Welding torch for pull feeding unit for robot (Built-in shock sensor)

CO_2

CO_2/MAG

MTXC-3534P **MTXCB-3534P**
MTXC-5034P **MTXCW-5034P**

Instruction Manual

= Safety and Operation =

Instruction Manual No.
1L7581-E-1

First thoroughly read this manual to operate the machine correctly.

- Installation, maintenance, and repair of this welding torch should be made by qualified persons or persons who fully understand welding machines for extra safety.
- Operation of this welding torch should be made by persons who have knowledge and technical skill to understand the contents of this manual well and handle the machine safely for extra safety.
- Regarding safety education, utilize courses and classes held by head/branch offices of the Welding Society/Association and the related societies/associations and qualifying examinations for welding experts/consultant engineers.
- After thoroughly reading this manual first, store it with the warranty in the place where the persons concerned can read at any time. Read it again as occasion demands.
- If incomprehensible, contact our offices. For servicing, contact our local distributor or sales representatives in your country. Our addresses and telephone numbers are listed in the back cover of this Instruction Manual.

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Instruction Manual of Welding Torch for Pull Feeding Unit for Robot

No. 1L7581-E-1 Oct. 2004 1st Edition

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AIR PLASMA CUTTING MACHINES

ARC WELDING ROBOT

CO_2 LASER EQUIPMENTS

Printed in Japan

DAIHEN Corporation
5-1, Minami Senrioka, Settsu,
Osaka 566-0021, JAPAN
Phone : +81-6-6317-2506
Fax : +81-6-6317-2583

DAIHEN, Inc.
DYNAMIC ROBOTICS DIVISION
761 Crossroads Court,
Vandalia, OH 45377, U.S.A.
Phone : +1-937-454-9660
Fax : +1-937-454-9661

DAIHEN EUROPE GmbH.
Broichhofstrasse 7,
F. R. GERMANY
Phone : +49-2102-444007
Fax : +49-2102-472100

DAIHEN ASIA(THAILAND)CO.,LTD
60/86 Mu 19,
Navanakorn Industrial Estate Phase 3.
Klong Nueng,Klong Luang
Pathumthani 12120, THAILAND
Phone :+66-5292130
Fax :+66-5292132

Thank you for purchasing our DAIHEN CO_2 /MAG torch for a pull feeding unit.
Before you use this product, read this instruction manual thoroughly for correct use.

[Note] 1. The contents in this instruction manual are subject to change without notice.
2. We have carefully created this instruction manual to avoid as many errors. Even if any errors are found in the contents, we are not responsible for any damage caused by them.
3. No part of this instruction manual may be reproduced or stored in any form without the express written permission.

1. Specifications

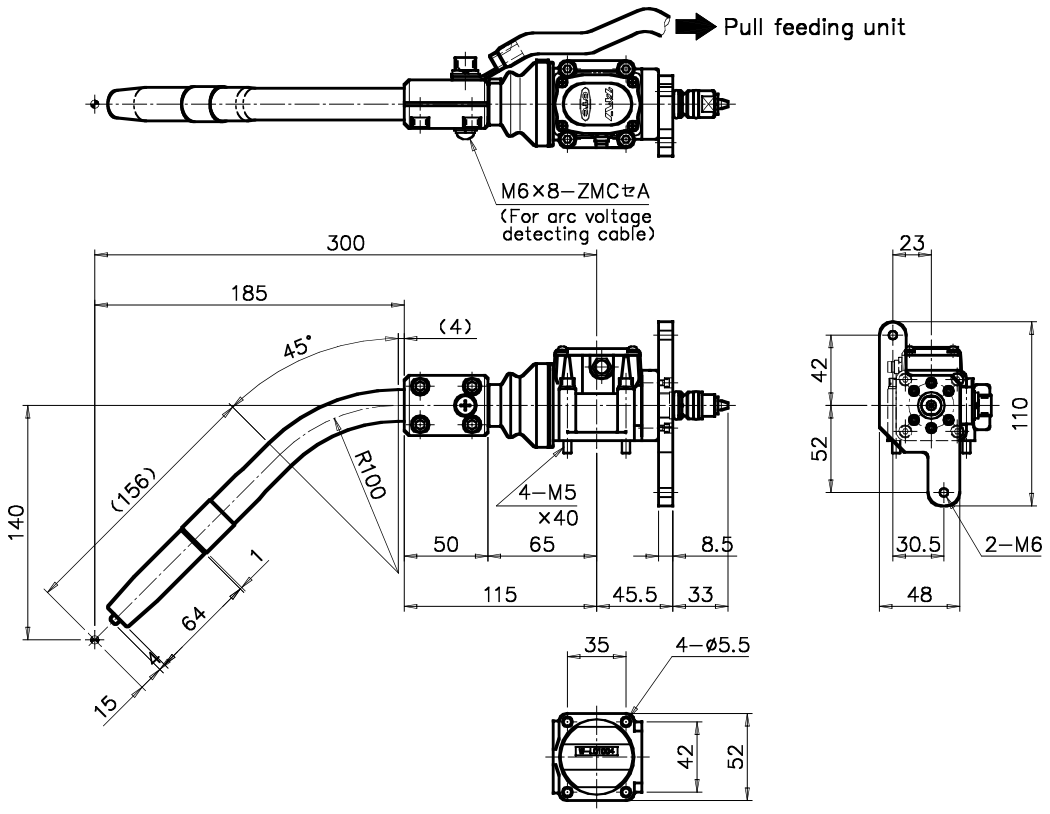
This torch is used as a servo torch for CO_2 /MAG welding in combination with the pull feeding unit (L-7590/AFPS-4311).

The specifications are shown in table 1. (Refer to Fig. 1.1 - 1.4 for outline drawing.)

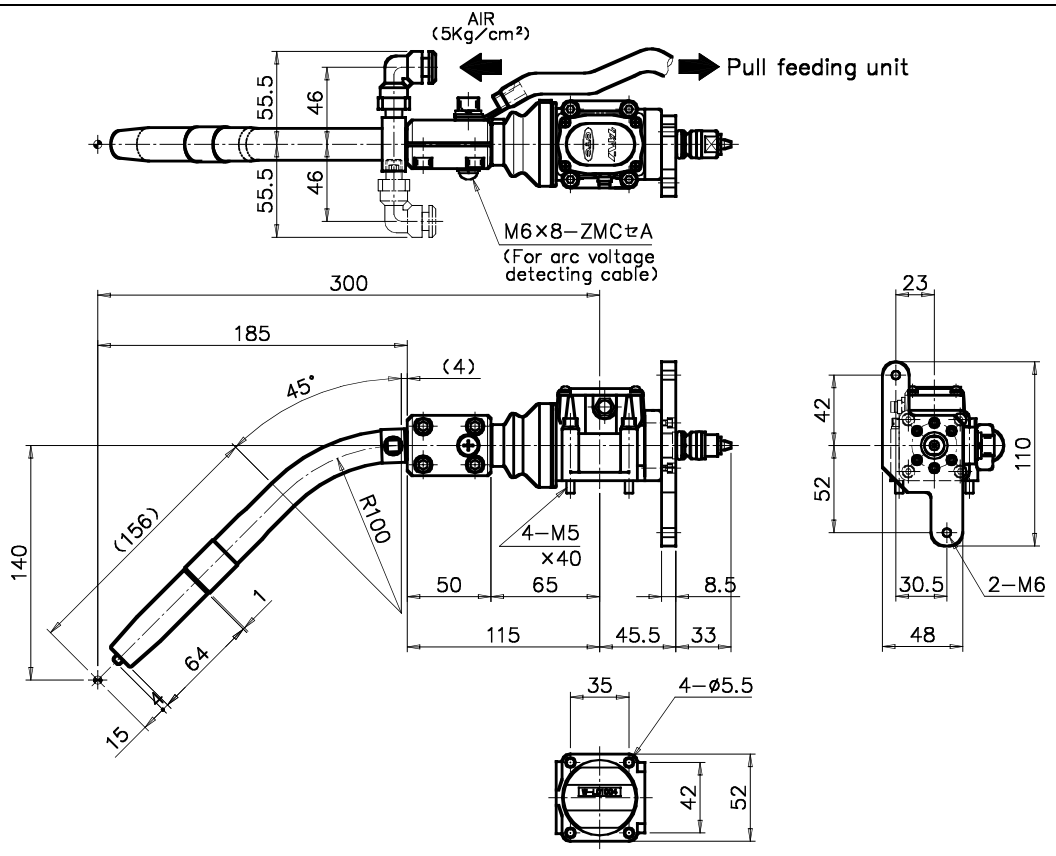
Table 1. Specifications of welding torch for pull feeding unit

Model	MTXC -3534P	MTXCB -3534P	MTXC -5034P	MTXCW -5034P
Torch shape	Curved			
Welding process	CO_2 (MAG) welding			
Maximum applicable current	350A (250A)		500A (300A)	
Rated duty cycle	50% (50%)			70% (50%)
Applicable wire	Solid wire, Flux cored wire			
Applicable wire diameter	(φ0.8), φ0.9, (φ1.0), (φ1.2), (φ1.4), (φ1.6)		(φ0.8), (φ0.9), (φ1.0), φ1.2, (φ1.4), (φ1.6)	
Nozzle cleaning	—	With air-blow function	—	
Cooling method	Air-cooled type			Water-cooled type
Shock sensor	Installed			
Mass	1.55 (kg)	1.6 (kg)	1.65 (kg)	1.75 (kg)

Note: 1. The welding process determines maximum applicable current and rated duty cycle.
2. An Air Blow Unit is required to use the MTXCB-3534P. As for details, refer to the next chapter.
3. Water shall be supplied with a water tank (PU-301) while using the MTXCW-5034P.
4. Shock sensor
In robots for arc welding, a welding torch may contact a workpiece /jig. Then the welding torch may become deformed or the robot body may be damaged. To prevent such an accident, a shock sensor function is installed into this welding torch. If excessive external force is applied on the torch tip (nozzle), the nozzle is made to escape by the external force outputting external-force-detecting-signal on the way to immediately stop the robot operation.
5. The above mass includes torch only. Mass of a bracket or pull feeding unit is not included.

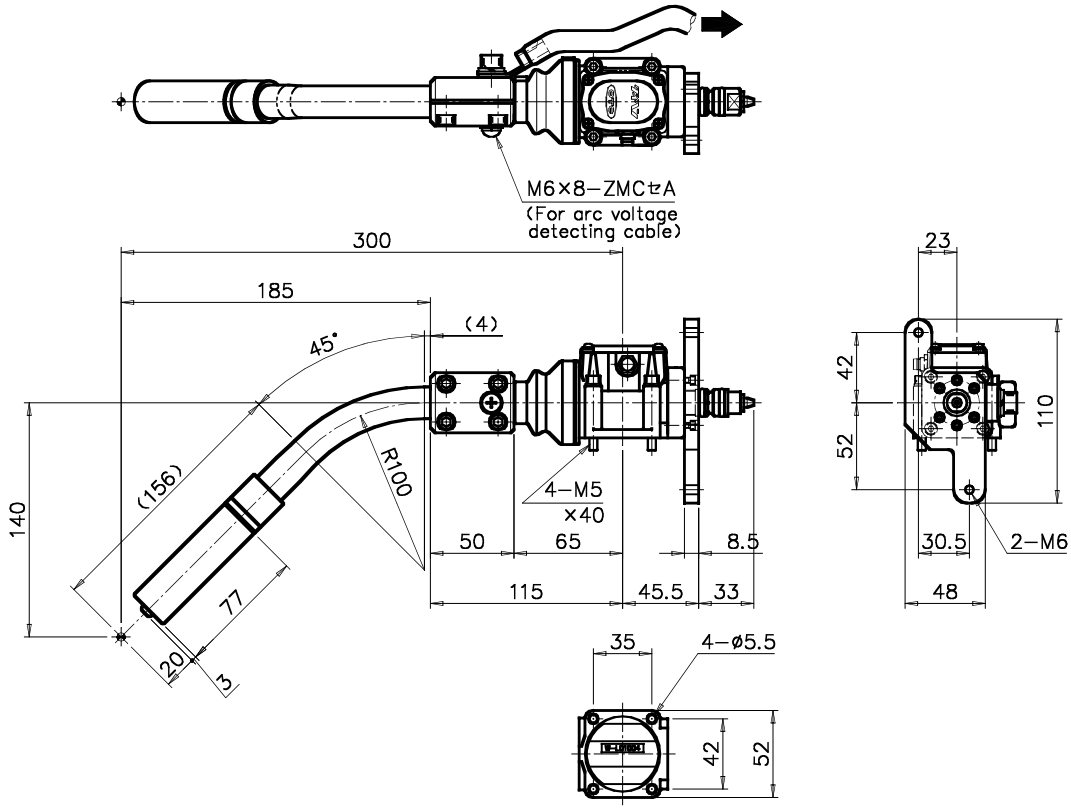


Mass 1.55 [kg]
Outline drawing of CO_2/MAG curved torch MTXC-3534P (350A / Air-cooled / Shock sensor)



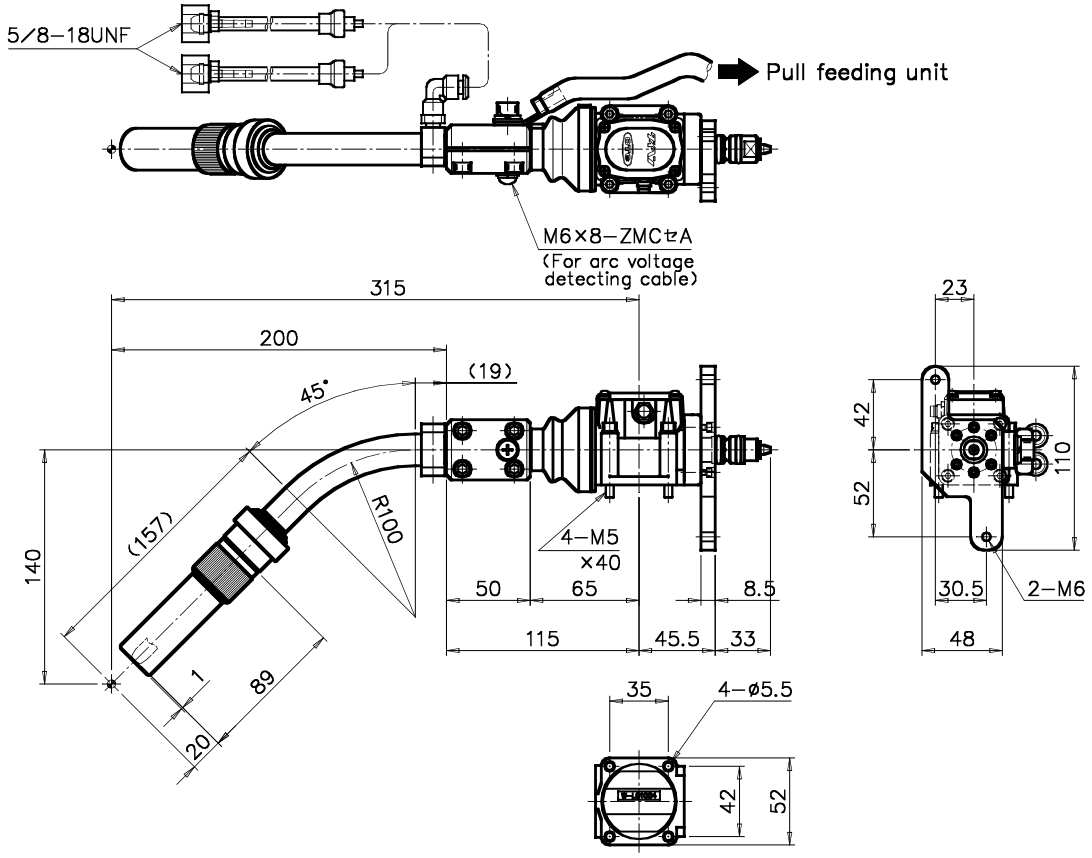
Mass 1.6 [kg]
Outline drawing of CO_2/MAG air-blow curved torch MTXCB-3534P (350A / Air-cooled / Shock sensor)

Fig. 1.1 Outline drawing Unit (mm)



Mass 1.65 [kg]

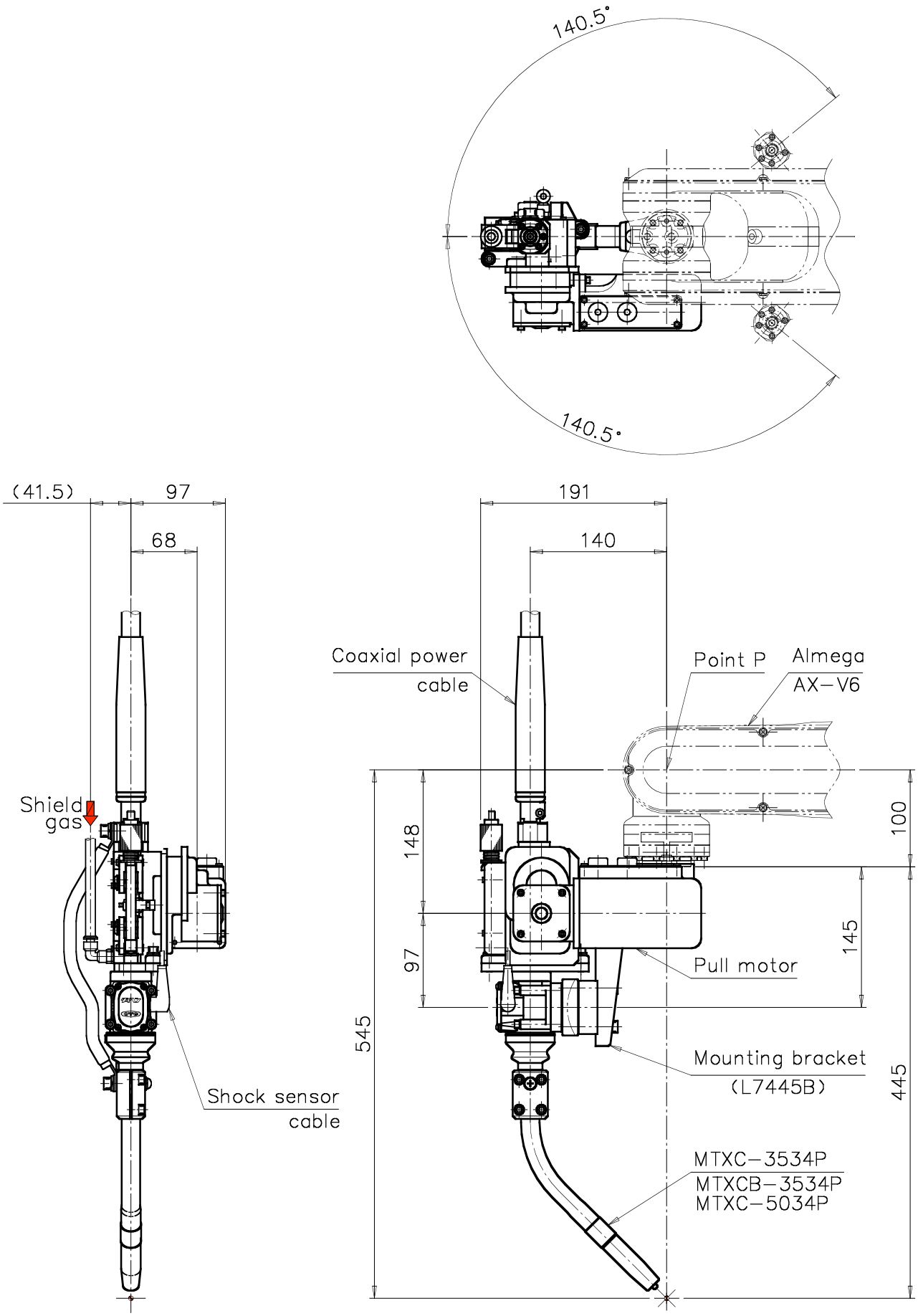
Outline drawing of CO_2/MAG curved torch MTXC-5034P (500A / Air-cooled / Shock sensor)



Mass 1.75[kg]

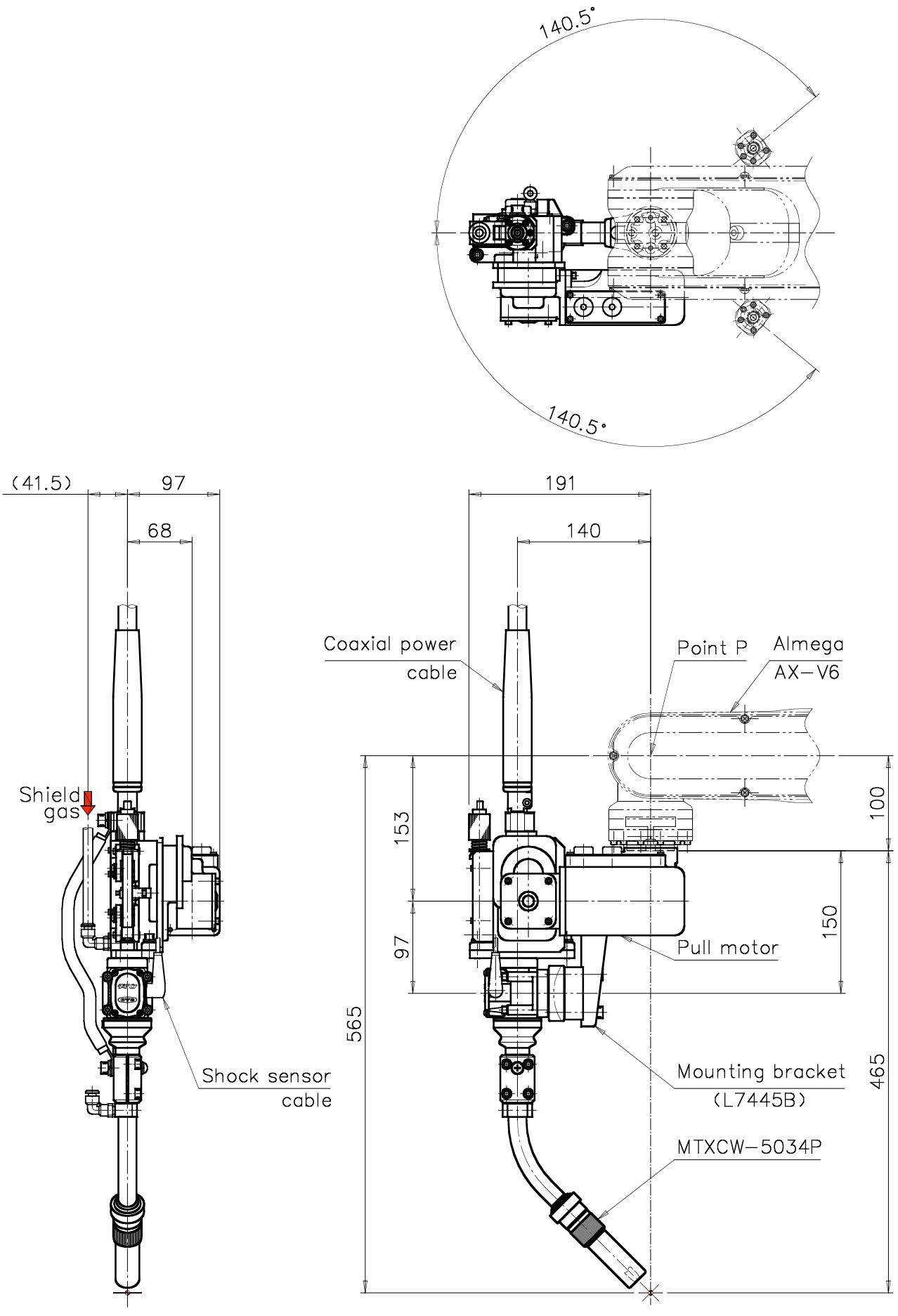
Outline drawing of CO_2/MAG curved torch MTXCW-5034P (500A / Water-cooled / Shock sensor)

Fig. 1.2 Outline drawing Unit (mm)



Unit: (mm)

Fig. 1.3 Assembly drawing of MTXC-3534P（MTXCB-3534P or MTXC-5034P）and pull feeding unit L-7590/AFPS-4311



Unit: (mm)

Fig. 1.4 Assembly drawing of MTXCW-5034P and pull feeding unit L-7590/AFPS-4311

2. Checking of Package Contents

2.1 Check of Package Contents

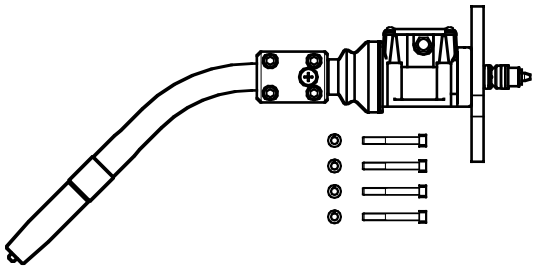
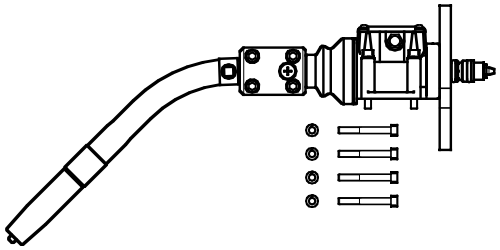
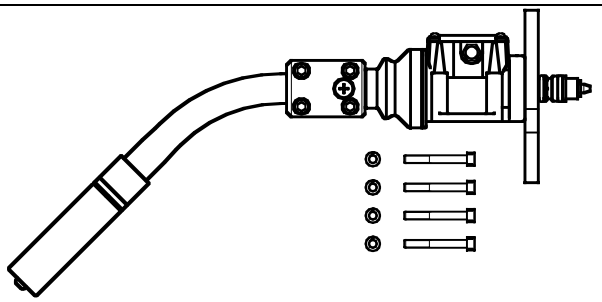
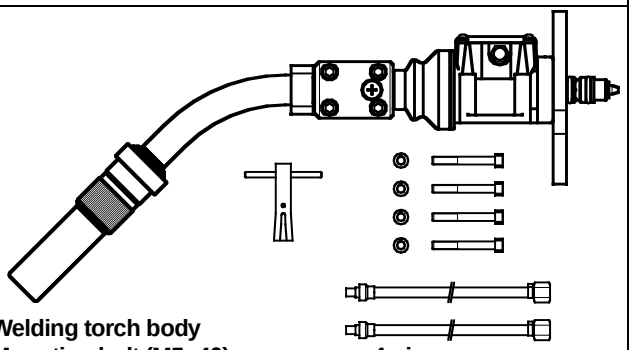
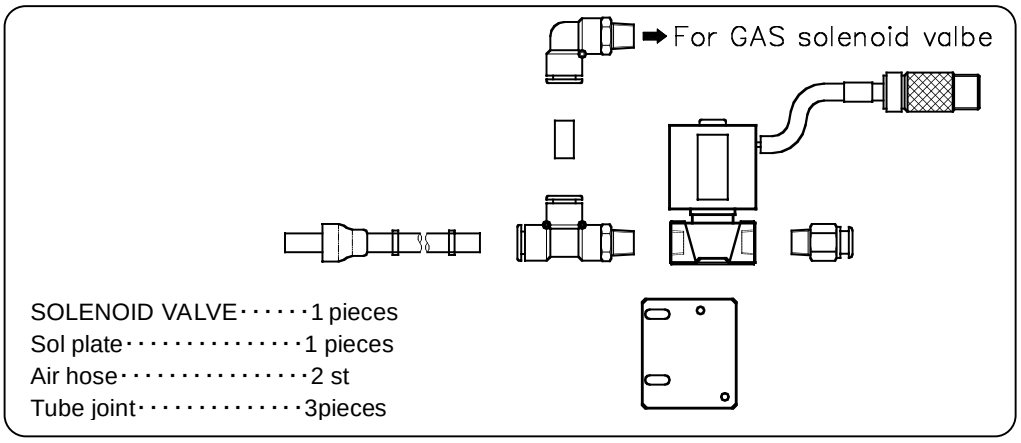
MTXC-3534P	MTXCB-3534P
 **Welding torch body** **Mounting bolt (M5×40)・・・4 pieces** **Spring washer (M5) ・・・・・4 pieces**	 **Welding torch body** **Mounting bolt (M5×40)・・・・・4 pieces** **Spring washer (M5)・・・・・・・・4 pieces**
MTXC-5034P	**MTXCW-5034P**
 **Welding torch body** **Mounting bolt (M5×40)・・・・・4 pieces** **Spring washer (M5)・・・・・・・・4 pieces**	 **Welding torch body** **Mounting bolt (M5×40) ・・・・・・・・・・4 pieces** **Hose for cooling water (6m) ・・・・・2 pieces** **Spring washer (M5) ・・・・・・・・・・・・4 pieces** **Wrench・・・・・・・・・・・・・・・・・・・・・・・・1 piece**

Fig. 2.1 Checking contents of package

Note: 1 An air-blow torch MTXCB-3534P requires an air-blow hose and an Air Blow Unit besides this torch.
Purchase separately the Almega AX / EX manipulator L7470A.



2. The torch MTXCW-5034P requires a water tank additionally.
A water tank (PU-301) shall be purchased separately.
3. The above mounting bolt (M5 ×40) is to mount a torch on a mounting bracket.
The bolts for mounting a pull feeding unit (L-7590/AFPS-4311) are included in the pull feeding unit.

2.2 Standard Assembly

Unpack and confirm that following parts are assembled.

Table 2.1 Standard assembly

Applicable torch	Item	Part number	Q'ty.	Remarks
MTXC-3534P	Contact tip (0.9)	L7250B02	1	For wire diameter φ0.9
	Inner liner (0.9 - 1.2)	L7328C03	1	
	Outlet guide (1)	L7581B01	1	
MTXCB-3534P	Contact tip (0.9)	L7250B02	1	For wire diameter φ0.9
	Inner liner (0.9 - 1.2)	L7509B01	1	
	Outlet guide (1)	L7581B01	1	
MTXC-5034P	Contact tip (1.2)	L7250B04	1	For wire diameter φ1.2
	Inner liner (0.9 - 1.2)	L7583C02	1	
	Outlet guide (2)	L7581B02	1	
MTXCW-5034P	Contact tip (1.2)	L7250B04	1	For wire diameter φ1.2
	Inner liner (0.9 - 1.2)	L7584C02	1	
	Outlet guide (2)	L7581B02	1	

Note: The above parts are standard assemblies. Optional accessories are offered for the replacement parts so that a wide range of welding is available.
As for details, see "Chapter 7 Parts List".

・When this torch is shipped, the parts for following wire are assembled.
Torch for 350A: For wire diameter φ0.9
Torch for 500A: For wire diameter φ1.2
Change parts according to the wire size to use.
(Refer to "Chapter 7 Parts List".)

IMPORTANT

1. Check the wire diameter to change parts.
   Use of parts other than specified may cause failure.
2. The pull feeding unit (L-7590/AFPS-4311) is built with the parts for wire diameter φ0.9.
   When using the torch for 500A or the parts of wrong wire diameter, change the parts built-in the pull feeding unit.

3. Mounting and Adjusting Procedure for Welding Torch

3.1 Mounting Torch (Mounting Bracket) and Pull feeding unit

A mounting bracket ASSY is available for all the torch. (Refer to the following table.)

Table 3.1. Torch and mounting bracket ASSY

Applicable torch	Mounting bracket ASSY		
	Assembly drawing No.	Drawing No. of L bracket	Remarks
MTXC-3534P MTXCB-3534P MTXC-5034P MTXCW-5034P	L7445B	L7445B03	

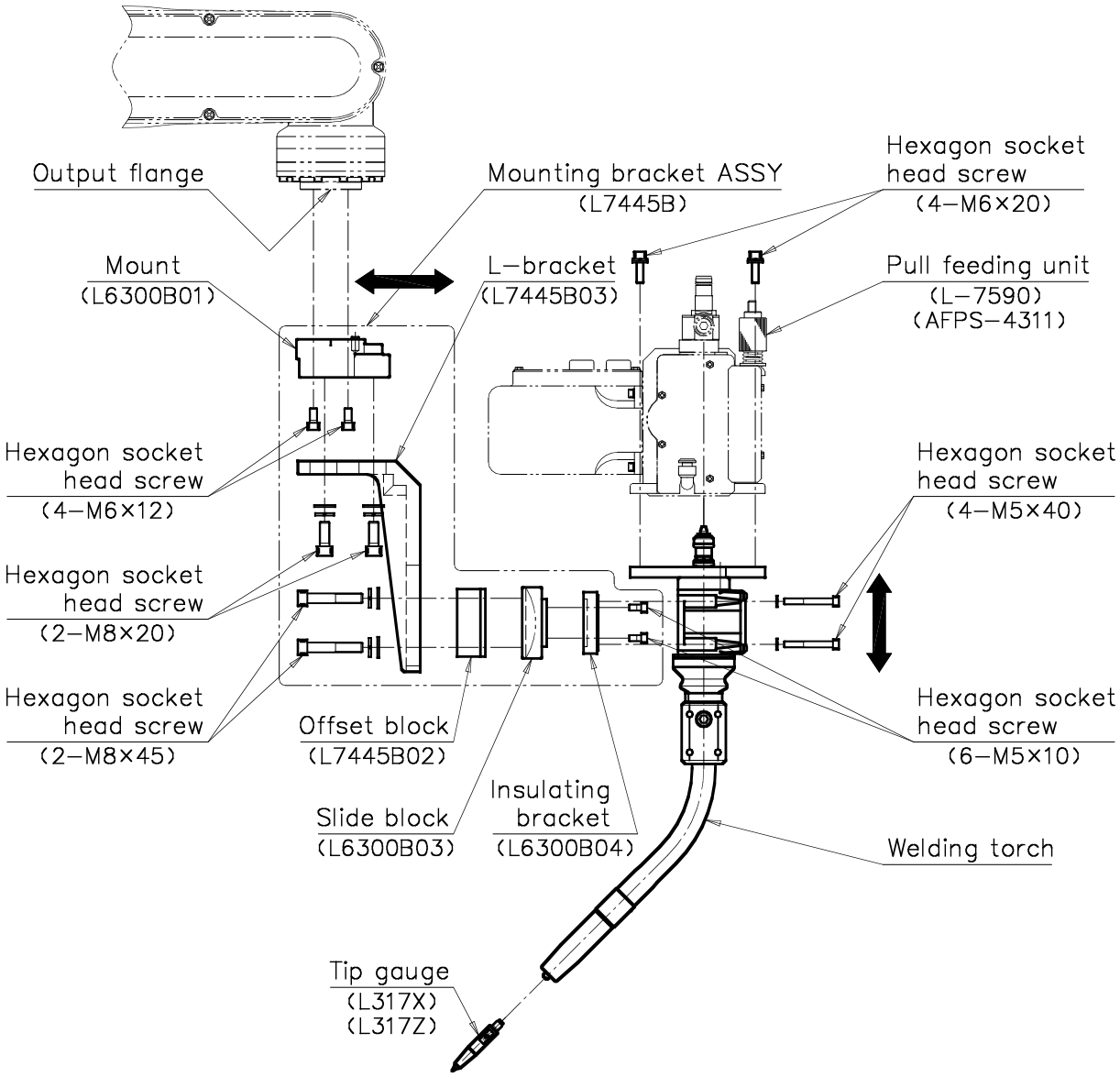


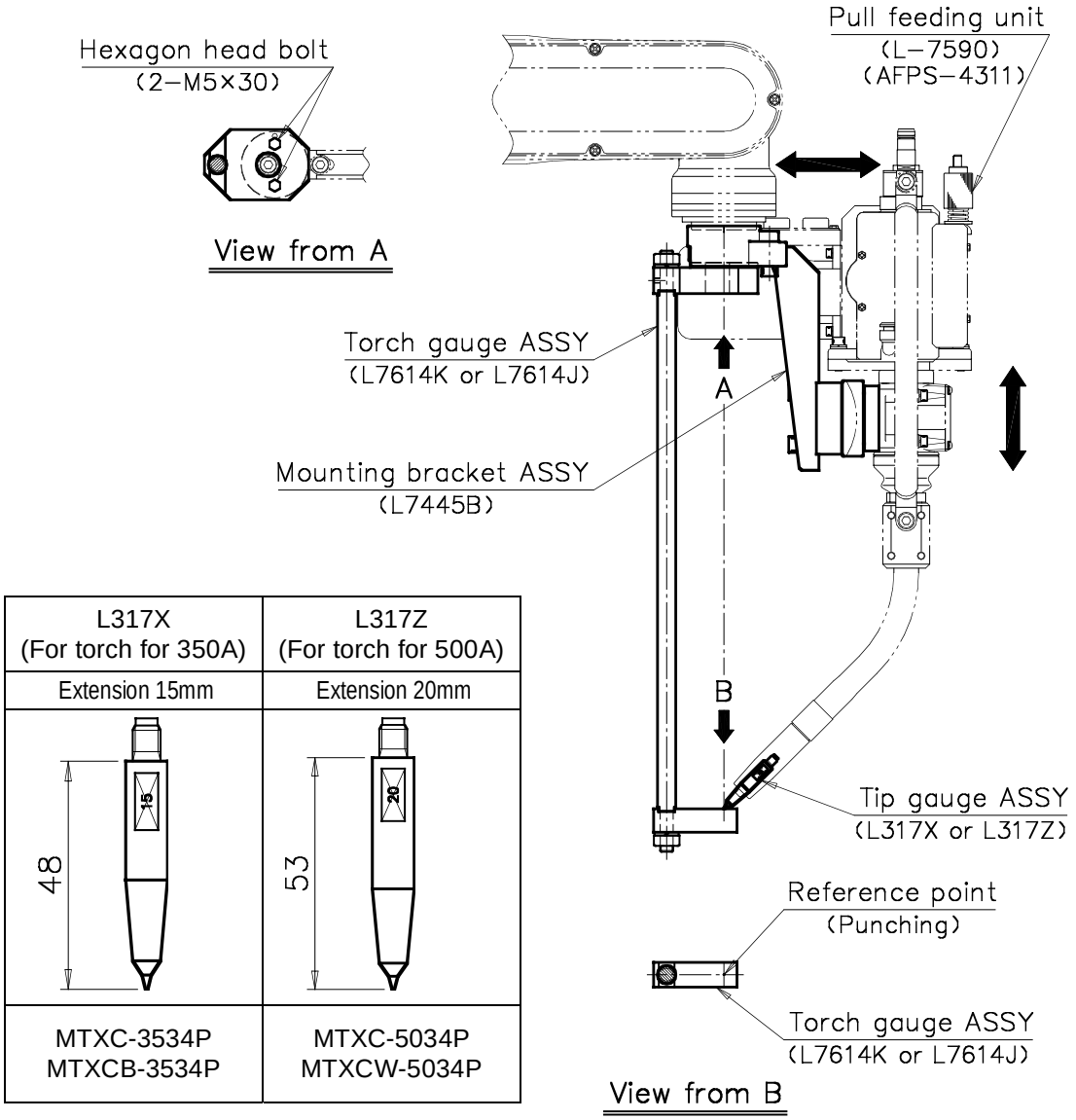
Fig. 3.1 Mounting torch (mounting bracket) and pull feeding unit

3.2 Mounting Torch Gauge

The torch gauge ASSY and tip gauge depend on the torch to use. (Refer to the following table.)

Table 3.2. Torch and torch gauge ASSY

Torch model	Torch gauge ASSY		
	Item	Assembly drawing No.	Remarks
MTXC-3534P MTXCB-3534P MTXC-5034P	Torch gauge ASSY(8)	L7614K	
MTXCW-5034P	Torch gauge ASSY(7)	L7614J	



L317X (For torch for 350A)	L317Z (For torch for 500A)
Extension 15mm	Extension 20mm
MTXC-3534P MTXCB-3534P	MTXC-5034P MTXCW-5034P

Fig. 3.2 Mounting torch gauge

3.3 Adjustment Procedure for Torch

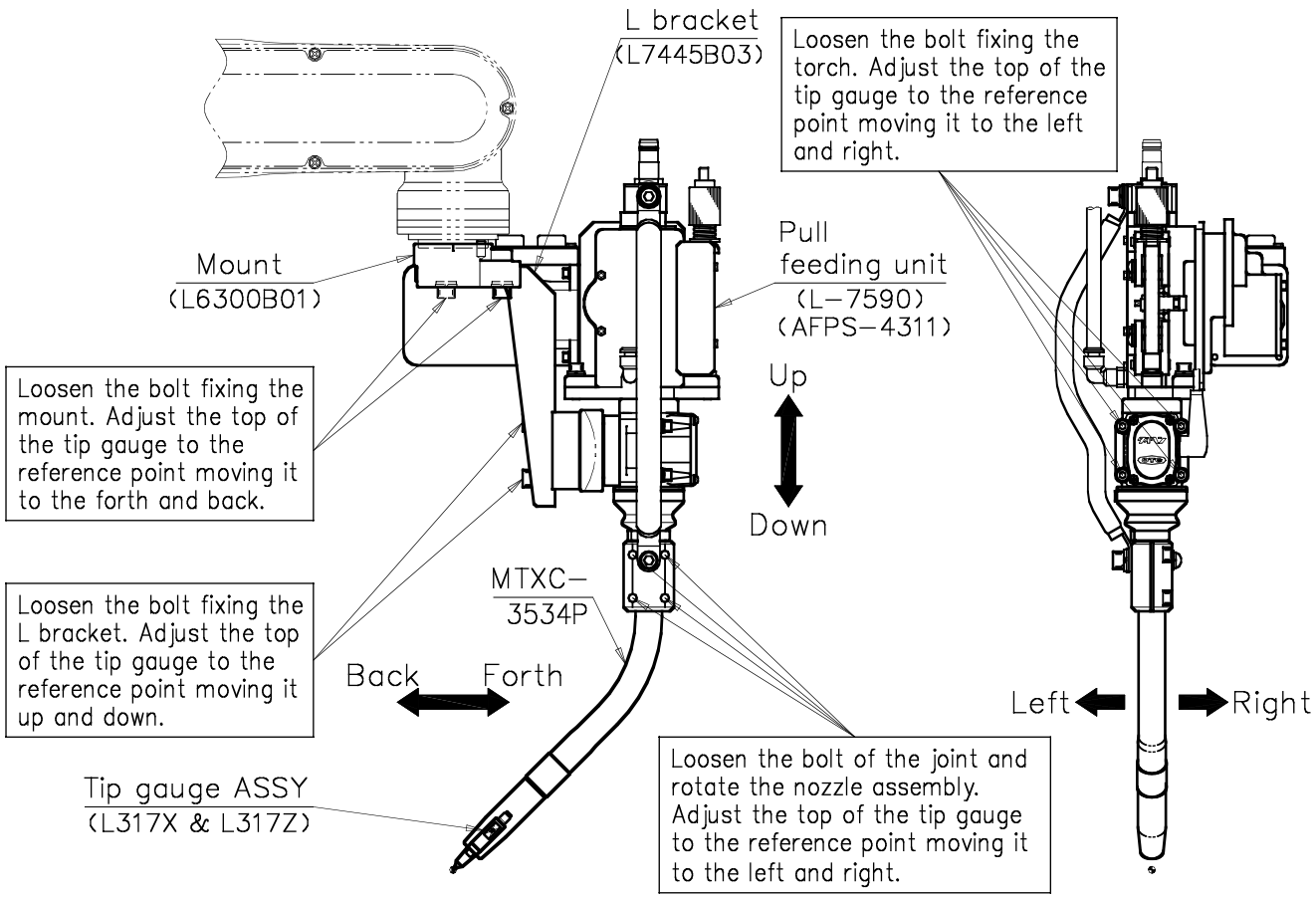


Fig. 3.3 Adjustment direction for torch

3.4 Connection Procedure for Water-Cooled Torch (MTXCW-5034P)

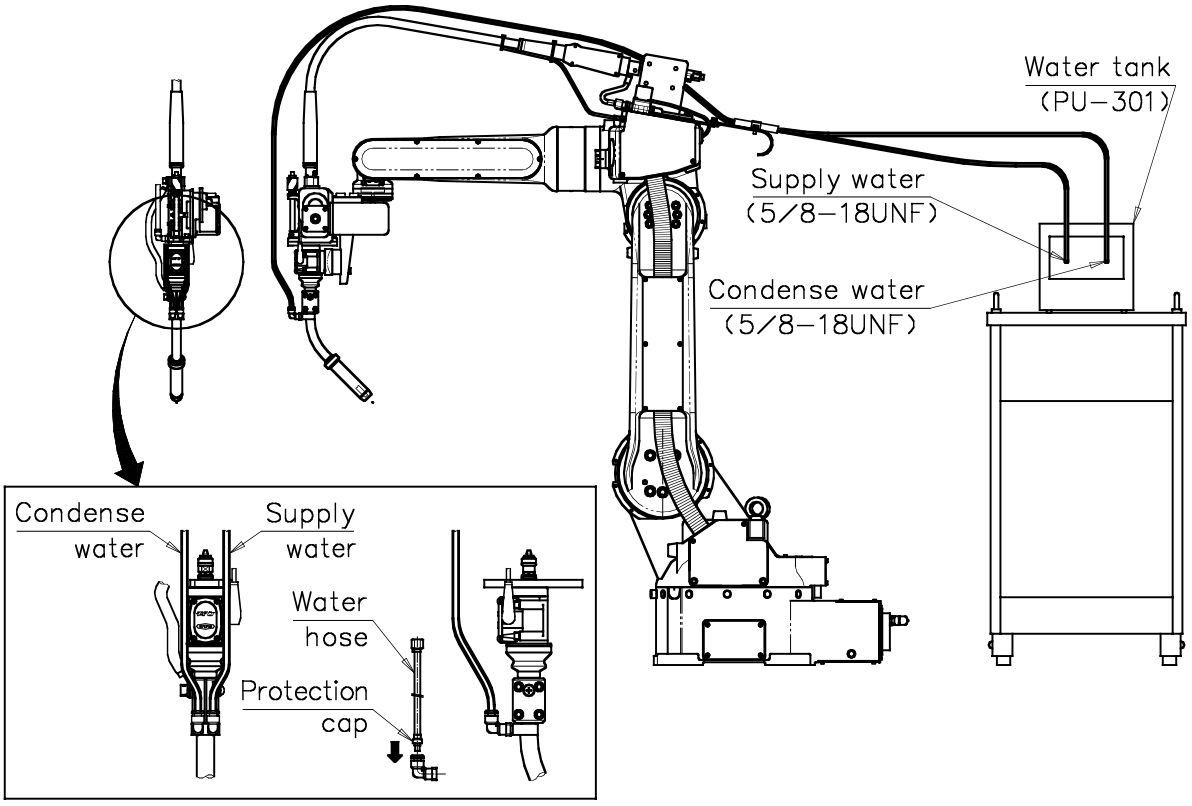


Fig. 3.4 Connection procedure for water-cooled torch

4. Setting of Robot Control

4.1 Confirmation of Tool Parameter

When a robot is delivered, the data (tool parameter) is set for use with the mounted welding torch. Confirm that the following data is set. As long as the torch is not changed, this data need not be changed.

Table 4.1 Almega AX (EX)-V6, 16, 6L

Torch model	Parameter 1	Parameter 2	Parameter 3	Parameter 4	Parameter 5	Parameter 6
MTXC-3534P MTXCB-3534P MTXC-5034P	0.0	0.0	445.0	-45.0	0.0	180
MTXCW-5034P	0.0	0.0	465.0	-45.0	0.0	180

If the data shown in table 4.1 is not set, see the instruction manual of your manipulator.

Model	Instruction manual for reference
EX manipulator	Chapter 7 in “Utilizing features and functions (1L8300G-E-xx)”
AX manipulator	Chapter 4 in “Installation (1L8800A-E-xx)”

IMPORTANT

This servo torch is not available for the manipulators before AV /BV06.

Ask our sales engineers for availability, if you use this torch for the manipulators before AV/ BV06.

4.2 Operation Check for Shock Sensor

4.2.1 External Force to Operate Shock Sensor

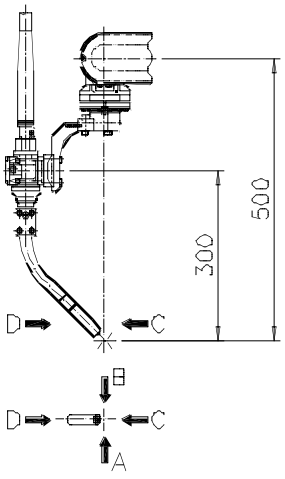


Table 4.2 Operating external force

Direction	External force [kg]
A	3.0
B	3.0
C	3.0
D	3.0

The left table shows the standard load to operate a shock sensor when external force is applied on the torch tip.

They may vary a little depending on torch type and torch length.

Fig. 4.1 Operating external force direction

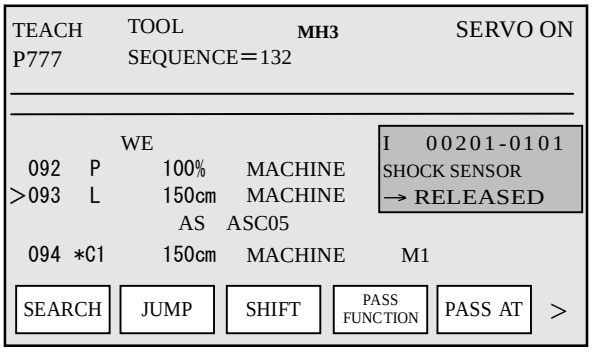
4.2.2 Operation Check for Shock Sensor

○ EX manipulator

In the teaching mode, push the torch tip by hand to check if the message "| 10002-0100 mechanism shock sensor" will appear.

When the torch is unhanded, the message will disappear.

If the message does not appear, the cable may not be connected. Check the connection again.



○ AX manipulator

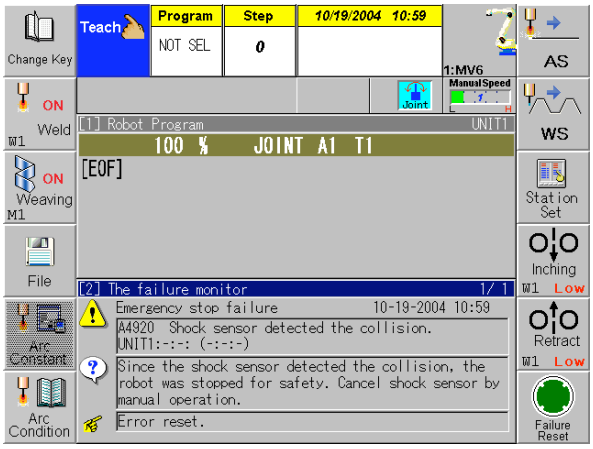
Push the torch tip.

Check if the following message appears in the "[2] error monitor screen" (lower right figure).

Error type: Emergency stop error
Error code: A4920

(For details, refer to Chapter 8 in Instruction Manual - Basic Operation (1L8800C-E-xx).)

If not, the cable may not be connected. Check the connection again.



5. Trouble shooting

Failure	Possible cause
No arc.	Loose connection or break of welding cable.
No smooth wire feeding No constant wire feeding	Wire pressure at feed roll is not enough. Tip is worn. Inner liner is worn. Outlet guide is worn. Wire shaving powder collects in a wire feeding line.
Wire adhesion on tip.	Wire feeding is not smooth. Hole of tip became large. The distance between tip and base material is too short.
Shock sensor can not be canceled.	Loose connection or break of shock sensor code. Nozzle is bent. *When contact trouble occurs and the robot operation stops because of the detection signal of the shock sensor, first investigate the cause of the accident. Pay close attention while operating the robot or restoring the power without finding the cause. It may be hazardous. For releasing the contact, refer to the Instruction Manual of Robot Control (Operation and Teaching).
Aim deviation	Orifice is not mounted. *If an orifice is not mounted, spatter will be seen in the inside and conduction will occur between nozzle and tip body. That results in anomalous arc discharge and tip body bentness.

6. Parts Change

6.1 Replacing Parts for Changed Wire Diameter

Check the wire diameter to use. Change the following parts depending on the wire diameter.

[Torch]

(5) Tip

(6) Inner liner

(7) Outlet guide

[Coaxial power cable]

(8) Liner

(9) Outlet guide

[Pull feeding unit]

(10) Feed roll

(11) Pressure roll

(12) Inlet guide

Suitable parts for the each wire diameter shall be required when the welding wire diameter is changed.

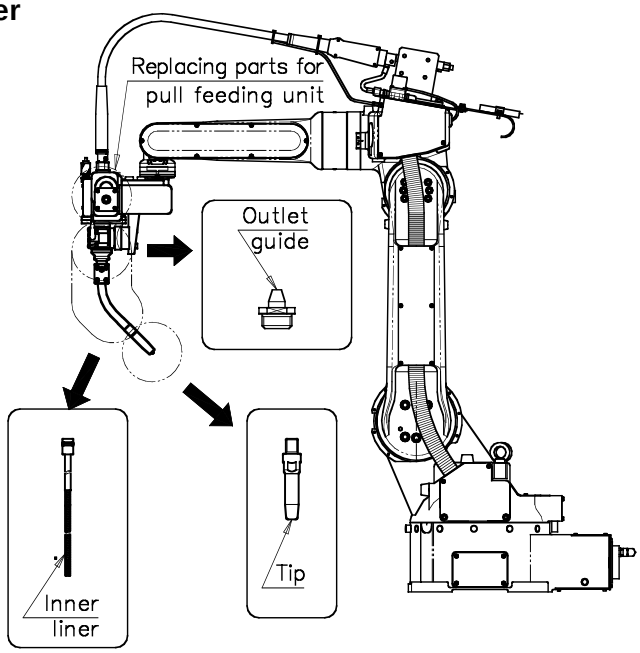


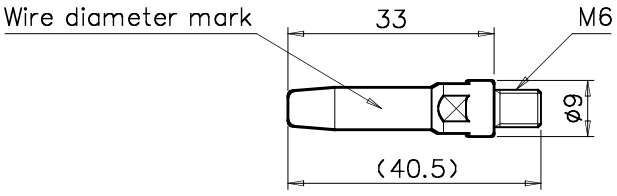
Fig. 6.1 Parts to be replaced for changed wire diameter

Followings are the list of the suitable parts.

Note: For detailed information on a coaxial power cable, feed roll, pressure roll, and inlet guide, refer to the instruction manual of pull feeding unit.

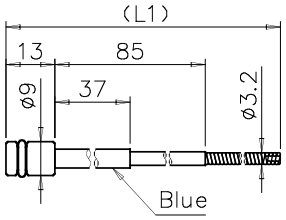
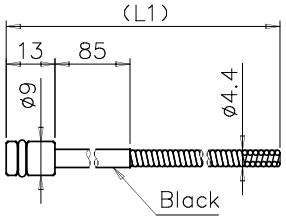
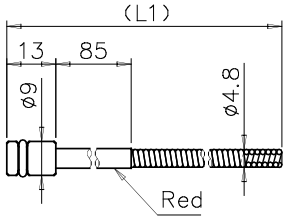
● Standard
▲ Optional

Table 6.1 MIG tip to be used

Torch model \ Wire diameter	φ0.8	φ0.9	φ1.0	φ1.2	φ1.4	φ1.6
Part number	L7250B01	L7250B02	L7250B03	L7250B04	L7250B05	L7250B06
Outline drawing						
MTXC-3534P	▲	●	▲	▲	▲	▲
MTXCB-3534P	▲	●	▲	▲	▲	▲
MTXC-5034P	▲	▲	▲	●	▲	▲
MTXCW-5034P	▲	▲	▲	●	▲	▲

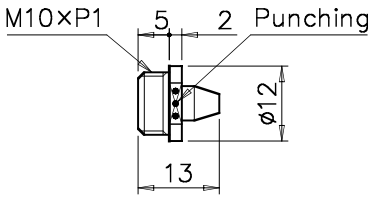
● Standard
▲ Optional

Table 6.2 Inner liner to be used

Wire diameter / Torch model	φ0.6~φ0.8	φ0.9~φ1.2	φ1.2~φ1.6
Outline drawing			
Part number	L7328C05	L7328C03	L7328C04
MTXC-3534P	▲	●	▲
L1	L1=353.5mm		
Part number	L7509B03	L7509B01	L7509B02
MTXCB-3534P	▲	●	▲
L1	L1=150.5mm		
Part number	L7583C01	L7583C02	L7583C03
MTXC-5034P	▲	●	▲
L1	L1=335.5mm		
Part number	L7584C01	L7584C02	L7584C03
MTXCAW-5034P	▲	●	▲
L1	L1=350.5mm		

● Standard
▲ Optional

Table 6.3 Outlet guide to be used

Wire diameter / Torch model	φ0.8~φ0.9	φ1.0~φ1.2	φ1.4~φ1.6
Part number	L7581B01	L7581B02	L7581B03
Punching number	1	2	3
Outline drawing			
MTXC-3534P	●	▲	▲
MTXCB-3534P	●	▲	▲
MTXC-5034P	▲	●	▲
MTXCW-5034P	▲	●	▲

6.2 Parts Change Procedure

○ Change of Outlet Guide and Inner Liner

(1) Remove the bolts (M6 x 20 [2 pieces]) with which the pull feeding unit and the torch are fixed.

(2) Remove the pull feeding unit from the torch.

(3) Change the outlet guide.

(4) Remove the outlet guide adaptor from the torch.

(5) Change the inner liner.

(An inner liner is inserted into the outlet guide adaptor.)

(6) Reassemble the outlet guide adaptor, pull feeding unit, and then bolts.

IMPORTANT

Be sure not to scratch the surface of O-ring assembled in the outlet guide adaptor when mounting an outlet guide adaptor and a pull feeding unit.
A scratch on the O-ring causes a gas leakage resulting in a bad welding quality.

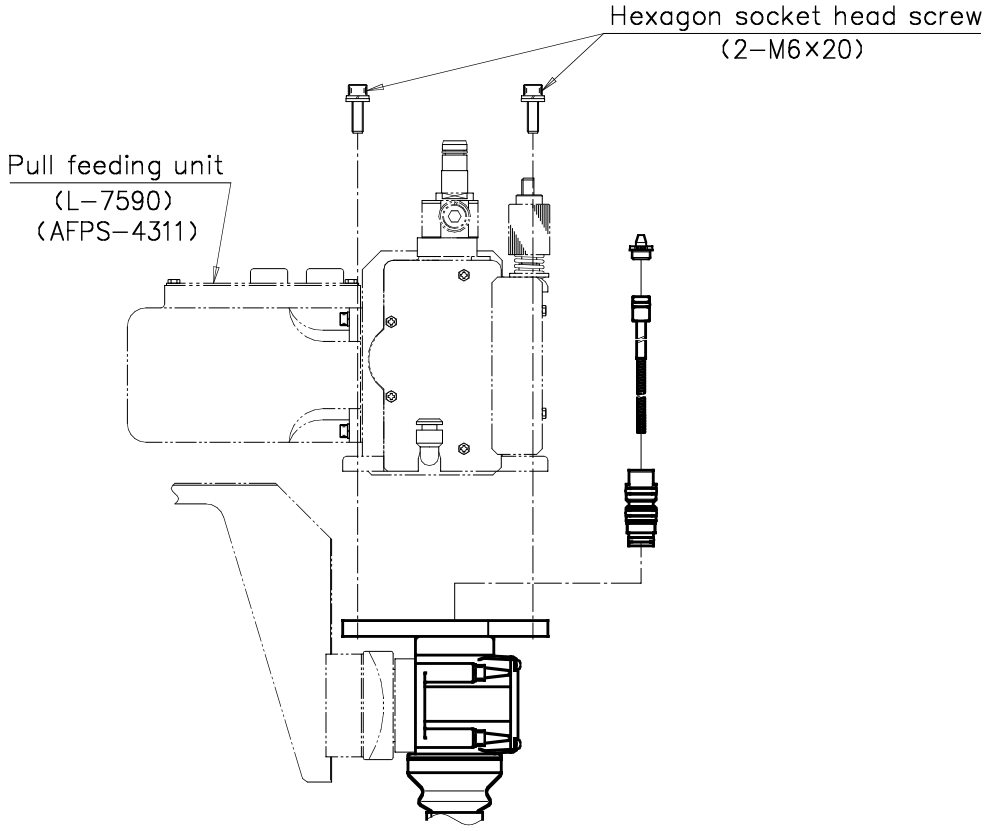


Fig. 6.2 Change of outlet guide and inner liner

6.3 Handling Instructions for Torch

(1) Make sure to mount an orifice.
Orifice is an important component to prevent nozzle and torch body from shorting and gas from flowing turbulently.

(2) Remove the spatter adhered to the nozzle and contact tip while few.

(3) The tip shall be DAIHEN genuine part.
A tip with an enlarged hole diameter causes failure conduction and wire swing. To avoid inconstant arc and aim deviation, change tips accordingly.

(4) Gas mass flow shall be 15 //min at least.

(5) Sludge or dust observed inside the liner (in a coaxial power cable), inner liner, or outlet guide causes wire power supply failure and welding failure. Clean up them with a compressed air system once every ten days.

(6) A wire stuck in the tip end (due to adhesion etc.) causes various failure such as a wire buckle in the liner and cut in the feed roll. Remove first the wire between the feed roll and tip end before inserting a new wire. If a wire is fed without removing the stuck wire, feeding failure or run out of arc may be caused.

(7) When it is taught to evacuate the torch from the work after welding, teach to pull up on the slant so that the shock sensor may work even if the wire and the base metal stick.

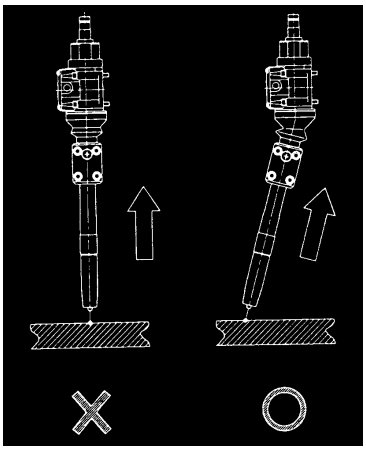


Fig. 6.3 Evacuating direction

(8) The shock sensor may somewhat deviate from the teaching point (Torch aim position). If a shock sensor operates, check again the torch aim position with a torch gauge.

(9) Notice for changing O-ring (MTXCAW-5034P)
Make sure not to damage the O-ring in the insulating bushing. The screw of the tip body may easily damage the O-ring when changing an O-ring of water-cooled torch (MTXCW-5034P).
(For mounting insulating bushing, use an attached applicator. [Refer to Fig. 6.8.])
A scratch on an O-ring causes water leakage.

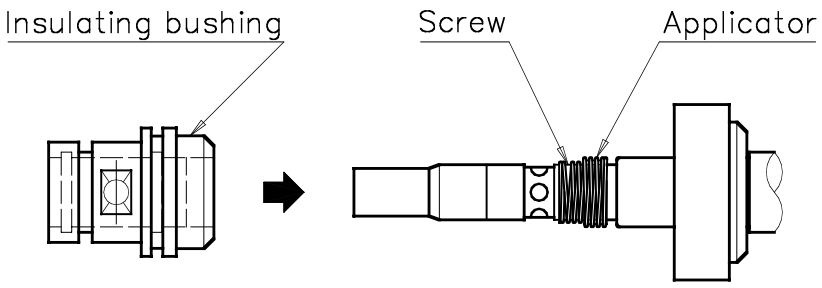


Fig. 6.4 Exchanging procedures of O-ring

7. Parts List

An adaptor ASSY, shock sensor unit, Hood ASSY, nozzle holder, and feeder cable are common parts. Nozzle fitting element is interchangeable for all the models. It can be replaced.

Note: 1. For changing these parts, torch mount and tool parameter shall be changed.

2. Assembly parts (inner liner and tip etc.) are not common. Make sure not to assemble wrong parts.

If the parts are getting worn out or damaged while using this torch, see the following table to place an order with our sales office or agent. Provide the product name and its part No. (or the specifications) for ordering.

Table 7.1 Parts list for MTXC-3534P

Ref. No.	Part number	Item	Q'ty	Remarks
1	L7328B	**Shock sensor unit**	1	
2	L6380G	**Hood ASSY**	(1)	
3	L7581B	**Adaptor ASSY**	(1)	
4	L7585B01	Adaptor	1	
5	L7479B02	Outlet guide adaptor	1	
6	3574-007	O-ring	2	P12 (Viton)
7	3574-017	O-ring	1	P10 (Viton)
8	L6380C	**Nozzle holder ASSY**	1	
9	L7585C	**Power supply cable ASSY**	1	
10	L6550B	**Nozzle ASSY**	1	
10-1	3574-007	O-ring	(1)	P12 (Viton)
11	L6380F02	Tip body	1	
12	U608T	Insulator	1	
13	L6380F01	Spring washer	1	
14	U2437H01	Orifice	1	
15	L6380F03	Nozzle No.8	1	
16	L6380F04	Nozzle No.7	(1)	
17	L7581D	**Assembly part (0.8)**	(1)	Optional accessory for wire diameter φ0.8
17-1	L72500B01	Contact tip (0.8)	(1)	
17-2	L7328C05	Inner liner (0.6 - 0.9)	(1)	
17-3	L7581B01	Outlet guide (1)	(1)	
18	L7581E	**Assembly part (0.9)**	1	Standard assembly part for wire diameter φ0.9
18-1	L72500B02	Contact tip (0.9)	(1)	
18-2	L7328C03	Inner liner (0.9 - 1.2)	(1)	
17-3	L7581B01	Outlet guide (1)	(1)	
19	L7581F	**Assembly part (1.0)**	(1)	Optional accessory for wire diameter φ1.0
19-1	L72500B03	Contact tip (1.0)	(1)	
18-2	L7328C03	Inner liner (0.9 - 1.2)	(1)	
19-3	L7581B02	Outlet guide (2)	(1)	
20	L7581G	**Assembly part (1.2)**	(1)	Optional accessory for wire diameter φ1.2
20-1	L72500B04	Contact tip (1.2)	(1)	
18-2	L7328C03	Inner liner (0.9 - 1.2)	(1)	
19-3	L7581B02	Outlet guide (2)	(1)	
21	L7581H	**Assembly part (1.4)**	(1)	Optional accessory for wire diameter φ1.4
21-1	L72500B05	Contact tip (1.4)	(1)	
21-2	L7328C04	Inner liner (1.2 - 1.6)	(1)	
21-3	L7581B03	Outlet guide (3)	(1)	
22	L7581J	**Assembly part (1.6)**	(1)	Optional accessory for wire diameter φ1.6
22-1	L72500B06	Contact tip (1.6)	(1)	
21-2	L7328C04	Inner liner (1.2 - 1.6)	(1)	
21-3	L7581B03	Outlet guide (3)	(1)	

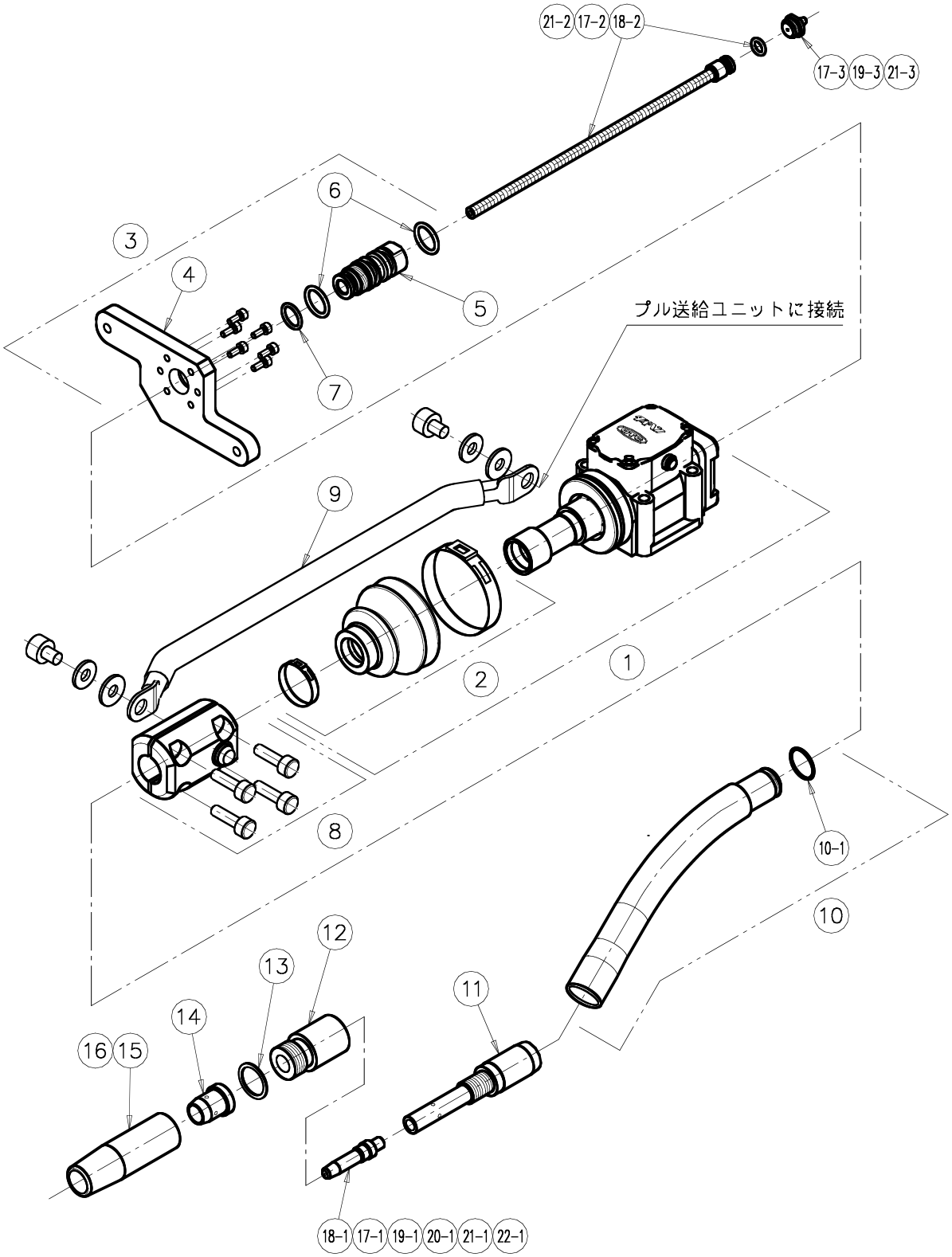


Fig. 7.1 Parts for MTXC-3534PS

Table 7.2 Parts list for MTXCB-3534P

Ref. No.	Part number	Item	Qty	Remarks
1	L 7 3 2 8 B	**Shock sensor unit**	1	
2	L 6 3 8 0 G	**Hood ASSY**	(1)	
3	L 7 5 8 1 B	**Adaptor ASSY**	(1)	
4	L 7 5 8 5 B 0 1	Adaptor	1	
5	L 7 4 7 9 B 0 2	Outlet guide adaptor	1	
6	3 5 7 4 - 0 0 7	O-ring	2	P12 (Viton)
7	3 5 7 4 - 0 1 7	O-ring	1	P10 (Viton)
8	L 6 3 8 0 C	**Nozzle holder ASSY**	1	
9	L 7 5 8 5 C	**Power supply cable ASSY**	1	
10	L 6 5 8 7 D	**Nozzle ASSY**	1	
10-1	3 5 7 4 - 0 0 7	O-ring	(1)	P12 (Viton)
11	L 6 5 8 6 C 0 1	Tip body	1	
12	U 6 0 8 T	Insulator	1	
13	L 6 3 8 0 F 0 1	Spring washer	1	
14	U 4 1 6 7 G 0 2	Orifice	1	
15	L 6 3 8 0 F 0 3	Nozzle(No.8)	1	
16	L 6 3 8 0 F 0 4	Nozzle(No.7)	(1)	
17	L 7 5 8 2 C	**Assembly part (0.8)**	(1)	Optional accessory for wire diameter φ0.8
17-1	L 7 2 5 0 B 0 1	Contact tip(0.8)	(1)	
17-2	L 7 5 0 9 B 0 3	Inner liner (0.6 - 0.9)	(1)	
17-3	L 7 5 8 1 B 0 1	Outlet guide (1)	(1)	
18	L 7 5 8 2 D	**Assembly part (0.9)**	1	Standard assembly part for wire diameter φ0.9
18-1	L 7 2 5 0 B 0 2	Contact tip(0.9)	(1)	
18-2	L 7 5 0 9 B 0 1	Inner liner (0.9 - 1.2)	(1)	
17-3	L 7 5 8 1 B 0 1	Outlet guide (1)	(1)	
19	L 7 5 8 2 E	**Assembly part (1.0)**	(1)	Optional accessory for wire diameter φ1.0
19-1	L 7 2 5 0 B 0 3	Contact tip(1.0)	(1)	
18-2	L 7 5 0 9 B 0 1	Inner liner (0.9 - 1.2)	(1)	
19-3	L 7 5 8 1 B 0 2	Outlet guide (2)	(1)	
20	L 7 5 8 2 F	**Assembly part (1.2)**	(1)	Optional accessory for wire diameter φ1.2
20-1	L 7 2 5 0 B 0 4	Contact tip(1.2)	(1)	
18-2	L 7 5 0 9 B 0 1	Inner liner (0.9 - 1.2)	(1)	
19-3	L 7 5 8 1 B 0 2	Outlet guide (2)	(1)	
21	L 7 5 8 2 G	**Assembly part (1.4)**	(1)	Optional accessory for wire diameter φ1.4
21-1	L 7 2 5 0 B 0 5	Contact tip(1.4)	(1)	
21-2	L 7 5 0 9 B 0 2	Inner liner (1.2 - 1.6)	(1)	
21-3	L 7 5 8 1 B 0 3	Outlet guide (3)	(1)	
22	L 7 5 8 2 H	**Assembly part (1.6)**	(1)	Optional accessory for wire diameter φ1.6
22-1	L 7 2 5 0 B 0 6	Contact tip(1.6)	(1)	
21-2	L 7 5 0 9 B 0 2	Inner liner (1.2 - 1.6)	(1)	
21-3	L 7 5 8 1 B 0 3	Outlet guide (3)	(1)	

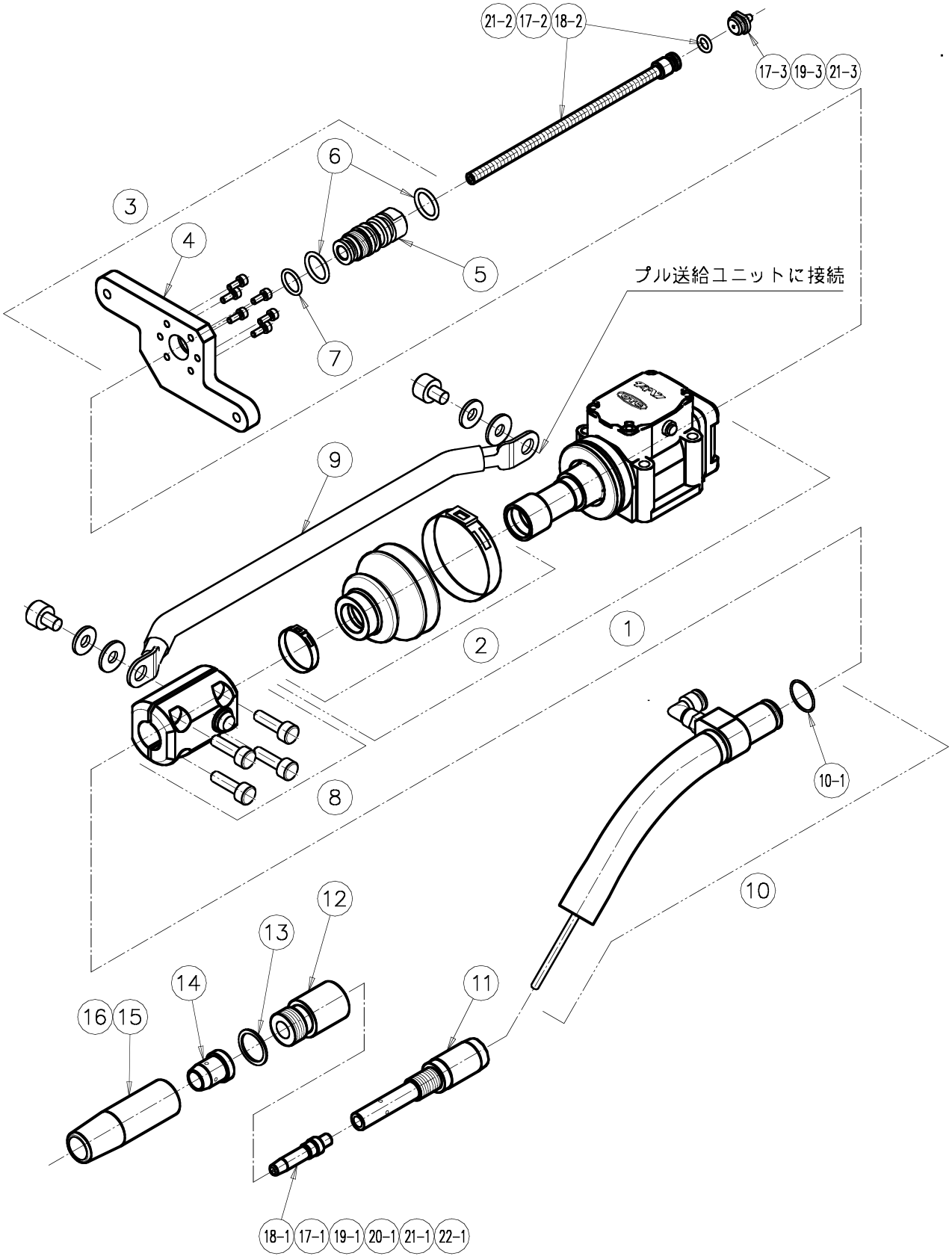


Fig. 7.2 Parts list for MTXCB-3534P

Table 7.3 Parts list for MTXC-5034P

Ref. No.	Part number	Item	Qty	Remarks
1	L7328B	**Shock sensor unit**	1	
2	L6380G	**Hood ASSY**	(1)	
3	L7581B	**Adaptor ASSY**	(1)	
4	L7585B01	Adaptor	1	
5	L7479B02	Outlet guide adaptor	1	
6	3574-007	"0" ring	2	P12 (Viton)
7	3574-017	"0" ring	1	P10 (Viton)
8	L6380C	**Nozzle holder ASSY**	1	
9	L7585C	**Power supply cable ASSY**	1	
10	L6574B	**Nozzle ASSY**	1	
10-1	3574-007	"0" ring	(1)	P12 (Viton)
11	K1769C01	Tip body	1	
12	U2774F	Insulator	1	
13	L6573C02	Spring washer	1	
14	U2774E03	Orifice	1	
15	L6218C01	Tip holder	1	
16	U2774E01	Nozzle(No.12)	1	
17	U2774E04	Nozzle(No.10)	(1)	
18	L7583D	**Assembly part (0.8)**	(1)	For wire diameter φ0.8 Optional accessory
18-1	L7250B01	Contact tip(0.8)	(1)	
18-2	L7583C01	Inner liner (0.6 ~0.9)	(1)	
18-3	L7581B01	Outlet guide (1)	(1)	
19	L7583E	**Assembly part (0.9)**	(1)	For wire diameter φ0.9 Optional accessory
19-1	L7250B02	Contact tip(0.9)	(1)	
19-2	L7583C02	Inner liner (0.9 ~1.2)	(1)	
18-3	L7581B01	Outlet guide (1)	(1)	
20	L7583F	**Assembly part (1.0)**	(1)	For wire diameter φ1.0 Optional accessory
20-1	L7250B03	Contact tip(1.0)	(1)	
19-2	L7583C02	Inner liner (0.9 ~1.2)	(1)	
20-3	L7581B02	Outlet guide (2)	(1)	
21	L7583G	**Assembly part (1.2)**	1	For wire diameter φ1.2 Standard assembly part
21-1	L7250B04	Contact tip(1.2)	(1)	
19-2	L7583C02	Inner liner (0.9 ~1.2)	(1)	
20-3	L7581B02	Outlet guide (2)	(1)	
22	L7583H	**Assembly part (1.4)**	(1)	For wire diameter φ1.4 Optional accessory
22-1	L7250B05	Contact tip(1.4)	(1)	
22-2	L7583C03	Inner liner (1.2 ~1.6)	(1)	
22-3	L7581B03	Outlet guide (3)	(1)	
23	L7583J	**Assembly part (1.6)**	(1)	For wire diameter φ1.6 Optional accessory
23-1	L7250B06	Contact tip(1.6)	(1)	
22-2	L7583C03	Inner liner (1.2 ~1.6)	(1)	
22-3	L7581B03	Outlet guide (3)	(1)	

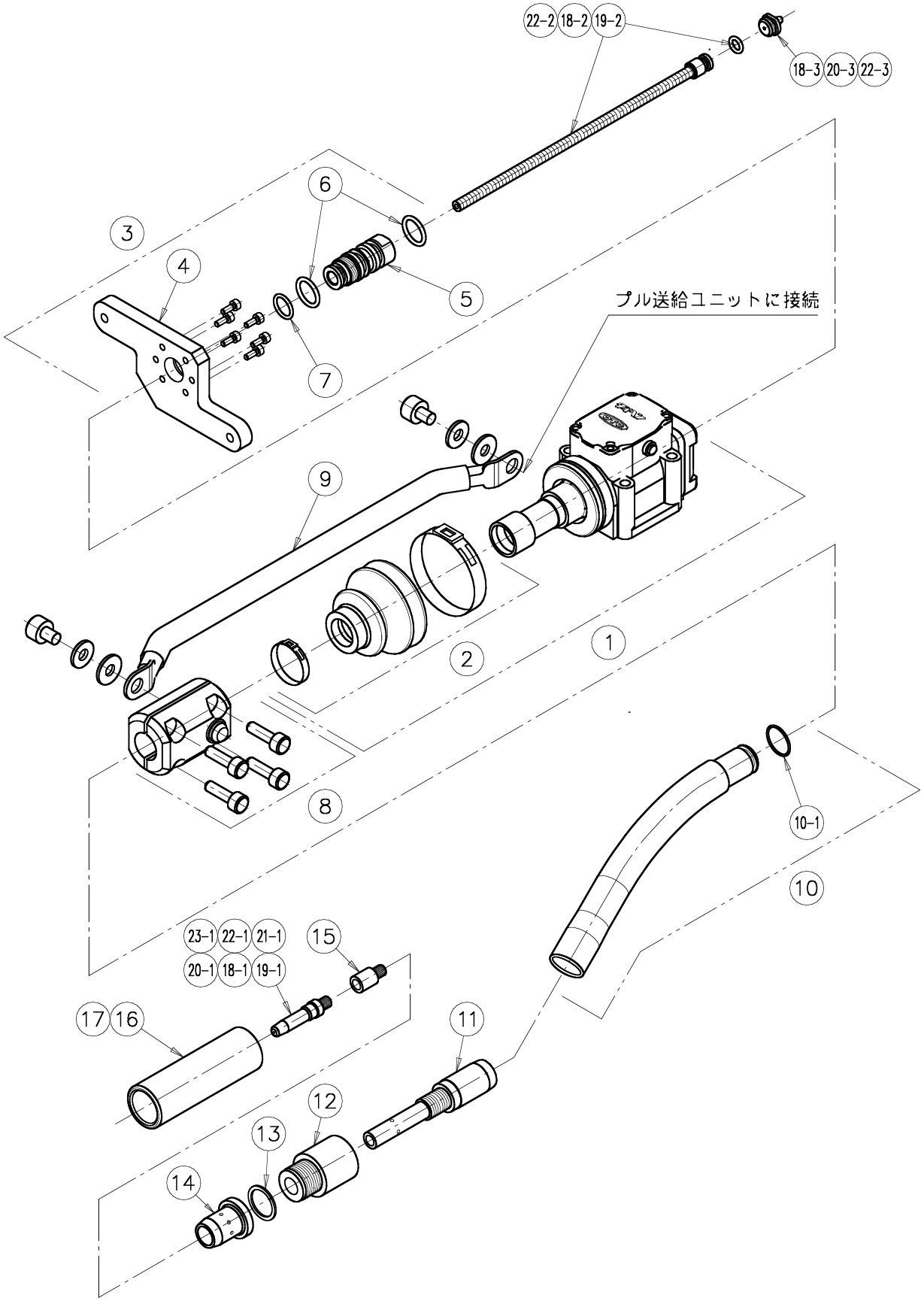


Fig. 7.3 Parts list for MTXC-5034P

Table 7.4 Parts list for MTXCW-5034P

Ref. No.	Part number	Item	Qty	Remarks
1	L 7 3 2 8 B	**Shock sensor unit**	1	
2	L 6 3 8 0 G	**Hood ASSY**	(1)	
3	L 7 5 8 1 B	**Adaptor ASSY**	(1)	
4	L 7 5 8 5 B 0 1	Adaptor	1	
5	L 7 4 7 9 B 0 2	Outlet guide adaptor	1	
6	3 5 7 4 - 0 0 7	" 0 " ring	2	P12 (Viton)
7	3 5 7 4 - 0 1 7	" 0 " ring	1	P10 (Viton)
8	L 6 3 8 0 C	**Nozzle holder ASSY**	1	
9	L 7 5 8 5 C	**Power supply cable ASSY**	1	
10	L 6 5 7 2 B	**Nozzle ASSY**	1	
10-1	3 5 7 4 - 0 0 7	" 0 " ring	(1)	P12 (Viton)
11	L 6 5 7 1 C 0 1	Insulating bushing	1	
12	L 6 5 7 1 C 0 2	Front body	1	
13	L 6 5 7 1 C 0 3	Nut	1	
14	K 2 5 8 5 B 0 6	Tip body(1)	1	
15	U 2 9 6 9 K 0 3	Cap nut	1	
16	U 3 7 6 6 K 0 1	Orifice	1	
17	3 5 7 4 - 0 0 6	" 0 " ring	1	P16 (Viton)
18	3 5 7 4 - 0 0 3	" 0 " ring	1	S22.4 (Viton)
19	3 5 7 4 - 0 0 2	" 0 " ring	2	S14 (Viton)
20	U 7 2 4 E 0 1	Nozzle(No.12)	1	
21	U 7 2 4 E 0 8	Nozzle(No.10)	(1)	
22	U 7 2 4 E 0 2	Nozzle(No.8)	(1)	
23	L 7 5 8 4 D	**Assembly part (0.8)**	(1)	For wire diameter φ0.8 Optional accessory
23-1	L 7 2 5 0 B 0 1	Contact tip(0.8)	(1)	
23-2	L 7 5 8 4 C 0 1	Inner liner (0.6 ~0.9)	(1)	
23-3	L 7 5 8 1 B 0 1	Outlet guide (1)	(1)	
24	L 7 5 8 4 E	**Assembly part (0.9)**	(1)	For wire diameter φ0.9 Optional accessory
24-1	L 7 2 5 0 B 0 2	Contact tip(0.9)	(1)	
24-2	L 7 5 8 4 C 0 2	Inner liner (0.9 ~1.2)	(1)	
23-3	L 7 5 8 1 B 0 1	Outlet guide (1)	(1)	
25	L 7 5 8 4 F	**Assembly part(1.0)**	(1)	For wire diameter φ1.0 Optional accessory
25-1	L 7 2 5 0 B 0 3	Contact tip(1.0)	(1)	
24-2	L 7 5 8 4 C 0 2	Inner liner (0.9 ~1.2)	(1)	
25-3	L 7 5 8 1 B 0 2	Outlet guide (2)	(1)	
26	L 7 5 8 4 G	**Assembly part(1.2)**	1	For wire diameter φ1.2 Standard assembly part
26-1	L 7 2 5 0 B 0 4	Contact tip(1.2)	(1)	
24-2	L 7 5 8 4 C 0 2	Inner liner (0.9 ~1.2)	(1)	
25-3	L 7 5 8 1 B 0 2	Outlet guide (2)	(1)	
27	L 7 5 8 4 H	**Assembly part(1.4)**	(1)	For wire diameter φ1.4 Optional accessory
27-1	L 7 2 5 0 B 0 5	Contact tip(1.4)	(1)	
27-2	L 7 5 8 4 C 0 3	Inner liner (1.2 ~1.6)	(1)	
27-3	L 7 5 8 1 B 0 3	Outlet guide (3)	(1)	
28	L 7 5 8 4 J	**Assembly part(1.6)**	(1)	For wire diameter φ1.6 Optional accessory
28-1	L 7 2 5 0 B 0 6	Contact tip(1.6)	(1)	
27-2	L 7 5 8 4 C 0 3	Inner liner (1.2 ~1.6)	(1)	
27-3	L 7 5 8 1 B 0 3	Outlet guide (3)	(1)	
29	L 6 5 7 1 D	**Cooling water hose(1)**	2	6m
30	L 6 5 7 1 E	**Cooling water hose(2)**	(2)	8m, Optional accessory
31	L 6 5 7 1 F	**Cooling water hose(3)**	(2)	10m, Optional accessory

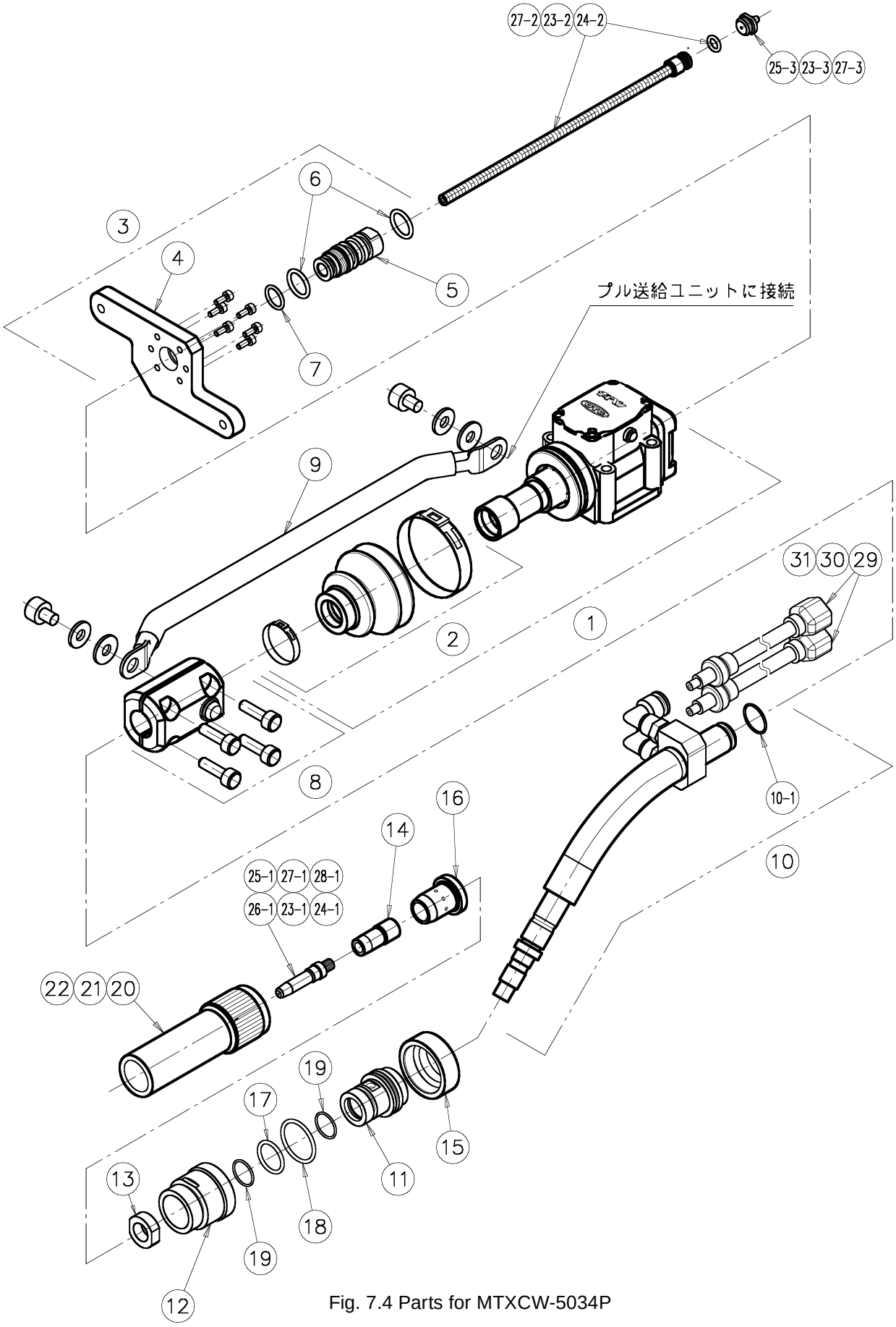


Fig. 7.4 Parts for MTXCW-5034P