TORCH NERTAJET HPi

TORCH T5

« for HPi²»

SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE

N° AS-CS-04150220 - AS-CS-04150223

EDITION : EN
REVISION : E
DATE : 01-2022

Instructions for use

REF : **8695 4585**

Original instructions

LINCOLN® ELECTRIC

Thank for the trust you have expressed by purchasing this equipment, which will give you full satisfaction if you follow its instructions for use and maintenance.

Its design, component specifications and workmanship comply with applicable European directives.

Please refer to the enclosed CE declaration to identify the directives applicable to it.

The manufacturer will not be held responsible where items not recommended by themselves are associated with this product.

For your safety,there follows a non-restrictive list of recommendations or requirements, many of which appear in the employment code.

Finally we would ask you kindly to inform your supplier of any error which you may find in this instruction manual.

CONTENTS

A - SAFETY INSTRUCTIONS....1
1 - SAFETY INSTRUCTION....1
2 - COOLANT DISPOSAL....1

B - DESCRIPTION....2
1 - GENERAL....2
2 - SPECIFICATIONS....2
3 - TORCH COOLING....4

C - DESCRIPTION OF DIFFERENT ASSEMBLIES FOR PLASMA CUTTING....6
1 - SELECTION OF MILD STEEL CONSUMABLES FOR COPPER ELECTRODE »....6
2 - SELECTION OF STAINLESS STEEL CONSUMABLES WITH H17 GAS FOR COPPER ELECTRODE....6
3 - SELECTION OF STAINLESS STEEL CONSUMABLES WITH AIR OR NITROGEN GAS FOR COPPER ELECTRODE....7
4 - SELECTION OF ALUMINIUM CONSUMABLES FOR COPPER ELECTRODE....7
5 - CONSUMABLES CASES....8
6 - TORCH AND MANIFOLD GROUPS....8
7 - TORCH ASSEMBLY PROCEDURE T5....10
8 - INSTALLATION/REPLACEMENT OF CONSUMABLES....11
9 - BUNDLE AND CONNECTOR OF TORCH T5....12

D - TORCH BUNDLES....14
1 - BUNDLE CONNECTION TO TORCH T5....14
2 - BUNDLE CONNECTION TO BRTi CABINET....15
3 - BUNDLE CONNECTION TO HPi POWER SOURCE....16

E - SERVICING AND MAINTENANCE....17
1 - SERVICING AND MAINTENANCE....17
2 - BASIC RULES TO FOLLOW WHILE ASSEMBLING THE T5 TORCH FOR HPi....18
3 - MAXIMISING THE LIFE OF CONSUMABLES....19
4 - INSPECTION OF DAMAGE....19
5 - TROUBLESHOOTING....20
6 - SPARE PARTS....21

PERSONAL NOTES....22

REVISIONS

REVISION B **10/20**

DESIGNATION	PAGE
Addition of stainless steel and aluminium	« C »

REVISION C **11/20**

DESIGNATION	PAGE
Adding 400A and 2.1m torch	

REVISION D **02/21**

DESIGNATION	PAGE
Removal 400A	

REVISION E **01/22**

DESIGNATION	PAGE
Update	B-3 ; C-6 ; C-8 ; D-14

A - SAFETY INSTRUCTIONS

1 - SAFETY INSTRUCTION

For general safety instructions, please refer to the specific manual supplied with the equipment.

Before starting any work on the torch, make sure that the power source is switched off.

During the cutting operation, the torch tip may heat considerably. Before removal, it is imperative to use protective equipment.

2 - COOLANT DISPOSAL

Freezcool « Red »	**W000010167** (9,6 L) (pink 285 coolant)
Freezcool « Green »	**W000404005** (9,6 L)

Coolant may not be discharged in large quantities in the natural environment. Please comply with local discharge regulations regarding COD (✶).

Before any discharge, contact the water department for the rules applicable in your region.

Inform them of the following:
- **the COD of Freezcool (741000 mg/kg)**
- **the quantity to discharge in kg**

The water department will let you know what you must do, particularly the following:
- **place**
- **quantity**
- **time etc.**

✶ COD (Chemical Oxygen Demand) represents the part of the product that demands oxygen, e.g. oxidisable mineral salts and most organic compounds.

B - DESCRIPTION

1 - GENERAL

The torch **NERTAJET HPi** and the **T5** torch tip is a plasma cutting tool that is necessarily mechanised and designed to be coupled with a **NERTAJET HPi** installation.

In a **T5** torch tip, the shape and type of electrode inserted is appropriate for the plasma gas chosen depending on the application.

The end of the torch receives a dual injection nozzle which forms the plasma under the combined effect of the electrical arc, the plasma gaz and the second injected gas.

2 - SPECIFICATIONS

Torch specifications:

Torch description		Torch "**T5**"	
Comments		For installation **NERTAJET HPi**	
Torch part number		**AS-CS-04150220**	**AS-CS-04150223**
Bundle length		1,6 m	2,1 m
Maximum intensity		275 A	
Duty factor		100 %	
Torch weight (bundle and connector)		4 Kg	
Strike type	principle	HF	
	gas	Argon	

Fluids:

Type	Use	Supply pressure	Service pressure	Flow (max. use)		Purity
				150A	300A	
-	-	Bar	Bar	m³/h		
Argon	- Plasma pilot gas	9,5 (max 10 bar)	1,4 to 2,8	0,85	2,4	99,99%
	- Plasma marking		3,4			
Oxygen	- Plasma cutting gas	9,5 (max 10 bar)	4,9 to 5,7	1,38	2,4	99,5%
	- Plasma shield gas		0,4 to 0,8			
Nitrogen	- Plasma shield gas	9,5 (max 10 bar)	0,8 to 6	0,9 - 5*	2,3 - 6,4*	99,5%
H17 (if no mixer*)	- Plasma cutting gas	9,5 (max 10 bar)	4,3 to 5,3	1,6*	2,2*	99,995%
N2 (if mixer*)	Supply to mixer	9,5 (max 10 bar)	9,5	0,8*	1,1*	99,995%
H35 (if mixer*)	Supply to mixer	9,5 (max 10 bar)	9,5	0,8*	1,1*	99,99%
Air	- Plasma cutting gas	7,9 (max 10 bar)	4,6 to 5,6	5 - 5,9*	6,4 - 8,3*	Dry and oil free**
	- Plasma shield gas		0,8 to 4,8			
Freezcool	Cooling 150A-300A-450A	-	7,5 to 8,5	4,0 l/min minimum T°=22 to 23 °C		Freezcool
				Friojet 300i	**Friojet 300i**	

* : if use of stainless steel option
** : air quality 1.4.1 according to standard ISO 8573

3 - TORCH COOLING

For cooling plasma cutting torches in a closed circuit with **FRIOJET**, the following may be used as the cooling fluid:

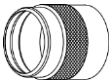
- either coolant

- or demineralised water.

Special coolant freezcool « Red »
W000010167 - drum of 9,6l It is ready for use.  **NEVER ADD WATER** This product is: - anti-freeze up to -27°C - anti-algal - anti-corrosion - non toxic - non-flammable.
Special coolant freezcool « Green »
W000404005 - drum of 9,6l It is ready for use.  **NEVER ADD WATER** This product is: - anti-freeze up to -5°C - anti-algal - anti-corrosion - non toxic - non-flammable.
 **DO NOT MIX FREEZCOOL « Red » and FREEZCOOL « Green »**
Demineralised water
It must have: - high electrical resistivity - pH close to 7. **IMPORTANT: with water ➜ RISK OF FREEZING.** **IMPORTANT: NEVER ADD ANTIFREEZE.**

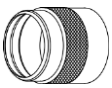
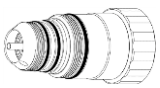
C - DESCRIPTION OF DIFFERENT ASSEMBLIES FOR PLASMA CUTTING

1 - SELECTION OF MILD STEEL CONSUMABLES FOR COPPER ELECTRODE »

	External cover	Protective nozzle	Internal cover	Nozzle	Gas diffuser	Electrode	Torch tip
							
30 A	BK284150	BK277145	BK277153	BK277120	BK277140	BK277130	BK279100 BK277007 (*)
50 A	BK284150	BK277115	BK277153	BK277122	BK277140 BK277142 (1)	BK277131	BK279100 BK277007 (*)
70 A	BK284150	BK277150	BK277153	BK277125	BK277142	BK277131	BK279100 BK277007 (*)
100 A	BK284150	BK277286	BK277151	BK277284	BK277283	BK277282	BK279100 BK277007 (*)
150 A	BK284150	BK277117	BK277151 BK277152 (2)	BK277293	BK277139	BK277292	BK279100 BK277007 (*)
200 A	BK284150	BK277274	BK277266	BK277289	BK277143	BK277291	BK279100 BK277007 (*)
275A	BK284150	BK277263	BK277266	BK277269	BK277258	BK277270	BK279100 BK277007 (*)

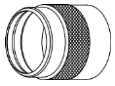
* : Immersion tube (all intensities), also included in the torch tip
1 : For hot rolled steel
2 : For thickness >12mm

2 - SELECTION OF STAINLESS STEEL CONSUMABLES WITH H17 GAS FOR COPPER ELECTRODE

	External cover	Protective nozzle	Internal cover	Nozzle	Gas diffuser	Electrode	Torch tip
							
70 A	BK284150	BK277150	BK277113	BK277124	BK277140	BK277132	BK279100 BK277007 (*)
100 A	BK284150	BK277146	BK277113	BK277126	BK277141	BK277133	BK279100 BK277007 (*)
150 A	BK284150	BK277298	BK277266	BK277297	BK277139	BK277135	BK279100 BK277007 (*)
200 A	BK284150	BK277274	BK277266	BK277287	BK277259	BK277135	BK279100 BK277007 (*)
260 A	BK284150	BK277211	BK277280	BK277118	BK277139	BK277135	BK279100 BK277007 (*)

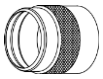
* : Immersion tube (all intensities), also included in the torch tip

3 - SELECTION OF STAINLESS STEEL CONSUMABLES WITH AIR OR NITROGEN GAS FOR COPPER ELECTRODE

	External cover	Protective nozzle	Internal cover	Nozzle	Gas diffuser	Electrode	Torch tip
							
30 A	BK284150	BK277144	BK277110	BK277121	BK277138	BK277137	BK279100 BK277007 (*)
50 A	BK284150	BK277149	BK277110	BK277123	BK277142	BK277137	BK279100 BK277007 (*)
70 A	BK284150	BK277150	BK277153	BK277125	BK277142	BK277131	BK279100 BK277007 (*)
100 A	BK284150	BK277286	BK277151	BK277284	BK277283	BK277282	BK279100 BK277007 (*)
150 A	BK284150	BK277117	BK277152	BK277293	BK277139	BK277292	BK279100 BK277007 (*)
200 A	BK284150	BK277274	BK277266	BK277289	BK277143	BK277291	BK279100 BK277007 (*)
275A	BK284150	BK277263	BK277266	BK277276	BK277258	BK277270	BK279100 BK277007 (*)

* : Immersion tube (all intensities), also included in the torch tip

4 - SELECTION OF ALUMINIUM CONSUMABLES FOR COPPER ELECTRODE

	External cover	Protective nozzle	Internal cover	Nozzle	Gas diffuser	Electrode	Torch tip
							
30 A	BK284150	BK277145	BK277153	BK277120	BK277140	BK277130	BK279100 BK277007 (*)
50 A	BK284150	BK277150	BK277153	BK277122	BK277142	BK277131	BK279100 BK277007 (*)
70 A	BK284150	BK277150	BK277153	BK277125	BK277142	BK277131	BK279100 BK277007 (*)
100 A	BK284150	BK277286	BK277151	BK277284	BK277283	BK277282	BK279100 BK277007 (*)
150 A	BK284150	BK277117	BK277152	BK277293	BK277139	BK277292	BK279100 BK277007 (*)
200 A	BK284150	BK277274	BK277266	BK277289	BK277143	BK277291	BK279100 BK277007 (*)
275A	BK284150	BK277263	BK277266	BK277276	BK277258	BK277270	BK279100 BK277007 (*)

* : Immersion tube (all intensities), also included in the torch tip

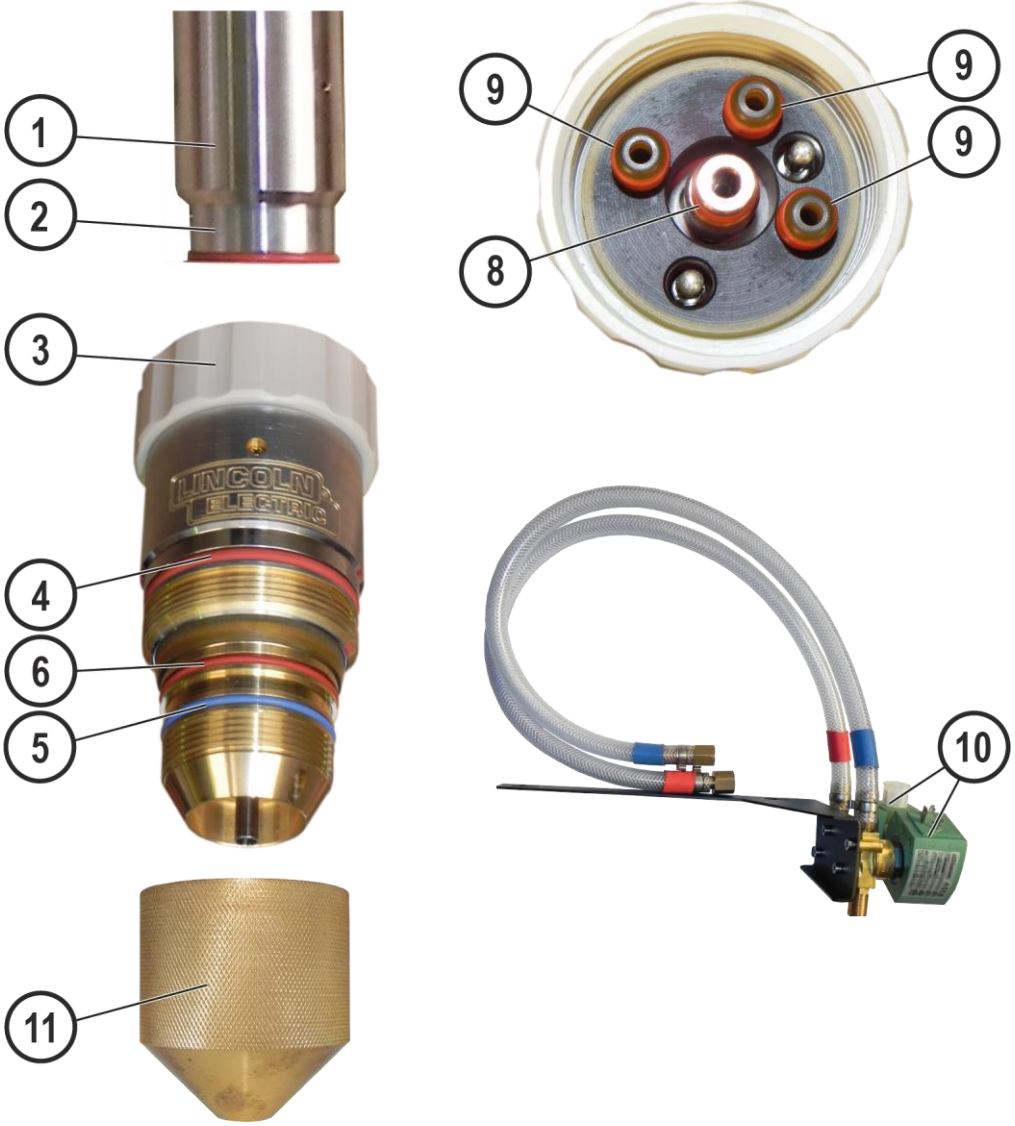
5 - CONSUMABLES CASES

Each case contains a USB stick with the part numbers and the consumables for each cutting intensity.

Part number	Description
AS-CW-04150400	Case **T5** for steel, 150A
AS-CW-04150401	Case **T5** for steel, 275A
AS-CW-04150403	Case **T5** for stainless steel, H17 150A
AS-CW-04150404	Case **T5** for stainless steel, H17 275A
AS-CW-04150406	Case **T5** for stainless steel, air-N2 150A
AS-CW-04150407	Case **T5** for stainless steel, air-N2 275A
AS-CW-04150409	Case **T5** for aluminium, 150A
AS-CW-04150410	Case **T5** for aluminium, 275A

6 - TORCH AND MANIFOLD GROUPS

Reference	Part number	Quantity	Description
1	BK278001	1	Torch handle - standard
2	BK279000	1	Connector of torch **T5**
3	BK279100	1	Torch tip (copper electrode)
4	BK820209	1	O-ring seal (red)
5	BK500024	1	O-ring seal (blue)
6	BK500018	1	O-ring seal (red)
7	BK279013	1	O-ring seal (red) - indicator only, not seal
8	BK279112	2	O-ring seal (red)
9	BK279113	6	O-ring seal (red)
10	AS-CS-5908124	2	Water shut-off solenoid valve
11	AS-CS-04150210	1	Protective torch cap (optional)
	BK716012	1	O-ring seal lubricant
	BK277056	1	Nozzle removal tool
	BK260105	1	Gas diffuser removal tool
	BK277086	1	Copper electrode installation/removal driver
	BK277087	1	Copper electrode installation/removal socket
	AS-CS-04150235	1	Immersion tube removal tool


1
2
3
4
6
5
11
9
9
9
8
10
LINCOLN ELECTRIC

7 - TORCH ASSEMBLY PROCEDURE T5

Electric shocks can lead to death.

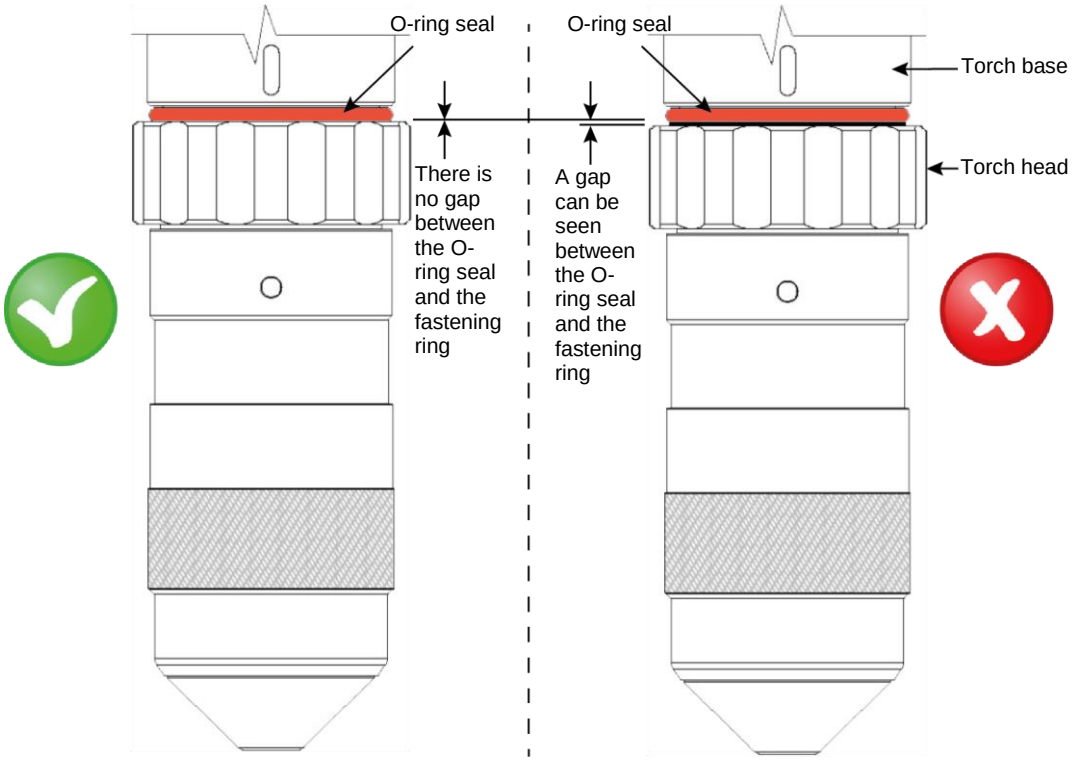
- Switch off the primary power supply of the power source before installing or removing the torch head.
- Stopping the power source switches off the supply of coolant

Hot parts can burn the skin.

- Do not touch hot parts with your bare hands.
- Always wear gloves while handling the torch because it may be hot after cutting, particularly with high current intensities and long cutting times.
- Let the torch cool down before starting to work on it.

1. Every time the torch head is connected to its base, use a cotton bud to apply a small quantity of O-ring seal lubricant on each of the seven O-ring seals on the top of the torch head. **Reminder: do not use too much O-ring seal lubricant.**
2. Line the indicator on the torch head (circle) with that on the base (notch).
3. Apply sufficient force to engage the threads by tightening the fastening ring. Turn the fastening ring to the RIGHT to tighten.
4. Continue tightening the fastening ring till it stops. There must be no space between the fastening ring and the O-ring seal at the base of the torch.

During the process, a small quantity of coolant will collect in the torch head.
It is normal for that coolant to flow between the O-ring seal at the base and the fastening ring when the system is put under pressure. If coolant continues to flow once the system is under pressure, switch off the plasma power supply, remove the torch head and inspect the damage to the O-ring seals.



Turn the fastening ring to the LEFT to remove the torch head.

8 - INSTALLATION/REPLACEMENT OF CONSUMABLES

Electric shocks can lead to death.

- Switch off the primary power supply of the power source before installing or removing the torch head.
- Stopping the power source switches off the supply of coolant

Hot parts can burn the skin.

- Do not touch hot parts with your bare hands.
- Always wear gloves while handling the torch because it may be hot after cutting, particularly with high current intensities and long cutting times.
- Let the torch cool down before starting to work on it.

NB: do not use too much O-ring seal lubricant while installing the consumables. Also make sure that the lubricant is placed on the O-ring seals only. Surplus lubricant may disrupt the flow of gas, thus leading to starting problems, poor cutting quality and a shorter life.

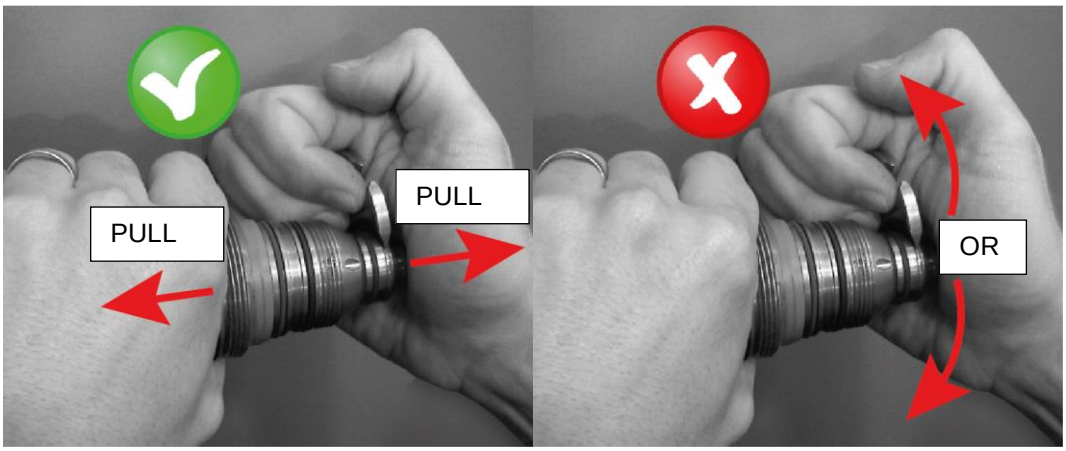
1. Unscrew the torch head from its base by turning the fastening ring to the LEFT. Make sure that the base of the torch is not unscrewed from the torch handle.

2. Remove the external holding ring of the torch head.

3. Remove the internal holding ring of the torch head.

4. Separate the protective cap of the internal or external holding ring.

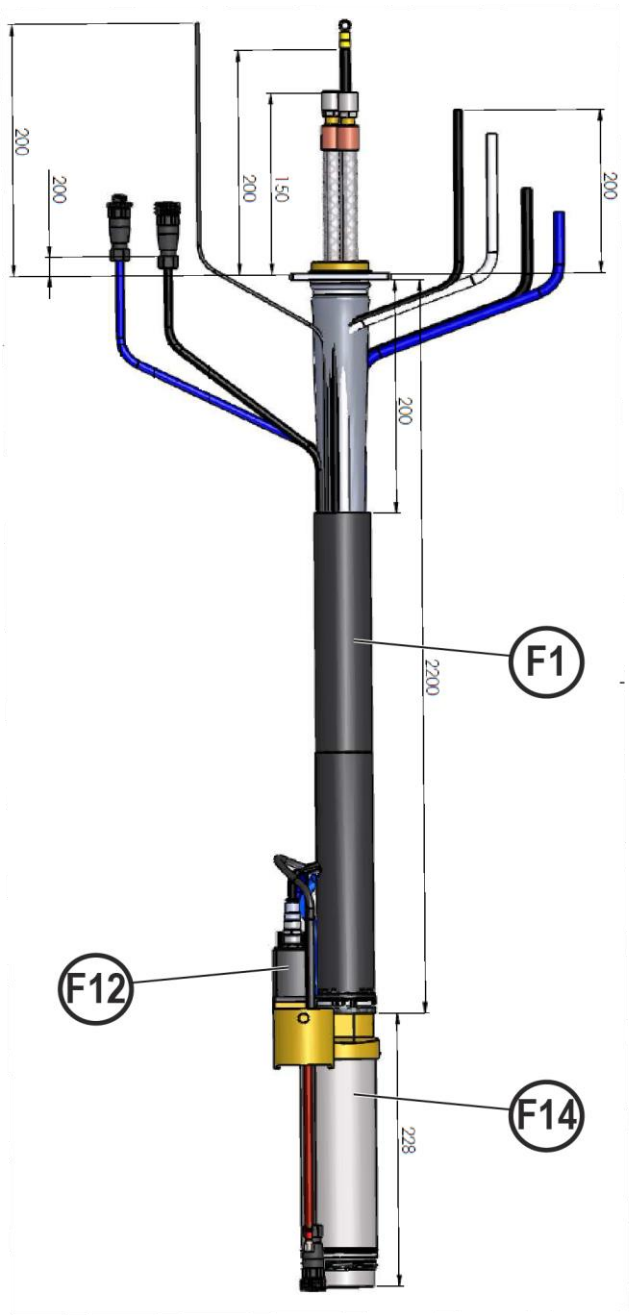
5. Use the tool for removing the upstream nozzle (P/N BK277056) to remove it from the torch head. To do so, insert the tool in the groove of the upstream nozzle and hold the tool/nozzle in the palm of your hand. Separate the two hands with a linear movement as shown in the left-hand image below. Do not use a levering or bending movement as shown in the right-hand image below.

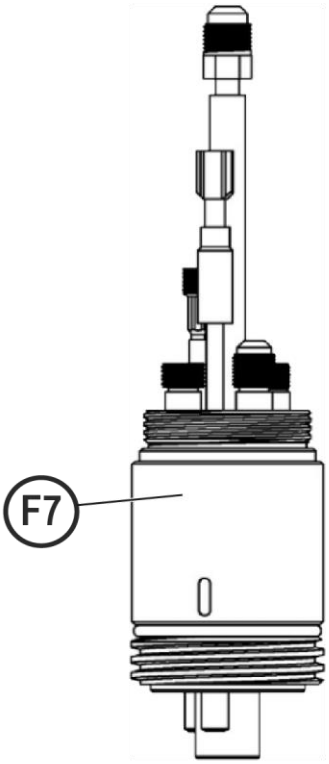


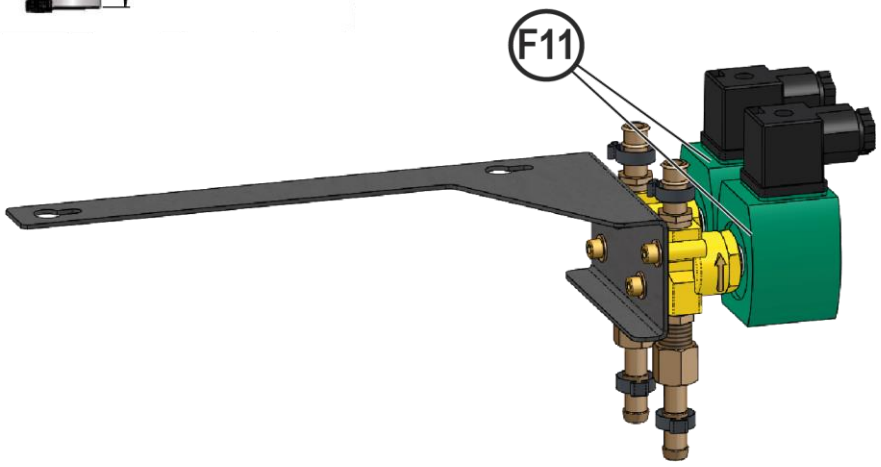
6. Use the tool for removing the diffuser (P/N BK260105) to take the ring off the nozzle.
7. Remove the electrode from the torch head using the appropriate tool:
   - all copper electrodes use the socket P/N BK277087 and the driver P/N BK277086;
8. Inspect all the consumables and O-ring seals for damage or excessive wear. Replace with new consumables if necessary.

9. Inspect any damage sustained by the tube for cooling the torch head.

9 - BUNDLE AND CONNECTOR OF TORCH T5



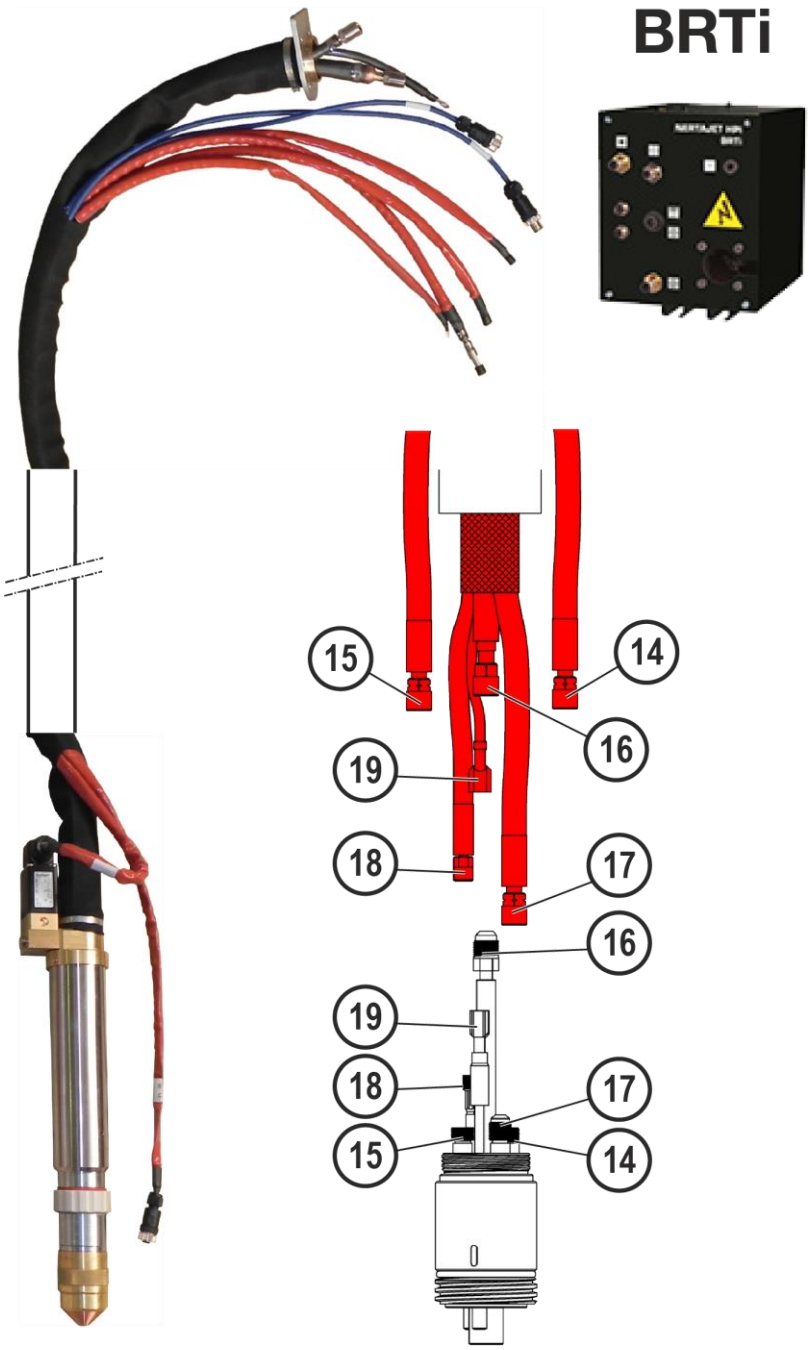




Bundle + connector of torch T5 for HPi			
Reference	**Part no**	**Description**	**Keep in stock**
F1	AS-CS-04150220	Torch **T5** retrofit (connector+bundle) 1.6 m. Connectors compatible with **BRTi**	✔
	AS-CS-04150223	Torch **T5** retrofit (connector+bundle) 2.1 m. Connectors compatible with **BRTi**	✘
F7	BK279000	Connector of torch **T5**	✔
F11	AS-CS-5908124	Water shut-off solenoid valve	✔
F12	AS-CS-5908126	Connector solenoid valve **HPi** / **T5**	✔
F14	AS-CS-04150205	Connector tube for **HPi**	✔

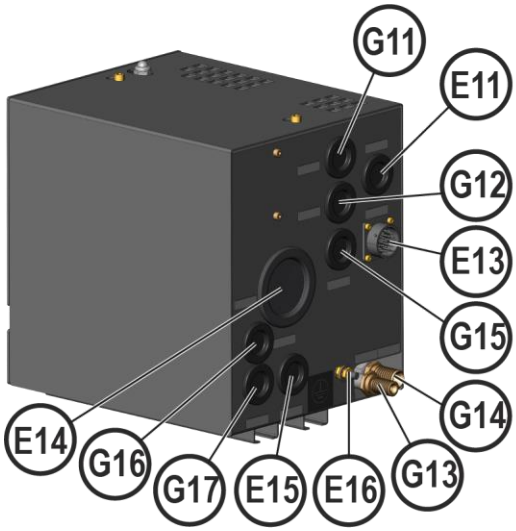
D - TORCH BUNDLES

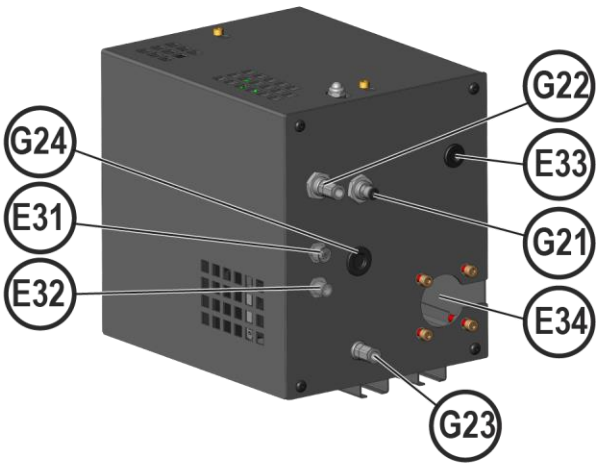
1 - BUNDLE CONNECTION TO TORCH T5

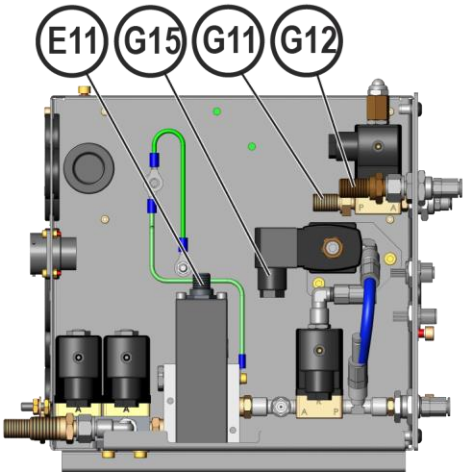


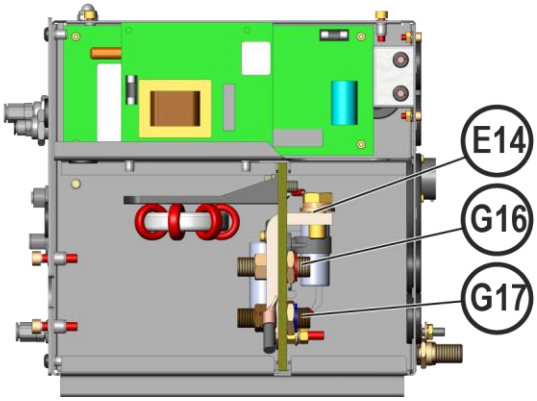
Ref	Description
14	Annular gas
15	Cutting gas
16	Cooling circuit inlet + current supply
17	Cooling circuit return
18	Nozzle cable
19	Plate detection

2 - BUNDLE CONNECTION TO BRTi CABINET



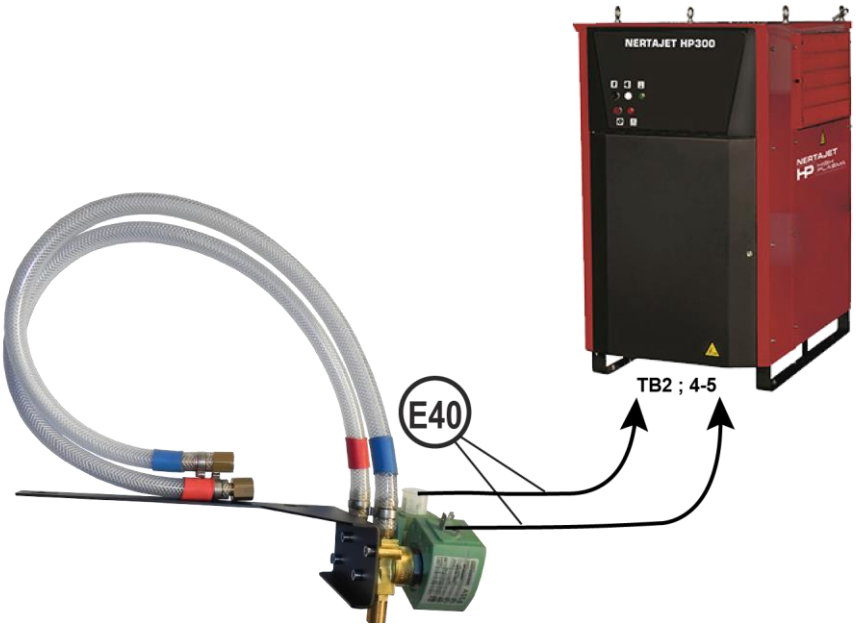






Inputs		Outputs	
G11	Pilot gas/marking input	**G21**	Pilot gas/marking line
G12	Cutting gas input	**G22**	Cutting gas line
G13	Annular gas 1 input	**G23**	Vortex line (not used with torch **T5**)
G14	Annular gas 2 input	**G24**	Annular gas line of torch **T5**
G15	Option (Water for vortex)	**E31**	Torch SV control cable - Y9
G16	Cooling (return)	**E32**	Torch impact safety system cable
G17	Cooling (inlet)	**E33**	Plate detection cable
E11	Annular gas proportional valve control	**E34**	Torch connector bundle
E13	Cable **BRGi** / **BRTi**		
E14	Electrode cable		
E15	Nozzle cable		
E16	Cabinet earth connection **BRTi**		

3 - BUNDLE CONNECTION TO HPi POWER SOURCE



Ref	Description
E40	Water shut-off solenoid valve control bundle

E - SERVICING AND MAINTENANCE

Before starting any work on the torch, make sure that the power source is switched off.

During the cutting operation, the torch tip may heat considerably. Before removal, it is imperative to use protective equipment.

1 - SERVICING AND MAINTENANCE

Plasma cutting torches **T5** are the location of different phenomena that create the plasma arc. For that, they are supplied with:

- electrical energy,
- plasma gas,
- cooling water,

through a bundle of pipes and cables.

a) NOTES:

* Normal wear and tear of the nozzle and the electrode limit the life of these parts, making it necessary to replace them.
* Assembly errors or the omission of parts would harm the life of the torch.
* While removing or assembling the parts making up the torch, handle them with care to avoid breaking, scratching or marking them.
* Always use original manufacturers' parts**.**

b) BUNDLE:

The bundle must be installed so that it is safe from mechanical, chemical and thermal damage.

Monitor the condition of the ducting that covers the bundle.

If there is any defect, explore the condition of the various conduits that make up the bundle.

Also check the cable to the piece (ground cable).

Work for maintaining and repairing insulating ducts, pipes and enclosures may not be carried out in a haphazard manner.

Regularly check all the connections and make sure that the electrical connections are not heating.

OBSERVATIONS:

- when the electrode is removed, mind you do not damage the end of the immersion tube located in the body of the torch,

- regularly make sure that the immersion tube is properly fastened before putting back the electrode.

2 - BASIC RULES TO FOLLOW WHILE ASSEMBLING THE T5 TORCH FOR HPi

The consumables and torch are to be stored in a clean dry place.

Never use soiled or over-used consumables.

- The hafnium slug of the electrode must not show wear « **U1** » (crater depth) above 1,5 mm:

- The nozzle holes must not be deformed or obstructed.

- All consumables and the torch must be clean and dry (clean with a dry cloth if necessary)

- Never use a dusty, moist or greasy cloth

Visually check the concentricity of the holes of the upstream and downstream nozzles

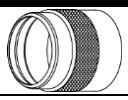
3 - MAXIMISING THE LIFE OF CONSUMABLES

Maximise the life of consumable parts by applying the following guidelines :

1. Use the recommended drilling height. If the drilling height is too low, the molten metal ejected while drilling may damage the protective nozzle and the nozzle. If the drilling height is too high, that would lead to an excessively long arc time and damage the nozzle.
2. Never ignite the torch in the air. That could damage the nozzle.
3. Make sure that the torch does not touch the plate while cutting. The protective nozzle and nozzle could be damaged.
4. Line cutting should be preferred as far as possible. Starting and stopping the torch is more harmful for consumables than continuous cutting.

4 - INSPECTION OF DAMAGE

If the cutting quality is poor, follow the indications below to determine which consumables are to be replaced. Inspect all the components in order to eliminate any debris, dirt or surplus lubricant.

Component	Check	Corrective action
External cover 	Impacts, scratches	Replace the external cover
Protective nozzle 	Central hole deformed	Replace the protective nozzle
	Impacts, scratches	Replace the protective nozzle
	Dry the O-ring seal	Apply a fine coat of O-ring seal lubricant
	O-ring seal damaged	Replace the protective nozzle
Internal cover 	Central hole deformed	Replace the protective nozzle
	Impacts, scratches	Replace the protective nozzle
	Dry the O-ring seal	Apply a fine coat of O-ring seal lubricant
	O-ring seal damaged	Replace the protective nozzle
Nozzle 	Central hole deformed	Replace the nozzle
	Wear or arc formation	Replace the nozzle
	Dry the O-ring seals	Apply a fine coat of O-ring seal lubricant
	O-ring seal damaged	Replace the nozzle
Gas diffuser 	Damage	Replace the diffuser
	Holes blocked	Clean the holes by blowing compressed air. Replace the diffuser if the holes cannot be cleared
	Dry the O-ring seals	Apply a fine coat of O-ring seal lubricant
	O-ring seal damaged	Replace the diffuser
Electrode 	Hollowing of tip	Replace the electrode if the central hollow is above 1 mm in a copper electrode.
	Wear or arc formation	Replace the electrode
	Dry the O-ring seals	Apply a fine coat of O-ring seal lubricant
	O-ring seal damaged	Replace the electrode

5 - TROUBLESHOOTING

FAULTS	REMEDIES
Difficult ignition of pilot arc	- check the nature and pressure of the pilot gas (argon) using the tables. - make sure that there is an HF burst between the electrode and the nozzle. - check the gas piping over the entire circuit: to do so, put a blocked nozzle in place on the torch and run a gas test. Make sure that the pressure displayed on the regulator does not change after the gas cylinder is shut; if the pressure drops ⇒ leak.
The arc blows at the time of the transfer.	- reduce the ramping up delay. - check the pressure values of the cutting gas. **NB:** **Mind the regulator pressure build-up; take care not to move the torch away excessively at the time of transfer: risk of arc break.**
Transfer difficult	- check the connection of the electrical cable to the piece (ground cable). - check the electrode circuit, particularly the connections of the bundles. - check the condition of the cone nozzle: it must be changed if the cutting channel widens at the bottom.
Nozzle destroyed	- Nozzle destruction may be due to: - an excessively fast rise to power: increase the power rise time, - contact with the piece due to metal splatter during mid-plate striking: raise the torch at the time of the transfer, - direct contact with the piece. - lack of cutting gas: check the flow rate or the circuit of the cutting gas, - intensity too high for the nozzle diameter used: see table, - deficient cooling: check the flow rate of the return circuit and the temperature of the cooling circuit,
Flat electrodes are rapidly worn or destroyed.	- check the condition of the gas gun. - increase the cutting gas pressure. - check the cooling circuit. - immersion tube in poor condition (affects flow rate).

6 - SPARE PARTS

Spare parts relating to the consumables of torch T5 can be found in section:

- **C - Description of different assemblies for plasma cutting**
- **D - Torch bundles**

PERSONAL NOTES

Lincoln Electric France S.A.S.
Avenue Franklin Roosevelt 76120 Le Grand Quevilly
76121 Le Grand Quevilly cedex
www.lincolnelectriceurope.com