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Changing Axis Limits in MotoSim for YRC1000 Welding Robots

Introduction

Certain models of Yaskawa robots are dual purpose: handling and welding. Since welding robots have a torch cable snaking through the axis', several welding robot models need their axis' range of motion reduced so as not to damage that cable. Examples would be MH12/MA1440 or GP12/AR1440.

When selecting an AR series welding robot in MotoSim (unlike the DX200 MA series) the motion range is NOT pre-configured. Instead, it matches the GP series range of motion. For example, an AR1730 motion range will be the same as a GP25. This can be an issue because it allows the MotoSim robot to reach locations that an actual robot will not.

For the AR1730, notice the default T-axis motion range is ±455°...it should be ±210°

SOFTLIMIT SETTING COORDINATE : ANGLE						
	SUFILIMIT(-,)	CURRENT	_SOFILIMIT(+,)	
R1 :S	-180.0004	deg.	0.0000 deg.	180.0004	deg.	
L	-105.0001	deg.	0.0000 deg.	155.0002	deg.	
U	-86.0003	deg.	0.0000 deg.	160.0004	deg.	
R	-200.0005	deg.	0.0000 deg.	200.0005	deg.	
В	-150.0009	deg.	0.0000 deg.	150.0009	deg.	
T	-455.0018	deg.	0.0000 deg.	455.0018	deg.	

Figure 1: Incorrect AR1730 motion range is using a GP25's range by default.

This affects the following models:

- AR1440
- AR1730
- AR2010
- AR3120



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Process¹

The process to change the axis limits is straight-forward.

- 1. In MotoSim go into maintenance mode
 - a. Select the Controller Tab



- b. Select Mode to reboot the controller.
- 2. In the virtual Pendant screen select System/Setup/Option Function
- 3. Scroll down and Select DETAIL for "Limits Customization".

PP_D500B_AR1730						
PLAY	H START	HOLD	SERVO ON	E.STOP	SYNC. 📁 🞬	
				Y		
SYSTEM	OPTION FUNC	TION				
FILE EX. MEMORY SD TOOL DISPLAY SETUP TOOL	001 ARC WI 015 RELAT 017 TCP 018 MACRO 020 I/F 025 EXTERI 026 PARALI 027 COORD 028 STATIO 030 LIMITS 032 TOOL 033 SI 034 DISPLA 037 VARIAI 049 Funct	ELDING IVE JOB INST. VAL REFERENC EL START IN INATED INSTR IN ANGLE DIS S CUSTOMIZAT IO. SWITCHIN IT INDICATIO AY IO NAME I BLE ALLOCATI IONAL SAFety	E POINT ISTRUCTION UCTION PLAY ION IG N JOB ON	STAND/ NOT US NOT US NOT US NOT US NOT US NOT US NOT US NOT US NOT US DETAIL	ARD SED SED SED SED SED SED SED SED SED SE	
Main Menu	Simple Menu	Maint	enance mode			

¹ This works for all except AR3120. See below for AR3120 process. Changing Axis Limits in MotoSim for YRC1000 Welding Robots v1.docx 3/8/2021



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4. Select NONE



5. ...and change it to STANDARD.



6. Select YES to modify and reboot the controller.



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7. The Soft-limit Settings (in the Robot menu) now have the correct motion ranges.

C VPP_D500B_AR1730 ×									
	н	START	HOLD		SERVO ON	E.STOP	SYN	o. 🎽	0
DATA	EDIT	DISPLAY		ry]	1224	11811	-		
JOB ARC WELDING WARIABLE B001 IN/OUT IN/OUT ROBOT SYSTEM INFO SYSTEM INFO	SOFTI CO R1 ::	LIMIT SETT ORDINATE : SOFTLI S <u>-180</u> L -105 U -86 R -150 B -135 T -210	ING ANGLE MIT(-) .0004 .0003 de .0006 de .0000 de .0001 de	(g. g. g. g.	CURRENT 0.00 0.00 0.00 0.00 0.00	00 deg. 00 deg. 00 deg. 00 deg. 00 deg.	SOFTLIMI 180.0 155.0 160.0 150.0 90.0 210.0	T(+) 1004 des 1002 des 1006 des 1003 des 1001 des	š. š. š. š.
Main Menu	Simp	le Menu							



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AR3120 Process

The above process does not work for the AR3120. There are currently no alternative motion ranges to select in maintenance mode.

It will need to be changed directly in the Robot Menu Soft Limits.

Use the numbers below as a reference:

JOB SOFTLIMIT S COORDINAT	ETTING E: ANGLE TUNIT() CURPENT	200TT 101T(+)
ARC WELDING R1 :S -	180.0000 deg33.4752 -90.0000 deg58.1156 -90.0000 deg58.1156	SUFFLIMIT(+) ! deg. 180.0000 i deg. 135.0000 deg. 200.0002
VARIABLE R - BOO1 B - T -	-80.0000 deg86.7907 200.0002 deg. 0.1740 150.0009 deg. 12.5254 210.0001 deg. 0.4025	deg. 200.0002 deg. deg. 200.0002 deg. deg. 150.0009 deg. i deg. 210.0001 deg.