

TIG DC RANGE

INVERTEC® 175TP / V205-TP 2V
220TPX / V270-T / V270-TP
V270-TP 2V / 300TPX / 400TPX

PRECISION AND RELIABILITY

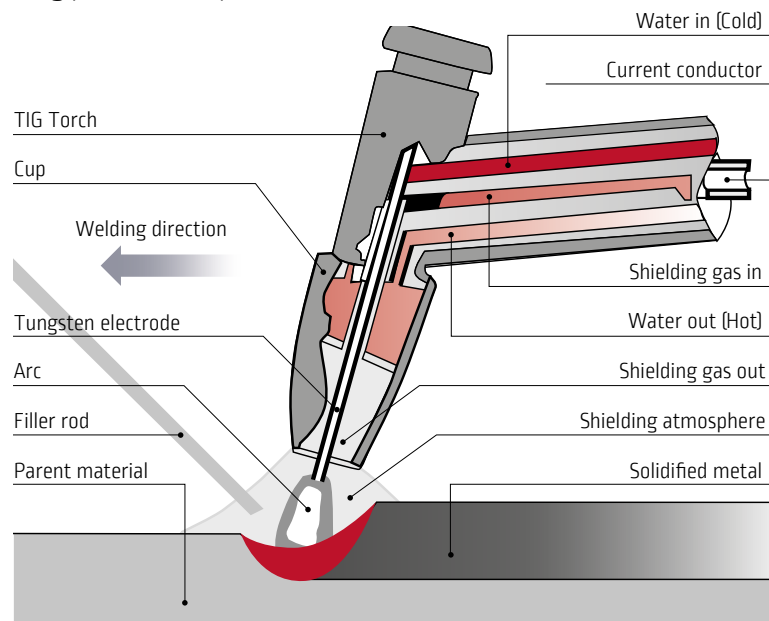
LINCOLN[®]
ELECTRIC

GTAW PROCESS

TIG welding produces an precise weld and is a commonly used as high quality welding process. TIG welding has become a popular choice of welding processes when high quality, precision welding is required. DC polarity is used in most welding applications. It produces a smoother welding output compared to AC. It creates a more stable arc, easier welding and less spatter. You can also either use DC negative for faster deposition rates when welding thin sheet metal or use DC positive for more penetration into the steel.

Advantages:

- Produces very high-quality, superior welds,
- Leaves no slag or splatter.
- Particularly high visual quality of weld seams
- Uses a number of shielding gases including Helium (He) and Argon (Ar)
- Is easily applied to thin materials and Welding yields low distortion,
- Welds can be made with or without filler metal
- All welding positions are possible



APPLICATIONS WITH TIG DC

TIG MILD STEEL/ STEEL WELDING

It is extremely common in fabrication because it is inexpensive compared with other steel alloys and is easy to weld, it is the most material in metal construction ahead of aluminum and stainless steel. Can be welded using tungsten inert gas (TIG) welding techniques, and the result is a clean and precise weld.

The biggest challenge is keeping the material distortion as low as possible. Selecting the correct welding process plays an important part in this.



TIG STAINLESS STEEL WELDING

The welding of stainless steel requires good material knowledge, because the many different alloys and steel types also have varied weld properties. The regular TIG stainless steel welding process has provided the lowest manual weld deposition rates and slowest weld speeds, making welding stainless steel much harder than normal steel.



TIG DC RANGE

	DC Inverter	Reference	Voltage (V)	Input voltage tolerance	Frequency (Hz)	Output range (A)	Fuse Size (A) (slow)	Plug	Stick	Lift TIG	TIG HF	TIG PULSE	Up /down	Torch connector	PFC	Motor-generator compatibility	Cooling (Air/Water)	Memory	Meter (A/V)	Dimensions HxWxD (mm)	Weight (kg)	Protection/ Insulation Class	Warranty (Years)
1-phase	Inverter® 175TP	K14169-1	230	+/- 20%	50/60	5-175	16	Yes	•	•	•	•		C5B	•	•	Air	•	•	210 x 330 x 480	10,2	IP23/H	2
	Inverter® V205-TP 2V	K12021-1	230/400	+/- 10%	50/60	5-200	35/20	No	•	•	•	•		C5B		•	Air / Water		•	385 x 215 x 480	16,2	IP23S / H	2
	Inverter® 220TPX	K12057-1	115/230	+/- 15%	50/60	5-220	16	yes	•	•	•	•	•	C5B	•	•	Air	•	•	328 x 212 x 465	13	IP23 / H	3
3-phase	Inverter® V270-T	K12023-1	400	+/- 15%	50/60	5-270	20	No	•	•	•			C5B		•	Air / Water		•	385 x 215 x 480	15,2	IP23S / H	2
	Inverter® V270-TP	K12024-1	400	+/- 15%	50/60	5-270	20	No	•	•	•	•		C5B		•	Air / Water		•	385 x 215 x 480	15,2	IP23S / H	2
	Inverter® V270-TP 2V	K12024-3	230/400	+/- 10%	50/60	5-270	35/20	No	•	•	•	•		C5B		•	Air / Water		•	385 x 215 x 480	15,2	IP23S / H	2
	Inverter® 300TPX	K12060-1	400	+/- 15%	50/60	5-300	16	No	•	•	•	•	•	C5B		•	Air / Water	•	•	349 x 247 x 502	22	IP23S / H	3
	Inverter® 400TPX	K12043-1	400	+/- 15%	50/60	5-400	16	No	•	•	•	•	•	C5B		•	Air / Water	•	•	455 x 301 x 632	37	IP23S / H	3



INVERTEC® 175TP

Leading technology in TIG DC welding.
User friendly interface.

- Robust design – varnished PC boards
- Improved generator compatibility:
+/- 20% Input voltage variation, PFC controller
- Usable with great length of primary cable
(up to 70 m in 2.5 mm² section)
- Good welding in TIG HF and TIG Lift mode
- Hot start function and anti-sticking device
- Portable – light weight: only 10.2 kg
- Reduced noise – "intelligent" cooling fan
- Save energy – low current consumption
- Simple control panel – full control, easy set up
- 2 year warranty for labor and parts,
without limitation
- Remote control optionals

Unit Includes

Input cable with schuko plug
Gas connection kit



Input



Output



Processes

Stick, Lift TIG, TIG HF,
TIG Pulse

Applications

- Boiler making
- Industrial plants, pipeline
- Metal and gantry construction
- Maintenance and repair

INVERTEC® V205-TP-2V

Smart switching, full flexibility.
Generator compatible, ideal for site use.

- Smart switching 230/400V single phase
- HF and Lift TIG ignition
- HIGH speed PULSE to adjust the arc focus,
reduce distortion and increase travel speed
- Excellent arc characteristics for rutile,
basic and cellulosic electrodes up to 4.0 mm
- Fan as needed (F.A.N.™) built-in reduces
power and the intake of dust and fumes
- Remote control optionals
- Water Coolers and Carts available

Input



Output



Processes

Stick, Lift TIG, TIG Pulse

Applications

- Light industrial/ Industrial plants
- Maintenance and repair
- Process and food industry/
Metal construction

Unit Includes

Input cable (2m)
Carrying strap
Gas connection kit



INVERTEC® 220TPX

Advanced inverter technology for superior TIG performance.

Very good HF arc ignition, stable, focused and fast arc.

- Excellent arc performance – perfect HF ignition, stable, focused and fast arc (for pulse and no pulsed arc)
- Simple control panel – full control, easy set up
- Energy efficient – PFC circuit, high efficiency, green mode
- Portable – Small, light weight
- PFC, protection 16A, 100m input cable, generator ready
- Robust design – Potted PCB's, True HD design
- 3 year warranty – for labor and parts
- Remote control optionals
- Up/down function

Unit Includes

Input cable (2m)

Gas connection kit



Input



Output



Processes

Stick, Lift TIG, TIG HF, TIG Pulse

Applications

- Light industrial, Motorsports
- Maintenance and repair
- Process and food industry

INVERTEC® V270-T & TP

Designed and engineered for durability and reliability.

Excellent arc characteristics for a wide range of applications.

- Generator compatible ideal for site use
- HF and Lift TIG ignition meeting all requirements
- Full function userfriendly control panel layout for easy setup of welding parameters
- Available in dual version model with auto-reconnect between 230/400V
- Fan on demand (F.A.N.™) built-in reduces power and the intake of dust and fumes
- Recessed controls and connections designed to eliminate damage
- High speed Pulse on the V270-T Pulse machine to adjust the arc focus, reduce distortion and increase travel speed
- 2 year warranty – for labor and parts
- Remote control optionals
- Water Coolers and Carts available

Unit Includes

Input cable (2m)

Carrying strap

Gas connection kit



Input



Output



Processes

Stick, Lift TIG, TIG HF

Applications

- Light industrial/ Industrial plants
- Maintenance and repair
- Process and food industry/ Metal construction

ALL MACHINES

INVERTEC® 300TPX & 400TPX

Advanced inverter technology for superior DC TIG performance.
Industrial TIG welder for tough conditions.

- Full function user-friendly control panel layout with graph and a numeric display make it easy to set all welding parameters.
- Rugged construction : electrical safety (IP23S), potted PC boards and optimum airflow reduce contamination to extend the equipments life in the harshest environmental conditions.
- HF and Lift TIG ignition meeting all requirements.
- Perfect TIG HF starting with pre-settable starting mode.
- Complete TIG parameters setting: Pulse TIG with variable frequency that allows the welder to adjust the arc focus to suit the applications, 10 memory locations for personalized welding settings, TIG Spot welding.
- Water Coolers and Carts available.
- 3 year warranty – for labor and parts
- Remote control optionals
- Up/down function

Unit Includes

Input cable (2m)

Gas connection kit



Input



Output



Processes

Stick, Lift TIG, TIG HF, TIG pulse

Applications

- Light industrial/ Industrial plants
- Maintenance and repair
- Process and food industry/ Metal construction

BUILT FOR THE HEAVIEST INDUSTRIAL CONDITIONS

Developed and tested under the hardest conditions (TRUE HD) to grant the reliability you need.

- PCB board made in Lincoln Electric Company
- Fully encapsulated and vertical mounted
- Capable of surviving the harshest testing conditions
- Varnished and potted electronic boards



WATER COOLING SETUP



Cart
K14129-1

Cart
K14114-1

SUGGESTED SETUP

TIG MILD STEEL/ STEEL WELDING

Welding thickness (mm)	Electrode diameter (mm)	Weld material (mm)	Current "DC" (A)	Argon (l/min)
0.5	1.0	–	30-60	5
1.0	1.6	–	70-90	5
1.5	1.6	1.6	90-110	8
2.0	1.6	1.6	100-130	8
3.0	2.4	2.0	120-140	10
4.0	2.4	2.4	150-190	12
6.0	3.2	3.0	200-300	15
> 6.0	4.0	3.0	300-400	>15

TIG STAINLESS STEEL WELDING

Welding thickness (mm)	Electrode diameter (mm)	Weld material (mm)	Current "DC" (A)	Argon (l/min)
0.5	1.0	–	15-30	5
1.0	1.6	–	50-70	5
1.5	1.6	1.2	60-90	8
2.0	1.6	1.6	80-100	8
3.0	2.4	2.0	100-130	10
4.0	2.4	2.4	130-170	12
6.0	3.2	3.2	200-300	15
>6.0	4.0	3.2	300-400	>15

TIG TORCHES

Series	Size	Rate	Application	Extra Flex Cable	HD expendables	Up /Down	Ergonomic handle	Adjustable neck	Valve version available	Flex Neck version available	Round Handle	110A	125A	135A	150A	180A	200A	220A	250A	350A	450A			
WTT2	9	35%	Professional				•		•	•		■												
	17								•		•	•		■	■									
	26								•		•	•		■	■	■								
	20	100%						•		•	•		■	■	■	■								
	18							•		•	•		■	■	■	■	■							
PROTIG IIS	10	60%	Industrial	•	•						•	■	■											
	20			•	•							•	■	■										
	30			•	•							•	■	■	■									
	40			•	•							•	■	■	■	■								
	10W	100%			•	•						•	■	■	■	■								
	35W			•	•							•	■	■	■	■	■							
	40W			•	•							•	■	■	■	■	■	■						
PROTIG NGS	10	60%	Industrial	•	•	•	•	•				■	■											
	20			•	•	•	•	•					■	■	■									
	30			•	•	•	•	•					■	■	■	■								
	40			•	•	•	•	•					■	■	■	■	■							
	10W	100%			•	•	•	•	•	•			■	■	■	■	■							
	35W			•	•	•	•	•					■	■	■	■	■	■						
	40W			•	•	•	•	•					■	■	■	■	■	■	■					

■ air cooled
■ water cooled

Choose your module & your plug kit for Protig NG S

Button modules		
Reference	WP10529-2	WP10529-4 (10 kΩ) or WP10529-3 (10 kΩ)
Plug kit	<ul style="list-style-type: none"> No plug kit needed Torch is connected to the machine through the C5B plug (5 pins) 	<p>+</p> <p>WP10529-9</p>
Workwith	<ul style="list-style-type: none"> Invertec 220/300/400 TPX Aspect 200/300 	<ul style="list-style-type: none"> All Lincoln machines with pedal control

Adapters

For old torches with central gas to be connected to power sources with separate gas, use **W000306140**.



Dinse 9 to 13 mm
W000306139



For torches with separate gas to be connected to power sources with central gas, use **W000306141**.



Dinse 13 to 9 mm
038055011



Connection



New Connector

Shaped cable output for a better robustness.



TIG TORCHES

			Invertec 175 TP K14169-1	Invertec 205 TP2V K12021-1	Invertec 220TPX K12057-1	Invertec 270T K12023-1	Invertec 270TP K12024-1	Invertec V270-TP2V K12024-3	Invertec 300TPX K12024-1	Invertec 400TPX K12043-1
TIG Premium torches air	5 m	8 m								
PROTIG IIIS 10 RL C5B-S	W000382715-2	W000382716-2	•	•	•					
PROTIG IIIS 20 RL C5B-S	W000382717-2	W000382718-2	•	•	•	•	•	•	•	
PROTIG IIIS 30 RL C5B-S	W000382719-2	W000382720-2				•	•	•	•	•
PROTIG IIIS 40 RL C5B-S	W000382721-2	W000382722-2								•
PROTIG NGS 10 EB C5B-S	W000278394-2	W000278395-2	•	•	•					
PROTIG NGS 20 EB C5B-S	W000278396-2	W000278397-2	•	•	•	•	•	•	•	•
PROTIG NGS 30 EB C5B-S	W000278398-2	W000278399-2				•	•	•	•	•
PROTIG NGS 40 EB C5B-S	W000278400-2	W000278401-2								•

TIG Premium torches water

PROTIG IIIS 10W RL C5B-S	W000382723-2	W000382724-2		•		•	•	•	•	
PROTIG IIIS 35W RL C5B-S	W000382725-2	W000382726-2							•	•
PROTIG IIIS 40W RL C5B-S	W000382727-2	-								•
PROTIG NGS 10W EB C5B-S	W000278402-2	W000278403-2		•		•	•	•	•	
PROTIG NGS 35W EB C5B-S	W000278404-2	W000278405-2							•	•
PROTIG NGS 40W EB C5B-S	W000278406-2	W000278407-2								•

TIG torches air

	4 m	8 m								
WTT2 17 RL C5B, 135A@35%	W000278884	W000278917	•		•				•	
WTT2 17 EB C5B, 135A@35%	W000278882	W000278919	•		•				•	
WTT2 26 RL C5B, 180A@35%	W000278890	W000278913	•	•	•	•	•	•	•	•
WTT2 26 EB C5B, 180A@35%	W000278887	W000278915	•	•	•	•	•	•	•	•

TIG torches water

WTT2 18W RL C5B, 320A@100%	W000278898	W000278899				•	•	•	•	•
WTT2 18W EB C5B, 320A@100%	W000278896	W000278901				•	•	•	•	•
WTT2 20W RL C5B, 200A@100%	W000278894	W000278905		•		•	•	•	•	•
WTT2 20W EB C5B, 200A@100%	W000278892	W000278909		•		•	•	•	•	•



PROTIG IIIS



PROTIG NGS



WTT2

ACCESSORIES & OPTIONS

		Invertec 175 TP K14169-1	Invertec 205 TP2V K12021-1	Invertec 220TPX K12057-1	Invertec 270T K12023-1	Invertec 270TP K12024-1	Invertec V270-TP2V K12024-3	Invertec 300TPX K12024-1	Invertec 400TPX K12043-1
Water cooler									
Freezcool	W000010167		•		•	•	•	•	•
COOLARC® 20	K12031-1		•		•	•	•		
COOLARC® 21	K14103-1						•		
COOLARC® 46	K14105-1								•



FREEZCOOL
W000010167

COOLARC® 46
K14105-1



ACCESSORIES & OPTIONS

ACCESSORIES & OPTIONS		Invertec 175 TP K14169-1	Invertec 205 TP 2V K12021-1	Invertec 220TPX K12057-1	Invertec 270T K12023-1	Invertec 270TP K12024-1	Invertec V270-TP 2V K12024-3	Invertec 300TPX K12024-1	Invertec 400TPX K12043-1
Cable Kits									
200A, 25mm ² , 3m with ground clamp & electrode holder (clamp)	KIT-200A-25-3M		•	•					
200A, 35mm ² , 5m with ground clamp & electrode holder (clamp)	KIT-200A-35-5M	•	•	•					
250A, 35mm ² , 5m with ground clamp & electrode holder (clamp)	KIT-250A-35-5M				•	•	•		
300A, 50mm ² , 5m with ground clamp & electrode holder (clamp)	KIT-300A-50-5M				•	•	•	•	
400A, 70mm ² , 5m with ground clamp & electrode holder (clamp)	KIT-400A-70-5M								•
KIT 35C50, 300A, 50mm ² , 4m	W000011139	•	•	•	•	•	•	•	
Ground cable assemblies									
Clamp, Fast-mate, cable 200A, 35mm ² , 5m	GRD-200A-35-5M	•	•	•					
Clamp, Fast-mate, cable 200A, 35mm ² , 10m	GRD-200A-35-10M	•	•	•					
Clamp, Fast-mate, cable 300A, 50mm ² , 5m	GRD-300A-50-5M				•	•	•	•	
Clamp, Fast-mate, cable 300A, 50mm ² , 10m	GRD-300A-50-10M				•	•	•	•	
Clamp, Fast-mate, cable 400A, 70mm ² , 5m	GRD-400A-70-5M								•
Clamp, Fast-mate, cable 400A, 70mm ² , 10m	GRD-400A-70-10M								•
Remote controls									
Foot amptrol, 6 pins, 7,6m	K870	•	•	•	•	•	•	•	•
Control box, 15m	K14147-1	•	•	•	•	•	•	•	•
Extension 15 remote control	K14148-1	•	•	•	•	•	•	•	•
Cart									
Undercarriage: 2-wheeled cart delivered as a kit, for portable power sources	W0200002		•	•	•	•	•		
4-wheeled undercarriage ST/VTX	K14114-1							•	
Tool Box for CART ST/VTX	K14115-1							•	
4-wheeled undercarriage TPX	K14129-1								•
Universal Trolley	W000375730	•							

CABLE KITS W000011139



FOOT AMPPTROL K870



UNIVERSAL TROLLEY W000375730



UNDERCARRIAGE W0200002



TIG RODS

MILD STEEL TIG RODS

LNT 26

AWS A5.18: ER70S-6
ISO 636-A: W 42 5 W3Si1

Shielding gas
I1: Inert gas Ar (100%)

- Solid rod for welding general construction in mild steel.
- Smooth bead appearance.

Product Name	Ø (mm)	Length (mm)	Weight per tube (kg)	Item Number
LNT 26	1.6	1000	5	T16T005R6S00
	2.0			T20T005R6S00
	2.4			T24T005R6S00
	2.8			T28T005R6S00
	3.2			T32T005R6S00

STAINLESS STEEL TIG RODS

LNT 304LSI

AWS A5.9: ER308LSi
ISO 14343-A: W 19 9 LSi

Shielding gas
I1: Inert gas Ar (100%)

- Solid rod with extra low carbon for welding stainless CrNiMo-steels, with high silicon for improved wettability.

Product Name	Ø (mm)	Length (mm)	Weight per tube (kg)	Item Number
LNT 304LSi	1.2	1000	5	580198
	1.6			582512
	2.0			582796
	2.4			582802
	2.8			583045
	3.2			583045

LNT 316LSI

AWS A5.9: ER316LSi
ISO 14343-A: W 19 12 3 LSi

Shielding gas
I1: Inert gas Ar (100%)

- Solid rod with extra low carbon for welding stainless CrNiMo-steels, with high silicon for improved wettability.

Product Name	Ø (mm)	Length (mm)	Weight per tube (kg)	Item Number
LNT 316LSi	1.0	1000	5	580259
	1.2			580235
	1.6			583915
	2.0			583922
	2.4			582819
	3.2			583571

TUNGSTEN ELECTRODES

A complete range of tungsten electrodes:

Product advantages:

- Very high life cycle
- Perfect arc ignition
- Very stable arc
- Tip longevity

- Pure tungsten
- Tungsten + cerium
- Tungsten + lanthanum
- Tungsten + rare earths

Type	Metal		Arc stability	Striking	Lasting	Thermal resistance
	Aluminium	Steel & Stainless steel				
WP – pure tungsten	*		**	*	*	*
WC20 – Cerium 2%		*	**	*	**	**
WL15 – Lanthanum 1,5%	**	***	**	***	***	***
WL20 – Lanthanum 2%	*	***	**	***	***	***
WS20 – Rare earths 2%	*	*	**	***	***	***

*** Excellent ** Good * Average

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company® is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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