WATER-COOLED TORCH

TA-22SSPW-FL
TA-200SSPW-FL

OPERATION MANUAL

AMADA®

Z06OM1177177-05

Thank you for purchasing our Water-Cooled Torch **TA-22SSPW-FL/200SSPW-FL**.
This operation manual describes its method of operation and precautions for use.
Read this operation manual carefully prior to use. Store appropriately for ready reference.

Contents

1. Precautions for Handling

About Safety

- To ensure safety, installation, maintenance, and repair of this device must be made by qualified personnel or personnel familiar with the device.
- To ensure safety, the personnel who operates this device must understand this operation manual and acquire knowledge and skills of safe handling.
- After reading this operation manual, save it in a proper place where you can easily access.
- If there is anything unclear, contact us.

Safety Precautions

DANGER: Denotes operations and practices that may imminently result in serious injury or loss of life if not correctly followed.

WARNING: Denotes operations and practices that may result in serious injury or loss of life if not correctly followed.

CAUTION: Denotes operations and practices that may result in personal injury or damage to the equipment if not correctly followed

WARNING

- This device was designed with safety in mind, but be sure to follow warnings and precautions in this operation manual when using it. If not followed, serious accident causing loss of life or serious injury may result.
- Keep any unauthorized people out of the device and welding site.
- A person who uses a pacemaker must not approach the welding machine or walk around the welding site while the welding machine is in operation, without being permitted by his/her doctor. The welding machine generates a magnetic field and has effects on the operation of the pacemaker while it is turned on.

WARNING

- Touching to the charged portion causes fatal electric shock or burns. With power output from the welder, electrode, collet body, collet, and cap are electrically charged.
- For installation and maintenance check, be sure to turn off the input power with switch in switch box.
- Be sure to tighten and isolate the cable connection.
- Maintain and inspect the device periodically, and repair any damage nearby before starting operation.
- Do not use cables of insufficient current capacities, damaged, or exposed conductor.
- Securely connect the EARTH cable as close to a workpiece to be welded as possible.
- Do not use torn or wet gloves. Always use dry insulating gloves.
- When not in use, turn off the power to all equipments.

⚠ CAUTION

- Arc light source can irritate the eyes or burn the skin.
- Spatter and slag can damage the eyes or burn the skin.
- Noises can damage hearing.
- When monitoring the welding site or welding, wear an eye protector with sufficient scale or protective masks for welding.
- To protect eyes from spatter and slag, wear protective glasses.
- Put up protective curtains around the welding site to protect people's eyes from arc light source.
- When welding, put on protective gear such as leather protective gloves for welding, long-sleeve jacket, leg cover, leather apron, etc.
- For loud noises, use ear protectors.

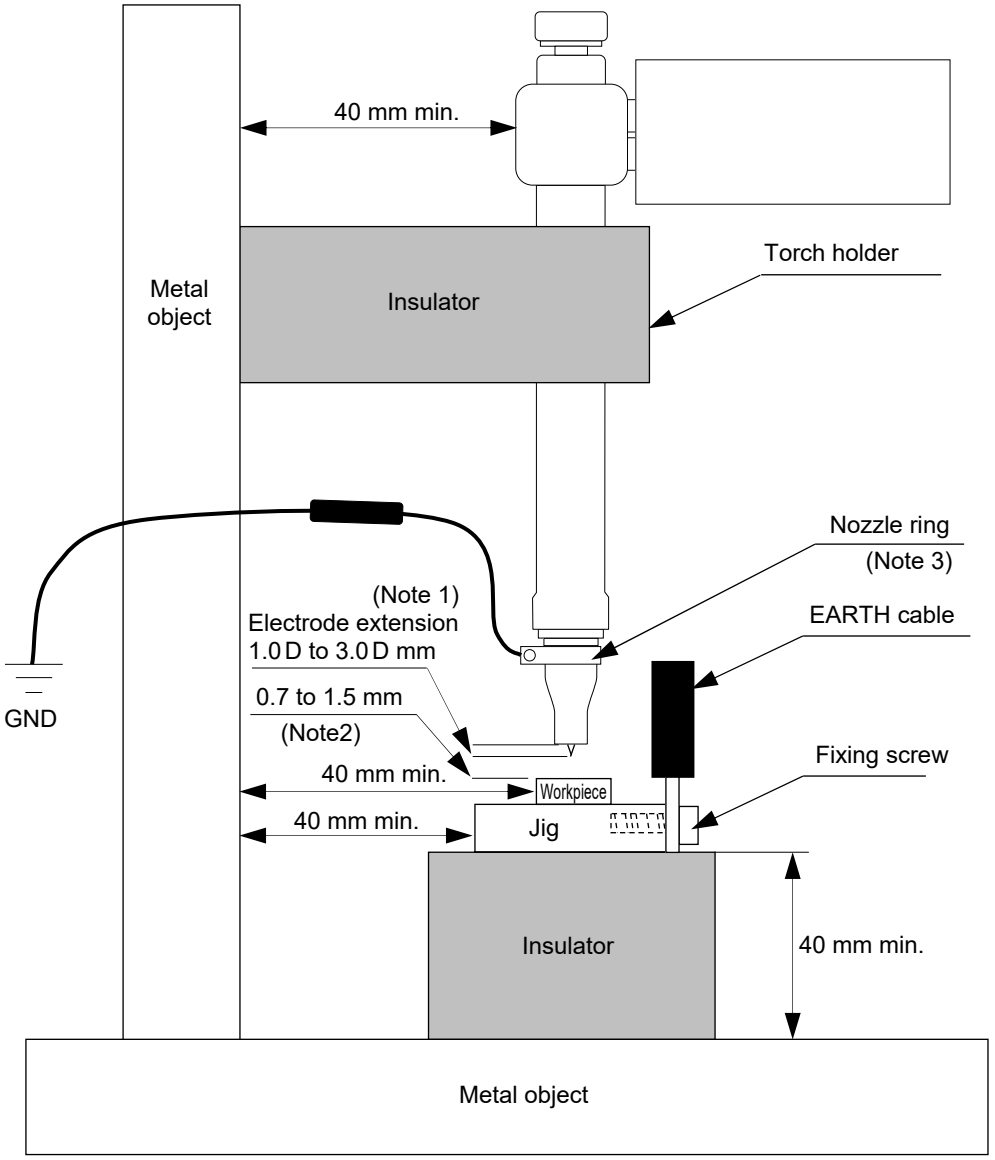
⚠ CAUTION

- Inhalation of gas or fume produced during welding can cause health damage. The Ministry of Health, Labor and Welfare in Japan revealed that "weld fumes" may cause worker's health problems such as neurological disorder. When using this product, wear a dust-proof mask and perform ventilation in the workshop to prevent the occurrence of health problems.
- Welding in narrow spaces can cause suffocation from oxygen deficiency.
- In places set by regulations (Ordinance on the Prevention of Oxygen Deficiency, etc.), provide adequate ventilation or use a breathing apparatus, etc. to avoid gas poisoning or suffocation.
- For welding in narrow spaces, be sure to provide adequate ventilation or use a breathing apparatus, etc. in addition to performing a work under the supervision of trained observer.
- Do not perform welding near degreasing, cleaning, and spray works. Performing welding near such works can produce harmful gas.

⚠ CAUTION

- Nozzle and electrode are very hot just after welding. Touching them carelessly may result in burns.
- Do not touch nozzle and electrode by hand just after completion of welding.

2. Installation



Note 1: Let the electrode diameter φ D mm. The dimension above is reference. Check the proper value.

Note 2: The clearance between electrode and workpiece changes depending on weldment. The dimension above is reference. Check the proper value.

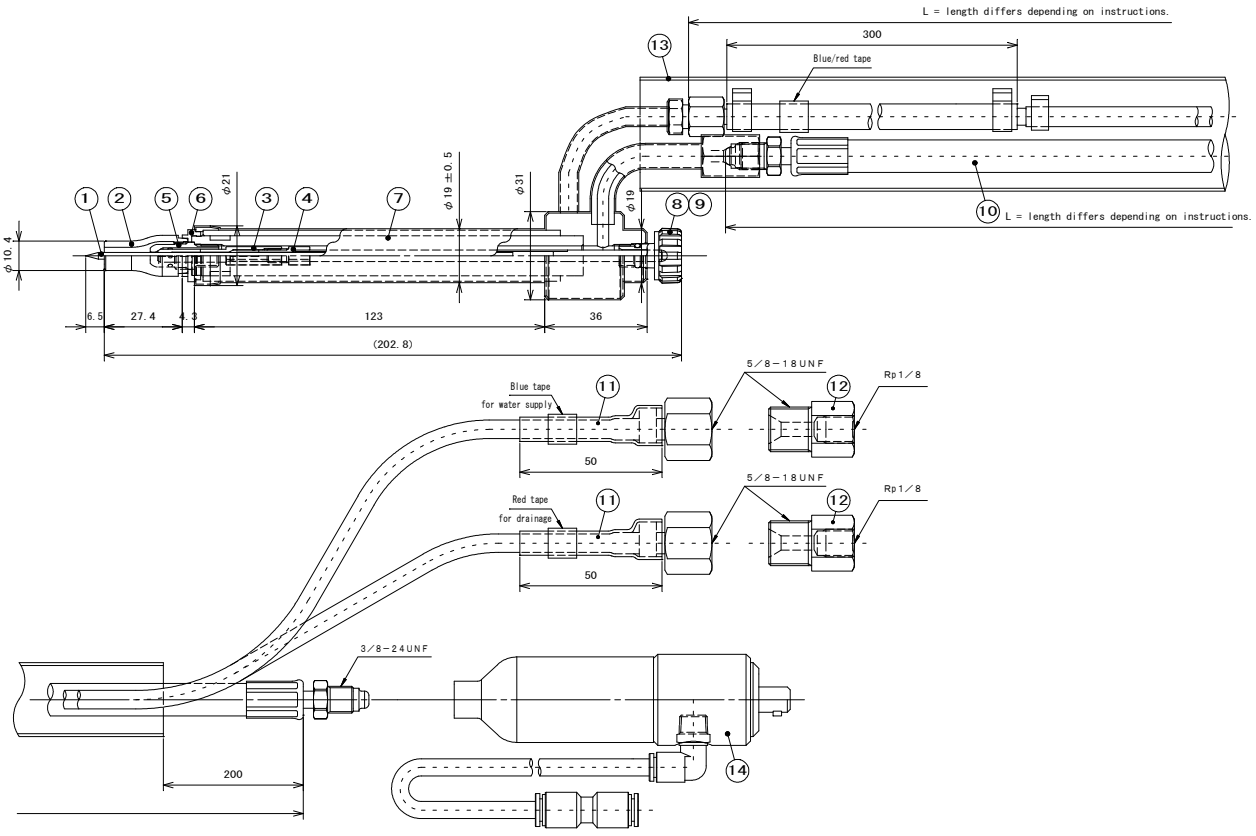
Note 3: Install the nozzle ring to the nozzle and ground it. This may increase the probability of LOST.
* Since LOST is caused by multiple factors, it is not totally eliminated.

3. About Torch

(1) Specifications

This water-cooled torch is designed for installing on the automated machine with high duty cycle.
The machine can be used by cooling the torch with water.

① TA-22SSPW-FL, Outline drawing (dimensions in mm)

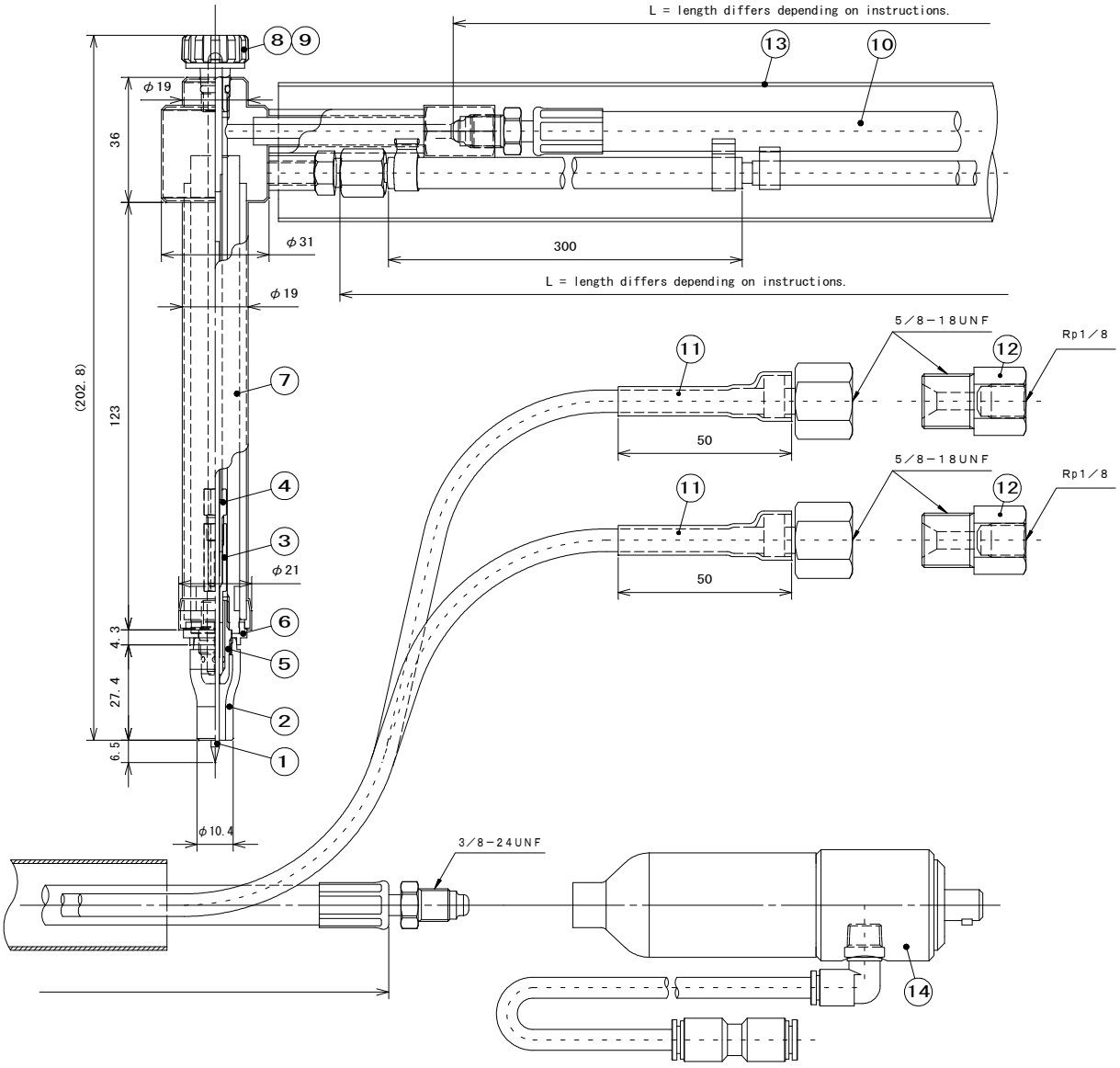


② TA-22SSPW-FL, Model specification

Item No.	Model No.	Connector type	Cable	Electrode dia.	Nozzle	Applicable power supply	Mass
1001219	TA-22SSPW-2020-FL	DINSE	2 m	φ2.4	13N08	MAW-300A	2.0kg
1001218	TA-22SSPW-3020-FL	DINSE	3 m	φ2.4	13N08	MAW-300A	3.0kg
1001225	TA-22SSPW-4020-FL	DINSE	4 m	φ2.4	13N08	MAW-300A	4.0kg
1169608	TA-22SSPWC-2020-FL	3/8-24UNF	2 m	φ2.4	13N08	MAWA-200A/300A/300B	2.0kg
1169609	TA-22SSPWC-3020-FL	3/8-24UNF	3 m	φ2.4	13N08	MAWA-200A/300A/300B	3.0kg
1171185	TA-22SSPWC-4020-FL	3/8-24UNF	4 m	φ2.4	13N08	MAWA-200A/300A/300B	4.0kg

* Mass of torch body is 0.5 kg.

③ TA-200SSPW-FL, Outline drawing (dimensions in mm)



④ TA-200SSPW-FL, Model specification

Item No.	Model No.	Connector type	Cable	Electrode dia.	Nozzle	Applicable power supply	Mass
1001222	TA-200SSPW-2020-FL	DINSE	2 m	φ2.4	13N08	MAW-300A	2.0kg
1001223	TA-200SSPW-3020-FL	DINSE	3 m	φ2.4	13N08	MAW-300A	3.0kg
1001226	TA-200SSPW-4020-FL	DINSE	4 m	φ2.4	13N08	MAW-300A	4.0kg
1171182	TA-200SSPWC-2020-FL	3/8-24UNF	2 m	φ2.4	13N08	MAWA-200A/300A/300B	2.0kg
1171183	TA-200SSPWC-3020-FL	3/8-24UNF	3 m	φ2.4	13N08	MAWA-200A/300A/300B	3.0kg
1171184	TA-200SSPWC-4020-FL	3/8-24UNF	4 m	φ2.4	13N08	MAWA-200A/300A/300B	4.0kg

* Mass of torch body is 0.5 kg.

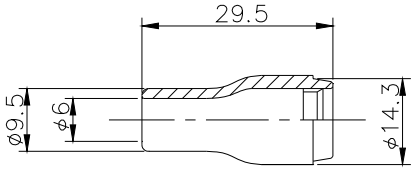
(2) Parts List

① Components

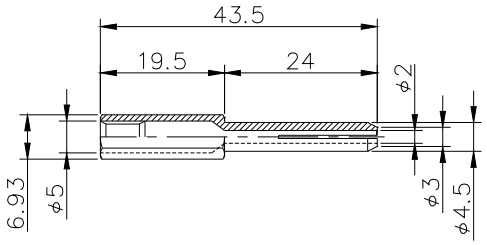
No.	Item	Model No.	Item No.	Remarks
1	Tungsten electrode φ2.4	018323	1040440	Lanthanum 1.5%
2	Nozzle (with mesh)	13N08-FL	1001220	
3	Collet chuck	MB0507141-24	1035094	
4	Collet	MB0507142-24	1035113	
5	Collet body	MB0312174-24	1035112	
6	Insulator	MB0309056	1035092	
7	Torch body	MB0507132	1168973	For TA-22SSPW-FL/22SSPWC-FL
		MB0712072	1170893	For TA-200SSPW-FL/200SSPWC-FL
8	Cap	MB0301225	1035108	
9	O ring	-	-	P-5
10	2m power cable Assy	MB0909180-B-2	1158914	STW adapter (for MAW-300A) Different diameter straight one-touch joint, with gas hose
	3m power cable Assy	MB0909180-B-3	1158915	
	4m power cable Assy	MB0909180-B-4	1158917	
	2m power cable Assy	MB0909180-C-2	1171188	3/8-24UNF connector (for MAWA-200A/300A/300B)
	3m power cable Assy	MB0909180-C-3	1171192	
	4m power cable Assy	MB0909180-C-4	1171193	
11	Cooling water hose 3m	01894-0001	1159275	
	Cooling water hose 4m	018943	1159276	
12	Cooling water adapter	DX-0507146	1159273	
13	Hose sheath	-	-	
14	STW adapter	-	-	For MAW-300A Attached to Torch TA-22SSPW-FL/ 200SSPW-FL. * Not attached to Torch TA-22SSPWC-FL/200SSPWC-FL.

② Drawings of major parts (dimensions in mm)

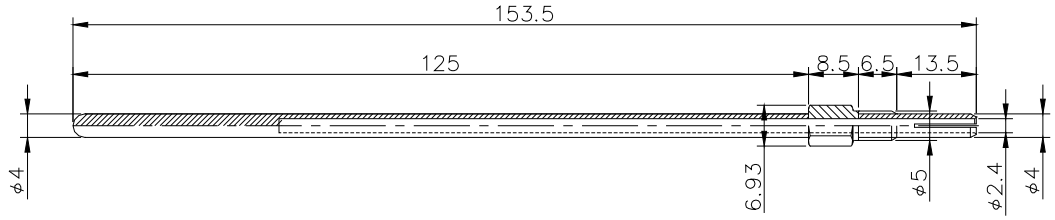
Ceramic nozzle: 13N08



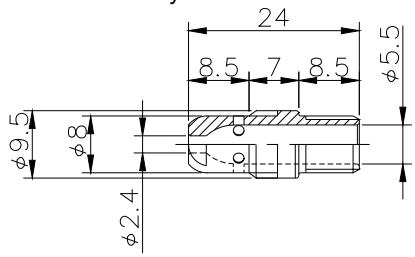
Collet chuck: MB0507141-24



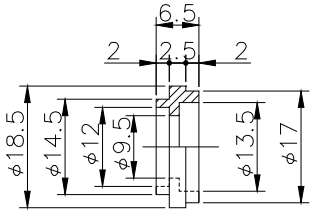
Collet: MB0507142-24



Collet body: MB0312174-24



Insulator: MB0309056



(3) Other Options

① Nozzle (with mesh)

Item No.	Model No.	Inner dia. of outlet (mm)	Total length × Outer dia. (mm)
1001220	13N08-FL	6	29.5×14.3
1159701	13N09-FL	8	
1159702	13N10-FL	10	
1159703	13N11-FL	11	
1159704	13N12-FL	12.5	
1159706	13N13-FL	16	
1159707	13N14-FL	6	29.5×15
1159708	13N15-FL	8	
1159709	13N16-FL	10	
1159710	13N17-FL	11	
1159711	13N18-FL	12.5	
1159712	13N19-FL	16	
1159719	796F70-FL	4	48×15
1159720	796F71-FL	6	
1159721	796F72-FL	8	
1159722	796F73-FL	10	
1159723	796F74-FL	4	68×15
1159724	796F75-FL	6	
1159725	796F76-FL	8	
1159726	796F77-FL	10	

② Nozzle ring

Item No.	Model No.	Length	Remarks
1176657	AS1176657	2 m	Attached to Torch TA-22SSPWC-FL/200SSPWC-FL. * Not attached to Torch TA-22SSPW-FL/ 200SSPW-FL. Nozzle side: M3 crimp-style terminal, GND side: M5 crimp-style terminal
1176658	AS1176658	3 m	
1176659	AS1176659	4 m	

(4) EARTH Cable

① Model specification

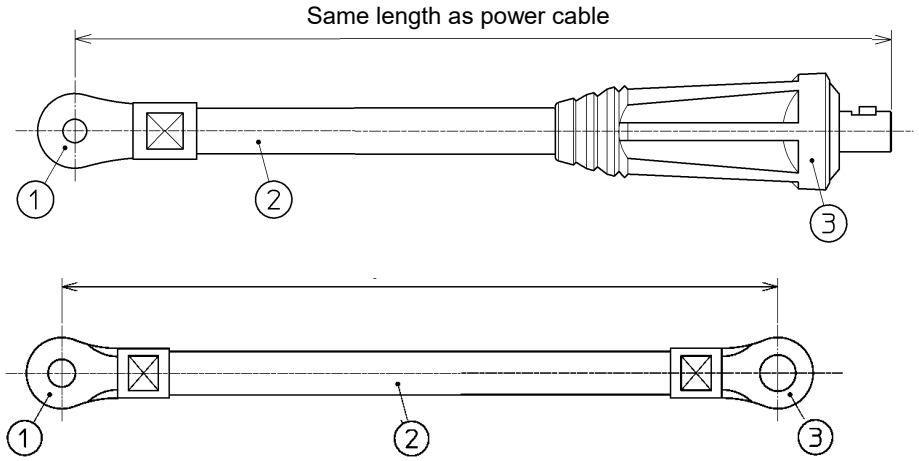
Item No.	Model No.	Length	Connector type	Applicable power supply
1024724	MB0210052-02	2 m	DINSE	MAW-009A/050A/300A
1024725	MB0210052-03	3 m	DINSE	MAW-009A/050A/300A
1024726	MB0210052-04	4 m	DINSE	MAW-009A/050A/300A
1159092	MB0909181-2	2 m	For M8	MAWA-200A/300A/300B
1159093	MB0909181-3	3 m	For M8	MAWA-200A/300A/300B
1159094	MB0909181-4	4 m	For M8	MAWA-200A/300A/300B

* Select the EARTH cable with the same length as the power cable.

② Specification

Item		Specifications
Ampacity	Duty cycle: 100%	121 A
	Duty cycle: 80%	135 A
	Duty cycle: 50%	171 A

③ Outline drawing



④ Components

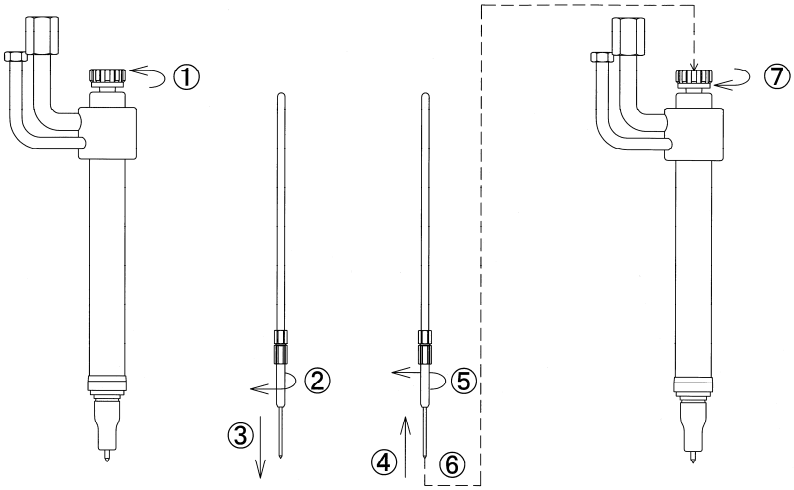
No.	Item	Model No.	Remarks
1	Round-type terminal	R22-6	For M6
2	Welding cable	E･WRCT22	22SQ
3	Plug connector	SKM25	DINSE type
	Round-type terminal	R22-8	For M8

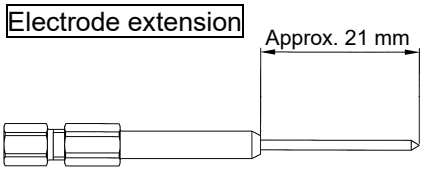
4. Electrode

(1) Replacing the Electrode

Replacing procedure

① Turn the cap on the torch body counterclockwise to loosen it.
② Remove the collet.
③ Turn the collet chuck counterclockwise to loosen it, and remove the electrode.
④ Insert a new electrode with the polished tip into the collet.
⑤ Let the electrode extension approx. 21 mm, and firmly tighten the collet chuck by hand by turning it clockwise.
⑥ Install it on the torch body.
⑦ Tighten the cap by turning it clockwise.



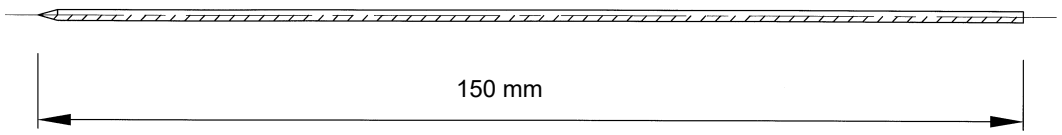


CAUTION ⚠
- Firmly tighten the collet chuck and the collet by hand. Firmly tighten the cap. Otherwise LOST may occur often.
- Confirm that the screw at the base of power cable and gas hose is not loose. If it is loose, air is entrapped into gas piping and LOST may occur often.
- Do not try to move the torch body with fixing the torch at the fixing holder. The holder is overloaded and may be broken.
- Do not tighten the collet chuck without inserting the electrode. The slit part at the tip of the collet is twisted and a center deviation of the electrode may be large.

(2) Electrodes List

Item	Item No.	Model No.	Manufacturer
Lanthanum 1.5% Tungsten electrode φ1.0	1036044	018320	Tokin Corporation
Lanthanum 1.5% Tungsten electrode φ1.6	1036043	018321	Tokin Corporation
Lanthanum 1.5% Tungsten electrode φ2.4	1040440	018323	Tokin Corporation
Lanthanum 1.5% TIG electrode rod φ1.0	1156510	35710007	Mizuho Sangyo Co.,Ltd
Lanthanum 1.5% TIG electrode rod φ1.6	1156511	35711002	Mizuho Sangyo Co.,Ltd
Lanthanum 1.5% TIG electrode rod φ2.4	1156512	35711004	Mizuho Sangyo Co.,Ltd
Cerium 2% TIG electrode rod φ1.0	1156292	35709001	Mizuho Sangyo Co.,Ltd
Cerium 2% TIG electrode rod φ1.6	1156293	35709003	Mizuho Sangyo Co.,Ltd
Cerium 2% TIG electrode rod φ2.4	1156294	35709005	Mizuho Sangyo Co.,Ltd
Thorium 2% TIG welding rod φ1.0 (10 pcs.)	1156295	W56051.0(10pcs)	Toshiba Materials Co.,Ltd
Thorium 2% TIG welding rod φ1.6 (10 pcs.)	1156296	W56051.6(10pcs)	Toshiba Materials Co.,Ltd
Thorium 2% TIG welding rod φ2.4 (10 pcs.)	1156297	W56052.4(10pcs)	Toshiba Materials Co.,Ltd
Lanthanum 1.5% Tungsten electrode φ1.0	1156239	WL φ1.0	Toho Metal Co.,Ltd
Lanthanum 1.5% Tungsten electrode φ1.6	1156240	WL φ1.6	Toho Metal Co.,Ltd
Lanthanum 1.5% Tungsten electrode φ2.4	1050714	WL φ2.4	Toho Metal Co.,Ltd
Lanthanum 2% Tungsten electrode φ1.0	1156517	Lanthanum φ1.0mm	Toho Metal Co.,Ltd
Lanthanum 2% Tungsten electrode φ1.6	1156518	Lanthanum φ1.6mm	Toho Metal Co.,Ltd
Lanthanum 2% Tungsten electrode φ2.4	1156519	Lanthanum φ2.4mm	Toho Metal Co.,Ltd
TEC lanthanum Tungsten electrode φ1.6	1186072	TEC lanthanum φ1.6×150	Matsumoto Sangyo Co.,Ltd
TEC lanthanum Tungsten electrode φ2.4	1186073	TEC lanthanum φ2.4×150	Matsumoto Sangyo Co.,Ltd

(3) Outline Drawing



Electrode dia.	Welding current
φ1.0	15 to 80 A
φ1.6	70 to 150 A
φ2.4	150 to 250 A

(4) Features

① Pure tungsten
Wears electrodes a lot. The tip is melted just after ark strike and the shape is rounded off, but then the shape is nearly unchanged. For this reason, this is often used for AC TIG in which electrodes are easy to be much-wearing.

② Tungsten with thorium oxide
Is more excellent in wear resistance and arc start than pure tungsten, and traditionally used for DC TIG welding. Since the shape of electrode tip is easy to change in DC and tungsten may melt and spatter, care should be taken when using this.

③ Tungsten with lanthanum oxide
Is most excellent in wear resistance (Fig. 1) and arc start (Fig. 2) among tungsten for welding and often used for automated welding requiring the arc stability in long continuous welding.

④ Tungsten with cerium oxide
Is more excellent in wear resistance and arc start than tungsten with thorium oxide. Since tungsten does not melt and spatter from the electrode tip and the tip shape change caused by melting is small in DC, this is used for TIG welding of aluminium and its alloy.

(5) Reference

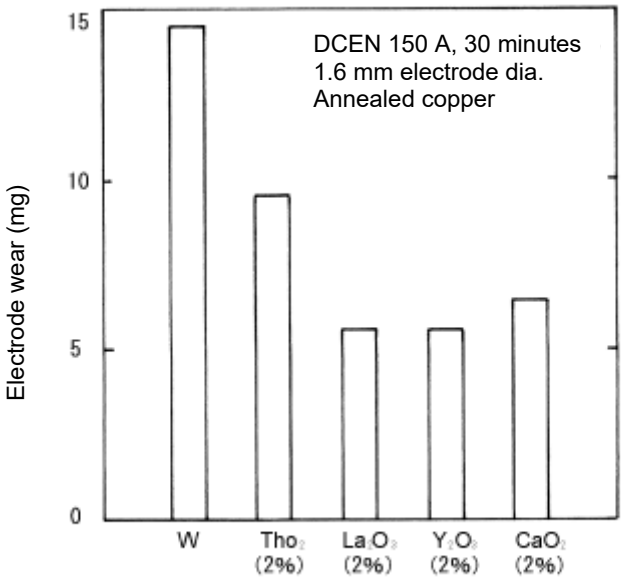


Fig. 1 Comparison of tungsten-oxide electrodes in wearing

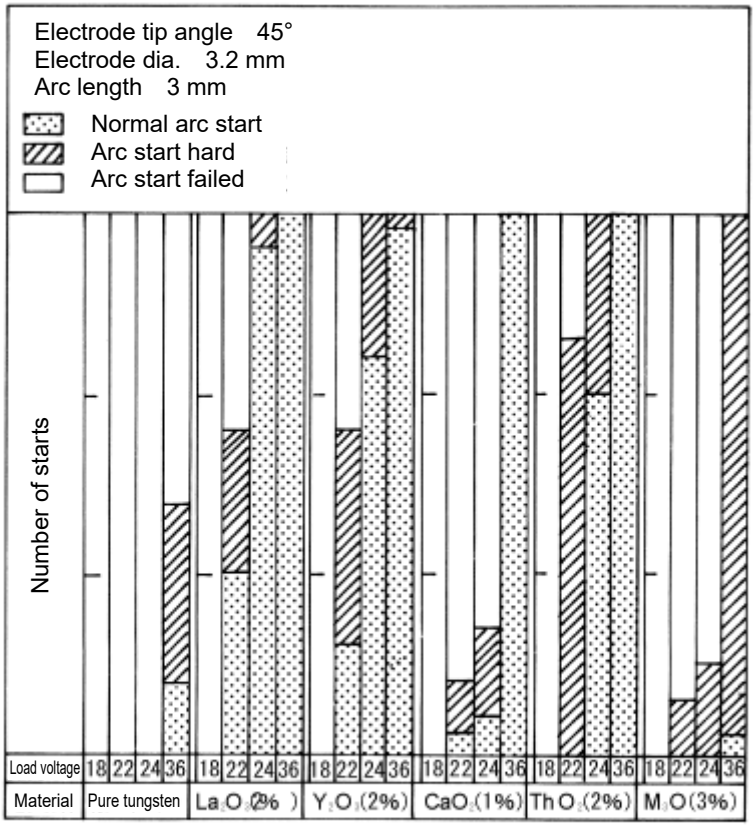


Fig. 2 Comparison of tungsten-oxide electrodes in arc start

Reference: Joining and welding technology Q&A1000