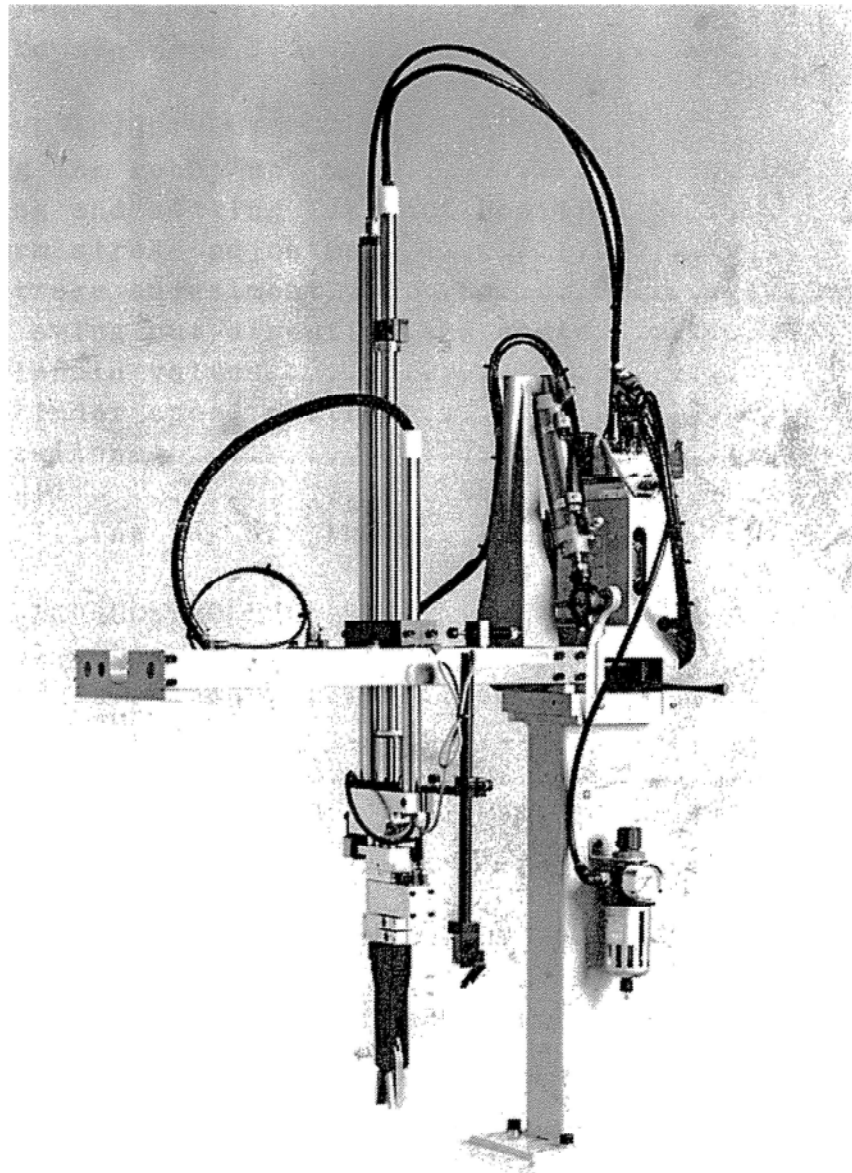


INSTRUCTION MANUAL
FOR THE
EX-60, 150
EXF-60, 150



HARMO CO., LTD.

TOKYO • JAPAN

INDEX

A.	AUTOMATIC PICK AND PLACE MECHANISM	
	1. Concept	1
	2. External view	1
B.	SPECIFICATIONS	
	1. Standard specification	3
	2. Dimensions	4
	3. Standard sequence	5
C.	FUNCTION AND ADJUSTMENT	
	1. Lifting the robot up	7
	2. Mounting and setting Take-out Position	8
	3. Main arm stroke adjustment	12
	4. Kick stroke adjustment	12
	5. Change swing out direction and angle	13
	6. Air solenoid valves	14
	7. Air cylinder speed control	15
	8. Limit switches	17
	9. F.R. unit	19
	10. Quick fitting for air tube	20
D.	RELAY SEQUENCE CONTROLLER	
	1. External switches	21
	2. Selection switches	23
	3. Timers	25
	4. LED display	27
E.	AIR SCHEMATIC	30
F.	CONNECTION BETWEEN ROBOT & INJECTION MACHINE	31
G.	WIRING DIAGRAM FOR RELAY SEQUENCE CONTROLLER	32