

INSTRUCTION MANUAL

WIRE ELECTRICAL DISCHARGE MACHINE



MECHANICAL EDITION

MAKINO MILLING MACHINE CO., LTD.

EC6-M1-9111(E)

CONTENTS

	Page
1 SPECIFICATIONS	1-1
1.1 Name of Each Part	1-1
1.2 Specifications	1-2
1.2.1 Machine	1-2
1.2.2 Taper cutting unit	1-3
1.2.3 Dielectric fluid supply unit	1-3
1.2.4 Power supply unit	1-4
1.3 Axis Assignment	1-5
1.4 Machine Coordinate System, Origin and Reference Point	1-6
2 CAUTIONS FOR SAFETY	2-1
3 FUNCTIONS AND HANDLING OF MAIN PARTS	3-1
3.1 Power Switches	3-1
3.2 Z Axis	3-2
3.3 Wire System	3-4
3.3.1 Wire path	3-4
3.3.2 Wire delivery	3-5
(1) Name of major components	3-5
(2) Wire loading method	3-6
3.3.3 Wire guide unit (upper)	3-8
3.3.4 Upper head	3-11
(1) Splashguard	3-11
3.3.5 Lower head	3-12
(1) Name of main parts	3-12
(2) Replacing wire guide and press guide	3-14
(3) Replacing the energizing plate	3-17
(4) Replacing of V guide	3-17
(5) Adjustment of nozzle guard height	3-18
(6) Replacing dielectric nozzle	3-19
(7) Installation of head cover	3-20
(8) Parts not to be loosened	3-21
3.3.6 Wire guide unit (lower)	3-21
3.3.7 Wire winding	3-23

3.3.8	Automatic wire threading	3-24
3.3.9	Wire vertical alignment	3-24
	(1) Wire vertical alignment	3-25
	(2) Precautions on wire vertical adjustment	3-27
3.3.10	Line-up between positioning guide and K axis	3-28
3.4	Taper Cutting Unit	3-32
3.4.1	Appearance	3-32
3.4.2	Taper machining and mechanical limitation	3-33
3.5	Dielectric Fluid System	3-34
3.5.1	Dielectric fluid circuit diagram and dielectric fluid supply unit	3-35
3.5.2	Function of each part	3-38
3.5.3	Tank filling for dielectric fluid supply unit	3-41
	(1) Checking before tank filling	3-41
	(2) Tank filling	3-41
3.5.4	Replenishment and change of dielectric fluid	3-42
	(1) Replenishment of dielectric fluid	3-42
	(2) Change of dielectric fluid	3-42
3.5.5	Change of filter element	3-43
	(1) Change of dielectric fluid filter element	3-43
	(2) Change of jet filter element	3-44
3.5.6	Change of ion exchange resin	3-45
3.5.7	Cleaning of raw water inlet assembly	3-47
3.5.8	Air breathing of fluid feed pump	3-48
3.5.9	Others	3-49
3.6	Air System	3-50
3.6.1	Pneumatic circuit diagram	3-50
3.6.2	Function of each part	3-51
3.7	Work Tank	3-53
3.8	Workpiece Clamping	3-53
3.8.1	Machining area	3-53
3.8.2	Workpiece fixture	3-54
3.8.3	Fasteners	3-57

4.	OPERATION AT START-UP	4-1
4.1	Start-up procedure	4-1
4.2	Checking Before Start of Machining	4-2
	(1) Machine	4-2
	(2) Dielectric fluid supply unit	4-2
5.	OPERATION AT END OF WORK	5-1
	(1) Unloading workpiece	5-1
	(2) Replenishment and change of dielectric fluid	5-1
	(3) Cleaning each part of machine	5-1
	(4) Turning the power off	5-1
6.	INSPECTION	6-1
6.1	Periodic inspection	6-1
6.2	Maintenance	6-1