TOKINARC®
TOKIN CORPORATION

Instruction Manual

CO_2 MAG Welding Torches

Semi-Automatic Torches

TL Series

180amp.
TL-18

200amp.
TL-20
TL-20F
TL-20L

350amp.
TL-35
TL-35K
TL-35F
TL-35G

Please read this instruction manual before using the product.	Please be sure to deliver this instruction manual to the end user of this product.

株式会社トーキン

Contents

NOTES REGARDING SAFETY

Be sure to read these instructions before using the welding torch.

- In order to ensure safe operation, this equipment should only be set up, inspected and maintained by a qualified person, or by someone who has a through understanding of the welding equipment and who has received sufficient training in its use.
- In order to ensure safe operation, this equipment should only be operated by people who have read these instructions throughly and understood their contents and who have the knowledge and ability to handle the equipment safely.
- It is recommended that instruction in all aspects of safe operation should be obtained from institutions snd associations which provide courses in proper welding techniques taught by qualified welding instructors.
- After reread these instructions, keep them in a safe and easily-accessible place so that they can be reread at a later date as required.
- Please contact TOKIN CORPORATION or its dealer if there are any unclear points in this manual. If there are any questions regarding service, contact the dealer of your purchase or TOKIN CORPORATION. The contact address and the telephone number are printed on the rear cover of this instructions.

1.Precautions for safety

- Different degrees of personal injury or equipment damage can occur if this welding torch is used incorrectly. The terms and symbols which appear in the "NOTES REGARDING SAFETY" section of these instructions are classified into three ranks according to the possible degree of danger or injury that each one warns against.

Symbol	Term	Definition
⚠	DANGER	The instructions which follow this term represent situations where failure to follow the instructions will almost certainly result in severe injury or death.
	WARNING	The instructions which follow this term represent situations where failure to follow the instructions can possibly result in severe injury or death.
	CAUTION	The instructions which follow this term represent situations where failure to follow the instructions may result in injury to the operator or physical damage.

In the above definitions, "severe injury" refers to cases of blindness, physical wounds, burns (high- and medium-temperature), electric shocks, fractures or poisoning which may leave scars or lasting ill-effects and for which medical treatment or prolonged hospitalization may be necessary. "Injury refers to cases of physical wounds, burns and electric shocks for which prolonged medical treatment and hospitalization are not necessary, and "physical damage" refers to extensive damage that may result in damaged property or broken equipment.

2.Items that must always be observed for safety

WARNING ⚠ **These items should be observed at all times in order to prevent the possibility of serious personal injury.**

- Welding torches have been designed and manufactured with full consideration given to safety; however, the warning and cautions given in this "Notes Regarding Safety" section must always be strictly observed during use. If they are not observed, severe injury or death through misoperation may result.
- Do not unauthorized personal come into the area where welding equipment is being used.
- When welding equipment is turned ON, it generates a magnetic field. This magnetic field may adversely affect the operation of some sensors and gauges. For the same reason, people who are using a heartbeat pace maker must not go close to operating welding equipment or go into workshops where welding equipment is being used unless prior medical approval has been obtained.
- In order to ensure safe operation, welding torch, wire feeder and the welding power supply equipment should only be set up, inspected, maintained and repaired by a qualified person, or by someone who has a through understanding of welding equipment and who has received sufficient training in its use.
- In order to ensure safe operation, welding torch should only be operated by people who have read these instructions and the instructions for the wire feeder and power supply equipment through and understood their contents and who have the knowledge and ability to handle the equipment safely.
- Do not use welding torch for any applications other than for arc welding as explained in these instructions and in the instructions for the wire feeder and power supply equipment.

WARNING ⚠ ϟ **These items should be observed at all times in order to prevent the possibility of electric shocks.**

*Touching the charged parts can cause fatal electric shocks or burns. Welding wire, contact tip and tip body are charged whenever the welding torch is turned ON and operating.

- Never Torch charged parts such as welding wire, or contact tip while welding torch is turned ON and operating.
- Grounding of welding power supply case and base metal and tools which are connected electrically to the base metal, must be carried out by a qualified electrician in accordance with the proper electrical engineering regulations.
- Turn OFF all input power supplies by turning OFF the switches in the distribution box before carrying out any inspections or maintenance.
- Inspections and maintenance should be carried out at periodic intervals, and the equipment must not be used until any damaged parts found have been repaired or replaced.
- Do not use cables that are damaged or that have exposed conductors, or that are rated lower than the specified level.
- Make sure that the cable is connected securely and that it is insulated.
- Welding cable should be connected as close as possible to the base metal being welded and it should be connected securely.
- Do not wear gloves which are torn or wet.
- Use a safety strap if welding in raised places.
- Turn OFF all power switches and the input power supply when not using.

CAUTION ⚠  **Wear protective equipment at all times to protect yourself and others against arc beam, welding flashes, flying spatter and slag, and noise.**

*Welding flashes contain harmful ultraviolet and infrared lights which can cause inflammation or burn to eyes.
*Flying spatter and slag can hurt the eyes and cause serious burns.
*The noise generated by welding can cause problems with hearing.

- Always wear protective goggles or welding masks which have sufficient shielding properties when doing welding or when observing welding being done.
- Wear protective glasses to protect the eyes from spatter and slag.
- Hang a curtain around the area where welding is being carried out to prevent welding flashes from affecting passers-by.
- Wear protective clothing such as leather gloves, longsleeves, leg covers and a leather apron for protection while welding.
- Wear noise proof ear protectors if the noise level is too high.

CAUTION ⚠  **Use protective equipment at all times to protect yourself and others against any fumes and gases that may be generated from welding.**

*Fumes and gases are generated when welding is carried out. Inhaling fumes and gases can be dangerous to your health.
*Welding in confined spaces can reduce the oxygen content in the air, which can result in suffocation.

- To provent gas poisoning and suffocation, always use a proper ventilation equipment to vent gases locally or entirely as stipulated by labor safety regulations and air contamination prevention regulations, or use an adequate breathing apparatus.
- When welding in a confined space, make sure that the air is circulating freely, wear some kind of breathing apparatus, and work only under the supervision of a properly trained supervisor.
- Toxic gases may be generated if welding is carried out near where degreasing, cleaning or demisting operations are also being carried out. Avoid welding near places where such operations are being carried out.
- Welding metal which has been plated with zinc will cause toxic fumes. Remove the plating before welding, or wear adequate absorption equipment for protection.

CAUTION ⚠  **Be sure to observe the following to avoid burns from the nozzle and tip or injury from fine wire ends.**

*The nozzle or contact tip becomes very hot after use, and it can cause serious burns if touched.

- Do not touch the nozzle or tip immediately after welding has been completed.
- Do not bring the tip of the welding torch close to your face during wire inching.

CAUTION ⚠  **Be sure to observe the following to avoid fires, explosions and rupturing.**

*Fires can be caused by spatter and base metals which are hot after welding.
*Fire can occur as a result of heat generated by the flow of current if the cable has not been correctly connected or there is an incomplete contact in the current path at the base metal being used.
*Explosions can occur if an arc is generated near containers that contain flammable substances such as gasoline.
*Ruptures can occur if welding sealed objects such as tanks and pipes.

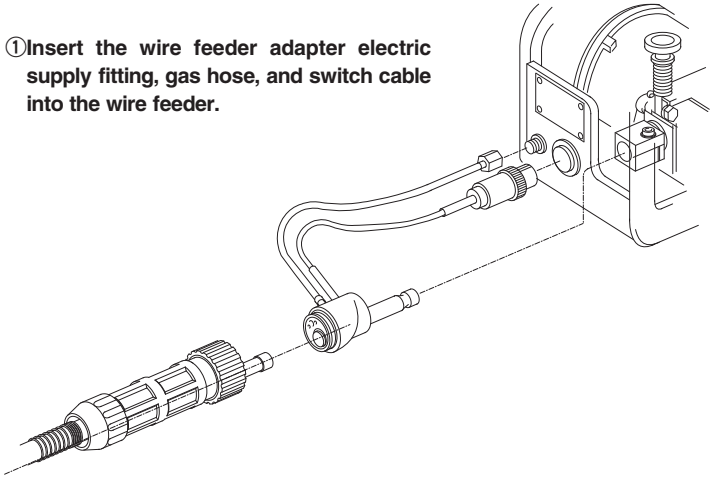
- Do not use the welding torch in places where flying spatter can cause flammable materials to ignite.
- Do not use the welding torch near places where flammable gases are present.
- Keep base metals away from flammable materials immediately after welding as they may have become hot.
- Remove any flammable materials on the other side of ceilings, floors and walls that are being welded as sparks from welding could cause such materials to ignite.
- The welding cable should be connected as close as possible to the base metal being welded, and it should be connected securely.
- Do not weld gas cylinders which still contain gas.
- Do not weld sealed tanks or pipes.
- Keep a fire extinguisher close by the place where welding is being carried out in case a fire starts.

Specifications

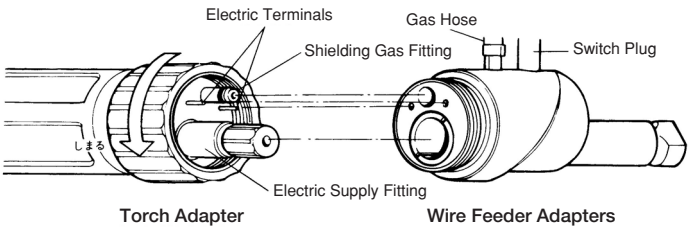
Torch Model		TL-18	TL-20 TL-20L	TL-20F	TL-35 TL-35G	TL-35F TL-35K
Rated Current	A	180	200	200	350	350
Wire Size	mm	(0.6,0.8) 0.9	(1.0) 1.2	(0.8,0.9,1.0) 1.2	(0.8,0.9,1.0) 1.2	(0.8,0.9,1.0) 1.2
Cable Length	m	3	3/4	3/4	3/4/5/6	3/4/5/6
Duty Cycle	% (CO_2)	40	40	40	35	35
	% (MAG)	20	20	20	20	20
Cooling Method		Air Cooled				
Apparent Weight	Kg	0.65	0.65 (0.85)	0.65	1.0	1.0
Total Weight	Kg	1.9	1.9 (2.1)	1.9	2.3	2.3

Preparation for Welding

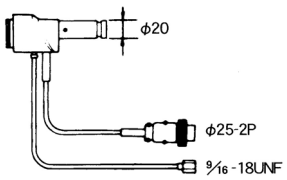
①Insert the wire feeder adapter electric supply fitting, gas hose, and switch cable into the wire feeder.

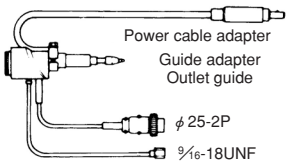


②Next insert the torch adapter electric supply fitting, shielding gas fitting, and electric terminals into the wire feeder adapter. Be sure everthing is properly inserted before firmly tightening the adapter nut.



Wire Feeder Adapters

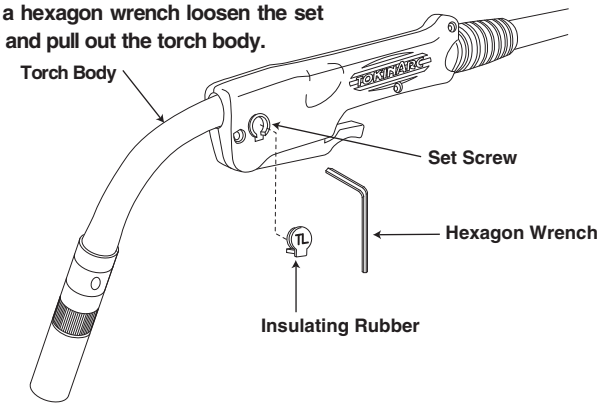
Adapter Type	Shape and Dimensions	Applicable Wire Feeder
N Adapter (020030)		**Panasonic** For all Air Cooled Wire Feeder No Adapter is needed when using a Uni-Con C series torch

Adapter Type	Shape and Dimensions	Applicable Wire Feeder
D Adapter **350A** (020029) **500A** (020031)		**DAIHEN** CM-231・CM-144 CML-23・CM-501 No Adapter is needed when using a blue torch

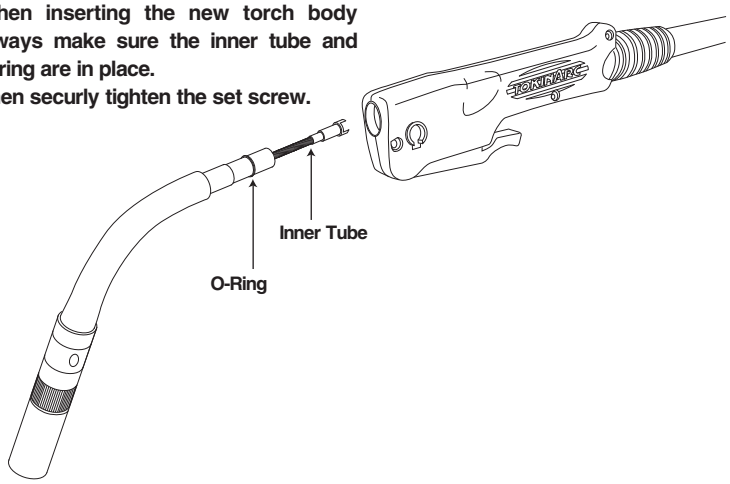

EURO Direct Connection

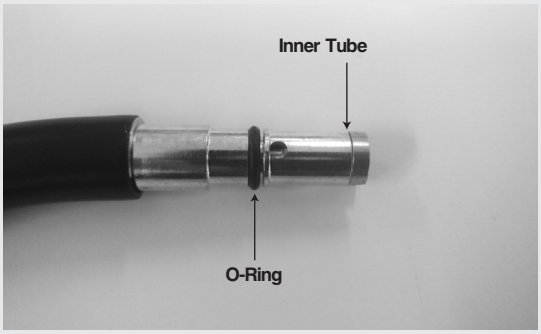
Replacing the Torch Body

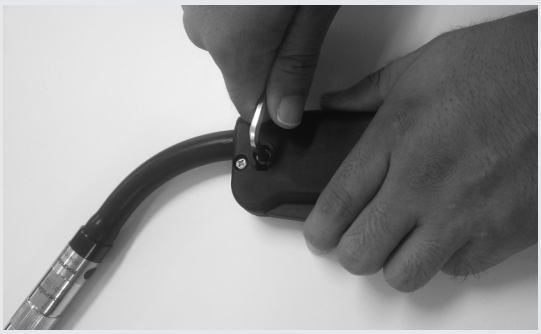
Using a hexagon wrench loosen the set screw and pull out the torch body.



When inserting the new torch body always make sure the inner tube and O-ring are in place.
Then securly tighten the set screw.



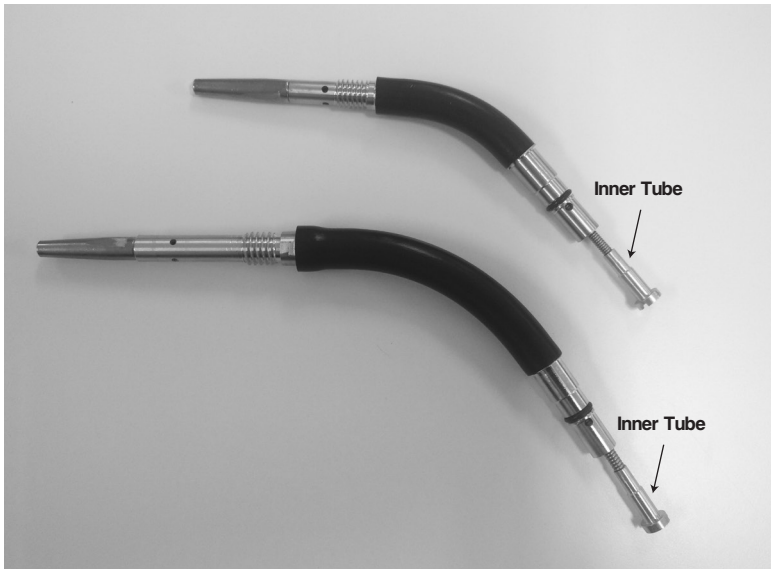




Please be sure to fully insert the torch body and firmly tighten the set screw.
If inadequately tightened heat generation from poor electric supply and gas leaks may occur.

Replacing the Inner Tube

If wire feeding becomes unsteady due to inner tube wear or is clogged with wire shavings, rust or dirt, please remove the torch body and replace the inner tube.

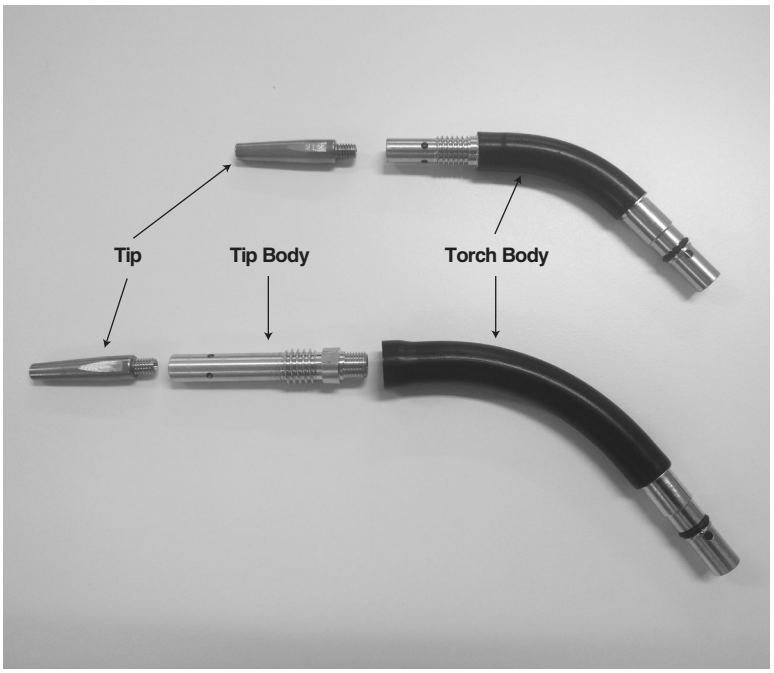


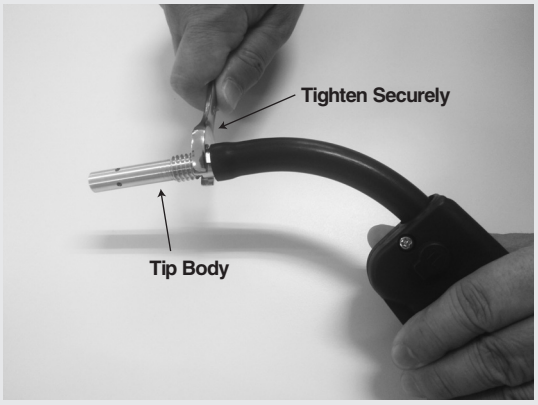
Part No.	Item
038 053	TL-18/20
038 072	TL-20L
038 061	TL-20F
020 210	TL-35,35K,35G
020 212	TL-35F

NOTICE: To adjust the length of the inner tube cut from the front end of the new inner tube to suit the length of the torch body.

Replacing the Tip Body

If damaged by heat or spatter please unscrew the tip body using a wrench and replace with a new one.

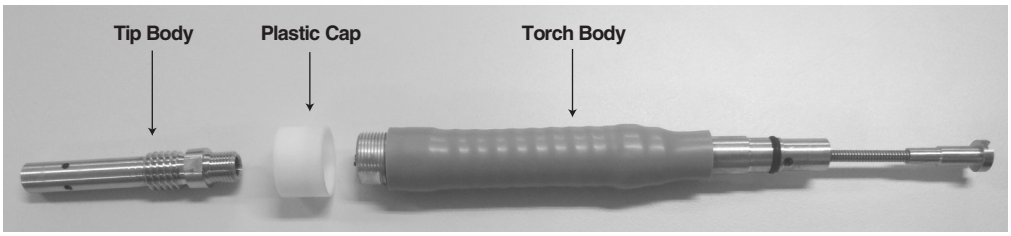




NOTICE: To avoid excess heat generation and unstable arc please be sure to always tighten the tip body securely.

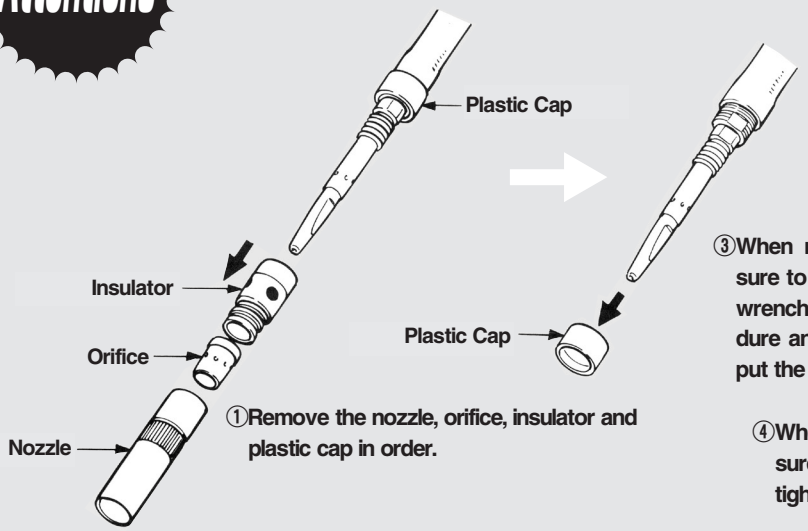
■TL-35F

When removing the tip body from a flexible torch body be careful not to damage the plastic cap.



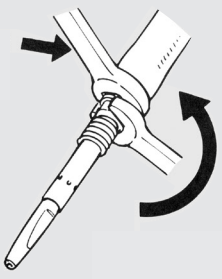
Attentions

Flex Replacing the Tip Body



①Remove the nozzle, orifice, insulator and plastic cap in order.

②Hold the torch body with a wrench and remove the tip body by turning it counterclockwise with another wrench.



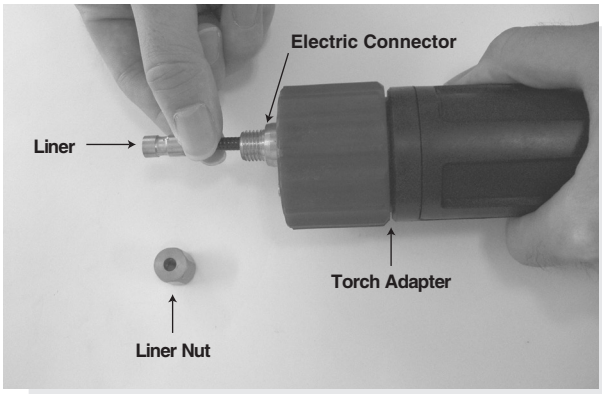
③When replacing the tip body, be sure to hold the torch body with a wrench as well as removal procedure and tighten the tip body and put the plastic cap back.

④Whenever attaching or detaching the tip body always be sure to hold the torch body with a wrench. After securely tightening the tip body screw on the plastic cap.

Replacing the Liner

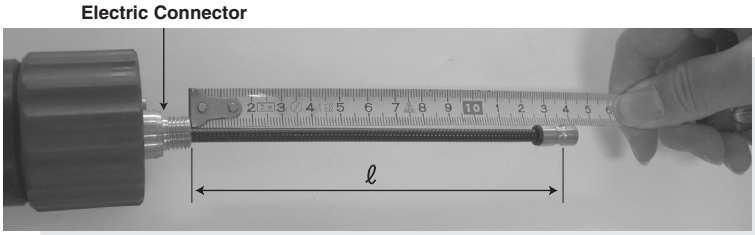
For Tokin Connection

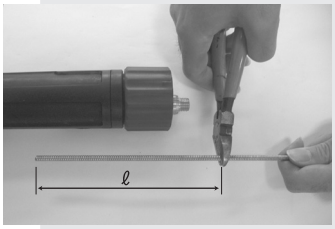
If wire feeding becomes unsteady due to liner wear or is clogged with wire shavings, rust or dirt, please replace the liner by the following procedure.

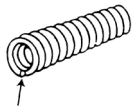


①Place the cable in a straight line.

②Unscrew the liner nut. Rotate the torch end counterclockwise until the liner fitting can be easily grasped. Pull out the liner.







File off any burred edges.

③Fully insert the new liner into the cable. Measure the length "L" which protrudes from the end. Pull the liner out and cut off the same length "L" from the front. After cutting, file off any burred edges. A long liner will cause gas leaks, whereas a short liner will disrupt wire feeding.

Without twisting carefully insert the length-adjusted liner into the cable.

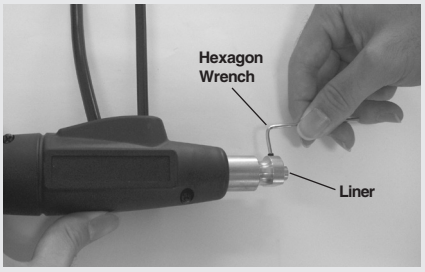
④Without twisting carefully insert the length-adjusted liner into the cable. Because the O-ring at the front of the liner fitting prevents gas leaks, please be careful when measuring For Direct Connection.

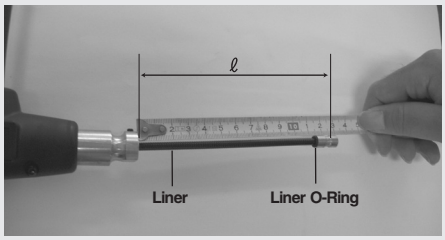
After setting the liner as illustrated, tighten the liner nut by hand. Hand-tightening will be enough. Do not use a wrench, pliers, or other tools.

For Direct Connection

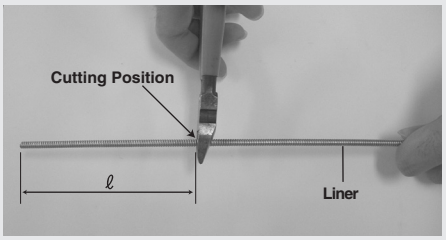
①Place the cable in a straight line.

②Using a hexagon wrench loosen the set screw on the electric supply fitting. Rotate the torch end counterclockwise until the liner fitting can be easily grasped. Pull out the liner.





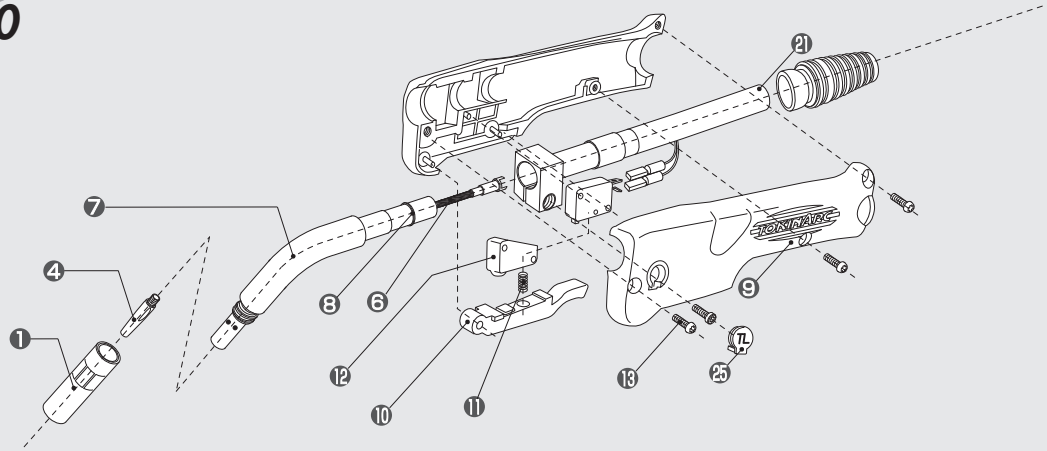
③Fully insert the new liner into the cable. Measure the length "L" which protrudes from the end. Pull the liner out and cut off the same length "L" from the front. After cutting, file off any burred edges.



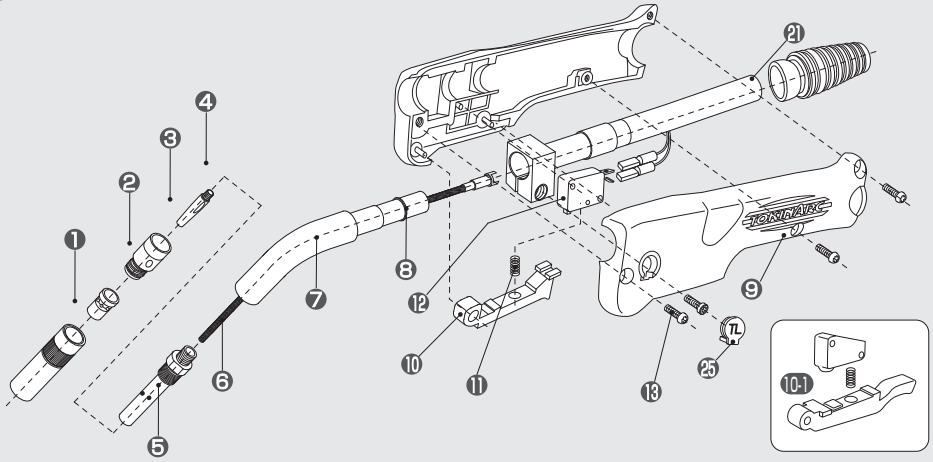
④Without twisting carefully insert the length-adjusted liner into the cable. Because the O-ring at the front of the liner fitting prevents gas leaks, please be careful when measuring. A long liner will cause gas leaks, whereas a short liner will disrupt wire feeding. Using a hexagon wrench tighten the set screw on the electric supply fitting.

■Parts List

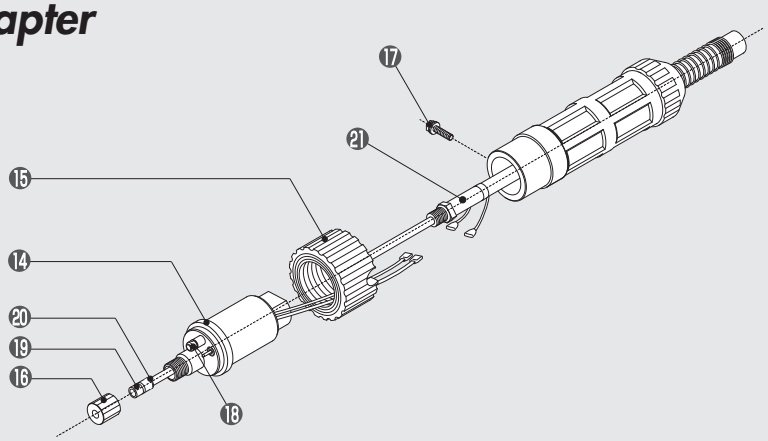
TL-18/20



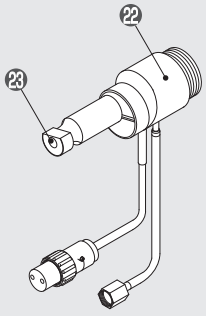
TL-35



Torch Adapter

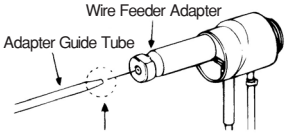


Adapter



■**Replace the guide tube**

1.Push by screwdliver head and pull out guide tube.



2.Insert new adapter guide tube from the sharpened tip.

■Parts List

1.Nozzle

Part No.	Item
038 040	TL-18,20 Φ13
038 041	TL-18,20 Φ16mm
038 042	TL-18,20 Narrow Nozzle
001 002	Φ16(350A)73L
001 003	Φ12(350A)73L
001 008	Φ18(350A)73L
001 009	Φ16(350A thick 2.5t)
001 004	N Narrow Nozzle (350A)
001 007	350A Arc Spot Nozzle

2.Orifice

Part No.	Item
003 002	S (350A)

3.Insulator

Part No.	Item
004 002	S (350A)

4.Contact Tip

Part No.	Item
002 016	N Tip 0.6
002 005	N Tip 0.8
002 001	N Tip 0.9
002 002	N Tip 1.0
002 003	N Tip 1.2
002 011	N Long Tip 0.6
002 006	N Long Tip 0.8
002 007	N Long Tip 0.9
002 008	N Long Tip 1.0
002 009	N Long Tip 1.2

5.Tip Body

Part No.	Item
036 001	A (350,450A)

6.Inner Tube

Part No.	Item
038 053	TL-18/20
038 072	TL-20L
038 061	TL-20F
020 210	TL-35,35K,35G
020 212	TL-35F

7.Torch Body

Part No.	Item
038 054	TL-18,20
038 060	TL-20F
038 056	TL-20L
020 306	TL-35
038 070	TL-35K
020 205	TL-35F
020 202	TL-35G

8.Torch Body O-Ring

Part No.	Item
038 055	TL (P-8)

9.Handle

Part No.	Item
077 091	TL Handle

10.Switch Lever

Part No.	Item
072 003	TL Switch Lever
077 092	TL Long Switch Lever

11.Switch Spring

Part No.	Item
032 016	CSH/TH/TL Spring

12.Micro Switch

Part No.	Item
032 013	CSH/TL Micro Swith with Cover

13.Hexagon Socket Bolt

Part No.	Item
020 123	TL

14.Power Adapter

Part No.	Item
020 001	Power Adapter

15.Adapter Nut

Part No.	Item
020 002	Adapter Nut

16.Liner Nut

Part No.	Item
020 003	TL/CSH/TH/CP

17.Screw

Part No.	Item
020 004	TL/CSH/TH/CP

18.Adapter O-Ring

Part No.	Item
020 005	TL/CSH/TH/CP

19.Liner

Part No.	品名
037 001	TL 0.6 3m
037 002	TL 0.8-0.9 3m
037 045	TL 0.8-0.9 4m
037 003	TL-20,35/TH-35 1.0-1.2 3m
037 004	TL-20,35/TH-35 1.0-1.2 4m
037 046	TL-20,35/TH-35 1.2 4.5m
037 005	TL-20,35/TH-35 1.2 5.0m
037 006	TL-20,35/TH-35 1.2 6.0m

19.Teflon Liner

Part No.	Item
043 1030	TL/TH-35 1.2 3m

20.Liner O-Ring

Part No.	Item
036 035	S-4

21.Power Cable

Part No.	Item
092 030	TL-18/20 3m
092 040	TL-18/20 4m
093 030	TL-35 3m
093 040	TL-35 4m
093 045	TL-35 4.5m
093 050	TL-35 5m
093 060	TL-35 6m

22.Adapter

Part No.	Item
020 030	N
020 029	D (350A)

23.Adapter Guide Tube

Part No.	Item
020 040	N,M,Mc
020 041	D
020 043	B
020 044	H

24.Switch Lever Pin

Part No.	Item
072 021	TL

25.Insulation Rubber

Part No.	Item
077 093	TL

Parts for D Adapter

Part No.	Item
020 054	Power Cable Adapter 350A
020 052	Outlet Guide
020 053	Guide Adapter

MEMO

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CO_2 MAG Welding Torches

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