

WELDCOM function INSTRUCTIONS

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

Part Number: 156487-1CD
Revision: 0



YASKAWA

MANUAL NO.

HW0485475

 **MANDATORY**

- This instruction manual is intended to explain operating instructions and maintenance procedures primarily for the MOTOWELD-EL350 **II**. Read this manual carefully and understand the contents before handling the MOTOWELD-EL350 **II**. For the wire feeder, the welding torch, and the gas regulator, read each instruction manual carefully.
- General items related to safety are listed in the Safety Manual Section 1: Safety. To ensure correct and safe operation, carefully read the Setup Manual before reading this manual.

 **CAUTION**

- Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.
- The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.
- YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.
- If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.
- YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product's warranty.

Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the MOTOWELD-EL350 II.

In this manual, the Notes for Safe Operation are classified as “WARNING,” “CAUTION,” “MANDATORY,” or “PROHIBITED.”



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury to personnel and damage to equipment. It may also be used to alert against unsafe practices.



MANDATORY

Always be sure to follow explicitly the items listed under this heading.



PROHIBITED

Must never be performed.

“Serious injury” described above indicates loss of eyesight, injuries, burns (both due to high/low temperature), electric shock, fractures, poisoning, etc. which may cause personnel to suffer aftereffects, hospitalization, or prolonged out-patient medical treatment.

“Moderate injury” indicates injuries, burns, or electric shock which does not require hospitalization or prolonged out-patient medical treatment.

“Damage to equipment” indicates expanded damages relating to property or equipment.

Even items described as “CAUTION” may result in a serious accident in some situations. At any rate, be sure to follow these important items.



To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “CAUTION” and “WARNING.”

For safe training concerning welding, utilize technical institutes held by the welding society or association, or related societies or associations, technical courses held by the headquarters or their branches, or qualifications examinations for welding technicians or engineers.



WARNING

Be sure to observe the following warnings to avoid serious injury to personnel.

- Be sure to observe the precautions in this instruction manual although this welder is designed and manufactured with sufficient consideration given to safety.

Failure to observe this warning may result in death or serious injury to personnel.

- Observe the regulations and your own references for the construction of the input power sources, selection of the installation site, handling of high-pressure gases, storage and piping, storage of manufactured products after welding, disposal of wastes, etc.
- Do not let personnel to approach the welder or welding sites unnecessarily.
- Any person using a pacemaker must not approach the welder or welding site under operation unless permitted by doctor.

The welder generates a magnetic field around it during current conduction, resulting in bad influence on the pacemaker.

- Clean the cooling-water path once a month when using a water-cooled torch and the cooling water circulator.

Failure to observe this warning may result in explosion or burns due to the choked path.

- In order to secure safe operations, only a trained or qualified person who has understood the welder must perform installation, maintenance and inspection, or repair of the welder.
- In order to secure safe operations, only a person that has understood this instruction manual and has knowledge and techniques to handle the welder safely must operate the welder.
- Do not use the welder for any applications other than welding.



WARNING

Be sure to observe the following warnings to avoid an electric shock.

- Never touch the charged parts.



Touching the charged parts may result in critical electric shock or burns.

- Only a qualified person in electric construction should perform grounding construction for the welder case and base metals (to be welded) or jigs that are electrically connected to the base metals as specified in the electric facility technical reference.
- Be sure to perform installation or maintenance and inspection five minutes after all the input power supplies are turned OFF by using switches in the switch box.

Even if the input power supply is turned OFF, the capacitor may still be charged. Be sure to confirm that charged voltage is gone before starting operations.

- Do not use any cable of insufficient capacity or damaged or with its conductor exposed.
- Tighten the cable connecting sections firmly and insulate them.
- Do not use the welder with its case or cover removed.
- Do not use worn, damaged or wet gloves. Always use dry insulated gloves.
- Use lifelines when working at heights.
- Perform maintenance and inspection periodically. Repair damaged parts immediately.
- Turn OFF all equipment input power supplies when not being used.
- When performing AC arc welding in a small space or at heights, be sure to use equipment to prevent critical electric shock as specified by labor safety and sanitary regulations.



WARNING

Be sure to observe the following warnings and use protectors to protect yourself or other people from the fumes or gases generated at welding and short of the oxygen.

- In order to prevent gas poisoning or suffocation, be sure to ventilate sufficiently or use an inhaler, etc. when welding at a place specified by regulations such as labor safety and sanitary regulations or hypoxia preventive regulations.



- In order to prevent dust trouble or gas poisoning due to the fumes or gases, use a local air exhaust facility specified by regulations such as labor safety and sanitary regulations or dust trouble preventive regulations or use effective protectors for breathing.

Fumes or gases generated at welding may harm your health.

- When welding within such areas as a tank, a boiler, or a ship's hold, be sure to ventilate sufficiently or use an inhaler, etc. in order to prevent or offset any actual or potential oxygen shortage.

Gas heavier than air such as carbon dioxide gas or argon gas stays at the bottom.

- When welding in a small space, be sure to ventilate the site sufficiently or use an inhaler. At the same time, operations must be done under trained supervisor.

Welding operations at a small space may result in short of the air, causing a person to be suffocated.

- Do not perform welding near degreasing, cleaning, or spraying operations.

Failure to observe this warning may generate extremely noxious gases.

- Before welding coated steel plates, be sure to ventilate sufficiently or use protectors for breathing.

Welding such coated steel plates generates noxious fumes or gases.



WARNING

Observe the following cautions to prevent fire, explosion, or rupture.

- Remove inflammables so that they will not get spattered. If they cannot be removed, use the inflammables with nonflammable covers.



Spatters or hot base metal immediately after welding may result in fire.

- Do not weld near flammable gases.

If arc is generated in a container (for inflammables) in which gasoline or the like is put, the container may explode.

- Do not make hot base metals immediately after welding close to inflammables.
- Remove inflammables at the hidden side when welding ceiling, floor, or wall.

Failure to observe this caution may result in fire.

- Tighten and insulate the cable connections.

Imperfect cable connections or imperfect contacting section of the current path at the base metal such as iron framework may result in fire due to heat generation by current conduction.

- Connect the cable at the base metal as close to the welding part as possible.
- Do not weld a gas tube having gas inside or an enclosed tank or pipe.

Welding an enclosed tank or pipe may result in rupture.

- Locate fire extinguishers near the welding site.



CAUTION

Be sure to observe the following cautions and use protectors to protect yourself or other people from arc beams, spatters, slugs or noise generated from welding.



- Wear welding mask or shaded glasses appropriate for welding.
- Wear protective glasses to protect your eyes from spatters or slugs.

Scattered spatters or slugs may damage eyes or burn the skin.

- Use such protectors as leather gloves, clothes with long sleeves, leg covers, or leather aprons for welding.
- Install protective curtains around the welding site to protect your eyes from arc beams.

Arc beams may irritate eyes or burn skins.

- Use noise protector when there is excessive noise.

Noise may damage hearing.



CAUTION

Be sure to observe the following cautions to prevent a gas cylinder from falling or a gas regulator from rupturing.

- Observe the regulations and your own references for the handling of gas cylinders.



Since a gas cylinder is filled with high pressure gas, improper handling may cause high pressure gas to blow up, resulting in personal injury.

- Use the attached gas regulator or our recommended one.
- Read carefully the instruction manual of the gas regulator and observe the precautions before using it.
- Hold the gas cylinder in the exclusive-use gas cylinder stand.

A gas cylinder falling may result in personal injury.

- Do not expose the gas cylinder to high temperature.
- Do not bring your face close to the discharging opening when opening the valve of the gas cylinder.
- Be sure to attach the protective cap when the gas cylinder is not used.
- Do not hang the welding torch over the gas cylinder or keep the electrode away from the gas cylinder.

Observe the following cautions to prevent personal injury due to improper handling.

- Do not use the welder with the case or cover removed.
- Only a qualified person or a person who has understood the welder must remove the welder case for maintenance and inspection or repair. Take preventive measures not to let other personnel approach the welder or welding sites unnecessarily by putting up a guard fence or the like.
- Do not contact the rotating cooling fan or feeding roll of the wire feeder with hands, fingers, hair, or clothes.



Failure to observe this caution may cause someone to be caught in the machine resulting in personal injury.



CAUTION

Observe the following cautions to prevent personal injury by the end tip of the welding wire.

- Do not peep through the chip hole to confirm that the wire is being fed.



If the wire is projected from the end tip of the welding torch, it may poke you in the eyes or face.

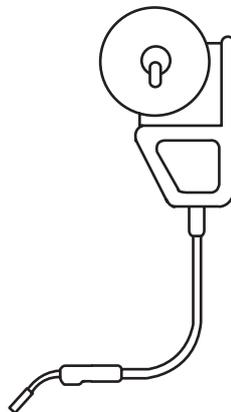
- Do not bring the welding torch end close to eyes, face, or body to perform inching or pulling the torch switch.

If the wire is projected from the end tip of the welding torch, it may poke you in the eyes, face, or body.

- When hanging the wire feeder, remove the anti-fall fastening from the spool shaft and tighten.



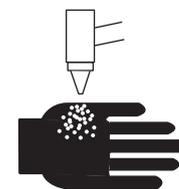
Failure to observe this caution may cause the wire to be removed from the spool shaft, resulting in personal injury.



Observe the following cautions to prevent burns due to the plasma arc.

If body parts such as hands and fingers directly touch the plasma arc, burns will result.

- Do not put your hands and fingers near the chip and the electrodes of the torch end during cutting operation.
- Do not grasp near the base metal during cutting operation.
- Turn OFF the power supply before replacing the chip or the electrodes of the torch.





CAUTION

Observe the following cautions to prevent a fire accident caused by deterioration of welder insulation.

- Perform all welding and grinding away from welder to protect welder from spattering and metal powder.



Spatter and metal powder inside the welder may cause a deterioration of insulation resulting in accidental fire.

- Be sure to perform maintenance and inspection periodically to prevent deterioration of insulation caused by accumulation of dust and dirt.
- If spatter or metal powder enters the inside of the welder, remove it by forced air spray after turning OFF the welder and switch in the switch box.

Spatter and metal powder inside the welder may cause a deterioration of insulation resulting in accidental fire.

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1 Introduction

1.1 Function overview

This book is a WELDCOM function operation manual. You can operate the welding program and the parameter of a welding power supply made in FRONIUS company, from a program pendant of NX100 by using a WELDCOM function.

<Function overview>

-MODBUS-UDP is communicated between NX100 and TPS, and the welding condition instruction, the data transmission of the welding response etc. , and the parameter are transmitted with one Ethernet cable.

-The job can be programmed by using a standard arc welding instruction.

ARCSET ASF#()

ARCON ASF#()

ARCOF AEF#()

-The welding condition is set with the ARC START CONDITION FILE or the ARC END CONDITION FILE specified for the arc welding instruction.

-The ARC START CONDITION FILE and the ARC END CONDITION FILE edit application are prepared for only TPS

-It corresponds to the following operating mode prepared on the TPS side.

0. Program Standard

1. Program Pulse-arc

2. Job mode

3. Parameter selection internally

4. Manual mode

7. CMT

(*)It doesn't correspond to 5. CC/CV , 6. TIG , 8. Manual standard, and 9 Manual puls.

-TCP speed function

Wire feed speed changes according to welding speed. Therefore it can weld while keeping the thickness of the bead. (See 3-3 TCP-speed function)

(*)To use it, the power source should install special software.

Version: UBST 1.06.21

(*)TCP Speed cannot be used by United States specification of TPS.

Table 1.1 Parts list

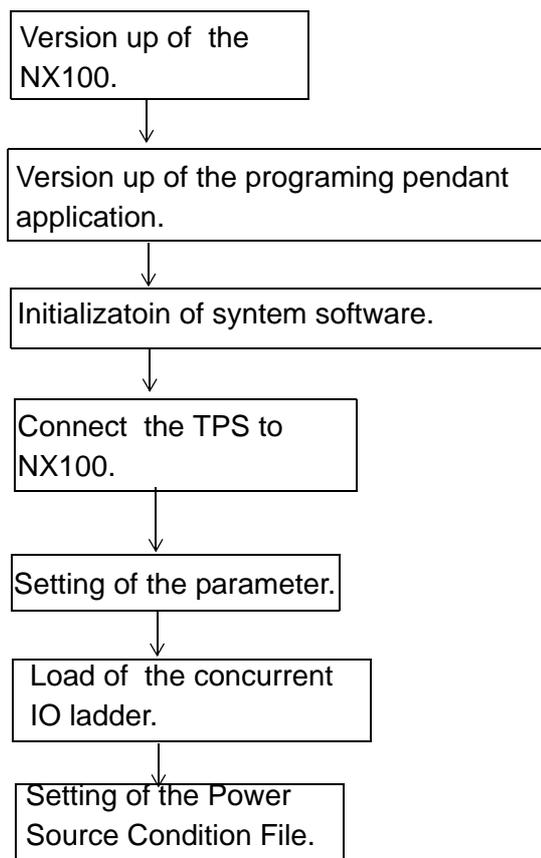
number	Name	Parts name	Parts number
①	Power source	TransPuls Synergic 4000 CMT MV MIG/MAG Inverter power source	4,075,138,630
		①Ethernet inside	4,045,983
		⑫I-kit autotrafo 200V-460V FK 4000 R	4,100,225
		⑬Software Configuration MotoFro	4,062,011
		⑭Software FS LN Gateway Level 1	4,061,115
		Service FMP Inverter ready mouted and testwelded	42,700,001
②	Cooling unit	Cooling unit FK 4000-R FC	4,045,837,632
③	Podium	Podium digital machines	4,045,881
④	Wire feeder	VR 7000-CMT 4R/G/W/F++ Wire feeder	4,045,963,000
⑤	Wire buffer	Wire buffer set CMT 4,25m/1,2m	4,001,635
⑥	CMT drive	Robacta Drive CMT	4,036,319
		Holding angle 36°	42,0201,2124
⑦	Torch	Robacta 5000 36° MIG/MAG robot torch body	34,0350,1974
⑧	Hose pack	Conn. Hose pack W 1,2m70mm2 LHSB	4,047,438
⑨	Hose pack	Robacta Drive CMT W/F++/4,25m MIG/MAG Robot hose pack	4,047,429,000
		Basic kit CMT ALMg/CuSi 1,2	44,0350,2383
⑩	Wearing parts box	Wearing part box RA 5000	44,0350,2022
⑮	Filter(Optional)	Option filter dig. PowerSource	4,100,413
⑯	Welding cable		HS0471283-A05
⑰	Ethernet cable		1689349/CO/C45/C H/5.0
⑱	Shock sensor		BINZL CAT2-LL
⑲	Shock sensor cable, Short circuit cap		

1.2 Configuration diagram

2 Set up of the NX100

2.1 A procedure of the setup

WELDCOM function is set up by following procedure on the NX100.



2.2 Version up of the NX100

2.2.1 Back up about robot data

Version up for the system software of WELDCOM needs initialization. Please record back up as follows if necessary.

- Individual files.
- AXES CONFIG(External axes)

2.2 Version up of the NX100

2.2.2 Version up of the NX100

Confirm that the pendant type is NPP01-03(DiskOnChip 64MB type) , and upgrade to WELDCOM application software(NS3.**.00A(JP/US)-78).

2.2.3 Copy of the application folder

From an offered medium, every subfolder copies a PP_APP folder in CF. The folder image in version up CF is as follows.



Fig.2.1 Folder image

2.2.4 Installation of the applications

- 1.Push the [Interlock + 8 + Select] button and turn on the NX100.
- 2.Push the "Applicaton version Up" button.

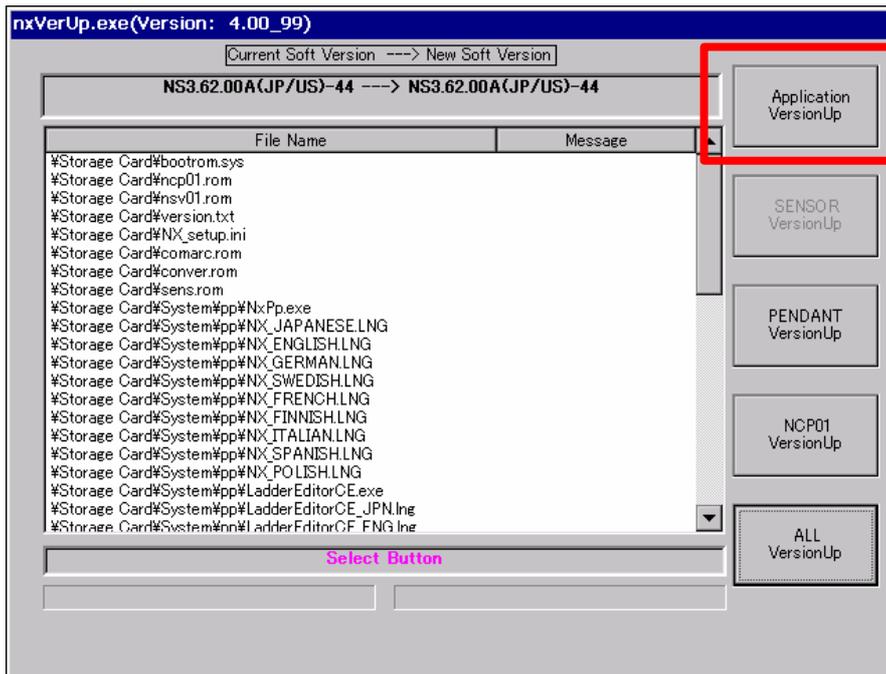


Fig.2.2 Instratation the applicaion

2.3 Initializatoin of system configuration.

3.An application installation screen is displayed. Confirm that necessary application "WELDCOM_ASF", "WELDCOM_AEF" and "ArcMonitor" become "Add". And push "Excute" button.

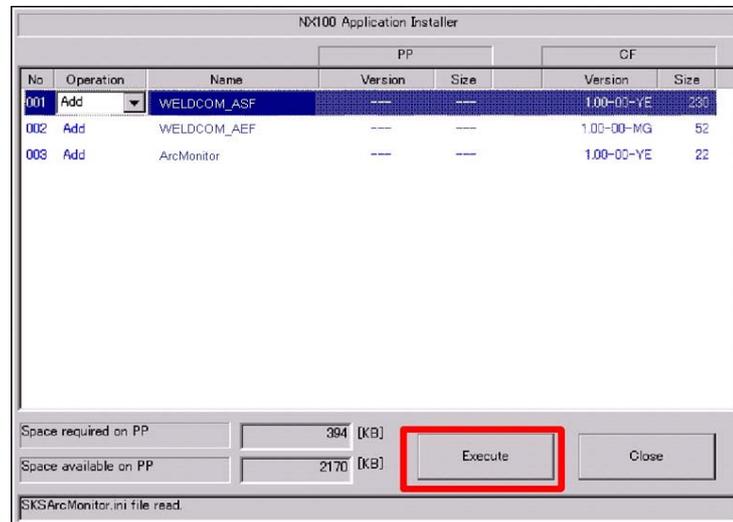


Fig.2.3 Instration the applicaion.

- 4.Installation of the application is started. never intercept a power supply.
- 5.After installation, restart NX100

2.3 Initializatoin of system configuration.

Initialize system configuration and set the "Enhanced mode" in the maintenance mode.

2.4 Connect the TPS to the NX100

Connect the NX100 and the TPS like below in ethernet (crossing cable).

2.5 Setting of the parameter

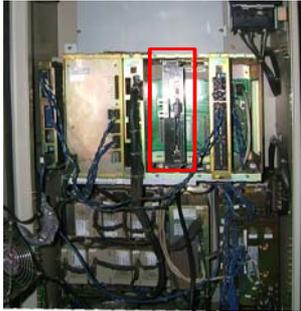


Fig.2.4 NX100

----->
Scale up

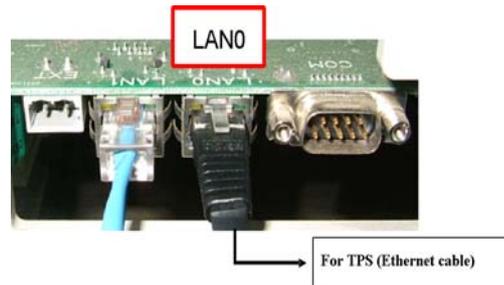


Fig.2.5 NCP01 in the NX100

2.5 Setting of the parameter

The following parameter is necessary to make the WELDCOM function effective.

Table.2.1 Parameter table

Parameter	Content	Set value	Initial Value
FD42	Ethernet function specification	1	0
FD188	Customizing function specification	1	0
FD211	WELDCOM telecommunication facility	1	0
S2C250	Arc welding PP application program (external storage function)	1	0
RS70	Internet Protocol address 1	192	192
RS71	Internet Protocol address 2	168	168
RS72	Internet Protocol address 3	255	255
RS73	Internet Protocol address 4	200	1
RS277	WELDCOM receive mail waiting time	10	0
RS278	WELDCOM register link cycle (unit of 4ms)	5	0
RS279	WELDECOM communication processing : Sleep time	10	0
RS280	Internet Protocol address 1 : Welder 1	192	0
RS281	Internet Protocol address 2 : Welder 1	168	0
RS282	Internet Protocol address 3 : Welder 1	255	0
RS283	Internet Protocol address 4 : Welder 1	210	0
RS284	Internet Protocol address 1 : Welder 2	192	0
RS285	Internet Protocol address 2 : Welder 2	168	0
RS286	Internet Protocol address 3 : Welder 2	255	0
RS287	Internet Protocol address 4 : Welder 2	211	0

RS299	TCP speed function specification	Effective:1 Invalid:0	0
RS396	WELDCOM function specification : Welder 1	1	0
RS397	WELDCOM function specification : Welder 2	1	0
A1P10	Welding instruction output specification : Welder 1	1	0
A1P50	For digital welding power supply : Welder 1	1	0
A2P10	Welding instruction output specification : Welder 2	5	0
A2P50	For digital welding power supply : Welder 2	1	0

2.6 Load of the concurrent IO ladder

It is necessary to load concurrent I/O ladder only for the WELDCOM function.

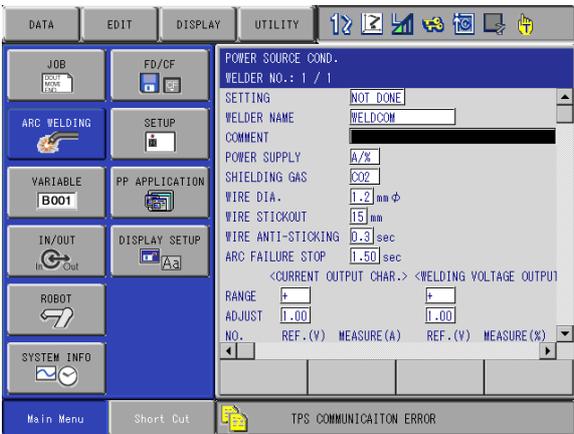
2.7 Setting of the Power Source Condition File

It is necessary to set power source condition file only for the WELDCOM function.

Set power source condition file like below.

	Operation	Explanation
1	Select {ARC AUX COND.} from "Main Menu"	

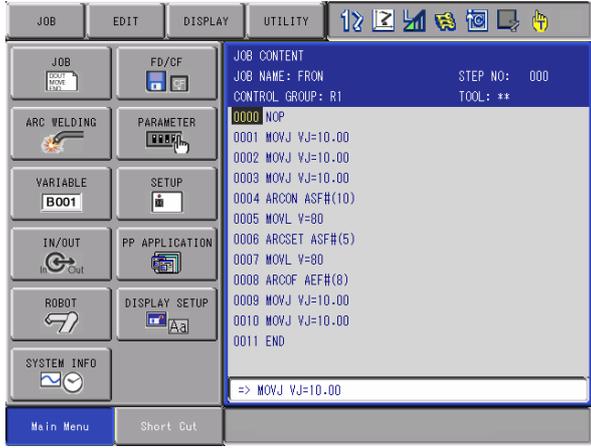
2.7 Setting of the Power Source Condition File

Operation	Explanation																																																												
<p>2 Set {WELDER NAME} , {CURRENT OUTPUT CHAR.} and {WELDING VOLTAGE OUTPUT CHAR.} like a figure.</p>	<p>Set the power source condition file.</p>   <table border="1" data-bbox="518 1355 1428 1680"> <thead> <tr> <th colspan="3"><CURRENT OUTPUT CHAR.></th> <th colspan="3"><WELDING VOLTAGE OUTPUT CHAR.></th> </tr> <tr> <th colspan="3">RANGE : +</th> <th colspan="3">RANGE : +</th> </tr> <tr> <th colspan="3">ADJUST : 1.00</th> <th colspan="3">ADJUST : 1.00</th> </tr> <tr> <th>No.</th> <th>REF.(V)</th> <th>MEASURE(A)</th> <th>No.</th> <th>REF.(V)</th> <th>MEASURE(%)</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>0.02</td> <td>1</td> <td>01</td> <td>0.00</td> <td>70</td> </tr> <tr> <td>02</td> <td>7.00</td> <td>350</td> <td>02</td> <td>7.00</td> <td>100</td> </tr> <tr> <td>03</td> <td>14.00</td> <td>700</td> <td>03</td> <td>14.00</td> <td>130</td> </tr> <tr> <td>04</td> <td>0</td> <td>0</td> <td>04</td> <td>0</td> <td>0</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>08</td> <td>0</td> <td>0</td> <td>08</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	<CURRENT OUTPUT CHAR.>			<WELDING VOLTAGE OUTPUT CHAR.>			RANGE : +			RANGE : +			ADJUST : 1.00			ADJUST : 1.00			No.	REF.(V)	MEASURE(A)	No.	REF.(V)	MEASURE(%)	01	0.02	1	01	0.00	70	02	7.00	350	02	7.00	100	03	14.00	700	03	14.00	130	04	0	0	04	0	0	08	0	0	08	0	0
<CURRENT OUTPUT CHAR.>			<WELDING VOLTAGE OUTPUT CHAR.>																																																										
RANGE : +			RANGE : +																																																										
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04	0	0	04	0	0																																																								
.																																																								
08	0	0	08	0	0																																																								
<p>3 After the modification , move the cursor to "SETTING" and press {SELECT} to DONE setting</p>																																																													

3 WELDCOM function operation method

3.1 Registering a Job

Welding work jobs is programed by the following.

Comment	Example
004 ARCON ASF#(10) It starts to weld in ASF#(10) condition.	
006 ARCSET ASF#(5) It sets the ASF#(5) condition.	
008 ARCOF ASF#(8) It ends to weld in AEF#(8) condition.	

3.2 Setting of the WELDCOM_ASF and WELDCOM_AEF

- Set {enhanced mode} in the “welding condition file”.
- ”WELDCOM_ASF” and “WELDCOM_AEF” have 396 files.
(In “arc+arc “ case 1 to 198 : Welder 1 , 199 to 396 : Welder 2)
- WELDCOM_ASF and WELDCOM_AEF have below parameters.
 - *Four kinds of welding conditions(eg.Wirefeed speed , Arc length correction , Pulse/Dynamic correction , Burn back correction)
 - >Please set “Wirefeed speed” in substitute for the welding current.
 - >Please set “Arc length correction “ in substitute for the welding voltage.
 - *Robot welding speed.
 - *Welding user file number.
- Welding user file have 16 files. It has below parameters.
 - *Operating mode
 - *Program number , Job number
 - *Effective/invalid specification of TCP speed function
 - *Additionally, parameter at gas pre flow time , gas at post flow time , slow down of wire setting and etc.

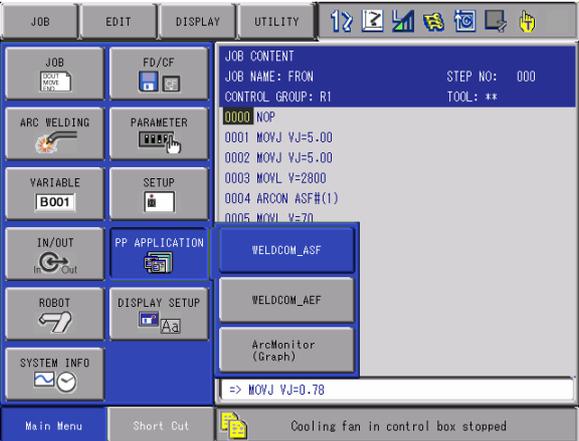
3.2 Setting of the WELDCOM_ASF and WELDCOM_AEF

<NOTE!>

- Please edit neither {ARC START CONDITION FILE} nor {ARC END CONDITION FILE} by a past edit display.
- Please use the following {WELDCOM_ASF} edit application and {WELDCOM_AEF} edit application only for WELDCOM .
- Set {enhanced mode} in the “welding condition file”.

3.2.1 The indication method of the WELDCOM

It is necessary to edit the {WELDCOM_ASF} and {WELDCOM_AEF} only for the WELDCOM function by the following.

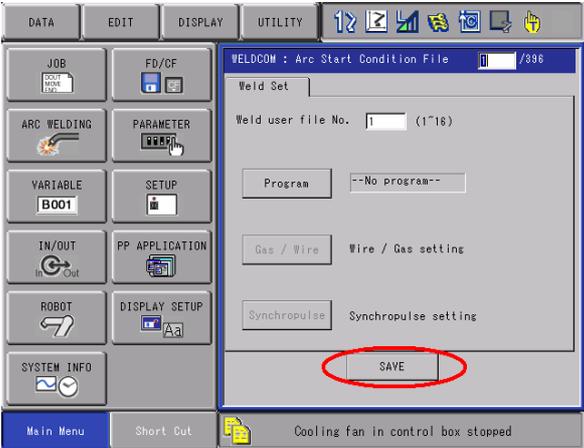
	Operation	Explanation
1	Select {PP APPLICATION} from "Main Menu".	
2	Select {WELDCOM_ASF} , {WELDCOM_AEF} from "PP APPLICATION".	 <p>The screenshot shows a control panel interface with a top menu bar containing 'JOB', 'EDIT', 'DISPLAY', and 'UTILITY'. Below this is a grid of function buttons: 'JOB' (with 'EXIT MODE' and 'EDIT' sub-buttons), 'FD/CF', 'ARC WELDING', 'PARAMETER', 'VARIABLE' (with 'BO01'), 'SETUP', 'IN/OUT' (with 'In' and 'Out' sub-buttons), 'PP APPLICATION' (highlighted), 'ROBOT', 'DISPLAY SETUP', 'SYSTEM INFO', and 'Main Menu' (with 'Short Cut' sub-button). To the right of the buttons is a 'JOB CONTENT' display area showing job details like 'JOB NAME: FRON', 'STEP NO: 000', and a list of steps including '0000 NOP', '0001 MOVJ VJ=5.00', '0002 MOVJ VJ=5.00', '0003 MOVL V=2800', '0004 ARCON ASF#(1)', and '0005 MCM V=70'. Below the job content is a status bar showing '=> MOVJ VJ=0.78' and a message 'Cooling fan in control box stopped'.</p>

3.2.2 The end method of the application

{WELDCOM} ends automatically when moving to other screens.

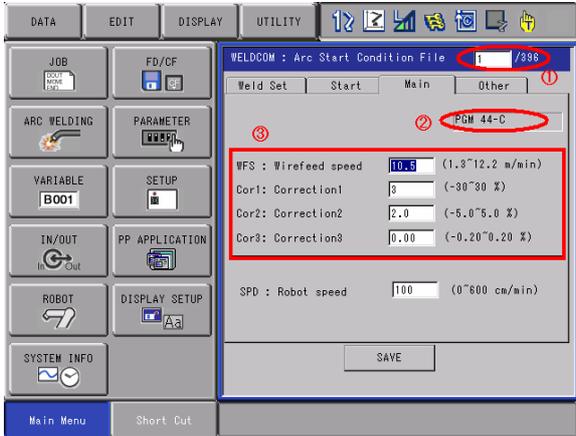
3.2 Setting of the WELDCOM_ASF and WELDCOM_AEF

Push {Save} button to save conditions as follows.

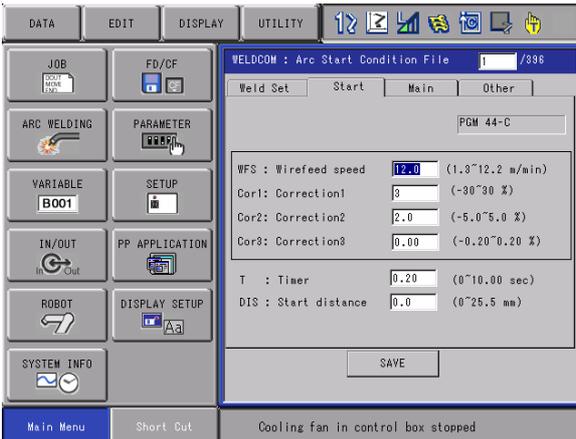
	Operaton	Explanation
1	Push {Save} button.	 <p>The screenshot shows the WELDCOM software interface. The main window is titled 'WELDCOM : Arc Start Condition File' with a file number '1 / 896'. The interface includes a menu bar with 'DATA', 'EDIT', 'DISPLAY', and 'UTILITY'. A toolbar contains various icons. The main area is divided into a left sidebar with buttons for 'JOB', 'ARC WELDING', 'VARIABLE', 'IN/OUT', 'ROBOT', and 'SYSTEM INFO', and a right panel with 'FD/CF', 'PARAMETER', 'SETUP', 'PP APPLICATION', and 'DISPLAY SETUP'. The 'PARAMETER' section is active, showing fields for 'Weld user file No.' (1), 'Program' (--No program--), 'Gas / Wire' (Wire / Gas setting), and 'Synchropulse' (Synchropulse setting). The 'SAVE' button at the bottom of the parameter section is circled in red.</p>

3.2 Setting of the WELDCOM_ASF and WELDCOM_AEF

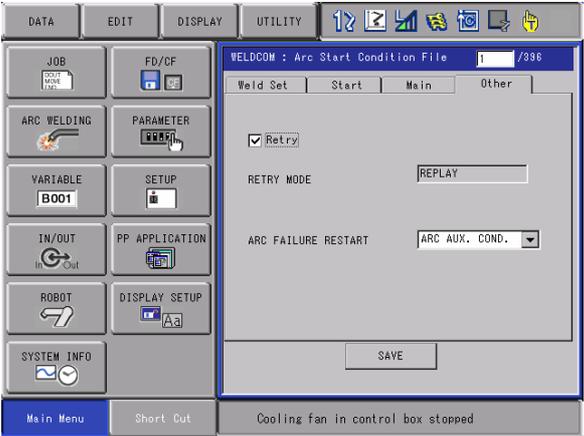
3.2.3 Edit display of WELDCOM_ASF(Main condition)

	Operation	Explanation
1	Select {Main} tab.	
2	① Arc start condition file No.	Select the Arc Start Conditon File No.
3	② Welding Program No.	Display welding program No. that was set in the "Weld Set" tab.
4	③ Welding conditions(4 kinds)	Content of the each conditons are changed from "operating mode".

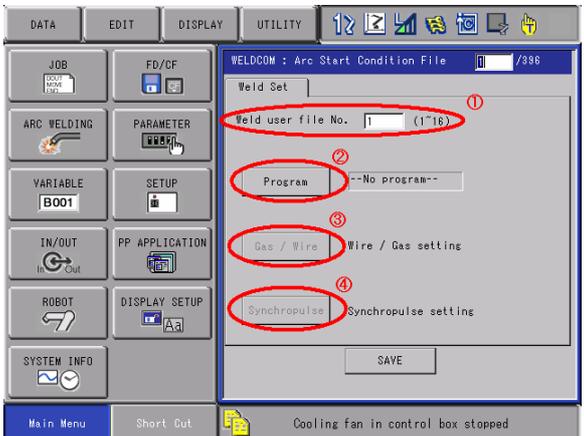
3.2.4 Edit display of WELDCOM_ASF (Start condition)

	Operation	Explanation
1	Select {Start} tab. It is same as a normal parameter other than four kinds of welding condition.	

3.2.5 Edit display of WELDCOM_ASF (Other)

	Operation	Explanation
1	Select {Other} tab. It is same as a normal parameter.	

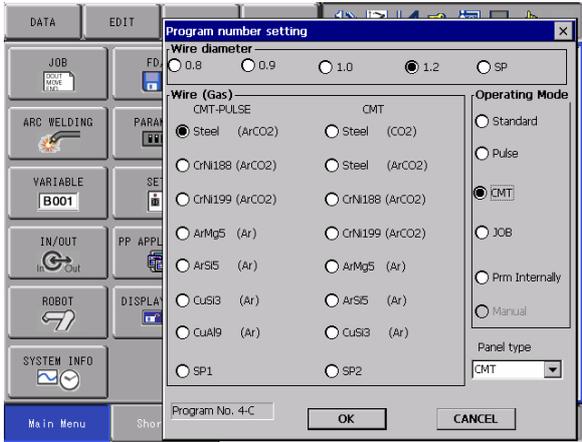
3.2.6 Edit display of WELDCOM_ASF (Weld Set)

	Operation	Explanation
1	Select "Weld Set" tab.	
2	① Welding user file No.	Select Welding user file No.(1 to 16)
3	② "Program number" setting.	Display the "Program number setting" dialog.
4	③ "Gas/Wire" parameter setting	Display the "Gas/Wire setting" dialog.
5	④ "SynchroPulse" setting(Optional)	Display the "SynchroPulse setting" dialog.

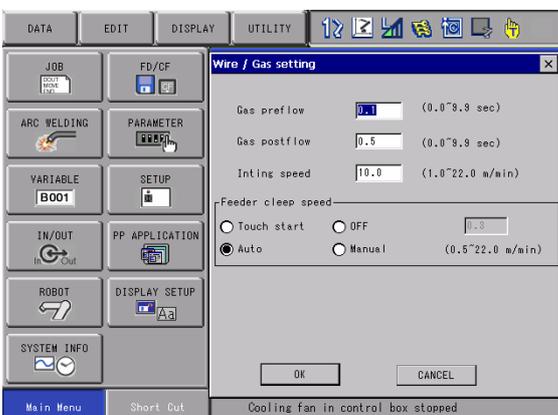
3.2 Setting of the WELDCOM_ASF and WELDCOM_AEF

3.2.7 Edit display of WELDCOM_ASF
(Program number setting)

- The program number is decided by the combination of the wire diameter, the wire material, the gas, and the process.
- When JOB is selected in the operating mode, the selection panel is not displayed because the combination of the wire diameter and the wire material and the gas is decided by JOB set on the TPS side.

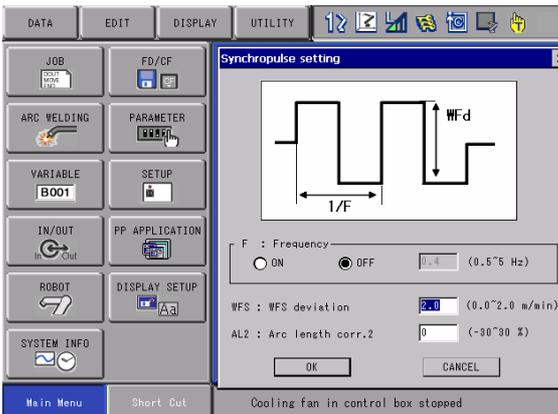
	Operation	Explanation
1	Push {Program number} butt on "Weld Set" tab.	
2	Select the weld condition.	Select the "Wire type", "Wire diameter", "Gas", "Operating mode".
3	Push {OK} or {CANCEL} button.	When there is not a welding program in TPS, the message of "No program. retry?" is displayed.

3.2.8 Edit display of WELDCOM_ASF (Wire / Gas setting)

Operation	Explanation
<p>1 Select {Wire / Gas} button from "Weld Set" tab.</p>	 <p>Change the parameters . About the contents of the parameter, please refer to a TPS instruction manual.</p>
<p>2 Select {OK} or {CANCEL} button.</p>	

3.2.9 Edit display of WELDCOM_ASF (Synchropulse setting)(Option)

Synchropulse function is additional function.

Operation	Explanation
<p>1 Select {Synchropulse} button from "Weld Set" tab.</p>	 <p>Change the parameters . About the contents of the parameter, please refer to a TPS instruction manual.</p>
<p>2 Select {OK} or {CANCEL} button.</p>	

3.3 TCP speed function

It is necessary to set the parameter of RS299 to use TCP speed function.

(Effective : 1 , Invalid : 0)

Using TCP speed function , you can weld it while keeping a fixed thickness of bead even if welding speed changes.

*It is necessary special ARCON Macro Job to use TCP speed function.

3.3.1 Registering a Macro Job

Macro Jobs is programed by the following

Argument of <FARCON>

ARC START CONDITION FILE No. * (I[Integer-type])

Macro Job <FARCON>

```

NOP
GETARG LI001 IARG#(1)
ARCSET ASF#(LI001) ACOND=1
ARATION AO#(21) BV=7.00 V=512.0 OFV=0.00
ARCON ASF#(LI001)
END

```

Argument of <FARCOF>

ARC END CONDITION FILE No.*(I[Integer-type])

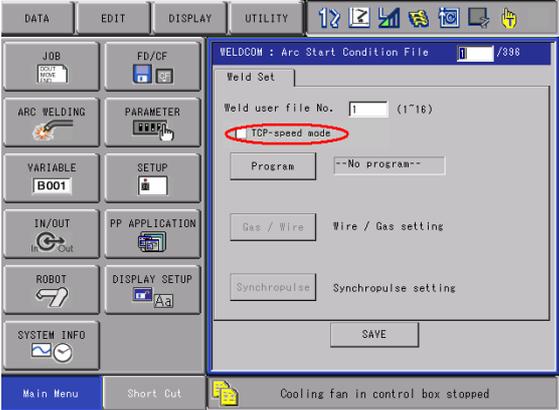
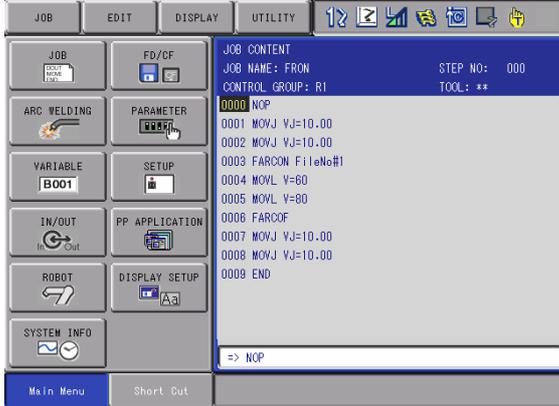
Macro Job <FARCOF>

```

NOP
GETARG LI001 IARG#(1)
ARATIOF
ARCOF AEF#(LI001)
END

```

3.3.2 Setting of TCP speed function

	Operaton	Explanation
1	Set RS299:1	TCP speed function : effective.
2	Check {TCP speed mode} button.	
3	Set {'a' dimension} value in "Start" tab and "Main" tab.	'a' dimension : level of thickness of bead . Wirefeed speed is changed to adjust the setting value even if welding speed changes.
4	Use macro job that registered "3.3.1 Registering a Macro Job" instead of normal "ARCON" and "ARCOF".	

*To use it, the TPS should install special software.

Version: UBST 1.06.21

*TCP Speed cannot be used by United States specification of TPS.

3.3 TCP speed function

4 Troubleshooting

4.1 Wirefeed error show

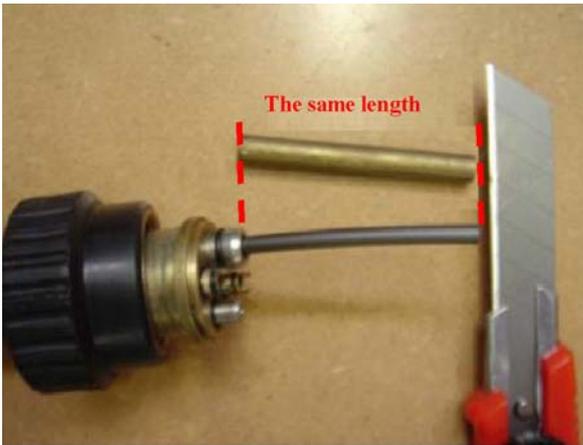
After reset the error , do wire inching and wire retract automatically from NX100.

But if it continue , please do wire inching and wire retract manually or please restart the TPS after change the position of robot .

4.2 Welding is unstable

Please check that the length of inner liner length in the welding torch is appropriate.

The length of inner liner is decided by below.

	Operation	Explanation
1	Attach a contact chip to the welding torch which was removed. And insert the inner liner in it.	
2	Cut the inner liner so that the inner liner appearing from welding torch and the pipe-shaped part bundled Robacta becomes the same length.	
3	Attach the welding torch.	

4.3 Note

1. TPS calibrate the servo torch automatically just after switch on.
Don't feed the wire before 30 seconds.
2. If you restart the TPS , switch on after confirm TPS completely off.

5 Error

5.1 Alarm

Alarm number	data	message	Explanation
4940	Welder No.	TPS:ERROR	The details please watch a welding power supply.

5.2 Error

Error number	message	Explanation
1111	TPS:Wirefeed system error	Wirefeed system error. Check the wire , wire buffer , and pressure roller. (TPS show : EFd)
1112	TPS:Rate-of-flow watchdog	Cooling unit error. Check the cooling unit ; top up with coolant or bleed the water flow if nessesary. (TPS show : No H2O)
1114	TPS:Wire-sticking	“Sticking“ of the wire in the solidifying weld pool. Cut off the sticking wire-tip ; there is no need to dismiss this error message (TPS show : Err 054)

5.3 Message

Message	Explanation
TPS:Touch-sensor activated	Touch-sensor activate. (TPS show : Touch)
TPS:Arc ignition timeout	No ignition. (TPS show : No IGn)
TPS:Arc-break	Arc break (TPS show : No Arc)
TPS:No more wire available	The “Wire-end check” option has detected the end of the welding wire. (TPS show : Err 056)
TPS:Robot not ready	Where the power source is being operated with a robot interface of a field bus. (TPS show : -St op-)
TPS:Communication error	No communication between NX100 and TPS.
TPS:Power source not ready	Non-preparations of the TPS

5.3 Message

Message	Explanation
TPS:Power out of reange	Wire feed speed is out of range.

WELDCOM function INSTRUCTIONS

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