# MS BUTT-WELD ELBOW 90° LONG RADIUS SCH 160

90° Long Radius Butt-Weld Elbow · Carbon Steel ASTM A234 WPB · ASME B16.9

BRAND: SW FLOW CONTROLS | SKU: SW-0285 | SIZE 1/2" TO 8" | SCH 160



FIG. 1 | MS BUTT-WELD ELBOW 90° LONG RADIUS SCH 160

## PRODUCT OVERVIEW

The SWBM MS Butt-Weld 90° Long Radius Elbow changes flow direction by 90° with a bend radius of 1.5 times the nominal size, giving lower pressure drop and turbulence than a short radius elbow. It is produced from carbon steel to ASTM A234 Grade WPB with a SCH 160 wall, dimensioned to ASME B16.9, and is intended for high pressure and heavy duty service.

Ends are bevelled for full penetration butt welding to ASME B16.25, giving a permanent, leak tight joint with a smooth bore and no crevices. Wall thickness matches SCH 160 pipe to ASME B36.10M, so the fitting carries the same pressure rating as the connecting seamless pipe of the same schedule and material.

| | |
|---|---|
| Fitting type | **90° LR elbow, butt-weld** |
| Material | **Carbon steel, ASTM A234 WPB** |
| Dimensional standard | **ASME B16.9** |
| Wall thickness | **SCH 160, ASME B36.10M** |
| End connection | **Bevelled butt-weld, ASME B16.25** |
| Size range | **1/2" to 8" (DN15 to DN200)** |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Material specification | **ASTM A234 / ASME SA234 WPB** |
| Dimensional standard | **ASME B16.9** |
| Wall schedule | **SCH 160 to ASME B36.10M** |
| End preparation | **Bevel to ASME B16.25** |
| Bevel angle | **37.5° ±2.5°** |
| Geometry | **Long radius, R = 1.5 x NPS** |

| | |
|---|---|
| Carbon | **0.30% max** |
| Manganese | **0.29% to 1.06%** |
| Tensile strength | **415 to 585 MPa** |
| Yield strength | **240 MPa min** |
| Pressure rating | **Equal to SCH 160 seamless pipe** |
| Surface finish | **Black varnish, rust preventive** |

## FEATURES AND MATERIALS

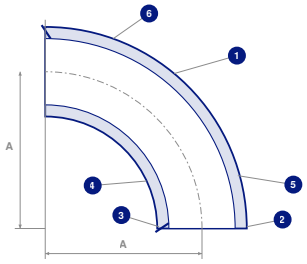



FIG. 2 | SECTION THROUGH ELBOW

| # | FEATURE | MATERIAL / DETAIL |
|---|---|---|
| 1 | Body | Carbon steel, ASTM A234 Grade WPB |
| 2 | Weld end bevel | 37.5° ±2.5° to ASME B16.25 |
| 3 | Root face (land) | 1.6 mm ±0.8 mm |
| 4 | Wall thickness | SCH 160 to ASME B36.10M |
| 5 | Surface finish | Black varnish, rust preventive |
| 6 | Marking | Size, schedule, grade, heat no. (MSS SP-25) |

One piece fitting, no assembled parts. Thin walls of 3 mm and under may be supplied square cut or slightly chamfered. Walls over 22 mm are supplied with a compound bevel to ASME B16.25.

## DIMENSIONS AND WEIGHTS

| SIZE | DN | OD (MM) | WALL (MM) | A (MM) | R (MM) | WEIGHT (KG) |
|---|---|---|---|---|---|---|
| **1/2"** | 15 | 21.3 | 4.78 | 38 | 38 | 0.12 |
| **3/4"** | 20 | 26.7 | 5.56 | 38 | 38 | 0.17 |
| **1"** | 25 | 33.4 | 6.35 | 38 | 38 | 0.25 |
| **1.1/4"** | 32 | 42.2 | 6.35 | 48 | 48 | 0.42 |
| **1.1/2"** | 40 | 48.3 | 7.14 | 57 | 57 | 0.65 |
| **2"** | 50 | 60.3 | 8.74 | 76 | 76 | 1.33 |
| **2.1/2"** | 65 | 73.0 | 9.53 | 95 | 95 | 2.23 |
| **3"** | 80 | 88.9 | 11.13 | 114 | 114 | 3.82 |
| **3.1/2"** | 90 | 101.6 | n/a | 133 | 133 | n/a |
| **4"** | 100 | 114.3 | 13.49 | 152 | 152 | 8.01 |
| **5"** | 125 | 141.3 | 15.88 | 190 | 190 | 14.7 |
| **6"** | 150 | 168.3 | 18.26 | 229 | 229 | 24.3 |
| **8"** | 200 | 219.1 | 23.01 | 305 | 305 | 53.3 |

A = centre to end. R = bend radius (1.5 x NPS). OD and wall to ASME B36.10M SCH 160; fitting dimensions to ASME B16.9. Weights are calculated estimates and not certified. Dimensions and weights are nominal and are given for guidance only. Certified drawings for the supplied make and size are issued on request. 3.1/2" is not a defined SCH 160 size in ASME B36.10M, wall to be confirmed on enquiry.

## ORDERING INFORMATION

| FIELD | OPTIONS |
|---|---|
| Product code | SW-0285 |
| Size | 1/2", 3/4", 1", 1.1/4", 1.1/2", 2", 2.1/2", 3", 3.1/2", 4", 5", 6", 8" |
| Schedule | SCH 160. Other schedules available under separate codes |
| Material | ASTM A234 WPB. MTC to EN 10204 3.1 on request |
| Order example | **SW-0285 / 4" / SCH 160 / A234 WPB / BW** |

Stock held in Dubai for fast despatch across the UAE and GCC. Contact our sales desk for pricing, availability, project quantities and certification requirements.

## PRESSURE AND TEMPERATURE

| | |
|---|---|
| Pressure rating | **Equal to SCH 160 seamless pipe of the same material** |
| Basis | **ASME B16.9 rating clause** |
| Allowable stress | **138 MPa at -29°C to +38°C (ASME B31.3)** |
| Minimum temperature | **-29°C (ASME B31.3, curve B)** |
| Maximum temperature | **+425°C for prolonged service** |

Design pressure is calculated by the piping designer from the governing code (ASME B31.1, B31.3, B31.4 or B31.8) using the wall thickness, corrosion allowance and design temperature. Impact testing may be required near the minimum temperature on thicker walls. Confirm duty with SWBM before use outside these limits.

## TYPICAL APPLICATIONS

- Process and utility pipeline routing
- Oil and gas, petrochemical and refinery piping
- Chemical processing lines
- Water treatment and supply networks
- Heat exchanger and reactor connections
- Steam, condensate and cooling water lines

## COMPLIANCE AND QUALITY

- Material to ASTM A234 / ASME SA234 Grade WPB
- Dimensions and tolerances to ASME B16.9
- Wall thickness to ASME B36.10M SCH 160
- Weld end bevel to ASME B16.25
- Marking to MSS SP-25
- Heat treatment as required by ASTM A234
- Material test certificate EN 10204 3.1 on request

## INSTALLATION AND OPERATION

- Clean the bevel and 25 mm either side to bright metal, removing varnish, oil and rust
- Check bevel and root face for damage, re-dress to ASME B16.25 if required
- Align bores and set a root gap of 1.6 to 3.2 mm with even tack welds
- Weld with procedures and welders qualified to ASME Section IX
- Apply preheat and post weld heat treatment where the piping code requires it
- Carry out NDE and pressure testing to the governing piping code

COMPANY

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