



TIG welding

Introduction

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WELDING POWER SOURCES



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- SMARTY TX 250 page 4-8

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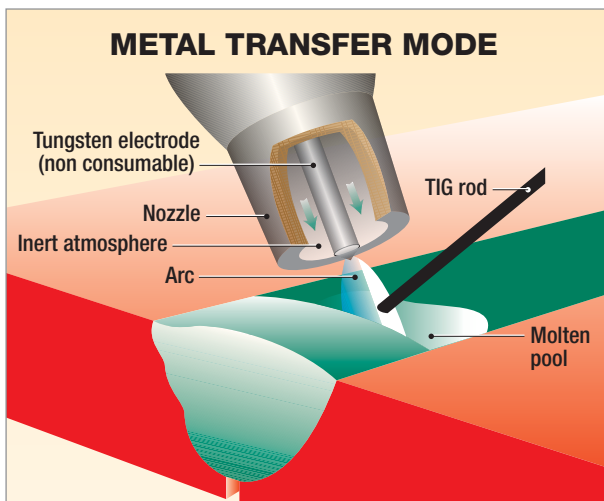
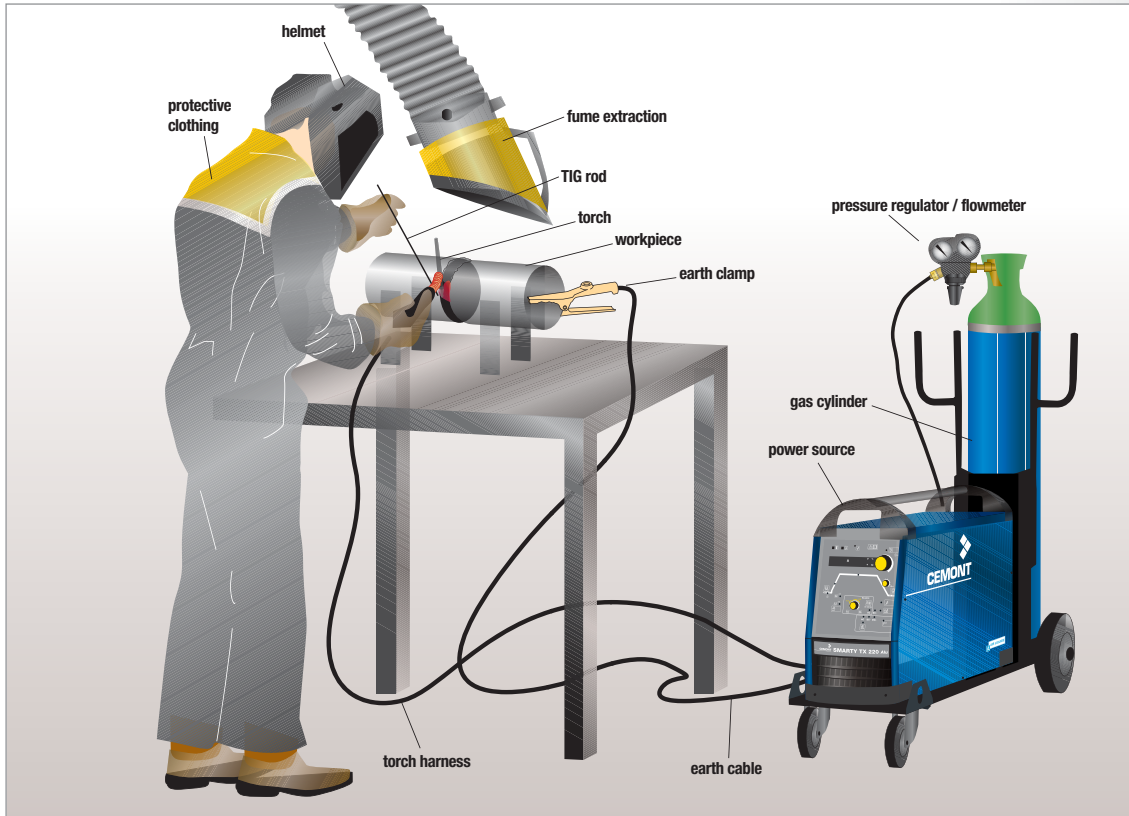


For all accessories and protection products, consult our WELDLINE catalogue and visit our website www.weldline-alw.com.



TIG welding

A TYPICAL MANUAL TIG WELDING INSTALLATION



TIG Welding Process

An electric arc is created between a non consumable tungsten electrode and the piece to be welded.

The electrode, the filler metal, the molten pool and the neighbouring zones are protected against atmospheric oxygen and nitrogen by an inert gas shield, generally argon.

Usually, this process is called "Tungsten Inert Gas or TIG". It is also known as "Gas Tungsten Arc Welding or GTAW".



LEXICON

TIG WELDING

Pre-gas:

Torch and harness are purged before striking.

Up slope function:

Allows a progressive increase of the welding current.

Down slope function:

Prevents a crater at the end of the welding cycle and prevents the risk of cracking particularly light alloys.

Post-gas:

Protection of the work piece and the electrode after welding is completed.

Balance:

Improves the penetration during AC welding or the cleaning phase.

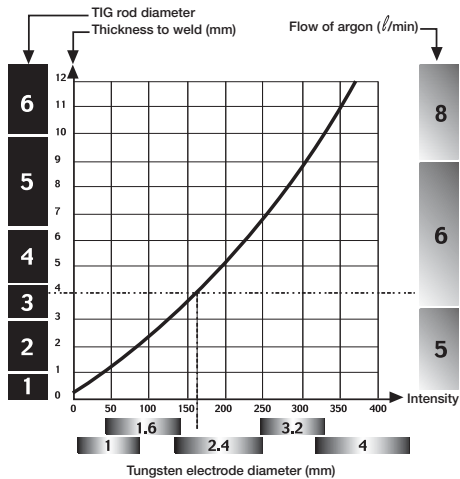
Pulsed Welding:

Makes positional welding and welding of thin plate easier, and prevents the collapse of the molten pool. Allows a regular deposit of filler metal and improves the penetration.

Tacking:

Allows quick tacking of the joint before welding.

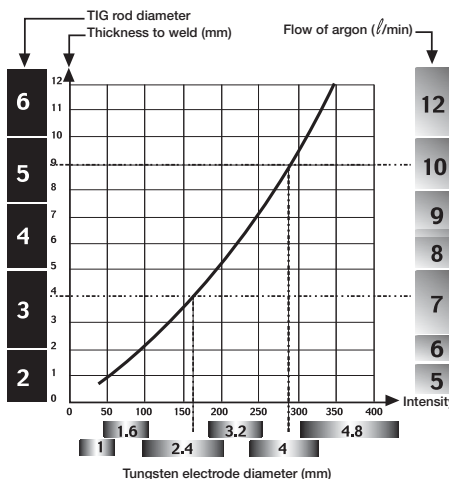
Welding selection table TIG stainless steel



Example on Fig. 1

Thickness to weld: 4 mm
TIG rod diameter: 3 mm
Electrode diameter: 2.4 mm
Welding current: 160 A
Flow of argon: 6 l/min

Welding selection table TIG aluminium



Example on Fig. 2

Thickness to weld: 9 mm
TIG rod diameter: 5 mm
Electrode diameter: 4 mm
Welding current: 280 A
Flow of argon: 10 l/min

Gas recommendations:










TIG Process			
Thickness to weld	Material to be welded	Shielding gas	Composition
< 2 mm	Steel	ARCAL 1 ARCAL 31	Ar Ar/He
	Stainless steel	ARCAL 1 ARCAL 31 ARCAL 10*	Ar Ar/He Ar/H ₂
	Aluminium	ARCAL 1 ARCAL 31	Ar Ar/He
2 to 4 mm	Steel	ARCAL 1 ARCAL 10*	Ar Ar/H ₂
	Stainless steel	ARCAL 1 ARCAL 10*	Ar Ar/H ₂
		ARCAL 15* ARCAL 11*	Ar/H ₂
Aluminium	ARCAL 31 ARCAL 32 ARCAL 37	Ar/He	

* on austenitic stainless steel.



TIG

TIG range

		DC			AC/DC	
SMARTY DIGITAL	3 ph			 TX 250		
	1 ph	 TX 160	 TX 220			 TX 220 ALU
SMARTY DIGITAL						
SMARTY ANALOGUE					 TX 160 ALU	
	 TX 150					
		150 A	160 A	220 A	250 A	150 A 200 A
						



SMARTY TX 150

The SMARTY TX 150 is a TIG power source specially designed for maintenance welding on steel and stainless steel.

Features and product advantages:

- **Input voltage:** 230 V single-phase.
- **Light and compact:** easy transport and storage.
- **Simple:** simple welding cycle (pre-gas / down slope / post-gas).
- **Powerful:** duty cycle at 60% at 40 °C.
- **Inverter technology:** precise adjustment of the welding current.
- **Versatile:** for both TIG and MMA electrode welding.
- **Practical:** due to HF starting and the 2T / 4T mode.



2006-3-40

- 1 Welding process selection TIG 2T / TIG 4T / MMA.
- 2 For welding current adjustment.
- 3 Switch on / off.
- 4 Pre-gas adjustment.
- 5 Down slope adjustment.
- 6 Post-gas adjustment.



TIG POWER SOURCES

Standards
EN 60974-1
EN 60974-10



2006-3-44

TIG WELDING EQUIPMENT

TIG WELDING EQUIPMENT

TECHNICAL CHARACTERISTICS:

	SMARTY TX 150	
Input voltage	230 V single-phase	
Primary max. consumption	19 A (TIG)	
Effective input current	12 A (TIG)	
Open circuit voltage	85 V	
Welding current range	5 - 150 A	
Duty cycle at 40 °C	at 35%	150 A
	at 60%	120 A
	at 100%	100 A
Protection index	IP 23	
Dimensions	400 x 190 x 300 mm	
Weight	10 kg	
Torch connection	S	



- For torches see page 4-11
- For filler metals see pages 4-13

Delivered equipped with:

- electric primary cable,
- earth cable with clamp,
- gas hose,
- safety instructions,
- user manual.

TO ORDER:

Power source only	W 000 056 033
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SMARTY TX 160 / 220

The SMARTY TX 160 and TX 220 are portable power sources for TIG DC professional welders. These units are very versatile due to their "pulsed" function for welding thinner thickness and the "2 current levels" for welding in position.

Features and product advantages:

- **Input voltage:** 230 V single-phase.
- **Tolerance to supply voltage:** 230 V ± 15%.
- **Digital display:** A / V / Sec / %.
- **Powerful:** 60% duty cycle at 40 °C.
- **Versatile:** TIG DC / pulsed TIG DC / MMA.
- **Technical:** 2 current level mode.
- **Safe:** protection class IP23.
- **Remote control:** remote adjustment flexibility.



TECHNICAL

Standards

EN 60974-1
EN 60974-10



- 1 Complete welding cycle.
- 2 Digital display.
- 3 Cycle selection.
- 4 Parameter adjustment.
- 5 Modes: MMA / TIG HF / TIG LIFT.
- 6 Selection 2T / 4T / Point.
- 7 TIG current: smooth or pulsed.
- 8 Selection for local / remote control.

TECHNICAL CHARACTERISTICS:

	SMARTY TX 160	SMARTY TX 220
Input voltage	230 V single-phase	
Primary max. consumption	22 A	
Effective input current	13 A (TIG)	
Open circuit voltage	85 V	97 V
Welding current range	5 - 160 A	5 - 220 A
Duty cycle at 40 °C	at 35%	160 A
	at 60%	140 A
	at 100%	110 A
Connector size	9 mm	
Protection index	IP 23	
Dimensions	170 x 250 x 400 mm	250 x 460 x 450 mm
Weight	10 kg	18 kg
Torch connection	S	

TO ORDER:

Power source only	W 000 263 652	W 000 263 653
Options		
Remote control	W 000 242 069	W 000 242 069
Foot control	W 000 241 602	W 000 241 602



- For torches see page 4-11
- For filler metals see pages 4-13

Delivered equipped with:

- electric primary cable,
- earth cable with clamp,
- gas hose,
- safety instructions,
- user manual.



SMARTY TX 230

The SMARTY TX 230 is essential equipment for maintenance and on site applications for TIG DC, pulsed TIG DC or MMA on steel and stainless steel.

Features and product advantages:

- **Light weight:** 16 kg, easily transported.
- **Simple:** user friendly.
- **Powerful:** for professional use, duty cycle 60% at 40 °C.
- **Inverter technology:** precise control of the welding current.
- **Pulsed mode:** ideal for thin sheet and pipe welding.
- **Remote control:** remote adjustment of the welding current.



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ON SITE WELDING

Standards

EN 60974-1
EN 60974-10

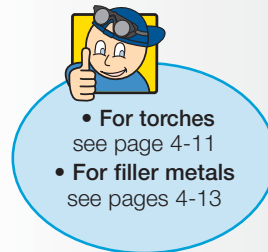
TIG WELDING EQUIPMENT

TIG WELDING EQUIPMENT

TECHNICAL CHARACTERISTICS:

SMARTY TX 230		
Input voltage	400 V three-phase	
Primary max. consumption	15 A	
Open circuit voltage	80 V	
Welding current range	5 - 220 A	
Duty cycle at 40 °C	at 25%	220 A
	at 60%	145 A
	at 100%	110 A
Connector size	9 mm	
Protection index	IP 23	
Dimensions	472 x 152 x 385 mm	
Weight	16.5 kg	
Torch connection	S or C5B	

- 1 Pre-gas adjustment.
- 2 Pulsed mode adjustment.
- 3 Current adjustment welding.
- 4 Remote control plug.
- 5 Selection mode 2T / 4T.
- 6 Welding process selection TIG DC / MMA and HF or LIFT starting.
- 7 Selection for local / remote control.
- 8 Post-gas adjustment.
- 9 Down slope.



TO ORDER:

Power source only	W 000 263 001	
Options		
Remote control	5 m	W 000 263 312
	10 m	W 000 270 325
Foot control	W 000 263 314	

Delivered equipped with:

- electric primary cable,
- earth cable with clamp,
- gas hose with quick couplings,
- safety instructions,
- user manual.

SMARTY TX 250

The SMARTY TX 250 is a portable TIG DC power source designed for light and industrial applications; with "pulsed" function for welding thin plate and also "2 current levels" mode for welding in position.

Features and product advantages:

- **Powerful:** 250 A at 40% duty cycle at 40 °C.
- **Digital display:** A / V / Sec / %.
- **Versatile:** TIG DC / pulsed TIG DC / MMA.
- **Technical:** complete TIG welding cycle.
- **Safe:** protection class IP23.
- **Remote control:** remote adjustment flexibility (option).



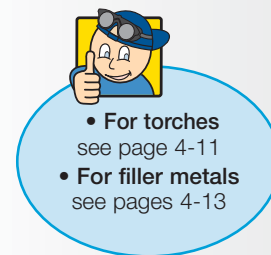
- 1 Complete welding cycle.
- 2 Digital display.
- 3 Cycle selection.
- 4 Parameter adjustment.
- 5 Modes: MMA/TIG HF/TIG LIFT.
- 6 Selection: 2T/4T/Point.
- 7 TIG current: smooth or pulsed.
- 8 Selection for local / remote control.

TECHNICAL CHARACTERISTICS:

	SMARTY TX 250	
Input voltage	400 V three-phase (50/60 Hz)	
Primary max. consumption	13 A	
Effective input current	10 A	
Open circuit voltage	107 V	
Welding current range	5 - 250 A	
Duty cycle at 40 °C	at 35%	250 A
	at 60%	210 A
	at 100%	180 A
Connector size	9 mm	
Protection index	IP 23	
Dimensions	250 x 460 x 450 mm	
Weight	18 kg	
Torch connection	S	

TO ORDER:

Power source only	W 000 260 031
Options	
Remote control	W 000 242 069
Foot control	W 000 241 602



Delivered equipped with:

- primary cable 5 m,
- earth cable 3 m,
- gas hose 2 m,
- safety instructions,
- user manual.



TIG POWER SOURCES

SMARTY TX 160 Alu

The SMARTY TX 160 Alu is a TIG power source specially designed for maintenance welding on steel, stainless steel and aluminium.

Features and product advantages:

- **Input voltage:** 230 V single-phase.
- **Light and compact:** easy transport and storage.
- **Simple:** clear welding cycle (pre-gas / down slope / post-gas).
- **Powerful:** duty cycle at 60% at 40 °C.
- **Inverter technology:** precise adjustment of the welding current.
- **Versatile:** for TIG AC/DC and MMA electrode welding.
- **Practical:** easy adjustment. Remote control.



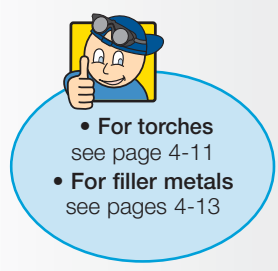
TIG WELDING EQUIPMENT



- 1 Switch on / off.
- 2 Slope down.
- 3 Selection AC/DC current.
- 4 Balance adjustment (AC).
- 5 Welding process selection TIG 2T / TIG 4T / MMA.
- 6 Pulsed frequency adjustment.
- 7 For welding current adjustment.

TECHNICAL CHARACTERISTICS:

	SMARTY TX 160 Alu
Input voltage	230 V single-phase (50/60 Hz)
Primary max. consumption	22 A
Effective input current	13 A (TIG)
Open circuit voltage	82 V
Welding current range	5 - 150 A
Duty cycle at 40 °C	at 35% 150 A (DC) - 130 A (AC)
	at 60% 120 A (DC) - 100 A (AC)
	at 100% 100 A (DC) - 80 A (AC)
Connector size	9 mm
Protection index	IP 23
Dimensions	260 x 460 x 450 mm
Weight	22 kg
Torch connection	S



TO ORDER:

Power source only	W 000 056 036
Options	
Remote control	W 000 242 069
Foot control	W 000 241 602

Delivered equipped with:

- electric primary cable,
- earth cable with clamp,
- gas hose,
- safety instructions,
- user manual.

TIG WELDING EQUIPMENT

SMARTY TX 220 Alu



Designed for both workshop and outdoor working conditions, the SMARTY TX 220 Alu meets the most demanding applications on site and in workshop (maintenance) for all kinds of materials.

Features and product advantages:

- **Single-phase input voltage:** 230 V ± 10%.
- **Inverter technology:** precise adjustment of the welding current.
- **Large digital display:** for accurate adjustment and clarity.
- **Powerful:** duty cycle 60% at 40 °C.
- **Compact:** for outdoor applications.
- **Intelligent balance:** for aluminium applications, simplified adjustment of cleaning and penetration steps, according to the tungsten electrode diameter.

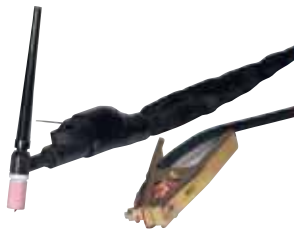
ON SITE WELDING

Standards
EN 60974-1
EN 60974-10



2006-675

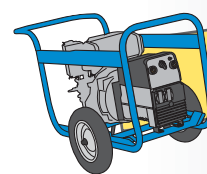
- 1 Digital display (U/I).
- 2 Pre-gas adjustment.
- 3 Selection mode 2T / 4T.
- 4 Cleaning / penetration balance (AC).
- 5 HF TIG / LIFT starting.
- 6 Pulsed frequency (AC).
- 7 Selection MMA (with DC+ / DC- / AC / intermittent arc).
- 8 Parameter adjustment.



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TECHNICAL CHARACTERISTICS:

		SMARTY TX 220 Alu
Input voltage		230 V single-phase (50/60 Hz)
Primary max. consumption		19 A
Effective input current		16 A
Open circuit voltage		70 V
Welding current range		3-200 A DC - 10-200 A AC
Duty cycle at 40 °C	at 30%	200 A
	at 100%	150 A
Connector size		9 mm
Protection index		IP 23
Dimensions		540 x 260 x 510 mm
Weight		30 kg
Torch connection		S or C5B



GENERATOR COMPATIBLE



- For torches see page 4-11
- For filler metals see pages 4-13

TO ORDER:

Power source only		W 000 263 003
Options		
Remote control	5 m	W 000 263 312
	10 m	W 000 270 325
Foot control		W 000 263 314
Trolley		W 000 263 308

Delivered equipped with:

- electric primary cable,
- earth cable with clamp,
- gas hose with quick couplings,
- safety instructions,
- user manual.



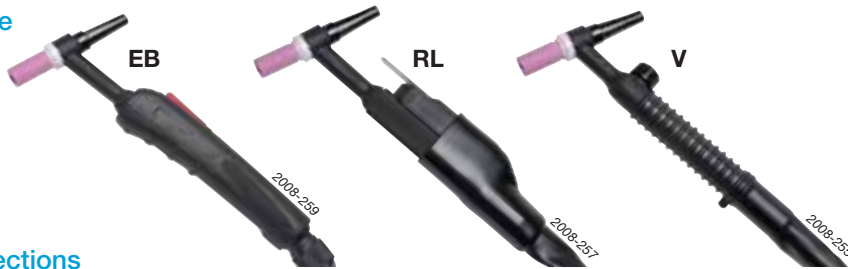
TIG TORCHES

WTT TIG torches



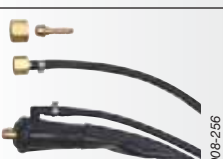


Simplicity and reliability

TIG torches which are reliable, flexible and use common wear parts.
Connections and handles for all applications.

Handle



Connections

	C5B	S	V
Air cooled	 2008-260	 2008-268	 2008-256
Water cooled	 2008-273	 2008-271	

TIG WELDING TORCHES

TIG WELDING EQUIPMENT

TO ORDER:

		Air cooling							
		WTT 9		WTT 17		WTT 26			
Duty cycle at 40 °C	60%	80 A		100 A		130 A			
	35%	125 A		150 A		200 A			
Fitted with	Cap	Medium		Medium		Medium			
	Nozzle	Ø 10		Ø 10		Ø 12			
	Electrode	Ø 1.6		Ø 2.0		Ø 2.4			
		4 m	8 m	4 m	8 m	4 m	8 m		
Handle	RL	Connection	S	W 000 306 115	W 000 306 116	W 000 306 117	W 000 306 118	W 000 306 119	W 000 306 120
			C5B	W 000 306 125	W 000 306 126	W 000 306 127	W 000 306 128	W 000 306 129	W 000 306 130
	EB	Connection	S	W 000 266 572	W 000 266 571	W 000 266 570	W 000 266 569	W 000 266 568	W 000 266 567
			C5B	W 000 306 105	W 000 306 106	W 000 306 107	W 000 306 108	W 000 306 109	W 000 306 110
V	V	W 000 266 434	-	W 000 266 574	-	W 000 266 573	-		

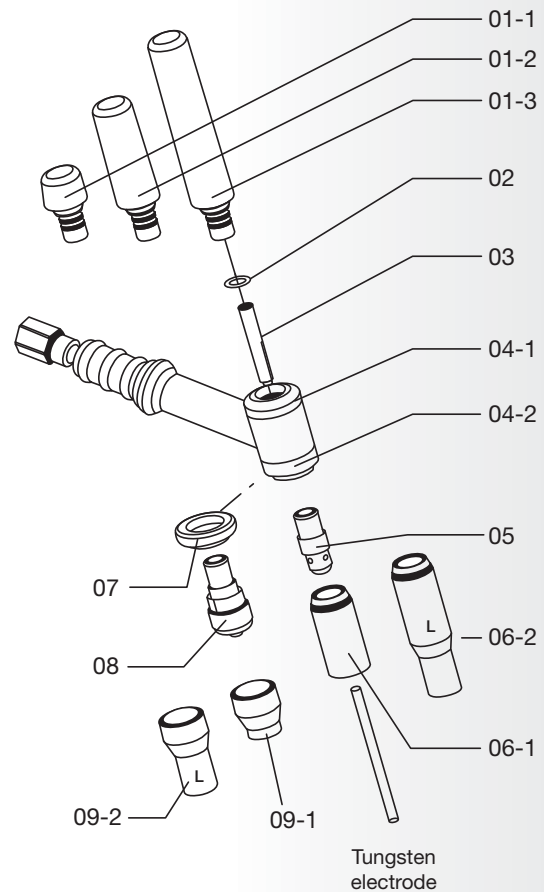
		Water cooling					
		WTT 20 W		WTT 18 W			
Duty cycle at 40 °C	60%	250 A		350 A			
	35%	-		-			
Fitted with	Cap	Medium		Medium			
	Nozzle	Ø 12		Ø 12			
	Electrode	Ø 2.4		Ø 2.4			
		4 m	8 m	4 m	8 m		
Handle	RL	Connection	S	W 000 306 121	W 000 306 122	W 000 306 123	W 000 306 124
			C5B	W 000 306 131	W 000 306 132	W 000 306 133	W 000 306 134
	EB	Connection	S	W 000 266 566	W 000 266 565	W 000 266 564	W 000 266 563
			C5B	W 000 306 111	W 000 306 112	W 000 306 113	W 000 306 114
V	V	-	-	-	-		



TIG WEAR PARTS

WTT TIG torches wear parts

		Ø	REP	WTT 9 / 9 V WTT 20 W	WTT 17 / 17 V WTT 26 / 26 V WTT 18 W
Back cap	short		01	W 000 306 398	W 000 306 399
	medium			W 000 306 400	-
	long			W 000 306 402	W 000 306 403
Back cap O-ring			02	W 000 306 404	W 000 306 405
Sealing ring			04-2	W 000 306 396	W 000 306 397
Insulating ring			04-1	W 000 270 780	W 000 306 395
Collet	1.0	03		W 000 306 406	W 000 306 411
	1.6			W 000 306 407	W 000 306 412
	2.0			W 000 306 408	W 000 306 413
	2.4			W 000 306 409	W 000 306 414
	3.2			W 000 306 410	W 000 306 415
	4.0			-	W 000 306 416
Collet body	1.0	05		W 000 306 376	W 000 306 380
	1.6			W 000 306 377	W 000 306 381
	2.0			W 000 306 378	W 000 270 781
	2.4			W 000 306 455	W 000 306 382
	3.2			W 000 306 379	W 000 306 383
	4.0			-	W 000 306 384
Nozzle	6.4	06-1		W 000 306 417	W 000 306 423
	8.0			W 000 306 418	W 000 306 424
	9.6			W 000 306 419	W 000 306 425
	11.2			W 000 306 420	W 000 306 426
	12.8			W 000 306 421	W 000 306 427
	16.0			W 000 306 422	W 000 306 428
	19.2			-	W 000 306 461
Long nozzle	4.8	06-2		W 000 306 456	-
	6.4			W 000 306 457	W 000 306 462
	8.0			W 000 306 458	W 000 306 463
	9.6			W 000 306 459	W 000 306 464
	11.2			-	W 000 306 465
Gas L. sealing ring			07	-	W 000 306 466
G.L. collet body	1.0	08		W 000 306 385	W 000 306 389
	1.6			W 000 306 386	W 000 306 390
	2.0			W 000 306 460	-
	2.4			W 000 306 387	W 000 306 391
	3.2			W 000 306 388	W 000 306 392
	4.0			-	W 000 306 393
Gas L. nozzle	6.4	09-1		W 000 306 429	W 000 306 434
	8.0			-	W 000 306 435
	9.6			W 000 306 431	W 000 306 436
	11.2			W 000 306 432	W 000 306 437
	12.8			W 000 306 433	W 000 306 438
	16.0			-	W 000 306 439
Long G.L. nozzle	8.0	09-2		-	W 000 306 467
	9.6			-	W 000 306 468
	11.2			-	W 000 306 469
	12.8			-	W 000 306 470





TIG OPTIONS

TUNGSTEN ELECTRODES

Warning: before use, carefully read the material safety data sheet on www.safety-welding.com

Electrode type	Metal type	Arc stability	Arc starting	Electrode lifetime	Thermal resistance
WP pure	Light alloy	**	*	*	*
WT 20 Thorium 2%	Steel and stainless steel	*	***	**	**
WC 20 Cerium 2%	Steel and stainless steel	**	*	**	**
WL 20 Lanthanum 2%	Steel and stainless steel	**	***	***	***

*** Excellent ** Good * Suitable



Pack of 10, length 150 mm

Standards
ISO 6848
EN 26848

2006-528

Ø	WP - Pure tungsten Light alloy (green end)		WT 20 - 2% thorium tungsten Steel and stainless steel (red end)		WC 20 - 2% cerium tungsten Steel and stainless steel (grey end)		WL 20 - 2% lanthanum tungsten Light alloy AC - Steel, stainless steel DC	
	AC current (A)	Cat. nr	DC current (A)	Cat. nr	DC current (A)	Cat. nr	Current (A)	Cat. nr
1.0 mm	10-50	W 000 010 009	10-80	W 000 010 002	10-84	W 000 010 022	10-80	W 000 010 373
1.6 mm	40-80	W 000 010 010	50-130	W 000 010 003	52-136	W 000 010 023	60-150	W 000 010 016
2.0 mm	60-110	W 000 010 011	90-190	W 000 010 004	94-199	W 000 010 024	100-200	W 000 010 017
2.4 mm	60-140	W 000 010 012	130-250	W 000 010 005	136-262	W 000 010 025	150-250	W 000 010 018
3.0 mm	90-180	W 000 010 013	170-300	W 000 010 006	178-315	W 000 010 026	210-310	W 000 010 019
3.2 mm	90-180	W 000 010 014	170-300	W 000 335 156	178-315	W 000 335 150	210-310	W 000 010 020
4.0 mm	140-240	W 000 010 015	250-400	W 000 010 008	262-420	W 000 010 028	350-480	W 000 010 021

REMOTE CONTROL BOXES - TROLLEYS

	SMARTY TX 160/220	SMARTY TX 230	SMARTY TX 160 ALU	SMARTY TX 220 ALU
Remote control 10 m length	W 000 242 069	W 000 263 312	W 000 242 069	W 000 263 312
Remote control pedal 10 m length	W 000 241 602	W 000 263 314	W 000 241 602	W 000 263 314
Trolley	-	-	-	W 000 263 308

MMA ACCESSORIES

Accessories	Length 3 m (25C50)	Length 4 m (35C50)
Arc kit 300 A	W 000 260 684	W 000 011 139

Connection Ø 13 mm



OK-EC200CC25B OK-EH200CC26B

TIG FILLER METALS

Filler metal	For standard steels (5 kg)	For stainless steels (5 kg)		For aluminium and alloys (5 kg)
Diameter / length	STEELTIG G2	WL ROD 308 L	WL ROD 316 L	WL ROD ALMG 5
1.6 mm / 1000 mm	W 000 283 298	W 000 283 609	W 000 283 606	-
2.0 mm / 1000 mm	W 000 283 299	W 000 283 610	W 000 283 607	W 000 283 698
2.4 mm / 1000 mm	W 000 283 300	W 000 283 611	W 000 283 608	W 000 283 699
3.2 mm / 1000 mm	-	-	-	W 000 283 700



For more information see on pages 6-21 to 6-23



823-037

OPTIONS AND ACCESSORIES FOR TIG WELDING

TIG WELDING EQUIPMENT