## INDUSTRLAL VAGUUNU COMPONENTS



## TUBING, PIPE, COUPLINGS, Bends \& Fittings

## Services

## When Ordering,

 Please Specify Type of Material:- Carbon
- Stainless
- Aluminum
- Galvanized Steel


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## Ruwac is a leading brand of tubular components for industrial vacuum systems.

## TUBING

Our standard catalog items include tube sizes from 2-1/8" through 14" OD in Carbon, Stainless, Aluminum and Galvanized Steel. 1-1/2" and 2" OD are available upon request.

| Tube Dimensions |  |  |
| :--- | :--- | :--- |
| 16 Gauge | $=$ | $.065^{\prime \prime}$ |
| 14 Gauge | $=$ | $.083 "$ |
| 12 Gauge | $=$ | $.109 \prime$ |
| 11 Gauge | $=$ | $.120^{\prime \prime}$ |

## CATALOG PART VARIATIONS

If our standard items don't meet your specific needs, visit our web site at www.ruwac.com. Custom tube fabrications are available to meet your exact specifications.

## DELIVERY

Fast delivery is available on a wide selection of in-stock RUWAC Tubing, Bends, Couplings, Fittings and Installation Components. We'll also make every effort to meet emergency requirements for non-stock items.

## PRICING

All prices are FOB factory, Holyoke, MA
Terms: Net 30 days
Prices are in U.S. dollars

Prices and specifications are subject to change without notice, and without obligation. All material is invoiced at the price in effect at time of shipment. All prices and discounts are based on one shipment to one destination. Please see current price list for pricing.

## NOTE

Specifications subject to change without notice, without incurring any obligation on our part.

## INSIDE AND OUTSIDE DIAMETERS POLISHING

Provides smooth ID (180 grit) and OD (150 grit) surfaces. For 2" - 6" OD Long Radius Bends and Straights.

## Tubing

## Standard Tubing

- 2-1/8" through 14" OD
- Wall Thickness: 16, 14, 12, 11 Gauge
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

| - WE ARE CAPABLE OF PROVIDING 1-1/2" - 14" OD |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OD | GAUGE | NOMINAL WALL THICKNESS | CARBON | GALVANIZED STEEL | StAINLESS | ALUMINUM |
| 2-1/8" | 16 | 0.065" | 90306C | $90306 Z$ | 903065 | 90306A |
| 2-1/8" | 11 | $0.120{ }^{\prime \prime}$ | 90307C | 90307Z* | 903075 | 90307A |
| 2-1/2" | 16 | $0.065{ }^{\prime \prime}$ | 90308 C | $90308 Z$ | 903085 | 90308A |
| 2-1/2" | 11 | $0.120{ }^{\prime \prime}$ | 90309C | 90309Z* | 903095 | 90309A |
| $3 "$ | 16 | 0.065" | 90310C | $90310 Z$ | 903105 | 90310A |
| $3 "$ | 11 | $0.120{ }^{\prime \prime}$ | 90311 C | 903112 | 903115 | 90311A |
| 3-1/2" | 16 | $0.065{ }^{\prime \prime}$ | 90312 C | 903122 | 90312 S | 90312A |
| 3-1/2" | 11 | $0.120{ }^{\prime \prime}$ | 90313 C | 903132* | 903135 | 90313A |
| $4{ }^{11}$ | 16 | $0.065{ }^{\prime \prime}$ | 90314C | $90314 Z$ | 903145 | 90314A |
| $4{ }^{\prime \prime}$ | 11 | $0.120{ }^{\prime \prime}$ | 90315 C | $90315 Z$ | 903155 | 90315A |
| $5{ }^{\prime \prime}$ | 14 | $0.083{ }^{\prime \prime}$ | 90316 C | $90316 Z$ | 903165 | 90316A |
| $5{ }^{\prime \prime}$ | 11 | $0.120^{\prime \prime}$ | 90317C | 903172 | 903175 | 90317A |
| $6 "$ | 14 | 0.083" | 90318 C | 903182 | 903185 | 90318A |
| $6{ }^{\prime \prime}$ | 11 | $0.120{ }^{\prime \prime}$ | 90319C | $90319 Z$ | 903195 | 90319A |
| 8" | 14 | $0.083{ }^{\prime \prime}$ | 90320C | $90320 Z$ | 90320 S | 90320A |
| $8{ }^{\prime \prime}$ | 11 | 0.120 | 90321 C | 903212 | 903215 | 90321A |
| 10" | 12 | 0.109 " | 90322 C | $90322 Z$ | 903225 | 90322A $\dagger$ |
| 12 " | 12 | 0.109 " | $90323 C$ | $90323 Z$ | 903235 | 90323A $\dagger$ |
| $14 "$ | 12 | 0.109" | 90324C | $90324 Z$ | ** | ** |

- OUR STANDARD STOCK (UNLESS NOTED) IS 20 FT. LENGTHS, BUT WE WILL CUT TO YOUR SPECIFICATIONS
* 10 Ft. LENGTHS
** QuOTATION BASIS
+ 13 GAUGE

[^0]When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


## Standard Elbows \& Bends

When Ordering, Please Specify Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


## Standard Specifications

- Inventories include a wide range of parts:
- Standard Elbows (2-1/2" times OD)
- Short Radius Elbows (1-1/2" times OD)
- Long Radius Bends (over 2-1/2" times OD)
- Smooth, wrinkle free elbows
- Wall Thicknesses: 16, 14, 12, (11 Gauge Available in Straight Ends Only)
- (2-1/8" to $4^{\prime \prime}$ OD = 16 Gauge) (5" to $8^{\prime \prime}$ OD = 14 Gauge) (10" to $14 "$ OD = 12 Gauge)
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel


## Tube Bending Capabilities

| OD (IN.) | CENTER LINE RADIUS (IN.) | GAUGE | WALL THICKNESS (IN.) |
| :---: | :---: | :---: | :---: |
| 1-1/2 | 1-3/4, 2-1/2, 3, 3-1/4, 4, 6, 7-1/2, 9, 12, 15, | 11,14, 16, 18 | .120, 083, .065,.049 |
|  | 18, 24, 30, 36 |  |  |
| 1-5/8 | 2-1/8, 2-1/2 | 16 | . 065 |
| 1-3/4 | 2-1/2, 3, 4, 4-1/2, 6, 8, 9, 12, 15, 18, 24, 30, 36 | 11,14, 16 | . $120, .083, .065$ |
| 2 | $\begin{aligned} & 2,2-1 / 2,3,3-1 / 2,4,5,6,8,9,12,15,18,24, \\ & 30,36,48 \end{aligned}$ | 11, 14, 16, 18, 20 | .120, .083, .065, .049,.035 |
| 2-1/8 | 2-7/8, 3-1/2, 4-1/4, 5, 20, 24, 36 | 11,16 | . 120,065 |
| 2-1/4 | 2-1/2, 4, 5-1/2, 8, 9, 12, 15, 18, 24, 30, 36, 42 | 11, 13, 14, 16, 18, 20 | . 120, , 095, , 083, , 065, .049, .035 |
| 2-3/8 | $2-3 / 8,6,8,12,18,24,30,36,48$ | 16,18 | . 065 , 049 |
| 2-1/2 | $\begin{aligned} & 2-1 / 2,3,3-1 / 4,3-3 / 4,4,5,6,9,12,15,18,24, \\ & 30,36,48 \end{aligned}$ | 11, 13, 14, 16 | .120, .095,.083, .065,.049 |
| 2-3/4 | 2-3/4, 3-7/8, 15, 24, 30 | 11, 14, 16, 18 | .120, ,083, .065, .049 |
| 2-7/8 | 9, 10, 10-1/2, 12, 24, 30, 36, 48, 60 | 15,16 | . $072, .065$ |
| 3 | 3, 4-1/2, 6, 7-1/2, 9, 12, 15, 18, 24, 30, 36, 38, 48, 60 | 11, 12, 13, 14, 16, 18 | .120, ,109, .095, ,083, .065,.049 |
| 3-1/8 | 6 | 16 | . 065 |
| 3-1/2 | $\begin{aligned} & 4,5,6,7-1 / 2,8,8-3 / 4,9,12,13,15,18,24,30, \\ & 36,48,60 \end{aligned}$ | 11, 14, 15, 16, 18 | .120, .083, .072, .065, .049 |
| 4 | $4,6,8,9,10,12,18,24,30,36,48,60$ | 10,11, 14, 16, 18 | .134, .120, .083, .065, .049 |
| 4-1/4 | 60 | 11, 13, 14 | . $120, .095, .083$ |
| 4-1/2 | 9, 12, 16, 20, 24, 30, 36, 48, 60 | 11, 14, 16 | . $120, .083, .065$ |
| 5 | 5, 5-1/2, 7-1/2, 12-1/2, 18, 24, 30, 36, 48, 60, 72 | 10,11, 14, 16 | .134, ,120, , 083, . 065 |
| 6 | 7, 9, 15, 24, 30, 36, 48, 60, 72 | 10, 11, 14, 16 | . $134, .120, .083, .065$ |
| 8 | 12, 20, 32, 48, 60, 72 | 11,14 | .120, 083 |
| 10 | 20,32, 48 | 11,12 | .120, 109 |

Pipe Bending Capabilities

|  | OD | CENTER LINE RADIUS |  |  | ED | E (IN | HES) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (INCHES) | (INCHES) | (INCHES) | 5 | 10 | 40 | 80 | OTHER |
| 1-1/4 | 1.660 | 5,12,18 | $\cdot$ | - | . 140 | - | - |
| 1-1/2 | 1.900 | 6, 9, 12, 18, 36 | - | - | . 145 | - | . 200 |
| 2 | 2.375 | $2-3 / 8,6,8,12,18,24,30,36,48$ | . 065 | . 109 | . 154 | . 218 | . 218 |
| 2-1/2 | 2.875 | 9, 10, 10-1/2, 12, 24, 30, 36, 48, 60 | . 083 | . 120 | . 203 | . 276 | - |
| 3 | 3.500 | $4,5,6,7-1 / 2,8,8-3 / 4,9,12,13,15,18,24,30,32$, $36,48,60$ | . 083 | . 120 | . 216 | . 300 | . 188 |
| 3-1/2 | 4.000 | 4, 6, 8, 9, 10, 12, 18, 24, 30, 32, 36, 48, 60 | . 083 | . 120 | - | . 300 | - |
| 4 | 4.500 | 9, 12, 16, 18, 20, 24, 30, 32, 36, 48, 60 | . 083 | . 120 | . 237 | . 337 | .188, 337 |
| 5 | 5.563 | $24,30,36,48,60,72$ | - | . 134 | . 258 | . 375 | - |
| 6 | 6.625 | $24,30,36,48,60,72$ | - | . 134 | . 280 | . 432 | . 188.250 |
| 8 | 8.625 | 32, 48, 60, 72 | $\cdot$ | . 148 | . 322 | - | . 188.250 |

## Standard Elbows \& Bends

## Standard Radius Elbows

| A (OD) | B (CLR) | GAUGE | TAN. | c | $90^{\circ}$ PART NO. | C | $45^{\circ}$ PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2-1/8" | 5" | 16 | 2" | $7{ }^{\prime \prime}$ | 90432 | 4-5/16" | 90402 |
| 2-1/2" | $6{ }^{\prime \prime}$ | 16 | $2{ }^{\prime \prime}$ | 8" | 90433 | 4-1/2" | 90403 |
| 3" | 7-1/2" | 16 | $2{ }^{\prime \prime}$ | 9-1/2" | 90434 | 5-1/8" | 90404 |
| 3-1/2" | 8-3/4" | 16 | 2" | 10-1/4" | 90435 | 5-5/8" | 90405 |
| $4{ }^{11}$ | 101 | 16 | $2{ }^{\prime \prime}$ | 12 | 90436 | 6-1/8" | 90406 |
| 5" | 12-1/2" | 14 | 2-5/8" | 15-1/8" | 90437 | 7-13/16" | 90407 |
| $6{ }^{\prime \prime}$ | $15^{\prime \prime}$ | 14 | 3-1/4" | 18-1/4" | 90438 | 9-15/32" | 90408 |
| 8" | 20" | 14 | 4-1/4" | 24-1/4" | 90439 | 12-17/32" | - 90409 |
| 101 | 321 | 12 | 15" | 47" | 90440* | 28-1/4" | 90410* |
| 12 " | $36 "$ | 12 | 6-1/4" | 42-1/4" | 90441** | 21-5/32" | 90411** |
| 14" | $36 "$ | 12 | 7-1/4" | 43-1/4" | 91442** | 22-5/32" | 90412** |

- EXPANSION DEPTH FOR STANDARD AND SHORT RADIUS ELBOWS: 1-1/4" THROUGH 4" OD AND 1-1/2" FOR 5" AND $6^{" ~ O D ~}$
- STAINLESS PARTS (10" OR LARGER OD) ARE SEGMENTED
*STAINLESS PARTS ARE SEGMENTED
** SEGMENTED


## Short Radius Elbows

| - $30^{\circ}$ AND $60^{\circ}$ ELBOWS AVAILABLE <br> - 11 GAUGE ELBOWS AVAILABLE (STRAIGHT ENDS ONLY) <br> - EXPANDED ENDS STANDARD THROUGH $6^{\prime \prime}$ SIZE <br> - EXPANDED ONE END AVAILABLE <br> - Straight ends available on all sizes by reouest |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A (OD) | B (CLR) | GAUGE | TAN. | c | 90 PART NO. | c | $45^{\circ}$ PART NO. |
| 2-1/8" | 3-1/2" | 16 | $2{ }^{\prime \prime}$ | 5-1/2" | 90442 | 3-7/16" | 90422 |
| 2-1/2" | $4{ }^{\prime \prime}$ | 16 | $2{ }^{\prime \prime}$ | $6{ }^{\prime \prime}$ | 90443 | $3-21 / 32{ }^{\prime \prime}$ | 90423 |
| $3{ }^{\prime \prime}$ | 4-1/2" | 16 | $2{ }^{\prime \prime}$ | 6-1/2" | 90444 | 3-7/8" | 90424 |
| 3-1/2" | $5{ }^{\prime \prime}$ | 16 | 2 " | $7{ }^{\prime \prime}$ | 90445 | 4-1/16" | 90425 |
| $4{ }^{\prime \prime}$ | $6{ }^{\prime \prime}$ | 16 | $2{ }^{\prime \prime}$ | $8^{\prime \prime}$ | 90446 | 4-1/2" | 90426 |
| 5" | 7-1/2" | 14 | 2-5/8" | 10-1/8" | 90447 | 5-23/32" | 90427 |
| $6{ }^{\prime \prime}$ | $9{ }^{\prime \prime}$ | 14 | 3-1/4" | 12-1/4" | 90448 | 6-31/32" | 90428 |
| 8" | 12 " | 14 | 4-1/4" | 16-1/4" | 90449 | 9-7/32" | 90429 |

[^1]When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel

$90^{\circ}$ Standard Radius Elbow

$45^{\circ}$ Standard Radius Elbow

$90^{\circ}$ Short Radius Elbow

$45^{\circ}$ Short Radius Elbow


## Standard Elbows \& Bends

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel

$90^{\circ}$ Long Radius Bend

$45^{\circ}$ Long Radius Bend

OD =Outside Diameter
CLR = Center Line Radius
C = Center to end
All reference dimensions are nominal.

Standard Long Radius Bends

- EXPANDED ENDS AVAILABLE UPON REQUEST, EXCEPT ON 8" AND 10" BENDS \& ALL 11 GAUGE BENDS

| A (OD) | B (CLR) | GAUGE | c | $90^{\circ}$ PART NO. | C | $45^{\circ}$ PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2-1/8" | $24{ }^{\prime \prime}$ | 16 | 30" | 90601 | 15-15/16" | 90651 |
| 2-1/8" | 24 " | 11 | 30" | 90602 | 15-15/16" | 90652 |
| 2-1/8" | $36{ }^{\prime \prime}$ | 16 | 42 " | 90603 | 20-15/16" | 90653 |
| 2-1/8" | $36 "$ | 11 | 42" | 90604 | 20-15/16" | 90654 |
| 2-1/2" | $24 "$ | 16 | 301 | 90605 | 15-15/16" | 90655 |
| 2-1/2" | 24 " | 11 | 30 | 90606 | 15-15/16" | 90656 |
| 2-1/2" | $36^{\prime \prime}$ | 16 | 42" | 90607 | 20-15/16" | 90657 |
| 2-1/2" | $36{ }^{\prime \prime}$ | 11 | 42" | 90608 | 20-15/16" | 90658 |
| $3{ }^{\prime \prime}$ | 24 " | 16 | 301 | 90609 | 15-15/16" | 90659 |
| 3" | 24 " | 11 | 30 | 90610 | 15-15/16" | 90660 |
| $3 "$ | $30^{\prime \prime}$ | 16 | $36^{\prime \prime}$ | 90611 | 18-7/16" | 90661 |
| $3 "$ | $30^{\prime \prime}$ | 11 | $36^{\prime \prime}$ | 90612 | 18-7/16" | 90662 |
| $3 "$ | $36 "$ | 16 | $42^{\prime \prime}$ | 90613 | 20-15/16" | 90663 |
| $3 "$ | $36{ }^{\prime \prime}$ | 11 | 42" | 90614 | 20-15/16" | 90664 |
| 3" | 38" | 16 | 44 " | 90615 | 21-3/4" | 90665 |
| 3" | 38" | 11 | 44 | 90616 | 21-3/4" | 90666 |
| $3{ }^{\prime \prime}$ | 48 " | 16 | $54 "$ | 90617 | 25-7/8" | 90667 |
| 3" | $48{ }^{\prime \prime}$ | 11 | 54" | 90618 | 25-7/8" | 90668 |
| 3-1/2" | 301 | 16 | $37{ }^{\prime \prime}$ | 90619 | 19-7/16" | 90669 |
| 3-1/2" | $30 "$ | 11 | 37" | 90620 | 19-7/16" | 90670 |
| 3-1/2" | $36^{\prime \prime}$ | 16 | 43 " | 90621 | 21-15/16" | 90671 |
| $3-1 / 2^{\prime \prime}$ | $36 "$ | 11 | 43 " | 90622 | 21-15/16" | 90672 |
| 3-1/2" | $48{ }^{\prime \prime}$ | 16 | $55^{\prime \prime}$ | 90623 | 26-7/8" | 90673 |
| $3-1 / 2^{\prime \prime}$ | $48 "$ | 11 | 55" | 90624 | 26-7/8" | 90674 |
| $4{ }^{1 /}$ | 24" | 16 | 32 " | 90625 | 17-15/16" | 90675 |
| $4 "$ | 24 " | 11 | 32" | 90626 | 17-15/16" | 90676 |
| $4 "$ | 30 | 16 | 38" | 90627 | 20-7/16" | 90677 |
| $4 "$ | 30 | 11 | 38" | 90628 | 20-7/16" | 90678 |
| $4 "$ | $36^{\prime \prime}$ | 16 | $44^{\prime \prime}$ | 90629 | 22-15/16" | 90679 |
| $4 "$ | $36{ }^{\prime \prime}$ | 11 | 44" | 90630 | 22-15/16" | 90680 |
| $4 "$ | $48^{\prime \prime}$ | 16 | $56 "$ | 90631 | 27-7/8" | 90681 |
| $4 "$ | $48^{\prime \prime}$ | 11 | $56 "$ | 90632 | 27-7/8" | 90682 |
| $4 "$ | 601 | 16 | $68{ }^{\prime \prime}$ | 90633 | 32-7/8" | 90683 |
| $4 "$ | $60{ }^{\prime \prime}$ | 11 | $68{ }^{\prime \prime}$ | 90634 | 32-7/8" | 90684 |
| 5" | $30^{\prime \prime}$ | 14 | 40 | 90635 | 22-7/16" | 90685 |
| 5" | $30^{\prime \prime}$ | 11 | 40 | 90636 | 22-7/16" | 90686 |
| 5" | 48" | 14 | 58" | 90637 | 29-7/8" | 90687 |
| $5{ }^{\prime \prime}$ | $48^{\prime \prime}$ | 11 | 58" | 90638 | 29-7/8" | 90688 |
| $6^{\prime \prime}$ | 301 | 14 | 42 " | 90639 | 24-7/16" | 90689 |
| $6 "$ | $30{ }^{\prime \prime}$ | 11 | $42^{\prime \prime}$ | 90640 | 24-7/16" | 90690 |
| $6 "$ | $48^{\prime \prime}$ | 14 | 601 | 90641 | 31-7/8" | 90691 |
| $6 "$ | $48{ }^{\prime \prime}$ | 11 | $60 "$ | 90642 | 31-7/8" | 90692 |
| $6 "$ | 60 " | 14 | 72" | 90643 | 36-7/8" | 90693 |
| $6 "$ | $60{ }^{\prime \prime}$ | 11 | 72" | 90644 | 36-7/8" | 90694 |
| 8" | 32" | 14 | 48" | 90645 | 25-1/4" | 90695 |
| $8{ }^{\prime \prime}$ | 32" | 11 | 48" | 90646 | 25-1/4" | 90696 |
| 8" | $48^{\prime \prime}$ | 14 | $64 "$ | 90647 | 31-7/8" | 90697 |
| 8" | $48^{\prime \prime}$ | 11 | $64 "$ | 90648 | $31-7 / 8{ }^{\prime \prime}$ | 90698 |
| $10^{\prime \prime}$ | 48" | 12 | $70^{\prime \prime}$ | - | 41-7/8 | 90699* |

[^2]- ALL STANDARD BENDS HAVE STRAIGHT ENDS
- NOMINAL STANDARD TANGENT FOR 10" BEND IS 22"
* STAINLESS PARTS ARE SEGMENTED


## Fittings

## Standard $90^{\circ}$ TY's

- 2-1/8" through 14" OD
- Wall Thickness: 16, 14, 12, (11 Gauge Available in Straight Ends Only)
- (16 Gauge: $2-1 / 8$ " to 4 " OD) ( 14 Gauge: $5^{\prime \prime}$ to 8 " OD) (12 Gauge: 10 " to 14 " OD)
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel

| SIZE | GAUGE | A (OD) | B | C | F (OD) | H | K | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2-1/8" | 16 | 2-1/8" | 5" | 9-5/32" | 2-1/8" | 8-13/16" | 9-1/2" | 90700 |
| 2-1/2" $\times 2-1 / 8^{\prime \prime}$ | 16 | 2-1/2" | 5" | 9-11/32" | 2-1/8" | $9{ }^{9}$ | $10 "$ | 90701 |
| 2-1/2" | 16 | 2-1/2" | $6{ }^{\prime \prime}$ | 10-1/2" | 2-1/2" | 10-1/32" | $10^{\prime \prime}$ | 90702 |
| 3" $\times 2-1 / 8^{\prime \prime}$ | 16 | $3 "$ | 5" | 9-19/32" | 2-1/8" | 9-1/4" | 10-1/2" | 90703 |
| $3^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | 3" | $6{ }^{\prime \prime}$ | 10-3/4" | 2-1/2" | 10-9/32" | 10-1/2" | 90704 |
| $3{ }^{\prime \prime}$ | 16 | 3" | 7-1/2" | 12-3/8" | $3{ }^{\prime \prime}$ | 11-25/32" | 11-1/2" | 90705 |
| $3-1 / 2^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 16 | 3-1/2" | $5{ }^{\prime \prime}$ | 9-27/32" | 2-1/8" | 9-1/2" | $11^{\prime \prime}$ | 90706 |
| $3-1 / 2^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | 3-1/2" | $6{ }^{\prime \prime}$ | $11 "$ | 2-1/2" | 10-17/32" | $11^{\prime \prime}$ | 90707 |
| $3-1 / 2^{\prime \prime} \times 3^{\prime \prime}$ | 16 | 3-1/2" | 7-1/2" | 12-5/8" | $3{ }^{\prime \prime}$ | 12-1/32" | 13" | 90708 |
| 3-1/2" | 16 | 3-1/2" | 8-3/4" | 14-1/8" | 3-1/2" | 13-11/32" | $13 "$ | 90709 |
| 4" $\times 2-1 / 8{ }^{\prime \prime}$ | 16 | $4 "$ | $5{ }^{\prime \prime}$ | 10-3/32" | 2-1/8" | 9-3/4" | $12^{\prime \prime}$ | 90710 |
| $4^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | $4 "$ | $6{ }^{\prime \prime}$ | 11-1/4" | 2-1/2" | 10-25/32" | 12" | 90711 |
| $4^{\prime \prime} \times 3^{\prime \prime}$ | 16 | $4 "$ | 7-1/2" | 12-7/8" | $3 "$ | 12-9/32" | 12 " | 90712 |
| $4^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 16 | $4 "$ | 8-3/4" | 14-3/8" | 3-1/2" | 13-19/32" | 14" | 90713 |
| $4{ }^{\prime \prime}$ | 16 | $4 "$ | 101 | 15-7/8" | $4 "$ | 14-29/32" | 14" | 90714 |
| 5" $\times 2-1 / 8{ }^{\prime \prime}$ | 14 | 5" | $5{ }^{\prime \prime}$ | 10-19/32" | 2-1/8" | 10-1/4" | 13 " | 90715 |
| $5^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | 5" | $6{ }^{\prime \prime}$ | 11-3/4" | 2-1/2" | 11-9/32" | $13 "$ | 90716 |
| $5^{\prime \prime} \times 3$ " | 14 | 5" | 7-1/2" | 13-3/8" | $3{ }^{\prime \prime}$ | 12-25/32" | 15-1/2" | 90717 |
| 5" $\times 3-1 / 2^{\prime \prime}$ | 14 | 5" | 8-3/4" | 14-7/8" | 3-1/2" | 14-3/32" | 15-1/2" | 90718 |
| $5^{\prime \prime} \times 4$ " | 14 | 5" | $10 "$ | 16-3/8" | $4 "$ | 15-13/32" | 15-1/2" | 90719 |
| 5" | 14 | 5" | 12-1/2" | 19-3/8" | 5" | 18-5/8" | 18-1/2" | 90720 |
| $6^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 14 | $6 "$ | $5{ }^{\prime \prime}$ | 11-3/32" | 2-1/8" | 10-3/4" | $15 "$ | 90721 |
| $6^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | $6 "$ | $6 "$ | 12-1/4" | 2-1/2" | 11-25/32" | 15" | 90722 |
| $6^{\prime \prime} \times 3$ " | 14 | $6 "$ | 7-1/2" | 13-7/8" | $3{ }^{\prime \prime}$ | 13-9/32" | 15" | 90723 |
| $6^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 14 | $6 "$ | 8-3/4" | 15-3/8" | 3-1/2" | 14-19/32" | $17^{\prime \prime}$ | 90724 |
| $6 \mathrm{\prime} \mathrm{\prime} \times 4$ | 14 | $6 "$ | $10 "$ | 16-7/8" | $4{ }^{\prime \prime}$ | 15-29/32" | 17" | 90725 |
| $6 " \times 5{ }^{\prime \prime}$ | 14 | $6 "$ | 12-1/2" | 19-7/8" | 5" | 19-1/8" | $21^{\prime \prime}$ | 90726 |
| $6^{\prime \prime}$ | 14 | $6 "$ | $15^{\prime \prime}$ | 22-7/8" | $6{ }^{\prime \prime}$ | 22-11/32" | 21" | 90727 |
| 8" $\times 2-1 / 8{ }^{\prime \prime}$ | 14 | 8" | 5" | 12-3/32" | 2-1/8" | 11-3/4" | 18" | 90728 |
| $8^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | 8" | $6 "$ | 13-1/4" | 2-1/2" | 12-25/32" | 18" | 90729 |
| $8^{\prime \prime} \times 3$ " | 14 | 8" | 7-1/2" | 14-7/8" | $3 "$ | 14-9/32" | 18" | 90730 |
| $8^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 14 | 8" | 8-3/4" | 16-3/8" | 3-1/2" | 15-19/32" | 21" | 90731 |
| $8{ }^{\prime \prime} \times 4$ " | 14 | 8" | $10^{\prime \prime}$ | 17-7/8" | $4{ }^{1 /}$ | 16-29/32" | $21^{\prime \prime}$ | 90732 |
| $8 \mathrm{Cl} \times{ }^{\prime \prime}$ | 14 | 8" | 12-1/2" | 20-7/8" | 5" | 20-1/8" | 24" | 90733 |
| $8{ }^{\prime \prime} \times 6{ }^{\prime \prime}$ | 14 | $8^{\prime \prime}$ | $15^{\prime \prime}$ | 23-718" | $6{ }^{\prime \prime}$ | 23-11/32" | 24" | 90734 |
| $8{ }^{\prime \prime}$ | 14 | $8{ }^{\prime \prime}$ | 20" | 29-7/8" | 8" | 29-17/32" | 29" | 90735 |
| $10^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | 5" | 13-3/32" | 2-1/8" | 12-3/4" | $21^{\prime \prime}$ | 90736 |

- EXPANDED ENDS STANDARD THROUGH 6" SIZE
* SEGMENTED


## Fittings

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel

$90^{\circ} \mathrm{TY}$ (one end expanded)

$90^{\circ} \mathrm{TY}$ (straight ends)

Standard $90^{\circ}$ TY's - cont.

- 11 GAUGE TY'S AVAILABLE (STRAIGHT ENDS ONLY)
- STRAIGHT AND EXPANDED COMBINATIONS AVAILABLE
- STRAIGHT ENDS AVAILABLE ON ALL SIZES BY REQUEST

| SIzE | GAUGE | A (OD) | B | C | F (OD) | H | K | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $10^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | $6{ }^{\prime \prime}$ | 14-1/4" | 2-1/2" | 13-25/32" | $21^{\prime \prime}$ | 90737 |
| $10^{\prime \prime} \times 3$ " | 12 | $10^{\prime \prime}$ | 7-1/2" | 15-7/8" | $3{ }^{\prime \prime}$ | 15-9/32" | $21{ }^{\prime \prime}$ | 90738 |
| $10^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | 8-3/4" | 17-3/8" | 3-1/2" | 16-17/32" | $24^{\prime \prime}$ | 90739 |
| $10^{\prime \prime} \times 4$ " | 12 | 10 | $10 "$ | 18-7/8" | $4{ }^{\prime \prime}$ | 17-29/32" | $24{ }^{\prime \prime}$ | 90740 |
| $10^{\prime \prime} \times 5^{\prime \prime}$ | 12 | $10 "$ | 12-1/2" | 21-7/8" | 5" | 21-1/8" | 24 " | 90741 |
| $10^{\prime \prime} \times 6^{\prime \prime}$ | 12 |  | $15^{\prime \prime}$ | 24-7/8" | $6{ }^{\prime \prime}$ | 24-11/32" | 28" | 90742 |
| $10^{\prime \prime} \times 8$ " | 12 | $10 "$ | 201 | 30-7/8" | 8" | 30-17/32" | $32^{\prime \prime}$ | 90743 |
| $10 "$ | 12 | $10 "$ | $32 "$ | 40-3/8" | $10^{\prime \prime}$ | 42-25/32" | $36{ }^{\prime \prime}$ | 90744 |
| $12^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 12 | 12 " | 5" | 14-3/32" | 2-1/8" | 13-3/4" | $24^{\prime \prime}$ | 90745 |
| $12^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 12 | 12 " | $6{ }^{\prime \prime}$ | 15-1/4" | 2-1/2" | 14-25/32" | 24 | 90746 |
| $12^{\prime \prime} \times 3$ " | 12 | 12 " | 7-1/2" | 16-7/8" | 31 | 16-9/32" | $24^{\prime \prime}$ | 90747 |
| $12^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 12 | 12 " | 8-3/4" | 18-3/8" | 3-1/2" | 17-19/32" | 27" | 90748 |
| $12^{\prime \prime} \times 4$ " | 12 | 12 " | 101 | 19-7/8" | $4{ }^{\prime \prime}$ | 18-29/32" | $27^{\prime \prime}$ | 90749 |
| $12^{\prime \prime} \times{ }^{\prime \prime}$ | 12 | 12 " | 12-1/2" | 22-7/8" | 5" | 22-1/8" | $27{ }^{\prime \prime}$ | 91750 |
| $12^{\prime \prime} \times 6^{\prime \prime}$ | 12 | 12 " | $15^{\prime \prime}$ | 25-7/8" | $6 "$ | 25-11/32" | $31^{\prime \prime}$ | 91751 |
| $12^{\prime \prime} \times 8^{\prime \prime}$ | 12 | 12 " | $20 "$ | 31-7/8" | 8" | 31-17/32" | $35^{\prime \prime}$ | 91752 |
| $12^{\prime \prime} \times 10^{\prime \prime}$ | 12 | 12 " | 321 | 41-3/8" | $10^{\prime \prime}$ | 43-25/32" | $39^{\prime \prime}$ | 91753 |
| 12 " | 12 | 12 " | $36^{\prime \prime}$ | 46-7/8" | 12" | 49-1/8" | $43 "$ | 91754 |
| $14^{\prime \prime} \times 8$ " | 12 | 14 " | 201 | 32-7/8" | 8" | 32-17/23" | 38" | 91755 |
| $14^{\prime \prime} \times 10{ }^{\prime \prime}$ | 12 | 14 " | $32 "$ | 42-3/8" | $10^{\prime \prime}$ | 44-25/32" | 42 " | 91756 |
| $14^{\prime \prime} \times 12$ " | 12 | 14 " | $36^{\prime \prime}$ | 47-7/8" | 12 " | 50-1/8" | $46^{\prime \prime}$ | 91757 |
| 14" | 12 | 14" | 36"* | 51-3/8" | $14 "$ | 50-3/4" | $52 "$ | 91758 |

- EXPANDED ENDS STANDARD THROUGH 6" SIZE
* SEGMENTED

OD = Outside Diameter
KEY
$\mathrm{F}=$ Outside Diameter (OD) $=\mathrm{G}=$ Inside Diameter (ID)
L = Expansion Depth 1-1/4" through 4" 0D, 1-1/2" for 5" and 6" OD
All reference dimensions are nominal.

## Fittings

## Standard $45^{\circ}$ YL's

- 2-1/8" through 14 " OD
- Wall Thickness: 16, 14, 12, (11 Gauge Available in Straight Ends Only)
- (16 Gauge: $2-1 / 8$ " to 4 " OD) ( 14 Gauge: $5^{\prime \prime}$ to 8 " OD) (12 Gauge: 10 " to 14 " OD)
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel

| - 11 GAUGE YL'S AVAILABLE (STRAIGHT ENDS ONLY) <br> - STRAIGHT AND EXPANDED COMBINATIONS AVAILABLE <br> - Straight ends available on all sizes by reouest |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SIZE | GAUGE | A (OD) | B | C | F (OD) | H | K | PART NO. |
| 2-1/8" | 16 | 2-1/8" | 5" | 9-3/32" | 2-1/8" | 4-11/16" | 9-1/2" | 90750 |
| 2-1/2" $\times 2-1 / 8^{\prime \prime}$ | 16 | 2-1/2" | 5" | 9-9/32" | 2-1/8" | 4-7/8" | $10 "$ | 90751 |
| 2-1/2" | 16 | 2-1/2" | $6{ }^{\prime \prime}$ | 10-5/32" | 2-1/2" | 5-3/16" | $10^{\prime \prime}$ | 90752 |
| 3" $\times 2-1 / 8{ }^{\prime \prime}$ | 16 | $3 "$ | 5" | 9-17/32" | 2-1/8" | 5-1/8" | 10-1/2" | 90753 |
| $3^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | 3" | $6 "$ | 10-13/32" | 2-1/2" | 5-7/16" | 10-1/2" | 90754 |
| $3{ }^{\prime \prime}$ | 16 | $3 "$ | 7-1/2" | 11-19/32" | 3" | 5-29/32" | 11-1/2" | 90755 |
| $3-1 / 2^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 16 | 3-1/2" | 5" | 9-25/32" | 2-1/8" | 5-3/8" | $11^{\prime \prime}$ | 90756 |
| $3-1 / 2^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | 3-1/2" | $6 "$ | 10-21/32" | 2-1/2" | 5-11/16" | $11 "$ | 90757 |
| $3-1 / 2^{\prime \prime} \times 3^{\prime \prime}$ | 16 | 3-1/2" | 7-1/2" | 11-27/32" | $3{ }^{\prime \prime}$ | 6-5/32" | $13 "$ | 90758 |
| 3-1/2" | 16 | 3-1/2" | 8-3/4" | 12-31/32" | 3-1/2" | 6-9/16" | $13^{\prime \prime}$ | 90759 |
| $4^{\prime \prime} \times 2-1 / 8{ }^{\prime \prime}$ | 16 | $4{ }^{\prime \prime}$ | $5{ }^{\prime \prime}$ | 10-1/32" | 2-1/8" | 5-5/8" | 12 " | 90760 |
| 4" $\times 2-1 / 2^{\prime \prime}$ | 16 | $4 "$ | $6{ }^{\prime \prime}$ | 10-29/32" | 2-1/2" | 5-15/16" | 12" | 90761 |
| 4" $\times 3$ " | 16 | $4 "$ | 7-1/2" | 12-3/32" | $3 "$ | 6-13/32" | $12^{\prime \prime}$ | 90762 |
| $4^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 16 | $4 "$ | 8-3/4" | 13-7/32" | 3-1/2" | 6-13/16" | $14 "$ | 90763 |
| $4{ }^{\prime \prime}$ | 16 | $4 "$ | 101 | 14-11/32" | $4{ }^{\prime \prime}$ | 7-1/4" | 14" | 90764 |
| $5^{\prime \prime} \times 2-1 / 8{ }^{\prime \prime}$ | 14 | $5{ }^{\prime \prime}$ | 5" | 10-17/32" | 2-1/8" | 6-1/8" | $13 "$ | 90765 |
| $5^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | 5" | $6 "$ | 11-13/32" | 2-1/2" | 6-7/16" | 13 " | 90766 |
| $5^{\prime \prime} \times 3$ " | 14 | 5" | 7-1/2" | 12-19/32" | $3{ }^{\prime \prime}$ | 6-29/32" | 15-1/2" | 90767 |
| $5^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 14 | 5" | 8-3/4" | 13-23/32" | 3-1/2" | 7-5/16" | 15-1/2" | 90768 |
| $5^{\prime \prime} \times 4{ }^{\prime \prime}$ | 14 | $5{ }^{\prime \prime}$ | $10 "$ | 14-27/32" | $4{ }^{17}$ | 7-3/4" | 15-1/2" | 90769 |
| $5{ }^{\prime \prime}$ | 14 | 5" | 12-1/2" | 17-9/16" | 5" | 9 " | 18-1/2" | 90770 |
| $6^{\prime \prime} \times 2-1 / 8 "$ | 14 | $6 "$ | 5" | 11-1/32" | 2-1/8" | 6-5/8" | $15^{\prime \prime}$ | 90771 |
| $6^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | $6{ }^{\prime \prime}$ | $6 "$ | 11-29/32" | 2-1/2" | 6-15/16" | 15" | 90772 |
| $6 " \times 3$ " | 14 | $6 "$ | 7-1/2" | 13-3/32" | $3 "$ | 7-13/32" | 15" | 90773 |
| $6^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 14 | $6 "$ | 8-3/4" | 14-7/32" | 3-1/2" | 7-13/16" | $17^{\prime \prime}$ | 90774 |
| $6^{\prime \prime} \times 4$ " | 14 | $6{ }^{\prime \prime}$ | $10^{\prime \prime}$ | 15-11/32" | $4{ }^{\prime \prime}$ | 8-1/4" | 17" | 90775 |
| 6"X5" | 14 | $6{ }^{\prime \prime}$ | 12-1/2" | 18-1/16" | 5" | 9-1/2" | $21^{\prime \prime}$ | 90776 |
| $6 "$ | 14 | $6{ }^{\prime \prime}$ | $15^{\prime \prime}$ | 20-25/32" | $6 "$ | 10-25/32" | $21 "$ | 90777 |
| $8^{\prime \prime} \times 2-1 / 8{ }^{\prime \prime}$ | 14 | $8{ }^{\prime \prime}$ | 5" | 12-1/32" | 2-1/8" | 7-5/8" | 18" | 90778 |
| $8^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | 8" | $6{ }^{\prime \prime}$ | 12-29/32" | 2-1/2" | 7-15/16" | 18" | 90779 |
| $8^{\prime \prime} \times 3$ " | 14 | $8{ }^{\prime \prime}$ | 7-1/2" | 14-3/32" | $3 "$ | 8-13/32" | 18" | 90780 |
| 8" $\times 3-1 / 2^{\prime \prime}$ | 14 | 8" | 8-3/4" | 15-7/32" | 3-1/2" | 8-13/16" | 21 " | 90781 |
| $8^{\prime \prime} \times 4$ " | 14 | 8" | $10^{\prime \prime}$ | 16-11/32" | $4{ }^{\prime \prime}$ | 9-1/4" | $21 "$ | 90782 |
| $8^{\prime \prime} \times 5^{\prime \prime}$ | 14 | $8{ }^{\prime \prime}$ | 12-1/2" | 19-1/16" | 5" | 10-1/2" | 24" | 90783 |
| 8" $\times 6$ " | 14 | 8" | $15^{\prime \prime}$ | 21-25/32" | $6 "$ | 11-25/32" | 24" | 90784 |
| $8{ }^{\prime \prime}$ | 14 | 8" | 201 | $27{ }^{\prime \prime}$ | 8" | 14-5/32" | 29" | 90785 |
| $10^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | 5" | 13-1/32" | 2-1/8" | 8-5/8" | $21{ }^{\prime \prime}$ | 90786 |

- EXPANDED ENDS STANDARD THROUGH 6" SIZE
* SEGMENTED


## Fittings

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel

$45^{\circ} \mathrm{YL}$ (one end expanded)

$45^{\circ} \mathrm{YL}$
(straight ends)


## Standard $45^{\circ}$ YL's - cont.

- 11 GAUGE YL'S AVAILABLE (STRAIGHT ENDS ONLY)
- STRAIGHT AND EXPANDED COMBINATIONS AVAILABLE
- STRAIGHT ENDS AVAILABLE ON ALL SIZES BY REQUEST

| SIzE | GAUGE | A (OD) | B | C | F (OD) | H | K | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $10^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | $6{ }^{\prime \prime}$ | 13-29/32" | 2-1/2" | 8-15/16" | $21^{\prime \prime}$ | 90787 |
| $10^{\prime \prime} \times 3$ " | 12 | $10^{\prime \prime}$ | 7-1/2" | 15-3/32" | $3{ }^{\prime \prime}$ | 9-13/32" | $21^{\prime \prime}$ | 90788 |
| $10^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | 8-3/4" | 16-7/32" | 3-1/2" | 9-13/16" | 24 | 90789 |
| $10^{\prime \prime} \times 4$ " | 12 | $10 "$ | $10 "$ | 17-11/32" | $4{ }^{\prime \prime}$ | 10-1/4" | 24 " | 90790 |
| $10^{\prime \prime} \times 5^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | 12-1/2" | 20-1/16" | 5" | 11-1/2" | 24 " | 90791 |
| $10^{\prime \prime} \times 6^{\prime \prime}$ | 12 | $10^{\prime \prime}$ | $15^{\prime \prime}$ | 22-3/4" | $6{ }^{\prime \prime}$ | 12-25/32" | $28^{\prime \prime}$ | 90792 |
| $10^{\prime \prime} \times 8{ }^{\prime \prime}$ | 12 | $10 "$ | 20" | 28" | 8" | 15-5/32" | 32 " | 90793 |
| $10 "$ | 12 | $10 "$ | $32^{\prime \prime}$ | 34-11/16" | $10 "$ | 18-5/8" | $36 "$ | 90794 |
| $12^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 12 | 12 " | $5{ }^{\prime \prime}$ | 14-1/32" | 2-1/8" | 9-5/8" | $24^{\prime \prime}$ | 90795 |
| $12^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 12 | 12 " | $6 "$ | 14-29/32" | 2-1/2" | 9-31/32" | 24 " | 90796 |
| $12^{\prime \prime} \times 3^{\prime \prime}$ | 12 | 12" | 7-1/2" | 16-3/32" | $3 "$ | 10-13/32" | 24 " | 90797 |
| $12^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 12 | 12" | 8-3/4" | 17-7/32" | 3-1/2" | 10-13/16" | $27{ }^{\prime \prime}$ | 90798 |
| $12^{\prime \prime} \times 4$ " | 12 | 12 " | $10 "$ | 18-11/32" | $4 "$ | 11-1/4" | 271 | 90799 |
| $12^{\prime \prime} \times 5^{\prime \prime}$ | 12 | 12" | 12-1/2" | 21-1/16" | 5" | 12-1/2" | $27{ }^{\prime \prime}$ | 90800 |
| $12^{\prime \prime} \times 6^{\prime \prime}$ | 12 | 12" | $15 "$ | 23-3/4" | $6 "$ | 13-25/32" | $31^{\prime \prime}$ | 91801 |
| $12^{\prime \prime} \times 8$ " | 12 | 12 " | 20" | $29 "$ | 8" | 16-5/32" | 35" | 91802 |
| $12^{\prime \prime} \times 10$ | 12 | 12" | 32 " | 35-11/16" | $10^{\prime \prime}$ | 19-5/8" | $39^{\prime \prime}$ | 91803 |
| 12 " | 12 | 12 " | 36"* | 40-3/4" | 12 " | 21-27/32" | $43^{\prime \prime}$ | 91804 |
| $14^{\prime \prime} \times 8$ " | 12 | $14 "$ | $20 "$ | 301 | 8" | 17-5/32" | $38^{\prime \prime}$ | 91805 |
| $14^{\prime \prime} \times 10$ | 12 | $14 "$ | 32 " | 36-11/32" | 10" | 20-5/8" | $42^{\prime \prime}$ | 91806 |
| $14^{\prime \prime} \times 12$ " | 12 | $14 "$ | 36"* | 41-3/4" | 12 " | 22-27/32" | $46^{\prime \prime}$ | 91807 |
| 14" | 12 | $14 "$ | 36"* | 45-15/16" | $14 "$ | 24-13/32" | $52^{\prime \prime}$ | 91808 |

- EXPANDED ENDS STANDARD THROUGH 6" SIZE
* SEGMENTED

OD = Outside Diameter
KEY
$\mathrm{F}=$ Outside Diameter $(\mathrm{OD})=\mathrm{G}=$ Inside Diameter
$\mathrm{L}=$ Expansion Depth $1-1 / 4^{\prime \prime}$ through 4 " $0 \mathrm{D}, 1-1 / 2^{\prime \prime}$ for 5 " and 6 " $O D$
All reference dimensions are nominal.

## Fittings

## Standard Double Y's

-2-1/8" through 6" OD

- Wall Thickness: 16, 14, (11 Gauge Available in Straight Ends Only)
- (16 Gauge: 2-1/8" to 4" OD) (14 Gauge: 5" to 6" OD)
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel


## Standard Double $90^{\circ}$ TY's

| - 11 GAUGE Y'S AVAILABLE (STRAIGHT ENDS ONLY) <br> - STRAIGHT AND EXPANDED COMBINATIONS AVAILABLE <br> - STRAIGHT ENDS AVAILABLE ON ALL SIZES BY REQUEST |  |  |  |  | F (OD) | H | K | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SIzE | GAUGE | A (OD) | B | C |  |  |  |  |
| 2-1/8" | 16 | 2-1/8" | $5{ }^{\prime \prime}$ | 9-5/32" | 2-1/8" | 8-13/16" | 9-1/2" | 90801 |
| 2-1/2" | 16 | 2-1/2" | $6{ }^{\prime \prime}$ | 10-1/2" | 2-1/2" | 10-1/32" | $10 "$ | 90802 |
| 3" | 16 | $3{ }^{\prime \prime}$ | 7-1/2" | 12-3/8" | 3" | 11-25/32" | 11-1/2" | 90803 |
| 3-1/2" | 16 | 3-1/2" | 8-3/4" | 14-1/8" | 3-1/2" | 13-11/32" | $13 "$ | 90804 |
| $4{ }^{\prime \prime}$ | 16 | $4{ }^{\prime \prime}$ | 101 | 15-7/8" | $4{ }^{\prime \prime}$ | 14-29/32" | $14^{\prime \prime}$ | 90805 |
| 5" | 14 | 5" | 12-1/2" | 19-3/8" | $5{ }^{\prime \prime}$ | 18-5/8" | 18-1/2" | 90806 |
| $6{ }^{\prime \prime}$ | 14 | $6^{\prime \prime}$ | $15^{\prime \prime}$ | 22-7/8" | $6 "$ | 22-11/32" | $21 "$ | 90807 |

- EXPANDED ENDS STANDARD


## Standard Double $45^{\circ}$ YL's

| SIZE | GAUGE | A (OD) | B | C | F (OD) | H | K | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2-1/8" | 16 | 2-1/8" | $5{ }^{\prime \prime}$ | 9-3/32" | 2-1/8" | 4-11/16" | 9-1/2" | 90808 |
| 2-1/2" | 16 | 2-1/2" | $6{ }^{\prime \prime}$ | 10-5/32" | 2-1/2" | 5-3/16" | 10 | 90809 |
| 3" | 16 | $3{ }^{\prime \prime}$ | 7-1/2" | 11-19/32" | 3" | 5-29/32" | 11-1/2" | 90810 |
| 3-1/2" | 16 | 3-1/2" | 8-3/4" | 12-31/32" | $3-1 / 2^{\prime \prime}$ | 6-9/16" | 13 " | 90811 |
| $4{ }^{1 \prime}$ | 16 | $4{ }^{\prime \prime}$ | 101 | 14-11/32" | $4{ }^{11}$ | 7-1/4" | 14 " | 90812 |
| 5" | 14 | 5" | 12-1/2" | 17-9/16" | 5" | $9{ }^{\prime \prime}$ | 18-1/2" | 90813 |
| $6{ }^{\prime \prime}$ | 14 | $6 "$ | 15" | 20-25/32" | $6{ }^{\prime \prime}$ | 10-15/32" | 21 " | 90814 |

- EXPANDED ENDS STANDARD

Standard Double $90^{\circ}{ }^{\prime}$ 's

| - 11 gauge y's available (STRAIght ends only) <br> - STRAIGHT AND EXPANDED COMBINATIONS AVAILABLE <br> - STRAIGHT ENDS AVAILABLE ON ALL SIZES bY REQUEST |  |  |  |  | F (OD) | H | K |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SIZE | GAUGE | A (OD) | B | C |  |  |  | PART NO. |
| 2-1/8" | 16 | 2-1/8" | 5" | $7{ }^{7}$ | 2-1/8" | $7{ }^{\text {7 }}$ | - | 90815 |
| 2-1/2" | 16 | 2-1/2" | $6^{\prime \prime}$ | 8" | 2-1/2" | 8" | - | 90816 |
| $3{ }^{\prime \prime}$ | 16 | $3{ }^{\prime \prime}$ | 7-1/2" | 9-1/2" | 3" | 9-1/2" | - | 90817 |
| 3-1/2" | 16 | 3-1/2" | 8-3/4" | 10-3/4" | 3-1/2" | 10-3/4" | - | 90818 |
| $4{ }^{11}$ | 16 | $4{ }^{\prime \prime}$ | 10 | 12 " | $4 "$ | 12 " | - | 90819 |
| 5" | 14 | 5" | 12-1/2" | 15-1/8" | $5{ }^{\prime \prime}$ | 15-1/8" | - | 90820 |
| $6{ }^{\prime \prime}$ | 14 | $6^{\prime \prime}$ | $15^{\prime \prime}$ | 18-1/4" | $6 "$ | 18-1/4" | - | 90821 |

- EXPANDED ENDS STANDARD

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Standard Double $90^{\circ}$ TY


Standard Double $45^{\circ} \mathrm{YL}$


Standard Double $90^{\circ} \mathbf{Y}$

OD = Outside Diameter
D = Expansion Depth 1-1/4" through $4^{\prime \prime} O D, 1-1 / 2^{\prime \prime}$ for $5^{\prime \prime}$ and $6^{\prime \prime} O D$
A = Outside Diameter (OD) =E - Inside
Diameter (ID)
F = Outside Diameter (OD) =G - Inside Diameter (ID)
$L=$ Expansion Depth 1-1/4" through $4^{\prime \prime} O D, 1-1 / 2^{\prime \prime}$ for $5^{\prime \prime}$ and $6^{\prime \prime} O D$
All reference dimensions are nominal.

## Fittings

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Standard Reducing Coupling (straight end)


Standard Reducing Coupling (expanded end)

## Standard Reducing Couplings

-2-1/8" through 14" OD

- Wall Thickness: 16, 14, 12, (11 Gauge Available in Straight Ends Only)
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel
- 11 GAUGE AVAILABLE (STRAIGHT ENDS ONLY)
- STRAIGHT ENDS AVAILABLE ON ALL SIZES BY REQUEST

| SIzE | GAUGE | A (OD) | C | D | E (ID) / F (OD) | GAUGE | K | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2-1/8" $\times 2$ " | 16 | 2-1/8" | $4{ }^{\prime \prime}$ | 1-1/8" | 2"ID | 16 | $2{ }^{\prime \prime}$ | 90829 |
| $2-1 / 2^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 16 | 2-1/2" | 4-1/2" | 1-1/4" | 2-1/8"ID | 16 | 1-1/2" | 90830 |
| $3^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 16 | $3 "$ | 8-3/4" | 1-1/4" | 2-1/8"ID | 16 | $2{ }^{\prime \prime}$ | 90831 |
| 3" $\times 2-1 / 2^{\prime \prime}$ | 16 | $3 "$ | $5{ }^{\prime}$ | 1-1/4" | 2-1/2"ID | 16 | 1-1/2" | 90832 |
| $3-1 / 2^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 16 | 3-1/2" | $11 "$ | 1-1/4" | 2-1/8"ID | 16 | $2{ }^{\prime \prime}$ | 90833 |
| $3-1 / 2^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | 3-1/2" | 9-1/4" | 1-1/4" | 2-1/2"ID | 16 | 2-7/8" | 90834 |
| $3-1 / 2^{\prime \prime} \times 3^{\prime \prime}$ | 16 | 3-1/2" | 5-1/2" | 1-1/4" | 3"ID | 16 | 1-1/2" | 90835 |
| $4^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 16 | $4{ }^{\prime \prime}$ | 13-1/2" | 1-1/4" | 2-1/8"ID | 16 | $2{ }^{\prime \prime}$ | 90836 |
| $4^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 16 | $4 "$ | 10-1/2" | 1-1/4" | 2-1/2"ID | 16 | $2{ }^{\prime \prime}$ | 90837 |
| 4" $\times 3$ " | 16 | $4 "$ | 9-1/4" | 1-1/4" | 3"ID | 16 | 2" | 90838 |
| $4^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 16 | $4{ }^{\prime \prime}$ | $6{ }^{\prime \prime}$ | 1-1/4" | 3-1/2"ID | 16 | 1-1/2" | 90839 |
| $5^{\prime \prime} \times 2-1 / 8^{\prime \prime}$ | 14 | 5" | 19-1/4" | 1-1/4" | 2-1/8"ID | 16 | 2-3/4" | 90840 |
| $5^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | 5" | 17-1/2" | 1-1/4" | 2-1/2"ID | 16 | 2-3/4" | 90841 |
| $5^{\prime \prime} \times 3$ " | 14 | 5" | $15{ }^{\prime \prime}$ | 1-1/4" | 3"ID | 16 | 2-3/4" | 90842 |
| $5^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 14 | 5" | 12-1/2" | 1-1/4" | $3-1 / 2^{\prime \prime}$ ID | 16 | 2-3/4" | 90843 |
| 5"X4" | 16 | 5" | $8{ }^{8}$ | 1-1/4" | $4{ }^{\text {I ID }}$ | 16 | 1-3/4" | 90844 |
| $6^{\prime \prime} \times 2-1 / 8{ }^{\prime \prime}$ | 14 | $6^{\prime \prime}$ | 24-3/4" | 1-1/4" | 2-1/8"ID | 16 | 3-1/4" | 90845 |
| $6^{\prime \prime} \times 2-1 / 2^{\prime \prime}$ | 14 | $6{ }^{\prime \prime}$ | 23" | 1-1/4" | 2-1/2"ID | 16 | 3-1/4" | 90846 |
| 6"X3" | 14 | $6 "$ | 20-1/2" | 1-1/4" | 3"ID | 16 | 3-1/4" | 90847 |
| $6^{\prime \prime} \times 3-1 / 2^{\prime \prime}$ | 14 | $6{ }^{\prime \prime}$ | $18 "$ | 1-1/4" | 3-1/2"ID | 16 | 3-1/4" | 90848 |
| $6^{\prime \prime} \times 4$ " | 14 | $6^{\prime \prime}$ | 15-3/4" | 1-1/4" | $4{ }^{\prime \prime}$ ID | 16 | $3-1 / 4$ " | 90849 |
| 6"X ${ }^{\prime \prime}$ | 14 | $6 "$ | $10 "$ | 1-1/2" | 5"ID | 14 | 1-3/4" | 90850 |
| 8" 4 $^{\prime \prime}$ | 14 | 8" | 26-1/4" | 1-1/4" | 4"ID | 16 | 4-1/4" | 90851 |
| 8" $\times 5^{\prime \prime}$ | 14 | 8" | 21-7/8" | 1-1/2" | 5"ID | 14 | 4-1/4" | 90852 |
| 8"X6" | 14 | 8" | 17-1/2" | 1-1/2" | $6 " 1 D$ | 14 | 3-5/8" | 90853 |
| $10^{\prime \prime} \times 6$ " | 12 | $10^{\prime \prime}$ | 28-1/2" | 1-1/2" | $6{ }^{\prime \prime}$ ID | 14 | 5-1/4" | 90854 |
| 10 " $\times 8$ " | 12 | $10^{\prime \prime}$ | 18-1/4" | 2-1/2" | 8" OD | 14 | 5-1/4" | 90855 |
| $12^{\prime \prime} \times 8$ " | 12 | 12" | 29-1/4" | 2-1/2" | 8" OD | 14 | 6-1/4" | 90856 |
| $12^{\prime \prime} \times 10$ | 12 | 12" | 19-3/4" | $3{ }^{\prime \prime}$ | $10^{\prime \prime} 0 \mathrm{D}$ | 12 | 6-1/4" | 90857 |
| $14^{\prime \prime} \times 10$ | 12 | 14" | $30 "$ | 3" | 10" OD | 12 | 7-1/4" | 91857 |
| $14^{\prime \prime} \times 12{ }^{\prime \prime}$ | 12 | 14" | 201 | $4 "$ | $12{ }^{\prime \prime} 0 \mathrm{D}$ | 12 | 7-114" | 91858 |

- EXPANDED ENDS STANDARD THROUGH 6" SIZE (ON SMALL END OF REDUCER)

OD =Outside Diameter
ID = Inside Diameter
All reference dimensions are nominal.

## Fittings

## Standard Adapters

## Female and Male Adapters

- 2" to 12"
- Wall Thickness: 16, 14, 12, 11 Gauge
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel


## Female Adapters

| size | GAUGE | A-FNPT | c | F (OD) | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2" to 2" | 16 | $2{ }^{\prime \prime}$ | $6^{\prime \prime}$ | 2 " | 90924 |
| 2" to 2-1/8" | 16 | 2 " | $6{ }^{\prime \prime}$ | 2-1/8" | 90925 |
| 2-1/2" to 2-1/2" | 16 | 2-1/2" | $6{ }^{\prime \prime}$ | 2-1/2" | 90926 |
| 3" to 3" | 16 | $3 "$ | $6{ }^{\prime \prime}$ | 3" | 90927 |
| 3-1/2" to 3-1/2" | 16 | 3-1/2" | $6{ }^{\prime \prime}$ | 3-1/2" | 90928 |
| $4^{\prime \prime}$ to 4" | 16 | $4{ }^{\prime \prime}$ | 6-1/2" | $4{ }^{\prime \prime}$ | 90929 |
| $5^{\prime \prime}$ to $5^{\prime \prime}$ | 14 | 5" | 6-3/4" | $5{ }^{\prime \prime}$ | 90930 |
| $6 "$ to 6" | 14 | $6 "$ | 7" | $6 "$ | 90931 |
| 8" to 8" | 14 | 8" | $9 "$ | 8" | 90932 |
| 10 to 10" | 12 | $10 "$ | 11 " | 10 | 90933 |
| 12 to 12" | 12 | 12 " | $13^{\prime \prime}$ | 12 " | 90934 |

## Male Adapters

| -11 GAuge available |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| SIZE | GAUGE | A-MNPT | C | F (OD) | PART NO. |
| 2" to 2" | 16 | 2 " | $6^{\prime \prime}$ | 2 " | 90935 |
| 2" to 2-1/8" | 16 | 2 " | $6^{\prime \prime}$ | 2-1/8" | 90936 |
| 2-1/2" to 2-1/2" | 16 | 2-1/2" | $6^{\prime \prime}$ | 2-1/2" | 90937 |
| 3" to 3" | 16 | $3{ }^{1}$ | $6^{\prime \prime}$ | $3 "$ | 90938 |
| 3-1/2" to 3-1/2" | 16 | 3-1/2" | $6^{\prime \prime}$ | 3-1/2" | 90939 |
| 4" to 4" | 16 | $4{ }^{\prime \prime}$ | $6{ }^{\prime \prime}$ | $4 "$ | 90940 |
| $5 "$ to 5" | 14 | 5" | 6-1/2" | $5{ }^{\prime \prime}$ | 90941 |
| $6 "$ to 6 " | 14 | $6 "$ | $7{ }^{17}$ | $6 "$ | 90942 |
| 8" to 8" | 14 | 8" | 8" | 8" | 90943 |
| $10^{\prime \prime}$ to 10" | 12 | 10 | 8-1/2" | 10 | 90944 |
| 12 " to 12" | 12 | $12^{\prime \prime}$ | 91 | 12 " | 90945 |

## Male Adapters

-2-1/8"

- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

| SIZE | A-MNPT | C | D | F (ID) | F (OD) | PART NO. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $2-1 / 8^{\prime \prime} \times 1-1 / 4^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $5-3 / 4^{\prime \prime}$ | - | - | $2-1 / 8^{\prime \prime}$ | 90946 |
| $2-1 / 8^{\prime \prime} \times 1-1 / 2^{\prime \prime}$ | $1-1 / 2^{\prime \prime}$ | $5-3 / 4^{\prime \prime}$ | - | - | $2-1 / 8^{\prime \prime}$ | 90947 |
| $2-1 / 8^{\prime \prime} \times 1-1 / 4^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $5-3 / 4^{\prime \prime}$ | $1-1 / 4^{\prime \prime *}$ | $2-1 / 8^{\prime \prime}$ | - | 90948 |
| $2-1 / 8^{\prime \prime} \times 1-1 / 2^{\prime \prime}$ | $1-1 / 2^{\prime \prime}$ | $5-3 / 4^{\prime \prime}$ | $1-1 / 4^{\prime *}$ | $2-1 / 8^{\prime \prime}$ | - | 90949 |

[^3]When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Female Adapter


FNPT = Female National Pipe Thread OD =Outside Diameter
M NPT = M ale National Pipe Thread
ID = Inside Diameter
All reference dimensions are nominal.

## Fittings

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Female Adapter Expanded


Male Adapter Expanded

$90^{\circ}$ Adapter Elbow


FNPT = Female National Pipe Thread
KEY
ID = Inside Diameter
M NPT = M ale National Pipe Thread
All reference dimensions are nominal.

## Standard Adapters - cont.

## Female and Male Adapter Expanded

-2" to 6"

- Wall Thickness: 16, 14, 12 Gauge
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel


## Female Adapter Expanded

| SIzE | GAUGE | A-FNPT | c | D | E (ID) | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2" to 2" | 16 | 2 " | $4 "$ | 1-1/8" | $2{ }^{\prime \prime}$ | 90950 |
| 2" to 2-1/8" | 16 | 2 " | $4 "$ | 1-1/4" | 2-1/8" | 90951 |
| 2-1/2" to 2-1/2" | 16 | 2-1/2" | 5" | 1-1/4" | 2-1/2" | 90952 |
| 3" to 3" | 16 | 3" | 5-1/4" | 1-1/4" | 3" | 90953 |
| $3-1 / 2^{\prime \prime}$ to 3-1/2" | 16 | 3-1/2" | 5-1/2" | 1-1/4" | 3-1/2" | 90954 |
| $4^{\prime \prime}$ to 4" | 16 | $4{ }^{\prime \prime}$ | 6-1/2" | 1-1/4" | $4{ }^{\prime \prime}$ | 90955 |
| $5 "$ to 5 " | 14 | $5{ }^{\prime \prime}$ | 6-3/4" | 1-1/2" | $5{ }^{\prime \prime}$ | 90956 |
| $6 "$ to 6" | 14 | $6 "$ | $7{ }^{7}$ | 1-1/2" | $6 "$ | 90957 |

Male Adapter Expanded

| SIZE | GAUGE | A-MNPT | C | D | E (ID) | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2" to 2" | 16 | 2 " | $4{ }^{\prime \prime}$ | 1-1/8" | $2{ }^{\prime \prime}$ | 90958 |
| 2" to 2-1/8" | 16 | 2 " | $4{ }^{\prime \prime}$ | 1-1/4" | 2-1/8" | 90959 |
| 2-1/2" to 2-1/2" | 16 | 2-1/2" | $4 "$ | 1-1/4" | 2-1/2" | 90960 |
| 3" to 3" | 16 | $3{ }^{\prime \prime}$ | 4-3/4" | 1-1/4" | 3" | 90961 |
| 3-1/2" to 3-1/2" | 16 | 3-1/2" | 4-3/4" | 1-1/4" | 3-1/2" | 90962 |
| 4" to 4" | 16 | $4{ }^{\prime \prime}$ | 4-3/4" | 1-1/4" | $4{ }^{\prime \prime}$ | 90963 |
| $5 "$ to 5 " | 14 | $5{ }^{\prime \prime}$ | 5" | 1-1/2" | 5" | 90964 |
| $6 "$ to 6" | 14 | $6 "$ | 5-1/4" | 1-1/2" | $6 "$ | 90965 |

## $90^{\circ}$ Adapter Elbow

- 2-1/8" to 2 "
- Available only in Cast Gray Iron, Zinc, Nickel Plated or Cast Aluminum

| SIZE | C | D | E (ID) | H | L-FNPT | PART NO. |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $2-1 / 8^{\prime \prime}$ to | $2^{\prime \prime}$ | $2-9 / 16^{\prime \prime}$ | $1-1 / 16^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | $1-5 / 8^{\prime \prime}$ | $2^{\prime \prime}$ | $90966^{*}$ |
| "AVAILABLE ONLY IN CAST GRAY IRON, ZINC, NICKEL PLATED OR CAST ALUMINUM |  |  |  |  |  |  |  |

## Adapter Tees

-2-1/8" to 4"

- 11 GAUGE ADAPTERS AVAILABLE

| SIZE | C | D | E (ID) | H | L-FNPT | PART NO. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $2-1 / 8^{\prime \prime}$ to $2^{\prime \prime}$ | $4-13 / 6^{\prime \prime}$ | $1-1 / 6^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | $1-9 / 16^{\prime \prime}$ | $2^{\prime \prime}$ | $90967^{*}$ |
| $2-1 / 2^{\prime \prime}$ to $2^{\prime \prime}$ | $6-1 / 2^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | $2^{\prime \prime}$ | 90968 |
| 3 " to $2^{\prime \prime}$ | $6-1 / 2^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $3^{\prime \prime}$ | $2-3 / 4^{\prime \prime}$ | $2^{\prime \prime}$ | 90969 |
| $3-1 / 2^{\prime \prime}$ to $2^{\prime \prime}$ | $6-7 / 8^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $3-1 / 2^{\prime \prime}$ | $3-7 / 16^{\prime \prime}$ | $2^{\prime \prime}$ | 90970 |
| 4 " to $2^{\prime \prime}$ | $6-7 / 8^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | 4 " | $3-7 / 16^{\prime \prime}$ | $2^{\prime \prime}$ | 90971 |

[^4]
## Fittings

## Standard Adapters - cont.

## Male Adapter Nipple

- 2-1/8"
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

| SIZE | A-MNPT | C | E (ID) | PART NO. |
| :--- | :--- | :--- | :--- | :--- |
| $2-1 / 8^{\prime \prime}$ | $2^{\prime \prime}$ | $2^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | 90975 |

## Female Reducing Adapter

- 2" to 2-1/2"
- Wall Thickness: 16 Gauge
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

| SIZE | GAUGE | A-FNPT | C | F (OD) | PART NO. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $2^{\prime \prime}$ to $2-1 / 2^{\prime \prime}$ | 16 | $2^{\prime \prime}$ | $4-1 / 4^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 90976 |

## Female Reducing Adapter Expanded

- 2" to 2-1/2"
- Wall Thickness: 16 Gauge

| SIZE | GAUGE | A-FNPT | C | D | E (ID) | PART NO. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $2^{\prime \prime}$ to $2-1 / 2^{\prime \prime}$ | 16 | $2^{\prime \prime}$ | $4-1 / 4^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 90977 |

## $45^{\circ}$ Female Adapter Elbow

- 2-1/8" to 2-1/2" OD
- Wall Thickness: 16, (11 Gauge Available in Straight Ends Only)
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

| SIZE | A (OD) | GAUGE | B | C | D | E(ID) | L-FNPT | PART NO. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $2-1 / 8^{\prime \prime}$ to $2^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | 16 | $5^{\prime \prime}$ | $4-1 / 1^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | $2^{\prime \prime}$ | 90978 |
| $2-1 / 2^{\prime \prime}$ t $2^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 16 | $6^{\prime \prime}$ | $4-1 / 2^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 2 " | 90979 |
| $2-1 / 2^{\prime \prime}$ to $2-1 / 2^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 16 | $6^{\prime \prime}$ | $4-1 / 2^{\prime \prime}$ | $1-1 / 4^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 90980 |

## Expanded Fittings

This type of connection enables a straight section of tubing to slip inside the expanded end of the fitting. The two pieces can then be "locked" together by any one of several techniques - brazing, welding, industrial adhesive or shrink sleeve. Not available in 11 gauge material. Joining methods are for use in low pressure (under 15 PSIG) systems. Slotted joining method also available.

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Male Adapter Nipple


Female Reducing Adapter


Female Reducing Adapter Expanded

$45^{\circ}$ Female Adapter Elbow


Expanded Fitting

## Methods of Joining

When Ordering, Please Specify Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


## Slip Couplings

Can be used for joining any two straight ends of tubing or fittings. The slip coupling is a solid sleeve that fits the OD of the joint which can then be glued, brazed, welded, or covered by a shrink sleeve.
-2-1/8" through 14" OD

- Wall Thickness: 16, 14, 12 Gauge
- Materials: Carbon, Stainless, Aluminum, Galvanized Steel

| • SLOTTED JOINING METHOD ALSO AVAILABLE |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| SIZE | C | ID | GAUGE | PART NO. |
| $2-1 / 8^{\prime \prime}$ | $3^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | 16 | 90270 |
| $2-1 / 2^{\prime \prime}$ | $3-1 / 2^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 16 | 90271 |
| $3^{\prime \prime}$ | $4^{\prime \prime}$ | $3 "$ | 16 | 90272 |
| $3-1 / 2^{\prime \prime}$ | $4-1 / 2^{\prime \prime}$ | $3-1 / 2^{\prime \prime}$ | 16 | 90273 |
| $4^{\prime \prime}$ | $5^{\prime \prime}$ | $4^{\prime \prime}$ | 16 | 90274 |
| $5 "$ | $6^{\prime \prime}$ | $5^{\prime \prime}$ | 14 | 90275 |
| $6^{\prime \prime}$ | $7 "$ | $6^{\prime \prime}$ | 14 | 90276 |
| $8^{\prime \prime}$ | $8^{\prime \prime}$ | $8^{\prime \prime}$ | 14 | 90277 |
| $10 "$ | $10 "$ | $10^{\prime \prime}$ | 12 | 90278 |
| $12^{\prime \prime}$ | $12^{\prime \prime}$ | $12^{\prime \prime}$ | 12 | 90279 |
| $14^{\prime \prime}$ | $14^{\prime \prime}$ | $14^{\prime \prime}$ | 12 | 90280 |

- JOINING METHODS ARE FOR USE IN LOW PRESSURE (UNDER 15 PSIG) SYSTEMS
* ${ }^{\text {" }}$ GALVANIZED SLIP COUPLING IS 16 GAUGE. ALL OTHER MATERIALS ARE 14 GAUGE


## Shrink Sleeves

A heat shrinkable polyolefin band that literally shrinks and encircles the connection giving it mechanical strength and a positive seal. It can be used in conjunction with a slip coupling or when using expanded fittings. Gluing, brazing and welding operations are eliminated.

| - SLOTTED JOININ | Method als | vailable |
| :---: | :---: | :---: |
| FOR TUBE <br> OD SIZE | SLEEVE <br> LENGTH | PART No. |
| 2-1/8" - 2-1/2" | 4 " | 90250 |
| $3{ }^{\prime \prime}$ | $4{ }^{\prime \prime}$ | 90251 |
| 3-1/2" | $4 "$ | 90252 |
| $4{ }^{\prime \prime}$ | $4 "$ | 90253 |
| 5" | $4 "$ | 90254 |
| $6 "$ | $4 "$ | 90255 |
| 8" | $9{ }^{\prime \prime}$ | 90256 |
| 10 | $9{ }^{\prime \prime}$ | 90257 |
| 12" | $9{ }^{\prime \prime}$ | 90258 |
| - JOINING METHODS ARE FOR USE IN LOW PRESSURE (UNDER 15 PSIG) SYSTEMS |  |  |

## Methods of Joining

## RUWAC Compression Couplings

## "Our own signature coupling"

- Offers easy "tear down" function
- Straight end tubing or fittings butt together within the ID of the coupling, and the joint is mechanically locked simply by tightening the bolts which are attached.
- $2-1 / 8^{\prime \prime}$ to $14^{\prime \prime}$ OD
- Standard Material is Galvanized Steel
- Standard Coupling includes Black Neoprene Liner \& Stainless Steel Grounding Strip.

| - WE ARE CAPABLE OF STAINLESS AND ALUMINUM COMPRESSION COUPLINGS <br> - OTHER GASKETS ARE AVAILABLE: WHITE NITRILE, RED RUBBER, SILICONE, EPDM AND VITON <br> - STAINLESS STEEL GASKET PROTECTORS ARE ALSO AVAILABLE <br> - WE CAN FURNISH YOU WITH REPLACEMENT NUTS, BOLTS, GASKETS AND STATIC STRIPS |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OD | NO. BOLT | GASKET | PROTECTOR | COUPLING LENGTH | PART NO. |
| 2-1/8" | 2 | BLACK | - | 4 | 90500 |
| 2-1/8" | 2 | BLACK | YES | 4 | 90501 |
| 2-1/8" | 3 | BLACK | - | 6 | 90502 |
| 2-1/8" | 3 | BLACK | YES | 6 | 90503 |
| 2-1/2" | 2 | BLACK | - | 4 | 90504 |
| 2-1/2" | 2 | BLACK | YES | 4 | 90505 |
| 2-1/2" | 3 | BLACK | - | 6 | 90506 |
| 2-1/2" | 3 | BLACK | YES | 6 | 90507 |
| 2-1/2" | 4 | BLACK | - | 8 | 90508 |
| 2-1/2" | 4 | BLACK | YES | 8 | 90509 |
| $3{ }^{\prime \prime}$ | 2 | BLACK | - | 4 | 90510 |
| $3 "$ | 2 | BLACK | YES | 4 | 90511 |
| 3" | 3 | BLACK | - | 6 | 90512 |
| $3 "$ | 3 | BLACK | YES | 6 | 90513 |
| 3" | 4 | BLACK | - | 8 | 90514 |
| 3" | 4 | BLACK | YES | 8 | 90515 |
| 3-1/2" | 2 | BLACK | - | 4 | 90516 |
| 3-1/2" | 2 | BLACK | YES | 4 | 90517 |
| 3-1/2" | 3 | BLACK | - | 6 | 90518 |
| 3-1/2" | 3 | BLACK | YES | 6 | 90519 |
| 3-1/2" | 4 | BLACK | - | 8 | 90520 |
| 3-1/2" | 4 | BLACK | YES | 8 | 90521 |
| $4 "$ | 2 | BLACK | - | 4 | 90522 |
| $4 "$ | 2 | BLACK | YES | 4 | 90523 |
| $4 "$ | 3 | BLACK | - | 4 | 90524 |
| $4 "$ | 3 | BLACK | YES | 4 | 90525 |
| $4 "$ | 4 | BLACK | - | 8 | 90526 |
| $4 "$ | 4 | BLACK | YES | 8 | 90527 |
| 5" | 2 | BLACK | - | 4 | 90528 |
| 5" | 2 | BLACK | YES | 4 | 90529 |
| 5" | 3 | BLACK | - | 6 | 90530 |
| $5 "$ | 3 | BLACK | YES | 6 | 90531 |
| $5{ }^{\prime \prime}$ | 4 | BLACK | - | 8 | 90532 |

- FOR COUPLINGS 1-1/4" THROUGH 2-7/8" OD THE BOLT SIZE IS $1 / 2^{\prime \prime}$ X 2 "
- FOR COUPLINGS 3" THROUGH 7-1/2" OD THE BOLT SIZE IS 5/8" X 2-1/4"
- FOR COUPLINGS $8^{\prime \prime}$ THROUGH $14^{\prime \prime}$ OD THE BOLT SIZE IS $3 / 4^{\prime \prime} X 3^{\prime \prime}$
- JOINING METHODS ARE FOR USE IN LOW PRESSURE (UNDER 15 PSIG) SYSTEMS

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Compression Coupling

ID = Inside Diameter
OD = Outside Diameter
PSIG = Pounds per Square
Inch Gravity
All reference dimensions are nominal.

## Methods of Joining

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Compression Coupling

## RUWAC Compression Couplings - cont.

## "Our own signature coupling"

- WE ARE CAPABLE OF STAINLESS AND ALUMINUM COMPRESSION COUPLINGS
- OTHER GASKETS ARE AVAILABLE: WHITE NITRILE, RED RUBBER, SILICONE, EPDM AND VITON
- STAINLESS STEEL GASKET PROTECTORS ARE ALSO AVAILABLE
- WE CAN FURNISH YOU WITH REPLACEMENT NUTS, BOLTS, GASKETS AND STATIC STRIPS

| OD | NO. BOLT | GASKET | PROTECTOR | COUPLING LENGTH | PART NO. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 5" | 4 | BLACK | YES | 8 | 90533 |
| $6^{\prime \prime}$ | 2 | BLACK | - | 4 | 90534 |
| $6^{\prime \prime}$ | 2 | BLACK | YES | 4 | 90535 |
| $6^{\prime \prime}$ | 3 | BLACK | - | 6 | 90536 |
| $6^{\prime \prime}$ | 3 | BLACK | YES | 6 | 90537 |
| $6^{\prime \prime}$ | 4 | BLACK | - | 8 | 90538 |
| $6^{\prime \prime}$ | 4 | BLACK | YES | 8 | 90539 |
| $6^{\prime \prime}$ | 5 | BLACK | - | 10 | 90540 |
| $6 "$ | 5 | BLACK | YES | 10 | 90541 |
| 8" | 2 | BLACK | - | 6 | 90542 |
| 8" | 2 | BLACK | YES | 6 | 90543 |
| 8" | 3 | BLACK | - | 8 | 90544 |
| 8" | 3 | BLACK | YES | 8 | 90545 |
| 8" | 4 | BLACK | - | 10 | 90546 |
| 8" | 4 | BLACK | YES | 10 | 90547 |
| 8" | 5 | BLACK | - | 12 | 90548 |
| 8" | 5 | BLACK | YES | 12 | 90549 |
| $10 "$ | 3 | BLACK | - | 8 | 90550 |
| 10" | 3 | BLACK | YES | 8 | 90551 |
| $10 "$ | 4 | BLACK | - | 10 | 90552 |
| 10" | 4 | BLACK | YES | 10 | 90553 |
| 10" | 5 | BLACK | - | 12 | 90554 |
| $10^{\prime \prime}$ | 5 | BLACK | YES | 12 | 90555 |
| 12" | 3 | BLACK | - | 8 | 90556 |
| 12" | 3 | BLACK | YES | 8 | 90557 |
| 12" | 4 | BLACK | - | 10 | 90558 |
| 12 " | 4 | BLACK | YES | 10 | 90559 |
| 12" | 5 | BLACK | - | 12 | 90560 |
| 12 " | 5 | BLACK | YES | 12 | 90561 |
| $14 "$ | 4 | BLACK | - | 10 | 90562 |
| $14^{\prime \prime}$ | 4 | BLACK | YES | 10 | 90563 |
| $14 "$ | 5 | BLACK | - | 12 | 90564 |
| $14^{\prime \prime}$ | 5 | BLACK | YES | 12 | 90565 |

- FOR COUPLINGS 1-1/4" THROUGH 2-7/8" OD THE BOLT SIZE IS 1/2" X 2"
- FOR COUPLINGS 3" THROUGH 7-1/2" OD THE BOLT SIZE IS 5/8" X 2-1/4"
- FOR COUPLINGS $8^{\prime \prime}$ THROUGH 14" OD THE BOLT SIZE IS $3 / 4^{\prime \prime}$ X $3^{\prime \prime}$
- JOINING METHODS ARE FOR USE IN LOW PRESSURE (UNDER 15 PSIG) SYSTEMS

PSIG = Pounds per Square Inch Gravity.
All reference dimensions are nominal.

# Methods of Joining 

## Tube Plugs

-2-1/8" to 14" OD/ID

- Wall Thickness: 16, 14, 12 Gauge

| - available in 11 gauge |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| SIzE | A (OD)/(ID) | GAUGE | c | PART NO. |
| 2-1/8" | 2-1/8"OD | 16 | 1-3/8" | 90901 |
| 2-1/2" | 2-1/2"OD | 16 | 1-3/8" | 90902 |
| 3" | 3"OD | 16 | 1-3/8" | 90903 |
| 3-1/2" | $3-1 / 2^{\prime \prime} 0 D$ | 16 | 1-3/8" | 90904 |
| $4{ }^{\prime \prime}$ | $4{ }^{\prime \prime}$ OD | 16 | 1-3/8" | 90905 |
| 5" | 5"OD | 14 | 1-5/8" | 90906 |
| $6{ }^{\prime \prime}$ | $6^{\prime \prime}$ OD | 14 | 1-5/8" | 90907 |
| 8" | 8"ID | 14 | 1-3/4" | 90908 |
| $10^{\prime \prime}$ | 10"ID | 12 | $2{ }^{\prime \prime}$ | 90909 |
| 12 | 12"ID | 12 | 2" | 90910 |
| 14 " | 14"ID | 12 | $2{ }^{\prime \prime}$ | 90911 |

## Tube Nipples

-2-1/8" to 14" OD

- Wall Thickness: 16, 14, 12 Gauge

| • AVAILABLE IN 11 GAUGE |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| SIZE | A (OD) | GAUGE | C | PART NO. |
| $2-1 / 8^{\prime \prime}$ | $2-1 / 8^{\prime \prime}$ | 16 | $2-1 / 2^{\prime \prime}$ | 90912 |
| $2-1 / 2^{\prime \prime}$ | $2-1 / 2^{\prime \prime}$ | 16 | $2-1 / 2^{\prime \prime}$ | 90913 |
| 3 " | $3^{\prime \prime}$ | 16 | $2-1 / 2^{\prime \prime}$ | 90914 |
| $3-1 / 2^{\prime \prime}$ | $3-1 / 2^{\prime \prime}$ | 16 | $2-1 / 2^{\prime \prime}$ | 90915 |
| 4 " | $4^{\prime \prime}$ | 16 | $2-1 / 2^{\prime \prime}$ | 90916 |
| 5 " | $5^{\prime \prime}$ | 14 | $3^{\prime \prime}$ | 90917 |
| 6 " | $6^{\prime \prime}$ | 14 | $3^{\prime \prime}$ | 90918 |
| $8^{\prime \prime}$ | $8^{\prime \prime}$ | 14 | $4^{\prime \prime}$ | 90919 |
| 10 " | $10^{\prime \prime}$ | 12 | $5^{\prime \prime}$ | 90920 |
| $12^{\prime \prime}$ | $12^{\prime \prime}$ | 12 | $6^{\prime \prime}$ | 90921 |
| $14^{\prime \prime}$ | $14^{\prime \prime}$ | 12 | $7^{\prime \prime}$ | 90922 |

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Tube Hanger


Tube Nipple


Slip Welding Ring

## Accessories

When Ordering,
Please Specify
Type of Material:

- Carbon
- Stainless
- Aluminum
- Galvanized Steel


Inlet Valve
(For use with open tubing or when a flush mounting is not required)

## Floor Valves

Our floor valve is a convenient alternative when wall valves aren't possible. It's built to resist wear and tear, even in heavy traffic areas.

The valve cap is easily removed, but remains flush with the body when not in use. Available in bronze and nickel-plated.


## Inlet Valves

Heavy duty inlet valves provide for a quick connection of the male hose coupling to the vacuum cleaning system. These parts are designed for insertion into a 2" FNPT threaded fitting adapting to a $2-1 / 8^{\prime \prime}$ tube size. Valves have self-closing covers and are available in galvanized and stainless steel, as well as nickel plated models.

The same body is used for all three valves...only the bore varies. 90981 and 90983 use a slight taper for hose adapter retention. 90984 and 90982 utilize a clip on the valve lid for retention instead. Hose adapters are constructed of heavy-duty galvanized steel.

Inlet Valves

| BORE | MNPT | PART NO. |
| :--- | :--- | :--- |
| $1.5^{\prime \prime}$ | $2.0^{\prime \prime}$ | 90981 |
| $1.8^{\prime \prime}$ | $2.0^{\prime \prime}$ | 90982 |
| $2.0^{\prime \prime}$ | $2.0 "$ | 90983 |
| $2.0^{\prime \prime}$ | $2.0^{\prime \prime}$ | 90984 |

Valve Accessories for Installation \& Operation

| HOSE ADAPTER <br> PART NO. | FOR <br> HOSE SIze | inlet VALVE PART NO. | WRENCH <br> PART NO. |
| :--- | :--- | :--- | :--- |
| 90986 | $1-1 / 2^{\prime \prime}$ ID | 90981 accepts 1-1/2" OD Hose Adapter | $90981 W R$ |
| 90987 | $1-1 / 2^{\prime \prime}$ ID | 90982 accepts 1.8" OD Hose Adapter | 90982 W |
| 90988 | $2 " I D$ | 90983 accepts 2" OD Hose Adapter | $90983 W$ R |
| 90989 | $2 " I D$ | 90984 accepts 2" OD Hose Adapter | $90984 W R$ |



Valve shown in $90^{\circ}$ adapter elbow (Part No. 90966)


Valve shown in tube fitting (Part No. 90967)

## Installation Components

H-P Products, Inc. gives you everything you need to get your system up and running, all in one complete installation package. If you're searching for a particular installation component, we'll be glad to help you find whatever you're looking for. Our "one-stop-shopping" will help you lower your inventory costs and spend less time looking for parts. And, when it's time for installation, you'll have all the components you need on-the-spot.

| DESCRIPTION | size | MATERIAL | PKGD. | PART NO. |
| :---: | :---: | :---: | :---: | :---: |
| Anchor, $\mathrm{Hilti}^{\text {® }}$ | 3/8" $\times 1-9 / 16^{\prime \prime}$ (Length) | Zinc | 50 pc . | 91401 |
| Bolt Anchor, <br> Includes Washer and Hex Nut <br> Features: Comprehensive performance testing in bottomless hole. Anchor size is same as hole size | 3/8" $\times 3-3 / 4^{\prime \prime}$ (Overall Length) <br> 1-1/8" Thread Length <br> rete, lightw eight concrete, and grout-fil easy installation. Hilti® Kwik Bolt II Stud | Zinc <br> ed block base ma Anchor System. | $100 \mathrm{pc} .$ <br> terials. Can | $91402$ <br> e installed in a |
| Hex Head Cap Screw | $3 / 8{ }^{\prime \prime} \times 1$ " (Length) | Zinc | 50 pc . | 91403 |
| Hex Head Cap Screw <br> "M ore Length W hen You N eed It" | 3/8" $\times 1-1 / 4$ " (Length) | Zinc | 50 pc . | 91404 |
| Hex Nut | 3/8" | Zinc | 50 pc . | 91405 |
| Flat Washer | 3/8" | Zinc | 50 pc . | 91406 |
| Split Lock Washer | 3/8" | Zinc | 50 pc . | 91407 |
| Threaded Rod | $3 / 8^{\prime \prime} \times 6^{\prime}$ (Length) | Zinc | each | 91408 |
| Eye Nut, <br> M aximum Allow able Load is 610 lbs . <br> "W orks Great W ith M etFlo" Tube Hang | 3/8" Tapped Hole | Malleable Iron - Plain. |  | 91409 |
| Coupler Nut | 3/8" $\times 1-3 / 4$ " (Length) | Zinc | each | 91410 |
| Beam Clamp <br> with Zinc Set Screw and Lock Nut. M aximum Allow able Load, in top or bottom position, is 550 lbs . | 3/8" Tapped Hole | M alleable Iron-Galv. |  | 91411 |

## Beam Clamp

3/8" Tapped Hole
with Set Screw and Lock Nut.
M aximum Allow able Load, in top position,
is 500 lbs .; in bottom position, 250 lbs .
"The Cost-Effective Solution When You Don't Need Our Heavy-Duty Beam Clamp (91411)"
M alleable each 91412
Iron- Plain
Beam Clamp
with U-Bolt and $3 / 8$ " Hex Nuts included,
for use with Beams up to $3 / 4$ " Flanges.
Design Load is 1000 lbs. Use in pairs only

Anchor


Hex Head Cap Screw 3/8" x $\mathbf{1 "}^{1 "}$


Hex Head Cap Screw 3/8" x 1-1/4"


Coupler Nut


Beam Clamp

M RI = M inimum
Rod Insertion

KEY
Zinc = Galvanized
Carbon Steel
OD =Outside Diameter
All reference dimensions
are nominal.
21


Channel Nut


Hangar Rod Stiffener Assembly


## Installation Components - cont.



| 90 ${ }^{\circ}$ Strut Bracket | $2 \times 2,9 / 16^{\prime \prime}$ Holes | Zinc | each | 91421 |
| :---: | :---: | :---: | :---: | :---: |
| 90 ${ }^{\circ}$ Strut Bracket | $2 \times 1,9 / 16^{\text {" Holes }}$ | Zinc | each | 91422 |
| $45^{\circ}$ Strut Bracket | 9/16" Holes | Zinc | each | 91423 |
| Square Washer Plate | 7/16" Hole for 3/8" Bolt Size | Zinc | 100 pc . | 91424 |
| Tube Hanger, includes Bolt and Nut | For 1-1/2" OD Tube | Zinc | each | 90858 |
| Tube Hanger, includes Bolt and Nut | For 2" OD Tube | Zinc | each | 90859 |
| Tube Hanger includes Bolt and Nut | For 2-1/8" and 2-1/4" OD Tube | Zinc | each | 90860 |
| Tube Hanger, includes Bolt and Nut | For 2-1/2" OD Tube | Zinc | each | 90861 |
| Tube Hanger, includes Bolt and Nut | For 3" OD Tube | Zinc | each | 90862 |
| Tube Hanger, includes Bolt and Nut | For 3-1/2" OD Tube | Zinc | each | 90863 |
| Tube Hanger, includes Bolt and Nut | For 4" OD Tube | Zinc | each | 90864 |
| Tube Hanger, includes Bolt and Nut | For 4-1/2" OD Tube | Zinc | each | 90871 |
| Tube Hanger, includes Bolt and Nut | For 5" OD Tube | Zinc | each | 90865 |
| Tube Hanger, includes Bolt and Nut | For 6" OD Tube | Zinc | each | 90866 |
| Tube Hanger, includes Bolt and Nut | For 8" OD Tube | Zinc | each | 90867 |
| Tube Hanger, includes Bolt and Nut | For 10" OD Tube | Zinc | each | 90868 |
| Tube Hanger, includes Bolt and Nut | For 12" OD Tube | Zinc | each | 90869 |
| Tube Hanger, includes Bolt and Nut | For 14" OD Tube | Zinc | each | 90870 |

## Installation Components - cont.

| DESCRIPTION | sIzE | MATERIAL PKGD. |  | PART NO. |
| :---: | :---: | :---: | :---: | :---: |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 1-1/2" Pipe Size | Zinc | 4 pc . | 90880 |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 2" Pipe Size | Zinc | 4 pc . | 90881 |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 2-1/2" Pipe Size | Zinc | 4 pc . | 90882 |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 3" Pipe Size | Zinc | 4 pc . | 90883* |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 3-1/2" Pipe Size | Zinc | 4 pc . | 90884* |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 4" Pipe Size | Zinc | 4 pc . | 90885* |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 5" Pipe Size | Zinc | 4 pc . | 90886 |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 6" Pipe Size | Zinc | 4 pc . | 90887 |
| Pipe Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 8" Pipe Size | Zinc | 4 pc . | 90888** |
| * Tube Clamp also fits this pipe size. <br> ** 2 piece package |  |  |  |  |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 600 lbs . | For 1-1/2" OD Tube | Zinc | 4 pc . | 90889 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 2" OD Tube | Zinc | 4 pc . | 90890 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 2-1/8" OD Tube | Zinc | 4 pc . | 90891 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 2-1/2" OD Tube | Zinc | 4 pc . | 90892 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 3" OD Tube | Zinc | 4 pc . | 90893 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 800 lbs . | For 3-1/2" OD Tube | Zinc | 4 pc . | 90894 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 4" OD Tube | Zinc | 4 pc . | 90895 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 4-1/2" OD Tube | Zinc | 4 pc . | 90896 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 5" OD Tube | Zinc | 4 pc . | 90897 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 6" OD Tube | Zinc | 4 pc . | 90898 |
| Tube Clamp, includes Slotted Hex Head Screw and Nut, Design Load 1000 lbs. | For 8" OD Tube | Zinc | 4 pc . | 90899** |

[^5]OD = Outside Diameter Zinc = Galvanized
Carbon Steel
All reference dimensions are nominal.

## Accessories

Cable Ties


Firestop Sealant


Metal Sealant
"Surface dries tack-free in approx. 5 min."

## Installation Components - cont.

## DESCRIPTION <br> SIZE <br> MATERIAL PKGD. PART NO.

Cable Tie $\quad 23$ " Length Nylon 100 pc .91900
Features: One-piece construction. Easy to use. Permanent lock. Designed to withstand 90 lbs . of force. Richco Brand.
Cable Tie
24" Length
Nylon $\quad 50 \mathrm{pc}$
91901
Features: One-piece construction. Easy to use. Permanent lock. Designed to withstand 60 lbs . of force. Catamount Brand.
"W hen Our Heavy-Duty Cable Tie (TIE-100) Isn't Necessary"

$$
\text { Cable Tie 14" Length Nylon } 100 \text { pc. } 91902
$$

Features: One-piece construction. Easy to use. Permanent lock. Designed to withstand 25 lbs . of force. Catamount Brand.
"A Light-Duty, Shorter Length Tie"
Firestop Sealant 4-gallon Bucket - each 313555

A non-sag silicone which remains flexible
after curing for simple metal pipe
penetrations and fire-rated joints where
the ability to absorb movement and/or
vibration is required.
Features: J ust $1 / 4$ " layer provides up to a 3 -hour fire rating when backed with 4 " of mineral wool. Superior adhesion characteristics. Resistant to smoke and water. Excellent elongation/compression properties. Distributed by Hilti®.

| Firestop Sealant | 10.5-0z. Tube | Quart Can | each | 313556 |
| :--- | :--- | :--- | :--- | :--- |
| Metal Sealant <br> An aluminum-colored, medium viscosity, <br> synthetic rubber sealant with excellent <br> adhesion to many metal, glass, wood <br> and other surfaces. |  | each | 313557 |  |

[^6]
## Revolutionizing the way you install couplings.

## E-Z Couplings

What makes E-Z couplings so revolutionary?
With the first major breakthrough in compression couplings in 40 years, $\mathrm{E}-\mathrm{Z}$ couplings provide a $30 \%$ faster installation. Just insert one tube end and tighten the bolt. No more re-tightening multiple bolts, means no more juggling acts since there are fewer components to handle. Plus, E-Z's O-ring gaskets won't fall out or catch on the tube, slowing installation.

E-Z couplings cost less too, because they're made from a solid piece of tube. Your customers will also experience fewer "streamers" and less chance of particle build up and blockage. Why? Because E-Z couplings are designed to self-align the ends of the tube for a smooth transition of materials.

It all adds up to superior performance. With E-Z couplings, you'll save time, save money, and pocket more profit. Lots more.

| PART NO. | OD | LENGTH |
| :---: | :---: | :---: |
| 90566Z | 1.50" | 4.00" |
| $90568 Z$ | 1.75" | 4.00" |
| 90570Z | 2.00" | 4.00" |
| 90572Z | 2.12" | 4.00" |
| 90574Z | 2.25" | 4.00" |
| 90576Z | 2.50" | 4.00" |
| 90578Z | 3.00" | 4.00" |
| 90580Z | 3.50" | 4.00" |
| $90582 Z$ | 4.00" | 4.00" |
| 90567Z | 1.50" | 6.00" |
| $90569 Z$ | 1.75" | 6.00 " |
| 90571Z | 2.00" | 6.00" |
| $90573 Z$ | 2.12" | 6.00 " |
| 90575Z | 2.25" | 6.00" |
| 90577Z | 2.50" | 6.00 " |
| $90579 Z$ | 3.00" | 6.00" |
| 90581Z | 3.50" | 6.00 " |
| $90583 Z$ | 4.00" | 6.00" |
| OD = Outside Diameter |  |  |



Tailored to fit your application, Ruwac offers...

- A full line of central vacuum components from 2 " to 12 " in diameter to meet any application.
- Tubing available in the following materials: aluminum galvanized steel carbon steel stainless steel
- Wall thickness ranging from 20 to 11 gauge.
- Inlet valves available in $1.5^{\prime \prime}, 2.0^{\prime \prime}$, and $2.75^{\prime \prime}$
- Inlets equipped with micro switches for low voltage remote starting.
- Y-Manifolds and Adapters ranging in size from $1.5^{\prime \prime}$ to $3.0^{\prime \prime}$, with custom fittings available.

Ruwac recommends E-Z couplings for all joint connections, though we offer heat shrink as an alternative. Don't hesitate to call us for more information - we're always willing to help.

Notes

Notes

## GOMPONENTS FOR EVERY APPLICATION



Ruwac is a world wide manufacturer and supplier of industrial vacuum equipment. Used in a variety of applications, from general housekeeping to point of source extraction, our industrial vacuums are made with only top quality materials to ensure durability and performance for the life of the vacuum. Using our expert engineering, we pride ourselves in providing cost effective solutions for your needs. All of our vacuum systems are built on location at our ISO 9001 certified company in Holyoke, Massachusetts. For more information on any of our products, please contact a Ruwac Representative.

## Vacuum systems we offer include (but are not limited to):

- 110 Volt Vacuums
- Air Operated Vacuums
- HEPA Vacuums
- Clean Room Vacuums
- Central Systems up to 125 HP
- Explosion Proof Vacuums
- Continuous Duty Vacuums
- Separation Systems
- Wet Vacuums
- Sump Vacuums
- Vacuum Assist Sanding Systems
- Vacuum Assist Welding Systems
- Fume Extractors
- Reverse Pulse Filter Cleaning
- Point of Source Extraction
- Bulk Material Recovery Systems
- Immersion Separators
- Dumpster Vacuums
- Trailer Mounted Vacuums
- Gasoline Driven Vacuums
- Custom Designed Vacuum Systems
- ...and more. Contact us for your specific application.


[^0]:    OD = Outside Diameter
    GALV = Galvanized
    All reference dimensions are nominal.

[^1]:    OD =Outside Diameter
    CLR $=$ Center Line Radius
    TAN = Tangent Length
    D = Expansion Depth 1-1/4" through 4" OD, 1-1/2" for 5" and 6" OD
    $\mathrm{E}=$ Inside Diameter (ID) =A Outside Diameter (OD)
    All reference dimensions are nominal.

[^2]:    - NOMINAL STANDARD TANGENT IS TWO TIMES TUBE OD, 6 " MINIMUM

[^3]:    * EXPANSION DEPTH

[^4]:    * AVAILABLE ONLY IN CAST GRAY IRON, ZINC, NICKEL PLATED OR CAST ALUMINUM \& NOT 11 GAUGE

[^5]:    ** 2 piece package

[^6]:    Features: Adheres to metal, wood and glass. Seals metal to glass in windows and doors. Resists weather, water, oil and gasoline. Solids wt. approx. $46 \%$, Flash Point (closed cup) $0^{\circ}$ F, heavy liquid consistency, aluminum color (dry), brush or flow application. Drying time is 24 hours ( $1 / 8^{\prime \prime}$ dia. bead), service temp. range of $-30^{\circ}$ to $200^{\circ}$ F. 3M Scotch-Seal ${ }^{\text {m/ }} 2084$ M etal Sealant repackaged by Ruwac, Inc.

