

Choosing the correct injector is a crucial factor for successful outcome of the experiments.

Daily maintenance to keep the injectors in good condition is essential for smooth operation. Easy maintenance is another important factor when choosing the injector. Choose an injector appropriate for the application in order to operate correctly without stress.

1. Object, repeatability and quantify

● Sample is solid object - injection/transfer of cell, puncture to the cell membrane, isolation/pick-up of object, etc.

● Operate suction / injection with observation of pipette tip (changes and situation of cell)

● Suitable for individual operations with using mild change of pressure.

Type of sample and injection procedure

● Injection of fluid - DNA / mRNA / Fluorescent Dye / Virus Vector, etc.

● Suitable for injection requires repetition with a very small amount of fluid. Preset the pressure for injection/balance and intervals.

Manual Injector

Your Choices

Digital Injector

Proceed to #2

2. Pnumatic injector or Oil -type Injector

● Virtually maintenance free and no oily mess to deal with.

● Operability is comparable to the oil-type injectors thanks to the improved wide range of pressure variability.

Key features

● Quick and precise response to the operators control.

● Oil type injectors require regular maintenance such as removal of air bubble and filling of oil.

Pneumatic Injector

Your Choices

Oil-type Injector

Proceed to #3

3. Advantage of each injector

● Injector is attached to the manipulator joystick so the working space is less cluttered.

● Controlling the injector and manipulator joystick simultaneously with one hand without switching hand from one to the other results faster operation.

Key features

● Handles a wide range of operations such as picking up of sperms/cells or holding the oocyte/embryo.

● Up to 25 times more pressure can be achieved by compressing the air by changing the position of the plunger, and choosing either fine or coarse handle

Exclusively for Holding Side

Your Choices

Suitable for manipulating of cells and other general purposes.

Type

Pneumatic Injector (for Holding)

Pneumatic Microinjector

Microinjector (Oil Type)

Electric Microinjector

Model

IM-HD1

IM-11-2

IM-21

IM-401*

*The gas tank equipped with a regulator or the compressor is required.

Usage

Manual Injector

Pneumatic Injector

For holding

For injection or holding

Oil-type Injector

Digital Injector

Keyword

[Pneumatic] [Manual] [Maintenance free][No Oily Mess]

[Oil-type] [Manual]

[Electric] [Digital] [Fluid/DNA]

Choose Adaptor

Set#	Model of Microscope			Mounting Adaptor			
1 2	Inverted	Nikon	Ti2-E/A/U *3 Full setup on both sides of microscope	NN-H-5			
			Ts2R	NN-W			
			Ti-E/U/S *3 Full setup on both sides of microscope	NN-H-4			
			TE2000-E/U/S *3 Full setup on both sides of microscope	NN-H-4			
	Evident (formerly Olympus)		IX73/83 *3 Left-side/motorized condenser	NO-PIX-5			
			IX71/81	NO-PIX-3			
	Leica		DMi8 *1	NL-18			
3			DMI3000B/ DMI4000B/ DMI6000B	NL-18			
			DMi8 *2	NL-3			
Zeiss		Axio Observer (3/5/7)	NZ-24				
		Axiovert5	NZ-24				
*3		Manipulator Attachment	P-10				
Stereo		Nikon	The IP and GJ-1 sets are recommended for stereo microscopes.	Iron plate IP	Magnetic stand GJ-1		
		Evident					
		Leica	*Mounting adapters (illumination-pillar mounting type) are available for some microscope models. Please contact us for more information.				
		Zeiss					

*1 100w Illumination Pillar *2 30w Illumination Pillar *3 For both-side/left-side setup, "P-10" is required (to avoid interference between the drive unit and condenser).

Optional Products

Product name	Model	Description
Microinjector	IM-21	For oil-filling type. Suitable for manipulating of cells and other general purposes.
Injection Holder	HI-9	For pneumatic injector/ Come with easy-to-attach mechanism.
End Cap with Stainless Steel Collar	HIC	For ø1 mm Pipette.
	HIC-1.2	For ø1.2 mm Pipette.
	HIC-1.5	For ø1.5 mm Pipette.
Injection Holder Set	IM-H3	For IM-21, oil-filling type.
Pipette Holder Clamper	HIK-5	To temporarily hold the injection holder safely. (2 pcs in pairs)
Iron Plate	IP-5	To place the injector, magnetic stand or controller.
Tubing for pneumatic injector	CT-1	PTFE Tubing 2mm OD x 1m (for IM-21)
	CT-1-1.5	PTFE Tubing 2mm OD x 1.5m, for "Mild Response" (for IM-11-2, IM-HD1)
	CT-4	PTFE Tubing 2mm OD x 1.2m, for "Quick Response" (for IM-11-2, IM-HD1)

Consumables

Model	Product name	Description	Quantity	Applicable item
HI01PK01	Silicone Rubber Gasket	2.5mm OD x 5mm	10 pcs	HI-9, HIC
HI01PK02	Silicone Rubber Gasket	3mm OD x 5mm	10 pcs	HIC-1.2
HI01PK04	Silicone Rubber Gasket	3mm OD x 50mm	1 pcs	HIC-1.5
IMO4	O-ring		3 pcs	IM-21
IMO10	O-ring		3 pcs	IM-11-2

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Injection System

- 5 -

Offering suitable systems for all: either the beginner or the expert.

Choosing from a vast variety of products to accommodate the system whether for well-established or experimental research.

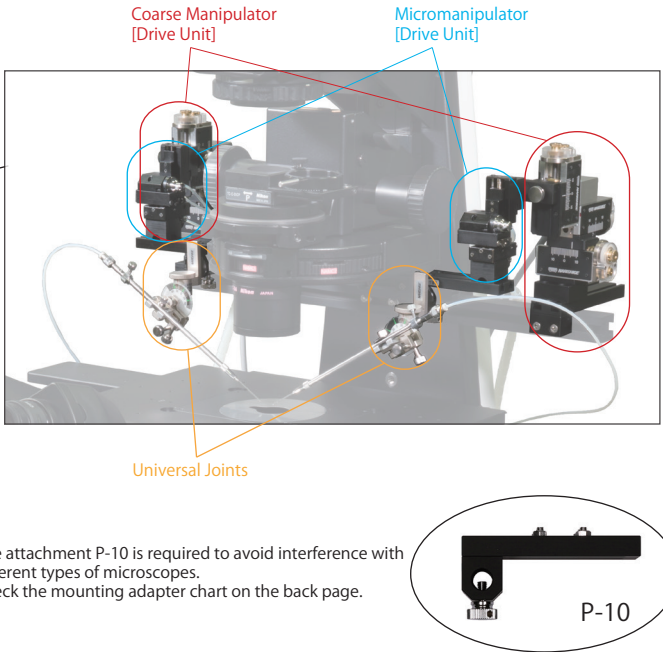
The standard system for cell handling / solution injection.

Combination of Motorized Coarse Drive that performs with agility and simple handling and Oil Hydraulic Fine Drive that performs with response true to an operator's hand. It has been achieving the high trust from laboratories worldwide in the field of Genetic, Animal Husbandry, Developmental Biology, Reproductive Biology, and so on.

Configuration of the Manipulation System

Setup for the Inverted Microscope (Traditional Model)

- Follow the flow chart to choose the perfect system for you easily and wisely.
- Build your own system: Motorized or Mechanical, 3-D or 4-D, add Return Mechanism, etc.



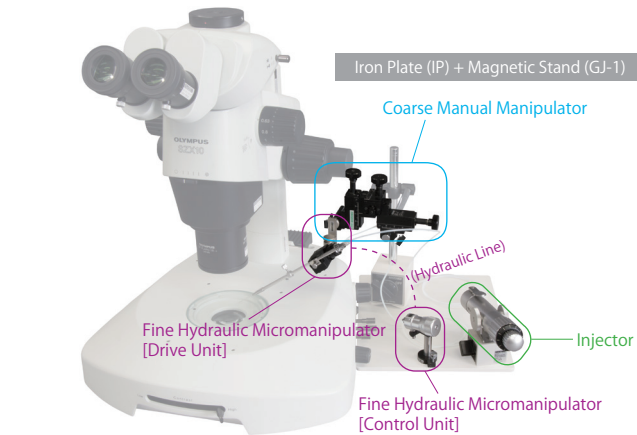
Setup for the Stereo Microscope

- Accurate positioning is possible with added One-axis Oil Hydraulic Micromanipulator to the Three-axis Manual Coarse Manipulator.
- Eliminates vibration by remotely controlling with the One-axis Oil Hydraulic Micromanipulator.

- The flow Chart on the next page is designed to pick the popular system by the user's scope, application, size of the specimen, condition, etc. It is recommended for everyone.
- Or, you can hand pick each part by preferences from the diagram on the bottom. It is recommended for the experienced researchers.

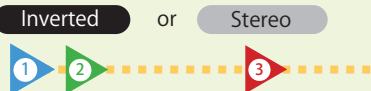
You can find more detailed information in our Web Catalog. If you have any questions, contact us at:

<https://narishige-group.com/>

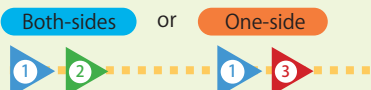


Flow Chart (Recommended for all)

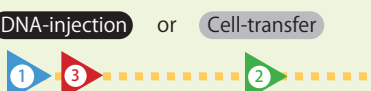
1. Size and Transparency of the Specimen	
● Small (up to 200 μm) such as ovum/embryo of mammalian and ascidian, plant cell, etc.	● Large (200 μm to mm) such as fish egg/insect (adult, egg)/amphibian egg, etc.
● Light Transmittable	● Hard to pass light
Inverted microscope	Stereo microscope



2. Fixation method	
● Floating cell: to be held with the holding pipette.	● Adherent cell: fixed to the Petri dish.
Both-sides	One-side



3. What to be Injected	
● DNA/mRNA/ fluorescent dye, etc.	● Cell/ES-Cell/iPS-Cell/Sperm/ Foreign Substances, etc.
● Liquid/Fluid	● Solid object of up to several tens of μm.
DNA-injection Set	Cell-transfer Set



Choose by the Parts (for Expert)

Select Adaptor	Select Manipulator			Select Injector
Select by model of the microscope	● Both sides or ● One-side	Coarse Drive	Fine Drive	Return Mechanism
		● Motorized or ● Manual	● 3D or ● 3D + 1D	● Additional "retract and return mechanism" with UT-R
List of the mounting adaptor is on the reverse side. Popular microscope has its own designated adaptor.		Selection of Coarse Drive		Select the Injector using the Flow Chart on the reverse side.
		Coarse Manipulator	Three-axis Joystick Oil Hydraulic Micromanipulator	
		MM-94 (Motorized) or MN-4 (Manual)	MMO-4 (Hanging Joystick) or MO-202U (Upright Joystick)	
		Coarse Manipulator Suitable for Stereomicroscope M-152 (Manual)	Choose by the Movement Range (fine/coarse)	
			One-axis Oil Hydraulic Micromanipulator	
			MMO-220A (Fine Drive) or MMO-220C (Coarse Drive)	
			250μm / rotation of knob or 1,000μm / rotation of knob	

※ More selections are available other than listed in this catalog.

1 DNA Injection System for Inverted Microscope



Both-sides One-side Inverted Microscope DNA-injection

For the microinjection such as DNA injection into pronucleus or cytoplasm of mouse embryo. Standard system is 3D + 1D (direction of pipette) with digital injector for adherent cell using the straight pipette.

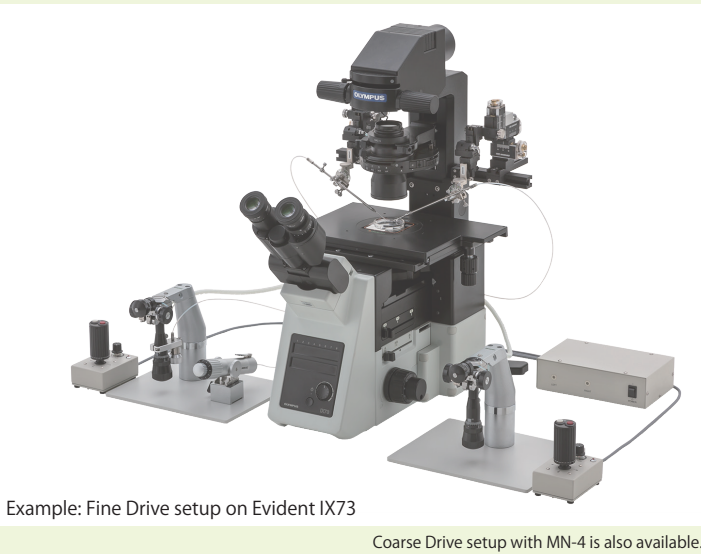
Recommended System <for floating cell>	
Both-sides Fine Drive/3D	
MM-94/MM-94B	1 each
MMO-4	×2
IM-401*	×1
IM-HD1	×1
Mounting Adaptor	

*It is required external pressure supply.

Popular System <for adherent cell>	
One-side Fine drive/3D+1D	
MM-94	×1
MMO-4	×1
MMO-220A	×1
IM-401*	×1
Mounting adaptor	

*It is required external pressure supply.

2 Cell-Transfer System for Inverted Microscope



Both-sides Inverted Microscope Cell-Transfer

For transferring and holding of floating cell such as somatic/ES cell of the mammalian (mice/rats/swine/bovine) embryos/oocytes. Standard system includes two manipulators for each side of the scope, and two manual injectors for the injection and holding.

Recommended Setup <with Coarse-Motorized set>	
MM-94/MM-94B	1 each
MMO-4	×2
IM-11-2	×1
IM-HD1	×1
Mounting Adaptor	

Recommended Setup <with Coarse-Manual set>	
MN-4	×2
MMO-4	×2
IM-11-2	×1
IM-HD1	×1
Mounting Adaptor	

3 DNA Injection System for Stereomicroscope



One-side Stereomicroscope DNA-injection

Suitable for sample up to several millimeters such as fish/amphibian eggs, insects (adults/eggs), Echinoderm larvae under stereo microscope. Suitable for DNA-injection for various animals utilizing genome editing technique CRISPR-Cas9. Installation using a Magnetic Stand gives the flexibility for the setups.

Recommended Setup	
M-152 (GJ-1/IP)	×1
MMO-220C	×1
IM-401*	×1

* External pressure supply is required to use the IM-401