THERMACUT®
EX-TRAFIRE®
45SD
PLASMA ARC CUTTING SYSTEM

Operator Manual

Revision: T-7
English
2024

!IMPORTANT! **BEFORE SWITCHING ON OR OPERATING THE SYSTEM, READ THIS MANUAL, BECOME FAMILIAR WITH THE CONTENT. KEEP THE MANUAL LOCAL TO THE JOB SITE WITH EASY ACCESS TO ALL PERSONNEL. THE SYSTEM IS TO BE USED FOR METAL CUTTING ONLY.**

PLEASE, CHECK THE LATEST VERSION OF THE OPERATOR MANUAL ON OUR WEBSITE:
www.ex-trafire.com

THERMACUT®
THE CUTTING COMPANY®

EX-2-902-003
N-22226

INDEX

SECTION 1: SAFETY 5
!Caution! 6
Plasma arc rays can burn eyes and skin 6
Noise can damage hearing 6
Flying sparks (arc spray) can cause injury, fire or explosion 6
Caution! Read operator's manual 6
Cutting can cause fire or explosion 7
Electric shock can kill 7
Plasma arc can injure 7
Flying sparks (arc spray) can cause injury, fire or explosion 7
Hot parts can cause severe burns 7
Smoke and gases can be hazardous 8
Caution when cutting around gas cylinders 8
Do not exceed the recommended duty cycle, this can lead to overheating and cause damage to the system. 8
Magnetic field can affect pacemakers 8
Plasma cutting can cause interference 8
Safety Sticker 9

SECTION 2: SPECIFICATIONS 2-10
Dimensions and weight of the plasma arc power supply 2-11
Specifications: plasma arc power supply EX-TRAFIRE®45SD, 1- phase 2-12
Specifications: plasma arc power supply EX-TRAFIRE®45SD, 3- phase 2-13
Specifications: Torches FHT-EX®45TTH and FHT-EX®45TTM 2-14
Dimensions and configuration 2-15
Hand torch FHT-EX®45TTH 2-15
Machine torch FHT-EX®45TTM 2-15
Symbols and marking 2-16

SECTION 3: INSTALLATION 3-18
Upon receipt of goods 3-19
Claims 3-19
Box contents 3-19
Power supply location 3-20
Mains power connection 3-20
Connecting to an engine drive power generator 3-20
Grounding 3-21
Mains power lead 3-21
Single-phase mains power lead 3-21
Installation of single-phase mains power lead 3-22

Three-phase mains power lead 3-22
Installation of three-phase mains power lead 3-22
Torch installation step by step 3-23
Working (ground) cable installation step by step 3-26
Plasma gas supply 3-27
Additional gas filtration 3-27
Gas supply installation 3-28
Gas supply regulation 3-28
System CNC interface connection 3-29
Activating an external DC coil with an external power supply 3-30
Activating an external AC coil with an external power supply 3-30
Activating an industrial isolated module with an external power supply 3-31
The circle cutting guide installation
- for the FHT-EX®105RTXH/105TTH/45TTH 3-32

SECTION 4: OPERATION 4-35
Front view 4-36
LCD display details 4-36
Setting of power supply 4-37
1. Mode selection. 4-37
2. Cutting parameters 4-38
3. Two variants of cutting torch. 4-38
Rear view, Turn ON 4-39
Rear panel detail 4-39
Cutting preparation 4-40
Manual cutting operation 4-40
Hand torch consumables installation 4-41
Operating the hand torch 4-42
Operating the torch safety trigger 4-42
Fit the work clamp 4-43
Edge start cutting 4-43
Hand torch cutting technique 4-44
Piercing 4-45
Gouging 4-46
Gouge profile 4-47
Modification of the gouge profile 4-47
Operating the machine torch 4-48
Alignment of the machine torch FHT-EX®45TTM 4-48
Machine torch consumables installation 4-49
Mechanized Cutting Charts
30 A Cutting, Shielded Configuration; using compressed air 4-50
Mechanized Cutting Charts
30 A Cutting, Shielded Configuration; using compressed air 4-51

Mechanized Cutting Charts
45 A Cutting, Shielded Configuration; using compressed air 4-52
Mechanized Cutting Charts
45 A Cutting, Shielded Configuration; using compressed air 4-53

SECTION 5: MAINTENANCE..... 5-54
Routine maintenance 5-55
Consumable parts inspection 5-56
Purging/draining the built-in filter 5-57

SECTION 6: TORCHES AND TORCH PARTS 6-58
FHT-EX®45TTH Hand Torch Assembly 6-59
FHT-EX®45TTH Hand Torch Components 6-60
FHT-EX®45TTH Hand Torch Consumables 6-61
FHT-EX®45TTM Machine Torch Assembly 6-62
FHT-EX®45TTM Machine Torch Components 6-63
FHT-EX®45TTM Machine Torch Consumables 6-64

SECTION 7: ADITIONAL ORDERING INFORMATION 7-65

SECTION 8: TROUBLESHOOTING 8-66

SECTION 9: ACCESSORIES 9-72
Filter-EX Compressed Air Filter with replacement filter cartridge 9-72
Filter-EX Quick Connect Couplings 9-73
CNC interface 9-73
O-Ring lubricant 9-73
Circle cutting guide kit for FHT-EX®105RTXH/105TTH/45TTH 9-74

SECTION 10: SYSTEM CIRCUIT DIAGRAM 10-75
Power supply block diagram 10-75

SECTION 11: DISPOSAL OF PRODUCT 11-76
Use and disposal of waste 11-76
End of lifetime product disposal 11-76

SECTION 12: WARRANTY 12-77
Notes: 12-78
Revision history: 12-79

SECTION 1.

SAFETY:

!Caution! 6
Plasma arc rays can burn eyes and skin 6
Noise can damage hearing 6
Flying sparks (arc spray) can cause injury, fire or explosion 6
Caution! Read operator's manual 6
Cutting can cause fire or explosion 7
Electric shock can kill 7
Plasma arc can injure 7
Flying sparks (arc spray) can cause injury, fire or explosion 7
Hot parts can cause severe burns 7
Smoke and gases can be hazardous 8
Caution when cutting around gas cylinders 8
Do not exceed the recommended duty cycle, this can lead to overheating and cause damage to the system. 8
Magnetic field can affect pacemakers 8
Plasma cutting can cause interference 8
Safety Sticker 9

SAFETY

1

!CAUTION!

The symbol shown in this section means: **!Caution!** !Beware! There are possible hazards with this procedure!

When you find this symbol in the manual or on the system, be cautious, and follow the related instructions to avoid the hazard.

CAUTION! READ OPERATOR'S MANUAL

Follow the safety instructions to avoid danger.

Only qualified persons should install, operate, maintain and repair the system.

Keep out of reach of children.

2

PLASMA ARC RAYS CAN BURN EYES AND SKIN

Arc rays from the cutting/gouging processes produce intense visible and invisible rays that can burn eyes and skin.

Use protective clothing made from durable, flame-resistant material, appropriate footwear and hand protection.

- Use face protection (welding helmet or shield) with the correct shade of filter lens fitted to protect your eyes and face (see Table 1.1).
- Warn people of the dangers of looking at the arc, use signs to warn/inform.

NOISE CAN DAMAGE HEARING

Prolonged exposure to noise from plasma cutting/gouging can cause hearing damage.

- Use approved ear protection when operating the plasma system.
- Warn others about the dangers of noise.

FLYING SPARKS (ARC SPRAY) CAN CAUSE INJURY, FIRE OR EXPLOSION

Flying sparks are created during the metal cutting/gouging processes; the area around the cutting process should be kept free from flammables.

- Use face shield/safety glasses with side protection.
- Wear flame resistant clothing, footwear and hand protection.
- Use earplugs/defenders that are flame resistant to prevent sparks entering the ear and to reduce the noise level.

3

CUTTING CAN CAUSE FIRE OR EXPLOSION

FIRE PREVENTION

- Keep flammable items away from the work area.
- Ensure that there is a fully charged fire extinguisher in the work area.
- Ventilate the work area, check for flammable/ combustible gases, liquids and materials, remove prior to cutting as they present a fire risk.

EXPLOSION PREVENTION

- Do not cut in areas containing explosives, flammable gases or vapors.
- Do not place the system on, over, or near combustible surfaces.
- Do not operate the system in areas with an atmosphere containing high concentrations of dust, flammable gases or vapors.
- Do not use the system to cut pressurized containers that have not been de-pressurized, vented and cleaned.

FLYING SPARKS (ARC SPRAY) CAN CAUSE INJURY, FIRE OR EXPLOSION

Flying sparks are created during the metal cutting/gouging processes; the area should be kept free from flammables.

- Use face shield/safety glasses with side protection.
- Wear flame resistant clothing, footwear and hand protection.
- Use earplugs/defenders that are flame resistant to prevent sparks entering the ear and to reduce the noise level.

4

ELECTRIC SHOCK CAN KILL

Touching electrical parts could cause a fatal shock or severe burns.

- Do not touch live electrical components.
- Wear dry insulated gloves, shoes and protective clothing.
- Insulate yourself from the work and ground using dry insulating material large enough for the work area.
- The working area should be clean and dry.
- Switch OFF the system for cleaning and maintenance operations.
- Do not wrap cables around your body.
- Turn OFF the machine when not in use.
- Periodically check the power supply cable, to insure that the outer insulation is intact. Replace the power supply cable immediately if damaged. DO NOT use the system with bare or exposed wires, this is highly dangerous.
- Before removing the cover or handling any of the internal components of the system, wait 5 (FIVE) minutes to ensure complete discharge of the capacitors.
- Keep the system in good condition; repair or replace damaged parts immediately. Maintain the system in accordance with the manual.

5

PLASMA ARC CAN INJURE

The plasma arc is activated immediately after the torch trigger is depressed.

- Turn off the power before changing the torch consumables, the plasma arc can burn through skin and gloves.
- Do not place your hand or hold the work piece near the cutting path.
- Do not point the torch toward yourself or other persons.

HOT PARTS CAN CAUSE SEVERE BURNS

Caution! After cutting, the workpiece will be HOT!

- Do not touch hot parts bare handed, wear suitable hand protection.
- Allow cooling time before handling.

6

SMOKE AND GASES CAN BE HAZARDOUS

Induction heating of certain materials, adhesives, and fluxes may cause fumes or smoke.

- Breathing the fumes and smoke can be hazardous to your healthKeep your face out of the smoke, do not breathe the fumes.
- Use local exhaust ventilation for fume removal.
- If ventilation is poor, wear an approved air-supplied respirator.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. The smoke and gases from the cutting/gouging process can displace air and lower the oxygen level causing injury or death.
- Monitor the breathable air quality as required.

7

CAUTION WHEN CUTTING AROUND GAS CYLINDERS

Gas cylinders which contain gas under high pressure can rupture and explode if damaged.

- Handle and use compressed gas cylinders in accordance with local or national codes.
- Never allow electrical contact between the plasma arc and a cylinder.
- Never expose cylinders to excessive heat, sparks, slag or flames.

MAGNETIC FIELD CAN AFFECT PACEMAKERS

- People with pacemakers/hearing aids should avoid close contact with plasma arc power supply.
- People with pacemakers/hearing aids should consult their doctor before operating plasma arc power supply.

Do not exceed the recommended duty cycle, this can lead to overheating and cause damage to the system.

- Allow a suitable cooling off period with high demand usage.
- Observe the duty cycle rating shown on the label attached to the system.

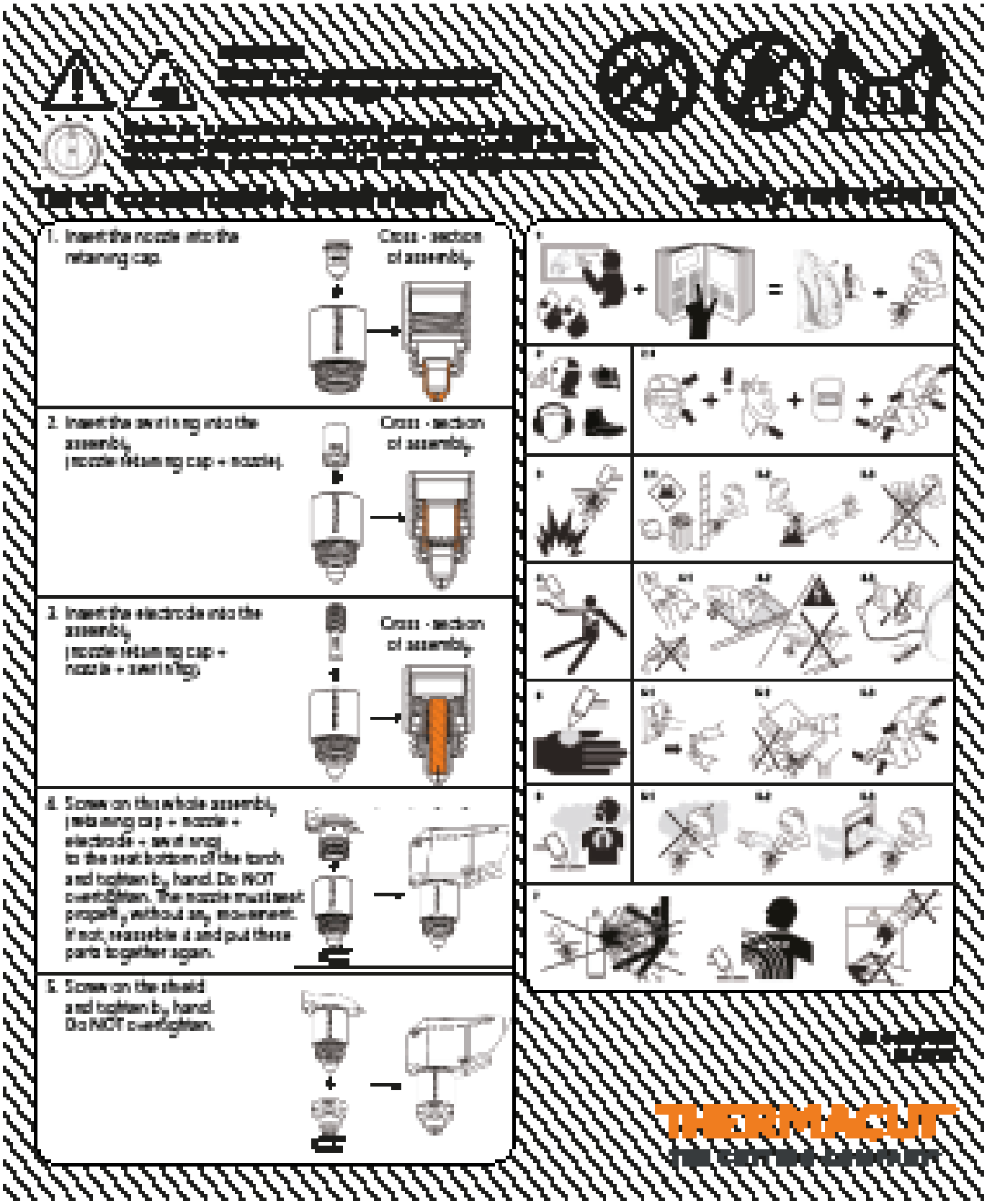
PLASMA CUTTING CAN CAUSE INTERFERENCE

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers, or computer-driven equipment.
- Ensure that all equipment in the cutting area is electromagnetically compatible.
- Ensure that the plasma arc cutting system is installed and positioned in accordance with this manual.

Plasma Arc Cutting Current	Protection glass shade number*
Up to 150A	ISO (DIN) 11
150A to 250A	ISO (DIN) 12
250A to 400A	ISO (DIN) 13
OVER 400A	ISO (DIN) 14

* According to ISO 4850:1979

Safety Sticker



SECTION 2.

SPECIFICATIONS:

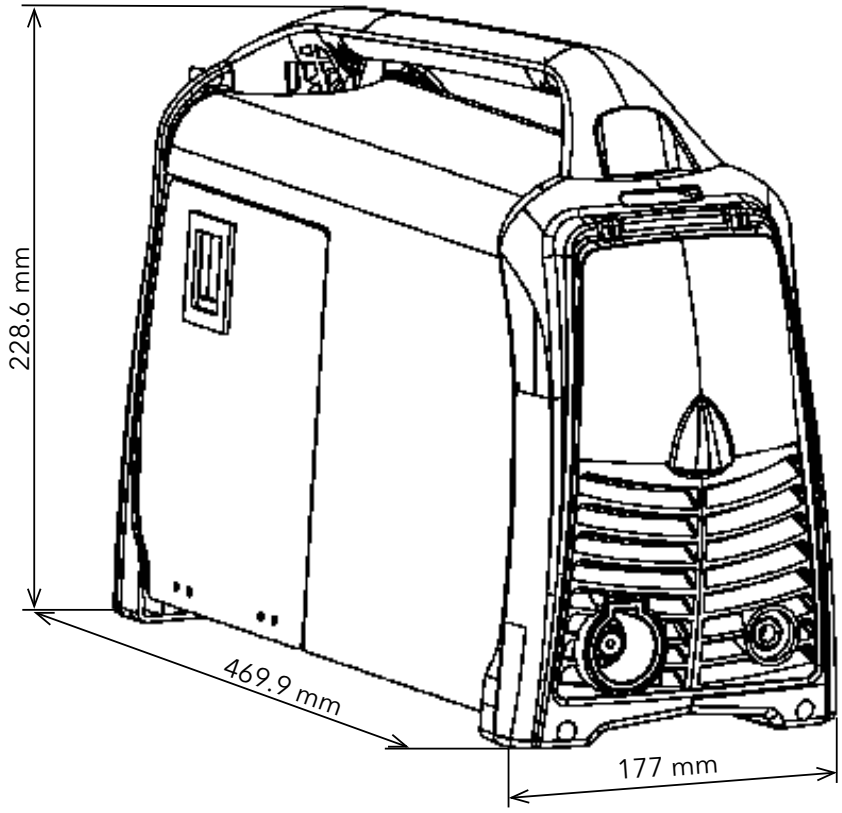
Dimensions and weight of the plasma arc power supply 2-11
Specifications: plasma arc power supply EX-TRAFIRE®45SD, 1-phase 2-12
Specifications: plasma arc power supply EX-TRAFIRE®45SD, 3-phase 2-13
Specifications: Torches FHT-EX®45TTH and FHT-EX®45TTM 2-14
Dimensions and configuration 2-15
Hand torch FHT-EX®45TTH 2-15
Machine torch FHT-EX®45TTM 2-15
Symbols and marking 2-16

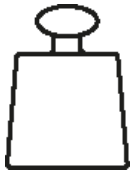
SPECIFICATIONS

EX-TRAFIRE®45SD

- Is a portable plasma arc cutting system.
- Has been designed for Handheld Cutting, Mechanised Cutting and Gouging.
- Uses compressed air or nitrogen for cutting Mild Steel, Stainless Steel, Aluminium and other electrically conductive metals.

Dimensions and weight of the plasma arc power supply





12.7 kg*

* Weight of plasma arc power supply without torch.

Specifications: plasma arc power supply EX-TRAFIRE®45SD, 1- phase

Open circuit voltage (U_0)	480 VDC					
Output characteristic* * Curve is defined as the output voltage versus output current	Drooping					
Input voltage (U_1) ***PFC**	1x 120VAC ± 15% (CE)			1x 230VAC ± 15% (CE/C-TICK)		
Rated output current (I_2)	20–25 A			20–45 A		
standard rated output voltage (U_2)	145 VDC					
	60%	100%		60%	100%	
	145 VDC	145 VDC		145 V	145 V	
cutting current at duty cycle (I_2)	25 A	20 A	16 A	45 A	41 A	32 A
	40%	60%	100%	50%	60%	100%
Maximum input power	4.4 kVA			7.59 kVA		
Duty cycle (X*) at 40° C at rated conditions (U_1, I_1, U_2, I_2) *X=Ton/Tbase, Ton = time, minutes Tbase =10 minutes	U_{1rms}			X		
	40%			50%		
Operating temperature	−10° – +40° C					
Rated AC phases (PH) and line frequency (Hz) Model CE	1 PH / 50-60 Hz					
Rated input voltage (U_1), rated input current (I_1) and effective input current (I_{1eff}*) at rated output voltage (U_2) and rated output current (I_2) - for cutting only. * $I_{1eff} = (I_1)\sqrt{X}$ used to determine rating of power cord. eff = effective rms = root mean square	I_{1rms}	I_{1eff}		I_{1rms}	I_{1eff}	
	36.7* A	23.2* A		33* A	23.3* A	
	This equipment conforms to IEC 60974-1, IEC 60974-10					
Isolation class	F					
IP Code – Degree of protection provided by enclosure	IP23S* IP – "International Protection" 2 – No ingress foreign objects ≥ 12.5 mm 3 – No harmful ingress spraying water. S – fan stationary during water test. ***WARNING: ! DO NOT OPERATE IN RAIN !**					
Toppling, tilting (with or without Wheel kit)	Up to 15° incline					
Gas type	Air			Nitrogen		
Gas quality specification	Recommended Air quality: ISO 8573-1 Class 1.2.2. Air max. particle size: 0.1 microns, class 1 ref. to ISO 8573 Air max. oil: 0.1 mg / m^3, class 2 ref.: ISO 8573 Air max. dewpoint: +3 °C, class 4 ref. to ISO 8573			Purity ≥ 99.99%		
Gas quality	Clean, moisture-free, without oil					
Gas input pressure and flow	10 bar/145 psi 90 l/min					
Operation modes	cutting, grid cutting, gouging					
Dimensions (l × h × w) (mm)	469.9 × 228.6 × 177					
Weight (kg)	12.7					

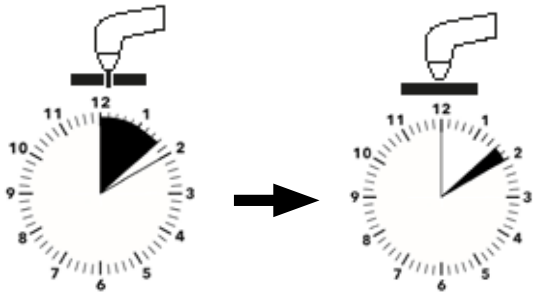
*** PFC** - power factor control automatically detects input voltage and adjusts output current.

Specifications: plasma arc power supply EX-TRAFIRE®45SD, 3- phase

Open circuit voltage (U_0)	308 VDC	
Output characteristic* * Curve is defined as the output voltage versus output current	Drooping	
Input voltage (U_1)	3x 400 VAC ± 15%	
Rated output current (I_2)	20–45 A	
Standard rated output voltage (U_2)	80%	
	145 VDC	
cutting current at duty cycle (I_2)	45 A	40 A
	80%	100%
Maximum input power	11.2 kVA	
Duty cycle (X*) at 40° C at rated conditions (U_1, I_1, U_2, I_2) *X=Ton/Tbase, Ton = time, minutes Tbase =10 minutes	U_{1rms}	
	80%	
Operating temperature	−10° – +40° C	
Rated AC phases (PH) and line frequency (Hz) Model CE	3 PH / 50-60 Hz	
Rated input voltage (U_1), rated input current (I_1) and effective input current (I_{1eff}*) at rated output voltage (U_2) and rated output current (I_2) - for cutting only. * $I_{1eff} = (I_1)\sqrt{X}$ used to determine rating of power cord. eff = effective rms = root mean square	I_{1rms}	I_{1eff}
	16.2* A	14.4* A
	This equipment conforms to IEC 60974-1, IEC 60974-10	
Isolation class	F	
IP Code – Degree of protection provided by enclosure	IP23S* IP – "International Protection" 2 – No ingress foreign objects ≥ 12.5 mm 3 – No harmful ingress spraying water. S – fan stationary during water test. ***WARNING: ! DO NOT OPERATE IN RAIN !**	
Toppling, tilting (with or without Wheel kit)	Up to 15° incline	
Gas type	Air	Nitrogen
Gas quality specification	Recommended Air quality: ISO 8573-1 Class 1.2.2. Air max. particle size: 0.1 microns, class 1 ref. to ISO 8573 Air max. oil: 0.1 mg / m^3, class 2 ref.: ISO 8573 Air max. dewpoint: +3 °C, class 4 ref. to ISO 8573	Purity ≥ 99.99%
Gas quality	Clean, moisture-free, without oil	
Gas input pressure and flow	max. 10 bar/145 psi 90 l/min	
Operation modes	cutting, grid cutting, gouging	
Dimensions (l × h × w) (mm)	469.9 × 228.6 × 177	
Weight (kg)	12.7	

Duty cycle

Duty cycle is the percentage of time,
during a period of 10 minutes,
that the power supply can continuously cut.
The following diagram represents a duty cycle of 80%.



8 minutes cutting 2 minutes resting

Specifications: Torches FHT-EX®45TTH and FHT-EX®45TTM

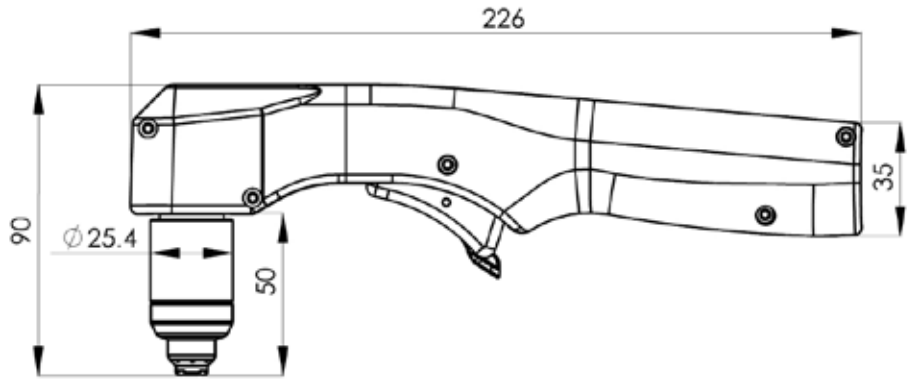
The FHT-EX® cutting torches are designed for plasma cutting of metalic conductive materials.
Torch construction: torch body, handle or mounting tube, leadset and consumables.
FHT-EX® torches fulfill the requirements of IEC/EN 60974-7.

Torch	**Torch FHT-EX®45TTH/M**
Recommended capacity	12 mm*
Maximum capacity	25 mm*
Piercing capacity	10 mm*
Plasma cutting	−10 °C to +40 °C
Transport and storage	−25 °C to +55 °C
Relative humidity	up to 90 % at 20 °C
Application process	Plasma Cutting, Gouging
Type of use	manual and mechanized
Pilot current	20 A at 45 A setting
Rated current and corresponding duty cycle	45 / 100%
Type of gas	compressed air / Nitrogen
Gas flow rate	approx. 90 l/min
Max. inlet pressure	10 bar
Operating (dynamic) pressure	4.8 bar
Gas post flow delay	≥ 20 sec.
Type of voltage	DC direct voltage
Protection type of the machine-side connections	IP3X (EN 60 529)
Type of connection	TCS (torch connection system) - 13 pin
Voltage rating	500V peak value
Rated value of control leads (trigger and cap sensor)	42 VAC / 0.1-1A
Standard lenght (other length availible on request)	5 m / 8 m / 15 m
Structure of cable	coaxial cable

*Cutting capacity (Values for low alloyed steel, e.g. Mild Steel S235JR)

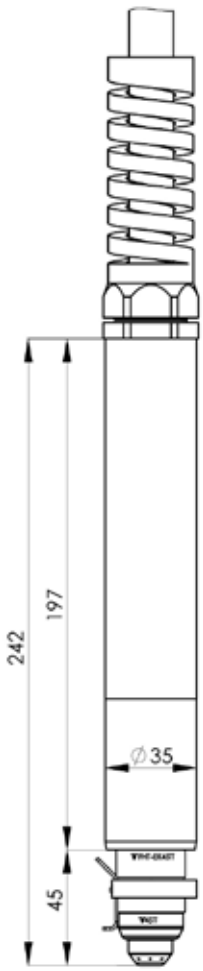
Weight	
FHT-EX®45TTH Hand Torch	5 m / 1.5 kg 8 m / 2.2 kg 15 m / 3.6 kg
FHT-EX®45TTM Machine Torch	5 m / 1.5 kg 8 m / 2.2 kg 15 m / 3.6 kg

Dimensions and configuration
Hand torch FHT-EX®45TTH



Shielded configuration using drag shield.

Machine torch FHT-EX®45TTM



Shielded configuration using machine shield.

Unshielded configuration using deflector.

Symbols and marking

S Mark;

The S mark indicates that the power supply and torch are suitable for use in environments with danger of electrocution. The hand torches must have shielded consumable parts fitted to maintain S mark compliance.

CE Mark;

This marking signifies the manufacturer's declaration of conformity to applicable European directives and standards (EMC & LVD).

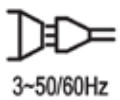
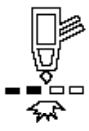
C-Tick Mark;

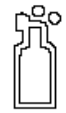
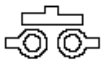
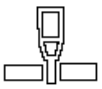
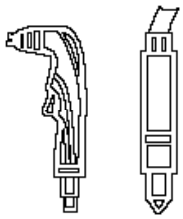
This mark signifies compliance with appropriate Australian EMC standard.

EAC Mark;

This mark indicates products that conform to all technical regulations of the Eurasian Customs Union.

IEC symbols

Symbol	Description	Symbol	Description
ON	Power is ON		BUS connector for further IOT 4.0
OFF	Power is OFF		The terminal for the external protective (earth) conductor
	Plasma torch cutting		Disposal of product
	The terminal for the external protective (earth) conductor	TEST	Test mode
	TIP/TORCH Indicates the torch is connected. Missing or loose nozzle retaining cap.		Grid cutting mode

Symbol	Description	Symbol	Description
	GAS Indicates flow of the gas. Gas pressure fault.		Cutting mode
	Direct Current (DC) power The power supply is working.		Gouging mode
	Indicates pressing of torch trigger or connection of pins 3, 4 in the CNC connector.		Indicates arc transfer
	An inverter-based power supply - 1-phase		An inverter-based power supply - 3-phase
	The torch type		PARAMETERS: Meters Volts Ampers

SECTION 3.

INSTALLATION:

Upon receipt of goods 3-19
Claims 3-19
Box contents 3-19
Power supply location 3-20
Mains power connection 3-20
Connecting to an engine drive power generator 3-20
Grounding 3-21
Mains power lead 3-21
Single-phase mains power lead 3-21
Installation of single-phase mains power lead 3-22
Three-phase mains power lead 3-22
Installation of three-phase mains power lead 3-22
Torch installation step by step 3-23
Working (ground) cable installation step by step 3-26
Plasma gas supply 3-27
Additional gas filtration 3-27
Gas supply regulation 3-28
Gas supply installation 3-28
System CNC interface connection 3-29
Activating an external DC coil with an external power supply 3-30
Activating an external AC coil with an external power supply 3-30
Activating an industrial isolated module with an external power supply 3-31
The circle cutting guide installation - for the FHT-EX®105RTXH/105TTH/45TTH 3-32

INSTALLATION

Upon receipt of goods

1. Verify that all ordered items have been received, for short shipment or damage to equipment, contact the Authorized Supplier.
2. If there is evidence of damage, see Claims, below.
3. All communication relating to this plasma arc system should include the model and serial number located on the bottom of the plasma arc power supply.
4. Read the information in the SAFETY section of this manual before installing and operating the system.

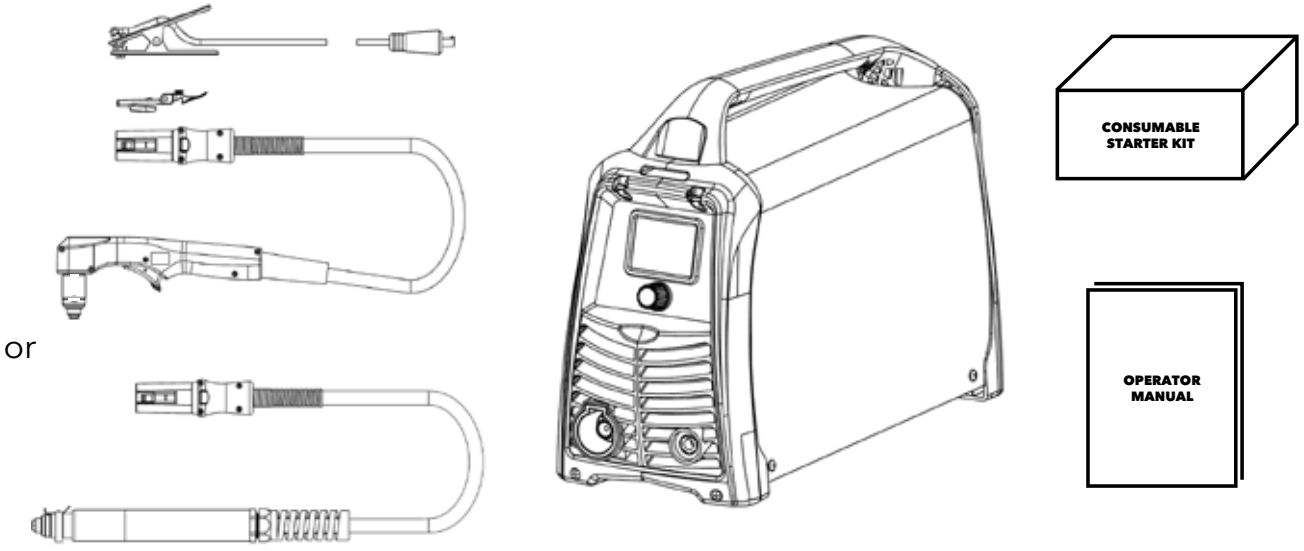
Claims

Claims for shipping damage; If the unit has been damaged in transit, contact the carrier immediately, take photographs of the packaging and areas of damage on the system. Inform Authorized Supplier, who will provide copies of relevant documentation. For further assistance, contact Customer Services, details are listed at the back of this manual.

Claims for defective or missing goods; All systems shipped from Authorized Supplier have been subjected to a rigorous quality control procedure. If any of the parts are found to be defective or missing, contact Authorized Supplier with the relevant information. For further assistance contact Customer Services, details are listed at the back of this manual.

Box contents

Check the items that are shown in the illustration below. Packaging also includes an air line connection DN7.2ES plug with male thread G1/4".



Power supply location

Place the plasma arc power supply EX-TRAFIRE®45SD on a flat even surface with a minimum distance of 0.5 m of clear space all round to ensure good ventilation.

Mains power connection

The EX-TRAFIRE®45SD plasma arc power supply requires a 120 VAC ± 20% (CE) – 230 VAC ± 20% (CE/C-TICK) single-phase mains power source or a 400 VAC ± 15% three-phase mains power source. Use a circuit breaker for power line input so that the operator can turn off the power supply quickly in an emergency. Locate the switch so that it is easily accessible to the operator. The interrupt level of the switch must be equal to or exceed the continuous rating of the fuses. Use slow blow fuses with a suitable capacity in accordance with local and national electrical codes.

Connecting to an engine drive power generator

When using an engine drive generator to power the EX-TRAFIRE®45SD:

Engine drive operation;

1. Set engine drive output to single or three-phase AC according to type of power supply.
2. Plug the EX-TRAFIRE®45SD mains power lead in to the power outlet.
3. Hard wire connection (No plug fitted) should be performed by a certified electrician.
4. Set the engine drive to maximum output (see chart below).
5. For optimum performance, do not share the engine drive with other equipment such as welding plant, lighting systems or angle grinders.

single-phase, three-phase, 50/60 Hz

Input voltage	Engine drive rating	Current output	EX-TRAFIRE®45SD Performance
120 VAC ± 20%	6 kW	25 A	limited arc stretch
230 VAC ± 20%	10 kW	45 A	full arc stretch
3 x 400 VAC ± 15%	10 kW	45 A	full arc stretch

Grounding

To reduce electromagnetic interference (EMI) and to ensure personal safety and correct operation, the EX-TRAFIRE®45SD must be properly grounded through the mains power lead in accordance with local and national electrical codes of practice.
The single-phase supply must be of the 3-wire type with a protective green-yellow wire for protective earth ground. The three-phase supply must be of the 4-wire type with a protective green-yellow wire for protective earth ground. It must comply with national and local electrical codes of practice.

Mains power lead

EX-TRAFIRE®45SD is supplied with a 3 meter length flexo cable without plug. Use of an alternative mains power lead is at the discretion of the user. The mains power lead shall comply with local and national codes of practice. The mains power lead should be installed by a certified electrician. See the length requirements listed below.

Recommended mains power lead extension		
Input voltage	**Cord Gauge**	**Length**
200 - 240 VAC / 1- phase	10 mm²	up to 15 m
	16 mm²	15–30 m
	25 mm²	30–45 m
380 - 480 VAC / 3- phase	4 mm²	up to 15 m
	6 mm²	15–45 m

Note: The system was tested with a 3 meter mains power lead for compliance with EMC standards.

The mains power lead connection

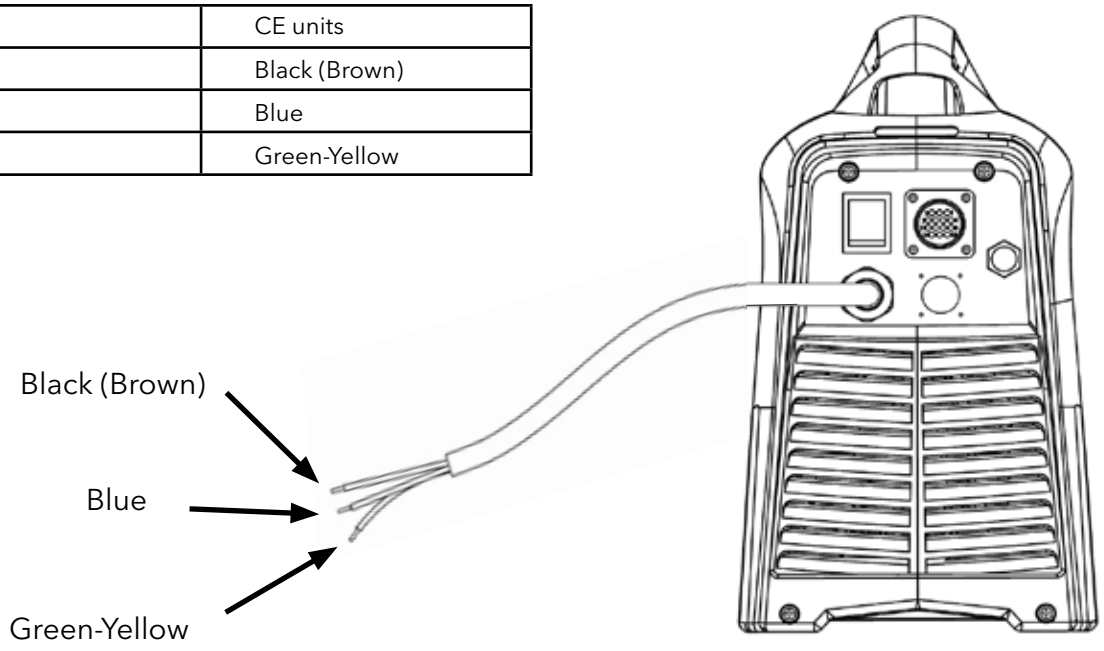
A certified electrician or competent person should connect the mains power lead to a plug or hard wire to a suitable supply according to national standards.

Single-phase mains power lead

CE models are fitted with a 3 wire 2.5 mm^2 mains power lead. To operate the EX-TRAFIRE®45SD, use a plug that complies with national and local codes of practice. A certified electrician or competent person should connect the mains power lead to the plug.

Installation of single-phase mains power lead

	CE units
L	Black (Brown)
N	Blue
Earth	Green-Yellow

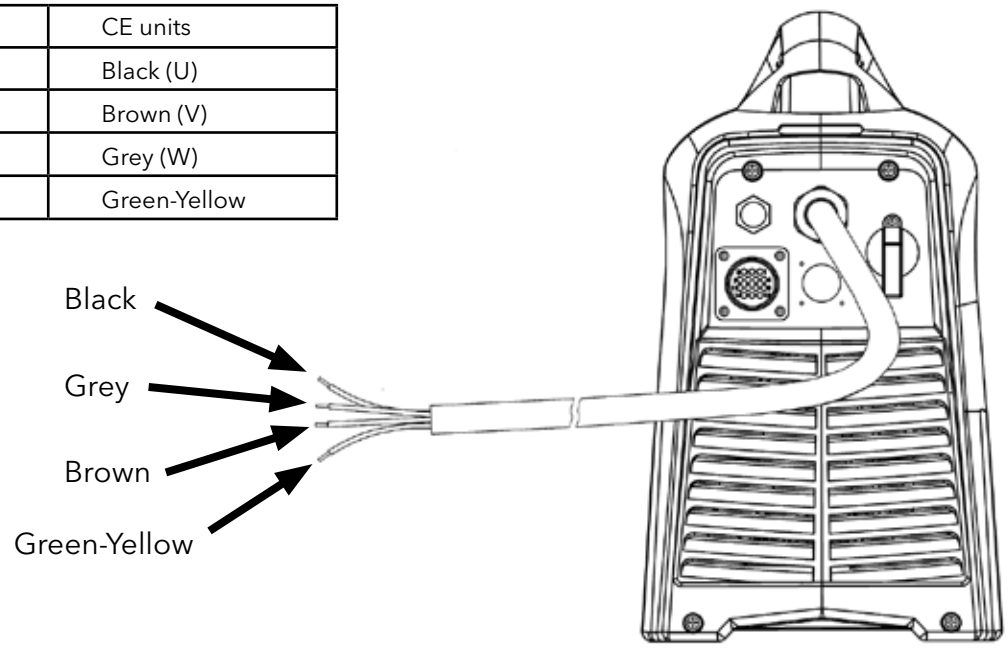


Three-phase mains power lead

CE models are fitted with a 4 wire 1.5 mm^2 mains power lead. To operate the EX-TRAFIRE®45SD, use a plug that complies with national and local codes of practice. A certified electrician or competent person should connect the mains power lead to the plug.

Installation of three-phase mains power lead

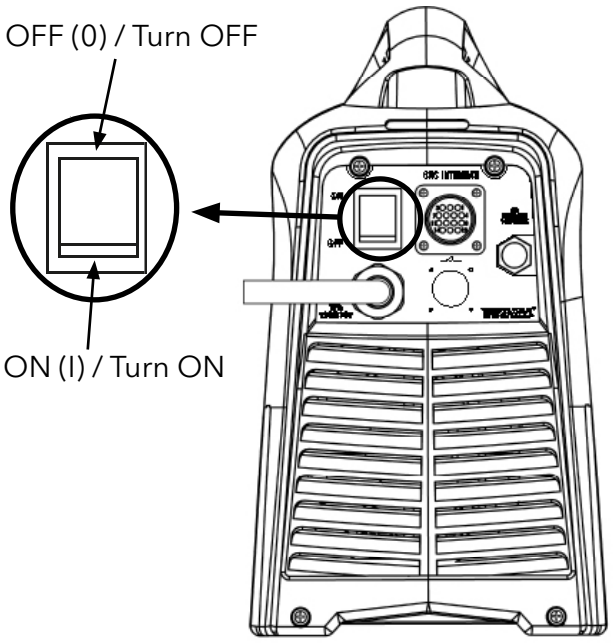
	CE units
L1	Black (U)
L2	Brown (V)
L3	Grey (W)
Earth	Green-Yellow



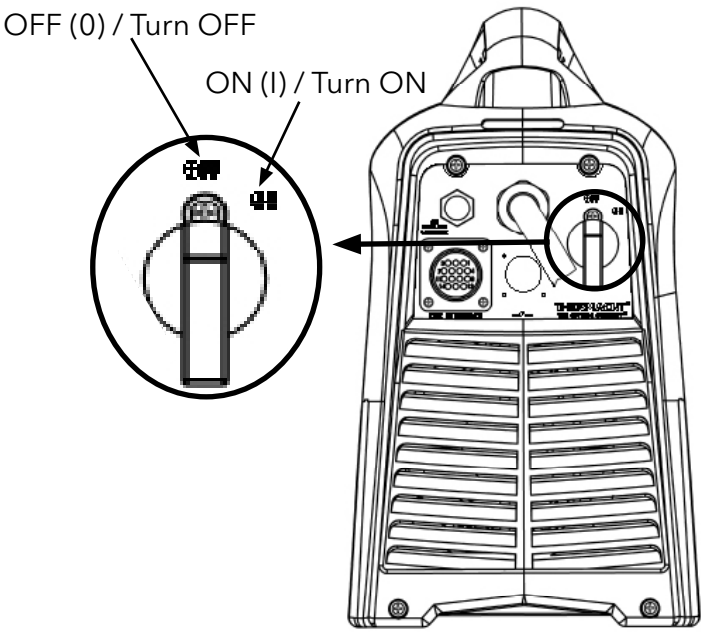
Torch installation step by step

1. TURN “OFF” the power supply

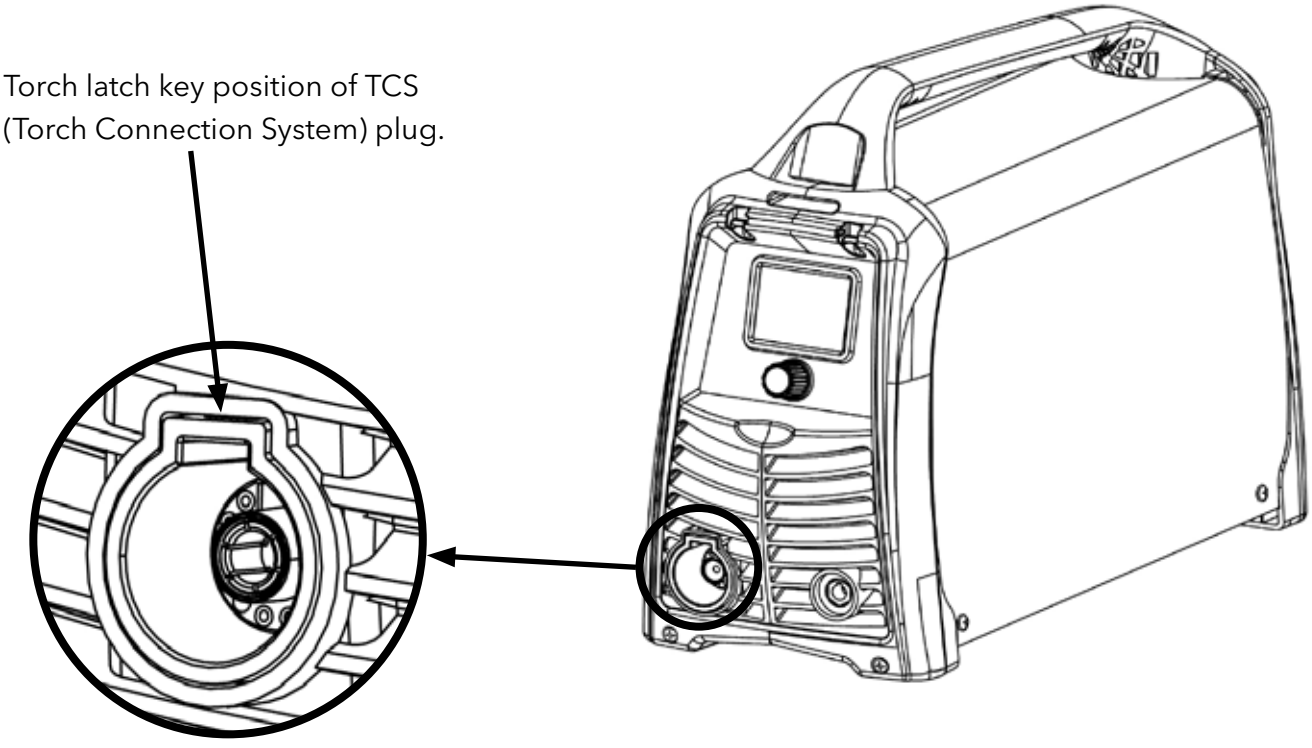
45SD - Single phase



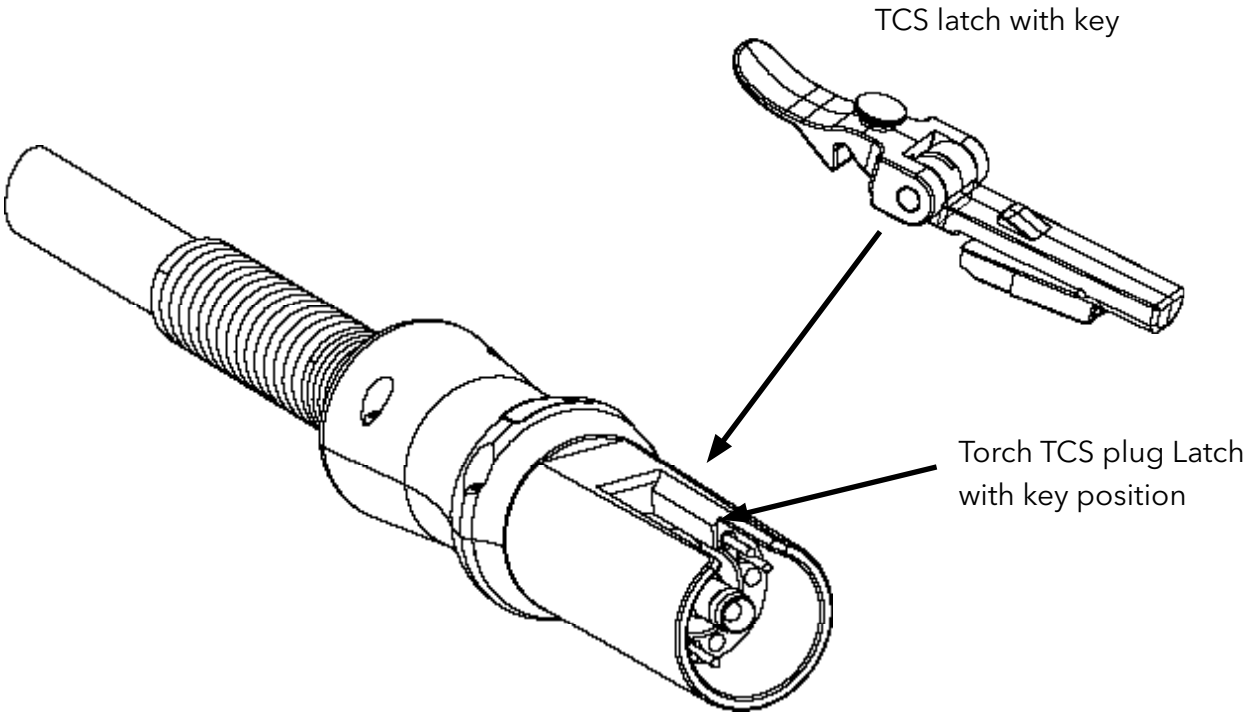
45SD - Three phase



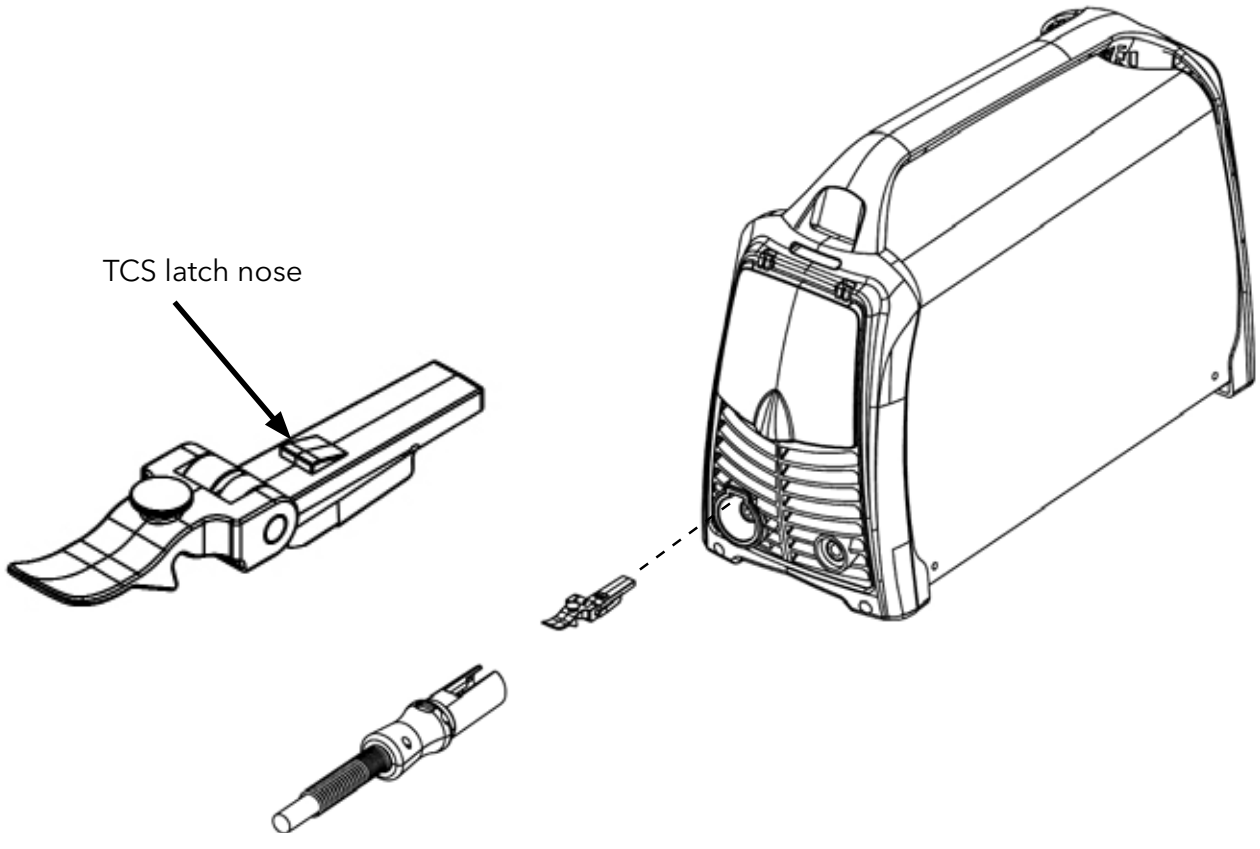
2. Torch connection – power supply location



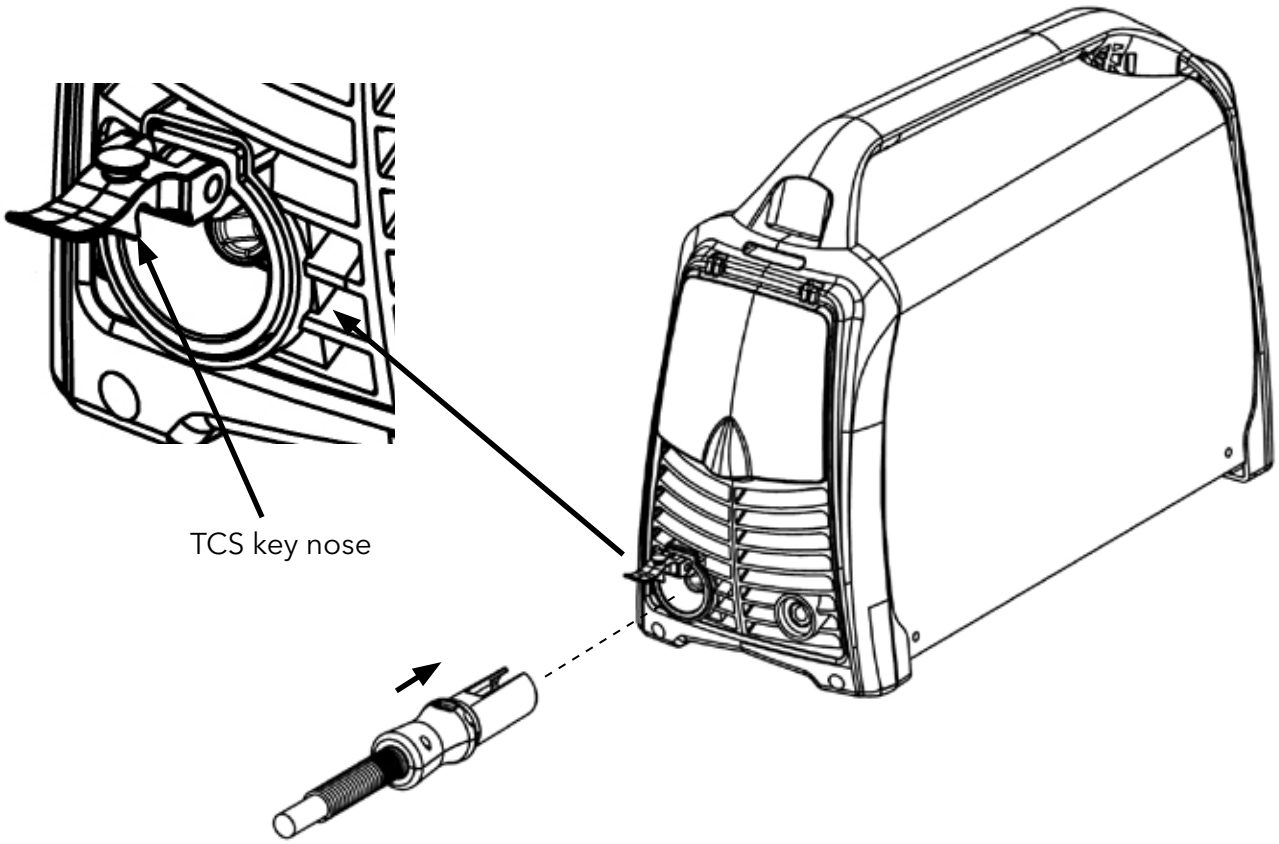
3. Torch conenction – Torch TCS plug Latch with key position.



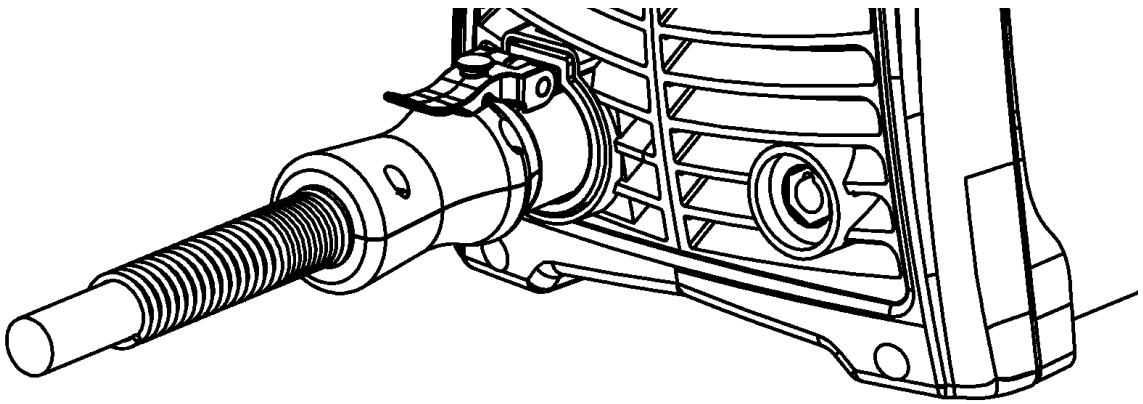
4. Torch connection – 1st step – place the TCS latch with key into the TCS power supply socket. The TCS latch with key must be locked in the TCS socket properly with the latch nose.



5. Torch connection – 2nd step – put TCS plug into the TCS socket.
   The torch TCS plug must be locked in the TCS socket properly with the key nose.



6. Torch connection – proper position of the TCS plug in the TCS socket.

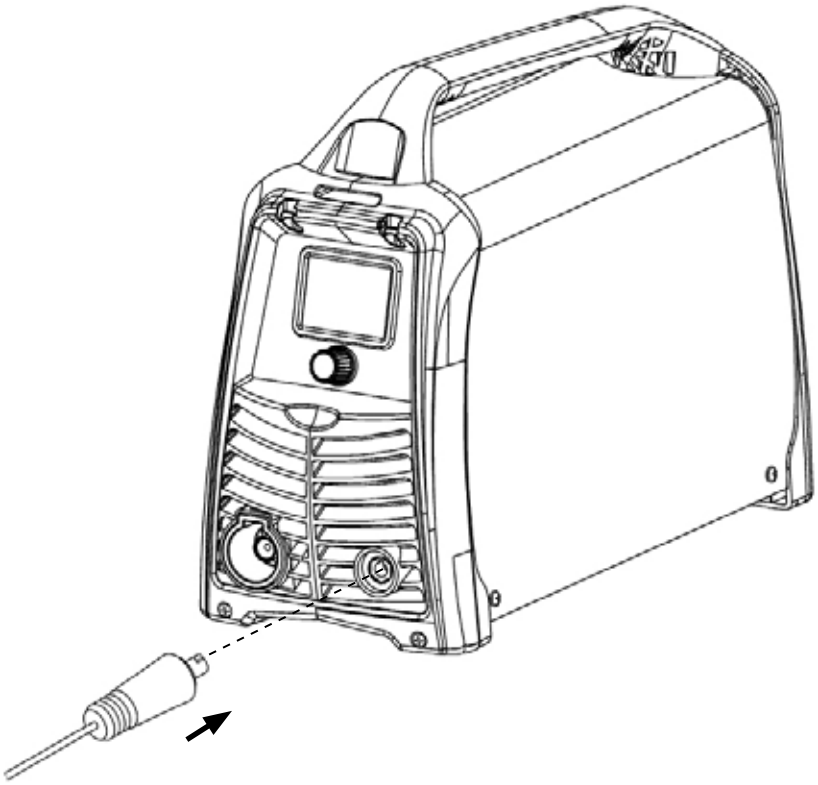


WARNING

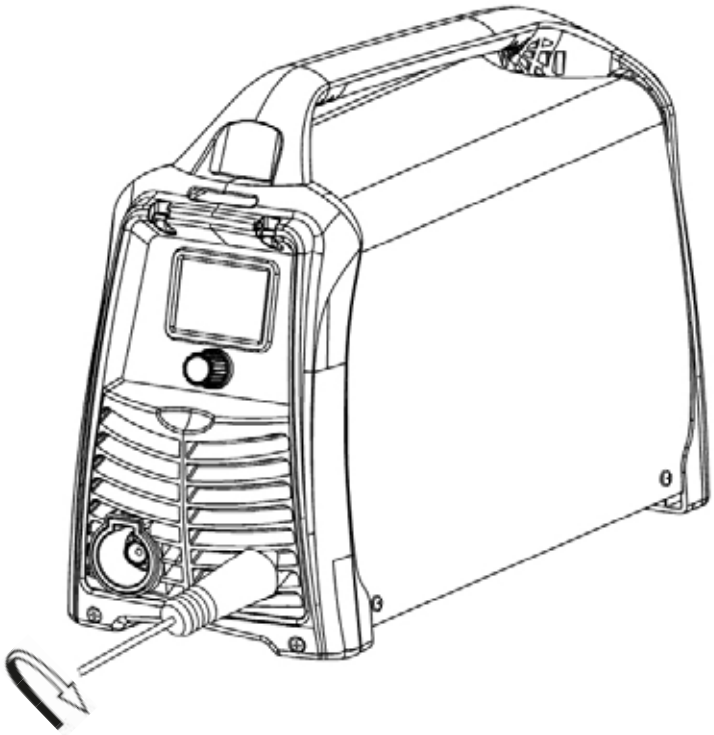
FHT-EX®45TTH, TTM torches are only for use with
EX-TRAFIRE®45HD and EX-TRAFIRE®45SD power supplies.

Working (ground) cable installation step by step

1. TURN “OFF” the power supply.
2. Push the connector of work clamp cable into the appropriate socket.



3. Turn the connector clockwise to lock the cable in the socket.



Plasma gas supply

The EX-TRAFIRE®45SD requires a compressed air supply from a compressor, alternatively, high pressure cylinders can be used to deliver compressed air or nitrogen, a high pressure regulator should be fitted to either form of supply and be capable of delivering gas to the filter on the system at a flow rate of 120 l/min at a pressure of 4.8 bar.

Gas type	Air	Nitrogen
Gas quality specification	Recommended Air quality: ISO 8573-1 Class 1.2.2. Air max. particle size: 0.1 microns, class 1 ref. to ISO 8573, Air max. oil: 0.1 mg / m^3, class 2 ref.: ISO 8573, Air max. dewpoint: +3 °C, class 4 ref. to ISO 8573	Purity ≥ 99.99%
Gas quality	Clean, moisture-free, without oil	

Note: A poor quality gas supply has a detrimental effect on cut speeds, cut quality, reduced thickness of material that can be cut and shorter consumable parts life.

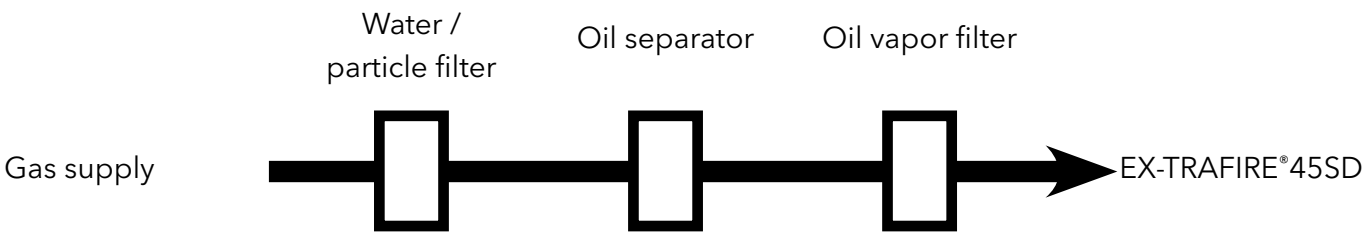
WARNING

Do not allow the input gas pressure to exceed 10 bar/145 psi.
The filter bowl could explode if the pressure is exceeded.

Note: EX-TRAFIRE®45SD is equipped with a built-in filtration system.

Additional gas filtration

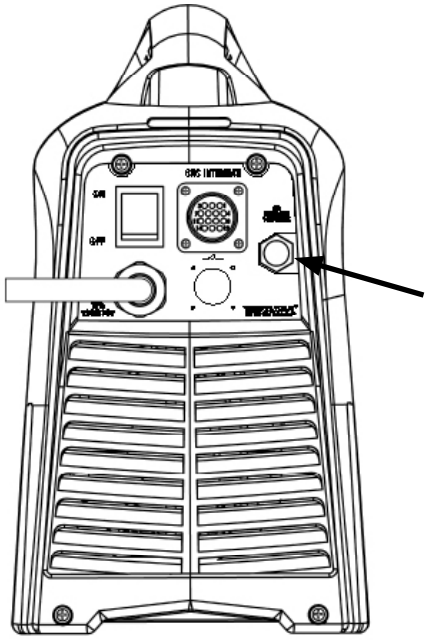
The Thermacut filtration system should be used when oil, moisture or other contaminants are found in the air supply. In more severe cases the 3-stage filtration system should be used.



Gas supply installation

Connect the air-line hose as follows:

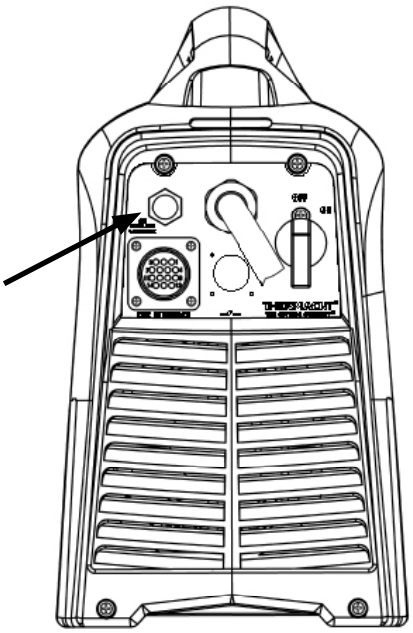
45SD - Single phase



1. Air-line hose connection.
- Female G1/4" thread adapter.

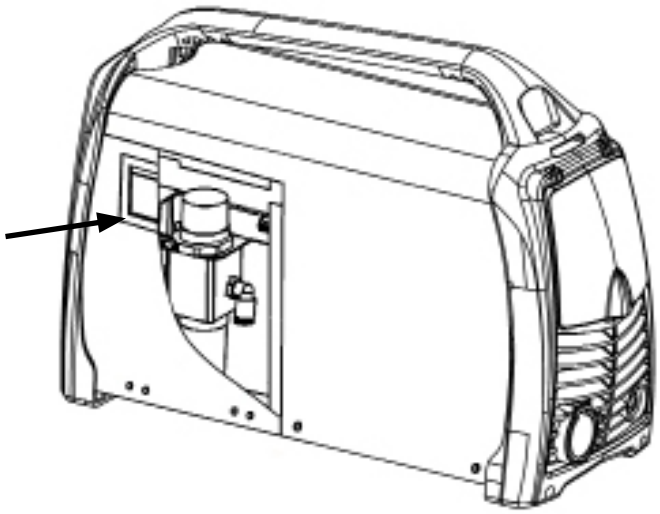
2. Air-line hose.
- Use an inert gas hose with a minimum internal diameter of 6 mm, make a direct attachment or use a quick disconnect fitting.

45SD - Three phase



Gas supply regulation

This plasma arc power supply is equipped with a manual valve regulator, which is accessible through the hinged flap in the rear of the left side panel.



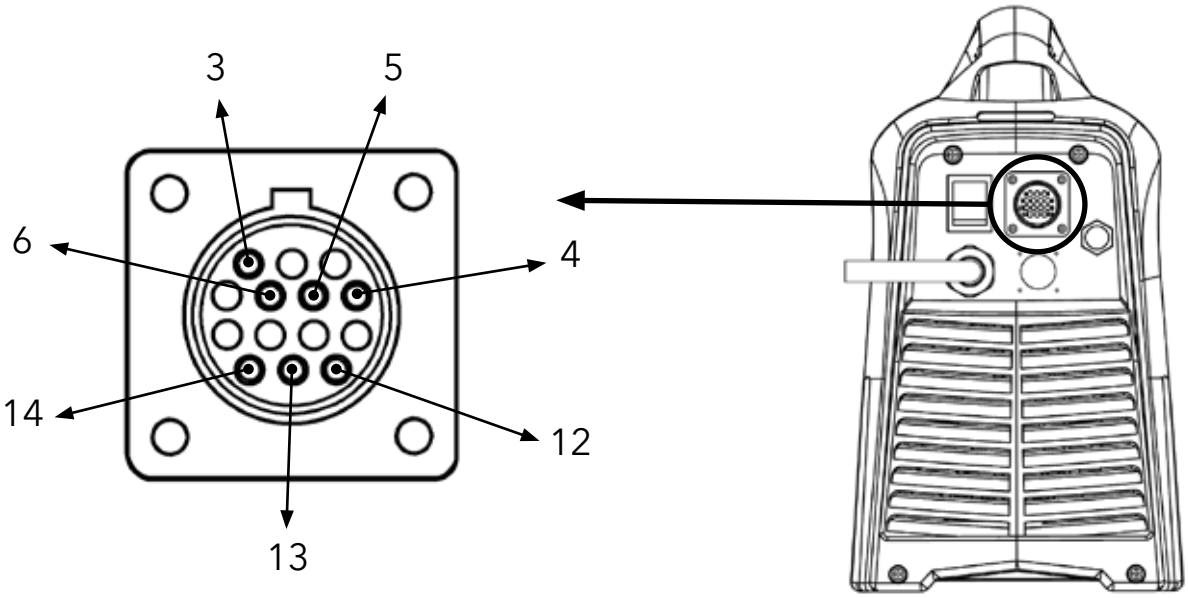
Gas pressure adjustment:

1. Open the side door for gas regulator.
2. Switch over operation mode (cutting > gouging).
3. The error code H13/ H
   (gas error - High pressure) appears.
4. When the gas is flowing, pull up the regulator knob and set the pressure showed on the display (3.5 bar).
5. When reaching the pressure 3.5 bar, H13 disappears.
6. When the gas is set, push down the regulator knob.
7. Close the gas regulator door.
8. Do a gouging.

9. Repeat the sequence for the further operation mode change.

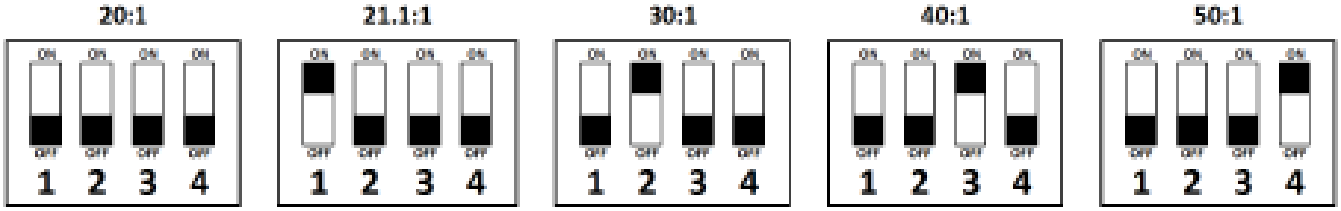
System CNC interface connection

Each type of signal is available through the system CNC interface connector located on the rear control panel. Use the chart with details of each signal type below when connecting the system interface lead to the plasma arc power supply.



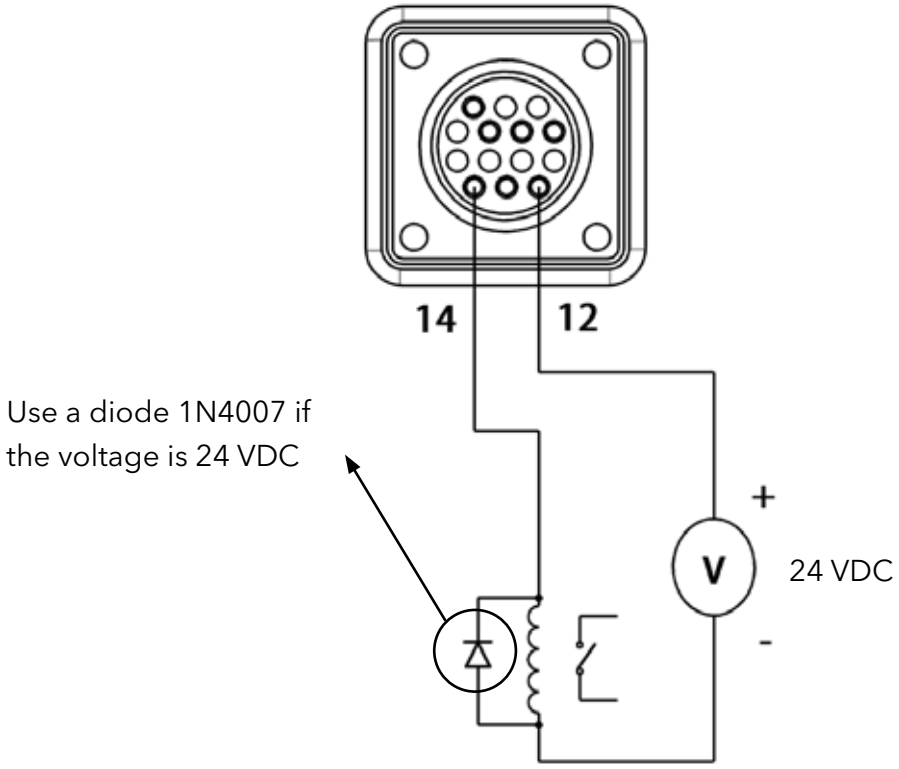
Signal:	**START** (start plasma cutting)	**Arc transfer** (start system motion)	**Ground**	**Voltage divider**
Type	Input	Output	Ground	Output
Note	Normally open. Requires a dry contact to close it.	Normally open. Dry contact with maximum capacity of: 120 VAC/1 A		Divider arc voltage signal of: 20:1 21.1:1 30:1 40:1 50:1 (provides a maximum 10V)
Rear socket connection	3, 4	12, 14	13	6 (+), 5 (−)
Internal wire colours	yellow, yellow	white, white	green/ yellow	6 (red), 5 (white)

Set the DIP switches to one of the following settings. Basic settings is 50:1.

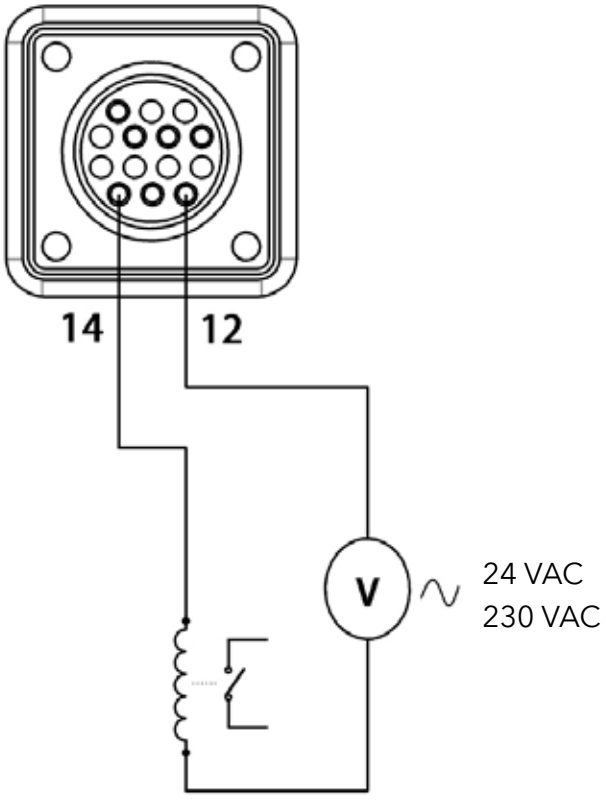


Turn OFF the power supply and disconnect the power lead prior opening the enclose.

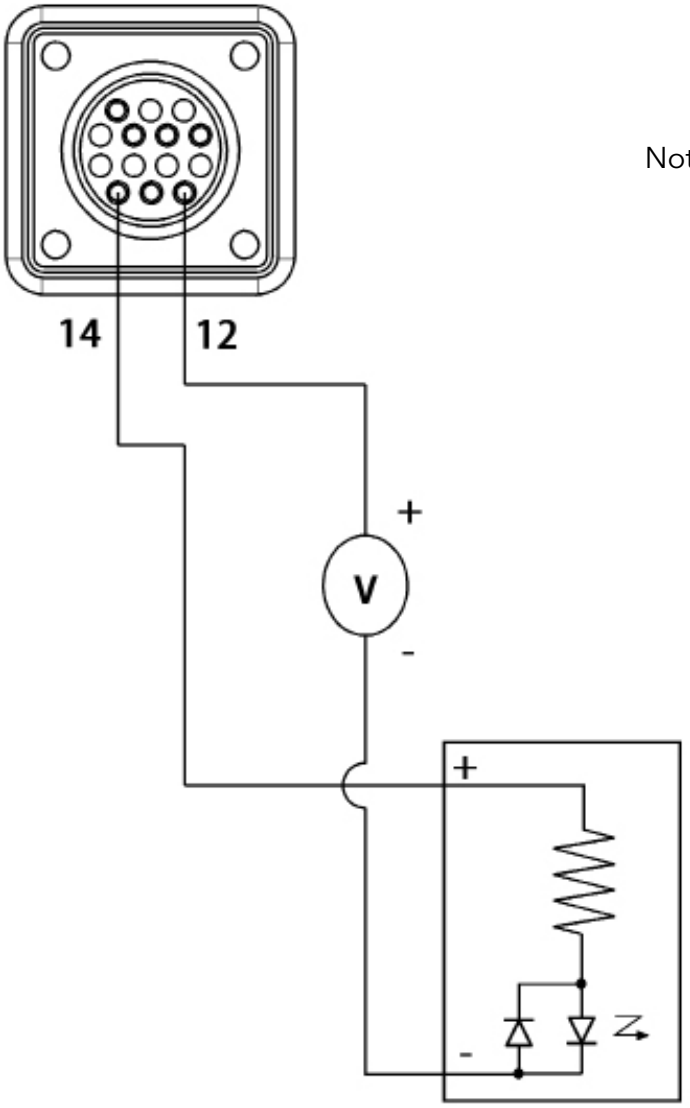
Activating an external DC coil with an external power supply



Activating an external AC coil with an external power supply



Activating an industrial isolated module with an external power supply



Notes:

1. Isolated input module, provided by the user.
2. 24 VDC power supply to be provided by the user.

ISOLATED INPUT MODULE.

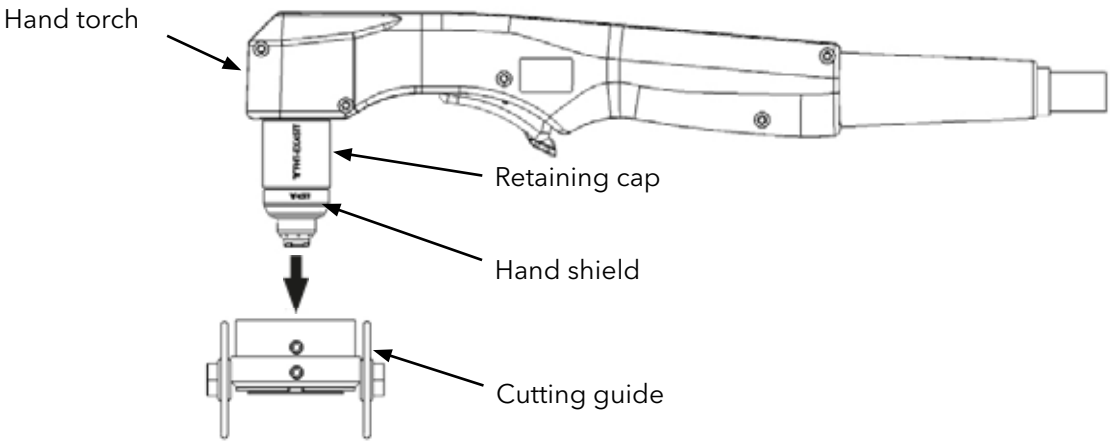
Installation of the machine interface cable must be performed by a certified electrician or competent person.

To install a machine interface cable:

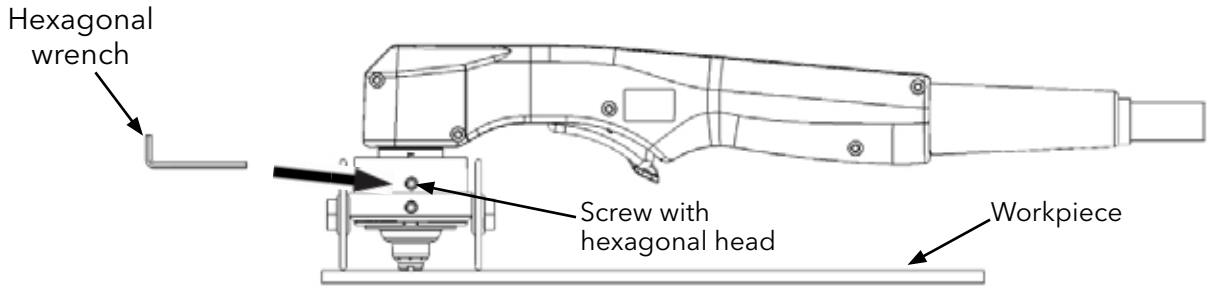
1. Turn OFF the power and disconnect the power cord.
2. Remove the machine interface receptacle's cover from the rear of the power supply.
3. Connect the interfece cable to the power supply.

The circle cutting guide installation - for the FHT-EX®105RTXH/105TTH/45TTH

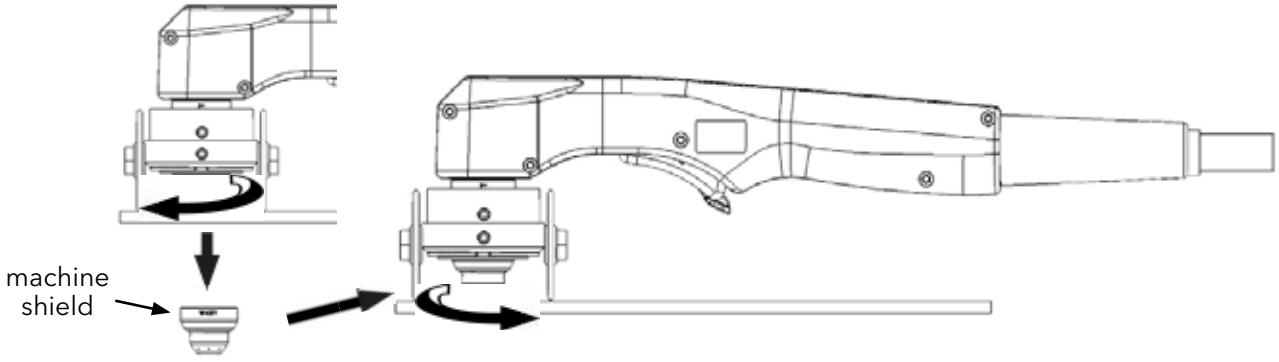
1. Disconnect the torch from the plasma power supply.
2. Insert the hand torch into the cutting guide.



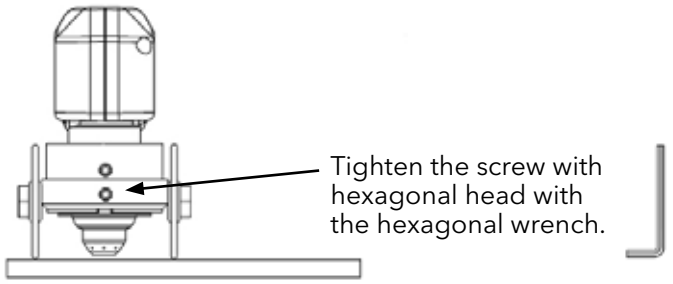
3. Secure the hand torch in the cutting guide with help of the screw with hexagonal head. Use the hexagonal wrench. Tighten by hand.
   The hand shield defines the required torch to workpiece distance.



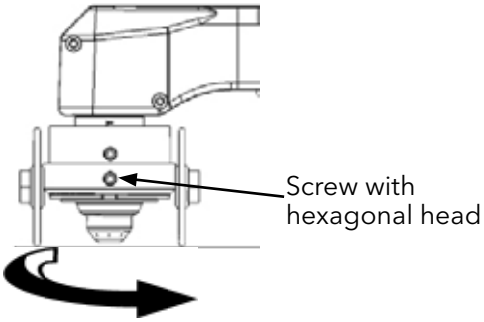
4. It's strictly recommended to use the machine shield in order to keep smooth cutting operation. Unscrew the hand shield and replace with the machine shield. The torch to workpiece distance remains the same because the hand torch is clamped in the cutting guide in the place of the retaining cap.



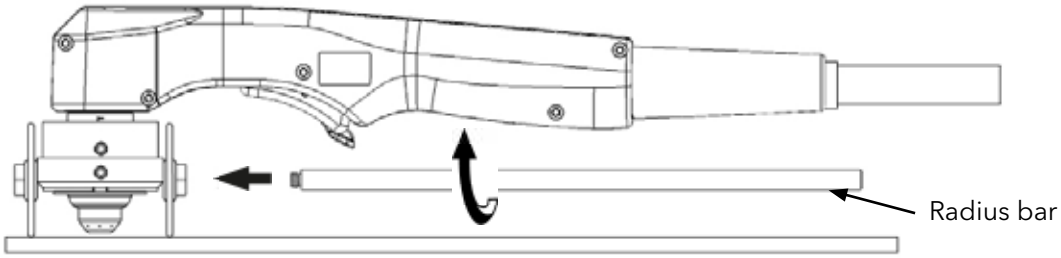
5. The hand torch clamped in the cutting guide can be used alone or with a radius bar.
   If you don't want use the radius bar, lock the cutting guide in a fixed position by using of the screw with hexagonal head so that the wheels of the cutting guide point in the same direction as the torch handle - see picture below.
   Now the torch with the cutting guide is ready to cut.

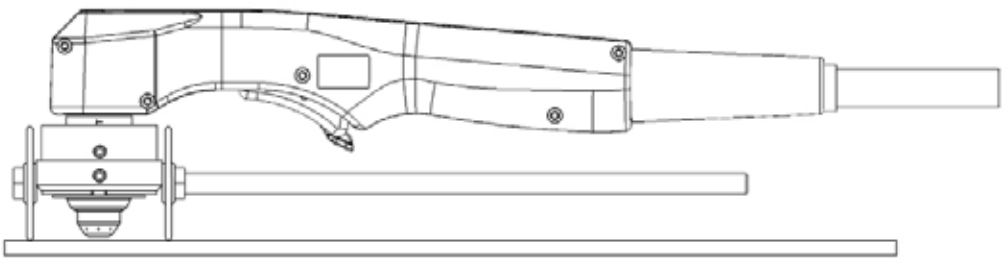


6. If you want use the radius bar, make sure the screw with hexagonal head isn't tightened so that the cutting guide can rotate freely.

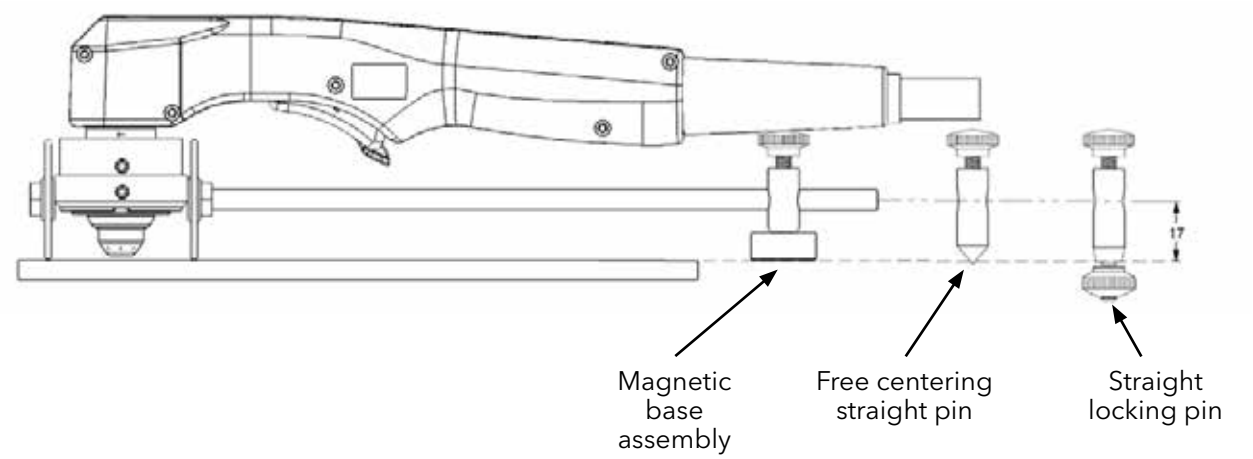


7. Screw in the radius bar * into the threaded hole in the cutting guide.
   * Lengths of bars are 250 mm or 400 mm.





8. Use the following fasteners to anchor the radius bar to the center of the circle:



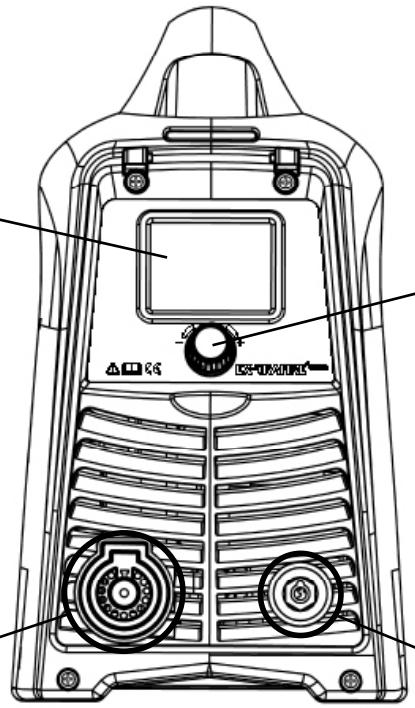
SECTION 4.

OPERATION:

Front view 4-36
LCD display details 4-36
Setting of power supply 4-37
1. Mode selection. 4-37
2. Cutting parameters 4-38
3. Two variants of cutting torch. 4-38
Rear view, Turn ON 4-39
Rear panel detail 4-39
Cutting preparation 4-40
Manual cutting operation 4-40
Hand torch consumables installation 4-41
Operating the hand torch 4-42
Operating the torch safety trigger 4-42
Fit the work clamp 4-43
Edge start cutting 4-43
Hand torch cutting technique 4-44
Piercing 4-45
Gouging 4-46
Gouge profile 4-47
Modification of the gouge profile 4-47
Operating the machine torch 4-48
Alignment of the machine torch FHT-EX®45TTM 4-48
Machine torch consumables installation 4-49
Mechanized Cutting Charts
30 A Cutting, Shielded Configuration; using compressed air 4-50
Mechanized Cutting Charts
30 A Cutting, Shielded Configuration; using compressed air 4-51
Mechanized Cutting Charts
45 A Cutting, Shielded Configuration; using compressed air 4-52
Mechanized Cutting Charts
45 A Cutting, Shielded Configuration; using compressed air 4-53

OPERATION

Front view



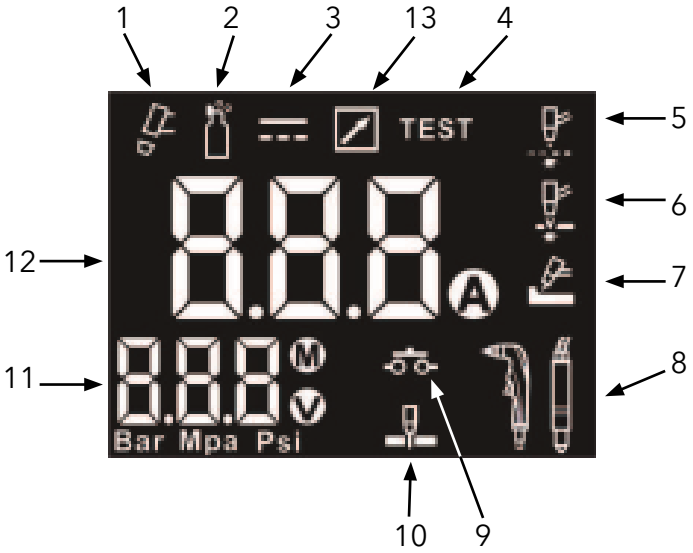
LCD
It displays machine status (such as the cutting current, air pressure, cutting mode, etc).

Multifunction knob
It is used to cycle through two menu's and to set the cutting parameters.

Torch connector

Work clamp connector

LCD display details



1. Indicates retaining cap is loose or not tightened.
2. Indicates gas supply
3. The power supply is working.
4. Test mode.
5. Grid cutting mode.
6. Normal cutting mode.
7. Gouging mode.
8. Torch type.
9. Indicates pressing of torch trigger or connection of pins No. 3, 4 in the CNC connector.
10. Indicates arc transfer.
11. Cutting parameters. (air pressure, output voltage, the detected length of torch)
12. Cutting current. (Amperage)
13. Remote control *

* Note:
Remote control is not available for this power supply.

Setting of power supply

The LCD screen contains two menus.

In the first menu, the cutting current (Amperage) and the operation modes can be adjusted. Turn the regulator knob left or right to set cutting current. Press the multifunction knob briefly to set operation modes.

In the second menu, the pressure value in bar, MPa or psi can be adjusted. Also display either: torch type, actual torch length and cutting voltage.

Hold down the multifunction knob for 1 second, the cutting parameters flash, the second menu has been activated. If there is no operation for 6 seconds, or hold down the multifunction knob for 1 second again, the cutting current display flashes, it will switch back to the first menu.

All personal settings will be restored to factory settings when the system is switched off.

1. Mode selection.

Grid cutting mode
To adjust the cutting current, press on the multifunction knob briefly to switch cutting mode.
The current range is 20–45 A, the air pressure range is 4.2–5.6 bar.

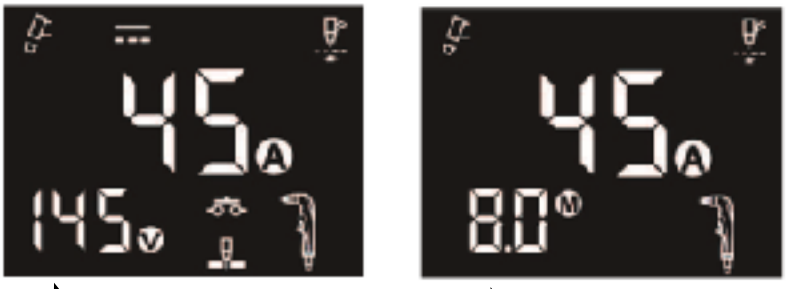
Cutting mode
To adjust the cutting current, press on the multifunction knob briefly to switch cutting mode.
The current range is 20–45 A, the air pressure range is 4.2–5.6 bar.

Gouging mode
To adjust the cutting current, press on the multifunction knob briefly to switch cutting mode.
The current range is 20–45 A, the air pressure range is 2.1–4.5 bar.

2. Cutting parameters.

Setting the gas pressure.
Press the multifunction knob for 1 second, the cutting parametrs illuminate.
Press on multifunction knob briefly to set bar, MPa or psi.

Continue to press on multifunction knob briefly, the output voltage and detected length of the cutting torch is displayed.



output voltage
visible after the arc transfer

autodetection
of cutting torch length

3. Two variants of cutting torch.

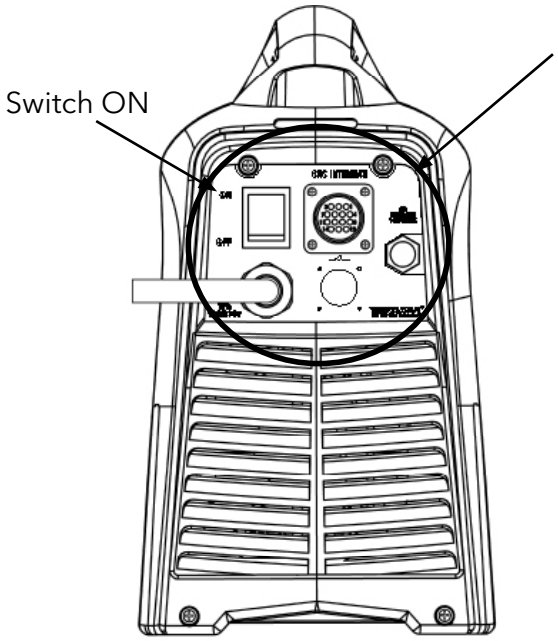
autodetection

hand torch

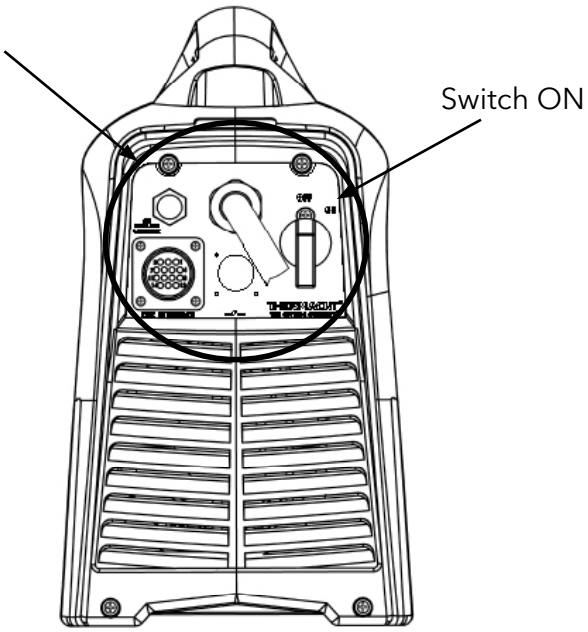
machine torch

Rear view, Turn ON

45SD – Single phase

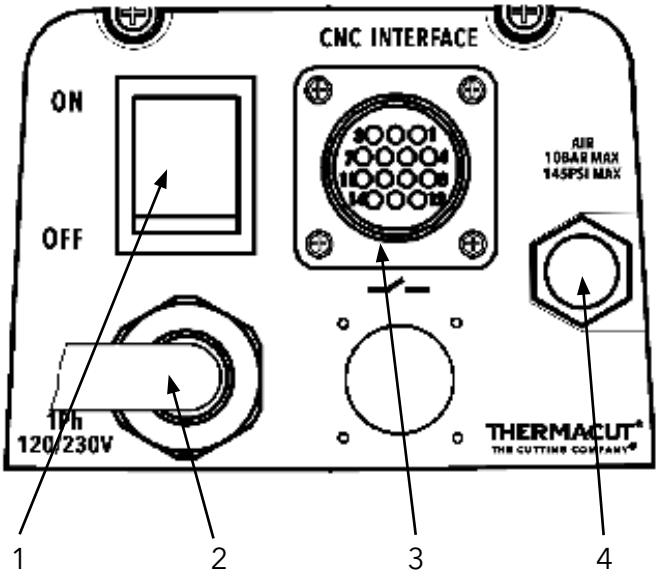


45SD – Three phase

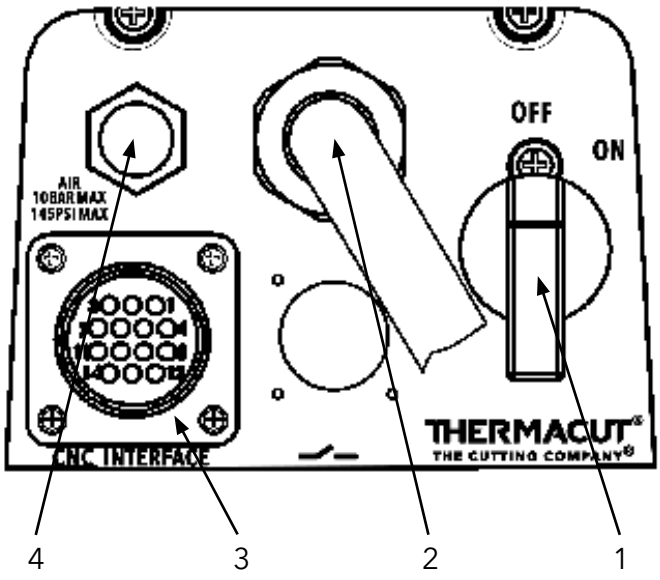


Rear panel detail

45SD – Single phase



45SD – Three phase

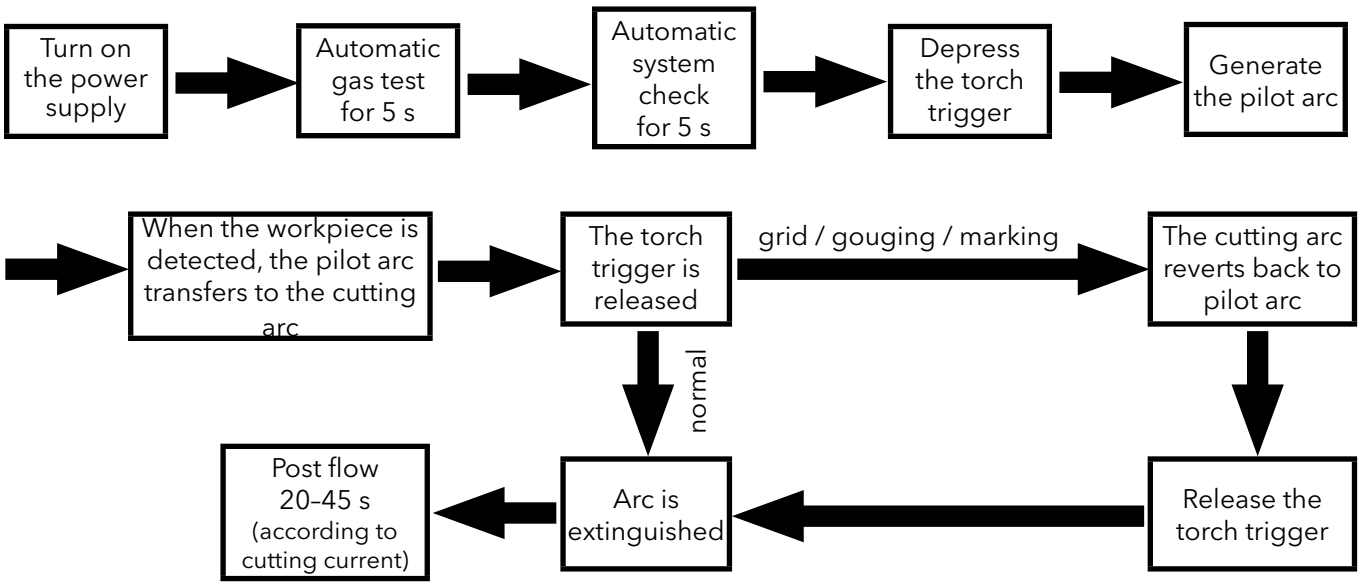


1. Power supply switch
2. Mains power lead
3. CNC interface connector
4. Gas supply input fitting G1/4" Female

Cutting preparation

1. Firmly connect the mains power lead to a suitable electrical socket, check the input supply voltage for compatibility.
2. Connect the air supply, connect the work clamp to the workpiece.
3. Switch on the power supply, the LCD illuminates, full system check.
4. Set the required current (Amperage) and cutting mode when fan stops.
5. System is ready for operation.

Manual cutting operation



Note:
During the automatic start up gas and system check, the torch trigger will not function.

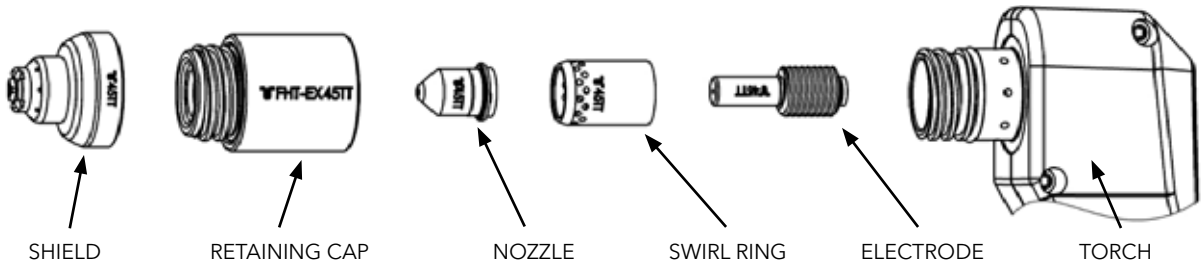
EX-TRAFIRE®45SD uses Compressed air or Nitrogen for cutting Mild Steel, Stainless Steel, Aluminium and other electrically conductive metals.

For the cutting of stainless steel with Nitrogen could be necessary to decrease the cutting speed about 10-20% (depends on thickness of material).
For the cutting of Aluminium with Nitrogen use standard parameters according to the cut charts of mild steel with Compressed air.

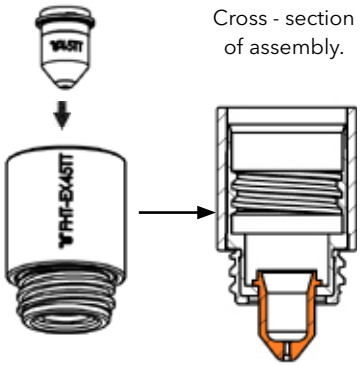
Hand torch consumables installation

WARNING
Plasma arc is generated immediately when the torch trigger is depressed

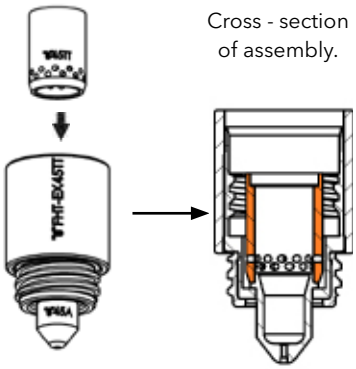
Plasma arc is generated immediately when the torch trigger is depressed.
The plasma arc will cut quickly through gloves and skin.
Make sure the power is switched off before changing consumables.



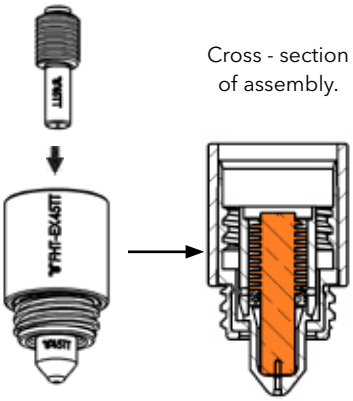
1. Insert the nozzle into the retaining cap.



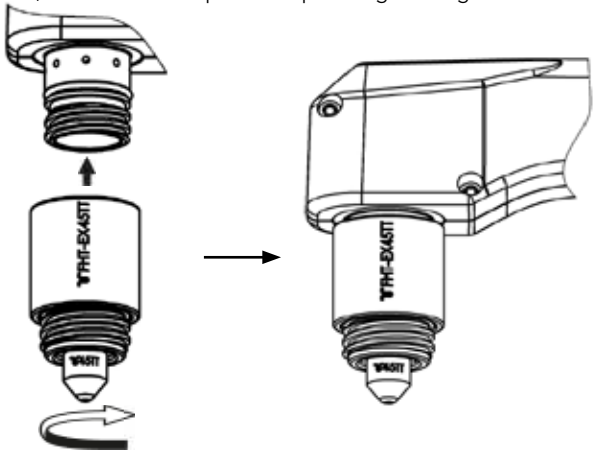
2. Insert the swirl ring into the assembly (retaining cap + nozzle).



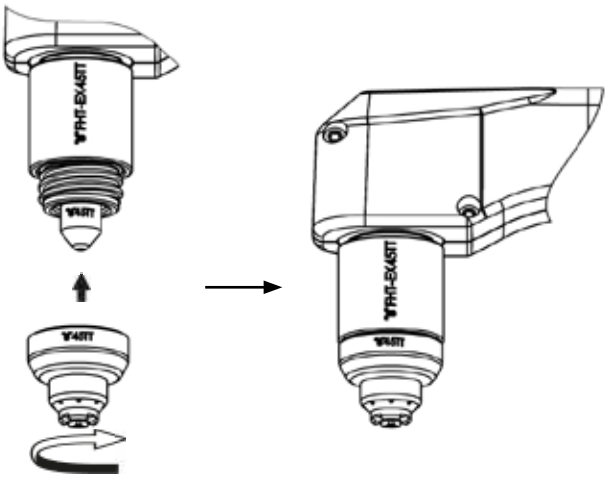
3. Insert the electrode into the assembly (retaining cap + nozzle + swirl ring).



4. Screw on this whole assembly (retaining cap + nozzle + electrode + swirl ring) to the seat bottom of the torch and tighten by hand. Do NOT overtighten.
The nozzle must seat properly without any movement.
If not, reasseble it and put these parts together again.



5. Screw on the shield and tighten by hand.
Do NOT overtighten.



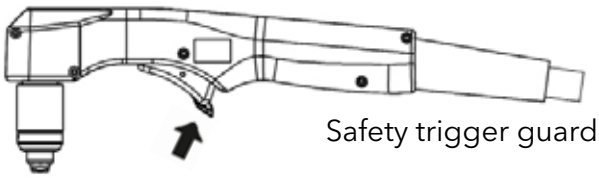
Operating the hand torch

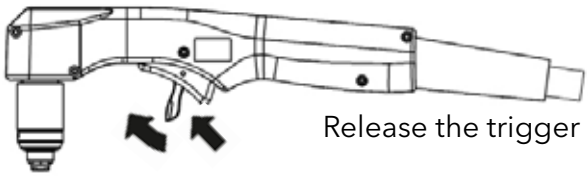
WARNING
Plasma arc is generated immediately when the torch trigger is depressed

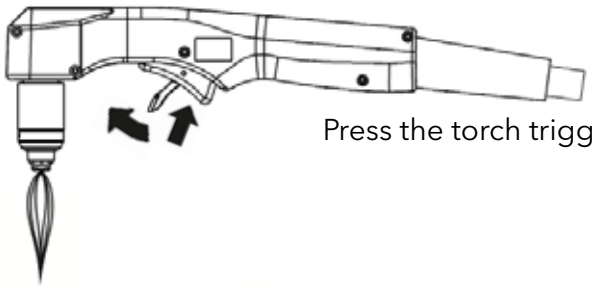
The plasma arc will cut quickly through gloves and skin. Make sure the power supply is switched off before changing consumables.

- Keep away from the torch tip.
- Do not hold the piece that is to be cut and keep your hands away from the cutting path.
- Never point the torch toward yourself or toward others.
- Never use with the pendant control switch.

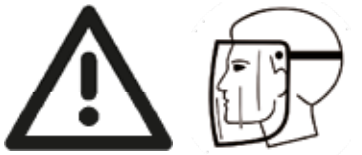
Operating the torch safety trigger

1. 
Safety trigger guard position.

2. 
Release the trigger guard.

3. 
Press the torch trigger for ignition of the arc.

4. Release the torch trigger to stop cutting.



WARNING
SPARKS AND HOT METAL CAN BURN THE SKIN AND EYES

When angling the torch for cutting or piercing, molten metal (Arc Spray) will occur in the direction that the torch is aimed. Aim the torch away from yourself and others.

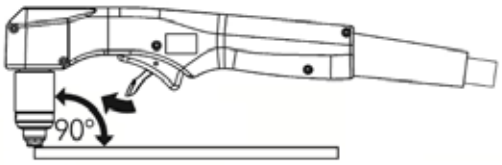
Fit the work clamp

Secure the work clamp to the workpiece, ensure good contact, and remove surface contaminants. DO NOT fit the work clamp to the material that will be severed/scrap.

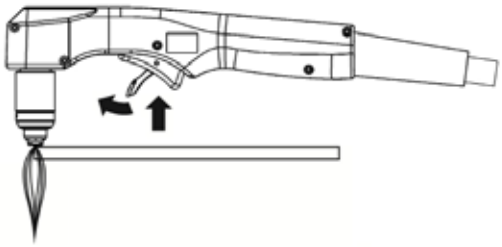
Fit the work clamp as close as possible to the cutting area to minimise exposure to electromagnetic fields (EMF).

Do not hold the material that is to be severed/scrap.

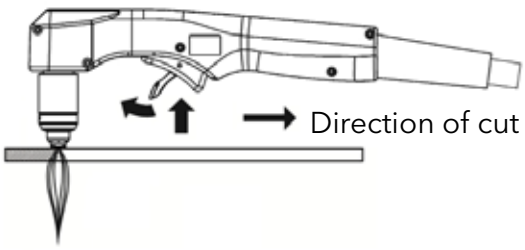
Edge start cutting



Keep the nozzle of the torch upright at the edge of the workpiece.



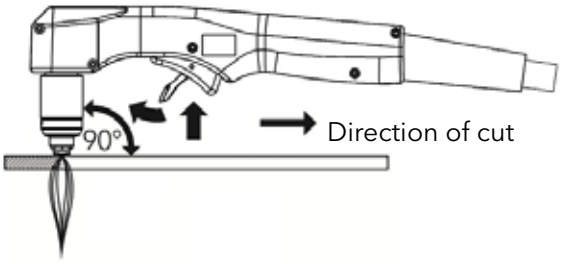
Start cutting from the edge of the workpiece.
DO NOT start the travel motion until the material has been completely cut through.



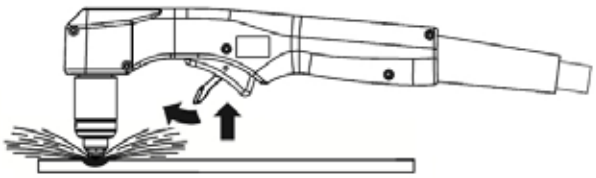
Then continue with the cut.

Hand torch cutting technique

Avoid unnecessary firing of the torch, each firing of the torch reduces the lifetime of the electrode and nozzle.

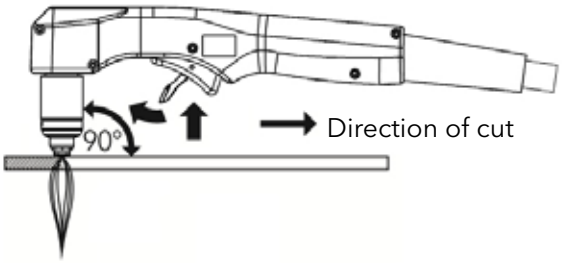


When cutting, ensure the arc spray exits the underside of the workpiece.



Incomplete severance is indicated by an upward arc spray. This can be caused by the following:

- Excessive travel speed
- Incorrect power settings
- Incorrect gas pressure settings
- Worn/damaged consumables
- or by combination of any of the above



Hold the torch vertically and watch the arc while cutting along the line.

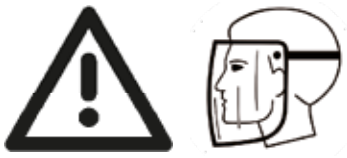
Shielded consumables. Make light contact between the shield and the workpiece, pull the torch at a steady travel speed.

- Pulling the torch gives better control compared to pushing.
- For cutting thin material, reduce the amperage to the optimum to achieve the highest cut quality.
- For straight line/bevel cutting, use a straight edge as a guide. To cut circles, use a template or a circle cutting attachment.
- **Gas Post flow** – After the torch trigger is released, the gas will continue to flow up to 45 seconds (according to adjusted cutting current) to cool the torch and consumables.

Note: The torch will be ready to restart by depressing the torch trigger during the post flow period. To stop the post flow, depress the torch trigger quickly and release.

DANGER! Consumables can remain hot after the post-flow period.

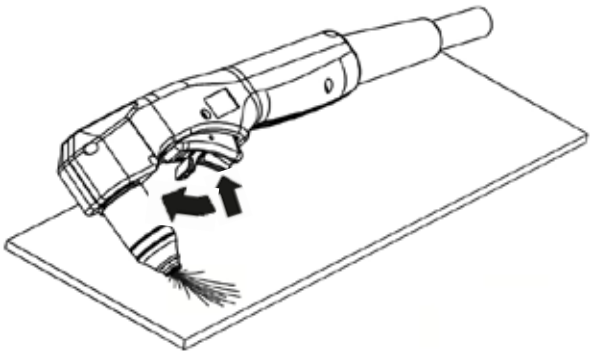
Piercing



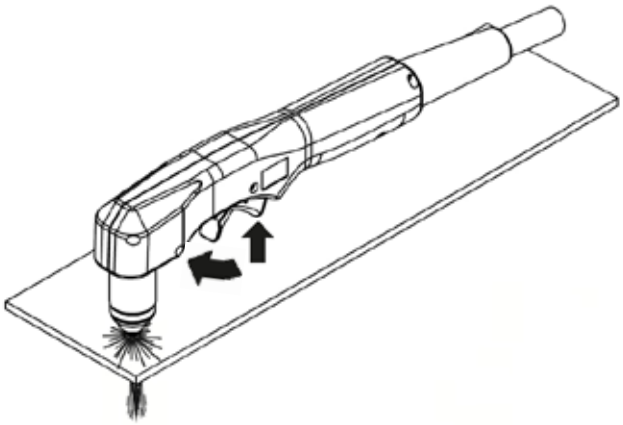
WARNING
SPARKS AND HOT METAL CAN BURN THE SKIN AND EYES

When angling the torch for cutting or piercing, molten metal (Arc Spray) will occur in the direction that the torch is aimed. Aim the torch away from yourself and others.

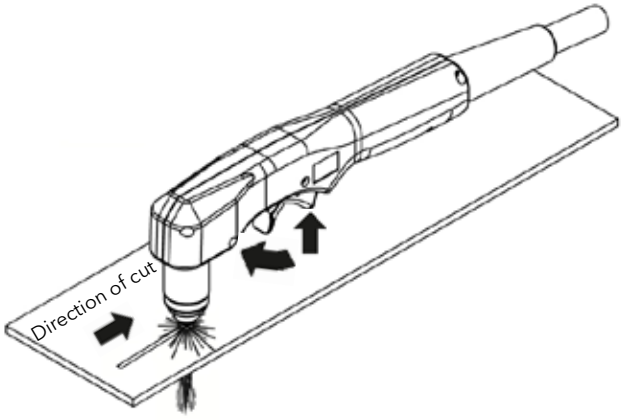
Hold the torch so that the nozzle is within 3 mm of the workpiece before firing.



Hold the torch at an angle to the workpiece, depress the torch trigger and slowly rotate the torch to a vertical position.



Arc spray exits the underside of the workpiece when the cut has achieved full thickness.



After the pierce, proceed with cutting.

Gouging

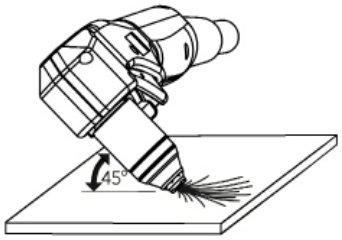
WARNING
SPARKS AND HOT METAL CAN BURN THE SKIN AND EYES

When angling the torch for cutting, piercing or gouging, molten metal (Arc Spray) will occur in the direction that the torch is aimed. Aim the torch away from yourself and others.

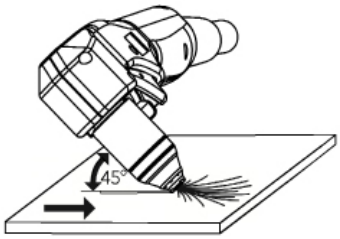
Gouging mode is used for the weld removal or achievement a controlled gouge profile.

For gouging application must be set the gouging mode on the power supply.
Please use gouging consumables according to used plasma torch and according to set gouging amperage. See the operator manual of the appropriate torch - section Torches and Torch parts - Hand Torch Consumables.

Hold the torch orifice as close as possible to the workpiece before firing.



Hold the torch at an angle of 35°–45° to the workpiece.
Depress the trigger to start the pilot arc.
Transfer the arc to the workpiece



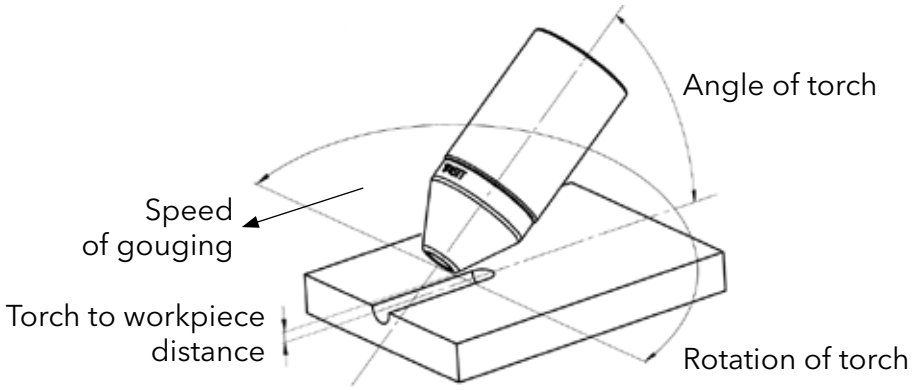
Direction of gouging

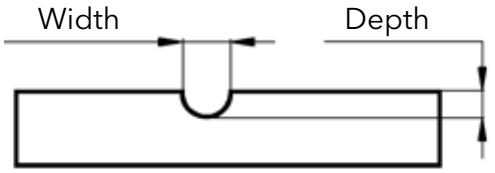
Maintain an approximate angle of 35°–45° to the workpiece.
Maintain travel in the direction of the material to be removed.

Operating parameters of gouging	
Operating (dynamic) air pressure	3.5–4 bar
Torch to workpiece distance	as close as possible (touch)
Torch to workpiece angle	35°–45°
Gouging speed	0.6 m/min
Gouging amperage	20–45 A

Gouge profile

The gouge profile can be modified by changing the speed of moving of the torch over the workpiece, changing the angle of the torch to the workpiece, changing the torch to workpiece distance or changing the gouging amperage (the output power) of the power supply.





Modification of the gouge profile

The gouge profile		The actions whitch affected the gouge profile			
Width	**Depth**	**Gouging amperage of the power supply**	**Gouging speed of the torch**	**Torch to workpiece distance**	**Torch to workpiece angle**
decreasing ↓	decreasing ↓	decreasing ↓			
decreasing ↓	decreasing ↓		increasing ↑		
decreasing ↓	increasing ↑			decreasing ↓	
decreasing ↓	increasing ↑				increasing ↑
increasing ↑	increasing ↑	increasing ↑			
increasing ↑	increasing ↑		decreasing ↓		
increasing ↑	decreasing ↓			increasing ↑	
increasing ↑	decreasing ↓				decreasing ↓

Operating the machine torch

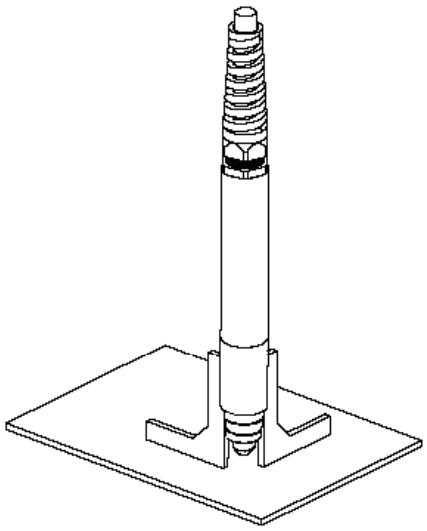
WARNING
SPARKS AND HOT METAL CAN BURN THE SKIN AND EYES

Plasma arc is generated immediately when the CNC start signal is ON.
The plasma arc will cut quickly through gloves and skin.
Make sure the power supply is switched off before changing consumables.

- Keep away from the torch tip.
- Do not hold the piece that is to be cut and keep your hands away from the cutting path.
- Never point the torch toward yourself or toward others.

Alignment of the machine torch FHT-EX®45TTM

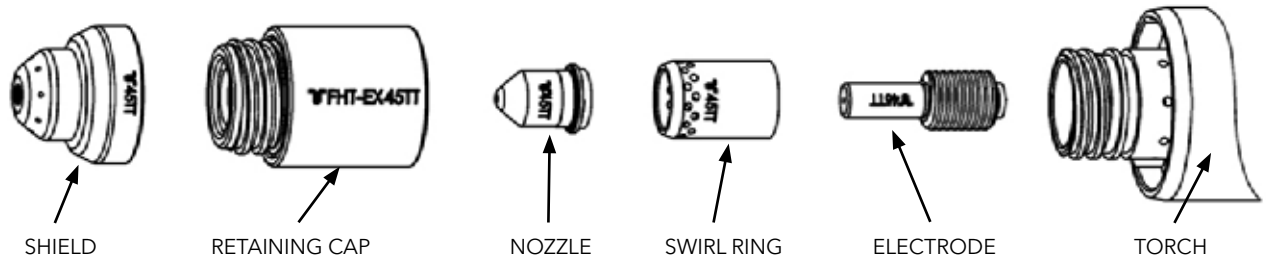
Mount the machine torch perpendicular to the material to be cut, use a square to align the torch at 0 ° and 90 °, if torch alignment is not possible, check the cutting table for level to obtain a true vertical cut.



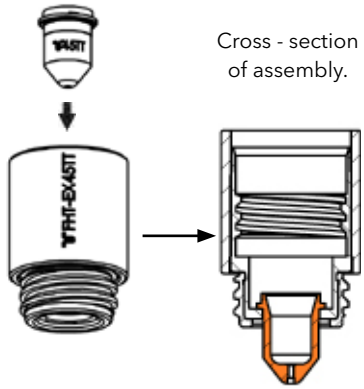
Machine torch consumables installation

WARNING
Plasma arc is generated immediately when the CNC start signal is ON

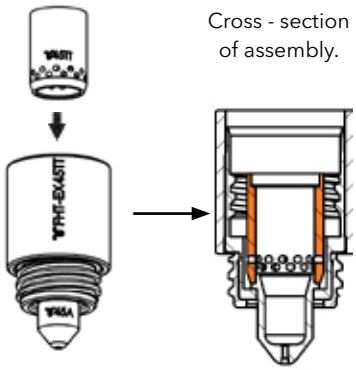
Plasma arc is generated immediately when the CNC start signal is ON.
The plasma arc will cut quickly through gloves and skin.
Make sure the power supply is switched off before changing consumables.



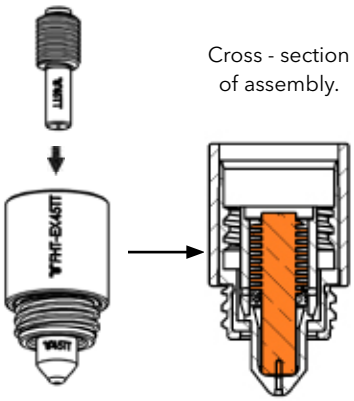
1. Insert the nozzle into the retaining cap.



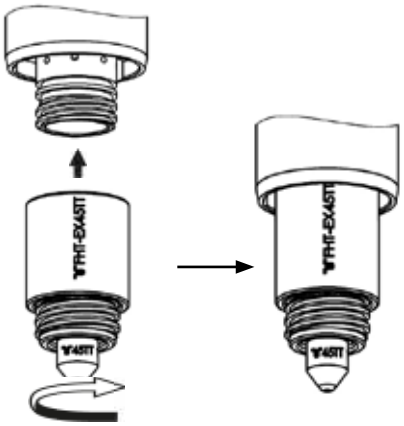
2. Insert the swirl ring into the assembly (retaining cap + nozzle).



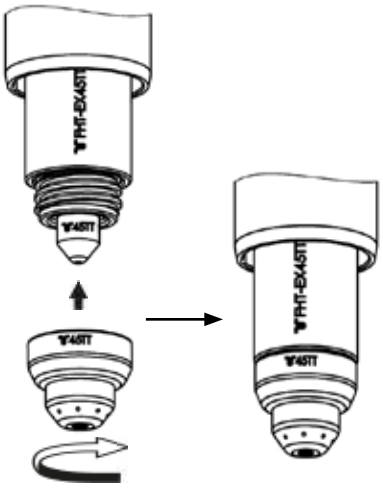
3. Insert the electrode into the assembly (retaining cap + nozzle + swirl ring).



4. Screw on this whole assembly (retaining cap + nozzle + electrode + swirl ring) to the seat bottom of the torch and tighten by hand. Do NOT overtighten.
The nozzle must seat properly without any movement.
If not, reasseble it and put these parts together again.



5. Screw on the shield and tighten by hand.
Do NOT overtighten.



Mechanized Cutting Charts
30 A Cutting, Shielded Configuration; using compressed air

Mild Steel

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
0.5	1.5	3.8	0	9150	117	10160	107	0.9
0.8				8650	116	10160	109	1
1				8100	115	10160	113	1
1.5			0.2	5650	111	7100	115	1.1

Stainless Steel

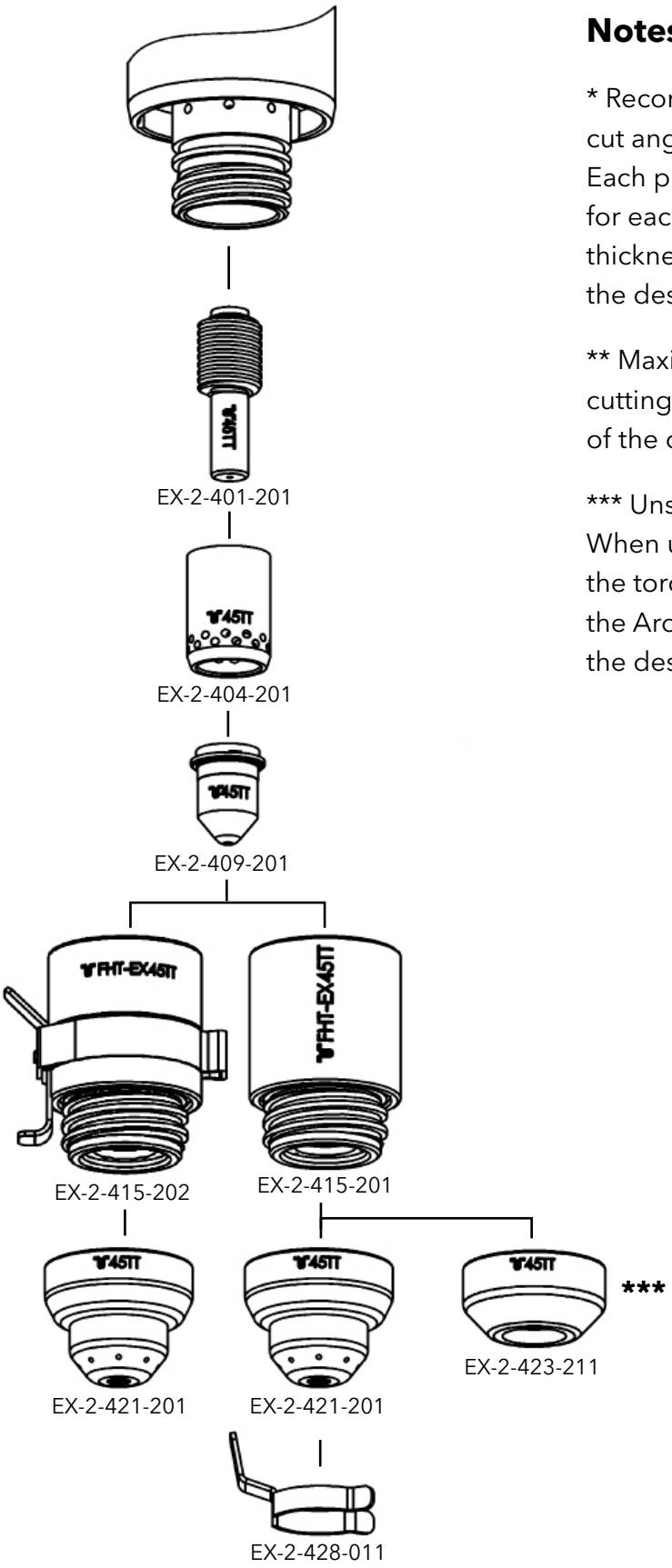
Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
0.5	1.5	3.8	0	9150	119	10160	123	1
0.8				8650	117	10160	121	1
1				8100	115	10160	119	1.1
1.5			0.2	3750	113	4700	118	1.3

Aluminium

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
1.2	1.5	3.8	0	9150	117	10160	120	1.2
1.5			0.2	8650	118	10160	121	1.2
2				5450	118	6860	121	1.3

See notes on page 4-51

Mechanized Cutting Charts
30 A Cutting, Shielded Configuration; using compressed air



Notes:

* Recommended cutting speeds provide the best cut angle, minimal dross and best cut quality surface. Each plasma cutting system requires “fine tuning” for each cutting application and each type and/or thickness of the material to be cut in order to reach the desired quality of the cut.

** Maximum cutting speeds are the fastest possible cutting speeds for the material to be cut regardless of the of the cut quality.

*** Unshielded configuration
When using unshielded consumables, adjust the torch to work height manually or adjust the Arc Voltage Control (AVC) settings to produce the desired cut quality.

Mechanized Cutting Charts
45 A Cutting, Shielded Configuration; using compressed air

Mild Steel

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
1	1.5	3.8	0	9652	115	10160	112	0.9
1.5				8890	116	10160	115	0.9
2			0.1	7100	117	9144	115	1.1
3			0.4	3550	117	4445	115	1.1
5			0.5	2150	118	2794	115	1.3
6			0.6	1500	120	1905	116	1.5
10			0.9	810	122	1016	116	1.7
12		Edge start		510	132	635	125	1.7
16				280	138	356	127	1.8
20				200	140	254	131	1.9
25				100	146	127	142	2

Stainless Steel

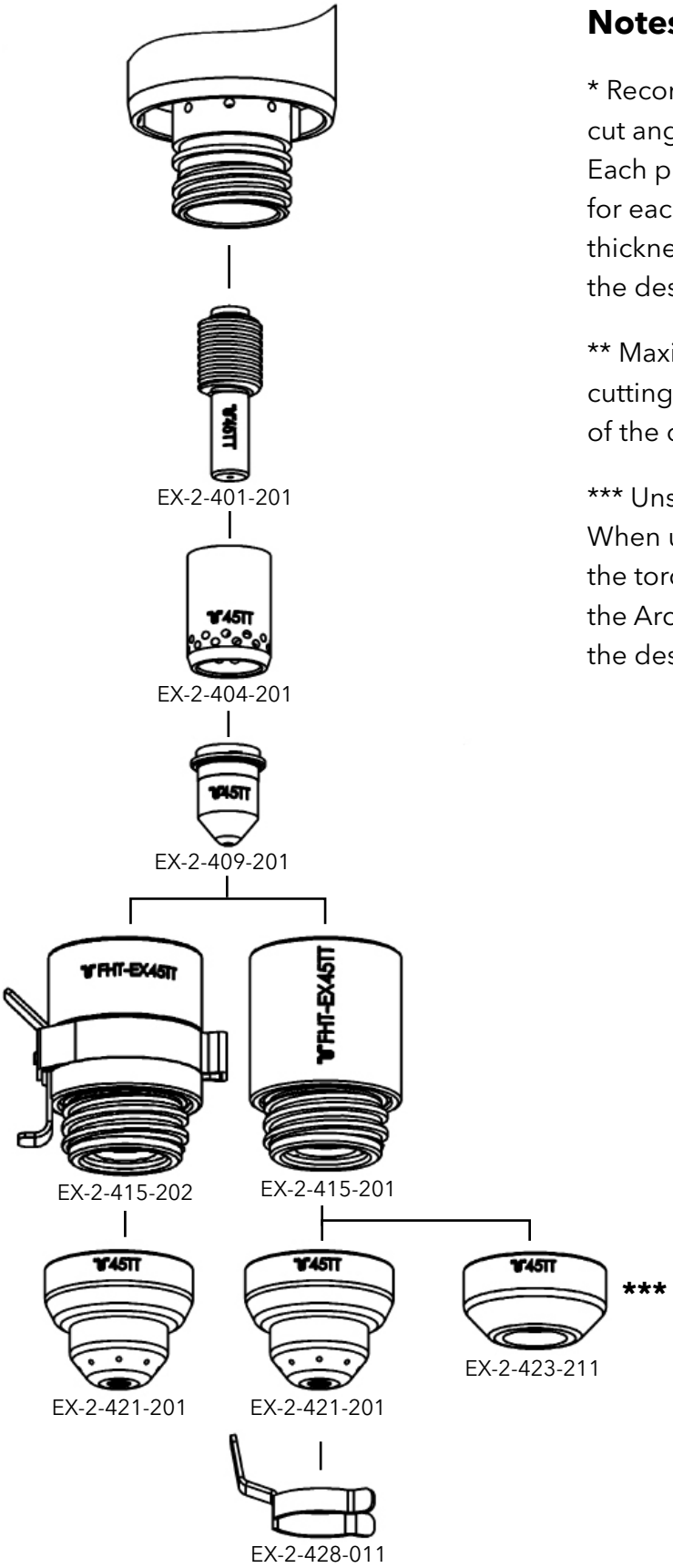
Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
1	1.5	3.8	0	7600	112	10160	109	1.3
1.5				8100	112	10160	125	1.4
2			0.1	7100	118	9144	115	1.4
3			0.4	3050	121	3810	118	1.5
5			0.5	1780	122	2159	118	1.6
6			0.6	1100	124	1397	120	1.6
10			0.8	760	126	813	121	1.7
12		Edge start		350	132	457	128	1.7
20				175	136	229	131	2.2

Aluminium

Material Thickness	Torch (Shield) to Workpiece Distance	Initial Pierce Height (Shield)	Pierce Delay Time	Recommended Speed*		Maximum Speed**		Kerf Width
				Best Quality Settings		Standard Quality Settings		
				Cut Speed	Voltage	Cut Speed	Voltage	
[mm]	[mm]	[mm]	[seconds]	[mm/min]	[Volts]	[mm/min]	[Volts]	[mm]
1.5	1.5	3.8	0	9150	116	10160	114	1.4
2				8650	117	10160	116	1.5
3			0.1	5600	122	7112	120	1.5
5			0.2	2550	123	3302	120	1.6
6			0.3	2050	123	2540	120	1.6
10			0.5	840	130	1067	125	1.7
12		Edge start		510	134	635	130	1.9
20				200	143	254	138	2

See notes on page 4-53

Mechanized Cutting Charts
45 A Cutting, Shielded Configuration; using compressed air



Notes:

* Recommended cutting speeds provide the best cut angle, minimal dross and best cut quality surface. Each plasma cutting system requires “fine tuning” for each cutting application and each type and/or thickness of the material to be cut in order to reach the desired quality of the cut.

** Maximum cutting speeds are the fastest possible cutting speeds for the material to be cut regardless of the of the cut quality.

*** Unshielded configuration
When using unshielded consumables, adjust the torch to work height manually or adjust the Arc Voltage Control (AVC) settings to produce the desired cut quality.

SECTION 5.

MAINTENANCE:

Routine maintenance 5-55
Consumable parts inspection 5-56
Purging/draining of the built-in filter..... 5-57

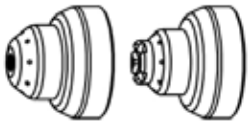
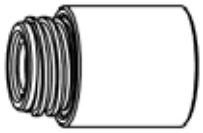
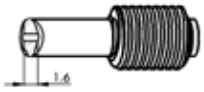
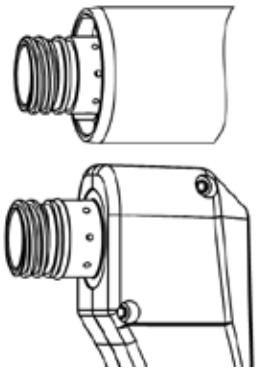
MAINTENANCE

Routine maintenance

	**WARNING** **ELECTRIC SHOCK CAN KILL**
	Disconnect mains power lead before servicing; Qualified technicians only should perform any work that requires removal of the system cover. Allow a period (minimum 5 min.) for electrical discharge before handling internal parts.

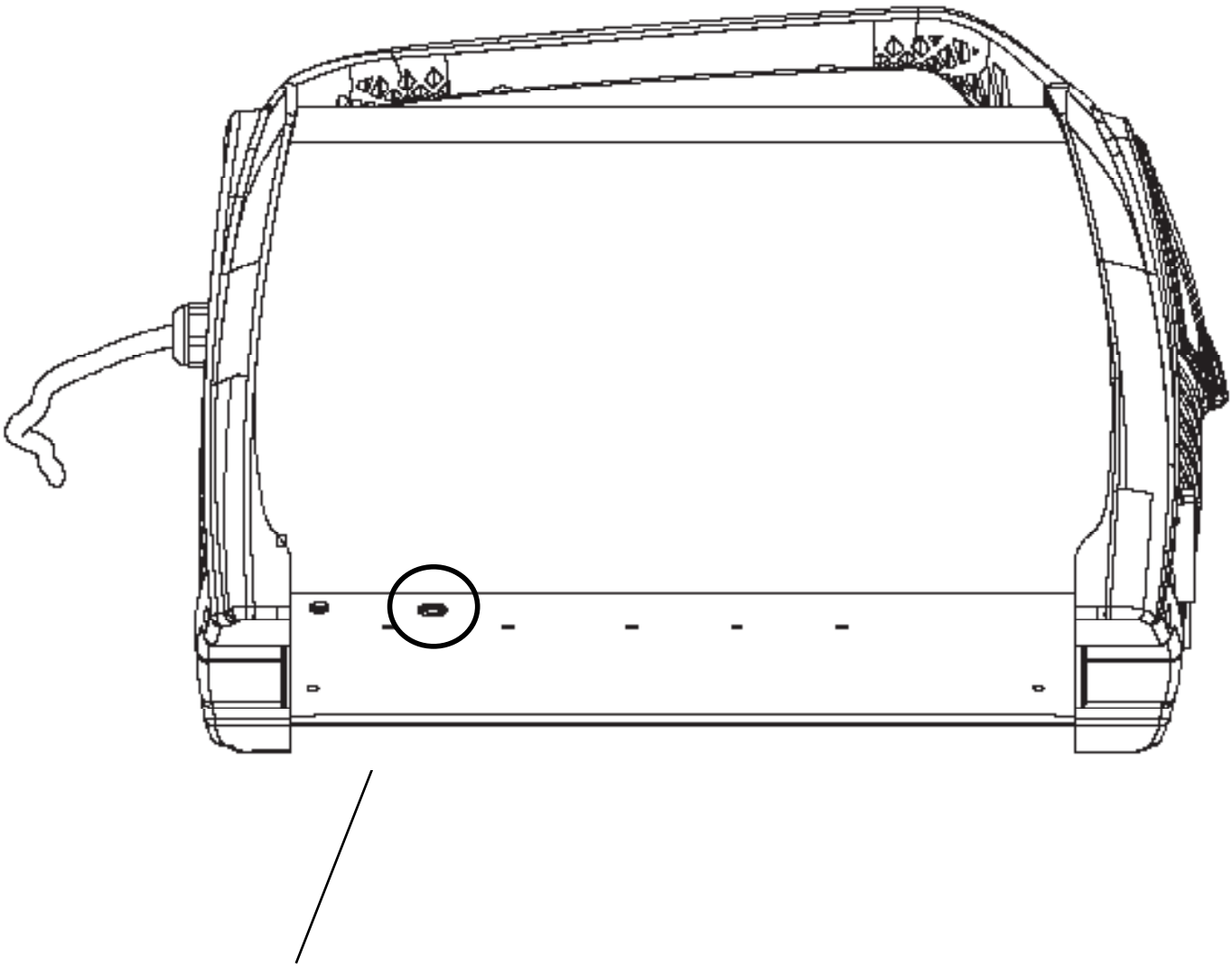
Every usage	Check the gas pressure. Check the consumables. Check the work clamp.	Ensure that consumables are installed correctly and are not worn.
Every week	Examine and check the cap sensor.	
Every 3 months	Clean the dust from inside of the power supply using clean dry compressed air. **Advisory note:** **The dust can be harmful to health!**	Full examination of the torch, check the torch trigger safety mechanism, check for signs of cracking in the torch body or exposed wires.
Immediately replace the mains power lead/plug if damaged.	Immediately replace the torch lead if damaged.	Check air-line hose, filter elements, and connections for leaks.

Consumable parts inspection

Part		Inspect		Operation
Shield		Out of round orifice or worn cruciform indicates worn condition		Replace shield
		Accumulated spatter in the gap between the shield and the nozzle		Clean away any material from the shield and nozzle surface
Retaining Cap		Heat damage, cracks / fractures, damaged threads, blocked gas holes		Replace nozzle Retaining Cap
Nozzle		Out of round orifice indicates worn condition		Replace nozzle
				
		Good orifice	Worn orifice	
Swirl Ring		Damage or contamination of external surface		Replace swirl ring
		Internal hole diameter / condition: Electrode doesn't slide easily / binding on the electrode.		
		blocked/damaged gas holes		
Electrode		Hafnium pit depth greater than 1,6mm		Replace electrode
				
Torch		Internal burn or arcing marks		Replace torch
		Worn or damaged threads		
		Pitted or missing material		
		Damaged, cracked or contaminated		
		Damaged O-ring		Replace O-ring
		Dry O-ring		Apply a thin coat of silicone grease part No. EX-0-805-001

Purging/draining the built-in filter

This power supply is equipped with built-in float type auto drain filter. Do not cover outflow drain hole located on the bottom of the power supply (see the picture below).



Position of the outflow drain hole

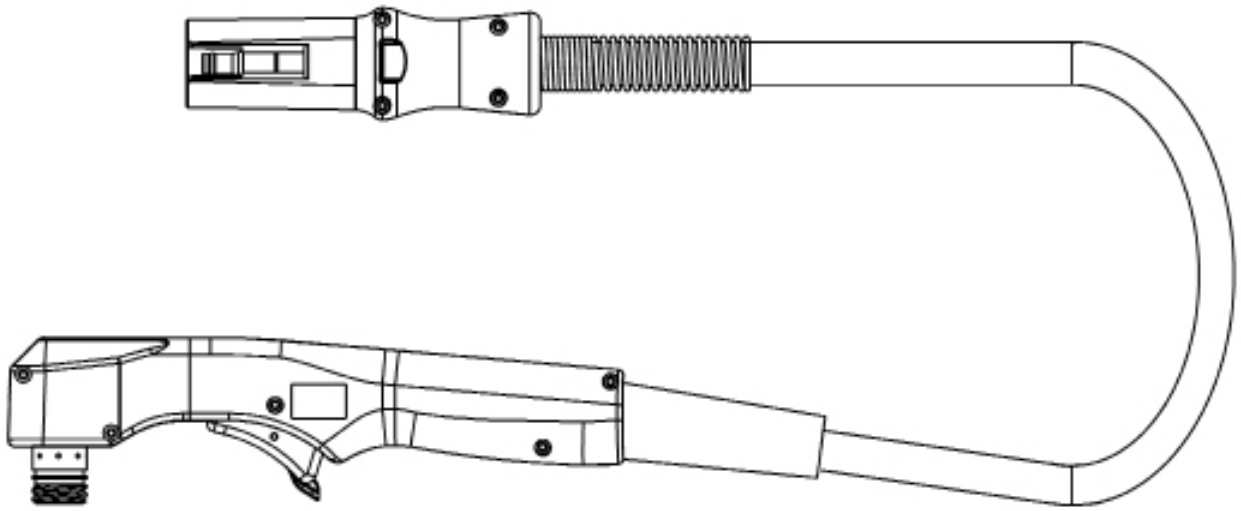
SECTION 6.

TORCHES AND TORCH PARTS:

FHT-EX®45TTH Hand Torch Assembly 6-59
FHT-EX®45TTH Hand Torch Components 6-60
FHT-EX®45TTH Hand Torch Consumables 6-61
FHT-EX®45TTM Machine Torch Assembly 6-62
FHT-EX®45TTM Machine Torch Components 6-63
FHT-EX®45TTM Machine Torch Consumables 6-64
Additional ordering information 6-65

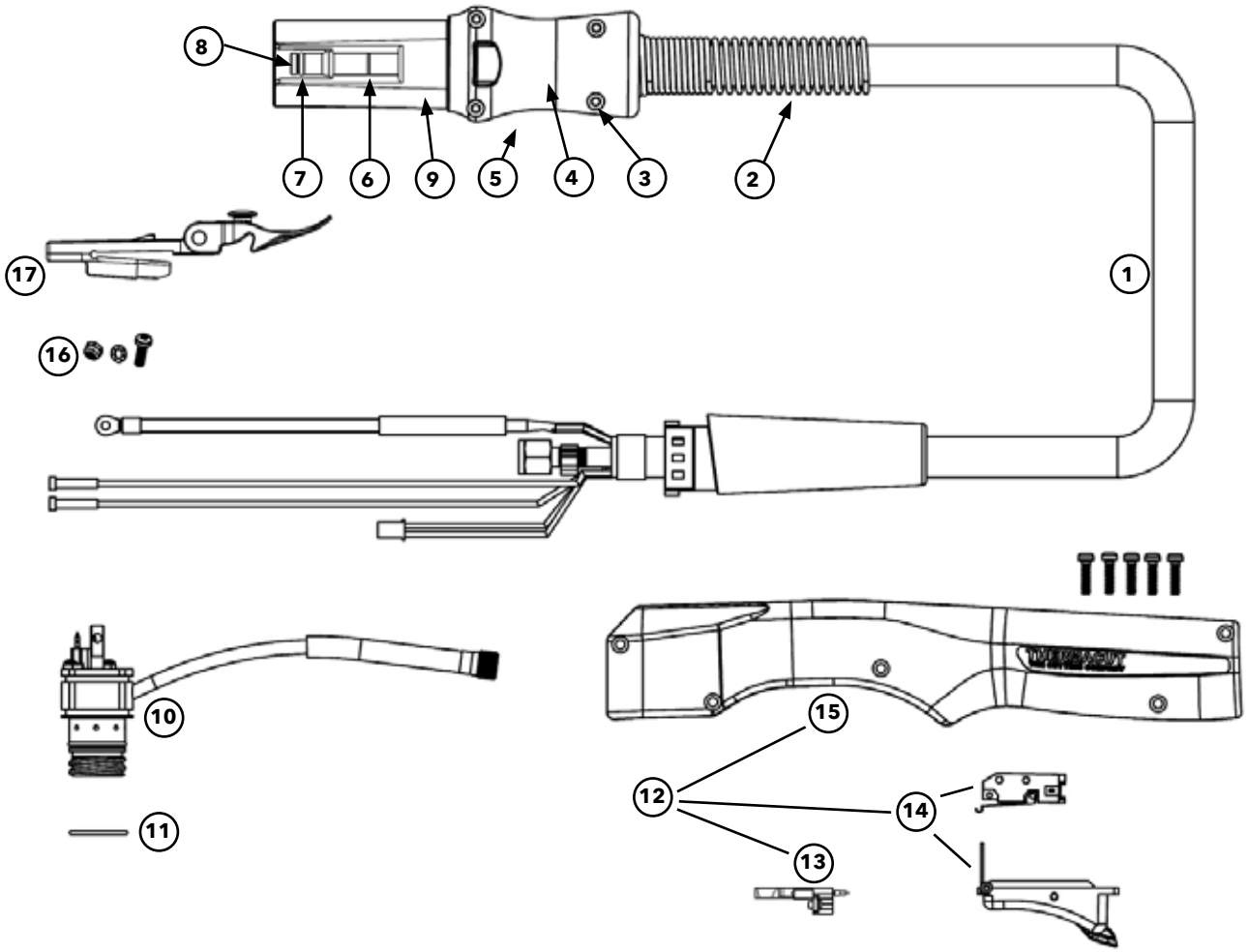
TORCHES AND TORCH PARTS

FHT-EX®45TTH Hand Torch Assembly



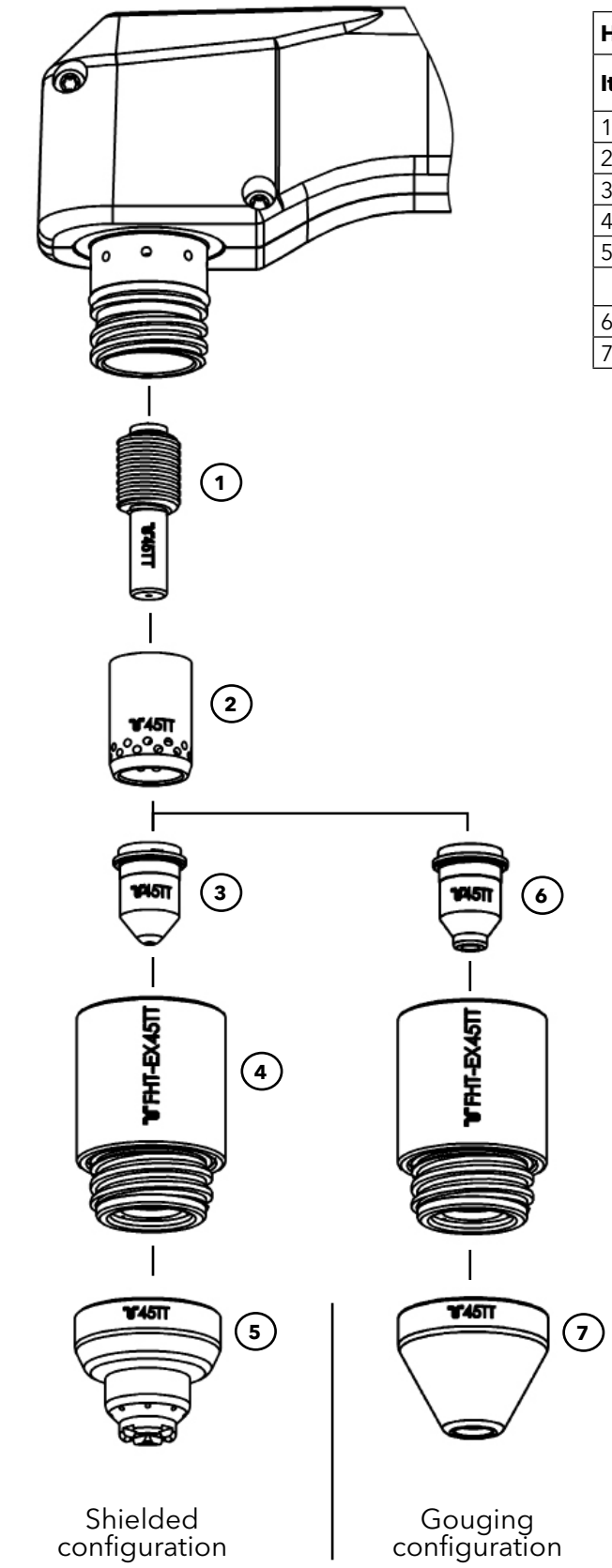
Part No.	DESCRIPTION
EX-2-133-001	FHT-EX45TTH DEMO Hand Torch Assembly w/consumables/TCS13
EX-2-101-001	FHT-EX45TTH Hand Torch Assembly w/o consumables w/5m Lead/TCS13
EX-2-103-001	FHT-EX45TTH Hand Torch Assembly w/o consumables w/8m Lead/TCS13
EX-2-106-001	FHT-EX45TTH Hand Torch Assembly w/o consumables w/15m Lead/TCS13

FHT-EX®45TTH Hand Torch Components



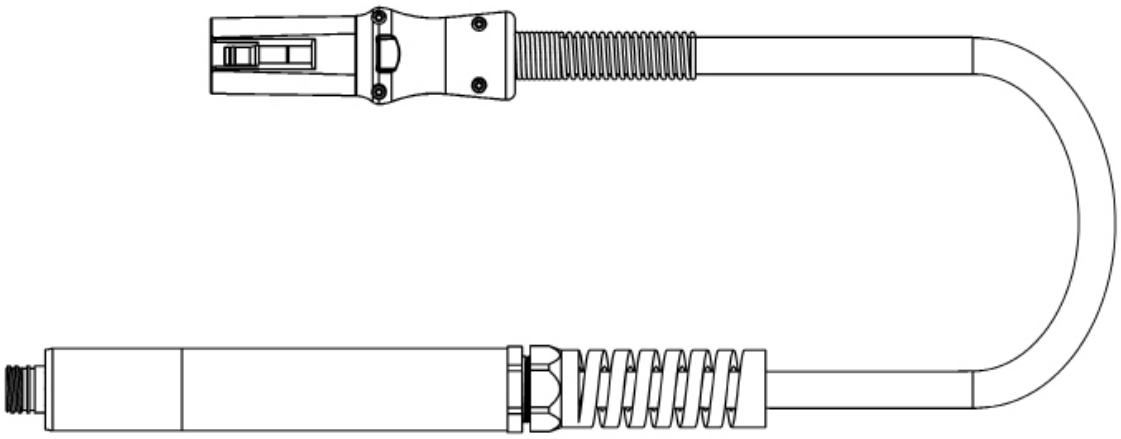
Item	Part No.	DESCRIPTION
1	EX-2-331-001	FHT-EX®45TTH Hand Torch Lead Replacement Kit 5m Lead/TCS13
1	EX-2-333-001	FHT-EX®45TTH Hand Torch Lead Replacement Kit 8m Lead/TCS13
1	EX-2-336-001	FHT-EX®45TTH Hand Torch Lead Replacement Kit 15m Lead/TCS13
2	EX-5-318-001	TCS Plug Spring Stain Relief
3	EX-0-325-015	TCS Clam Shell Screw
4	EX-0-325-002	TCS Clam Shell Upper
5	EX-0-325-001	TCS Clam Shell Lower
6	EX-0-325-010	Retaining Ring (Outer circlip ring)
7	EX-0-325-009	O-Ring (fitted in the TCS plug)
8	EX-0-325-005	Male Crimp Pin for TCS Plug
9	EX-0-323-001	TCS13 Plug Body
10	EX-2-302-001	Hand Torch Body FHT-EX®45TTH
11	EX-5-431-050	O-Ring (fitted on the torch body)
12	EX-2-314-001	FHT-EX®45TTH Hand Torch Handle Replacement Kit
13	EX-2-305-001	Cap-sensor Replacement Kit with Screws/ Hand Torch
14	EX-2-313-001	Safety Trigger with start switch
15	EX-2-308-001	Hand Torch Handle with Screws
16	EX-5-372-010	Cathode mounting kit
17	EX-0-321-003	Latch w/Key Assembly

FHT-EX®45TTH Hand Torch Consumables



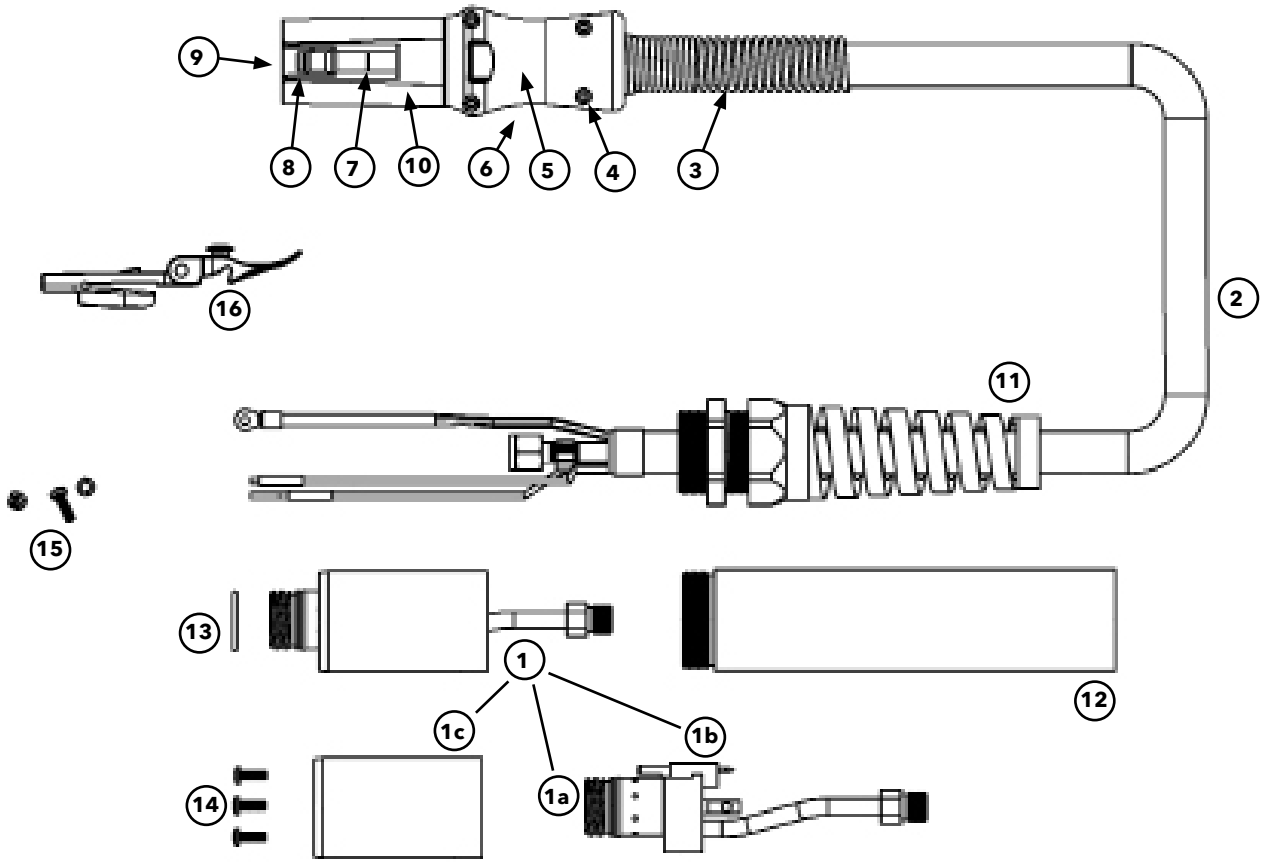
Hand Torch Consumables Configuration 45 A		
Item	**Part No.**	**DESCRIPTION**
1	EX-2-401-201	Electrode
2	EX-2-404-201	Swirl Ring
3	EX-2-409-201	Nozzle
4	EX-2-415-201	Retaining Cap
5	EX-2-419-201	Hand (contact) Shield
6	EX-2-409-202	Gouging Nozzle
7	EX-2-419-202	Gouging Shield

FHT-EX®45TTM Machine Torch Assembly



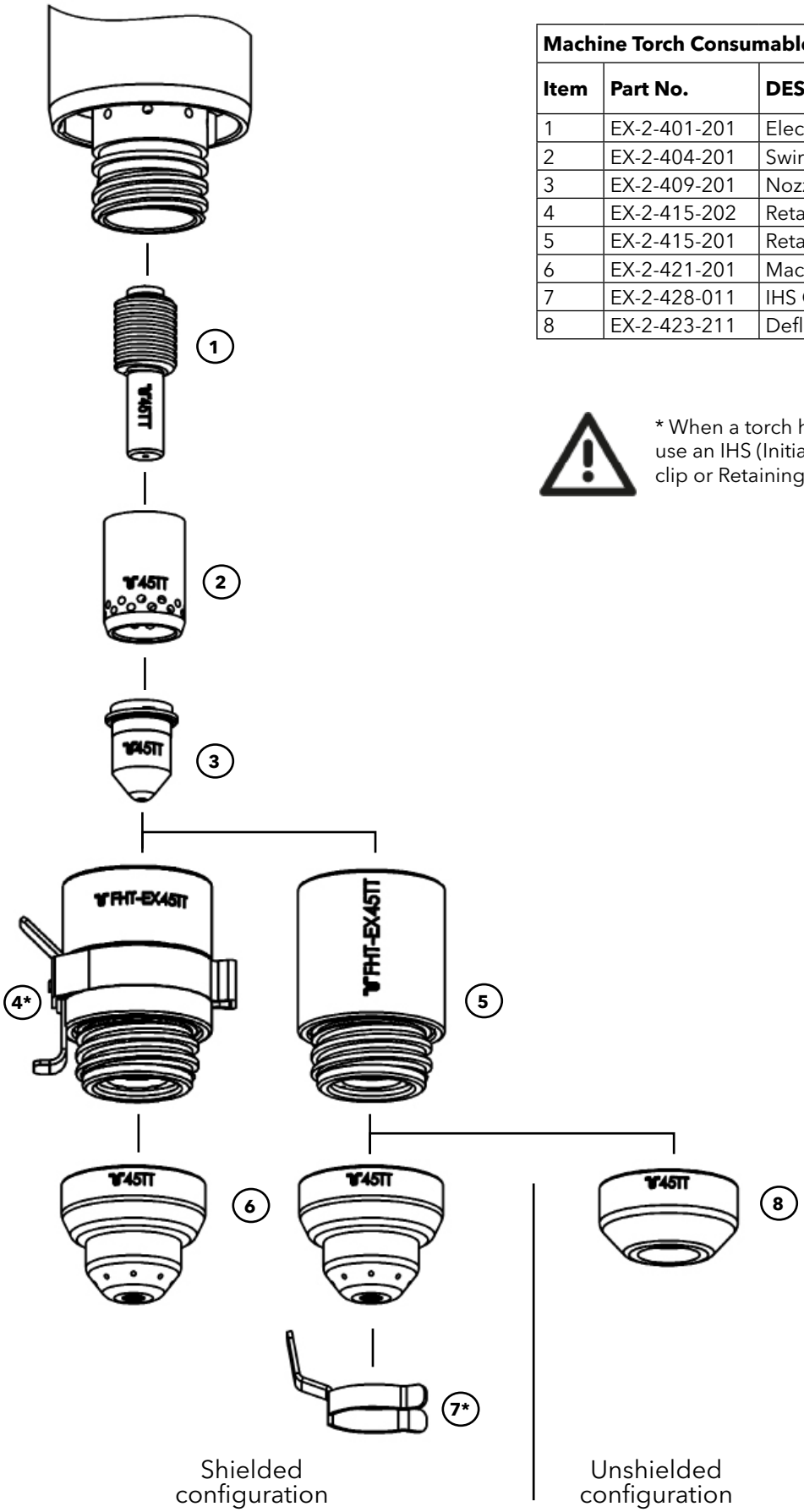
Part No.	DESCRIPTION
EX-2-233-001	FHT-EX45TTM DEMO Machine Torch Assembly w/consumables/TCS13
EX-2-202-001	FHT-EX45TTM Machine Torch Assembly w/o consumables w/5m Lead/TCS13
EX-2-204-001	FHT-EX45TTM Machine Torch Assembly w/o consumables w/8m Lead/TCS13
EX-2-207-001	FHT-EX45TTM Machine Torch Assembly w/o consumables w/15m Lead/TCS13

FHT-EX®45TTM Machine Torch Components



Item	Part No.	DESCRIPTION
1	EX-2-301-001	Machine Torch Body Assembly FHT-EX®45TTM
1a	EX-2-301-002	Machine Torch Body FHT-EX®45TTM
1b	EX-5-304-001	Cap Sensor Replacement Kit with Screws / Machine Torch
1c	EX-5-306-002	Torch Mounting Sleeve (incl. 3 screws)
2	EX-2-352-001	FHT-EX®45TTM Machine Torch Lead Replacement Kit 5m Lead/TCS13
2	EX-2-354-001	FHT-EX®45TTM Machine Torch Lead Replacement 8m Lead/TCS13
2	EX-2-357-001	FHT-EX®45TTM Machine Torch Lead Replacement 15m Lead/TCS13
3	EX-5-318-001	TCS Plug Spring Strain Relief
4	EX-0-325-015	TCS Clam Shell Screw Kit (incl. 4 screws)
5	EX-0-325-002	TCS Clam Shell Upper
6	EX-0-325-001	TCS Clam Shell Lower
7	EX-0-325-010	Retaining Ring (Outer circlip ring)
8	EX-0-325-009	O-Ring (fitted in the TCS plug)
9	EX-0-325-005	Male Crimp Pin for TCS Plug
10	EX-0-323-001	TCS13 Plug Body
11	EX-5-317-021	Machine Torch Strain Relief
12	EX-2-306-001	FHT-EX®45TTM Standard Mounting Tube w/o Rack
13	EX-5-431-050	O-Ring (fitted on the torch body)
14	EX-5-372-005	Torch Mounting Screws Kit (incl. 3 screws)
15	EX-5-372-010	Cathode Mounting Kit
16	EX-0-321-003	Latch w/Key Assembly

FHT-EX®45TTM Machine Torch Consumables



Machine Torch Consumables Configuration 45 A		
Item	**Part No.**	**DESCRIPTION**
1	EX-2-401-201	Electrode
2	EX-2-404-201	Swirl Ring
3	EX-2-409-201	Nozzle
4	EX-2-415-202	Retaining Cap w/IHS Tab
5	EX-2-415-201	Retaining Cap
6	EX-2-421-201	Machine Shield
7	EX-2-428-011	IHS Ohmic Clip
8	EX-2-423-211	Deflector

* When a torch height controller is installed use an IHS (Initial Height Sensing) ohmic clip or Retaining Cap with IHS Tab.

SECTION 7.

ADITIONAL ORDERING INFORMATION

EX-TRAFIRE®45SD Plasma Power Supply Units	
Part No.	**DESCRIPTION**
EX-2-001-030	EX-TRAFIRE®45SD/CE/3x400V Power Supply Unit (fully-equipped)
EX-2-001-024	EX-TRAFIRE®45SD/CE/1x110/230V Power Supply Unit (fully-equipped)

EX-TRAFIRE®45SD Manual Plasma Cutting Systems		
Part No.	**DESCRIPTION**	**Length**
EX-2-010-011	EX-TRAFIRE®45SD/CE/3x400V Hand System/FHTEX®45TTH 5m/H Starter Kit	5 m
EX-2-010-012	EX-TRAFIRE®45SD/CE/3x400V Hand System/FHTEX®45TTH 8m/H Starter Kit	8 m
EX-2-010-013	EX-TRAFIRE®45SD/CE/3x400V Hand System/FHTEX®45TTH 15m/H Starter Kit	15 m
EX-2-010-020	EX-TRAFIRE®45SD/CE/1x110/230V Hand System/FHTEX45®TTH 5m/H Starter Kit	5 m
EX-2-010-021	EX-TRAFIRE®45SD/CE/1x110/230V Hand System/FHTEX45®TTH 8m/H Starter Kit	8 m
EX-2-010-022	EX-TRAFIRE®45SD/CE/1x110/230V Hand System/FHTEX45®TTH 15m/H Starter Kit	15 m

EX-TRAFIRE®45SD Mechanized Plasma Cutting Systems		
Part No.	**DESCRIPTION**	**Length**
EX-2-011-008	EX-TRAFIRE®45SD/CE/3x400V Machine System/FHTEX45®TTM 5m/M Starter Kit	5 m
EX-2-011-009	EX-TRAFIRE®45SD/CE/3x400V Machine System/FHTEX45®TTM 8m/M Starter Kit	8 m
EX-2-011-010	EX-TRAFIRE®45SD/CE/3x400V Machine System/FHTEX45®TTM 15m/M Starter Kit	15 m
EX-2-011-014	EX-TRAFIRE®45SD/CE/1x110/230V Machine System/FHT-EX45®TTM 5m/M Starter Kit	5 m
EX-2-011-015	EX-TRAFIRE®45SD/CE/1x110/230V Machine System/FHT-EX45®TTM 8m/M Starter Kit	8 m
EX-2-011-016	EX-TRAFIRE®45SD/CE/1x110/230V Machine System/FHT-EX45®TTM 15m/M Starter Kit	15 m

Available Bulk Packs for EX-TRAFIRE®45TTH a EX-TRAFIRE®45TTM		
Part No.	**DESCRIPTION**	**Pcs**
EX-2-434-201	Bulk Pack – Electrode – 25 pcs	1
EX-2-435-201	Bulk Pack – Nozzle – 25 pcs	1
EX-2-436-201	Bulk Pack – Hand (contact) Shield – 18 pcs	1
EX-2-437-201	Bulk Pack – Machine Shield – 18 pcs	1

SECTION 8.

TROUBLESHOOTING:

Fault	This may mean	Cause	Solution
Main switch is ON, the LCD screen does not power up	• No / Low mains voltage power supply.	• Insufficient mains power supply.	• Check the mains input voltage 120 VAC ± 20% (CE) / 230 VAC ± 20% (CE/C-TICK) • Check internal control board supply.
		• The mains power lead is not plugged in to a live socket.	• Plug the mains power lead in to a live socket.
		• Main power switch is defective.	• Replace the main power switch.

Note: The fan turns ON and OFF automatically. The fan may not run when the plasma arc power supply is switched on.

The error code H06 appears.	• Over-temperature (OT)	• Fan fault.	• Ensure fan is free running, correct condition.
		• Duty cycle over limit.	• Allow the power supply to cool down and reset. Do not exceed the rated duty cycle.
		• Possible component part damage.	• Contact your distributor.
The error code H13 appears.	• Gas pressure fault.	• The gas input pressure is lower than 2.1 bar / 30.5 psi.	• Check gas supply input pressure.
		• Damaged torch lead.	• Replace the torch lead.
	• Pressure sensor fault.	• Incorrect pressure.	• Change the pressure switch inside the power supply.

Fault	This may mean	Cause	Solution
The error code H08 appears. And icon  **flashes. No arc output when the trigger is depressed or the CNC start signal is ON.**	• Consumables fault.	• Consumables are loose, improperly installed or missing.	• Install the consumables and fit the retaining cap.
		• The retaining cap is not installed or tightened correctly.	• Fit the retaining cap and correctly tighten.
		• Non original consumables.	• Use original new consumables.
	• Short circuit inside the torch.	• Consumables are loose, improperly installed or missing.	• Install the consumables correctly.
		• Dirt inside the torch.	• Remove all consumables, clean the inside of the torch. Reassemble in correct order.
When switching cutting modes press the torch trigger but no gas output.	• Gas valve or power supply fault.	• Cable to the gas valve disconnected.	• Contact your distributor.
		• Gas valve malfunction.	• Contact your distributor.
		• Switch or trigger malfunctioning.	• Contact your distributor.
No arc output but no alarm light when torch trigger is depressed or the CNC start signal is ON.	• Torch fault.	• Incorrect torch type.	• Use the specified torch for the machine.
		• Torch components.	• Check torch components, change parts if necessary.
	• Input gas pressure fault.	• Input gas pressure is too high.	• Decrease input static pressure to 6 bar/87 psi.

Fault	This may mean	Cause	Solution
No transfer between pilot arc and workpiece.	• Work clamp connection fault.	• Fluctuating connection between the clamp and workpiece.	• Clean the surface of the clamp and material.
	• No connection to workpiece.	• Incorrect distance between the torch and workpiece.	• Maintain correct distance between the torch and workpiece.
		• Work cable is broken.	• Replace the work cable.
The output power is too low, unstable or inadequate.	• Connection fault.	• Input and output connection leads.	• Check all input and output connection leads.
		• Fluctuating connection between the clamp and workpiece.	• Make sure that work lead has a good connection to a clean and dry area of workpiece.
		• Incorrect distance between the torch and the workpiece.	• Maintain correct distance between the torch and the workpiece.
	• Voltage fault.	• Incorrect input voltage.	• Use the correct input voltage, in accordance with specification.
The pilot arc is difficult to ignite and cuts out.	• Consumables fault.	• Check for worn consumables.	• Change the consumable which may be worn.
	• Air pressure fault.	• The air pressure is too high.	• Adjust the air pressure output.
Output is restricted and can not be controlled.	• Connection failure.	• Input / output connection leads.	• Check all input / output leads connection.
		• Fluctuating connection between the clamp and workpiece.	• Ensure that the work lead has a good connection to a clean and dry area of workpiece.

Fault	This may mean	Cause	Solution
Cut quality issues.	• Incorrect current setting.	• Cutting current (Amperage) too low / material too thick.	• Adjust the cutting current (Amperage) to suit the thickness of material to be cut.
	• Consumables fault.	• Consumables are worn.	• Inspect consumables – see section Consumable part inspection.
	• Incorrect cutting technique.	• Poor cut quality.	• Adjust the cutting current (Amperage) to suite the cutting speed and torch-to-workpiece distance according to the thickness of material to be cut.
	• Poor connection.	• Workpiece is dirty / contaminated.	• Clean the surface of the workpiece.

For more detailed information see Service Manual

ERROR CODES		
H03	System operation failed	
H04	No pilot arc established possibly due to a loss of current.	
H05	Consumables in torch failed to separate during pilot arc.	
H06	Over - temperature alarm	
H07	Over - current alarm	
H08	Torch inspection / cap sensor (The cutting torch is missing or not connected.)	
H09	Consumables in Place check	
H10	Internal communication error remote control	
H11	Missing phase or no input voltage (single phase power supply only)	
H13	Air pressure alarm	**L** - The input pressure is too low **H** - The input pressure is too high

H04: After prolonged periods of use, the consumables may become worn and influence the contact between the nozzle and electrode. This may lead to the pilot arc failing to ignite and generate the H04 alarm. To clear the alarm, depress the trigger again, this should generate the pilot arc or the system will automatically reset the alarm after 15 seconds.

H10: Contact your distributor.

Examples of error codes:

SECTION 9.

ACCESSORIES:

Filter-EX Compressed Air Filter with replacement filter cartridge

EX-0-804-001 - Filter-EX Compressed Air Filter
(Standard package 1 piece)

EX-0-804-002 - Filter-EX Air Filter Cartridge
(Standard package 8 pieces)

Technical specification

Filtering Degree:	0.01 µinch – 0.25 µm
Maximum Pressure:	125 PSI – 8.5 bar
Maximum Flow @ 80%:	2700 SCFH – 1250 l/min.
Temperature Range:	15 – 140F / –10 to +60 °C
Size Pipe:	¼ NPT
Dimension:	Ø 5.2" × 7.9" – Ø 132 × 200 mm

The maximum pressure of this item does not match the 10.0 bar rating of the power supply.

This filter does not fall under the specification of pressure equipment and requires no revision.

Advantages of using the Filter-EX Compressed Air Filter:

- Removes solid particles, aerosols, and moisture from the compressed air.
- Elimination of the negative effects caused by humidity during cutting.
- Extends the service life time of the torch, leads and consumables.
- Reduces the risk of torch and power supply damage.
- Positive effect on the quality of the cut.

Filter-EX Quick Connect Couplings

EX-0-802-001
DN 7.2 ES Quick Connect Plug
with male thread G 1/4“

EX-0-802-002
DN 7.2 ES Quick Connect Coupling
with male thread G 1/4“

CNC interface

EX-0-803-001
CNC Interface 14-pin Plug Kit,
incl. 7 pins

EX-0-803-004
CNC Interface connection
lead 6 m

EX-0-803-005
Plasma Arc START/STOP
Remote Controller

O-Ring lubricant

EX-0-805-001
Grease 25ml

Circle cutting guide kit for FHT-EX®105RTXH/105TTH/45TTH

EX-5-801-002

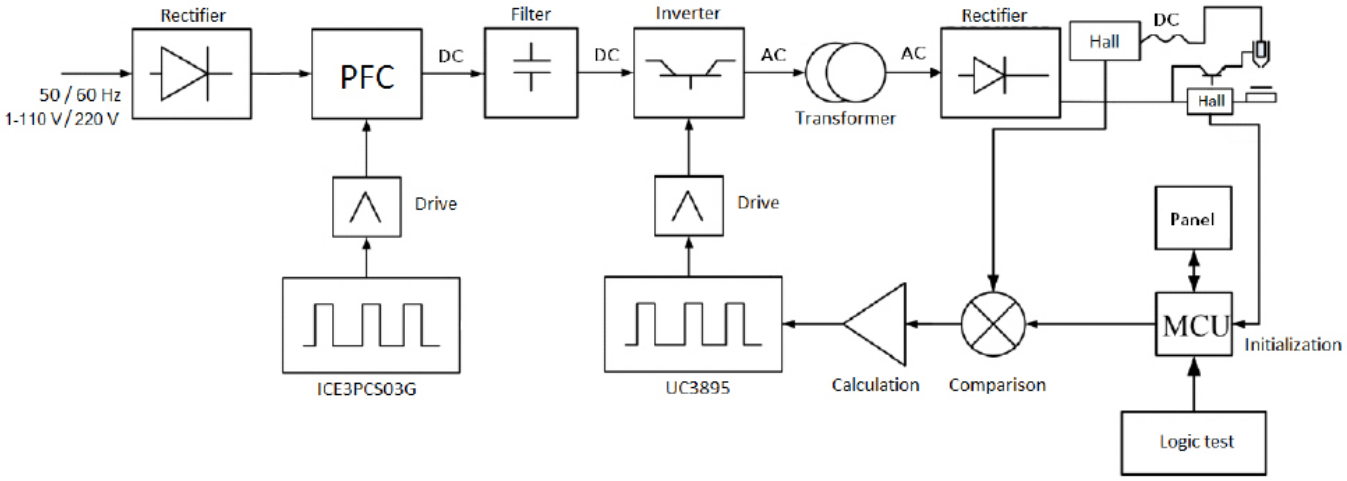
This Circle cutting guide kit for hand-held cutting obtains:

- Circle cutting attachment
- Cutting guide
- Radius bar mm. 250
- Radius bar mm. 400
- Magnetic base assembly
- Free centering straight pin
- Straight locking pin

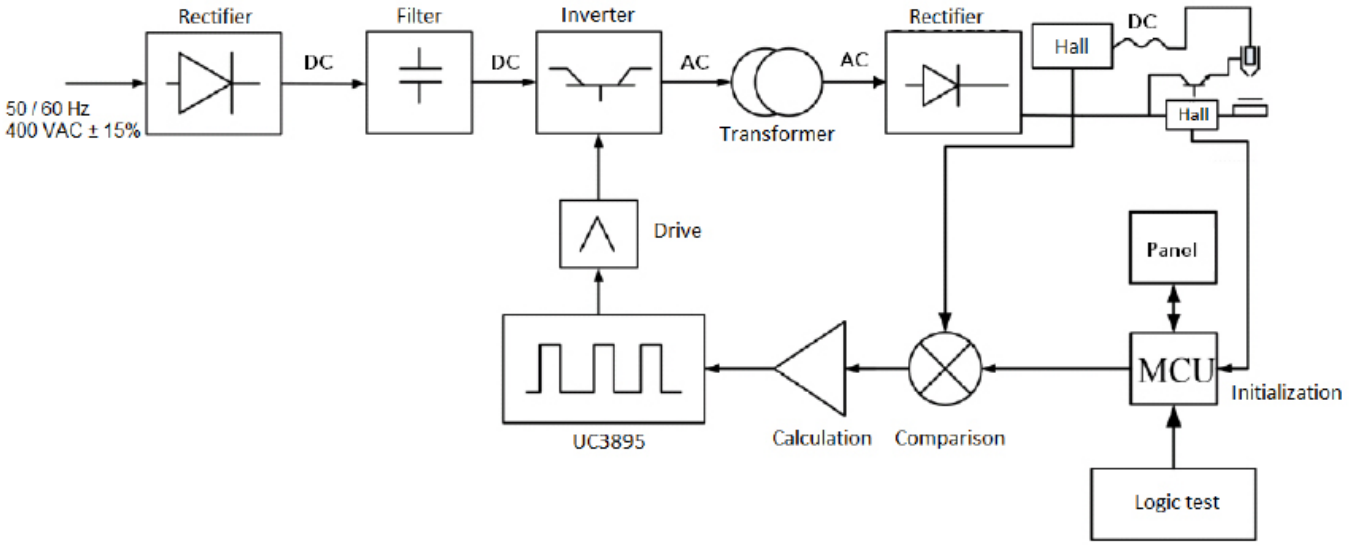
SECTION 10.

POWER SUPPLY BLOCK DIAGRAM:

45SD - Single phase



45SD - Three phase



SECTION 11.

END OF LIFETIME PRODUCT DISPOSAL

Use and disposal of waste

Wrapping paper and corrugated paperboard – place in paper recycling containers. Packing foil, PE bags, plastic elements – place in plastic recycling containers.

End of lifetime product disposal

Disposal of electric and electronic equipment (valid in EU member countries and other European countries with an implemented recycling system).

It is not allowed to treat this product as domestic waste. Hand over the product to the specified location for recycling electric and electronic equipment. Prevent negative impact on human health and the environment by correctly recycling your product.

Recycling contributes to preserving natural resources. For more information on the recycling of this product, refer to manufacturer, who will be able to handle the disposal for you or refer to your local authority, domestic waste processing organization or store, where you purchased the product.

For local disposal, the local regulations for the disposal of electrical and electronic scrap as well as materials must be observed.

This product complies with EU directive requirements on electromagnetic compatibility and electrical safety.

RoHS statement

Hereby Thermacut, k.s. confirms that to its knowledge all Plasma Power supply models **EX-TRAFIRE H, SC, SD** and **HD** (unless otherwise expressly stated) sold by Thermacut, k.s. fulfill the requirements of the EU directive 2011/65/EU. These products are compatible with the current RoHS requirements for the 7 substances (max 0.1% by weight in homogeneous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), Deca-BDE and max 0.01% for cadmium).

SECTION 12.

WARRANTY:

WARRANTY

This Warranty Certificate forms an integral part of General Business Conditions ("GBC") of THERMACUT, k.s. (the "Seller") and shall apply to supplies of Goods under Contract concluded between the Seller and the other contracting party as the recipient of the Goods (the "Buyer"); terms used herein have the same meaning as is ascribed to them in the GBC

1. The Seller hereby provides to the Buyer a quality warranty (hereinafter referred to as the"Warranty") affirming that the below specified goods delivered under the Contract will, for the below specified warranty period, retain the characteristics stipulated in technical data sheet of the Goods available on Seller's webpages (www.thermacut.cz, www.ex-trafire.com) at the time of sending of Binding Offer (par. 2.2 of the GBC), otherwise in the quality and design suitable for the purpose arising out of the Contract, otherwise for usual purpose.

2. The warranty period is valid from the date the goods are delivered to the buyer (par. 5.1, 5.2 of the GBC).

3. Par. 3.4 and the following of the GBC shall apply to reporting (claiming) of Warranty defect, asserting rights from defective performance and other rights and obligation of the Seller and Buyer.

4. The warranty period is:

o Three (3) years for EX-TRAFIRE® brand power supplies
o One (1) year for torches and lead sets

5. The Warranty does not cover reasonable wear and tear of the Goods or associated parts, which include consumables such as: Electrodes,Nozzles, Swirl Rings, Retaining Caps, Shields and O-rings.

6. The Seller is not liable for damage of the Goods caused by the Buyer or third party by incorrect or unprofessional treatment of the Goods (in particular repair or alteration by persons not authorized by the Seller) or its installation, unprofessional usage of the Goods or insufficient maintenance, in particular using the Goods for other than the specified purpose or other failure to comply with operating instructions, application of excessive force or using unapproved consumables parts with the Goods.

Warranty terms and conditions vary to suit diverse markets and country directives.

Notes:

Revision history:

1. Revision T-1/2020 - 02/2020 Official release

2. Revision T-2/2020 - 05/2020

a) New graphics of rear panel - rear panel without BUS connector

b) Page 3-28 - New paragraph - Gas pressure adjustment

c) Page 4-46 - new value of **Voltage** from: 7100 to: **115**
(Mild Steel, Material Thickness =1.5 mm, Standard Quality Settings, Cut Speed=7100 mm/min)

d) Page 4-48 - new value of **Cut Speed** from: 510 to: **810**
(Mild Steel, Material Thickness =10 mm, Best Quality Settings, Voltage=122 V)

e) Page 6-57 - New Part No. of item 5 - from: EX-5-419-201 - Hand (contact) Shield to: **EX-2-419-201**

f) Page 7-66 - Changes in **error codes** charter

g) Page 11-71 - New page of **Warranty**

3. Revision T-3/2020 - 07/2020

Page 1 - the latest version of manual link added

4. Revision T-4/2020 - 09/2020

a) Pages 3-32 - 34 - new pages -**The circle cutting guide installation - for the FHT-EX®105RTXH/ 105TTH/45TTH** added

b) Page 7-63 - new items of additional ordering added

c) Pages 9-70, 71 - new items of accessories added - **EX-0-802-000, EX-0-803-001, EX-0-803-004** and **EX-5-801-002**

5. Revision T-5/2020 - 11/2020

a) Page 2-12 - note about **PFC** added

b) Page 3-33 - point No. 7 - note about **lengths of bars** added

6. Revision T-6/2021 - 07/2021

a) Page 4-46 - more info about gouging added

b) Page 4-47 - new page of gouge profile description, profile modification added

c) Page 4-48 - text moved from page 4-46 + new text added: Operating the machine torch

7. Revision T-7/2024 - 06/2024

a) - new item of accessories - **EX-0-803-005** added

ADDRESSES AND CONTACTS:

THERMACUT, K.S.

HEADQUARTERS AND PRODUCTION:

THERMACUT, k.s.
Sokolovská 574, Mařatice
686 01 Uherské Hradiště
CZECH REPUBLIC
Tel.: +420 572 420 411
Fax: +420 572 420 420
E-mail: info@thermacut.cz
reditelstvi@thermacut.cz
www.thermacut.cz

SALES DEPARTMENT:

Dukelská 76a,
742 42 Šenov u Nového Jičína
CZECH REPUBLIC
Tel.: +420 556 423 418, 440
Fax: +420 556 423 443, 444
E-mail: sales@thermacut.cz
obchod@thermacut.cz
www.thermacut.cz

THERMACUT GMBH

Am Rübgarten 2
57299 Burbach
GERMANY
Tel.: +49 (0)2736 29 49 11 – 0
Fax: +49 (0)2736 29 49 11 – 77
E-mail: info@thermacut.de
www.thermacut.de

SUBSIDIARIES:

THERMACUT CROATIA D.O.O.

Daničićeva 12
532 70 Senj
CROATIA
Tel.: +385 53 882 599
Fax: +385 53 882 622
E-mail: thermacut@gs.t-com.hr

THERMACUT HUNGÁRIA KFT.

Petőfi Sándor utca 37 atd.
2500 Esztergom
HUNGARY
Tel.: +36 33 502 090,1
Fax: +36 33 400 004
E-mail: info@thermacut.hu
www.thermacut.hu

THERMACUT SLOVAKIA, S.R.O.

Priemyselná ulica 1239
93101 Šamorín
SLOVAKIA
Tel.: +421 31 591 0121
Fax: +421 903 644 954
E-mail: obchod@thermacut.sk
www.thermacut.sk

THERMACUT FRANCE

6 Rue des Frères Lumiere
67201 Eckbolsheim
FRANCE
E-mail: thermacut@thermacut.fr
Tel.: +33 3 88 76 25 78
www.thermacut.fr

THERMACUT-POLAND SP. Z O.O.

ul. Stawowa 20
43-400 Cieszyn
POLAND
Tel.: +48 33 852 13 34
E-mail: thermacut@thermacut.pl
www.thermacut.pl

THERMACUT ROMANIA SRL

B-dul 1 Decembrie 1918 nr. 127A
540445 Tg. Mures, Jud. Mures
ROMANIA
Tel.: +40 265 269 520, 263 205
Fax: +40 265 250 317
E-mail: office@thermacut.ro
www.thermacut.ro

ALEXANDER BINZEL (UK) LTD./ THERMACUT UK

Mill Lane, Winwick Quay
Warrington, Cheshire, WA2 8UA
Tel: +44(0) 1925 653944
Fax: +44(0) 1925 654861
Email: info@abimail.co.uk
www.binzel-abicor.co.uk

Distributor details:

THERMACUT, k. s.
Sokolovská 574, Mařatice
686 01, Uherské Hradiště
Czech Republic
www.thermacut.cz
sales@thermacut.cz