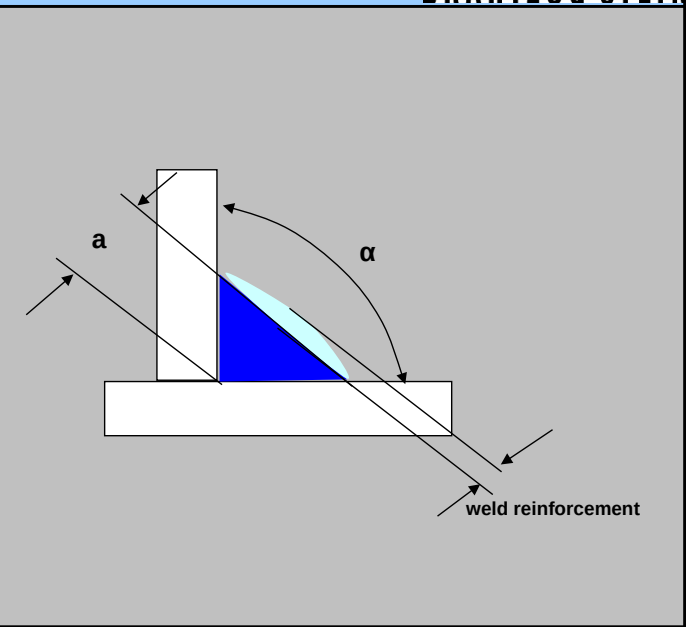


Comparison of welding economy for fillet welds



		MEGAFIL® 710 M		SG2 massief	
wire diameter	Ø	1.2	mm	1.2	mm
labour and overhead costs	L	55	€/h	55	€/h
amperage	I	380	A	380	A
deposition rate	A	6.6	kg/h	5.2	kg/h
welding duty cycle	ED	40	%	40	%
price of welding consumable	Zp	5	€/kg	2	€/kg
weld metal recovery	E	96	%	96	%
price of gas	Gp	0.002	€/l	0.002	€/l
gas volumetric flow rate	Gs	12	l/min	15	l/min
gas consumption = 60 x GS / Ax ED	Gv	272.73	L/kgSG	432.692	L/kgSG
gas costs = Gp x Gv	Gk	0.55	€/kgSG	0.87	€/kgSG
welding costs = Zp / E x 100	Zk	5.21	€/kgSG	2.08	€/kgSG
production costs = L / A x ED	Fk	20.83	€/kgSG	26.44	€/kgSG
total costs = Fk + Zk + Gk		26.59	€/kgSG	29.39	€/kgSG
a-dimension [mm]	weld-reinforcement [mm]	α	weight of weld [kg/m]	production costs per meter fillet weld [€ / mSN]	
14	2	90	1.832	48.70	53.83
			required wire quantity [kg/mSN]		
			solid or metal powder flux-cored*		1.905
			rutile or basic flux-cored wire *		2.088



Remarks:

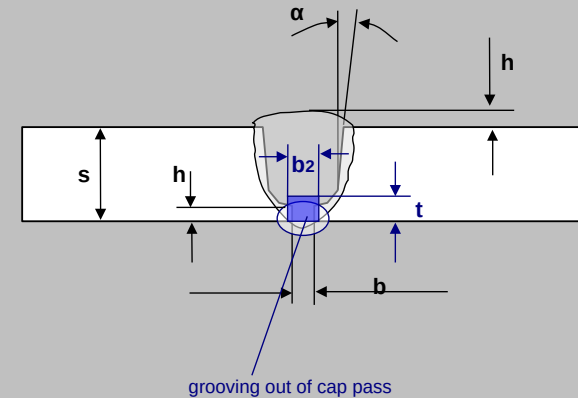
* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered

Comparison of welding economy for U-butt welds



DRAHTZUG STEIN

		MEGAFIL® 710 M			
wire diameter	∅	1.2	mm	4	mm
labour and overhead costs	L	55	€/h	55	€/h
amperage	I	300	A	210	A
deposition rate	A	5.8	kg/h	2.5	kg/h
welding duty cycle	ED	80	%	30	%
price of welding consumable	Zp	6.5	€/kg	5	€/kg
weld metal recovery	E	85	%	103	%
price of gas	Gp	0.01	€/l	0.01	€/l
gas volumetric flow rate	Gs	12	l/min	12	l/min
gas consumption = 60 x GS / Ax ED	Gv	155.17	L/kgSG	960	L/kgSG
gas costs = Gp x Gv	Gk	1.55	€/kgSG	9.60	€/kgSG
welding costs = Zp / E x 100	Zk	7.65	€/kgSG	4.85	€/kgSG
production costs = L / A x ED	Fk	11.85	€/kgSG	73.33	€/kgSG
	total costs = Fk + Zk + Gk	21.05	€/kgSG	87.79	€/kgSG



sheet thickness s [mm]	20.0	weight of weld [kg/m]	production costs per meter weld [€ / mSN]		
weld preparation angle α	8				
gap width b [mm]	1.0				
root height h [mm]	3.0		2.197	46.26	192.90
radius r [mm]	8.0				
weld reinforcement [mm]	0				
cap pass (if necessary)		required wire quantity [kg/mSN]			
depth t [mm]	0.0	solid wire or metal powder flux-cored wire*		2.3	
width b2 [mm]	0.0	rutile oder basic flux-cored wire		2.5	

Remarks:

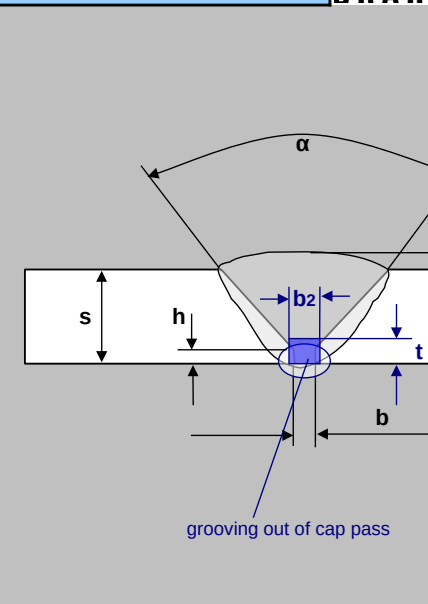
* for flux-cored wire with slag 86 % and for solid or metal powder flux-cored wire 96 % recovery are considered

Comparison of welding economy of V weld



DRAHTZUG STEIN

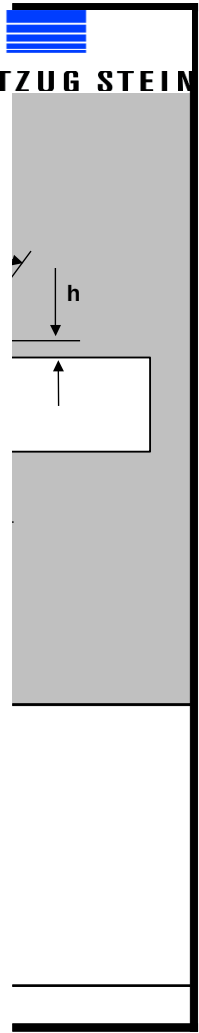
		MEGAFIL® 710 M		LMN 26	
wire diameter	∅	1.2	mm	1.2	mm
labour and overhead costs	L	55	€/h	55	€/h
amperage	I	325	A	325	A
deposition rate	A	5.5	kg/h	4.4	kg/h
welding duty cycle	ED	40	%	40	%
price of welding consumable	Zp	4	€/kg	1.5	€/kg
weld metal recovery	E	96	%	96	%
price of gas	Gp	0.01	€/l	0.01	€/l
gas volumetric flow rate	Gs	12	l/min	12	l/min
gas consumption = 60 x GS / Ax ED	Gv	327.27	L/kgSG	409.0909	L/kgSG
gas costs = Gp x Gv	Gk	3.27	€/kgSG	4.09	€/kgSG
welding costs = Zp / E x 100	Zk	4.17	€/kgSG	1.56	€/kgSG
production costs = L / A x ED	Fk	25.00	€/kgSG	31.25	€/kgSG
	total costs = Fk + Zk + Gk	32.44	€/kgSG	36.90	€/kgSG
sheet thickness s [mm]	25.0	weight of weld [kg/m]	production costs per meter weld [€ / mSN]		
weld preparation angle α	60				
gap width b [mm]	3.0				
root height h [mm]	1.0	3.490	113.23	128.81	
weld reinforcement [mm]	2	required wire quantity [kg/mSN]			
cap pass (if necessary)	1.0	solid or metal powder flux-cored wire *			3.63
depth t [mm]	1	rutile or basic flux-cored wire *			3.98
width b2 [mm]		* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered			



Remarks:

d

DRAHTZUG STEIN

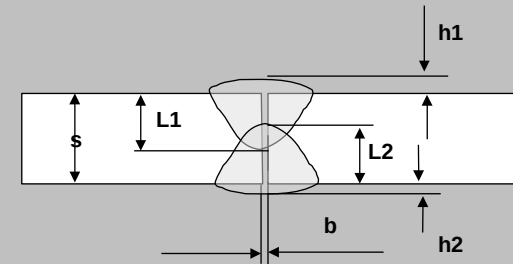


Comparison of welding economy for butt welds



DRAHTZUG STEIN

		MEGAFIL® 235 M			
wire diameter	∅	1.2	mm	1.2	mm
labour and overhead costs	L	55	Euro/h	55	Euro/h
amperage	I	300	A	300	A
deposition rate	A	5.8	kg/h	5.8	kg/h
welding duty cycle	ED	80	%	80	%
price of welding consumable	Zp	6.5	Euro/kg	4.5	Euro/kg
weld metal recovery	E	85	%	85	%
price of gas	Gp	0.01	Euro/l	0.01	Euro/l
gas volumetric flow rate	Gs	12	l/min	12	l/min
gas consumption = 60 x GS / Ax ED	Gv	155.17	L/kgSG	155.1724	L/kgSG
gas costs = Gp x Gv	Gk	1.55	Euro/kgSG	1.55	Euro/kgSG
welding costs = Zp / E x 100	Zk	7.65	Euro/kgSG	5.29	Euro/kgSG
production costs = L / A x ED	Fk	11.85	Euro/kgSG	11.85	Euro/kgSG
	total costs = Fk + Zk + Gk	21.05	Euro/kgSG	18.70	Euro/kgSG
wall thickness s [mm]	3.0	weight of weld [kg/m]	production costs per meter weld [€ / mSG]		
gap width b [mm]	0.5		0.012	0.25	0.22
~pass -depth L1 [mm]	3.0	required wire quantity [kg/mSN]			
~cap pass-depth L2 [mm]	0.0	solid or metal powder flux-cored wire *		0.012	
weld reinforcement h1 [mm]	0.0	rutile or basic flux-cored wire *		0.013	
weld reinforcement h2 [mm]	1.0				



If the weld reinforcement shall be considered, the desired, respectively suspected penetration depth L1 und L2 have to be indicated..

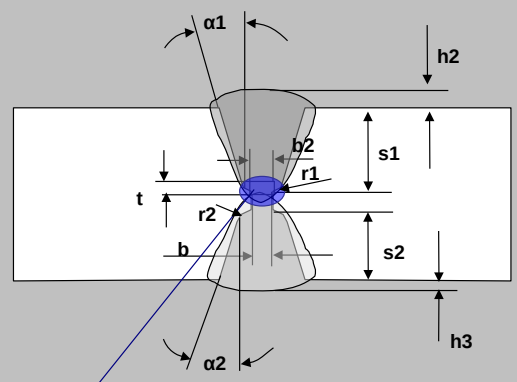
Remarks:

* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered

Comparison of welding economy for double-U butt weld



		MEGAFIL® 710 M			
wire diameter	∅	1.2	mm	4	mm
labour and overhead costs	L	55	€/h	55	€/h
amperage	I	300	A	210	A
deposition rate	A	5.8	kg/h	2.5	kg/h
welding duty cycle	ED	80	%	30	%
price of welding consumable	Zp	6.5	€/kg	5	€/kg
weld metal recovery	E	85	%	103	%
price of gas	Gp	0.01	€/l	0.01	€/l
gas volumetric flow rate	Gs	12	l/min	12	l/min
gas consumption = 60 x GS / Ax ED	Gv	155.17	L/kgSG	960	L/kgSG
gas costs = Gp x Gv	Gk	1.55	€/kgSG	9.60	€/kgSG
welding costs = Zp / E x 100	Zk	7.65	€/kgSG	4.85	€/kgSG
production costs = L / A x ED	Fk	11.85	€/kgSG	73.33	€/kgSG
	total costs = Fk + Zk + Gk	21.05	€/kgSG	87.79	€/kgSG



grooving out of cap pass

U-depth s1 [mm]	6.0	weight of weld [kg/m]	production costs per meter weld [€ / mSN]	
gap width b [mm]	2.0			
weld preparation angle α1	2			
weld reinforcement h2 [mm]	2.0	0.034	0.72	3.01
U-depth s2 [mm]	2	cap pass (if necessary)		
root height h1 [mm]	3.0	depth t [mm]		
wall thickness s1+s2+h1[mm]	1.0	width b2 [mm]	1.0	
weld preparation angle α2	1	radius r1 [mm]		
weld reinforcement 3h [mm]	1.0	radius r2 [mm]		

Remarks:

required wire quantity [kg/mSN]	
solid or metal powder flux-cored wire *	0.036
rutile or basic flux-cored wire *	0.039

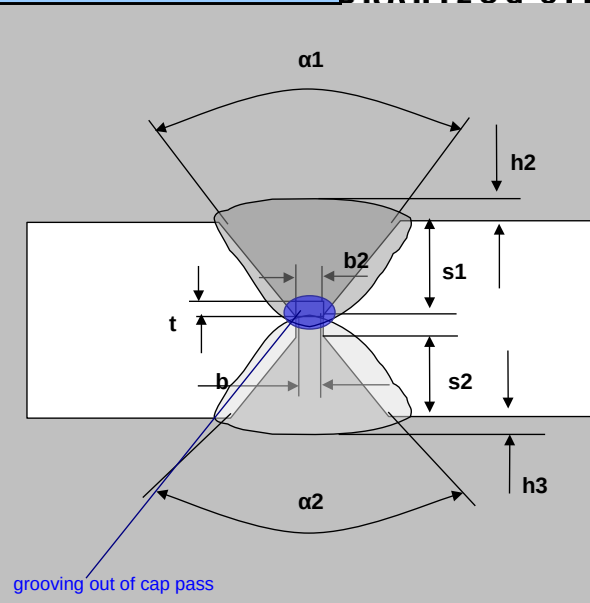
* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered

Comparison of welding economy for double-V butt welds



DRAHTZUG STEIN

		MEGAFIL® 807 M			
wire diameter	Ø	1.2	mm	4	mm
labour and overhead costs	L	55	€/h	55	€/h
amperage	I	300	A	210	A
deposition rate	A	5.8	kg/h	2.5	kg/h
welding duty cycle	ED	80	%	30	%
price of welding consumable	Zp	6.5	€/kg	5	€/kg
weld metal recovery	E	85	%	103	%
price of gas	Gp	0.01	€/l	0.01	€/l
gas volumetric flow rate	Gs	12	l/min	12	l/min
gas consumption = 60 x GS / Ax ED	Gv	155.17	L/kgSG	960	L/kgSG
gas costs = Gp x Gv	Gk	1.55	€/kgSG	9.60	€/kgSG
welding costs = Zp / E x 100	Zk	7.65	€/kgSG	4.85	€/kgSG
production costs = L / A x ED	Fk	11.85	€/kgSG	73.33	€/kgSG
	total costs = Fk + Zk + Gk	21.05	€/kgSG	87.79	€/kgSG



V-depth s1 [mm]	0.0	weight of weld [kg/m]	production costs per meter weld [€ / mSN]		
gap width b [mm]	0.0				
weld preparation angle alpha1	0				
weld reinforcement h2 [mm]	0.0	0.000	0.00	0.00	
V-depth s2 [mm]	0				
root height h1 [mm]	0.0	cap pass (if necessary)			
wall thickness s1+s2+h1[mm]	0.0	depth t [mm]	0.0	required wire quantity [kg/mSN]	
weld preparation angle alpha2	0	width b2 [mm]	0.0	solid or metal powder flux-cored wire *	
weld reinforcement 3h [mm]	0.0			0.000	
				rutile or basic flux-cored wire *	
				0.000	

Remarks:

* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered.



Calculation programme to determine welding costs
Economic comparison of two welding consumables
Determining of required wire quantity

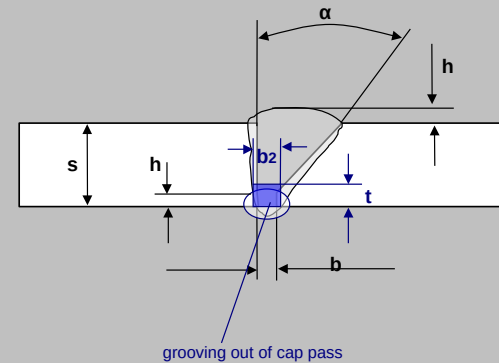
This programme considers standard weld preparation with a simplified weld geometry. By entering variables into the dark blue field, the welding costs per meter weld, as well as required wire quantity can be determined.

Comparison of welding economy for single-bevel butt welds



DRAHTZUG STEIN

		MEGAFIL® 710 M			
wire diameter	Ø	1.2	mm	4	mm
labour and overhead costs	L	55	€/h	55	€/h
amperage	I	300	A	210	A
deposition rate	A	5.8	kg/h	2.5	kg/h
welding duty cycle	ED	80	%	30	%
price of welding consumable	Zp	6.5	€/kg	5	€/kg
weld metal recovery	E	85	%	103	%
price of gas	Gp	0.01	€/l	0.01	€/l
gas volumetric flow rate	GS	12	l/min	12	l/min
gas consumption = 60 x GS / Ax ED	Gv	155.17	L/kgSG	960	L/kgSG
gas costs = Gp x Gv	Gk	1.55	€/kgSG	9.60	€/kgSG
welding costs = Zp / E x 100	Zk	7.65	€/kgSG	4.85	€/kgSG
production costs = L / A x ED	Fk	11.85	€/kgSG	73.33	€/kgSG
	total costs = Fk + Zk + Gk	21.05	€/kgSG	87.79	€/kgSG



sheet thickness s [mm]	1.0	weight of weld [kg/m]	production costs per meter weld [€ / mSN]	
weld preparation angle α	0			
gap width b [mm]	3.0			
root height h [mm]	0.0	0.028	0.60	2.48
weld reinforcement [mm]	0	required wire quantity [kg/mSN]		
cap pass (if necessary)	2.0	solid or metal powder flux-cored wire *		0.0
depth t [mm]	3	rutile or basic flux-cored wire *		0.0
width b2 [mm]				

Remarks:

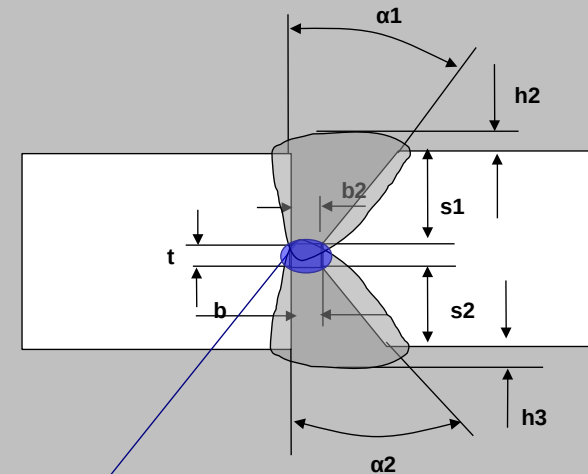
* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered.

Comparison of welding economy for double-bevel butt welds



DRAHTZUG STEIN

		MEGAFIL® 742 M			
wire diameter	∅	1.2	mm	0.045	mm
labour and overhead costs	L	40	€/h	40	€/h
amperage	I	300	A	260	A
deposition rate	A	5.5	kg/h	12.12	kg/h
welding duty cycle	ED	70	%	70	%
price of welding consumable	Zp	3	€/kg	3	€/kg
weld metal recovery	E	85	%	85	%
price of gas	Gp	0.006	€/l	0.019	€/l
gas volumetric flow rate	Gs	14	l/min	3.9	l/min
gas consumption = 60 x GS / Ax ED	Gv	218.18	L/kgSG	27.58	L/kgSG
gas costs = Gp x Gv	Gk	1.31	€/kgSG	0.52	€/kgSG
welding costs = Zp / E x 100	Zk	3.53	€/kgSG	3.53	€/kgSG
production costs = L / A x ED	Fk	10.39	€/kgSG	4.71	€/kgSG
	total costs = Fk + Zk + Gk	15.23	€/kgSG	8.77	€/kgSG



		weight of weld [kg/m]		production costs per meter weld [€ / mSN]	
V-depth s1 [mm]	2.0	▲ ▼	0.00	0.00	0.00
gap width b [mm]	0.0				
weld preparation angle α1	0				
weld reinforcement h2 [mm]	0.0	0.00	0.00	0.00	
V-depth s2 [mm]	1.0	▲ ▼			
root height h1 [mm]	0.0	▲ ▼	cap pass (if necessary)		
wall thickness s1+s2+h1[mm]	0.0	▲ ▼	depth t [mm]	0.0	required wire quantity [kg/mSN]
weld preparation angle α2	1	▲ ▼	width b2 [mm]	0.0	solid or metal powder flux-cored wire *
weld reinforcement 3h [mm]	0.0	▲ ▼			0.000
					rutile or basic flux-cored wire *
					0.000

Remarks:

* for flux-cored wire with slag 86 % for solid and metal powder flux-cored wire 96 % recovery are considered