

Flush Weld Fittings

Made in MILWAUKEE

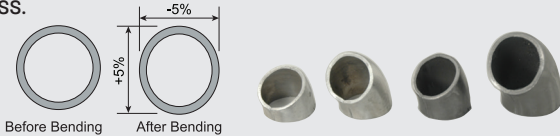
Clean, aesthetic **Flush Fittings** are utilized in the assembly of **Railings** joined by **Wagner's** unique **Wedge-Lock™ Weld Connectors** shown on page 32. After welding and grinding smooth, the railing section is complete and ready for installation. Or wire weld with no grinding - as shown. **Wedge-Locks** are available for **Pipe** and **Tube** sizes - see page 32.

Deformity Issues with Stock Bends

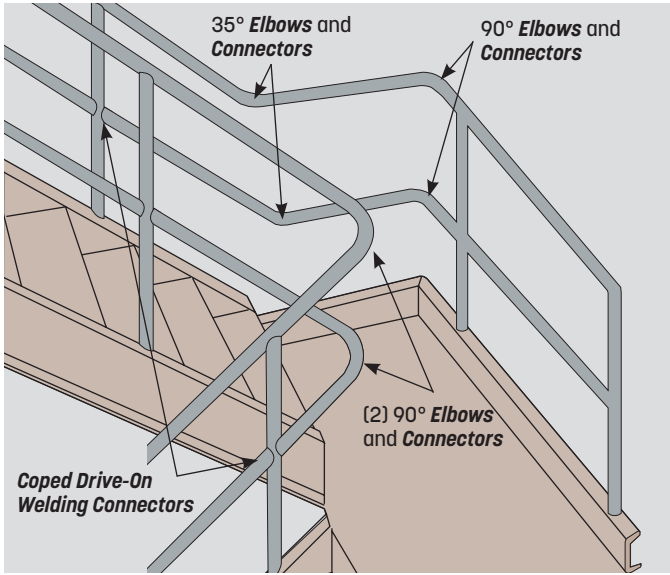
The process of bending **Pipe** and **Tube** results in unavoidable deformation.

In round sections, this causes some ovality in the bent sections of material that may result in a mismatch between the **Elbow** and stock, straight material. The deformation may be as much as +5% in the vertical dimension and -5% in the horizontal dimension.

This may be avoided by ordering **Elbows with Tangents** since the tangent sections will be unaffected by the bending process.



| | |
|--|---------------------------|
| STEEL | 3003 Seamed Elbows |
| ALUMINUM | 6061 Tubing Elbows |
| | 6063 Pipe Elbows |
| STAINLESS STEEL | Type 304 |
| BRASS | C33000 |
| BRONZE | C23000 |
| • Stainless Steel Type 316 and Bronze Alloy C38500 are available upon request. | |



Typical Pipe Stair Railings

Large Diameter Pipe and OD Tube Elbows

These **Handrail Bends** are mandrel bent and have no visible seam unless noted.

Elbows are supplied with a mill finish. They are also available galvanized, zinc plated, anodized or polished to a satin or bright finish.



90° Elbow

These **Elbows** have no visible seam unless noted.

| Pipe Size | OD | Wall Thick. | r | R | STEEL | ALUMINUM | 304 STAINLESS |
|-----------|--------|-------------|-------|--------------|--------------|---------------|---------------|
| 1.50" | .120" | 1.50" | 2.25" | 7914* | 7930* | 7946** | |
| 2.50" | .120" | 3.75" | 5.00" | 9610 | 9613 | | |
| 2 1/2" | 2.880" | .203" | 3.56" | 5.00" | 9600 | 9603 | |
| | 3.00" | .120" | 3.50" | 5.00" | | 9623 | |
| 3" | 3.50" | .216" | 4.25" | 6.00" | 9630 | | |
| 4" | 4.50" | .237" | 5.75" | 8.00" | 9640 | 9643 | |

* Denotes an **Elbow** with a seam.

** Available in 316 Stainless, add .316 to the end of the part number

90° Elbow with Two 4" Tangents

These **Elbows** have no visible seam unless noted.

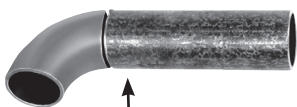
| Pipe Size | OD | Wall Thick. | r | R | STEEL | ALUMINUM | 304 STAINLESS |
|-----------|--------|-------------|-------|-------|-------|----------|---------------|
| 2 1/2" | 2.880" | .203" | 3.56" | 5.00" | 9601 | 9604 | |
| | 3.00" | .120" | 3.50" | 5.00" | 9621 | 9624 | 9626 |
| 3" | 3.50" | .216" | 4.25" | 6.00" | 9631 | 9634 | |
| 4" | 4.50" | .237" | 5.75" | 8.00" | 9641 | | |

180° Elbow with Two 4" Tangents

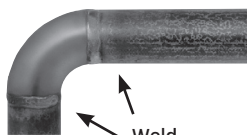
These **Elbows** have no visible seam unless noted.

| Pipe Size | OD | Wall Thick. | r | R | C-C | STEEL | ALUMINUM |
|-----------|-------|-------------|-------|--------|--------|-------------|----------|
| 2.50" | .120" | 3.75" | 5.00" | 10.00" | | | 9615 |
| 2 1/2" | 2.88" | .203" | 3.56" | 5.00" | 10.00" | | 9605 |
| | 3.00" | .120" | 3.50" | 5.00" | 12.00" | 9622 | |
| 3" | 3.50" | .216" | 4.25" | 6.00" | 12.00" | 9632 | |

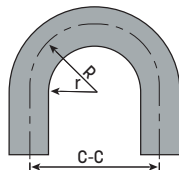
r = Inside Radius
R = Center Line Radius
C-C = Center to Center Diameter



Wedge-Lock Connector



Weld
No Grinding
Ready to Paint



STANDARD PRODUCTS

RAILING SYSTEMS

TRADITIONAL RAILING

CUSTOM SERVICES

APPENDIX