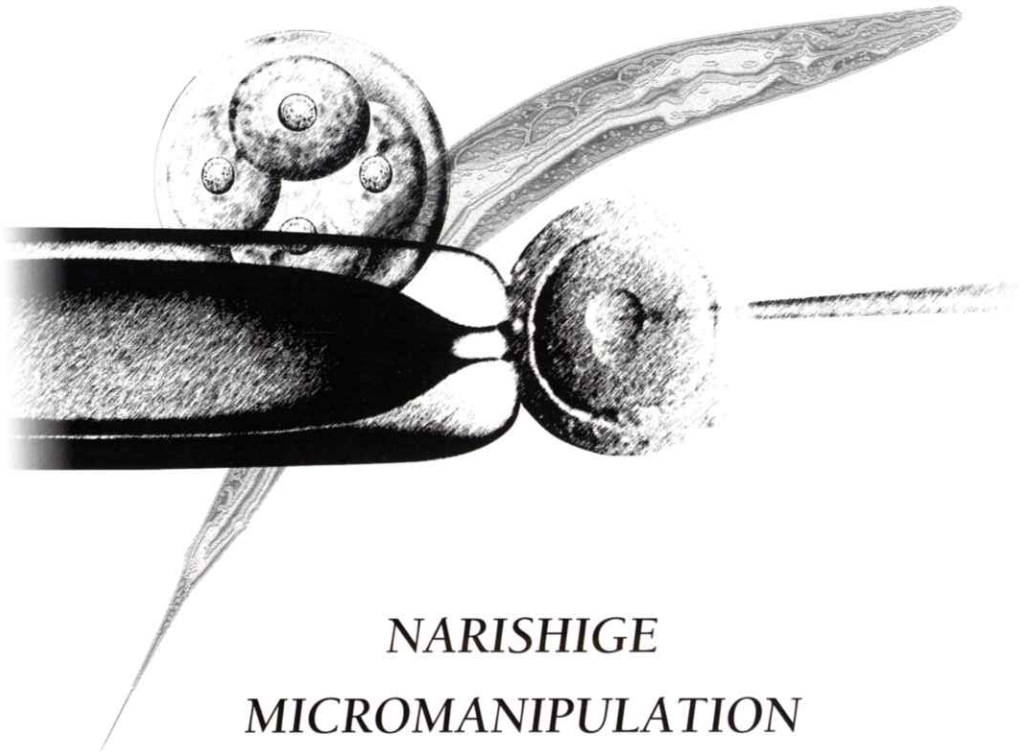

INJECTION SYSTEMS



*NARISHIGE
MICROMANIPULATION
SYSTEMS*

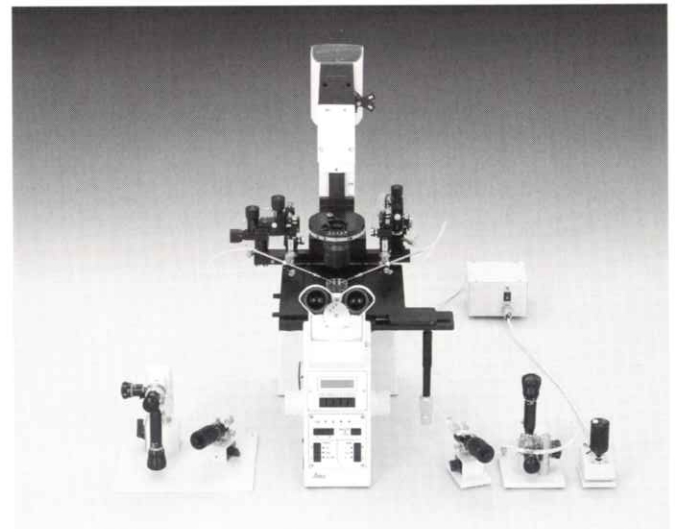
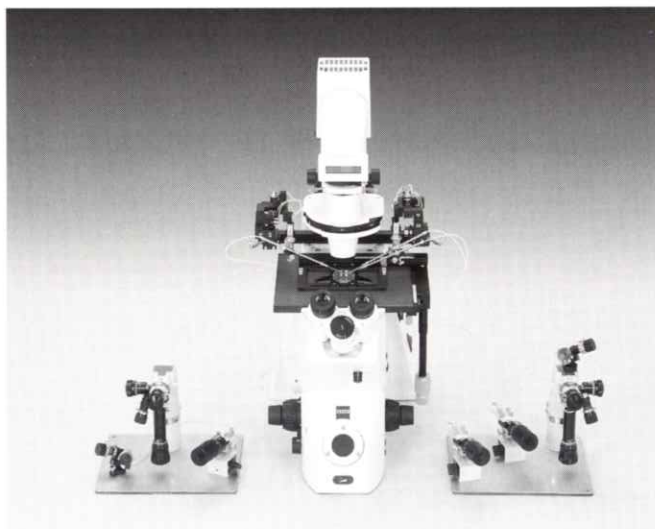
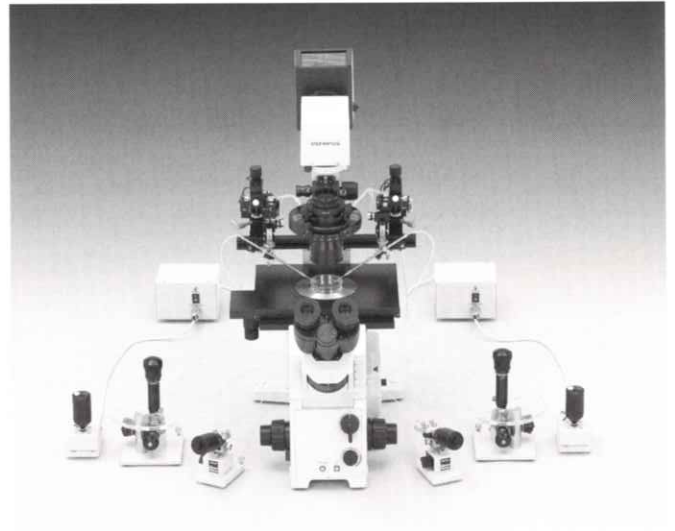
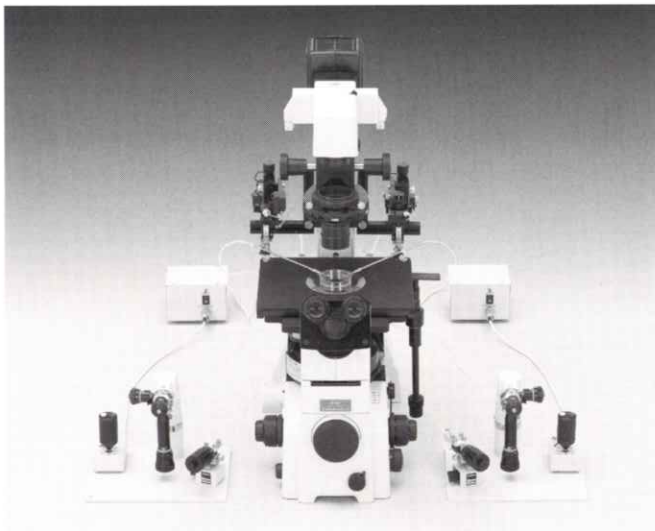
NARISHIGE GROUP

2008

WIDER RANGE, GREATER CHOICE— *New advanced injection systems based on long experience and leading-edge technologies*

The science of bio-technology continues to play an increasingly vital role in modern life, achieving crucial developments in such diverse fields as medicine, agriculture, marine science and energy resource management. In particular, molecular biologists and bio-chemists report outstanding progress in clarifying complex DNA processes, as well as highly successful results in DNA exchange and cloning. Another important area is IVF, where clinical studies have established ICSI (Intracytoplasmic Sperm Injection) as one of today's most effective treatments.

Narishige is a world leader in developing and producing the micromanipulation products that world researchers depend on, including today's most advanced 3-axis joystick type micromanipulators. In presenting the product range shown in this catalog, we reaffirm our commitment to making micromanipulation as easy and accurate as possible, and to providing high-performance, high-reliability products that help to advance key research in every field.



Contents

Micromanipulators	■ Hydraulic Micromanipulators	P3 – P6
	■ Coarse Manipulators	P7 – P8
	■ Micromanipulators for Stereo Microscopes	P9
	■ Mechanical Micromanipulators	P10 – P11
	■ Double Pipette Holder/Universal Joint	P12
	■ Injectors and peripheral products	P13 – P20
Accessories	■ Ball Joints/Pipette Holder	P21
	■ Height Adjustment Plate	P21
	■ Iron Plates/Magnetic Stand	P22
Electric Equipment	■ Pullers	P23 – P24
	■ Microforge	P25
	■ Microgrinders	P26 – P27
Glass Capillaries		P28
Manipulator Mounting Adapters		P29 – P30



NARISHIGE ON THE INTERNET

Full details of the Narishige product range are now available on the World Wide Web.
Please visit us any time at: <http://www.narishige.co.jp>

NARISHIGE INFORMATION CENTER

Also on the Internet, the Narishige Information Center is open round the clock to provide a rapid response to customers' enquiries and requests for repairs, attachments, spare parts etc.

Please visit this site any time at:

<http://www.narishige.co.jp>

Legend symbols



Water hydraulic system

Low drift type using water, which is not affected by thermal expansion caused by temperature changes. Suitable for patch clamping.



Oil hydraulic system

Easy maintenance system with no oil refill required. Suitable for microinjection.



1:1 cylinder

Employed for manipulator with a long working distance.



5:1 cylinder

Low drift type with big cylinder, enabling extremely precise operations.



Compliance with CE standards.

When choosing a micromanipulator, please consider the following points according to your purpose.

- ① Microscope
- ② Manipulator mounting adaptor
- ③ Manipulator (coarse and fine)
- ④ Peripheral equipments (microinjector, puller, microforge, grinder, glass capillary)
- ⑤ Others (anti-vibration table, video monitor)

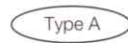
Interpreting the system chart



refers to the model itself with standard attachments



refers to attachable main accessories



refers to types of mounting adaptors

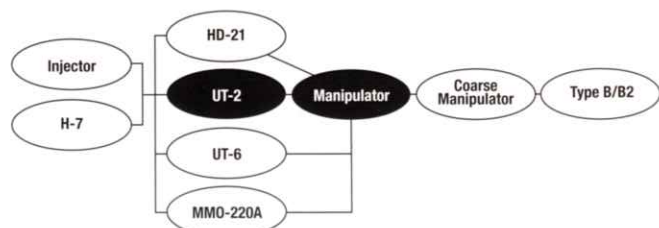
Type A (stage side mounting type)

Type B/B2 (pillar mounting type)

Type C/C2 (double type / front double type)

Type D (surround type)

Type D2 (combination type)

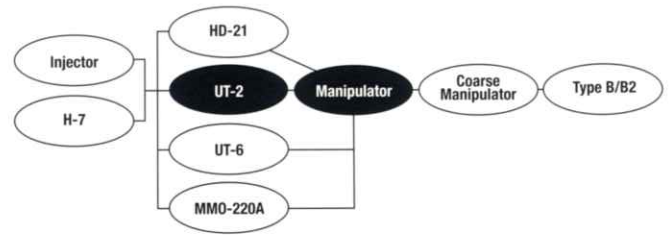


MMO-202ND

Three-axis Hanging Joystick Oil Hydraulic Micromanipulator

3-D joystick operations while maintaining an easy posture.

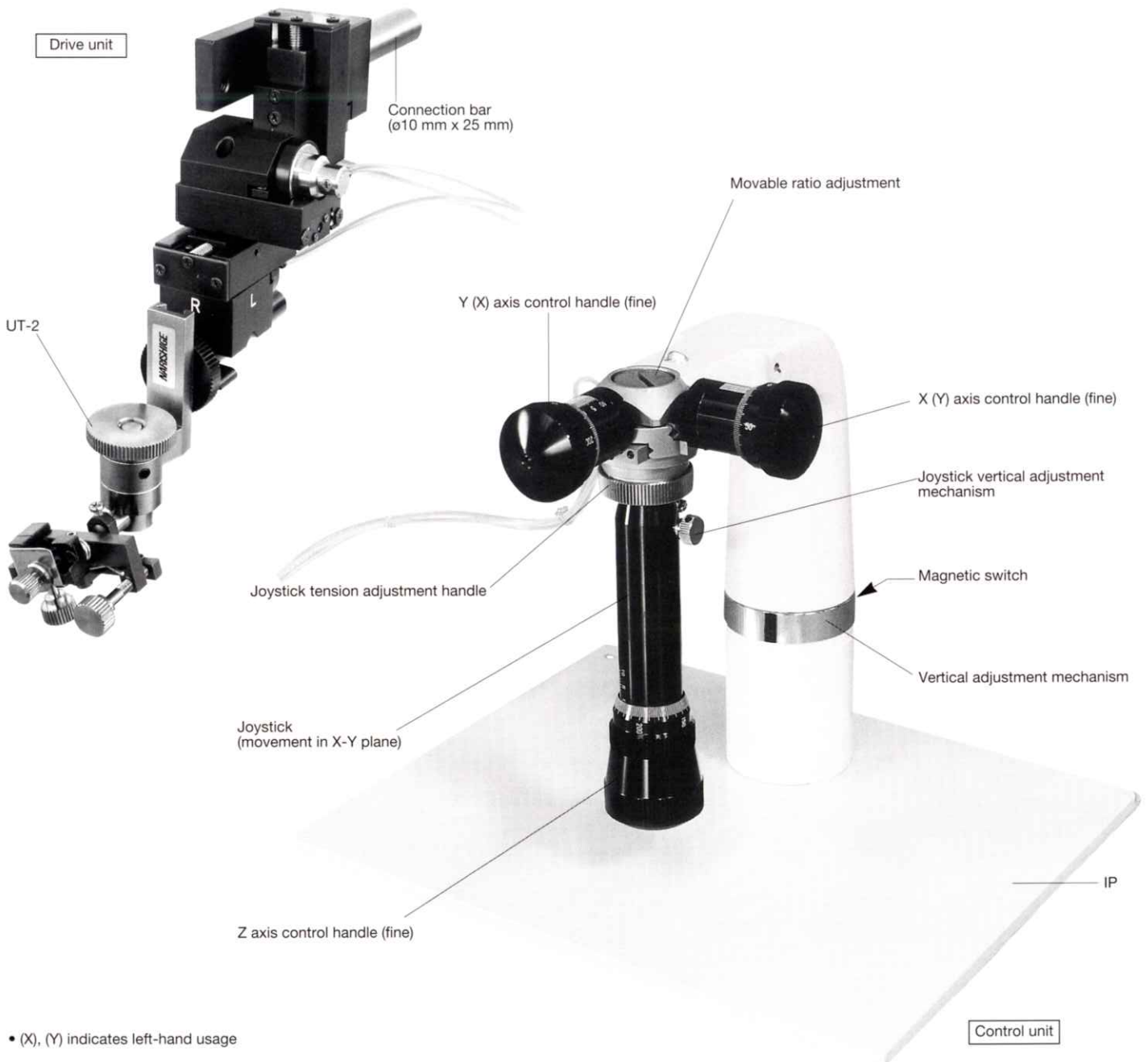
The MMO-202 micromanipulator features an oil hydraulic joystick enabling smooth three-dimensional movement with a single lever. Since the joystick is the hanging type, it can be manipulated with the user's arms and hands placed comfortably on the table. Operation is therefore done in a natural posture, and can be maintained for longer periods. Among other features promoting ease of use are the movable ratio adjustment section located on top of the control unit, and the unit's familiar rounded design instead of the more angular shape seen on conventional equipment. As one of our most popular micromanipulators, the MMO-202ND is highly recommended.



- For attachment to the microscope, a coarse manipulator and suitable adaptor are required (sold separately).
- Select Type B adaptor for mounting this manipulator in combination with MMN-1 coarse manipulator.
- Changing the universal joint that attaches the micromanipulator to the double pipette holder HD-21 (sold separately) enables performance of embryo biopsy.
- Changing the universal joint that attaches the micromanipulator to MMO-220A one-axis oil hydraulic micromanipulator enables four-dimensional remote controlled movement.

Accessories included	IP Iron Plate, UT-2 Universal Joint, Allen wrench	
Movement range	Fine	X10 mm, Y10 mm, Z10 mm Full rotation of knob: 250 μm Minimum graduation: 2 μm
	Joystick (for maximum movement in X-Y plane)	2 mm
Dimensions/Weight	Control unit	W165 x D80 x H175 mm, 1.85 kg
	Drive unit	W40 x D53 x H87 mm, 0.18 kg

Please contact your local Narishige representative for the model with full rotation of knob 500 μm.



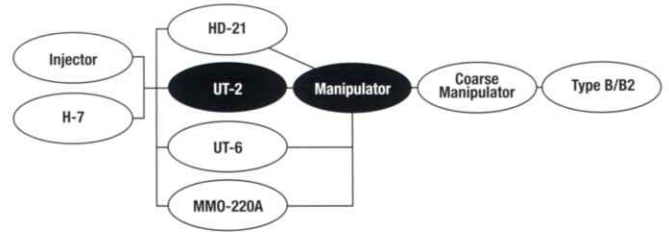
• (X), (Y) indicates left-hand usage

MO-202U 1:1

Three-axis Joystick Oil Hydraulic Micromanipulator

Return of an acclaimed design with outstanding ease of use.

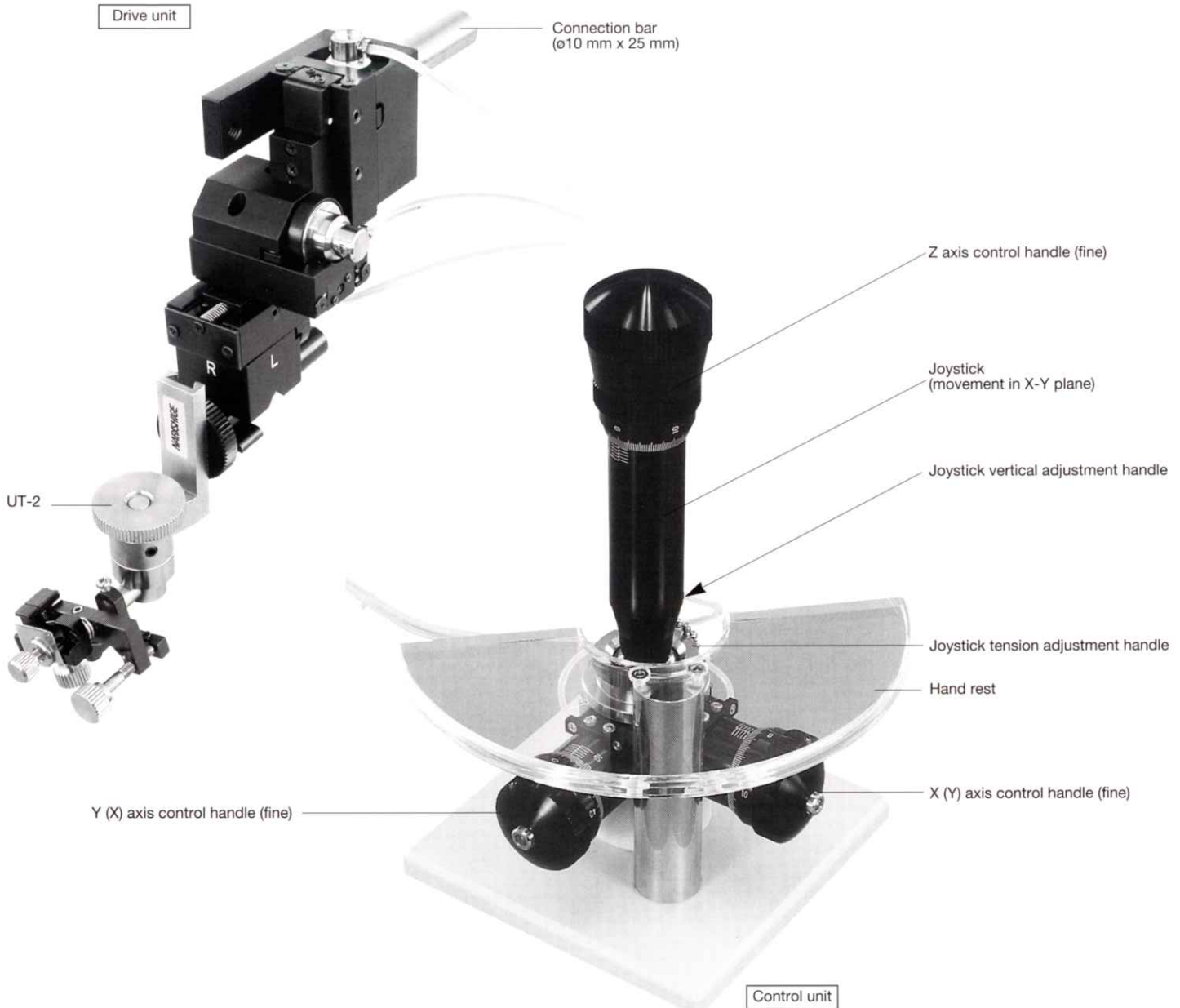
This oil hydraulic joystick micromanipulator won considerable attention as an innovative model as soon as it went on sale, principally because of its smooth three-dimensional operation using a single lever. Since that time, it has been widely used by many customers, whose requests for restoration of its former shape and other discontinued features are met in this latest model. Those features include the tall upright joystick control section with plastic hand-rest and full, 500 µm rotation movement. In addition, a slimmer driving unit and attachment of the UT-2 as an accessory make this model easier than ever to use.



- For attachment to the microscope, a coarse manipulator and suitable adaptor are required (sold separately).
- Select Type B adaptor for mounting this manipulator in combination with MMN-1 coarse manipulator.
- Changing the universal joint that attaches the micromanipulator to the double pipette holder HD-21 (sold separately) enables performance of embryo biopsy.
- Changing the universal joint that attaches the micromanipulator to MMO-220A one-axis oil hydraulic micromanipulator enables four-dimensional remote controlled movement.

Accessories included	UT-2 Universal Joint, Allen Wrench	
Movement range	Fine	X10 mm, Y10 mm, Z10 mm Full rotation of knob: 500 µm Minimum graduation: 4 µm
	Joystick (for maximum movement in X-Y plane):	2 mm
Dimensions/Weight	Control unit	W135 x D135 x H210 mm, 1.85 kg
	Drive unit	W40 x D60 x H87 mm, 0.18 kg

Please contact your local Narishige representative for the model with full rotation of knob 250 µm.



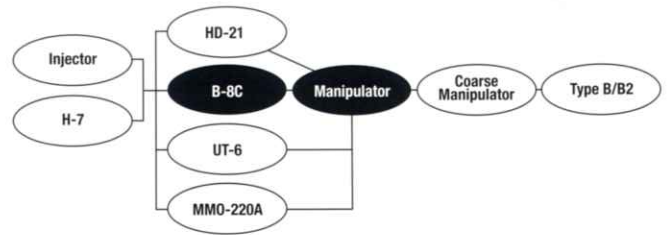
• (X), (Y) indicates left-hand usage

MMO-203

Three-axis Oil Hydraulic Micromanipulator

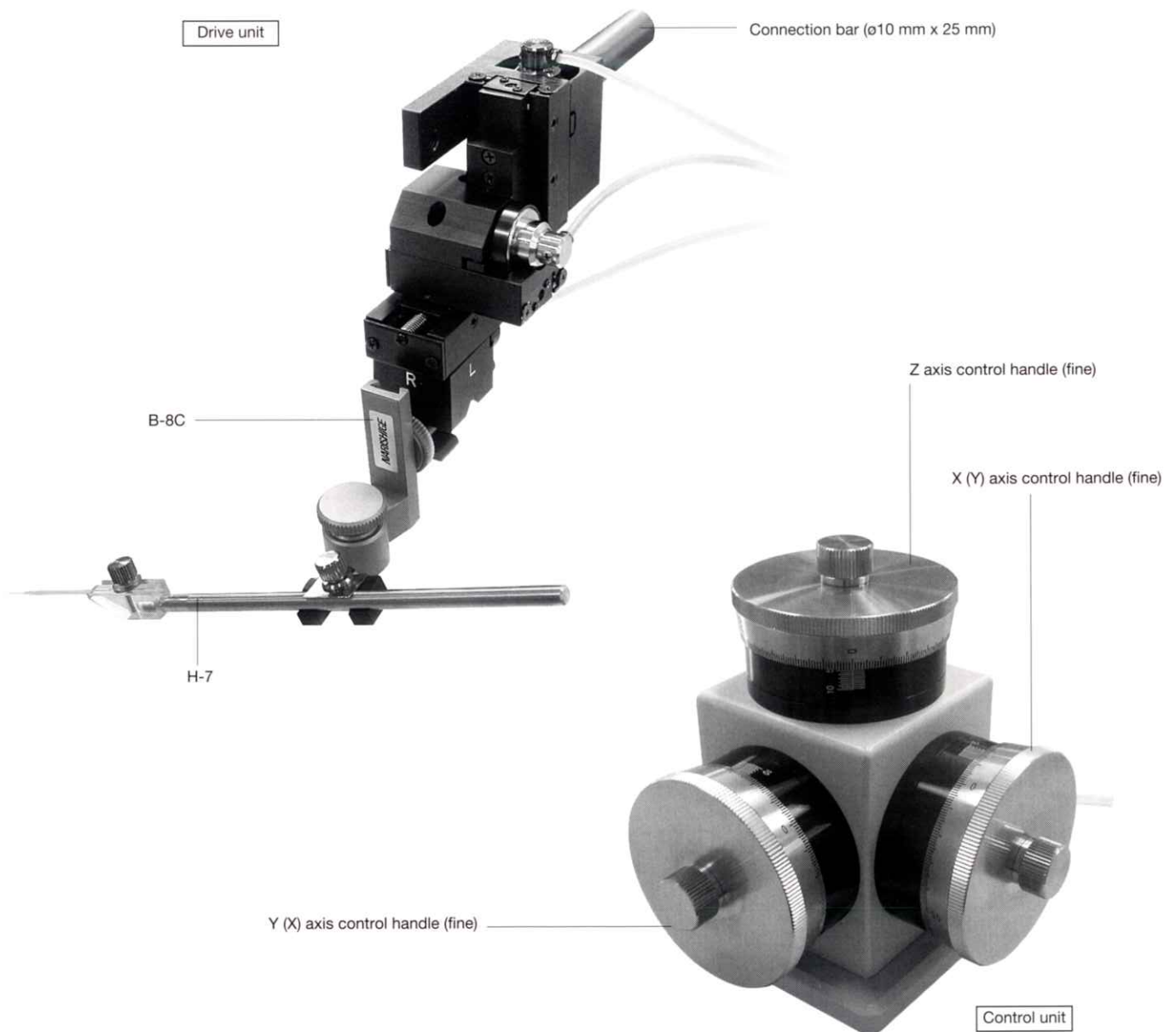
Original hydraulic model with large handle offering excellent linearity.

This micromanipulator's hydraulic drive system can be remote-controlled, and provides smooth, vibration-free movements. As successor to the vernier type, it features a big cylinder control unit which enables very fine operation. Another key feature is high reproduction of the linear position. Compared with the currently popular joystick method, this control unit has a long record of use among discerning customers because of its simple design and outstanding cost-efficiency. For microinjection systems, this model is recommended for use on the cell holding side, in combination with a joystick type manipulator.



- For attachment to the microscope, a coarse manipulator and suitable adaptor are required (sold separately).
- Select Type B adaptor for mounting this manipulator in combination with MMN-1 coarse manipulator.
- Changing the ball joint that attaches the micromanipulator to the double pipette holder HD-21 (sold separately) enables performance of embryo biopsy.
- Changing the ball joint that attaches the micromanipulator to MMO-220A one-axis oil hydraulic micromanipulator enables four-dimensional remote controlled movement.

Accessories included	B-8C Ball Joint, H-7 Pipette Holder,	
Movement range	Fine	X10 mm, Y10 mm, Z10 mm Full rotation of knob 250 μm Minimum graduation 1 μm
Dimensions/Weight	Control unit	W115 x D115 x H132 mm, 1.6 kg
	Drive unit	W40 x D60 x H87 mm, 0.18 kg



• (X), (Y) indicates left-hand usage

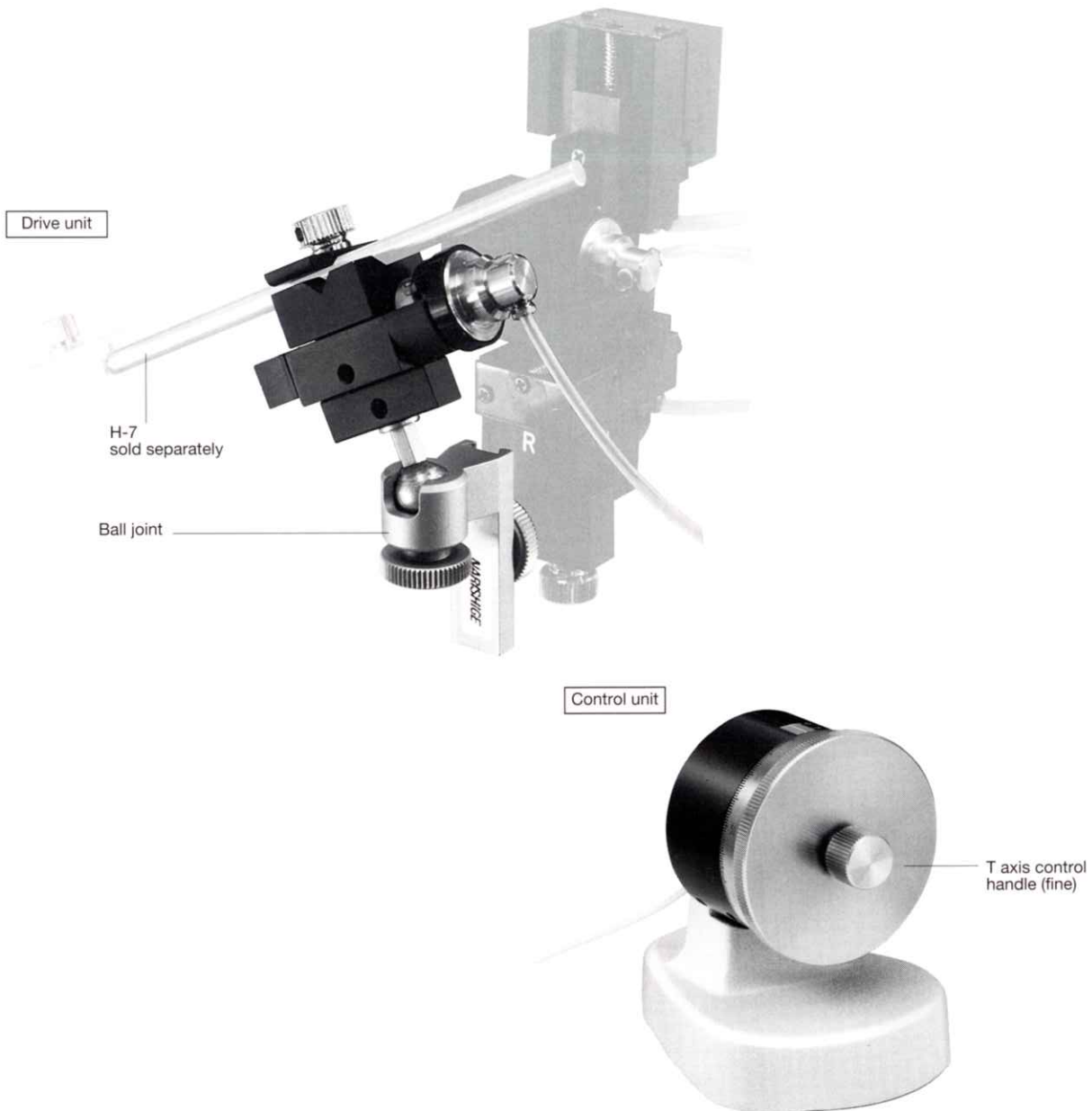
MMO-220A 1:1

One-axis Oil Hydraulic Micromanipulator

Three-dimensional manipulator with added movement capability in the same direction as the pipette.

When using this unit to insert a pipette into the cell, operators can make further movement in the same direction, which minimizes the chance of damaging the cell. This one-axis oil hydraulic manipulator meets that requirement and can also be used as an add-on manipulator. A compact drive unit is installed on the tip of the ball joint, giving this model the same high accuracy as a general oil hydraulic micromanipulator.

Movement range	Fine	T10 mm Full rotation of knob 250 µm Minimum graduation 1 µm
Dimensions/Weight	Control unit	W70 x D115 x H100 mm, 1.15 kg
	Drive unit	W52 x D20 x H35 mm, 38 g



MM-89

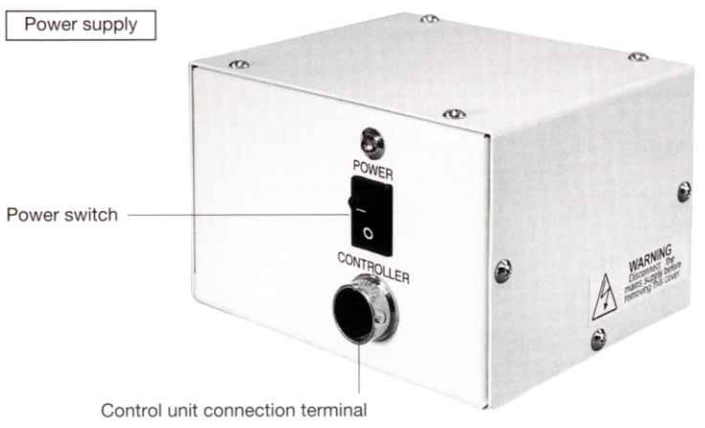
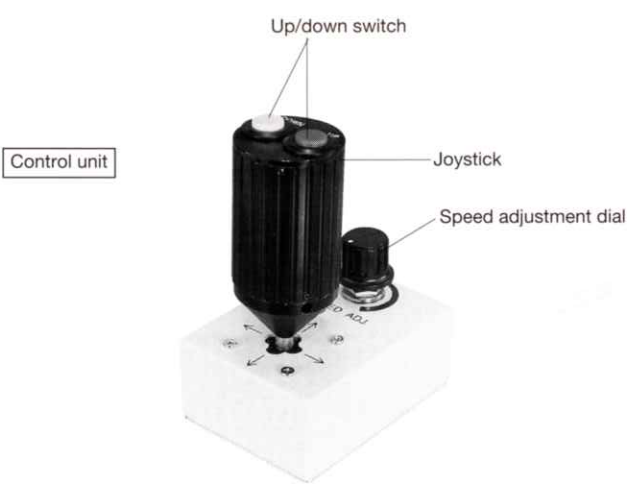
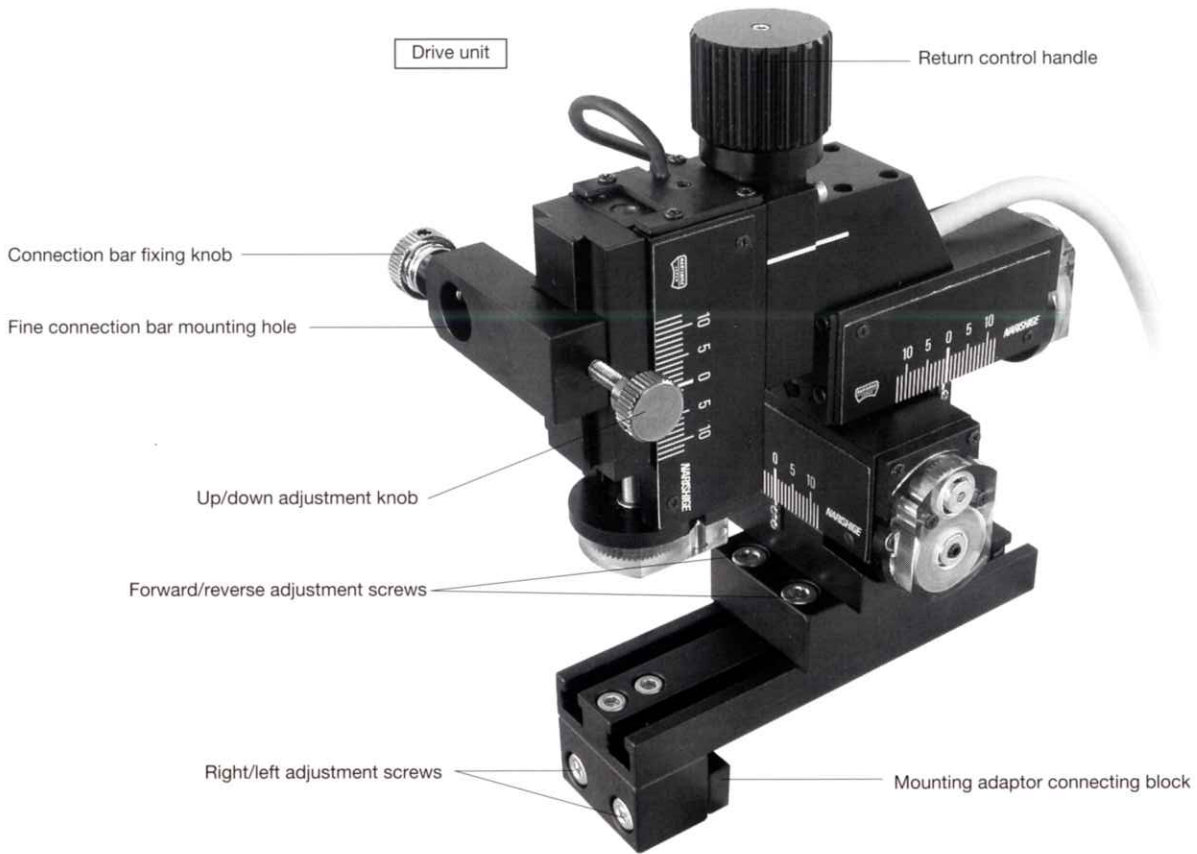
Motor-drive Manipulator

Coarse manipulator with most popular motor-drive system.

This motor-driven coarse micromanipulator enables remote controlled movement of a pipette into a microscope observation field. The bigger the microscope, the more difficult manual control becomes; remote control is the mainstream alternative. Control is easy, with the joystick right at the operator's hand, and a return mechanism facilitates pipette exchange.

Accessories included	AC Power Cord, Allen Wrench	
Movement range	Coarse	X22 mm, Y22 mm, Z22 mm
Power source	AC100 (±5%), 50/60Hz, AC120 (±5%), 50/60Hz AC220 (±5%), 50/60Hz, AC240 (±5%), 50/60Hz	
Power consumption	Approx. 15 W	
Dimensions/Weight	Power supply	W125 x D105 x H85 mm, 1.5 kg
	Control unit	W70 x D100 x H120 mm, 0.53 kg
	Drive unit	W80 x D116 x H142mm, 0.6 kg

• Separately sold NR-89 is available when attaching a rotating adjustable clamp to this model.



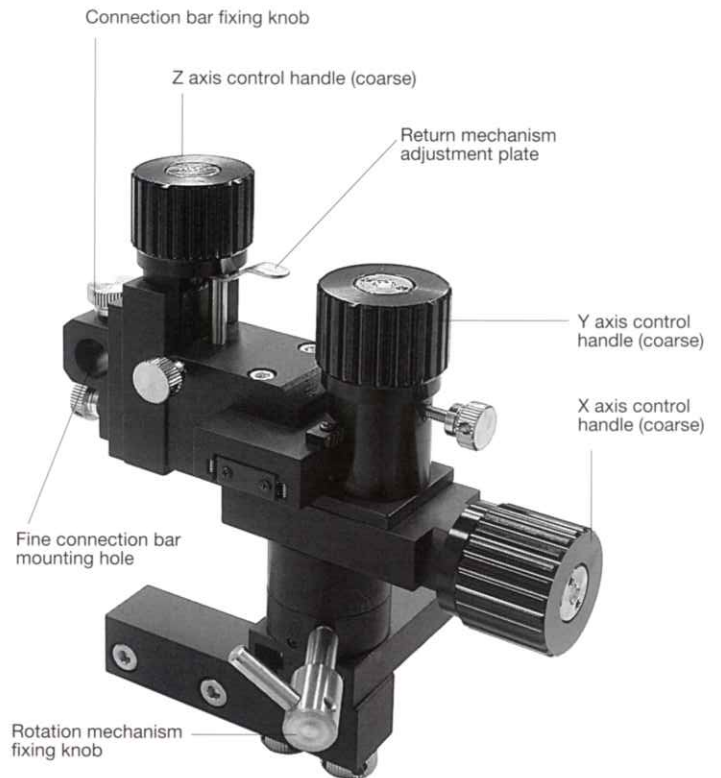
MN-4

Coarse Manipulator

Manual coarse manipulator with many convenient functions.

This manual coarse manipulator is used in combination with a liquid hydraulic micromanipulator to transfer the pipette into the microscope view field. Since its operation is manual, this model offers excellent response and impressive economy. Compared with the MMN-1, setup and installation are straightforward. Return and rotating mechanisms are included for easy pipette exchange.

Accessory included	Allen Wrench	
Movement range	Coarse	X30 mm, Y30 mm, Z30 mm
Dimensions/Weight	W125 x D110 x H135 mm, 0.6 kg	



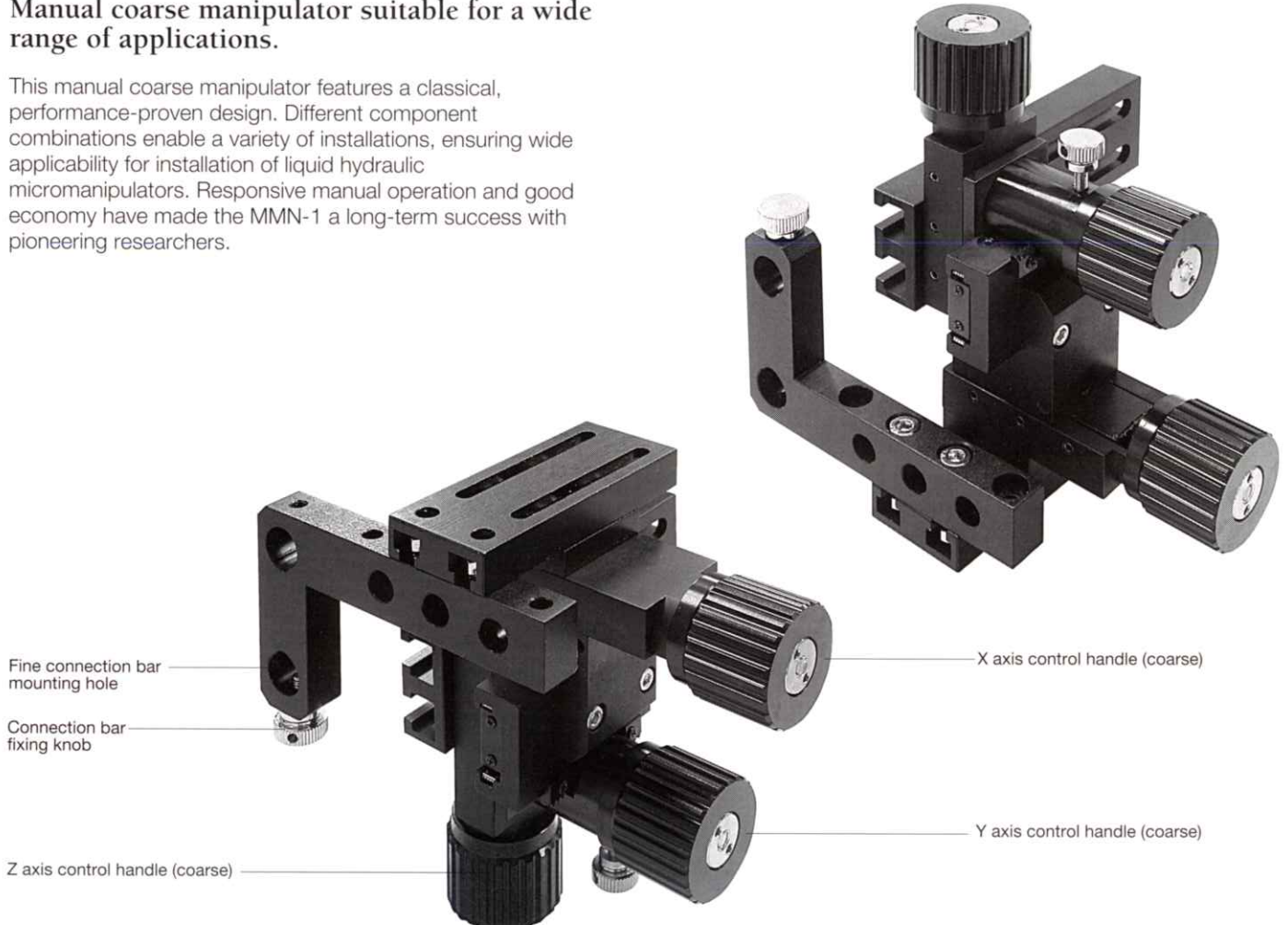
MMN-1

Coarse Manipulator

Manual coarse manipulator suitable for a wide range of applications.

This manual coarse manipulator features a classical, performance-proven design. Different component combinations enable a variety of installations, ensuring wide applicability for installation of liquid hydraulic micromanipulators. Responsive manual operation and good economy have made the MMN-1 a long-term success with pioneering researchers.

Accessory included	Allen Wrench	
Movement range	Coarse	X30 mm, Y30 mm, Z30 mm
Dimensions/Weight	W95 x D90 x H110 mm, 0.47 kg	

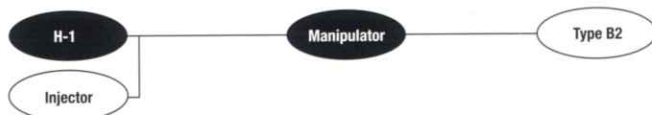
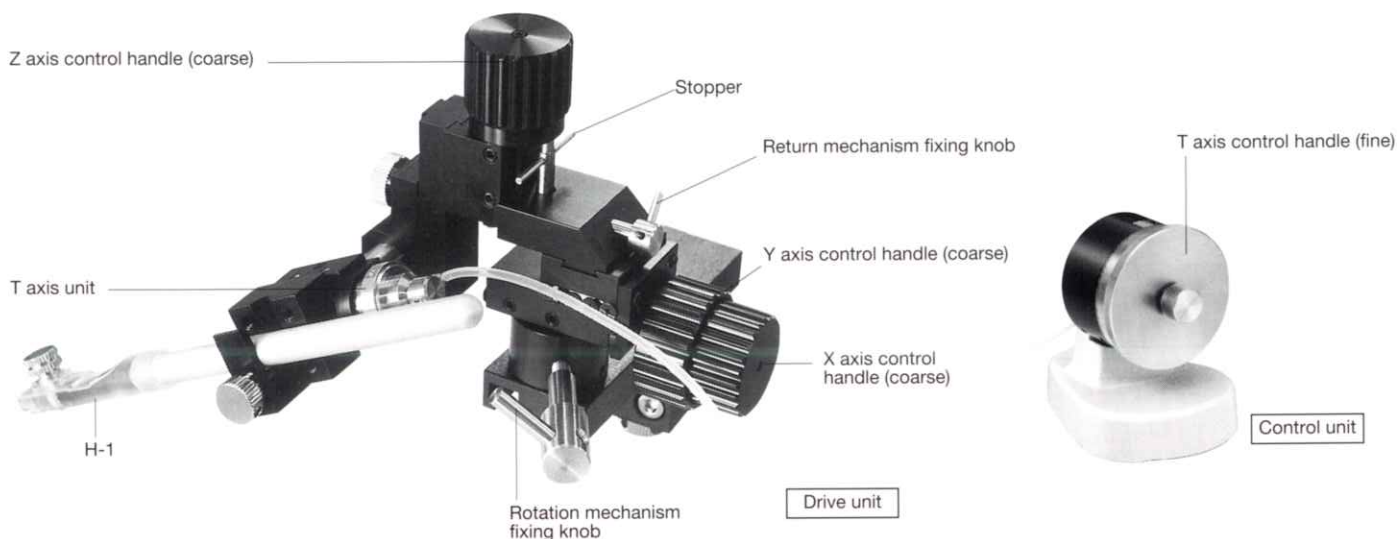


MWS-1A

Micromanipulator (One-axis Water Hydraulic System)

Excellent microinjection performance under low magnifications.

Intended for performing microinjections under low magnifications using a stereo microscope, this unit features a one-axis water hydraulic micromanipulator mounted on the MWS-1. Employment of the 1:1 cartridge system produces a movement range as wide as 10mm, so that the MWS-1A can be used for a wide variety of applications other than microinjection.



• For attachment to the microscope, a suitable adaptor is required (sold separately).

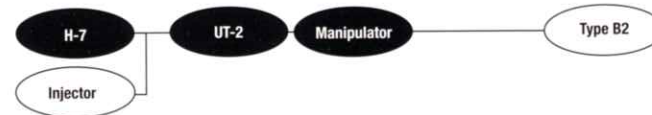
Accessories included	H-1 Electrode Holder, Allen Wrench	
Movement range	Coarse	X15 mm, Y15 mm, Z15 mm
	Fine	T10mm, Full rotation of knob 250 μm, Minimum graduation 1 μm
Dimensions/Weight	Drive unit	W105 x D115 x H110 mm, 370 g
	Control unit	W70 x D115 x H100 mm, 1.15 kg

MWS-1

Manipulator

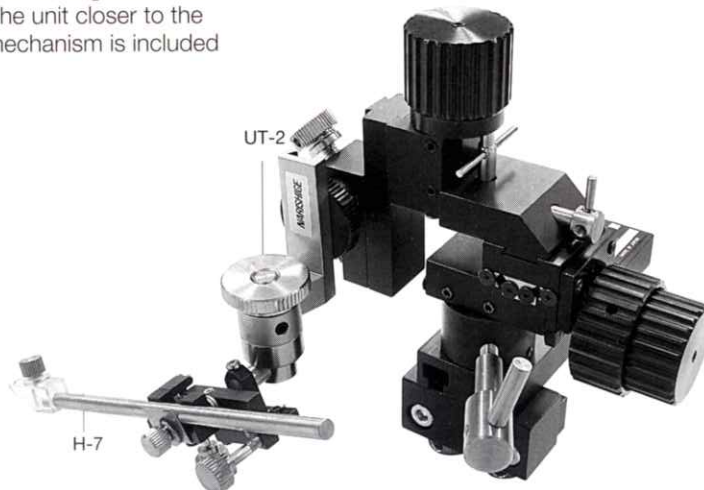
Manipulator for experiments using stereo microscopes.

This is a manual manipulator developed for experimental tasks under low magnifications using a stereo microscope. An adaptor attachment is employed, according to the size of the stand with which the illumination equipment is integrated. The compact size makes it possible to place the unit closer to the specimen. A pipette rotation and return mechanism is included to simplify pipette exchange.



• For attachment to the microscope, a suitable adaptor is required (sold separately).

Accessories included	UT-2 Universal Joint, H-7 Pipette Holder, Allen Wrench	
Movement range	Coarse	X 15 mm, Y 15 mm, Z 15 mm
Dimensions/Weight	W105 x D115 x H110 mm, 300 g	

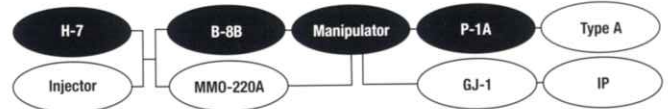


MN-151

Joystick Micromanipulator

Light, compact, easy-to-operate manual manipulator with joystick.

Designed to be light and compact for diverse applications, this manual micromanipulator features joystick control for excellent operability. The joystick enables micro tools to be freely controlled on the X and Y planes, and coarse movement is provided on the X, Y and Z axes. The Z-axis offers fine movement as well, making vertical adjustment both easy and accurate: used with the joystick, it also enables three-dimensional fine movement. A ball joint is attached so that approach angles can be set without interfering with the joystick operation. The model's versatility also extends to installation, with a bar mount system which allows attachment by either a magnetic stand or mount adaptor.



- For attachment to the microscope, P-1A height adjustment plate and a suitable adaptor is required (standard accessories).
- The ball joint that attaches the micromanipulator can be replaced by MMO-220A one-axis oil hydraulic micromanipulator (sold separately).

Accessories included	B-8B Ball Joint, P-1A Height Adjustment Plate, H-7 Pipette Holder, Allen Wrench	
Movement range	Coarse	X25 mm, Y20 mm, Z25 mm
	Fine movement: Z axis 8 mm Full rotation of fine knob 250 μ m Minimum graduation: Fine 5 μ m	
	Joystick control 1:150 – 1:15 (X-Y plane movement ratio)	
Dimensions/Weight	W95 x D90 x H110 mm, 470 g	

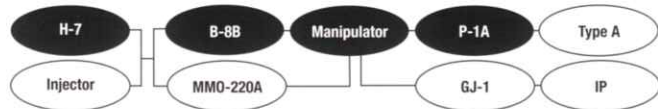


M-152

Manipulator

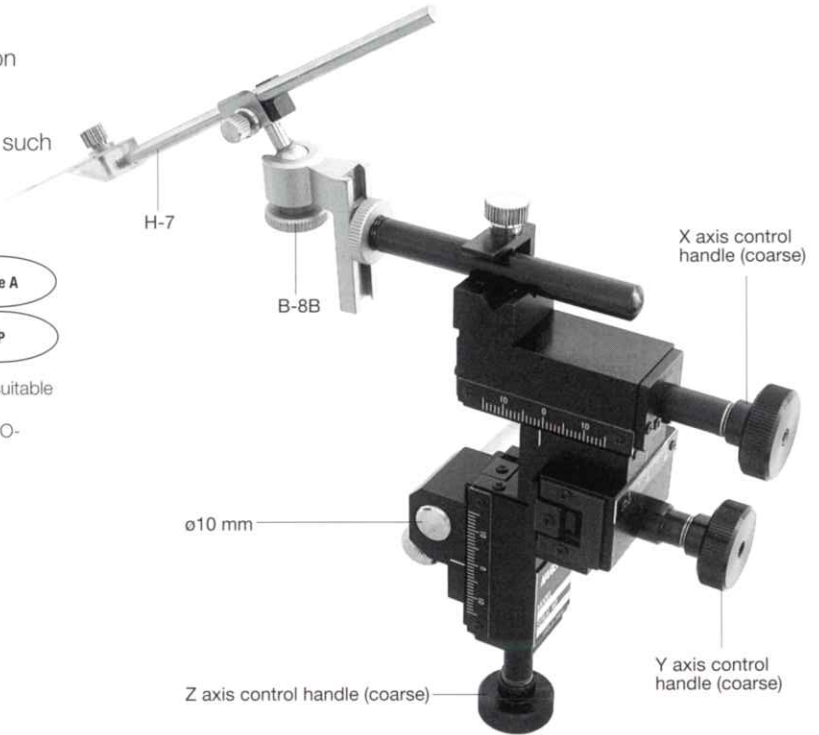
Three-dimensional coarse manual manipulator with simple design.

This compact, lightweight model offers coarse manipulation only and is very simple to use. A bar mount is provided to enable installation by either a mount adaptor or magnetic stand. When used in conjunction with a micromanipulator such as the MMO-220A, quick three-dimensional operation is possible in low magnification experiments using a stereo microscope.



- For attachment to the microscope, P-1A height adjustment plate and a suitable adaptor is required (standard accessories).
- The ball joint that attaches the micromanipulator can be replaced by MMO-220A one-axis oil hydraulic micromanipulator (sold separately).

Accessories included	B-8B Ball Joint, P-1A Height Adjustment Plate, H-7 Pipette Holder, Allen Wrench
Movement range	Coarse X25 mm, Y20 mm, Z25 mm
Dimensions/Weight	W95 x D90 x H110 mm, 320 g

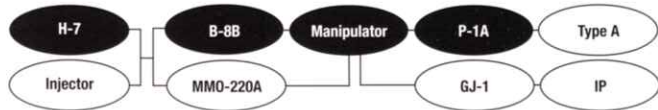


MN-153

Micromanipulator

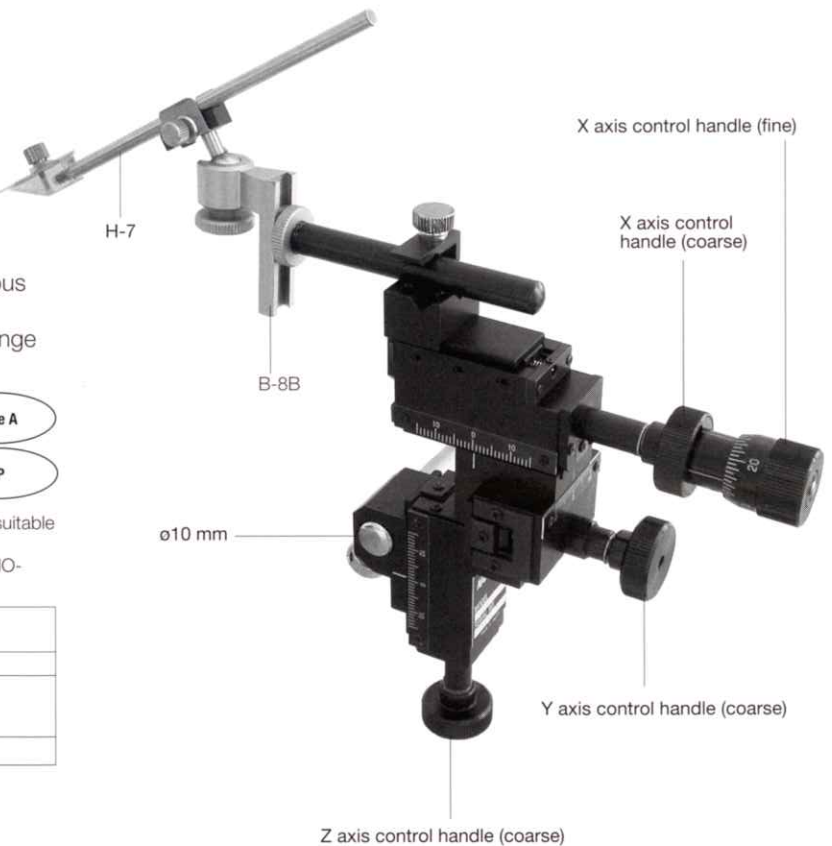
With added one-axis fine movement in the same direction as the pipette.

Based on the M-152, this version adds the capability of fine movement on the X-axis, enabling accurate linear approach to the cell with no danger of causing it any serious damage. Employment of the bar mount system provides complete installation flexibility and greatly broadens the range of possible applications.



- For attachment to the microscope, P-1A height adjustment plate and a suitable adaptor is required (standard accessories).
- The ball joint that attaches the micromanipulator can be replaced by MMO-220A one-axis oil hydraulic micromanipulator (sold separately).

Accessories included	B-8B Ball Joint, P-1A Height Adjustment Plate, H-7 Pipette Holder, Allen Wrench
Movement range	Coarse X25 mm, Y20 mm, Z25 mm Fine: X 8 mm Full rotation of knob 250 µm Minimum graduation 5 µm
Dimensions/Weight	W121 x D36 x H145 mm, 330 g



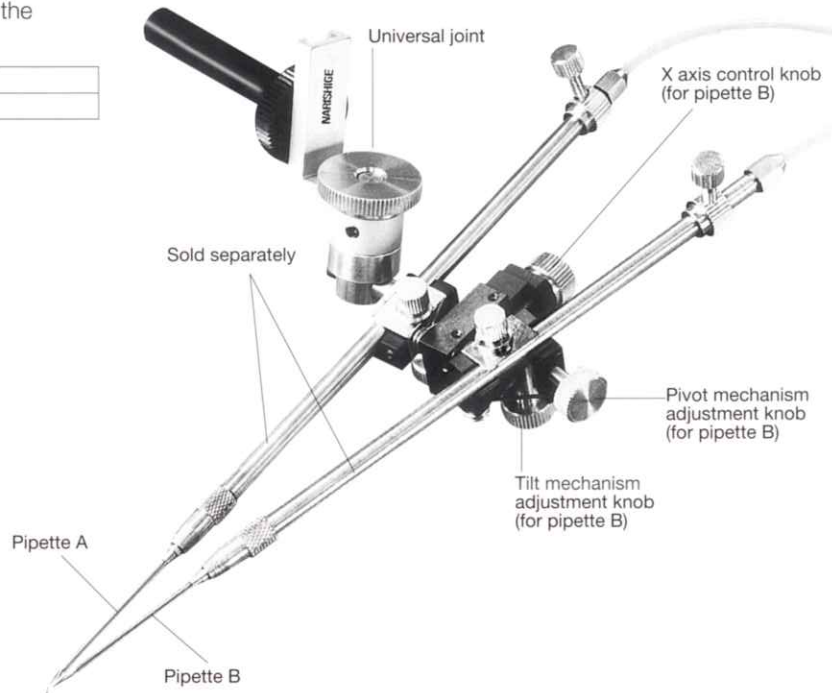
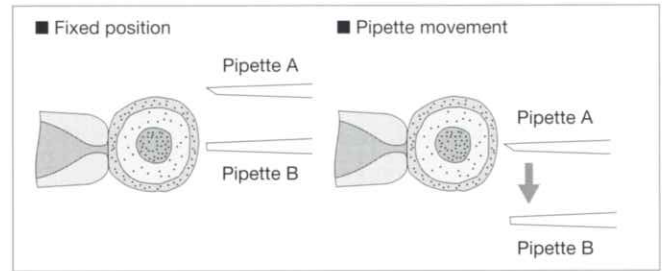
HD-21

Double Pipette Holder

Lightweight, compact and simple double pipette holder.

This is the simplest and most economical model of double pipette holder, which allows simultaneous use of two pipettes. Oil hydraulic pressure is not used for the pipette exchange system; instead, the pipette position is simply set manually. This compact, economical model can be attached to the manipulator instead of using another joint unit.

Accessory included	Allen Wrench
Dimensions/Weight	W127 x D38 x H52 mm, 105 g

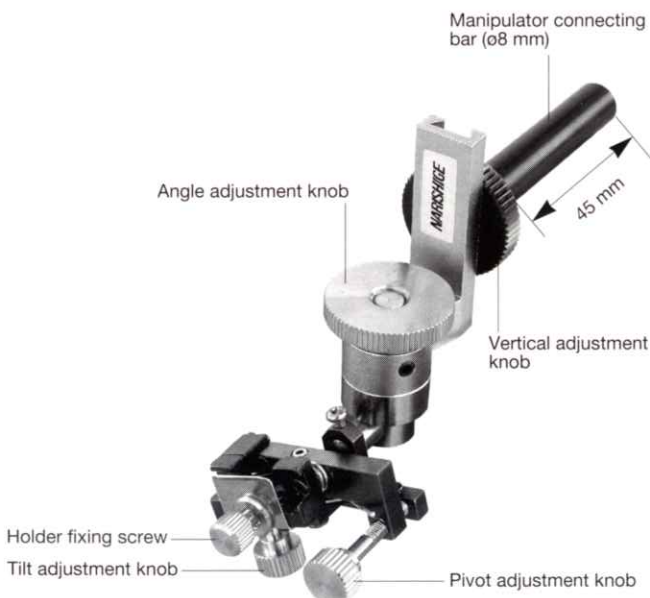


UT-2

Universal Joint

A dual rotation mechanism in the UT-2 enables the pipette holder to be operated freely. This universal joint can be finely adjusted in both pivot and tilt axes, making it easy to set the holder and lock it in position.

Accessory included	Allen Wrench
Dimensions/Weight	W100 x D22 x H58 mm, 72 g

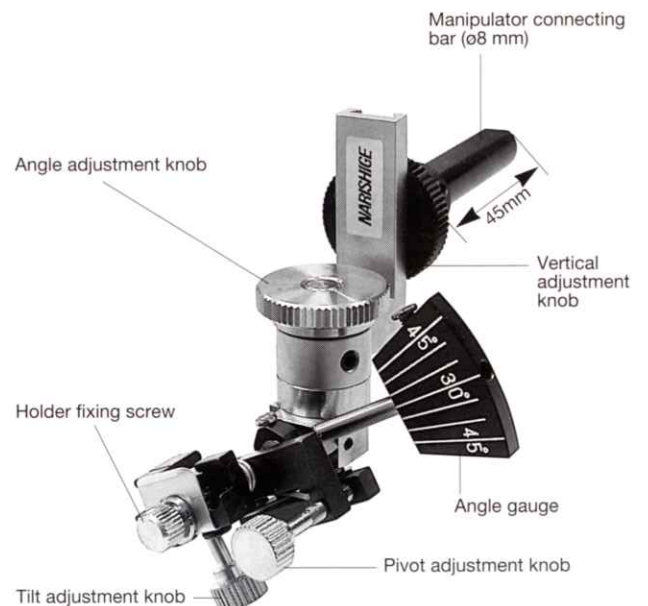


UT-6

Universal Joint (with Angle Gauge)

Outfitted with an angle gauge, the Model UT-6 enables quicker, easier and more accurate setting of an injection or holding micropipette with an angled tip.

Accessory included	Allen Wrench
Dimensions/Weight	W100 x D55 x H58 mm, 85 g

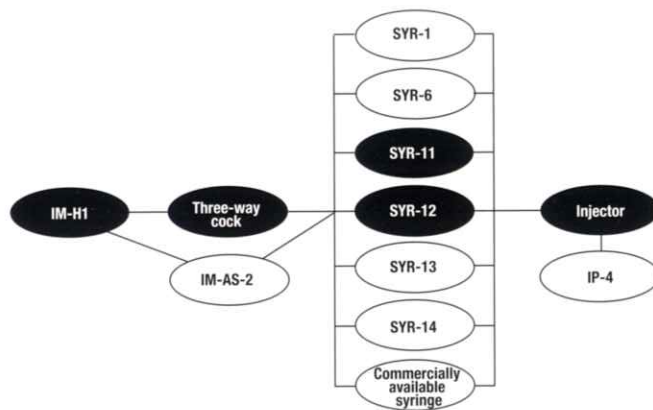


IM-9B

Microinjector

Incorporating a new mechanism to improve operability.

A new mechanism is incorporated which improves the parallelism of the plunger within the syringe and prevents the development of any play. Reducing fluctuations of the handle tension, which have many possible causes, makes control much smoother. The new mechanism and drive sections are built into the handle, while the handle itself is made larger: however, the overall design is smaller, and operability is improved, with a higher driving volume facilitating a greater control volume. The glass syringe is accurately made, while the attached metal syringe is highly durable and precisely processed, and allows the operator to choose a preferred type. The specification of this model allows precise control of both injection and aspiration: we recommend its use at the injection side after it has been filled with oil.



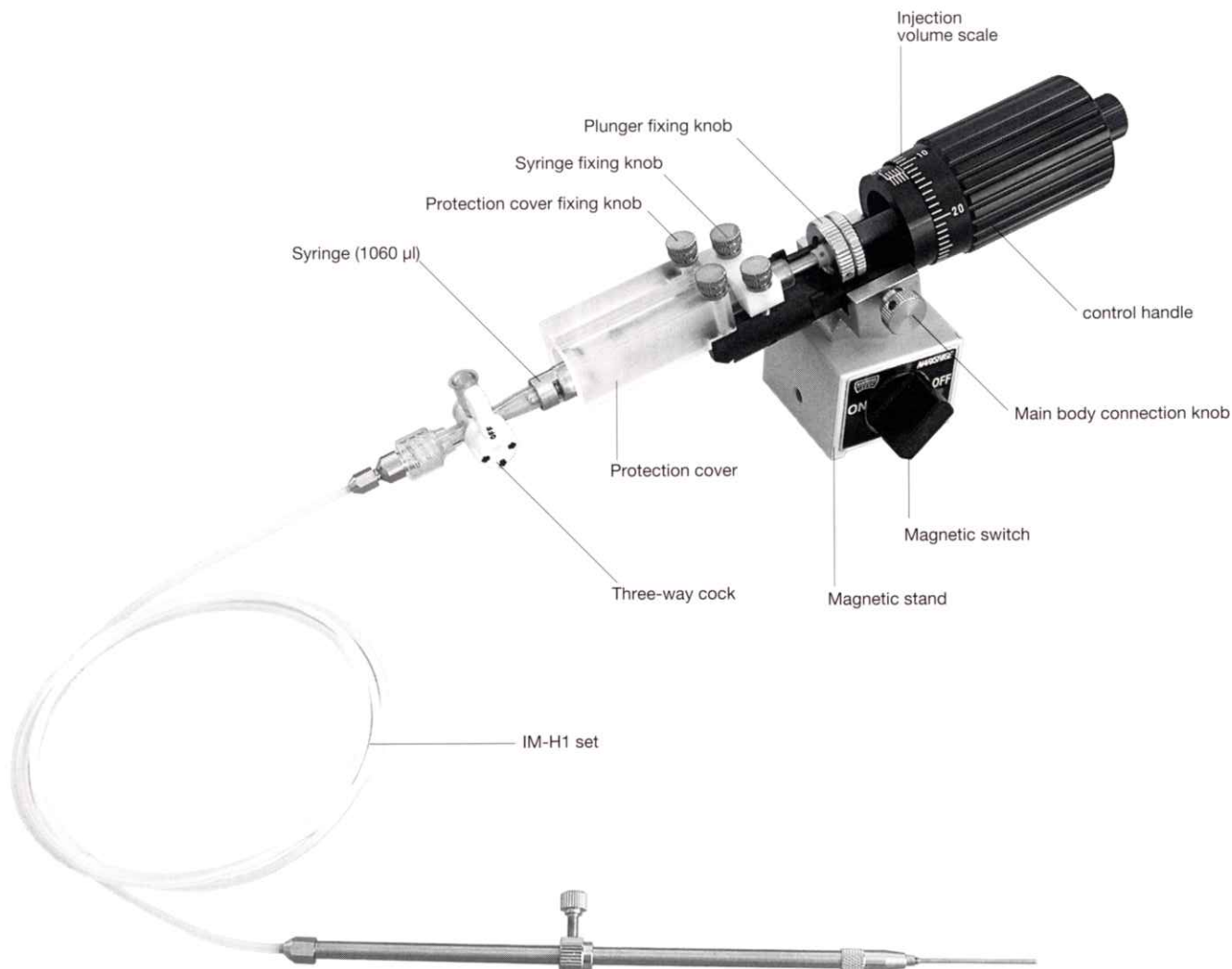
- $\phi 7\text{mm}-\phi 14\text{mm}$ commercially available syringes also mountable.
- Oil top-up kit IM-AS-2 (sold separately) is available for easy oil top-up and air bubble removal. Commercially available oil is required to fill up the oil.

Accessories included	IM-H1 Injection Holder Set**, O Ring, Silicone Grease, Silicone Rubber Gasket, Allen Wrench, Metal Syringe (1060 μl), Three-way cock
Movement range	Plunger 53 mm, Full rotation of knob 500 μm
Control capacity	Full volumes 1060 μl , Full rotation of knob approx. 10 μl
Dimensions/Weight	W175 – 228 x D55 x H77 mm, 0.65 kg

** IM-H1 is a jointed set consisting of HI-7, CT-1 and CI-1 (refer to P19).

Consumables

Model	Product	Description
HIO1PKO1	Silicone rubber gasket	For 2.5mm (10 pcs)
IMO2	O ring	3

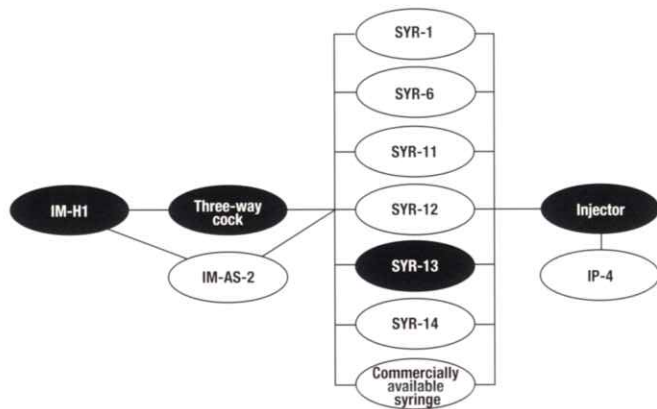


IM-9A

Microinjector

New mechanism and efficient control of large volume of liquid.

This model features the same new mechanism as the IM-9B, offering smooth control by reducing fluctuations of the handle tension. With the new mechanism built into the large handle, the IM-9A is compact, easy to operate and can control a large volume of fluid. These capabilities, together with the use of a large-volume syringe, makes this model suitable for large volume liquid injections or placing the cell holding side.



- ø7mm-ø14mm commercially available syringes also mountable.
- Oil top-up kit IM-AS-2 (sold separately) is available for easy oil top-up and air bubble removal. Commercially available oil is required to fill up the oil.

Accessories included	IM-H1 Injection Holder Set**, O Ring, Silicone Grease, Silicone Rubber Gasket, Allen Wrench, Three-way cock
Movement range	Plunger 53 mm, Full rotation of knob 500 µm
Control capacity	Total volumes 4240 µl, Full rotation of knob approx. 40 µl
Dimensions/Weight	W175 – 228 x D55 x H77 mm, 0.65 kg

** IM-H1 is a jointed set consisting of HI-7, CT-1 and CI-1 (refer to P19).

Model	Product	Description
HIO1PKO1	Silicone rubber gasket	For 2.5mm (10 pcs)
IMO1	O ring	3



IM-9C

Pneumatic Injector

Pneumatic system brings maintenance-free operation.

This model features the same new mechanism as the IM-9B, offering smooth control by reducing fluctuations of the handle tension. As well as controlling a large volume of liquid, it can be operated pneumatically, avoiding maintenance issues like topping up the oil, re-filling or removing air bubbles. Mainly recommended for use in placing the cell holding side.



- Dedicated large size syringe incorporated.
- Filling-up oil is not necessary for this model.

Accessories included	IM-H2 Injection Holder set**, O Ring, Silicone Grease, Silicone Rubber Gasket
Movement range	Plunger 53 mm, Full rotation of knob approx. 6 mm
Control capacity	Total volumes 4240 µl, Full rotation of knob approx. 480 µl
Dimensions/Weight	W136 – 189 x D55 x H74 mm, 0.64 kg

** IM-H2 is a jointed set consisting of HI-7, CT-1 and CI-3 (refer to P19).

Model	Product	Description
HIO1PKO1	Silicone rubber gasket	For 2.5mm (10 pcs)
IMO1	O ring	3

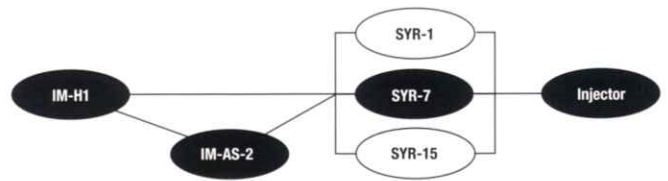


IM-6

Microinjector

Return of popular features promoting ease of use.

In response to user demand, the IM-6 marks the return of a former model which went out of production. The large, stable body makes operation extremely reliable, while the specifications allow precise control of injection and aspiration. Recommended for use at the injection side after it has been filled with oil.

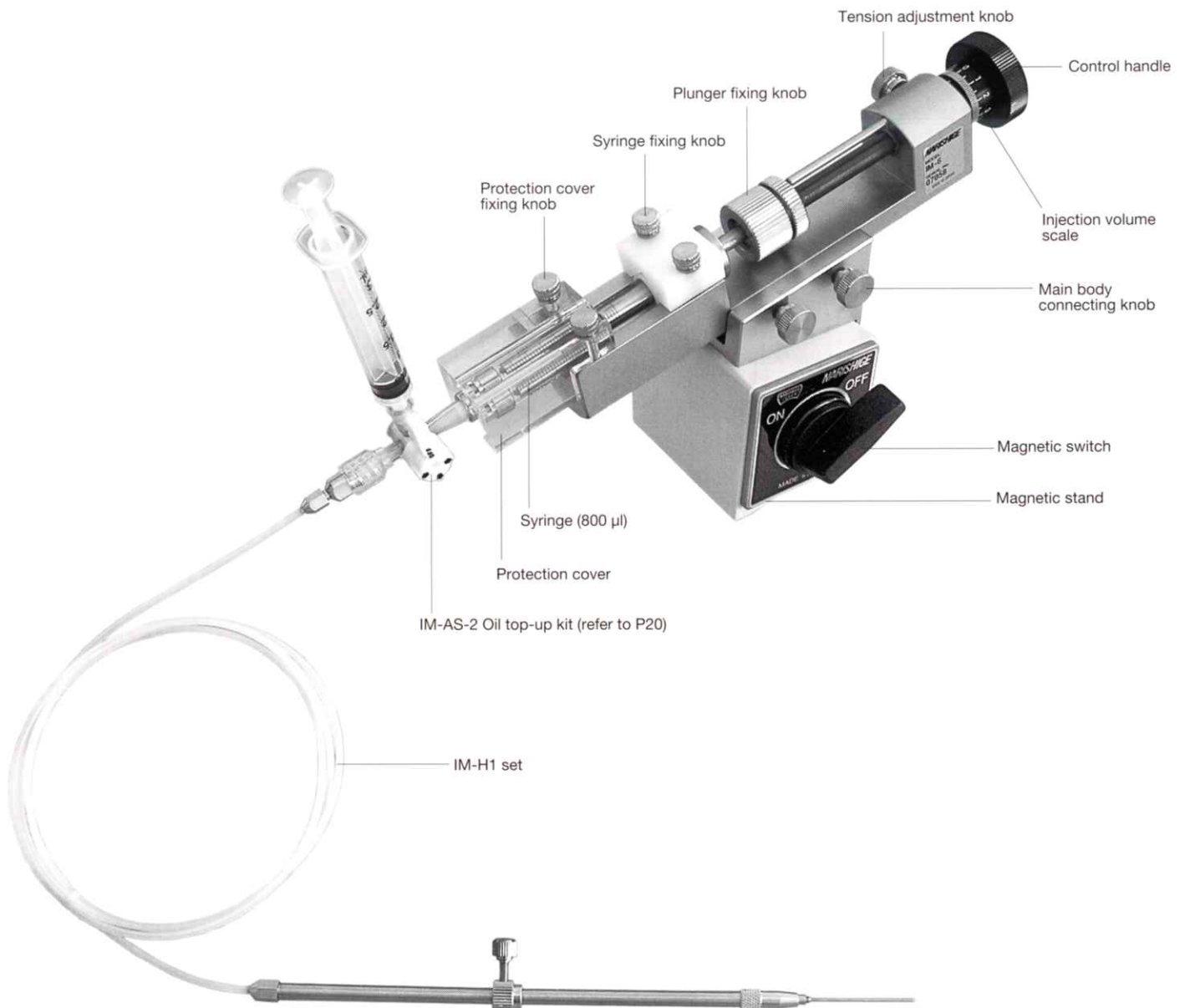


- Oil top-up kit IM-AS-2, for easy oil top-up and air bubble removal, is an accessory included. Commercially available oil is required to fill up the oil.
- For details of attaching a commercially available syringe to this model, please contact your local narishige representative.

Accessories included	IM-H1 Injection Holder Set**, Silicone Rubber Gasket, IM-AS-2 Oil Top-up Kit
Movement range	Plunger 40 mm, Full rotation of knob 500 μ m
Control capacity	Total volumes 800 μ l, Full rotation of knob approx. 10 μ l
Dimensions/Weight	W200 x D80 x H130 mm, 2 kg

** IM-H1 is a jointed set consisting of HI-7, CT-1 and CI-1 (refer to P19).

Consumables		
Model	Product	Description
HIO1PK01	Silicone rubber gasket	For 2.5mm (10 pcs)



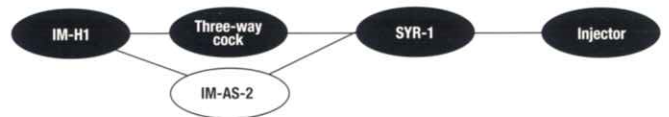
IM-5A

Injector

Return of a popular model with maintenance-free pneumatic system.

In response to user demand, the IM-5A marks the return of a former model which went out of production. The large, stable body makes operation extremely reliable. As well as controlling a large volume of liquid, it can be operated pneumatically, avoiding maintenance issues like topping up the oil, re-filling or removing air bubbles. Mainly recommended for use in placing on the cell holding side.

- Oil top-up kit IM-AS-2 (sold separately) is available for easy oil top-up and air bubble removal.
- For details of attaching a commercially available syringe to this model, please contact your local narishige representative.

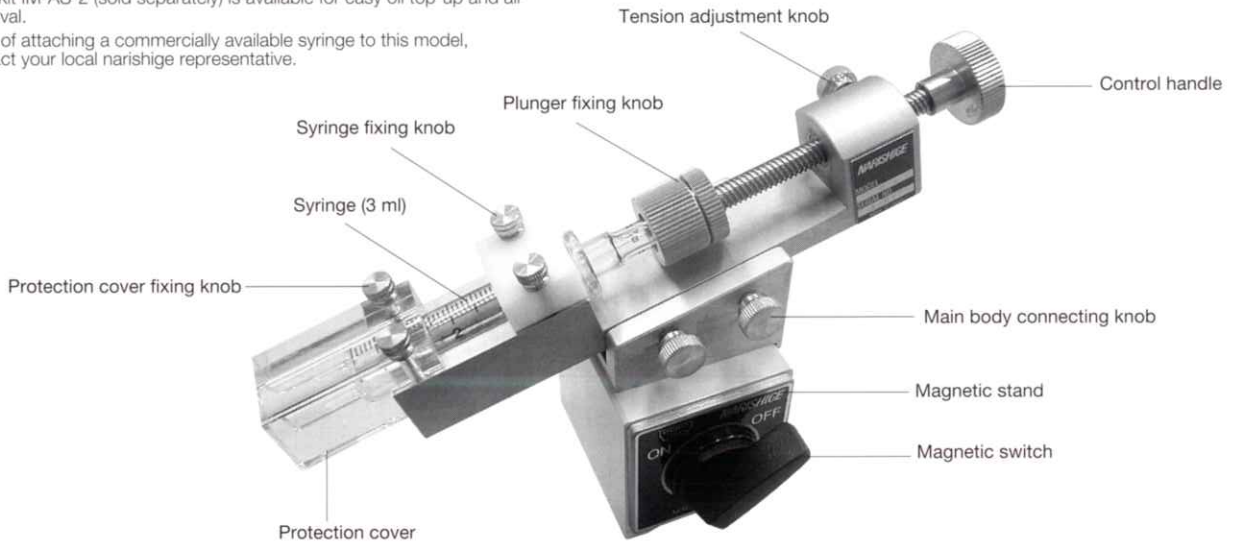


Accessories included	IM-H1 Injection Holder Set**, Silicone Rubber Gasket, Glass Syringe 3ml, Three-way cock
Movement range	Plunger 40mm, Full rotation of knob: approx.6 mm
Control capacity	Total volumes 3 ml, Full rotation of knob approx. 480 µl
Dimensions/Weight	W200 x D80 x H130 mm, 2 kg

** IM-H1 is a jointed set consisting of HI-7, CT-1 and CI-1 (refer to P19).

Consumables

Model	Product	Description
HIO1PK01	Silicone rubber gasket	For 2.5mm (10 pcs)



IM-5B

Microinjector

Acclaimed for ease of use.

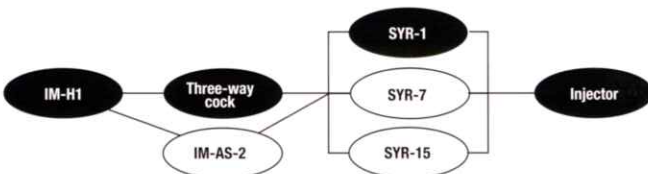
In response to user demand, the IM-5B marks the return of a former model which went out of production. The large, stable body makes operation extremely reliable. The large syringe allows a large volume of liquid to be contained and accurately controlled. Recommended for large volume injections or for use in placing on the cell holding side.

Accessories included	IM-H1 Injection Holder Set**, Silicone Rubber Gasket, Glass Syringe 3ml, Three-way cock
Movement range	Plunger 40 mm Full rotation of knob: 500 µm
Control capacity	Total volumes 3 ml Full rotation of knob approx. 40 µl
Dimensions/Weight	W200 x D80 x H130 mm, 2 kg

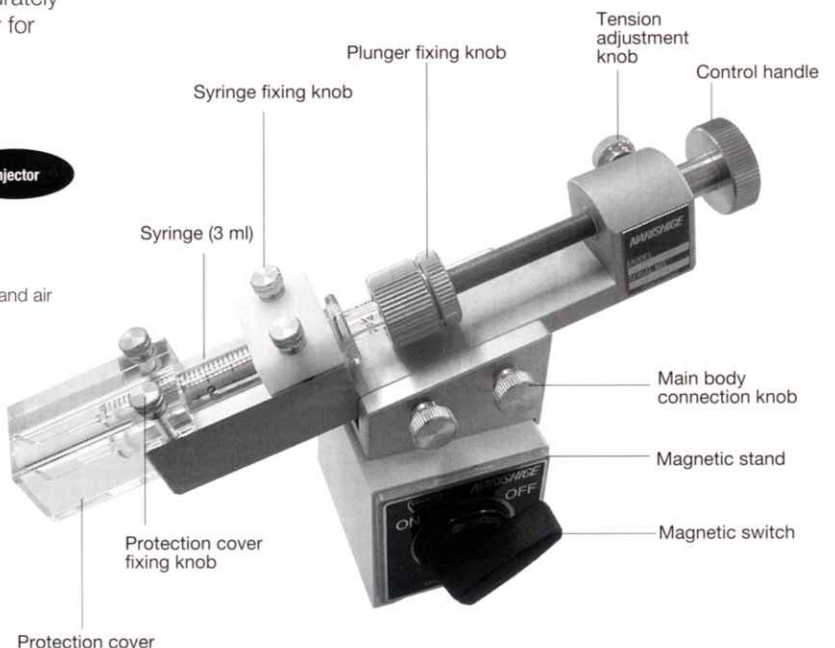
** IM-H1 is a jointed set consisting of HI-7, CT-1 and CI-1 (refer to P19).

Consumables

Model	Product	Description
HIO1PK01	Silicone rubber gasket	For 2.5mm (10 pcs)



- Oil top-up kit IM-AS-2 (sold separately) is available for easy oil top-up and air bubble removal. Commercially available oil is required to fill up the oil.
- For details of attaching a commercially available syringe to this model, please contact your local narishige representative.



Narishige offers a range of high-performance glass and metal syringes for use with our own injectors, each with its own specific features. Since glass versions are transparent, the user can easily check for the presence of air bubbles and observe the state of the O ring used to pack the plunger. The metal versions are extremely durable and precisely made for smooth, accurate operation. Some models have a resin tip to prevent leakage, while others features a firmly fixed luer lock. Syringes should be selected according to the injector in use, as indicated on the chart below.

SYR-11 (1,060 µl/Metal)
SYR-13 (4,240 µl/Metal)
 Injection Syringe

Extremely durable metal syringe. Can be attached to IM-9A/9B.



SYR-7 (800 µl/with collar)
SYR-15 (800 µl/Metal)
 Injection Syringe

Measures to prevent leakage include changing the connecting section with the tube fixture from metal to resin and from luer tip to luer lock for a firm screw-in connection.



SYR-12 (1,060 µl/Glass)
SYR-14 (4,240 µl/Glass)
 Injection Syringe

Glass syringe with precision-polished inner and outer surfaces, which allow easy centering and excellent response. Can be attached to IM-9A/9B.



■ Syringe/Injector Compatibility

Injector	Syringe														
	-1	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	SYR			
IM-5A	O	—	—	—	—	—	—	—	—	—	—	—	—	—	—
IM-5B	O	—	O	—	—	—	—	—	—	—	—	—	—	—	O
IM-6	O	—	O	—	—	—	—	—	—	—	—	—	—	—	O
IM-9A	O	O	—	—	—	—	O	O	O	O	—	—	—	—	—
IM-9B	O	O	—	—	—	—	O	O	O	O	—	—	—	—	—
IM-9C	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Injector	Syringe														
	-1	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	SYR			
IM-16	—	O	—	—	—	—	—	—	—	—	—	—	—	—	—
IM-26-2	—	—	—	O	—	—	—	—	—	—	—	—	—	—	—
IM-4A	O	—	—	—	—	—	—	—	—	—	—	—	—	—	—
IM-4B	O	—	O	—	—	—	—	—	—	—	—	—	—	—	O
IM-5A-2	—	—	—	—	O	—	—	—	—	—	—	—	—	—	—
IM-5B-2	—	—	—	—	O	—	—	—	—	—	—	—	—	—	—
IM-50A	O	—	—	—	—	—	—	—	—	—	—	—	—	—	—
IM-50B	O	—	—	—	—	—	—	—	—	—	—	—	—	—	—
IM-55-2	—	—	—	O	—	—	—	—	—	—	—	—	—	—	—
IM-6-2	—	—	—	—	—	O	—	—	—	—	—	—	—	—	—
IM-8	—	O	—	—	—	—	—	—	—	—	—	—	—	—	—

IM-300

Microinjector (Programmable)

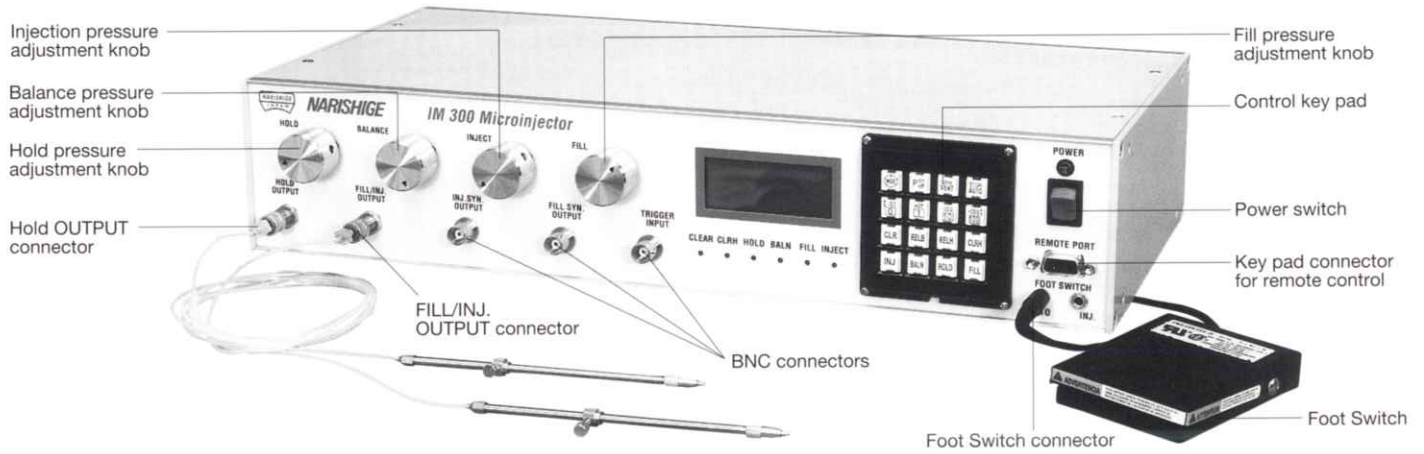
Multi-functional, motor-driven injector for precise control of small volumes.

Setting the time and pressure in advance makes it possible to inject very small volumes of liquid with great precision. This model's numerous capabilities, including injection, filling up and holding, and varied functions such as foot switching, programming and air distribution, make it suitable for a wide

variety of applications. Moreover, external control with the same action as the foot switch is possible via the input of TTL signals (negative logic).

Accessories included	Output Tube (with a tube connector/Hi-7 Injection Holder) x2, Input Hose (with a hose connector), AC Power Cord, Foot Switch, Silicone Rubber Gasket
Input pressure	Approx. 400 – 700 kpa (approx. 0.4 mpa – 0.7 mpa = 60 PSI – 100PSI)
Power Source	AC100 (±5%)–AC120 (±5%), 50/60Hz AC220 (±5%)–AC240 (±5%), 50/60Hz
Power consumption	Approx. 35 W
Dimensions/Weight	W425 x D205 x H90 mm, 3.7 kg

• A compressor or cylinder (air, nitrogen, etc.)+regulator (IM-R) are required to use this device.



IM-31

Electric Microinjector

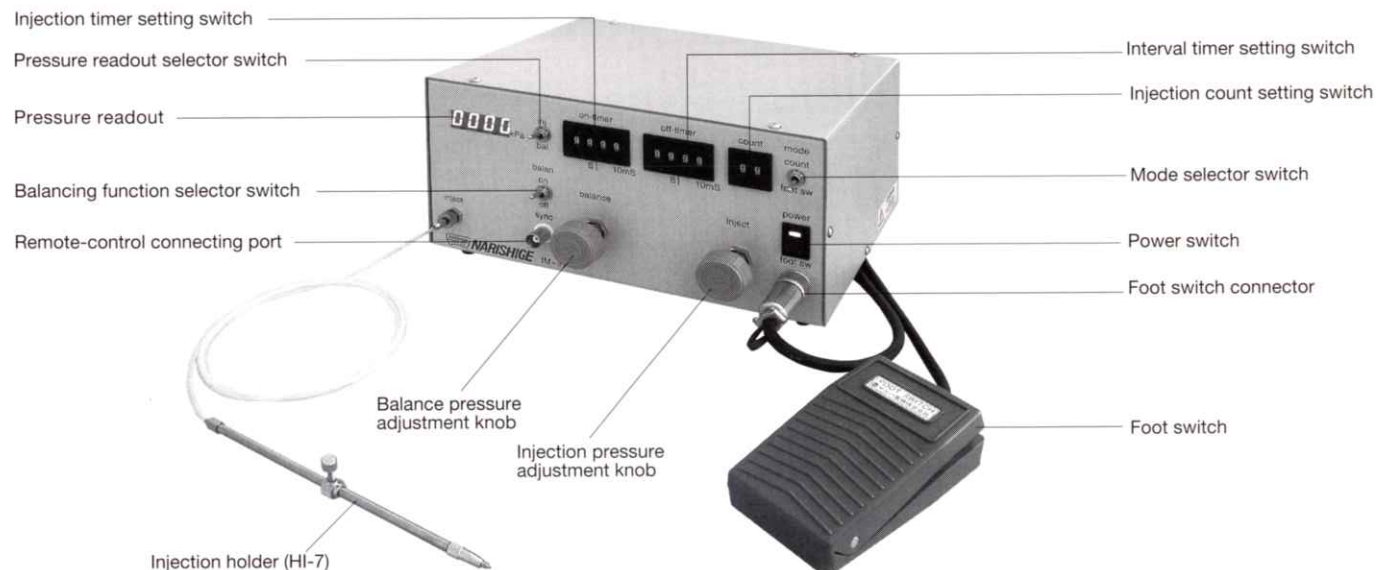
Supports various applications from micro-injecting cells to puffing a drug solution to stimulate cells .

This device has 2 types of modes—a count mode to set the pressure/time/count and inject a solution and a foot switch mode to set only the pressure and inject a solution while pressing a foot switch—that can be selected in accordance with the experimental application. In addition, incremented settings are also possible when the count is set. Moreover, external control with the same action as the foot switch is possible via the input of TTL signals (negative logic).

Accessories included	Output Tube (with a tube connector/Hi-7 Injection Holder), Input Hose (with a hose connector), AC Power Cord, Foot Switch, Silicone Rubber Gasket
Input pressure	50–500 kpa (0.05 mpa-0.5 mpa = approx. 7.25 PSI- approx. 72.5 PSI)
Time settings	10 ms–99.99 s
Count settings	1–99
Interval settings	10 ms–99.99 s
Power source/voltage	AC100(±5%)–AC240(±5%), 50/60Hz
Power consumption	Approx. 10W
Dimensions/weight	W240 X D215 X H130 mm, 4kg

• A compressor or cylinder (air, nitrogen, etc.)+regulator (IM-R) are required to use this device.

Model	Product	Description
HIO1PK01	Silicone rubber gasket	For 2.5mm (10 pcs)



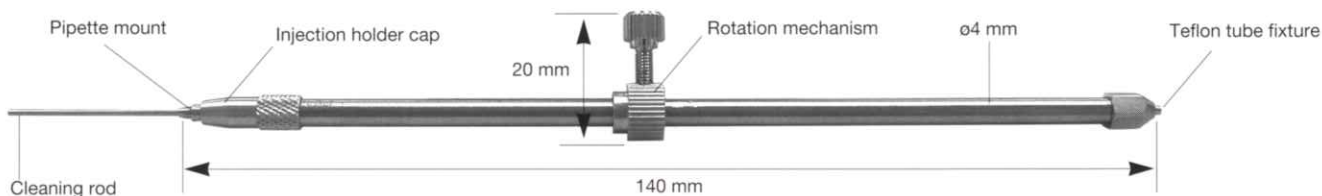
HI-7 (for ø1mm Pipette)

Injection Holder

Incorporating a stainless steel collar with a holder cap, the HI-7 solves the problem of mounting pipettes when cores are lacking for the respective holes. An HIR rotation mechanism is included for operational convenience.

Accessory included	Silicone Rubber Gasket
Length/Weight	L140 mm, 15 g

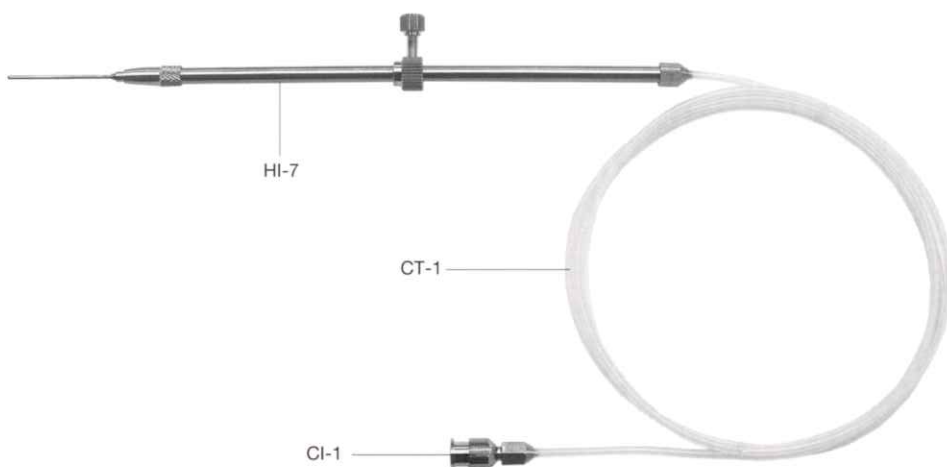
Consumables		
Model	Product	Description
HIO1PK01	Silicone rubber gasket	For 2.5mm (10 pcs)



IM-H1 (for ø1mm Pipette)

Injection Holder Set

Consisting of HI-7 injection holder, CT-1 teflon tubing and CI-1 tube connector.



HIC

End Cap with Stainless Steel Collar

This has incorporated stainless steel collar into an end cap, which were previously separate parts, hence preventing loss of components and breakage of capillary from movement of internal components.

Accessory included	Silicone Rubber Gasket
Dimensions/Weight	W17 x D5 x H5 mm, 1 g

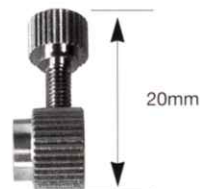


HIR

Rotating Adjustable Clamp

This product is to facilitate relocation of injection holder exchanged or rotation of injection holder beveled.

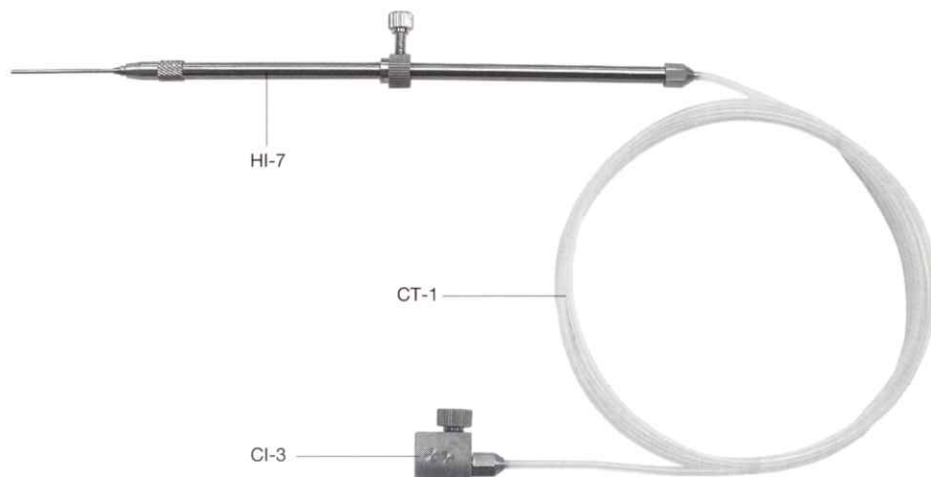
Dimensions/Weight	W7 x D7 x H18 mm, 2 g
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IM-H2 (for ø1mm Pipette)

Injection Holder Set

Consisting of HI-7 injection holder, CT-1 teflon tubing and CI-3 tube connector with multi-use valve.



CI-1

Tube Connector

Used to connect microsyringes with Teflon tubing.

Dimensions/Weight	W20 x D7 x H6 mm, 2 g
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CI-2

Micropipette Connector

Used to connect microsyringes to a glass micropipette. (exclusively for ø1 mm glass micropipette)

Accessory included	Silicone Rubber Gasket
Dimensions/Weight	W20 x D7 x H6 mm, 2 g



CI-3

Tube Connector (with Multi-use Valve)

This item is attached to the injector and is used in various ways: as a pressure balancing valve to control the supply of air, as a means of supplying liquid when connected to the supply syringe, and for suction-removal of air bubbles.

Dimensions/Weight	W21 x D8 x H17 mm, 10 g
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CT-1

Teflon Tubing

Standard teflon tubing. CT-2 polyethylene tubing also available.

Dimensions	Length 1 m, Inner diameter ø0.9 mm, Outer diameter ø2 mm
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IM-AS-2

Oil Top-up Kit

Consisting of three-way cock and plastic syringe, the IM-AS-2 provides an easy and convenient way to fill up with oil or to remove air bubbles.



HIK-3 for NIKON (for M3)

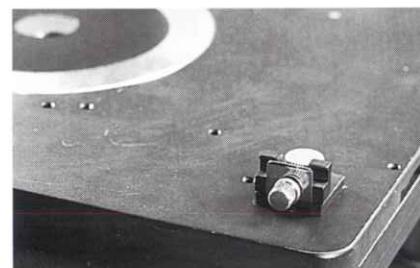
HIK-4 for OLYMPUS (for M4)

Pipette Holder Keeper

Mounted on the stage, these units are used to clamp the pipette holder and simplify pipette exchange. The HIK-3 is suitable for 3mm screw hole, the HIK-4 for 4 mm screw hole.



Accessory included	Double-sided adhesive tape	
Dimensions	W18 x D24 x H17 mm	
Weights	HIK-3	8 g
	HIK-4	10 g



Make angles freely by attaching to the manipulator.

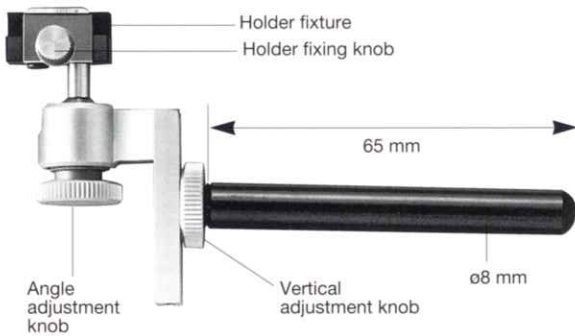
These ball joints can be attached to different types of manipulators, enabling pipette holder angles to be set freely and easily. Their main function is to attach holders to manipulators: users can choose from 4 different types, which are designed for compatibility with different holders and different lengths of attachment bar.

B-8B

Ball Joint

For mounting a ϕ 4mm holder.

Dimensions/Weight	W108 x D20 x H36 mm, 47 g
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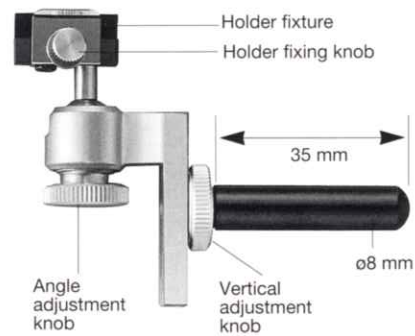


B-8C

Ball Joint

Similar to type B, but with a shorter fixing bar.

Dimensions/Weight	W77 x D20 x H36 mm, 42 g
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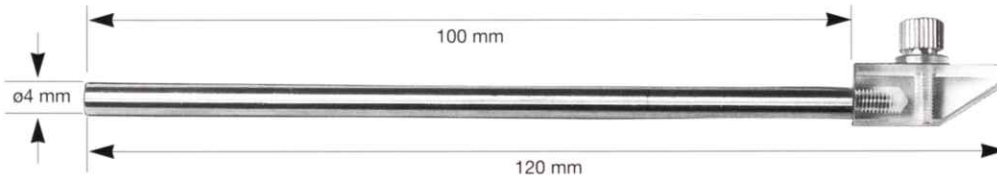


H-7

Pipette Holder

- For ϕ 1 – 1.5 mm pipettes
- Bar ϕ 4 mm

Length/Weight	120 mm, 10 g
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P-1A

Height Adjustment Plate

This plate is used when attaching the manual manipulator to the side of the microscope stage.

Accessory included	Allen Wrench
Dimensions/Weight	W38 x D28 x H90 mm, 120 g



IP Iron Plate

Steel plate for use with magnet stand.

Painted in cream, this plate is designed to offer suitable size and weight.

Dimensions/Weight	W250 x D200 x H6 mm, 2.4 kg
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IP-4 Iron Plate

Steel plate for small injectors.

Small injectors which cannot be installed independently should be attached to this steel plate: its weight enables them to be installed directly on the table.

Dimensions/Weight	W80 x D60 x H9 mm, 300 g
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GJ-1 Magnetic Stand

Can be used with a $\phi 10$ mm bar mount type manipulator.

Magnet dimensions	W50 x D80 x H55 mm
Height/Weight	230 mm, 1.5 kg



PN-30

Puller

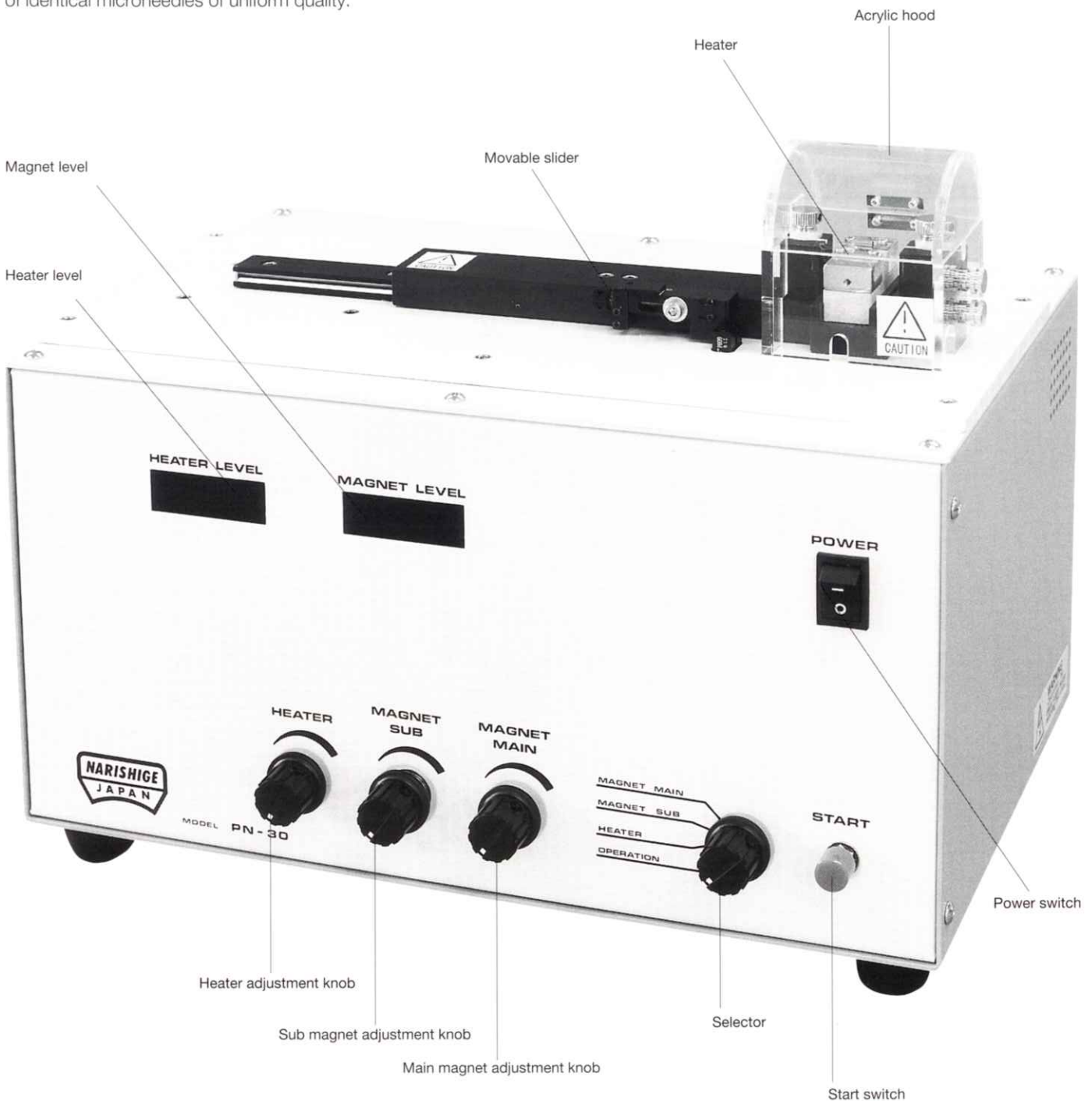
Puller for producing long, thin, sharp microneedles.

This puller uses a pulling method by which a glass capillary is fine-drawn using electromagnetic force. The long draw-out volume and employment of a strong electromagnetic solenoid enable the production of long, sharp microneedles. The pulling tension can be adjusted over a wide range, from weak tension for gradual pulling of the glass capillary at the beginning to strong tension for the single-stretch draw-out required to make a long, thin microneedle. The heater uses a platinum plate which heats up quickly, so pulling can begin immediately, with no time-lag. Digital values, with the maximum output of the electromagnet and heater represented as 100, are shown on the display, making it easier to mass-produce large quantities of identical microneedles of uniform quality.

Accessories included	GD-1 Glass Capillary with filament, Spare Heater, Heater Reshaping Tool, AC Power Cord, Allen Wrench
Power Source	AC100 (±5%), 50/60Hz, AC120 (±5%), 50/60Hz, AC220 (±5%), 50/60Hz, AC240 (±5%), 50/60Hz
Power consumption	Approx. 250 W
Heater level	100=heater voltage 1V
Magnet level	100=magnetic voltage 36 V
Dimensions/Weight	W300 x D190 x H230 mm, 7.7 kg

Consumables

Model	Product	Description
PN-3H	Heater for PN-3	Platinum board 3 mm (x3)
PN-30H	Heater for PN-30	Platinum board 6 mm (x3)



PC-10

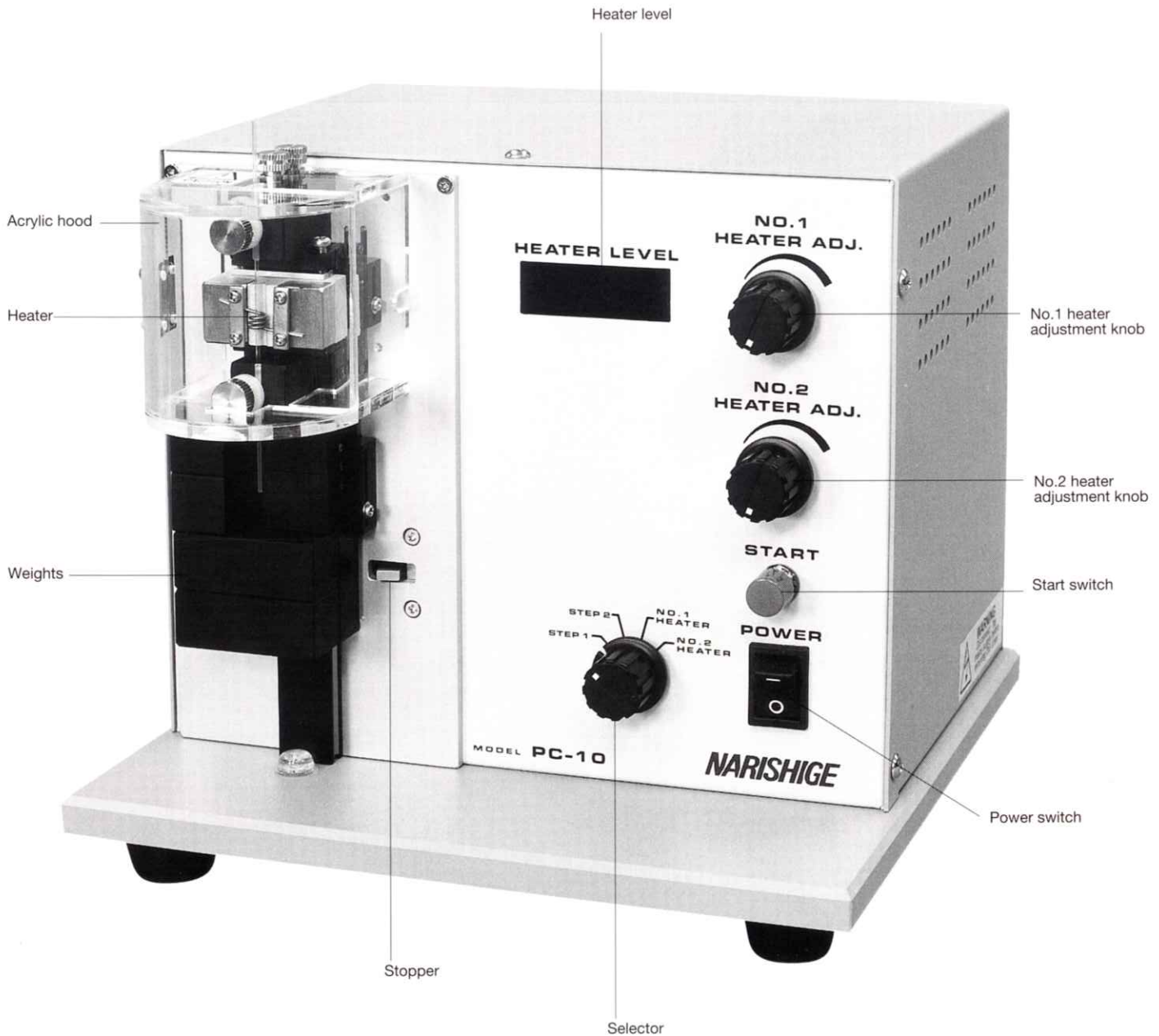
Puller

Vertical pull type with automated double mode for improved versatility.

The method used by this puller is to pull the glass capillary vertically, using the gravitational force of its own weight. For more versatility, two modes are provided: a single pull, which pulls at one stretch, and a double pull in which the setting is changed in mid-process. The PC-10 can therefore produce long, thin microneedles for injection purposes, and firm microelectrodes for patch clamping. The change of setting in the double pull mode can be preset and then performed automatically, which represents a drastic saving of labor over conventional methods. Digital values, with the maximum output of the electromagnet and heater represented as 100, are shown on the display and the heater output is continually increased, making accurate mass production easier. This puller has several simple features to enhance ease of use, such as the employment of two weights (light and heavy) for tension adjustment.

Accessories included	GD-1 Glass Capillary with filament, Spare Heater, AC Power Cord
Power Source	AC100 (±5%), 50/60Hz, AC120 (±5%), 50/60Hz, AC220 (±5%), 50/60Hz, AC240 (±5%), 50/60Hz
Power consumption	Approx. 80 W
Heater level	100=heater voltage 2.5 V
Weight	Approx. 25 g x 2, Approx. 100 g x 2
Dimensions/Weight	W205 x D190 x H185 mm, 6.0 kg

Consumables		
Model	Product	Description
PC-10H	Heater	Kanthal wire (x5)



MF-900 **Microforge****Multiple functions for making different kinds of microtools.**

Reflecting Narishige's long practical experience, the MF-900 offers a wide range of functions for making many different kinds of microtools by processing microneedle tips. An easy-to-use manipulator is provided for operating the heater and pipette, and the microscope is operated three-dimensionally with control close to the operator's hand. Separate rotation mechanisms for vertical and horizontal movement allow the pipette to be approached at any angle, while a special device in the heater section can form it into any required shape. As well as conventional scales, a protractor to measure angles is provided on the microscope eyepiece. With the heater turned ON/OFF via a foot switch, and the heater section integrated into the microscope body, all control actions are performed easily and precisely close to the operator's hand.

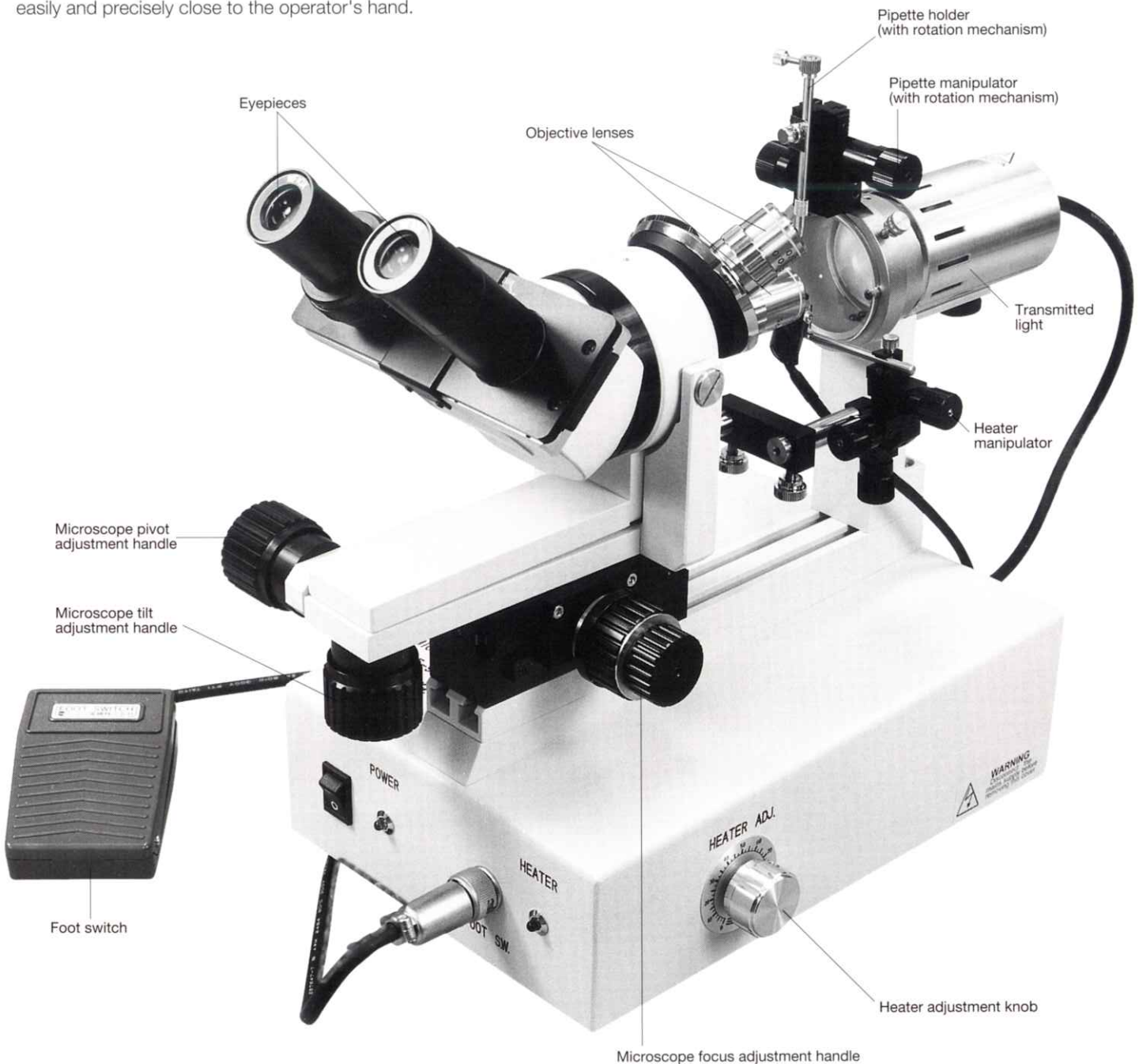
Accessories included	MF-900F Foot Switch, AC Power Cord, Dedicated Electrode Holder, Allen Wrench, Spare Heater, Spare Lamp, Silicone Rubber Gasket
Movement range	Heater manipulator: X14 mm, Y14 mm, Z14 mm Pipette manipulator: X12 mm, Z28 mm Microscope: X approx. 7 mm, Y30 mm, Z approx. 8 mm
Magnifications	50x/100x (eyepiece 10x, objective lenses 5x, 10x)
Glass capillary	ø1 mm
Power Source	AC100 (±5%), 50/60Hz, AC120 (±5%), 50/60Hz AC220 (±5%), 50/60Hz, AC240 (±5%), 50/60Hz
Power consumption	Approx.35 W
Dimensions/Weight	W200 x D350 x H300 mm, 6.1 kg

Optional accessories

Model	Product	Description
MF-OP	Optional lens for MF-900	35x objective lens, 15x eyepiece with micrometer 15x eyepiece without micrometer
MF-OPA	Optional lens for MF-900	35x objective lens
MF-OPB	Optional lens for MF-900	15x eyepiece without micrometer
MF-OPC	Optional lens for MF-900	15x eyepiece with micrometer

Consumables

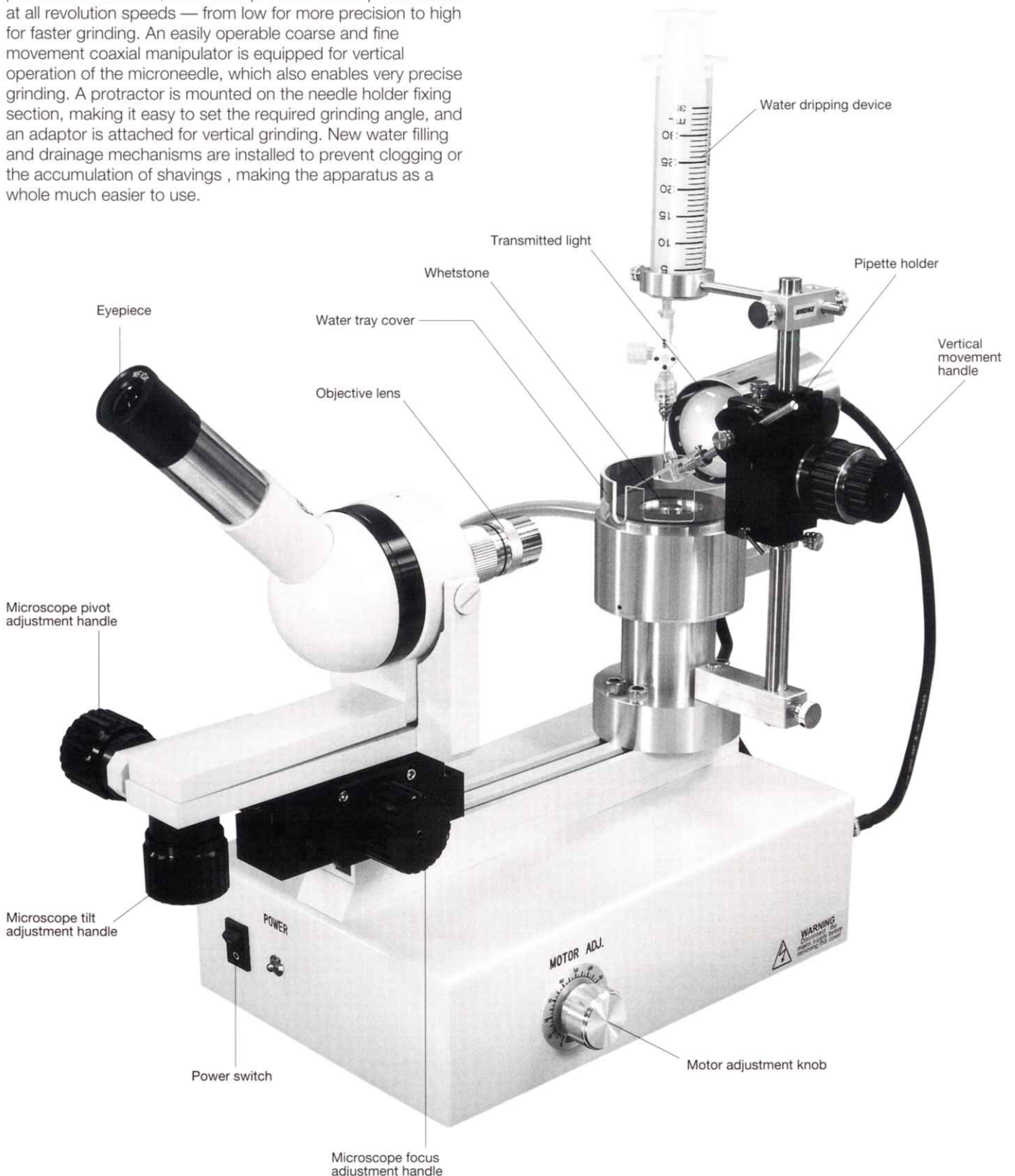
Model	Product	Description
PT-B	Platinum wire heater	150 μm x 300 mm



EG-400 **Microgrinder****Mounted microscope to confirm needle contact with grinding plane.**

The microscope is mounted on this grinder, which uses a special motor to minimize irregular movements of the grinding plane: confirmation of contact between the needle and the grinding plane enables grinding to be performed with greater precision. In addition, this model provides stable performance at all revolution speeds — from low for more precision to high for faster grinding. An easily operable coarse and fine movement coaxial manipulator is equipped for vertical operation of the microneedle, which also enables very precise grinding. A protractor is mounted on the needle holder fixing section, making it easy to set the required grinding angle, and an adaptor is attached for vertical grinding. New water filling and drainage mechanisms are installed to prevent clogging or the accumulation of shavings, making the apparatus as a whole much easier to use.

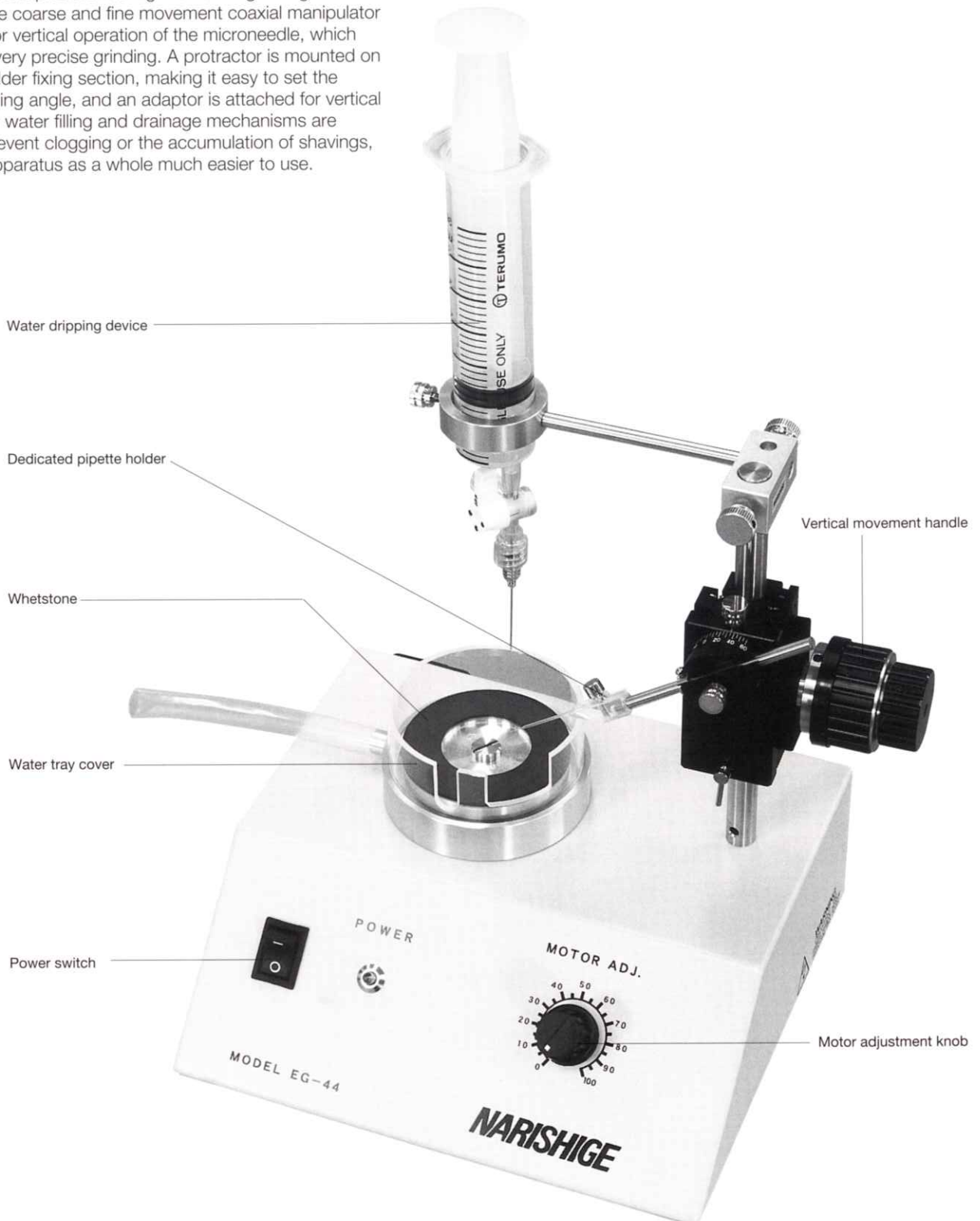
Accessories included	Adaptor for Vertical Grinding, Diamond Wheel Cleaner, Dedicated Pipette Holder, Allen Wrench, Spare Lamp, AC Power Cord
Movement range	Pipette manipulator: Approx. 47mm Microscope: X approx. 7 mm, Y30 mm, Z approx. 8 mm
Magnifications	30x (eyepiece 10x, objective lens 3x)
Glass capillary	ø1mm - ø1.5mm
Power Source	AC100 (±5%), 50/60Hz, AC120 (±5%), 50/60Hz AC220 (±5%), 50/60Hz, AC240 (±5%), 50/60Hz
Power consumption	Approx. 50 W
Motor speed	Approx. 50 - 2,000 rpm
Dimensions/Weight	W250 x D450 x H400 mm, 6.6 kg



EG-44 **Microgrinder****Minimizing irregular movements on the grinding plane for greater precision.**

This grinder is ideal for grinding micropipette tips, thanks to its employment of a special motor which is designed to minimize irregular movements of the grinding plane. In addition, this model provides stable performance at all revolution speeds — from low for more precision to high for faster grinding. An easily operable coarse and fine movement coaxial manipulator is equipped for vertical operation of the microneedle, which also enables very precise grinding. A protractor is mounted on the needle holder fixing section, making it easy to set the required grinding angle, and an adaptor is attached for vertical grinding. New water filling and drainage mechanisms are installed to prevent clogging or the accumulation of shavings, making the apparatus as a whole much easier to use.

Accessories included	Dedicated Pipette Holder, Adaptor for Vertical Grinding, Diamond Wheel Cleaner, AC Power Cord
Power Source	AC100 (±5%), 50/60Hz, AC120 (±5%), 50/60Hz, AC220 (±5%), 50/60Hz, AC240 (±5%), 50/60Hz
Power consumption	Approx. 10 W
Movement range	Slider movement approx. 47 mm
Motor speed	Approx. 50–2,000 rpm
Glass capillary	ø1 mm – ø1.5 mm
Dimensions /Weight	W185 x D165 x H310 mm, 2.4 kg



GC-1 Glass Capillary**GDC-1**

Glass Capillary with filament

The glass capillaries which were pre-washed in an ultrasonic washing machine and sterilized with ultraviolet ray (vacuum-packed).



GDC-1

**GD-1**

Glass Capillary with filament

Generally known as double tubing, these glass capillaries contain an internal glass fiber (approx. 100 μm). GD-1 has been prewashed in an ultrasonic washing machine.



GD-1

**G-1**

Glass Capillary

General type of glass capillary. G-1 has been prewashed in an ultrasonic washing machine.

G-100

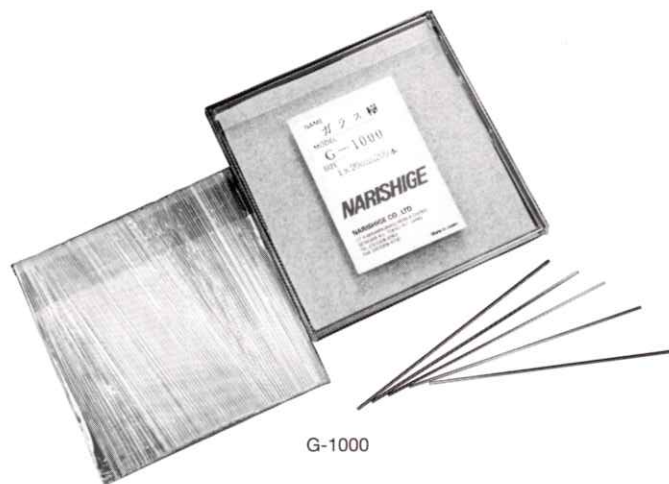
Thin-walled Glass Capillary

This thin-walled glass capillary has been prewashed in an ultrasonic washing machine.

G-1000

Glass Rod

This glass rod is used as a microtool. Prewashed in an ultrasonic washing machine.



G-1000

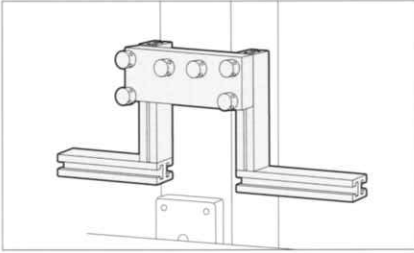
Type	G-1	GD-1	GC-1	GDC-1	G-100	G-1000
Outer diameter	1 mm	1 mm	1 mm	1 mm	1 mm	1 mm
Inner diameter (approx.)	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.8 mm	-
Length	90 mm	90 mm	90 mm	90 mm	90 mm	90 mm
Contents (pcs)	500	500	200	200	200	200
Material	Borosilicate					

For NIKON

FOR INVERTED MICROSCOPES

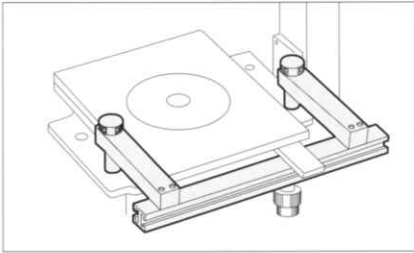
NN-H-3

Type B2



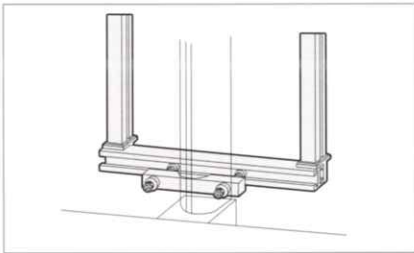
NN-U

Type A



NN-S

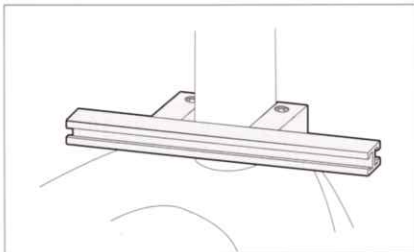
Type B



FOR STEREO MICROSCOPES

NN-T-2

Type B2

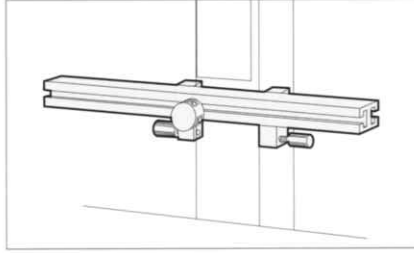


For OLYMPUS

FOR INVERTED MICROSCOPES

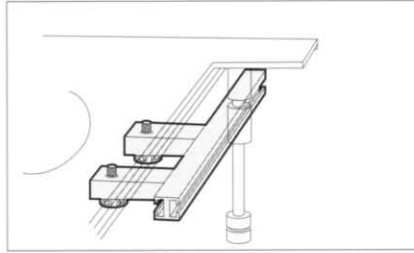
NO-PIX-3

Type B2



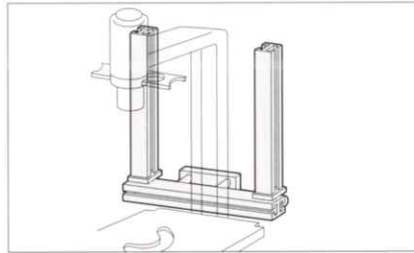
NO-SIX-2

Type A



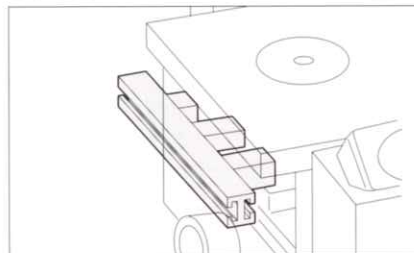
NO-ADK

Type B



NO-AD

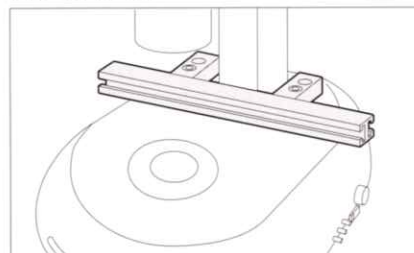
Type A



FOR STEREO MICROSCOPES

NO-SZX2A

Type B2

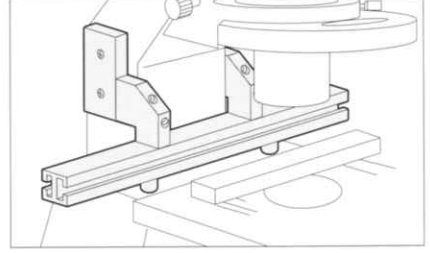


For CARL ZEISS

FOR INVERTED MICROSCOPES

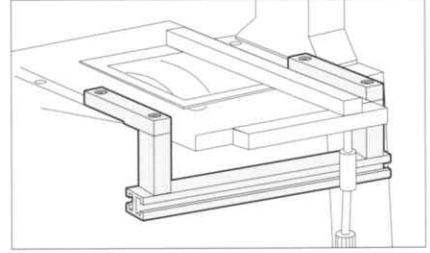
NZ-19

Type B2



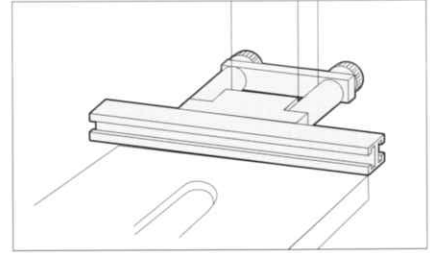
NZ-21

Type A



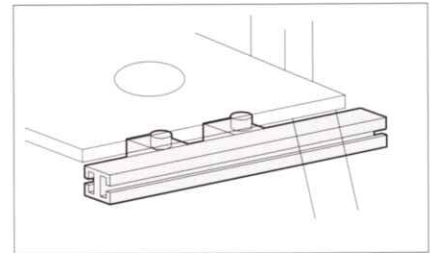
NZ-18

Type B2



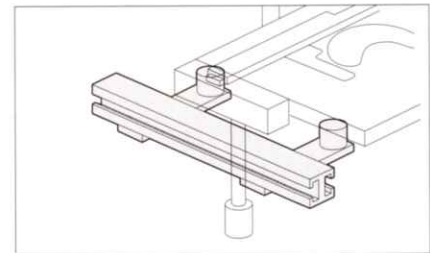
NZ-13

Type A



NZ-131

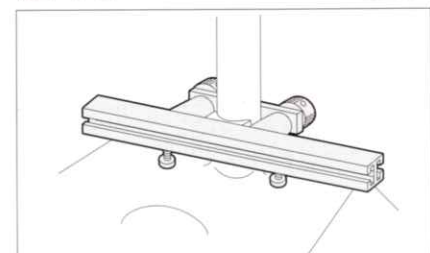
Type A



FOR STEREO MICROSCOPES

NZ-4-2

Type B2

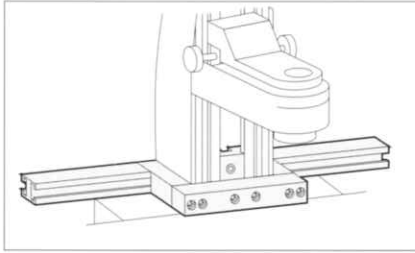


For LEICA

FOR INVERTED MICROSCOPES

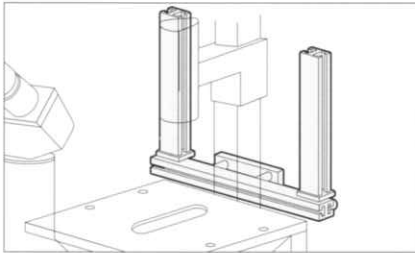
NL-15

Type B2



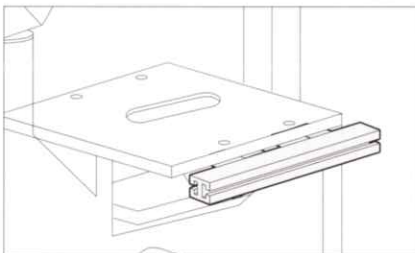
NL-3

Type B



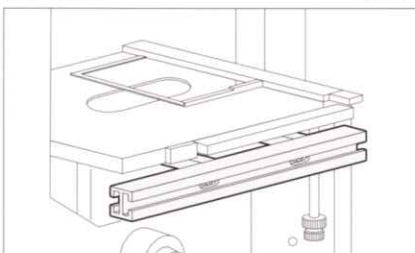
NL-1

Type A



NL-1B

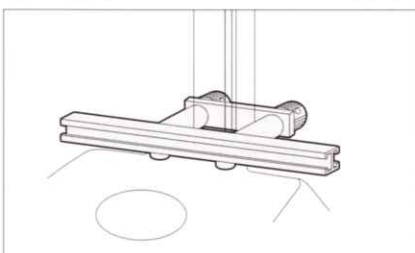
Type A



FOR STEREO MICROSCOPES

NL-10-2

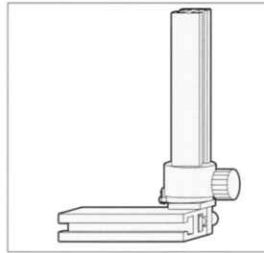
Type B2



* We also provide NR rotatable support for rotating manipulator mounting adaptor pillar and NR2 non-rotatable support.

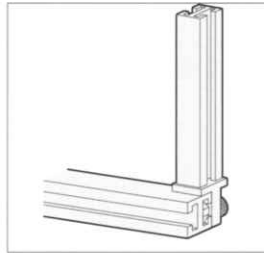
NR

Type B



NR2

Type B



Please select the mounting adaptor best-suited to your needs and manipulators in use.

Type A

Stage side-mounted type to install mechanical manipulators.

Type B & Type B2

Illumination pillar-mounted type to install hydraulic micromanipulators used for microinjection.

CAUTION!

Type B2 is not suitable for the MMN-1 mechanical coarse manipulator.

Nikon Microscope/Adaptor Combinations

Microscope	Type A	Type B	Type B2
Inverted type			
TMD300			NN-H-3*
TE200/TE300			NN-H-3*
TE2000-E/U/S	NN-U		NN-H-3*
TS100		NN-S	
Stereo type			
SMZ1000/1500		NN-T	NN-T-2

* When attaching MMN-1 to NN-H-3 or NN-T-2, please use NR or NR2.

Olympus Microscope/Adaptor Combinations

Microscope	Type A	Type B	Type B2
Inverted type			
CK2/CK30/CK40	NO-AD	NO-ADK	
CKX31/CKX41	NO-AD	NO-ADK	
IX70/50	NO-SIX-2	NO-PIX	NO-PIX-4*
IX71/81	NO-SIX-2	NO-PIX	NO-PIX-3*
Stereo type			
SZX9/SZX10/SZX12/SZX16 (transmitted)			NO-SZX2A*

* When attaching MMN-1 to NO-SZX2A, NO-PIX-3 or NO-PIX-4, please use NR or NR2.

Carl Zeiss Microscope/Adaptor Combinations

Microscope	Type A	Type B	Type B2
Inverted type			
Axiovert35/100/135	NZ-10		
Axiovert25/40	NZ-13/131		NZ-18*
Axiovert200	NZ-21		NZ-19*
Stereo type			
StemiSV6/SV11/1000/2000/2000C/DRC			NZ-4-2

* When attaching MMN-1 to NZ-18, NZ-19 or NZ-4-2, please use NR or NR2.

Leica Microscope/Adaptor Combinations

Microscope	Type A	Type B	Type B2
Inverted type			
DMI3000B/DMI4000B/DMI6000B			NL-15*
DMIL	NL-1/1B	NL-3	
DMIRB/E/DMIRM	NL-5		NL-6-2*
Stereo type			
M55/MZ6/MZ8/MZ12/MZ9.5/MZAPO/MZFL/MZ16/MZ10			NL-10-2*

* When attaching MMN-1 to NL-6-2, NL-10-2 or NL-15, please use NR or NR2.

* Various adaptors for older or discontinued models of microscope are still available. For further information, please contact your local Narishige representative.



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Specifications are subject to change without notice.

Dealer/Distributor