MS BUTT-WELD ELBOW 90° SHORT RADIUS SCH 40

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

BRAND: SW FLOW CONTROLS | SKU: SW-0293 | SIZE 1/2" TO 18" | SCH 40



FIG. 1 | MS BUTT-WELD ELBOW 90° SHORT RADIUS SCH 40

PRODUCT OVERVIEW

The SWBM MS Butt-Weld 90° Short Radius Elbow changes flow direction by 90° with a bend radius equal to the nominal size, for compact turns where space does not allow a long radius elbow. It is produced from carbon steel to ASTM A234 Grade WPB with a SCH 40 wall and dimensioned to ASME B16.9.

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 40 pipe to ASME B36.10M. Under ASME B16.9 a short radius elbow may be rated at 80% of the connecting seamless pipe of the same schedule and material.

Fitting type	**90° SR elbow, butt-weld**
Material	**Carbon steel, ASTM A234 WPB**
Dimensional standard	**ASME B16.9**
Wall thickness	**SCH 40, ASME B36.10M**
End connection	**Bevelled butt-weld, ASME B16.25**
Size range	**1/2" to 18" (DN15 to DN450)**

TECHNICAL SPECIFICATION

Material specification	**ASTM A234 / ASME SA234 WPB**
Dimensional standard	**ASME B16.9**
Wall schedule	**SCH 40 to ASME B36.10M**
End preparation	**Bevel to ASME B16.25**
Bevel angle	**37.5° ±2.5°**
Geometry	**Short radius, R = 1.0 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	**80% of SCH 40 seamless pipe**
Surface finish	**Black varnish, rust preventive**

FEATURES AND MATERIALS

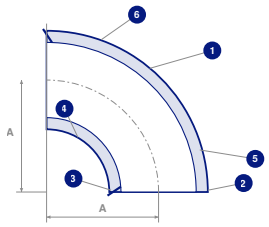


FIG. 2 | SECTION THROUGH ELBOW

#	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 40 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.

DIMENSIONS AND WEIGHTS

SIZE	DN	OD (MM)	WALL (MM)	A (MM)	R (MM)	WEIGHT (KG)
1/2"	15	21.3	2.77	Confirm	Confirm	Confirm
3/4"	20	26.7	2.87	Confirm	Confirm	Confirm
1"	25	33.4	3.38	25	25	0.10
1.1/4"	32	42.2	3.56	32	32	0.17
1.1/2"	40	48.3	3.68	38	38	0.24
2"	50	60.3	3.91	51	51	0.44
2.1/2"	65	73.0	5.16	64	64	0.87
3"	80	88.9	5.49	76	76	1.35
3.1/2"	90	101.6	5.74	89	89	1.90
4"	100	114.3	6.02	102	102	2.58
5"	125	141.3	6.55	127	127	4.34
6"	150	168.3	7.11	152	152	6.75
8"	200	219.1	8.18	203	203	13.6
10"	250	273.0	9.27	254	254	24.1
12"	300	323.8	10.31	305	305	38.2
14"	350	355.6	11.13	356	356	52.9
16"	400	406.4	12.70	406	406	78.6
18"	450	457.0	14.27	457	457	111.8

A = centre to end. R = bend radius (1.0 x NPS). OD and wall to ASME B36.10M SCH 40; 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. Short radius elbows below 1" are outside the ASME B16.9 table, dimensions confirmed on enquiry.

ORDERING INFORMATION

FIELD	OPTIONS
Product code	SW-0293
Size	1/2", 3/4", 1", 1.1/4", 1.1/2", 2", 2.1/2", 3", 3.1/2", 4", 5", 6", 8", 10", 12", 14", 16", 18"
Schedule	SCH 40. Other schedules available under separate codes
Material	ASTM A234 WPB. MTC to EN 10204 3.1 on request
Order example	**SW-0293 / 4" / SCH 40 / 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	**Up to 80% of SCH 40 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.

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 40
- 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

TYPICAL APPLICATIONS

- Compact routing in space-constrained layouts
- Skids, packages and equipment hook-ups
- Oil and gas and refinery piping
- Chemical processing lines
- Water treatment and supply networks
- Low velocity utility lines where pressure drop is not critical

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

Sunel Wala Building Materials
Trading Co. LLC (SWBM)
Dubai, United Arab Emirates

SALES ENQUIRIES

info@swbm-fittings.com
Tel: +971 4 238 5652
Mobile / WhatsApp: +971 50 748 1772

ONLINE

www.swbm-fittings.com
Brand: SW Flow Controls

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