *32* | B | ¼ | *8* | 0.33 | *0.15* | 0.33 | *0.15* |
| | | B | ⅜ | *10* | 0.27 | *0.12* | 0.27 | *0.12* |
| | | B | ½ | *15* | 0.34 | *0.15* | 0.34 | *0.15* |
| | | A | ¾ | *20* | 0.39 | *0.18* | 0.39 | *0.18* |
| | | A | 1 | *25* | 0.30 | *0.14* | 0.30 | *0.14* |
| 1½ | *40* | A | 1¼ | *32* | 0.30 | *0.14* | 0.30 | *0.14* |
| 2 | *50* | A | 1½ | *40* | 0.64 | *0.29* | 0.64 | *0.29* |
| 2½ | *65* | A | 2 | *50* | 1.02 | *0.46* | 1.02 | *0.46* |

**Note:** Hexagon head or octagon head bushings 2½ NPS *(65 DN)* and smaller reducing one size may be made of malleable iron, ductile iron or steel. Other sizes may be made of cast iron, ductile iron, malleable iron or steel. Face bushings 2½ NPS *(65 DN)* and smaller may be made of malleable iron, ductile iron or steel. Face bushings 3NPS *(80 DN)* and larger reducing one size may be made of malleable iron, ductile iron or steel. Face bushings 3NPS *(80 DN)* and larger reducing two sizes or more may be made of cast or malleable iron, ductile iron, or steel. According to specifications, hex bushings and cored plugs should be used with 150# malleable iron and 125# cast iron. Solid plugs and face bushings are recommended for use with 250# and 300# fittings.

## Cast Iron Hex Bushings on next page.

| PROJECT INFORMATION | APPROVAL STAMP |
|---|---|
| **Project:** | ☐ **Approved** |
| **Address:** | ☐ **Approved as noted** |
| **Contractor:** | ☐ **Not approved** |
| **Engineer:** | **Remarks:** |
| **Submittal Date:** | |
| **Notes 1:** | |
| **Notes 2:** | |

## Cast Iron Hex Bushing

**FIGURE 383**
**Hex Bushing**

Outside Hex
Type A

Inside Hex
Type B

See Malleable Iron section on previous page for other available sizes.

| Size | | | | | | Unit Weight | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Black | | Galv. | |
| NPS | *DN* | Hex Type | All Cast Iron | NPS | *DN* | lbs | *kg* | lbs | *kg* |
| 1 1/2 | *40* | B | C | 1/4 | *8* | 0.47 | *0.21* | 0.47 | *0.21* |
| | | B | C | 3/8 | *10* | 0.47 | *0.21* | 0.47 | *0.21* |
| | | B | C | 1/2 | *15* | 0.42 | *0.19* | 0.42 | *0.19* |
| | | B | C | 3/4 | *20* | 0.47 | *0.21* | 0.47 | *0.21* |
| | | A | C | 1 | *25* | 0.50 | *0.23* | 0.50 | *0.23* |
| 2 | *50* | B | C | 1/4 | *8* | 0.75 | *0.34* | 0.75 | *0.34* |
| | | B | C | 3/8 | *10* | 0.75 | *0.34* | 0.75 | *0.34* |
| | | B | C | 1/2 | *15* | 0.70 | *0.32* | 0.70 | *0.32* |
| | | B | C | 3/4 | *20* | 0.71 | *0.32* | 0.71 | *0.32* |
| | | B | C | 1 | *25* | 0.73 | *0.33* | 0.73 | *0.33* |
| | | A | C | 1 1/4 | *32* | 0.81 | *0.37* | 0.81 | *0.37* |
| 2 1/2 | *65* | B | C | 1/2 | *15* | 1.28 | *0.58* | 1.28 | *0.58* |
| | | B | C | 3/4 | *20* | 1.25 | *0.57* | 1.25 | *0.57* |
| | | B | C | 1 | *25* | 1.16 | *0.53* | 1.16 | *0.53* |
| | | B | C | 1 1/4 | *32* | 1.24 | *0.56* | 1.24 | *0.56* |
| | | A | C | 1 1/2 | *40* | 1.29 | *0.59* | 1.29 | *0.59* |
| 3 | *80* | B | C | 1/2 | *15* | 1.93 | *0.88* | 1.93 | *0.88* |
| | | B | C | 3/4 | *20* | 1.92 | *0.87* | 1.92 | *0.87* |
| | | B | C | 1 | *25* | 1.90 | *0.86* | 1.90 | *0.86* |
| | | B | C | 1 1/4 | *32* | 1.77 | *0.80* | 1.77 | *0.80* |
| | | B | C | 1 1/2 | *40* | 1.79 | *0.81* | 1.79 | *0.81* |
| | | A | C | 2 | *50* | 1.90 | *0.86* | 1.90 | *0.86* |
| | | A | C | 2 1/2 | *65* | 1.63 | *0.74* | 1.63 | *0.74* |
| 3 1/2 | *80* | B | C | 1 | *25* | 2.42 | *1.10* | 2.42 | *1.10* |
| | | B | C | 1 1/4 | *32* | 2.56 | *1.16* | 2.56 | *1.16* |
| | | B | C | 1 1/2 | *40* | 2.65 | *1.20* | 2.65 | *1.20* |
| | | B | C | 2 | *50* | 2.54 | *1.15* | 2.54 | *1.15* |
| | | A | C | 2 1/2 | *65* | 3.23 | *1.46* | 3.23 | *1.46* |
| | | A | C | 3 | *80* | 1.96 | *0.89* | 1.96 | *0.89* |

According to specifications, hex bushings and cored plugs should be used with 150# malleable iron and 125# cast iron. Solid plugs and face bushings are recommended for use with 250# and 300# fittings.

**Additional Cast Iron Hex Bushings on next page.**

## Cast Iron Hex Bushing

**FIGURE 383**
**Hex Bushing**

Outside Hex
Type A

Inside Hex
Type B

See Malleable Iron section on first page for other available sizes.

| Size | | | | | | Unit Weight | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Black | | Galv. | |
| NPS | *DN* | Hex Type | All Cast Iron | NPS | *DN* | lbs | *kg* | lbs | *kg* |
| 4 | *100* | B | C | 1 | *25* | 3.59 | *1.63* | 3.59 | *1.63* |
| | | B | C | 1 1/4 | *32* | 3.54 | *1.61* | 3.54 | *1.61* |
| | | B | C | 1 1/2 | *40* | 3.44 | *1.56* | 3.44 | *1.56* |
| | | B | C | 2 | *50* | 3.11 | *1.41* | 3.11 | *1.41* |
| | | B | C | 2 1/2 | *65* | 3.29 | *1.49* | 3.29 | *1.49* |
| | | A | C | 3 | *80* | 3.15 | *1.43* | 3.15 | *1.43* |
| | | A | C | 3 1/2 | *90* | 2.50 | *1.13* | 2.50 | *1.13* |
| 5 | *125* | B | C | 2 | *50* | 5.12 | *2.32* | 5.12 | *2.32* |
| | | B | C | 2 1/2 | *65* | 4.87 | *2.21* | 4.87 | *2.21* |
| | | B | C | 3 | *80* | 4.83 | *2.19* | 4.83 | *2.19* |
| | | A | C | 3 1/2 | *90* | 4.00 | *1.81* | – | – |
| | | A | C | 4 | *100* | 3.94 | *1.79* | 3.94 | *1.79* |
| 6 | *150* | B | C | 2 | *50* | 8.00 | *3.63* | 8.00 | *3.63* |
| | | B | C | 2 1/2 | *65* | 7.72 | *3.50* | – | – |
| | | B | C | 3 | *80* | 7.75 | *3.51* | 7.75 | *3.51* |
| | | B | C | 4 | *100* | 6.83 | *3.10* | 6.83 | *3.10* |
| | | A | C | 5 | *125* | 5.24 | *2.38* | 5.24 | *2.38* |
| 8 | *200* | B | C | 3 | *80* | 15.50 | *7.03* | – | – |
| | | B | C | 4 | *100* | 13.93 | *6.32* | – | – |
| | | B | C | 5 | *125* | 13.65 | *6.19* | – | – |
| | | A | C | 6 | *150* | 13.19 | *5.98* | 13.19 | *5.98* |
| 10 | *250* | B | C | 6 | *150* | 24.50 | *11.11* | – | – |
| | | A | C | 8 | *200* | 22.00 | *9.98* | – | – |

According to specifications, hex bushings and cored plugs should be used with 150# malleable iron and 125# cast iron. Solid plugs and face bushings are recommended for use with 250# and 300# fittings.

# MALLEABLE IRON FITTINGS

## Malleable Iron Threaded Pipe Unions Pressure - Temperature Ratings

| Temperature | | Pressure | | | | | |
|---|---|---|---|---|---|---|---|
| | | Class 150 | | Class 250 | | Class 300 | |
| (°F) | *(°C)* | psi | *bar* | psi | *bar* | psi | *bar* |
| -20° to 150° | *-28.9° to 65.6°* | 300 | *20.7* | 500 | *34.5* | 600 | *41.4* |
| 200° | *93.3°* | 265 | *18.3* | 455 | *31.4* | 550 | *37.9* |
| 250° | *121.1°* | 225 | *15.5* | 405 | *27.9* | 505 | *34.8* |
| 300° | *148.9°* | 185 | *12.8* | 360 | *24.8* | 460 | *31.7* |
| 350° | *176.7°* | 150 | *10.3* | 315 | *21.7* | 415 | *28.6* |
| 400° | *204.4°* | 110 | *7.6* | 270 | *18.6* | 370 | *25.5* |
| 450° | *232.2°* | 75 | *5.2* | 225 | *15.5* | 325 | *22.4* |
| 500° | *260.0°* | – | – | 180 | *12.4* | 280 | *19.3* |
| 550° | *287.8°* | – | – | 130 | *9.0* | 230 | *15.9* |

**Note**: Unions with Copper or Copper Alloy seats are not intended for use where temperature exceeds 450°F

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## Malleable Iron Threaded Fittings Pressure - Temperature Ratings

| Temperature | | Pressure | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Class 150 | | Class 300 | | | | | |
| | | | | Sizes ¼"–1" *(6–25 mm)* | | Sizes 1¼"–2" *(32–51 mm)* | | Sizes 2½"–3" *(64–76 mm)* | |
| (°F) | *(°C)* | psi | *bar* | psi | *bar* | psi | *bar* | psi | *bar* |
| -20° to 150° | *-28.9° to 65.6°* | 300 | *20.7* | 2,000 | *137.9* | 1,500 | *103.4* | 1,000 | *68.9* |
| 200° | *93.3* | 265 | *18.3* | 1,785 | *123.1* | 1,350 | *93.1* | 910 | *62.7* |
| 250° | *121.1* | 225 | *15.5* | 1,575 | *108.6* | 1,200 | *82.7* | 825 | *56.9* |
| 300° | *148.9* | 185 | *12.8* | 1,360 | *93.8* | 1,050 | *72.4* | 735 | *50.7* |
| 350° | *176.7* | 150 | *10.3* | 1,150 | *79.3* | 900 | *62.1* | 650 | *44.8* |
| 400° | *204.4* | – | – | 935 | *64.5* | 750 | *51.7* | 560 | *38.6* |
| 450° | *232.2* | – | – | 725 | *50.0* | 600 | *41.4* | 475 | *32.8* |
| 500° | *260.0* | – | – | 510 | *35.2* | 450 | *31.0* | 385 | *26.5* |
| 550° | *287.8* | – | – | 300 | *20.7* | 300 | *20.7* | 300 | *20.7* |

Anvil Class 150/300 Malleable Iron Fittings conform to ASME B16.3 and Unions conform to ASME B16.39.

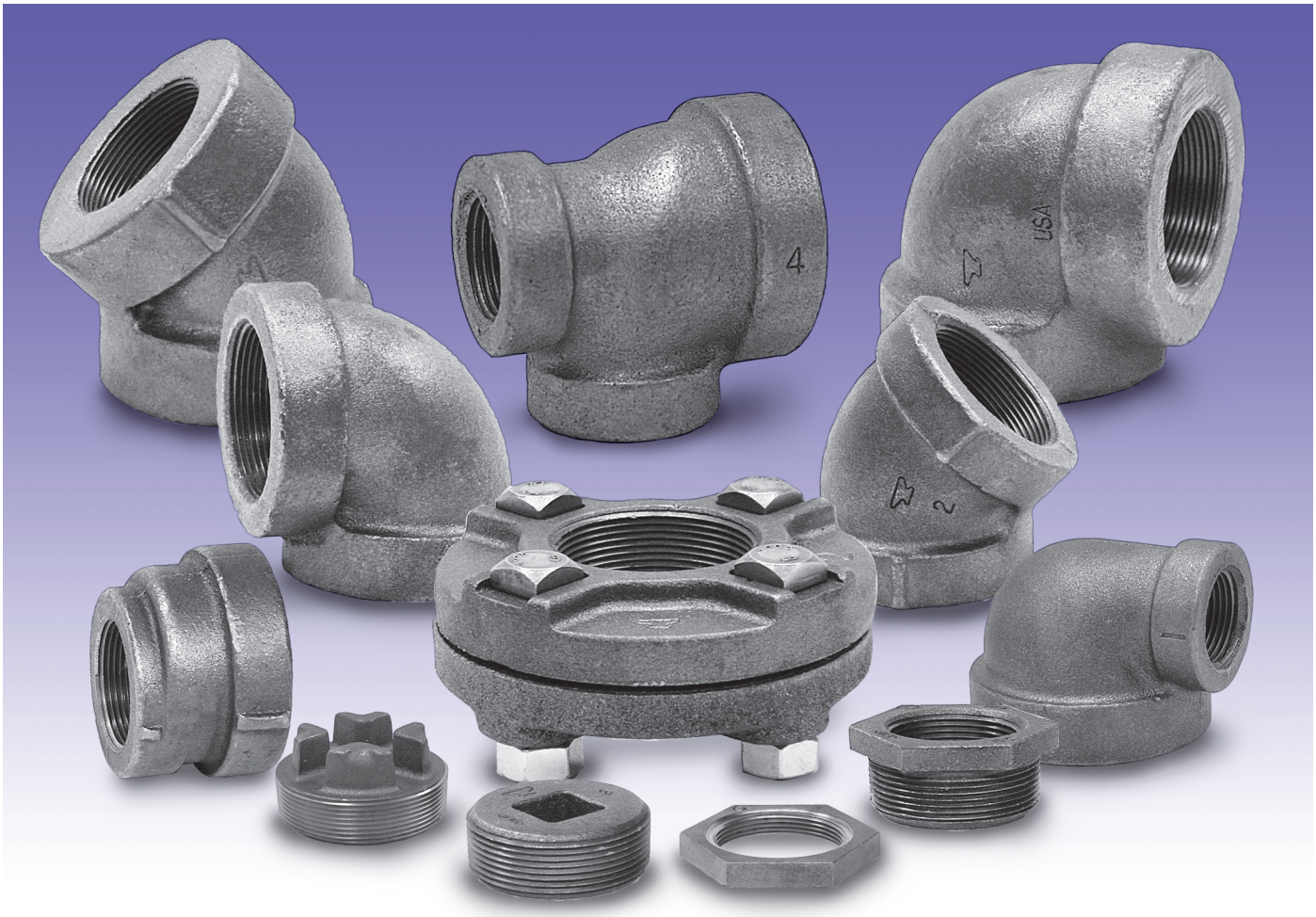
**ALL ELBOWS & TEES ⅜" *(10 DN)* and LARGER ARE 100% GAS TESTED AT A MINIMUM OF 100 PSI. *(6.9 bar)***

## Standards and Specifications

| | Dimensions | Material | Galvanizing* | Thread | Pressure Rating |
|---|---|---|---|---|---|
| **MALLEABLE IRON FITTINGS** | | | | | |
| Class 150/PN 20 | ASME B16.3 | ASTM A-197 | ASTM A-153 | ASME B1 20.1 | ASME B16.3 |
| Class 300/PN 50 | ASME B16.3 | ASTM A-197 | ASTM A-153 | ASME B1 20.1 | ASME B16.3 |
| **MALLEABLE IRON UNIONS** | | | | | |
| Class 150/PN 20 | ASME B16.39 | ASTM A-197 | ASTM A-153 | ASME B1 20.1 | ASME B16.39 |
| Class 250 | ASME B16.39 | ASTM A-197 | ASTM A-153 | ASME B1 20.1 | ASME B16.39 |
| Class 300/PN 50 | ASME B16.39 | ASTM A-197 | ASTM A-153 | ASME B1 20.1 | ASME B16.39 |

* ASTM B 633. Type I, SC 4, may be supplied as alternate zinc coating per applicable ASME B16 product standard.

# CAST IRON FITTINGS



Anvil standard and extra heavy cast iron threaded fittings are manufactured in accordance with ASME B16.4. Plugs and bushings are manufactured in accordance with ASME B16.14.

**NOTE:** Figure 367 Concentric Reducers do not meet the overall length requirement of ASME B16.4. All other dimensions are in compliance.

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**Cast Iron Threaded Fittings**
**Pressure - Temperature Ratings**

| Temperature | | Pressure | | | |
|---|---|---|---|---|---|
| | | Class 125 | | Class 250 | |
| (°F) | *(°C)* | psi | *bar* | psi | *bar* |
| -20° to 150° | *-28.9 to 65.6* | 175 | *12.1* | 400 | *27.6* |
| 200° | *93.3* | 165 | *11.4* | 370 | *25.5* |
| 250° | *121.1* | 150 | *10.3* | 340 | *23.4* |
| 300° | *148.9* | 140 | *9.7* | 310 | *21.4* |
| 350° | *176.7* | 125 | *8.6* | 300 | *20.7* |
| 400° | *204.4* | – | – | 250 | *17.2* |

**Standards and Specifications**

| | Dimensions | Material | Galvanizing* | Thread | Pressure Rating |
|---|---|---|---|---|---|
| **CAST IRON THREADED FITTINGS** | | | | | |
| Class 125 | ASME B16.4 | ASTM A-126 (A) | ASTM A-153 | ASME B1.20.1 | ASME B16.4 |
| Class 250 | ASME B16.4 | ASTM A-126 (A) | ASTM A-153 | ASME B1.20.1 | ASME B16.4 |
| **CAST IRON PLUGS AND BUSHINGS** | | | | | |
| | ASME B16.14 | ASTM A- 126 (A) | ASTM A-153 | ASME B1.20.1 | ASME B16.14 |

* ASTM B 633. Type I, SC 4, may be supplied as alternate zinc coating per applicable ASME B16 product standard.

# General Assembly of Threaded Fittings

1) Inspect both male and female components prior to assembly.
   - Threads should be free from mechanical damage, dirt, chips and excess cutting oil.
   - Clean or replace components as necessary.

2) Application of thread sealant
   - Use a thread sealant that is fast drying, sets-up to a semi hard condition and is vibration resistant. Alternately, an anaerobic sealant may be utilized.
   - Thoroughly mix the thread sealant prior to application.
   - Apply a thick even coat to the male threads only. Best application is achieved with a brush stiff enough to force sealant down to the root of the threads.

3) Joint Makeup
   - For sizes up to and including 2" pipe, wrench tight makeup is considered three full turns past handtight. Handtight engagement for 1/2" through 2" thread varies from 4 1/2 turns to 5 turns.
   - For 2 1/2" through 4" sizes, wrench tight makeup is considered two full turns past handtight. Handtight engagement for 2 1/2" through 4" thread varies from 5 1/2 turns to 6 3/4 turns.