TARFAND
TECHNICAL SOLUTIONS

Cell Manipulation Systems

Serving macroscale ambitions in microscopic world!

Introduction

From agriculture to medicine, we can observe different branches of life science advance and attract more considerations in modern life on a daily basis. Recent progress in biotechnology demands even more sophistication for devices used by researchers and scientists engaged in this field of science.

Micromanipulators are precision devices that transform hand movements into precise, microscopic mechanical displacements. Hence, micromanipulators are essential for cell manipulation such as Intracytoplasmic sperm injection (ICSI), one of the most effective treatments used in assisted reproductive technologies (ART).

Tarfand Technical Solutions, is the most pioneered company in cell manipulation technologies in the West Asia region. With more than ten years of expertise in developing precise motion control systems, our team of innovative engineers has developed a new product line best suited for every cell manipulation application.

While introducing the product range in this catalog, we reassert our commitment to make cell manipulation as easy as possible, and to supply high-performance, high-reliability instruments, and top-tier after sales service. we hope it helps to advance fundamental research in every biological and medical field.

If you already use other micromanipulator brands, we strongly suggest you to request our product presentation and demo to make a comparison. We are also available to support you with a customized solution for your specific cell manipulation requirements.

International Organization for Standardization ISO 13485

International Organization for Standardization ISO 9001

International Organization for Standardization ISO 10002

Applications

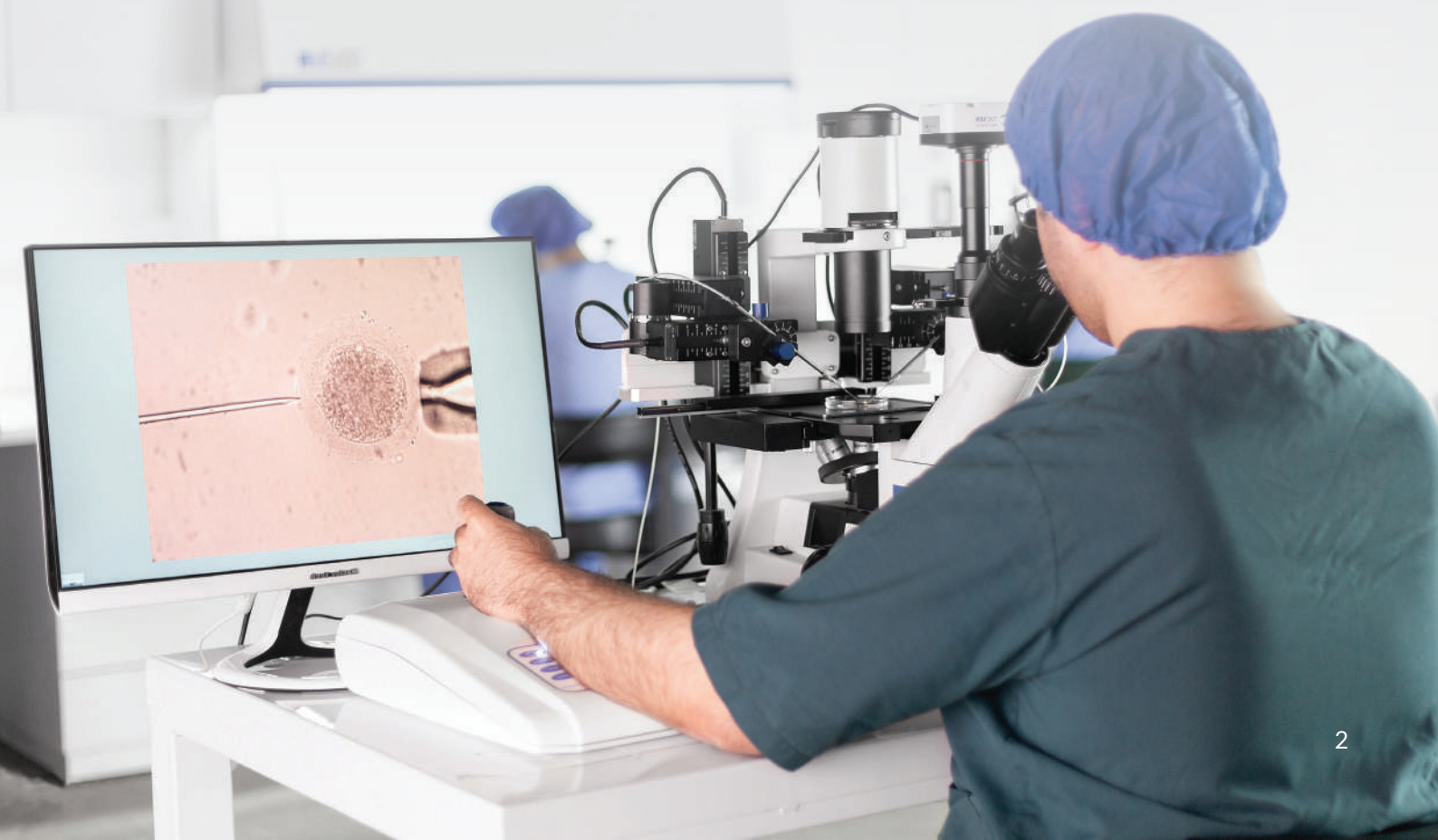
Assisted Reproductive Technology (ART)

The most common application of this system is in ICSI and other related methods. In this technique, sperm is injected into the cytoplasm of the oocyte.

This method is very effective in treating cases where sperm does not have the ability to move and mate with the oocyte.

Tarfand's microinjection workstation is a medical device specifically designed and optimized for ICSI. But there are much more applications. Other applications of this product include the following:

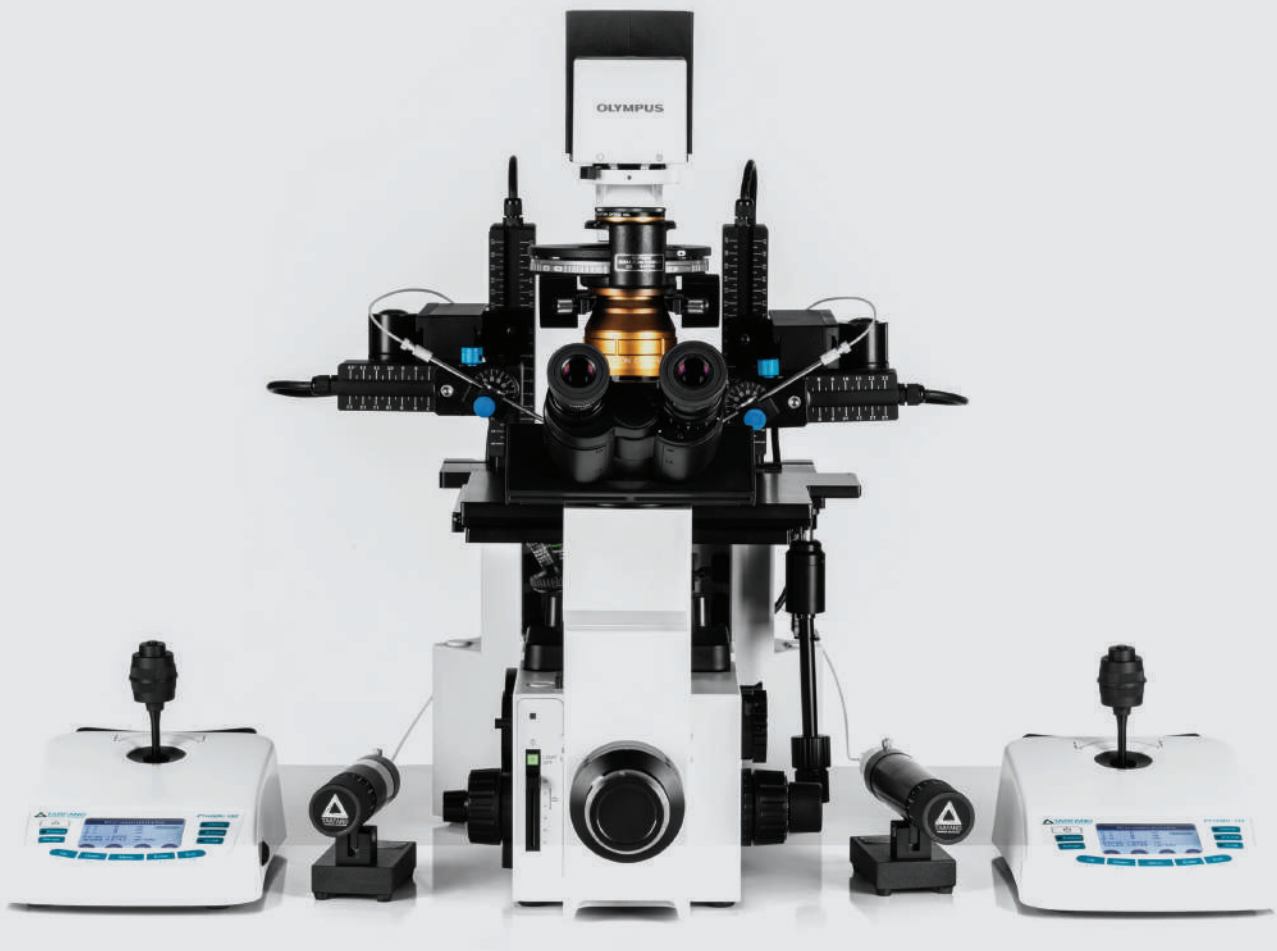
- Selection of individual cells (e.g., biopsies, single cell picking)
- Generation of transgenic animals (e.g., zebra fish)
- Stem cell research
- Nuclear transfer
- Positioning and selection of micro particles
- Microdissection of chromosomes, etc.



Microinjection Workstation

Includes of:

Title	Descriptions
2x Prolific® G2	one for moving the holding capillary and another for collecting and transferring the spermatozoa
1x Prolifusion® Oil	microinjector for transferring the sperm
1x Prolifusion® Air	microinjector for holding the oocyte
2x MNH-200	capillary holder for each microinjector
1x Microscope Adapter	for inverted microscope
1x Inverted microscope	equipped with Modulation Contrast or DIC, equipped with 10x, 20x and 40x objectives
1x AVT-100	Anti-vibration table



The Prolific® G2 was designed and manufactured for the purpose of intracytoplasmic sperm injection (ICSI) within the context of human reproductive medicine. Therefore the Prolific® G2 is a medical product in accordance with the guidelines and regulations of National Medical Device Directorate (IMED) of the Health Medical Education Ministry of IR. Iran.

IMED
National Medical
Device Directorate IR.IRAN

Prolific® G2

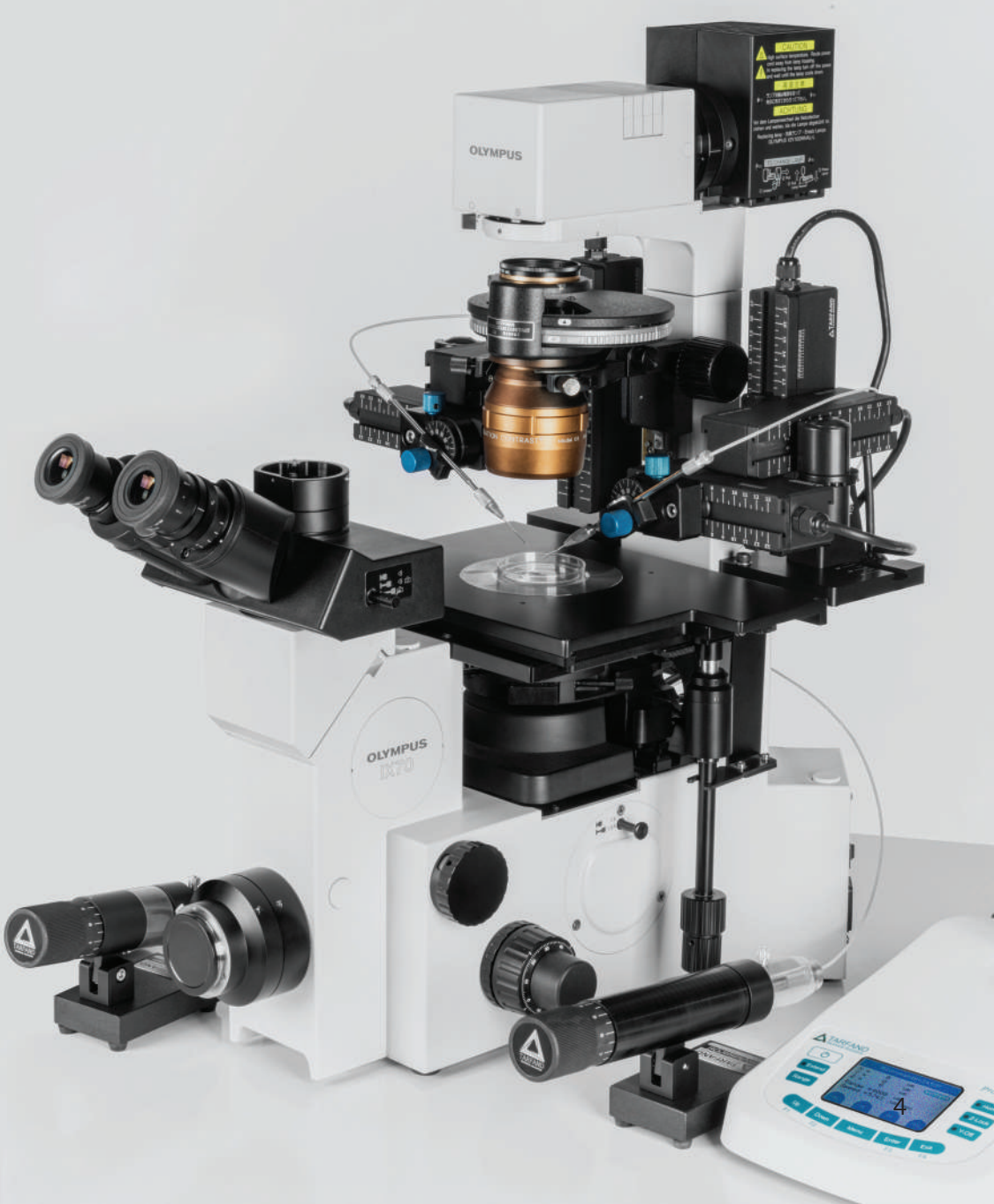
Fast but gentle at the same time!

We have developed our electrical micromanipulator ***Prolific® G2*** specifically for high demanding cell manipulation applications. It is designed to meet strict requirements of the in vitro fertilization (IVF) centers.

Our competent team of engineers has enjoyed the advantage of consulting with some of the most prominent embryologists and IVF experts prior and during the development phase of this product.

We understand the two main concerns of ICSI specialists. While your precious cells should not be stressed or experience any traumatic shock, there is a continuous struggle to cope with the heavy workload of your clinic.

Considering this, built-in functions embedded in the control interface will help you speed up the sample handling process. Furthermore, improved joint mechanism and angle head design allow rapid capillary set-up and replacement.



Prolific® G2

Manipulator Module

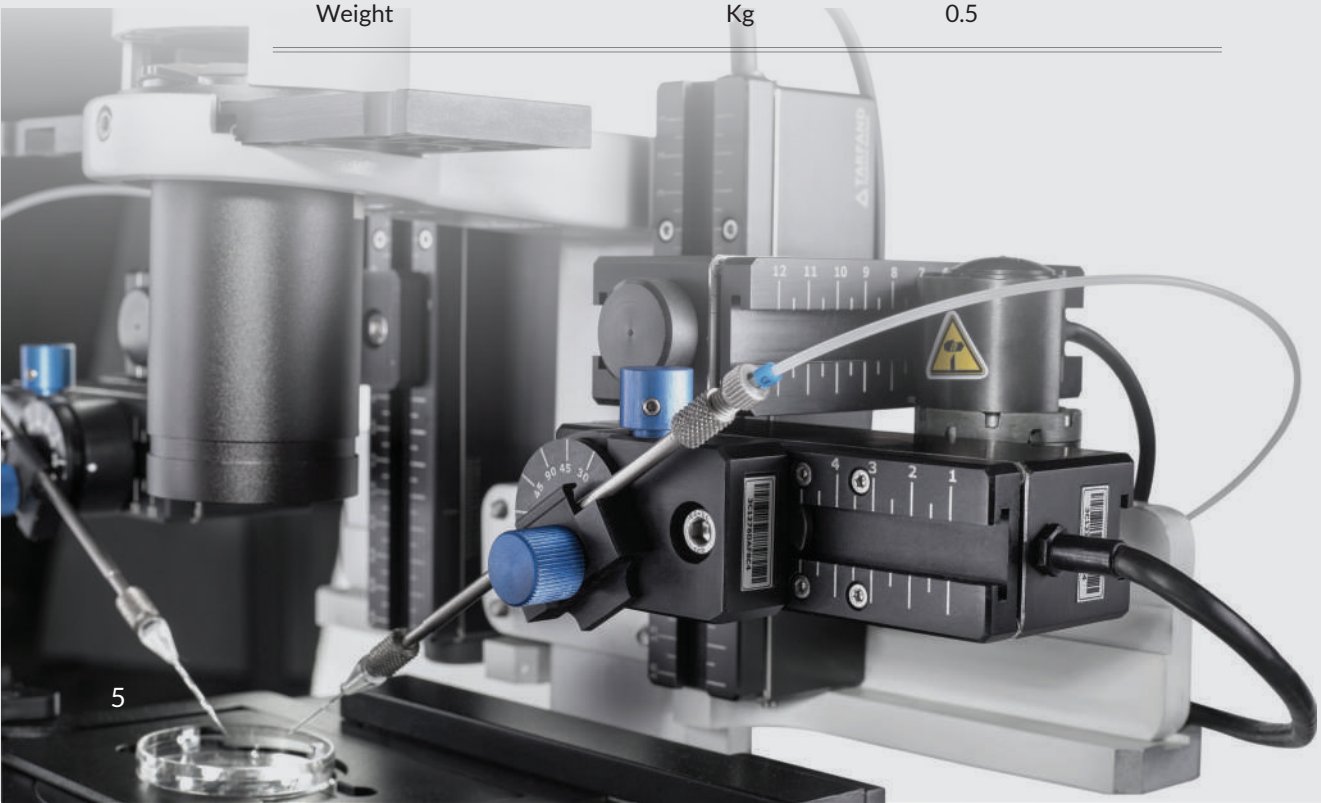
With years of expertise in designing and implementing linear and rotary positioning stages, Tarfand has integrated its most reliable and precise linear actuators into a 3-axis electrical micromanipulation unit. ***Prolific® G2*** manipulator module is engineered exceptionally to ensure its extraordinary performance, impressive compactness and perfect accessibility.

Each manipulator module will secure the position of a glass capillary or micropipette. The unit's ergonomic design has made it a user-friendly device and minimizes the risk of unintentional capillary breakage. Mounting new capillary or adjusting capillary angle is single-handedly done by just turning two well-positioned knobs.

Key features:

- Simple installation and maintenance
- Reliable, smooth and precise performance
- Simple capillary holder mounting
- Swivel joint allows easy capillary exchange
- Easily adjustable capillary angle (0° up to 90°)
- Adaptability with all available microscope models of major brands

Title	Unit	Descriptions
Motor Type		5-Phase Stepping
Maximum travel	mm	20
Dimensions	mm	36 × 50 × 140
Step size (theoretical)	nm	20
Max. Speed	mm/s	7
Weight	Kg	0.5



Control Module

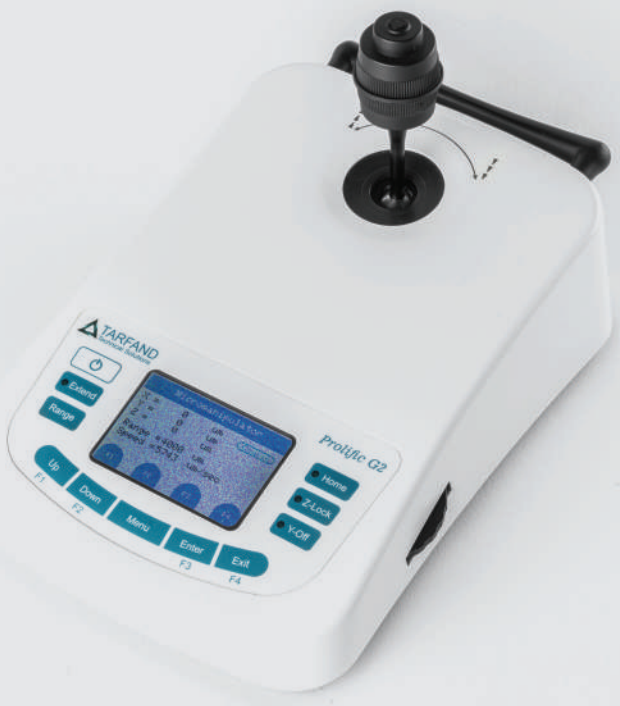
Prolific® G2 has the privilege of utilizing a robust and well-engineered control module. Control module is equipped with our highly durable joystick. HJS100 is a 3-axis finger joystick based on contactless Hall effect technology.

Its dual function combines the traditional proportional kinetics at central zone with spring-back dynamic kinetics at outer boundary zone. Our joystick also has a thumb button for clutching action in the proportional zone.

Key features:

- Innovative and ergonomic shape allows lengthy operations with less fatigue
- User-friendly menu
- Highly-durable dual-function joystick with clutch operation
- Avoiding unintentional capillary breakage by Z-Lock function
- More gentle penetration by Y-off function
- More automation using four independent position memory functions and Home function

Title	Unit	Descriptions
Joystick type		Dual function 3-axis joystick with clutch operation
Control type		Speed control: Dynamic zone / Positon control: Proportional zone
Motion mode		Coarse, Fine, X-fine
Weight	kg	2.0
Dimensions	mm	76 × 240 × 350



Prolifusion® Oil

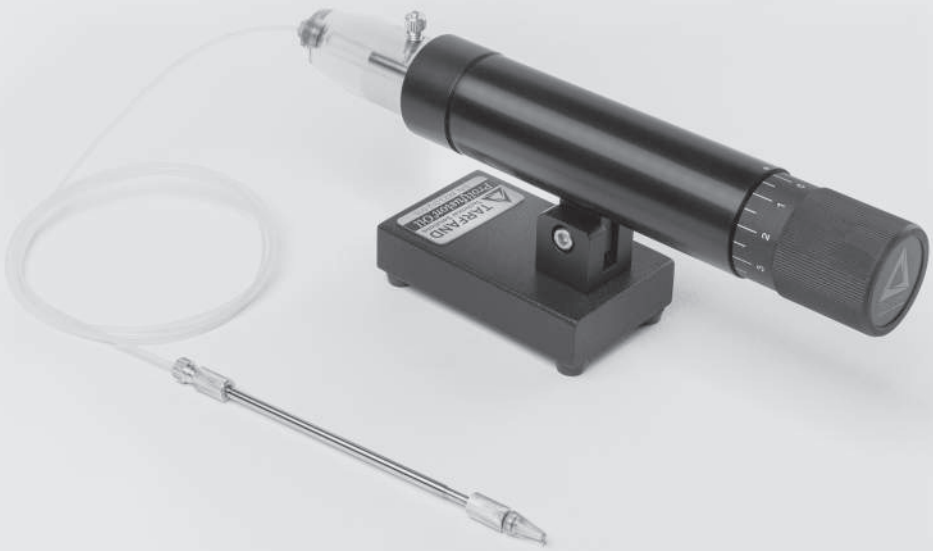
Tarfand's manual oil microinjector, *Prolifusion*® Oil, is our unique solution for all injection applications requiring precision and sensitivity.

Prolifusion® Oil features an excellent sealing system which enables friction-free motion and minimizes oil leakage.

Key features:

- Easy oil filling and dispensing
- Fine and coarse dials to balance between resolution and sensitivity
- Sub-microliter precision
- Biologically compatible materials
- Durable transparent oil chamber eases bubble elimination
- Stiction free piston-cylinder system

Title	Unit	Descriptions
Micro injector		Prolifusion® Oil
Working media		Oil
Mechanism		Cylinder and piston system Coarse and fine dials
Volume change per revolution (coarse)	µL	10
Volume change per revolution (fine)	µL	1
Cylinder volume	mL	10
Minimum adjustable volume	nL	100
Maximum pressure	bar	15



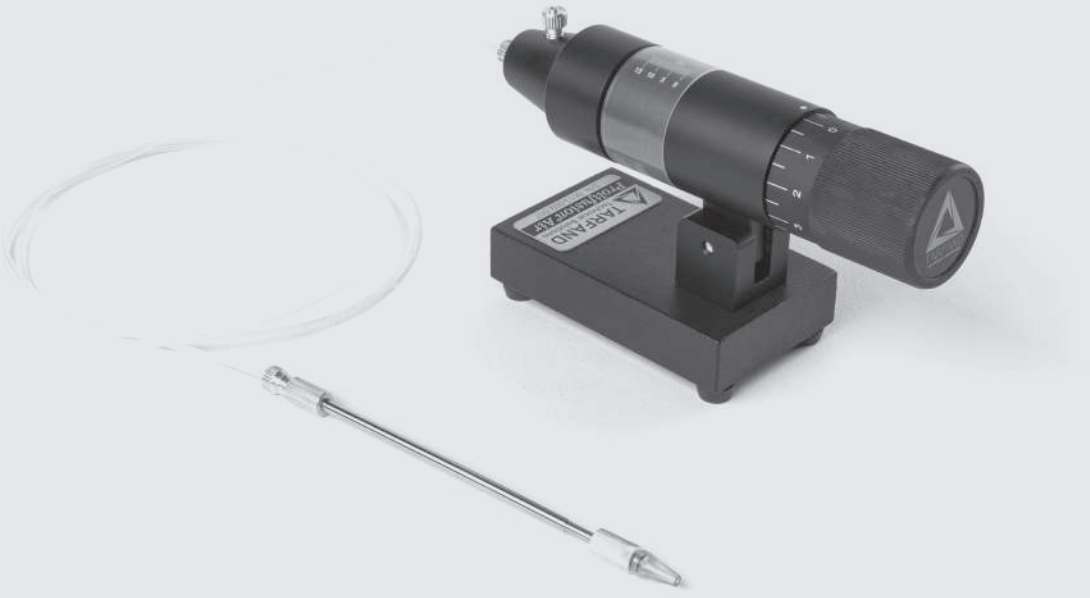
Prolifusion® Air

Tarfand's manual pneumatic microinjector, *Prolifusion*® Air, is our unique solution for holding suspension cells (e.g., oocytes and embryos) in place. For it is entirely oil-free, it features excellent operational and maintenance characteristics.
Prolifusion® Air features superb sealing system that enables stiction-free motion.

Key features:

- Easy to use, no leakage, no filling!
- Large ergonomic dial provides operational comfort
- Piston position scale for better adjusting performance characteristics
- Stiction free piston-cylinder system
- Biologically compatible materials

Title	Unit	Descriptions
Micro injector		Prolifusion® Air
Working media		Air
Mechanism		Cylinder and piston system
Volume change per revolution	µL	600
Cylinder volume	mL	10
Minimum adjustable volume	nL	100
Maximum pressure	bar	3



Accessories

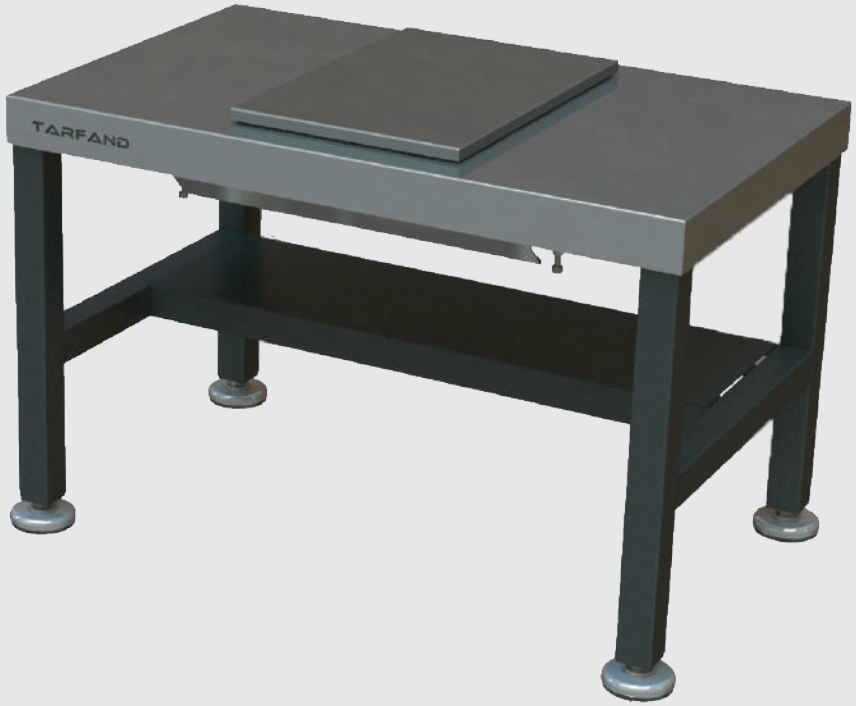
Anti-vibration table

Extreme environmental vibrations can harm your microinjection performance and degrade your results.

Our AVT-100 passive anti-vibration table can protect your cell manipulation quality effectively and economically. Also, it pleasantly accommodates your entire microinjection workstation.

Key features:

- Easy to set up with two separate parts
- Easy to use and maintenance-free
- Large float surface compatible with prevalent microscopes
- Adjustable leveling feet
- Polished stainless steel surface



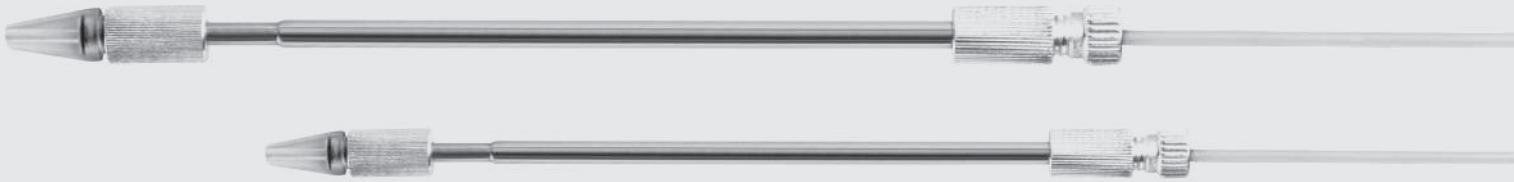
Accessories

Capillary Holder

MNH-200 proper function has an essential role in microinjection set-ups. Excellent torsional strength saves this miniature part from unintentional breakage. Transparency makes it easy to eliminate undesirable air bubbles.
The tandem use of two O-rings enables a reliable and no-leakage grip while simplifying the entire process of capillary exchange.

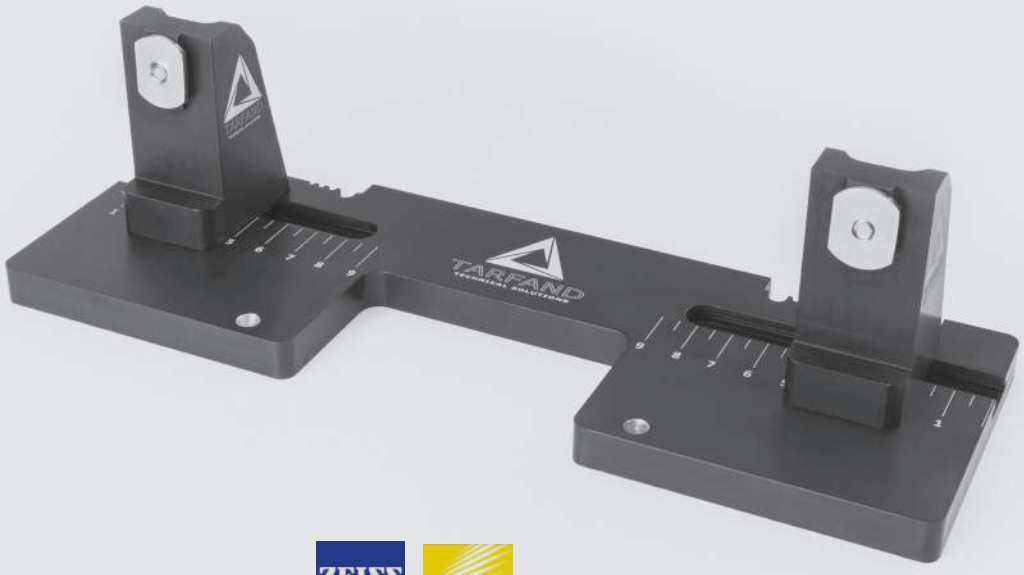
Key features:

- Excellent durability
- Tight grip with no leakage
- Customizable grip head for various capillaries
- Transparent grip head



Microscope Adapters

There is no need to worry about microscope choice and compatibility. Tell us about your microscope instrument model and we will provide you with adapters that meet your requirement.



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