



Expert Guide

Böhler Welding

#1 seamless cored wires

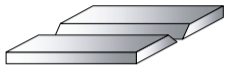


voestalpine Böhler Welding
www.voestalpine.com/welding

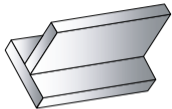
voestalpine

ONE STEP AHEAD.

EN and AWS Welding Positions / butt & fillet welds



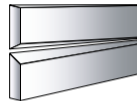
PA/1G



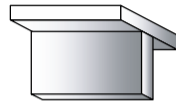
PA/1F



PB/2F



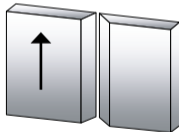
PC/2G



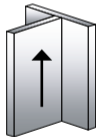
PD/4F



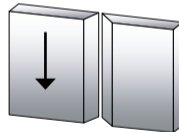
PE/4G



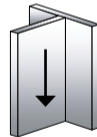
PF/3G



PF/3F



PG/3G



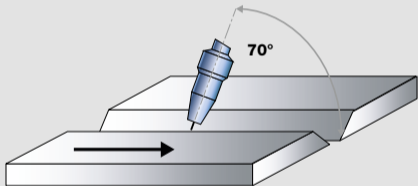
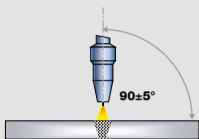
PG/3F

Overview – All-Positional Rutile

| Product name | EN classification | AWS classification |
|---|-------------------------------|---------------------------|
| BÖHLER Ti 52 T-FD | 17632-A: T46 4 P M 1 H5 | A5.36: E71T1-M21A4-CS1-H4 |
| BÖHLER Ti 52 T-FD (CO ₂) | 17632-A T46 3 P C 1 H5 | A5.36 E71T1-C1A2-CS1-H4 |
| BÖHLER Ti 52 T-FD (HP) | 17632-A: T46 5 P M 1 H5 | A5.36 E71T1-M21A6-CS1-H4 |
| BÖHLER Ti 52 T-FD SR (CO ₂) | 17632-A T42 4 P C 1 H5 | A5.36 E71T12-C1AP4-CS1-H4 |
| BÖHLER NiCu1 Ti T-FD | 17632-A T46 4 Z P M 1 H5 | A5.36 E81T1-M21A4-GH4 |
| BÖHLER Ti 60 T-FD | 17632-A T 50 6 1Ni P M 1 H5 | A5.36 E81T1-M21A8-Ni1-H4 |
| BÖHLER Ti 60 T-FD SR | 17632-A T50 6 1Ni P M 1 H5 | A5.36 E81T1-M21AP8-Ni1-H4 |
| BÖHLER Ti 60 T-FD (CO ₂) | 17632-A T46 4 1Ni P C 1 H5 | A5.36 E81T1-C1A4-Ni1-H4 |
| BÖHLER Ti 60 K2 T-FD (CO ₂) | 17632-A T50 6 1.5Ni P C 1 H5 | A5.36 E81T1-C1A8-K2-H4 |
| BÖHLER Ti 2 Ni T-FD | 17632-A T50 6 2Ni P M 1 H5 | A5.36 E81T1-M21A8-Ni2-H4 |
| BÖHLER Ti 75 T-FD | 18276-A T62 4 Mn1.5Ni P M 1H5 | A5.36 E101T1-M21A4-K2-H4 |
| BÖHLER Ti 80 T-FD | 18276-A T69 6 Z P M 1 H5 | A5.36 E111T1-M21A8-GH4 |
| BÖHLER Ti 70 Pipe T-FD | 18276-A T55 5 Mn1Ni P M 1 H5 | A5.36 E91T1-M21A6-K2-H4 |

Overview – All-Positional Rutile

| Product name | Application | CVN toughness | ABS steel grades |
|---|--|---------------|------------------|
| BÖHLER Ti 52 T-FD | Multi-purpose up to 460MPa YS. Mixed gas and CO ₂ . | 60J at -40°C | EH36-EH40 |
| BÖHLER Ti 52 T-FD (CO ₂) | Multi-purpose up to 460MPa YS. 100% CO ₂ . | 70J at -30°C | DH36 |
| BÖHLER Ti 52 T-FD (HP) | Highest toughness demands up to 460MPa YS. Mixed gas and CO ₂ . | 80J at -50°C. | EH36-EH40 |
| BÖHLER Ti 52 T-FD SR (CO ₂) | Multi-purpose up to 420 MPa YS. CTOD. PWHT. 100% CO ₂ . | 85J at -40°C | EH36-EH40 |
| BÖHLER NiCu1 Ti T-FD | Weathering steels. Mixed gas. | 70J at -40°C | NA |
| BÖHLER Ti 60 T-FD | Low temperature steels up to 500MPa. < 1%Ni. CTOD. Mixed gas. | 65J at -60°C | FQ43-FQ47 - FH40 |
| BÖHLER Ti 60 T-FD SR | Low temperature steels up to 500MPa. < 1%Ni. PWHT. CTOD. Mixed gas. | 90J at -60°C | FQ43-FQ47 - FH40 |
| BÖHLER Ti 60 T-FD (CO ₂) | Low temperature steels up to 460MPa. < 1%Ni. CTOD. 100 % CO ₂ . | 80J at -40°C | EH36-EH40 |
| BÖHLER Ti 60 K2 T-FD (CO ₂) | Low temperature steels up to 500MPa. 100 % CO ₂ . | 60J at -60°C | FQ43-FQ47 - FH40 |
| BÖHLER Ti 2 Ni T-FD | Low temperature steels up to 500MPa. 2%Ni. CTOD. Mixed gas. | 80J at -60°C | FQ43-FQ47-FH40 |
| BÖHLER Ti 75 T-FD | High strength steels up to 620MPa. Mixed gas. | 90J at -40°C | EQ51 - EQ56-EQ63 |
| BÖHLER Ti 80 T-FD | High strength steels up to 690MPa. Mixed gas. | 75J at -40°C | EQ70 |
| BÖHLER Ti 70 Pipe T-FD | Pipeline steel grades up to X70. Mixed gas. | 80J at -50°C | API 5L: X70 |

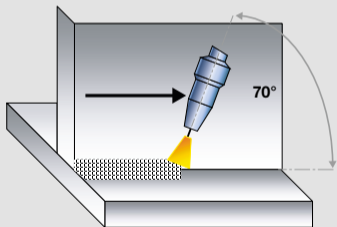
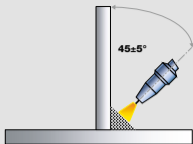


Downhand
PA/1G/1F

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | Run |
|-----|-----------|-----------------|-----------------|---------|-------------|------|
| | mm | inch | mm | inch | V | |
| | | | | | PA/1G/1F | |
| 1.0 | 0.040 | 15 | 0.6 | 120-150 | 18-20 | Root |
| | | | | 200-240 | 23-25 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 150-180 | 19-20 | Root |
| | | | | 240-300 | 25-28 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 160-200 | 20-25 | Root |
| | | | | 250-340 | 24-32 | Fill |
| 1.6 | 0.063 | Not recommended | | | | Root |
| | | 20 | 0.8 | 250-360 | 26-33 | Fill |

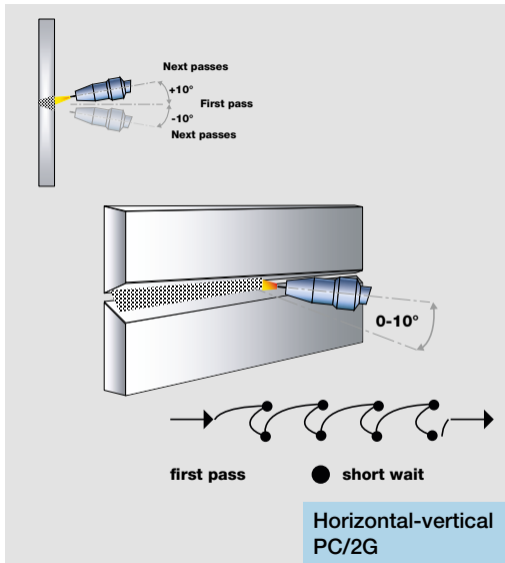


Flat Fillet
PB/2F

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

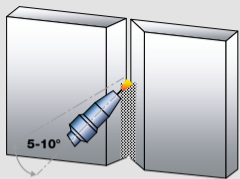
| Ø | Stick-out | | Welding current | Arc voltage | Run | |
|-----|-----------|------|-----------------|-------------|-------|------|
| | mm | inch | | | | mm |
| | | | A | V | | |
| | | | PB/2F | PB/2F | | |
| 1.0 | 0.040 | 15 | 0.6 | 210-250 | 20-24 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 200-320 | 24-31 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 220-360 | 24-32 | Fill |
| 1.6 | 0.063 | 20 | 0.8 | 230-400 | 25-33 | Fill |



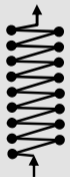
Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

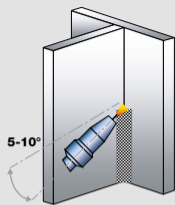
| Ø | Stick-out | | Welding current | | Arc voltage | Run |
|-----|-----------|-----------------|-----------------|---------|-------------|------|
| | mm | inch | mm | inch | V | |
| | | | | | PC/2G | |
| 1.0 | 0.040 | 15 | 0.6 | 140-190 | 18-20 | Root |
| | | | | 200-230 | 20-22 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 150-190 | 19-21 | Root |
| | | | | 200-250 | 21-25 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 160-210 | 20-25 | Root |
| | | | | 220-300 | 23-29 | Fill |
| 1.6 | 0.063 | Not recommended | | | | Root |
| | | 20 | 0.8 | 230-310 | 24-30 | Fill |



First pass



Next passes

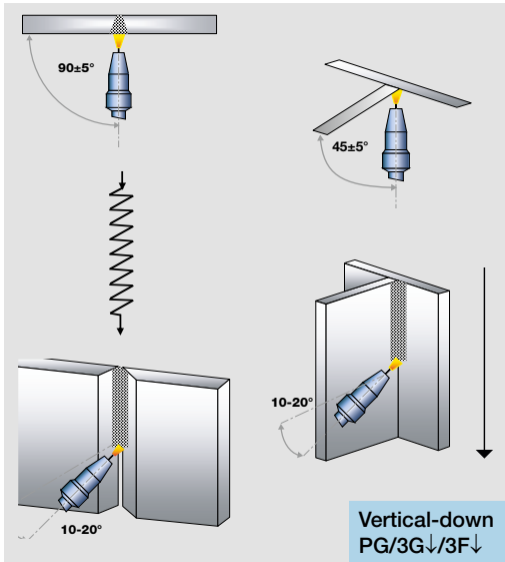


Vertical-up
PF/3G↑/3F↑

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

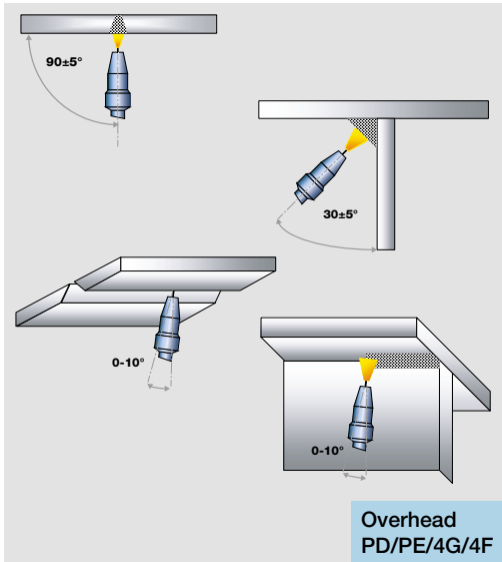
| Ø | Stick-out | | Welding current | | Arc voltage | | Run | |
|-----|-----------|-----------------|-----------------|---------|-------------|-------|-------|------|
| | mm | inch | mm | inch | A | V | | |
| | | | | | PF/3G↑ | 3F↑ | | |
| 1.0 | 0.040 | 15 | 0.6 | 140-170 | 19-22 | | Root | |
| | | | | 190-240 | 170-210 | 22-25 | 22-24 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 140-180 | 20-22 | | Root | |
| | | | | 200-240 | 210-250 | 23-26 | 23-26 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 200-240 | 23-26 | | Root | |
| | | | | | 210-250 | | 23-26 | Fill |
| 1.6 | 0.063 | Not recommended | | | | | | Root |
| | | 20 | 0.8 | 210-270 | 210-260 | 23-27 | 23-27 | Fill |



Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | | Run |
|-----|-----------|------|-----------------|---------|-------------|---------|-------|
| | mm | inch | mm | inch | A | V | |
| | | | | | PG/3G↓ | 3F↓ | |
| 1.0 | 0.040 | 15 | 0.6 | 130-170 | 17.5-22 | | Root |
| | | | | | | 190-280 | 20-28 |
| 1.2 | 0.045 | 15 | 0.6 | 150-180 | 18-23 | | Root |
| | | | | | | 200-300 | 22-30 |



Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

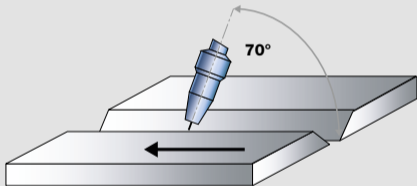
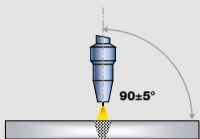
| Ø | Stick-out | | Welding current | | Arc voltage | | Run | |
|-----|-----------|-----------------|-----------------|---------|-------------|---------|-------------|------|
| | mm | inch | mm | inch | V | | | |
| | | | | | PD/4F | PE/4G | PD/PE/4G 4F | |
| 1.0 | 0.040 | 15 | 0.6 | 120-150 | | 18-21 | | Root |
| | | | | 160-200 | 170-200 | 19-23 | 20-22 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 140-170 | | 18-21 | | Root |
| | | | | 170-230 | 200-230 | 19-24 | 21-23 | Fill |
| 1.4 | 0.055 | Not recommended | | | | | | Root |
| | | 20 | 0.8 | 180-220 | 20-23 | 210-240 | 22-25 | Fill |
| 1.6 | 0.063 | Not recommended | | | | | | |

Overview – All-positional Metal-Cored

| Product name | EN classification | AWS classification |
|------------------------|-----------------------------------|---------------------------|
| BÖHLER HL 51 T-MC | 17632-A T 46 6 M M 1 H5 | A5.36 E70T15-M21A8-CS1-H4 |
| BÖHLER HL 46 GS T-MC | 17632-A T 46 Z M M 1 H5 | A5.36 E70T15-M21AZ-CS1-H4 |
| BÖHLER NiCu1 T-MC | 18276-A T 46 6 Z M M 1 H5 | A5.36 E80T15-M21A8-GH4 |
| BÖHLER HL 53 T-MC | 17632-A T 50 6 1Ni M M 1 H5 | A5.36 E80T15-M21A8-Ni1-H4 |
| BÖHLER HL 65 T-MC | 18276-A T 55 4 1NiMo M M 1 H5 | A5.36 E90T15-M21A4-K3-H4 |
| BÖHLER HL 75 T-MC | 18276-A T 62 4 Z M M 1 H5 | A5.36 E101T15-M21A4-G-H4 |
| BÖHLER 700 T-MC | 18276-A T 69 6 Mn2NiCrMo M M 1 H5 | A5.36 E110T15-M21A8-K4-H4 |
| BÖHLER 900 T-MC | 18276-A T 89 6 Z M M 1 H5 | A5.28: E120C-H4 |
| BÖHLER DMO T-MC | 17632-A T 46 2 Mo M M 1 H5 | A5.36 E80T15-M21P0-A1-H4 |
| BÖHLER DCMS T-MC | 17634-A T CrMo1 M M 1 H5 | A5.36 E80T15-M21PY-B2-H4 |
| BÖHLER CM 2 T-MC | 17634-A T CrMo2 M M 1 H5 | A5.36 E90T15-M21PY-B3-H4 |
| BÖHLER HL 60 Pipe T-MC | 17632-A T 46 6 Z M M 1 H5 | A5.36 E80T15-M21A8-K6-H4 |

Overview – All-positional Metal-Cored

| Product name | Application | CVN toughness | ABS steel grade |
|------------------------|---|---------------|------------------|
| BÖHLER HL 51 T-MC | Multi-purpose up to 460MPa YS. Mixed gas and CO ₂ . | 60J at -60°C | FQ43-FQ47-FH40 |
| BÖHLER HL 46 GS T-MC | Galvanized steel plates. Mixed gas. | NA | NA |
| BÖHLER NiCu1 T-MC | Weathering steels. Mixed gas. | 70J at -60°C | NA |
| BÖHLER HL 53 T-MC | Low temperature steels up to 500MPa. < 1%Ni. CTOD. Mixed gas. | 90J at -60°C | FQ43-FQ47 - FH40 |
| BÖHLER HL 65 T-MC | Ni-Mo alloyed for steels up to 550MPa. Mixed gas. | 70J at -50°C | FQ56-FQ51-FQ-47 |
| BÖHLER HL 75 T-MC | ASTM A519 Gr. 4130. < 1%Ni. Mixed gas. | 70J at -40°C | DQ63 |
| BÖHLER 700 T-MC | Ni-Mo-alloyed for high strength steels up to 690 MPa YS. Mixed gas. | 70J at -60°C | EQ70 |
| BÖHLER 900 T-MC | Ni-Cr-Mo alloyed for high strength steels up to 890MPa. Mixed gas. | 55J at -60°C | NA |
| BÖHLER DMO T-MC | 0.5% Mo type creep resistant steels. PWHT. Mixed gas. | 90J at -20°C | NA |
| BÖHLER DCMS T-MC | 1% Cr-0.5% Mo type creep resistant steels. PWHT. Mixed gas. | 80J at -20°C | NA |
| BÖHLER CM 2 T-MC | 2.25% Cr-0.5% Mo type creep resistant steels. PWHT. Mixed gas. | 110J at +20°C | NA |
| BÖHLER HL 60 Pipe T-MC | Pipeline steel grades up to X70. CTOD. Mixed gas. | 140J at -60°C | API 5L: X70 |

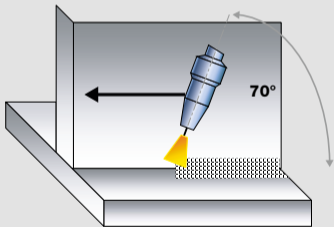
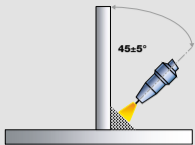


Downhand
PA/1G/1F

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | | Run | |
|-----|-----------|-----------------|-----------------|---------|-------------|-------|-------|------|
| | mm | inch | mm | inch | A | V | | |
| | | | | | PA/1G | 1F | | |
| 1.0 | 0.040 | 15 | 0.6 | 100-140 | | 18-21 | | Root |
| | | | | 220-270 | 230-270 | 23-26 | 25-28 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 150-180 | | 18-20 | | Root |
| | | | | 250-320 | 240-320 | 27-30 | 24-31 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 170-200 | | 21-23 | | Root |
| | | | | 270-350 | 210-360 | 29-32 | 24-32 | Fill |
| 1.6 | 0.063 | Not recommended | | | | | | Root |
| | | 20 | 0.8 | 300-400 | 230-400 | 29-32 | 25-33 | Fill |

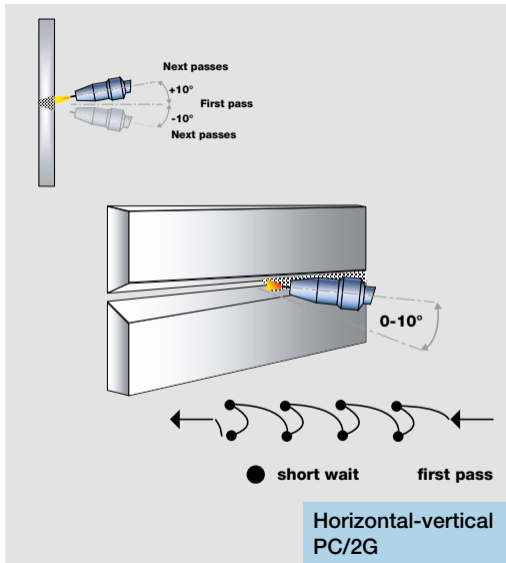


Flat Fillet
PB/2F

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

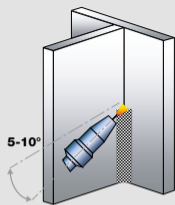
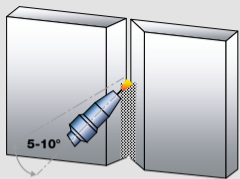
| Ø | Stick-out | | Welding current | Arc voltage | Run | |
|-----|-----------|------|-----------------|-------------|-------|------|
| | mm | inch | | | | mm |
| | | | A | V | | |
| | | | PB/2F | PB/2F | | |
| 1.0 | 0.040 | 15 | 0.6 | 230-270 | 25-28 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 240-320 | 24-31 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 210-360 | 24-32 | Fill |
| 1.6 | 0.063 | 20 | 0.8 | 230-400 | 25-33 | Fill |



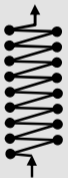
Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | Run |
|-----|-----------|-----------------|-----------------|---------|-------------|------|
| | mm | inch | mm | inch | V | |
| 1.0 | 0.040 | 15 | 0.6 | 110-140 | 18-21 | Root |
| | | | | 190-230 | 23-26 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 150-170 | 19-21 | Root |
| | | | | 200-260 | 21-26 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 160-210 | 20-25 | Root |
| | | | | 220-280 | 23-27 | Fill |
| 1.6 | 0.063 | Not recommended | | | | Root |
| | | 20 | 0.8 | 230-300 | 24-29 | Fill |



First pass



Next passes

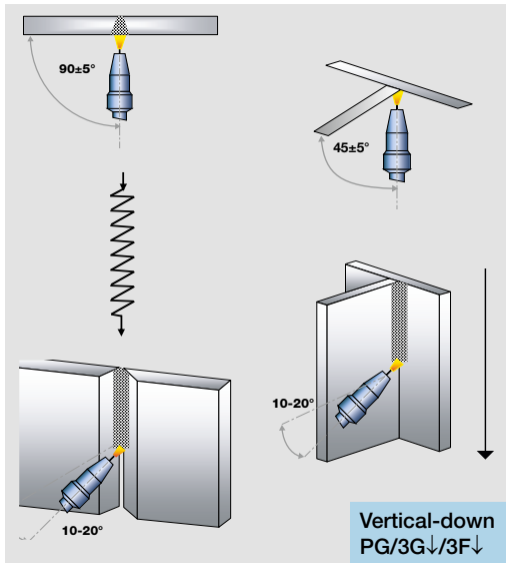


Vertical-up
PF/3G↑/3F↑

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | | Run |
|-----|-----------|-----------------|-----------------|---------|-------------|-------|-------|
| | mm | inch | mm | inch | A | V | |
| | | | | | PF/3G↑ | 3F↑ | |
| 1.0 | 0.040 | 15 | 0.6 | 100-130 | 19-20 | | Root |
| | | | | 130-170 | 130-160 | 18-22 | 17-21 |
| 1.2 | 0.045 | 15 | 0.6 | 130-160 | 17-21 | | Root |
| | | | | 170-190 | 140-170 | 19-21 | 17-22 |
| 1.4 | 0.055 | Not recommended | | | | | |
| 1.6 | 0.063 | Not recommended | | | | | |

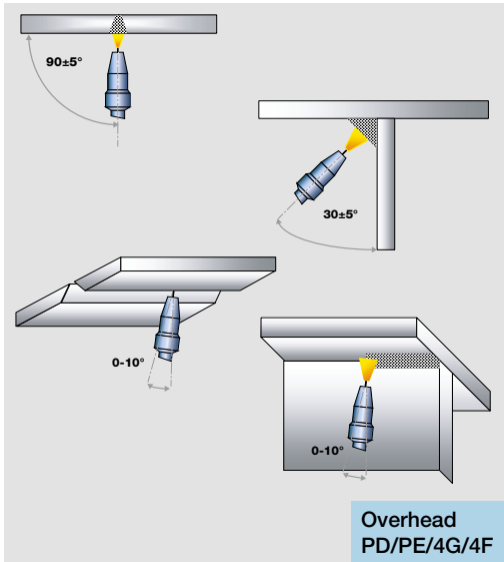


Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | | Run |
|-----|-----------|------|-----------------|---------|-------------|-------|-------|
| | mm | inch | mm | inch | A | V | |
| | | | | | PG/3G↓ | 3F↓ | |
| 1.0 | 0.040 | 15 | 0.6 | 140-170 | 18-22 | | Root* |
| | | | | | | 23-26 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 150-180 | 18-21 | | Root* |
| | | | | | | 24-28 | Fill |

* Usually one layer weld.



Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

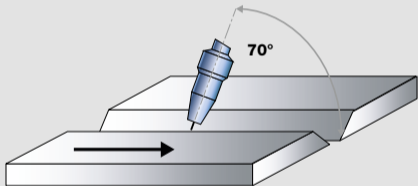
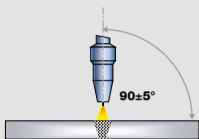
| Ø | Stick-out | | Welding current | | Arc voltage | | Run | |
|-----|-----------|------|-----------------|-----------------|-------------|-------|-------------|------|
| | mm | inch | mm | inch | A | V | | |
| | | | | | PD/4F | PE/4G | PD/PE/4G 4F | |
| 1.0 | 0.040 | 15 | 0.6 | 110-140 | | 18-21 | | Root |
| | | | | 160-210 | 180-230 | 21-24 | 21-24 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 140-170 | | 18-21 | | Root |
| | | | | 180-240 | 190-240 | 21-25 | 22-25 | Fill |
| 1.4 | 0.055 | | | Not recommended | | | | Root |
| | | 20 | 0.8 | 210-240 | 210-240 | 22-25 | 22-24 | Fill |
| 1.6 | 0.063 | | | Not recommended | | | | |

Overview – Downhand Basic

| Product name | EN classification | AWS classification |
|--------------------------------------|------------------------------------|--------------------------|
| BÖHLER Kb 46 T-FD | 17632-A T 42 4 B M 1 H5 | A5.36 E70T5-M21A4-CS1-H4 |
| BÖHLER Kb 52 T-FD | 17632-A T 46 4 B M 3 H5 | A5.36 E70T5-M21A4-CS1-H4 |
| BÖHLER Kb NiCu1 T-FD | 17632-A T 46 6 Z B M 3 H5 | A5.36 E80T5-M21A8-GH4 |
| BÖHLER Kb 60 T-FD | 17632-A T 46 6 1Ni B M 3 H5 | A5.36 E80T5-M21P8-Ni1-H4 |
| BÖHLER Kb 63 T-FD | 18276-A T 55 4 Z B M 3 H5 | A5.36 E90T5-M21A4-GH4 |
| BÖHLER Kb 65 T-FD | 18276-A T 55 4 1NiMo B M 3 H5 | A5.36 E90T5-M21A4-GH4 |
| BÖHLER Kb 85 T-FD | 18276-A T 69 6 Mn2NiCrMo B M 3 H5 | A5.36 E110T5-M21A8-K4-H4 |
| BÖHLER Kb 85 T-FD (CO ₂) | 18276-A T 69 4 Mn2NiCrMo B C 3 H5 | A5.36 E110T5-C1A4-K4-H4 |
| BÖHLER Kb 90 T-FD | 18276-A T 89 4 Mn2Ni1CrMo B M 3 H5 | A5.36 E120T5-GM-H4 |
| BÖHLER DMO Kb T-FD | 17632-A T 46 6 Mo B M 3 H5 | A5.36 E80T5-M21P8-A1-H4 |
| BÖHLER DCMS Kb T-FD | 17634-A T CrMo1 B M 3 H5 | A5.36 E80T5-M21PY-B2-H4 |
| BÖHLER CM 2 Kb T-FD | 17634-A T CrMo2 B M 3 H5 | A5.36 E90T5-M21PY-B3-H4 |
| BÖHLER DCMV Kb T-FD | 17634-A T Z B M 3 H5 | A5.36 E90T5-M21PY-GH4 |
| BÖHLER CM 5 Kb T-FD | 17634-A T CrMo5 B M 4 H5 | A5.36 E80T5-M21PY-B6-H4 |

Overview – Downhand Basic

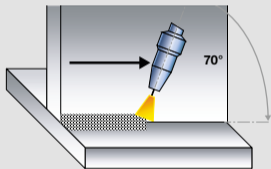
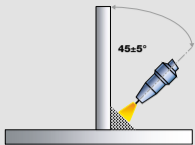
| Product name | Application | CVN toughness | ABS steel grade |
|--------------------------------------|--|-----------------|------------------|
| BÖHLER Kb 46 T-FD | Steel up to 420MPa YS. CO ₂ . | -60°C. | EH36 |
| BÖHLER Kb 52 T-FD | Steel up to 460MPa YS. Mixed gas and CO ₂ . | 80J at -60°C. | EH36 |
| BÖHLER Kb Ni1Cu T-FD | Weathering steels. Mixed gas and CO ₂ . | 130J at -60°C | NA |
| BÖHLER Kb 60 T-FD | Low-temperature steels up to 460 MPa yYS. <1% Ni. | 80J at -60°C. | FQ51-FQ47-FQ43 |
| BÖHLER Kb 63 T-FD | Cr-Ni-Mo alloyed for high strength steel up to 550MPa YS. Mixed gas. | 80J at -40°C. | EQ47-EQ51 - EQ56 |
| BÖHLER Kb 65 T-FD | Cr-Ni-Mo alloyed for high strength steel up to 550MPa YS. Mixed gas. | 100J at -40°C. | EQ47-EQ51 - EQ56 |
| BÖHLER Kb 85 T-FD | Ni-Mo-alloyed for high strength steels up to 690 MPa YS. Mixed gas. | 80J at -60°C. | FQ70 |
| BÖHLER Kb 85 T-FD (CO ₂) | Ni-Mo-alloyed for high strength steels up to 690 MPa YS. CO ₂ . | 80J at -40°C | EQ70 |
| BÖHLER Kb 90 T-FD | Ni-Mo-alloyed for high strength steels up to 890 MPa YS. Mixed gas. | 75J at -40°C. | NA |
| BÖHLER DMO Kb T-FD | 0.5% Mo type creep resistant steels. Mixed gas. | 130J at -60°C. | NA |
| BÖHLER DCMS Kb T-FD | 1% Cr-0.5% Mo type creep resistant steels. Mixed gas. | >100J at +20°C. | NA |
| BÖHLER CM 2 Kb T-FD | 2.25% Cr-0.5% Mo type creep resistant steels. Mixed gas. | >100J at +20°C | NA |
| BÖHLER DCMV Kb T-FD | Cr-Mo-V- alloyed creep resistant steels (G17CrMoV5-10). Mixed gas. | 100J at +20°C | NA |
| BÖHLER CM 5 Kb T-FD | 5% Cr-0.5% Mo type creep resistant steels. Mixed gas. | 100J at +20°C | NA |

Downhand
PA/1G/1F

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | Run |
|-----|-----------|-----------------|-----------------|---------|-------------|------|
| | mm | inch | mm | inch | V | |
| | | | | | PA/1G/1F | |
| 1.0 | 0.040 | 15 | 0.6 | 130-160 | 19-21 | Root |
| | | | | 220-250 | 21-24 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 130-150 | 17-20 | Root |
| | | | | 220-310 | 22-30 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 170-200 | 20-22 | Root |
| | | | | 220-360 | 24-32 | Fill |
| 1.6 | 0.063 | Not recommended | | | | Root |
| | | 20 | 0.8 | 270-400 | 27-34 | Fill |

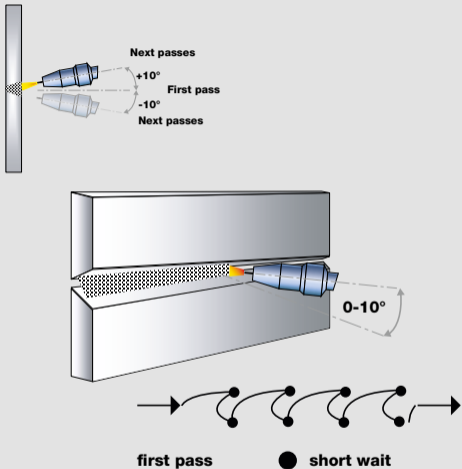


Flat Fillet
PB/2F

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | Arc voltage | Run | |
|-----|-----------|------|-----------------|-------------|-------|------|
| | mm | inch | | | | mm |
| | | | A | V | | |
| | | | PB/2F | PB/2F | | |
| 1.0 | 0.040 | 15 | 0.6 | 230-250 | 24-26 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 230-310 | 22-30 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 270-350 | 22-30 | Fill |
| 1.6 | 0.063 | 20 | 0.8 | 260-400 | 27-34 | Fill |

Horizontal-vertical
PC/2G

Torch Positions and Welding Parameters

(Values for mixed gas - add 1.5-2V for CO₂)

| Ø | Stick-out | | Welding current | | Arc voltage | Run |
|-----|-----------|-----------------|-----------------|---------|-------------|------|
| | mm | inch | mm | inch | V | |
| | | | | | PC/2G | |
| 1.0 | 0.040 | 15 | 0.6 | 130-160 | 19-21 | Root |
| | | | | 220-250 | 21-24 | Fill |
| 1.2 | 0.045 | 15 | 0.6 | 130-150 | 17-20 | Root |
| | | | | 220-290 | 22-31 | Fill |
| 1.4 | 0.055 | 20 | 0.8 | 170-200 | 20-22 | Root |
| | | | | 270-300 | 26-30 | Fill |
| 1.6 | 0.063 | Not recommended | | | | Root |
| | | 20 | 0.8 | 270-310 | 27-32 | Fill |

voestalpine Böhler Welding

Welding know-how joins steel

010/2016/EN/GL

With over 100 years of experience, voestalpine Böhler Welding is the global innovator for the daily welding challenges in joining, wear and corrosion protection as well as brazing. Customer proximity is guaranteed by more than 40 subsidiaries in 25 countries, with the support of 2,200 employees, and through more than 1,000 distribution partners worldwide. And with individual consultation by our application technicians and welding engineers, we make sure that our customers master the most demanding welding challenges. voestalpine Böhler Welding offers three specialized and dedicated brands to cater our customers' and partners' requirements.



Lasting Connections – More than 2,000 products for joint welding in all conventional arc welding processes are united in a product portfolio that is unique throughout the world. Creating Lasting Connections is the brand's philosophy in welding and between people.



Tailor-Made Protectivity™ – Decades of industry experience and application know-how in the areas of repair of cracked material, anti-wear and cladding, combined with innovative and custom-tailored products, guarantee customers an increase in the productivity and protection of their components.



In-Depth Know-How – Through deep insight into processing methods and ways of application, Fontargen Brazing provides the best brazing and soldering solutions based on proven products with German technology. The expertise of this brand's application engineers has been formulated over many years of experience from countless application cases.