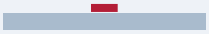
WELDING POSITIONS

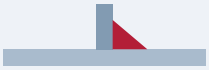
Plate Positions · PA to PE

Describe weld axis and weld face orientation together. These are workshop comparisons, not qualification equivalences.

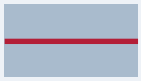
PA · Flat Butt



PB · Horizontal-Vertical Fillet



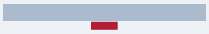
PC · Horizontal Butt



PD · Overhead Fillet



PE · Overhead Butt



ISO 6947:2019	Typical AWS Plate Notation	What the Pool Does
PA · flat	1G butt / 1F fillet	Pool lies below the arc. Many processes can use larger beads here.
PB · horizontal-vertical	2F fillet	Gravity draws the pool towards the lower member. Watch the top toe.
PC · horizontal	2G butt	Horizontal weld axis on a vertical plate. Check upper sidewall fusion and lower-toe overlap.
PD · horizontal-overhead	4F fillet	Pool hangs beneath the joint. Keep it manageable.
PE · overhead	4G butt	Pool hangs below the parent surfaces. Watch sag and avoid unsupported large pools.

A Common Mix-Up

PC and PB can both have a horizontal weld axis. For a common plate comparison PC is 2G and PB is 2F. The joint geometry and weld face identify the setup.

ISO 6947:2019 · Clause 4 and annexes

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WELDING POSITIONS

Vertical Up and Vertical Down

Progression changes how gravity acts on the pool. PF is up, PG is down. Read the direction on both the procedure and the welder record.

PF · Vertical Up



PG · Vertical Down



Position	Common Plate Notation	Control and Main Risk
PF · upwards	3G up butt / 3F up fillet	Build on the previous pool. Use controlled beads and make sure the toes fuse.
PG · downwards	3G down butt / 3F down fillet	Pool can run ahead of the arc. Downhill may suit selected thin sheet or qualified pipe procedures. Do not use it when the job or qualification requires uphill.
Process selection	MMA or FCAW with a suitable positional consumable, TIG, or controlled short-arc/pulse MAG.	Conventional spray produces a fluid pool. Use it only in a position and setup that can control that pool.

Worked Comparison · 9.6mm Steel

One short-arc example uses 0.89mm ER70S-6, 75/25 Ar/CO_2, DC+ at 8.9m/min and 20V for 1G, versus 6.3m/min and 17.9V for 3G up. That is about 29% less wire feed in that example. It is not a universal reduction.

ISO 6947:2019 · PF and PG

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WELDING POSITIONS

Pipe · Rolled, Fixed and Orbital

Confirm the pipe axis and whether it turns. Fixed pipe makes the welder or head travel around the joint.

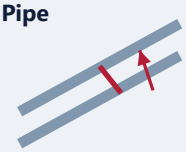
PH · Fixed Horizontal Pipe, Up



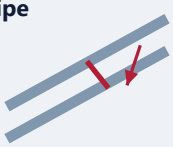
PJ · Fixed Horizontal Pipe, Down



PH-L045 · Inclined Pipe



PJ-L045 · Inclined Pipe



Pipe Setup	Typical Test Notation	How to Read It
Rolled · PA	1G rolled	The pipe rotates so the pool stays near the top.
Fixed · PC	2G	Vertical pipe axis with horizontal circumferential weld plane.
Fixed · PH / PJ	5G up / down	Horizontal pipe axis. The weld passes through flat, vertical and overhead regions.
Fixed · PH-L045 / PJ-L045	6G up / down	Axis inclined 45°. Older documents may use H-L045 or J-L045.
Orbital	PK to be confirmed	Head travels around the circumference. Position and operator qualification depend on the orbital setup and governing standard.

Do Not Buy by 5G or 6G Alone

Give the test standard, process, position and direction, joint, diameter, thickness or deposit range and backing. The drawing shorthand identifies an orientation. It does not establish the full scope of qualification.

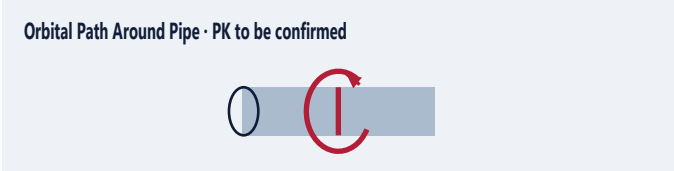
ISO 6947:2019 · Clause 5 inclinations

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WELDING POSITIONS

Set-Up and Qualification Checks

Read the procedure and consumable limitations together. One position code tells you how the weld is made, but process, joint and qualification still matter.



Workshop Check	Action
Axis, face and direction	Mark the direction in the job pack. Record if the part is rolled or fixed. Recheck after turning or repositioning.
Current, feed and travel	Use the approved range for that position. In one example, 9.6mm plate short-arc 4G uses 6.8m/min and 18V, against 8.9m/min and 20V for 1G.
Common errors	A large pool sags overhead. A fast downhill run may let the pool overrun the arc. On horizontal butt welds, watch the upper toe and lower edge.
Test coverage	ISO 9606-1:2012 clause 5.8 uses different position tables for butt and fillet welds. The ISO interpretation for Table 9 addresses legacy H-L045 and J-L045 designations. Read the actual qualification record.
Exposure	Use the planned work position, fume control, screens and eye protection. Overhead work also exposes the operator to hot particles and falling slag.

Worked Decision

A 5G-up production weld is a PH setup. If the record lists only a rolled 1G test, refer it for qualification review before assigning the joint. The rolled weld does not reproduce the changing pool orientation of fixed pipe.

For positional equipment or consumable selection, give the position code, direction, process, joint type and thickness. Call 023 8033 9443 or email sales@rhdaveywelding.co.uk.

Jasic TIG Range Guide
Parweld XTM
Parweld XTT
Parweld Filler Wires
Weld Star TIG
Kjellberg MMA Electrodes

ISO · ISO 9606-1 interpretations
HSE · Welding risk controls

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