



# Dynabeads<sup>®</sup> Sample Mixers

Designed to provide optimal sample processing

Catalog nos. 159-07, 158-08, 159-10, 159-15D, and 947-01

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User Manual



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# Products and Components

**Products Covered** This manual is shipped with the following products:

Product	Catalog no.
Dynabeads® MX1 Mixer	159-07
Dynabeads® MX2 Mixer	159-08
Dynabeads® MX4 Mixer	159-10
Dynabeads® MX7 Mixer	159-15D
Dynabeads® Rotator Mixer (for use in North America only)	947-01
Dynabeads® MX Mixer Body	159-02

**Parts Shipped with Each Product** The following table lists the parts included with each Dynabeads® Mixer. Parts that are also available separately are listed with a catalog number.

Component	Supplied with Dynabeads® Mixer:				
	MX1 (159-07)	MX2 (159-08)	MX4 (159-10)	MX7 (159-15D)	Rotator* (947-01)
Dynabeads® MX Mixer Body (Catalog no. 159-02)	•	•	•	•	—
Power Adapter and Interchangeable Plugs	•	•	•	•	—
Turret (Catalog no. 159-06)	•	•	—	—	—
12-tube Mixing Wheel (Catalog no. 159-03)	•	—	—	—	—
8-tube Mixing Wheel (Catalog no. 159-04)	—	•	—	—	—
Dynal MPC®-S Mixing Wheel (Catalog no. 159-11)	—	—	•	—	—
Dynal MPC®-6 Semi-Automated Mixing Head (Catalog no. 159-14D)	—	—	—	•	—
Mixing Rod (accommodates 12 10–15-ml tubes or 14 1.5-ml tubes)	—	—	—	—	•
Standard power cord	—	—	—	—	•

\*Additional accessories are available separately for the Dynabeads® Rotator Mixer; see page 5.

**Upon Receiving the Mixer** Examine the unit carefully for any damage incurred during transit. Any damage claims must be filed with the carrier. The warranty does not cover in-transit damage.



The WEEE (Waste Electrical and Electronic Equipment) symbol indicates that these products should not be disposed of in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of WEEE. Visit [www.invitrogen.com/weee](http://www.invitrogen.com/weee) for collection and recycling options.

## Accessory Products

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### Dynal Magnetic Particle Concentrators (MPC<sup>®</sup>s)

The Dynal Magnetic Particle Concentrators (Dynal MPC<sup>®</sup>s) listed below are powerful magnets designed to work in combination with Dynabeads<sup>®</sup>, as described in the user manual supplied with your Dynabeads<sup>®</sup> kit. Ordering information is provided below.

For more information, visit our Web site at [www.invitrogen.com](http://www.invitrogen.com) or contact Technical Support (page 21).

Product	Optimal Working Volume	Catalog no.
Dynal MPC <sup>®</sup> -1	5 ml–50 ml	120-01D
Dynal MPC <sup>®</sup> -6	5–15 ml	120-02D
Dynal MPC <sup>®</sup> -S	20 µl–2 ml	A13346

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### Dynabeads<sup>®</sup> MX Mixer Parts

The following parts for use with Dynabeads<sup>®</sup> MX Mixers can be ordered separately.

For more information, visit our Web site at [www.invitrogen.com](http://www.invitrogen.com) or contact Technical Support (page 21).

Product	Catalog no.
Dynabeads <sup>®</sup> MX Mixer body	159-02
Turret	159-06
12-tube Mixing Wheel	159-03
8-tube Mixing Wheel	159-04
Dynal MPC <sup>®</sup> -S Mixing Wheel	159-11
Dynal MPC <sup>®</sup> -6 Semi-Automated Mixing Head	159-14D

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### Dynabeads<sup>®</sup> Rotator Mixer Accessories

The following accessories for use with the Dynabeads<sup>®</sup> Rotator Mixer (Catalog no. 947-01) can be ordered separately.

For more information, visit our Web site at [www.invitrogen.com](http://www.invitrogen.com) or contact Technical Support (page 21).

Product	Catalog no.
Mixing Rod (for holding 14 30–50-ml tubes)	947-02
Platform (for holding 3 Dynal MPC <sup>®</sup> -S magnets)	947-03

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# Features and Specifications

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## Intended Use

Dynabeads® are a leading magnetic separation technology for the capture, purification, and concentration of selected targets from biological samples. Dynabeads® Sample Mixers have been designed to provide continuous gentle tilting and rotational motion for optimal binding of Dynabeads® with a specified target in a sample.

Dynabeads® Mixers come in a variety of formats and attachments to accommodate a range of sample tube sizes and numbers, as well as magnets. Dynabeads® MX Mixers utilize a mixing wheel to hold the sample tubes/magnets, while the Dynabeads® Rotator Mixer uses a mixing rod design for end-over-end rotational mixing. The mixers are suitable for use in both cold rooms and incubators.

For research use only. Not intended for human or animal therapeutic or diagnostic use.

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## MX Mixer Features

The Dynabeads® MX Mixers are available in four different mixing wheel sizes:

- MX1 mixer is provided with a 12-sample tube mixing wheel for 1.5-ml microcentrifuge tubes and tubes up to 17 mm in diameter.
  - MX2 mixer is provided with an 8-sample tube mixing wheel for tubes ranging from 15 to 27 mm in diameter.
  - MX4 mixer is provided with a mixing wheel specifically designed to hold two Dynal MPC®-S magnets. This unit has the capacity to mix up to 12-microcentrifuge tubes at one time.
  - MX7 mixer is provided with a mixing wheel specifically designed to hold either one Dynal MPC®-6 magnet or one Dynal MPC®-S magnet. This unit has the capacity to mix up to six microcentrifuge tubes or six 17 mm tubes at one time.
- 

## Rotator Mixer Features

The Dynabeads® Rotator Mixer:

- Provides end-over-end rotation for all types of mixing and separation protocols in the laboratory.
- Comes with a mixing rod to accommodate 14 1.5-ml tubes or 12 10–15-ml tubes.

In addition, the following attachments are available separately (see page 5):

- A mixing rod to accommodate 14 30–50-ml tubes (catalog no. 947-02)
  - A platform with a 96-well microcentrifuge plate holder that can also accommodate three Dynal MPC®-S magnets (catalog no. 947-03).
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## Features and Specifications, continued

### Dynabeads® MX Mixer Base

<b>Dimensions:</b>	20 × 15 × 25 cm (6 × 6 × 10 in)
<b>Weight:</b>	2.5 lbs (1165 g)
<b>Composition of Casing:</b>	High impact ABS
<b>Electrical Requirements:</b>	12V DC power, supplied by a wall mounted transformer unit (fully approved with a CE mark)
<b>Operating speeds:</b>	0–40 rpm
<b>Operating temperature:</b>	4–37°C and 80% RH
<b>Input:</b>	12V DC @ 500 mA

### Power Adapter and Interchangeable Plugs (supplied with MX Mixers)

<b>Description:</b>	Wall plug-in switching power supply, 25 watts
<b>Regions supported by plugs:</b>	North America, Europe, United Kingdom and Australia
<b>Input voltage:</b>	100–240 VAC
<b>Input current:</b>	< 0.6 A RMS MAX
<b>Output voltage:</b>	12V DC
<b>Output current:</b>	12V @2.08A

### Dynabeads® Rotator Mixer (for use in North America only)

<b>Dimensions:</b>	43.5 × 12 × 15 cm (16.5 × 4.75 × 6 in)
<b>Weight:</b>	5.0 lbs (2290 g)
<b>Composition of Casing:</b>	Steel
<b>Electrical Requirements:</b>	12V DC power, supplied by a wall mounted transformer unit (fully approved with a CE mark)
<b>Operating speeds:</b>	0–80 rpm
<b>Operating temperature:</b>	4–42°C and 80% RH
<b>Input:</b>	12V DC @ 500 mA

### Safety Information



- The power adapter supplied with the MX Mixers must have the correct interchangeable plug installed prior to use (see page 6).
- The power cord must be connected to an appropriately grounded electrical outlet meeting the voltage specifications described above to protect against the risk of electrical shock and protect the mixer from damage.
- The mixer is not designed to be serviced by the purchaser. Do not attempt to open the mixer body.

# Power Adapter and Interchangeable Plugs

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## Description

The power adapter provided with the Dynabeads® MX Series of mixers comes with four interchangeable plugs for operation in different geographic locations.

Check the power adapter plugs to ensure that one of them is compatible with your local socket format. If you cannot find a plug that fits the socket, contact Invitrogen Technical Support (see page 22).



## Installing a Plug in the Adapter

1. Remove the protective insert from the power adapter by sliding the spring-loaded locking key downward and pulling up on the protective insert. The locking key is marked with an arrow.



2. Choose the plug you need. Plugs are provided for standard power outlets in North America, Europe, United Kingdom, and Australia.
3. Insert the tip of the plug assembly into the power adapter at a 30–60 degree angle. The top edge of the plug assembly is flat and the bottom edge is U-shaped. The power adapter has a corresponding shape.
4. Push the plug assembly into the power adapter in a downward motion until it locks in place with an audible “click.”



5. Check the plug assembly for correct insertion by holding the power cord with one hand and gently pulling on the plug.

## Removing a Plug

To remove the plug from the power adapter, slide the locking key downward and pull the plug out.

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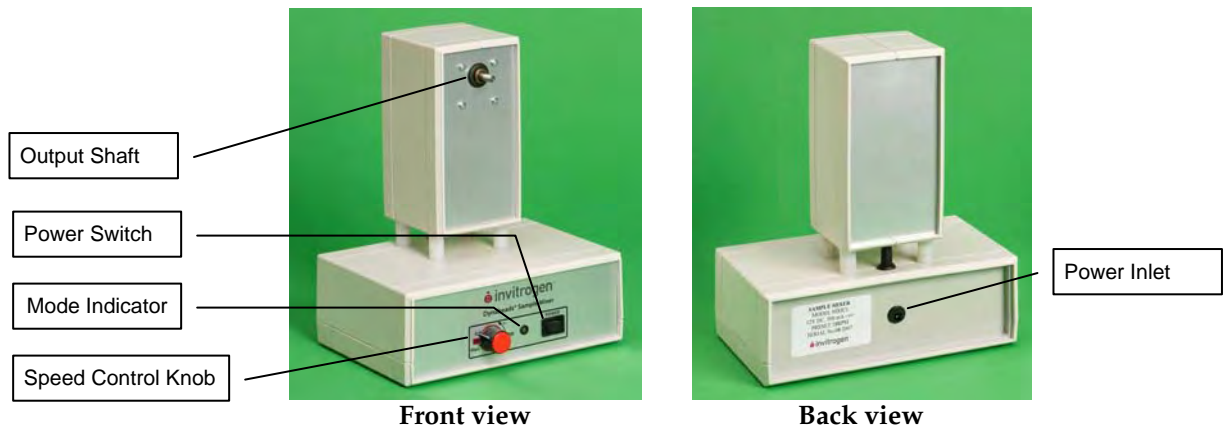


# Dynabeads<sup>®</sup> MX Mixer Base

## Features of the MX Mixer Base

The Dynabeads<sup>®</sup> MX Mixer Base is a common component of all four Dynabeads<sup>®</sup> MX Mixers. The main features of the base are described below:

- **Power Switch** — used to turn the instrument on and off.
- **Speed Control Knob** — used to adjust the operating speed.
- **Mode Indicator** light — indicates whether the mixer is operating with fixed or variable speed rotation.
- **Output Shaft** — used to attach that mixer wheels and mixer heads to the motor of the mixer base. The flat surface on the shaft is used to align the mixer wheels and mixer heads.
- **Power Inlet** — the connection point for the supplied power adapter.



## Note

- Plug the power adapter into the power inlet on the Dynabeads<sup>®</sup> MX Mixer Base using a gentle twisting motion while pushing. *Do not force the connector into place; doing so will cause damage to the power port!*
- When operating the Dynabeads<sup>®</sup> MX Mixer, place it on a solid surface and away from items that can become entangled in output shaft.

## Adjusting the Speed Control Knob

The **Speed Control Knob** on the front panel of the MX Mixer Base is used to adjust the operating speed. The mixer can operate at a fixed speed of 18 rpm or the knob can be adjusted to vary the speed.

- **Fixed Speed operation:** Turn the speed control knob *counterclockwise* to the number 18. The **Mode Indicator** will glow **GREEN**, indicating that the output shaft is rotating at a fixed speed of 18 rpm.
- **Variable Speed operation:** Turn the speed control knob *clockwise*. The **Mode Indicator** will glow **RED**, indicating that the base is in variable speed mode. Adjust the speed control knob to vary the speed of the output shaft between 0 and approximately 40 rpm.

**Note:** All RPMs regulated by the speed control knob are approximate and depend on the mixer head or wheel utilized and the weight and number of samples. Actual RPMs should be verified by the user.

# Dynabeads<sup>®</sup> MX1 Mixer

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## Introduction

This section describes assembly and use of the Dynabeads<sup>®</sup> MX1 Mixer.

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## Sample Tube Specifications

The Dynabeads<sup>®</sup> MX1 Mixer is supplied with a 12-tube Mixing Wheel for mixing up to 12 samples at a time. Tube sizes can range from 1.5-ml microcentrifuge tubes to tubes up to 17 mm in diameter.

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## Components

The following components are provided with the Dynabeads<sup>®</sup> MX1 Mixer:

- Dynabeads<sup>®</sup> MX Mixer Base
  - Turret
  - 12-tube Mixing Wheel
  - Power adapter and interchangeable plugs
- 

## Assembling the 12-tube Mixing Wheel and Mixer Base

1. On the Turret, remove the large plastic nut used to affix the 12-tube Mixing Wheel.
2. If necessary, use a screwdriver to loosen the metal locking screw on the end of the Turret sleeve so that the Turret can easily slide onto the output shaft on the Dynabeads<sup>®</sup> MX Mixer Base.
3. Carefully align the Turret sleeve over the output shaft so that the screw lines up with the flat side of the shaft. Slide the Turret onto the shaft and push down until it is flush with Dynabeads<sup>®</sup> MX Mixer Base.
4. Tighten the locking screw on the Turret with a screwdriver.
5. The opening at the center of the Mixing Wheel is wider on one side than the other. Align the *narrow opening* on the 12-tube Mixing Wheel with the Turret and gently slide the wheel onto the Turret until fully inserted.
6. Replace the plastic nut on the Turret and tighten until snug.

The Dynabeads<sup>®</sup> MX1 Mixer is now ready for use.

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**Bottom of turret with locking screw**



**Attaching the turret**

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# Dynabeads<sup>®</sup> MX1 Mixer, continued

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## Using the Mixer

After you have prepared your samples with Dynabeads<sup>®</sup>, use the Dynabeads<sup>®</sup> MX1 Mixer as described below.

*Note:* See the Dynabeads<sup>®</sup> protocol for mixing times and procedures.

1. Place the sealed tubes containing samples and Dynabeads<sup>®</sup> into the slots on the 12-tube Mixing Wheel. Insert each tube through the spring in the Mixing Wheel hole to the point of ~50% insertion.
2. After all tubes are inserted, press the Power Switch on the mixer to turn it on and turn the Speed Control Knob to the desired rotational speed.
3. After mixing, press the Power Switch on the mixer to turn it off. Remove the sample tubes from the mixer and place in a magnetic device for bead capture and removal of materials, as described in the Dynabeads<sup>®</sup> protocol.



Mixing Wheel with 1.5-ml tubes



Mixing Wheel with 15-ml tubes

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# Dynabeads<sup>®</sup> MX2 Mixer

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## Introduction

This section describes assembly and use of the Dynabeads<sup>®</sup> MX2 Mixer.

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## Sample Tube Specifications

The Dynabeads<sup>®</sup> MX2 Mixer is supplied with an 8-tube Mixing Wheel for mixing up to 8 samples at a time. Tube sizes can range from 15 to 27 mm in diameter.

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## Components

The following components are provided with the Dynabeads<sup>®</sup> MX2 Mixer:

- Dynabeads<sup>®</sup> MX Mixer Base
  - Turret
  - 8-tube Mixing Wheel
  - Power adapter and interchangeable plugs
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## Assembling the 8-tube Mixing Wheel and Mixer Base

1. On the Turret, remove the large plastic nut used to affix the Mixing Wheel.
2. If necessary, use a screwdriver to loosen the metal locking screw on the bottom of the Turret sleeve so that the Turret can easily slide onto the output shaft on the Dynabeads<sup>®</sup> MX Mixer Base.
3. Carefully align the Turret sleeve over the output shaft so that the screw lines up with the flat side of the shaft. Slide the Turret onto the shaft and push down until it is flush with Dynabeads<sup>®</sup> MX Mixer Base.
4. Tighten the locking screw on the Turret with a screwdriver.
5. The opening at the center of the Mixing Wheel is wider on one side than the other. Align the *narrow opening* on the Mixing Wheel with the Turret and gently slide the wheel onto the Turret until fully inserted.
6. Replace the plastic nut on the Turret and tighten until snug.

The Dynabeads<sup>®</sup> MX2 Mixer is now ready to use.



**Bottom of turret with locking screw**



**Attaching the turret**

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# Dynabeads<sup>®</sup> MX2 Mixer, continued

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## Using the Mixer

After you have prepared your samples with Dynabeads<sup>®</sup>, use the Dynabeads<sup>®</sup> MX2 Mixer as described below.

*Note:* See the Dynabeads<sup>®</sup> protocol for mixing times and procedures.

1. Place the sealed tubes containing samples and Dynabeads<sup>®</sup> into the slots on the 8-tube Mixing Wheel. Insert each tube through the spring in the Mixing Wheel hole to the point of ~50% insertion.
2. After all tubes are inserted, press the Power Switch on the mixer to turn it on and turn the Speed Control Knob to the desired rotational speed.
3. After mixing, press the Power Switch on the mixer to turn it off. Remove the sample tubes from the mixer and place in a magnetic device for bead capture and removal of materials, as described in the Dynabeads<sup>®</sup> protocol.



Mixing Wheel with 50-ml tubes

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# Dynabeads<sup>®</sup> MX4 Mixer

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## Introduction

This section describes assembly and use of the Dynabeads<sup>®</sup> MX4 Mixer.

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## Magnet and Sample Tube Specifications

The Dynabeads<sup>®</sup> MX4 Mixer is supplied with an Dynal MPC<sup>®</sup>-S Mixing Wheel for holding two Dynal MPC<sup>®</sup>-S magnets (sold separately) at one time. This provides the capacity to mix up to 12 microcentrifuge tubes at one time.

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## Components

The following components are provided with the Dynabeads<sup>®</sup> MX4 Mixer:

- Dynabeads<sup>®</sup> MX Mixer Base
  - Dynal MPC<sup>®</sup>-S Mixing Wheel
  - Power adapter and interchangeable plugs
- 

## Components Supplied by the User

Two Dynal MPC<sup>®</sup>-S magnets are required for use with the mixer (see ordering information on page 5). Both magnets should be inserted in the mixer during operation to ensure that the mixer is balanced, even if only one magnet contains sample tubes.

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## Assembling the Dynal MPC<sup>®</sup>-S Mixing Wheel and Mixer Base

1. The back of the Dynal MPC<sup>®</sup>-S Mixing Wheel has a center sleeve with a locking screw in which the output shaft on the Dynabeads<sup>®</sup> MX Mixer Base is inserted. If necessary, use a screwdriver to loosen the screw so that the output shaft may be inserted in the sleeve.
2. Carefully align the sleeve with the output shaft so that the screw lines up with the flat side of the shaft. Slide the Dynal MPC<sup>®</sup>-S Mixing Wheel onto the shaft and push down until it is flush with Dynabeads<sup>®</sup> MX Mixer Base.
3. Tighten the locking screw with a screwdriver.

The Dynabeads<sup>®</sup> MX4 Mixer is now ready for use.



**Back of mixing wheel with locking screw**



**Attaching the mixing wheel**

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## Dynabeads<sup>®</sup> MX4 Mixer, continued

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### Using the Dynabeads<sup>®</sup> MX4 Mixer, continued

After you have prepared your samples with Dynabeads<sup>®</sup>, use the Dynabeads<sup>®</sup> MX4 Mixer as described below.

*Note:* See the Dynabeads<sup>®</sup> protocol for mixing times and procedures.

1. Place the sealed tubes containing samples and Dynabeads<sup>®</sup> into the slots of a Dynal MPC<sup>®</sup>-S magnet. Each Dynal MPC<sup>®</sup>-S magnet has the capacity to mix up to six microcentrifuge tubes at one time. The Dynal MPC<sup>®</sup>-S Mixing Wheel is designed to hold two Dynal MPC<sup>®</sup>-S magnets.

*Note:* The magnetic strip in each magnet can be removed or remain in place during mixing. Both magnets should be inserted in the mixer during operation to ensure that the mixer is balanced, even if only one magnet contains sample tubes.

2. Position the Dynal MPC<sup>®</sup>-S Mixing Wheel so that one of the two spring-loaded locking pins is in the top position.
3. Pull the spring-loaded locking pin back and insert a Dynal MPC<sup>®</sup>-S magnet in the plate holder. The small notch on the top of the magnet should be aligned with the locking pin. Release the pin to secure the magnet.
4. Insert the other magnet in the plate holder in the same manner.

*Note:* Both magnets should be inserted in the mixer during operation to ensure that the mixer is balanced. However, both magnets do not need to contain sample tubes.

5. After the magnets are locked in position, press the Power Switch on the mixer to turn it on and adjust the Speed Control Knob to the desired rotational speed.
6. After mixing, press the Power Switch on the mixer to turn it off and proceed with bead capture and removal of materials, as described in the Dynabeads<sup>®</sup> protocol.



MX4 Mixer with Dynal MPC<sup>®</sup>-S magnet

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# Dynabeads<sup>®</sup> MX7 Mixer

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## Introduction

This section describes assembly and use of the Dynabeads<sup>®</sup> MX7 Mixer.

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## Magnet and Sample Tube Specifications

The Dynabeads<sup>®</sup> MX7 Mixer is supplied with a Dynal MPC<sup>®</sup>-6 Semi-Automated Mixing Wheel for holding either a Dynal MPC<sup>®</sup>-S magnet or a Dynal MPC<sup>®</sup>-6 magnet.

The Dynal MPC<sup>®</sup>-S magnet has the capacity to mix up to six microcentrifuge tubes and the Dynal MPC<sup>®</sup>-6 magnet has the capacity to mix up to six 17-mm tubes at one time.

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## Components

The following components are provided with the Dynabeads<sup>®</sup> MX7 Mixer:

- Dynabeads<sup>®</sup> MX Mixer Base
  - Dynal MPC<sup>®</sup>-6 Semi-Automated Mixing Wheel
  - Power adapter and interchangeable plugs
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## Components Supplied by the User

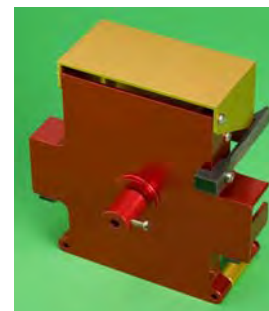
A Dynal MPC<sup>®</sup>-S or Dynal MPC<sup>®</sup>-6 magnet is required for use with the mixer (see ordering information on page 5).

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## Assembling the Dynal MPC<sup>®</sup>-6 Semi-Automated Mixing Wheel and Mixer Base

1. The back of the Dynal MPC<sup>®</sup>-6 Semi-Automated Mixing Wheel has a sleeve with a locking screw in which the output shaft on the Dynabeads<sup>®</sup> MX Mixer Base is inserted. If necessary, use a screwdriver to loosen the metal screw so that the output shaft may be inserted in the sleeve.
2. Carefully align the sleeve with the output shaft so that the screw lines up with the flat side of the shaft. Slide the Dynal MPC<sup>®</sup>-6 Semi-Automated Mixing Wheel onto the shaft and push down until it is flush with Dynabeads<sup>®</sup> MX Mixer Base.
3. Tighten the locking screw with a screwdriver.

The Dynabeads<sup>®</sup> MX7 Mixer is now ready to use.



**Back of mixing wheel with locking screw**



**Attaching the mixing wheel**

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## Dynabeads<sup>®</sup> MX7 Mixer, continued

### Using the Dynabeads<sup>®</sup> MX7 Mixer, continued

After you have prepared your samples with Dynabeads<sup>®</sup>, use the Dynabeads<sup>®</sup> MX7 Mixer as described below.

*Note:* See the Dynabeads<sup>®</sup> protocol for mixing times and procedures.

1. Place the sealed tubes containing samples and Dynabeads<sup>®</sup> into the slots on the Dynal MPC<sup>®</sup>-6 or Dynal MPC<sup>®</sup>-S magnet.
2. Position the Dynal MPC<sup>®</sup>-6 Semi-Automated Mixing Head with the "Dynal" logo on the unit in the top position.
3. Insert the magnet in the Mixing Head as follows:
  - To insert the Dynal MPC<sup>®</sup>-S magnet, the magnetic strip must be removed. The unit is then inserted in the center of the mixing head with two small plastic clips under the unit securing it in place.



**MX7 Mixer with Dynal MPC<sup>®</sup>-S magnet**

- The magnetic strip on the Dynal MPC<sup>®</sup>-6 magnet can be removed or remain in place during mixing. To insert the magnet, release the top lid of the mixer head by unclipping the plastic clip on the left side and lifting up. Then insert the Dynal MPC<sup>®</sup>-6 unit in the mixing head and secure the lid with the plastic clip.



**Top lid open**



**Dynal MPC<sup>®</sup>-6 inserted**



**Lid closed**

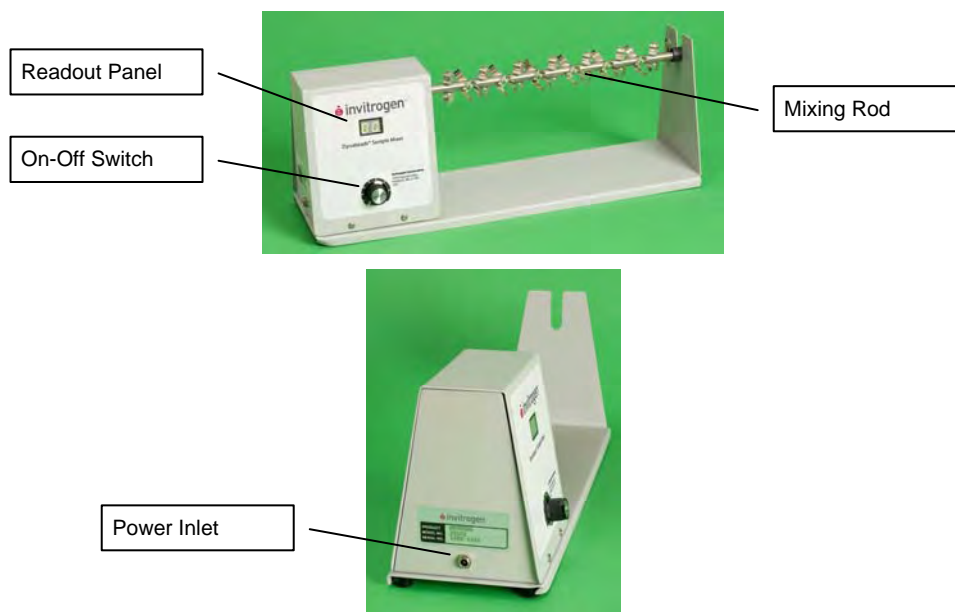
4. After the magnet is locked in position, press the Power Switch on the mixer to turn it on and adjust the Speed Control Knob to the desired rotational speed.
5. After mixing, proceed with bead capture and removal of materials, as described in the Dynabeads<sup>®</sup> protocol.

# Dynabeads<sup>®</sup> Rotator Mixer

## Features of the Dynabeads<sup>®</sup> Rotator Mixer

The Dynabeads<sup>®</sup> Rotator Mixer has the following features:

- The **On-Off Switch** on the front panel is used to turn the instrument on and adjust the rotational speed.
- The **Readout Panel** on the front displays the mixing speed. The number displayed in the panel is the relative speed based on the rotational speed of the mixer as well as the weight and number of samples being mixed (see the first bullet point in the **Note** below).
- The **Mixing Rod** has either clips for holding tubes or a platform that can hold three Dynal MPC<sup>®</sup>-S magnets or a 96-well microcentrifuge plate.
- The **Power Inlet** on the side panel is the connection point for the power cord.



## Components

The following components are provided with the Dynabeads<sup>®</sup> Rotator Mixer:

- Dynabeads<sup>®</sup> Rotator Mixer base
- Mixing Rod (accommodates 14 1.5-ml tubes or 12 10–15-ml tubes)
- Power cord



### Note

- The rotational speed displayed in the Readout Panel is a relative value that depends on the mixing rod used and the weight and number of samples. **The panel does not display RPMs.** Actual RPMs should be verified by the user.
- Plug the power cord into the power inlet on the side of the Rotator using a gentle twisting motion while pushing. *Do not force the connector into place; doing so will cause damage to the power port!*
- When operating the Dynabeads<sup>®</sup> Rotator Mixer, place it on a solid surface and away from items that can become entangled in the output shaft.

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## Dynabeads<sup>®</sup> Rotator Mixer, continued

### Magnet and Sample Tube Specifications

The Dynabeads<sup>®</sup> Rotator Mixer comes with a mixing rod to accommodate 14 1.5-ml centrifuge tubes or 12 10–15-ml tubes. A mixing rod to accommodate 14 30–50-ml tubes is available separately (Cat. No. 947-02), as is a mixing rod with a platform to accommodate a 96-well microcentrifuge plate or three Dynal MPC<sup>®</sup> -S magnets (Cat. No. 947-03).



Mixing Rod for 14 30–50-ml tubes



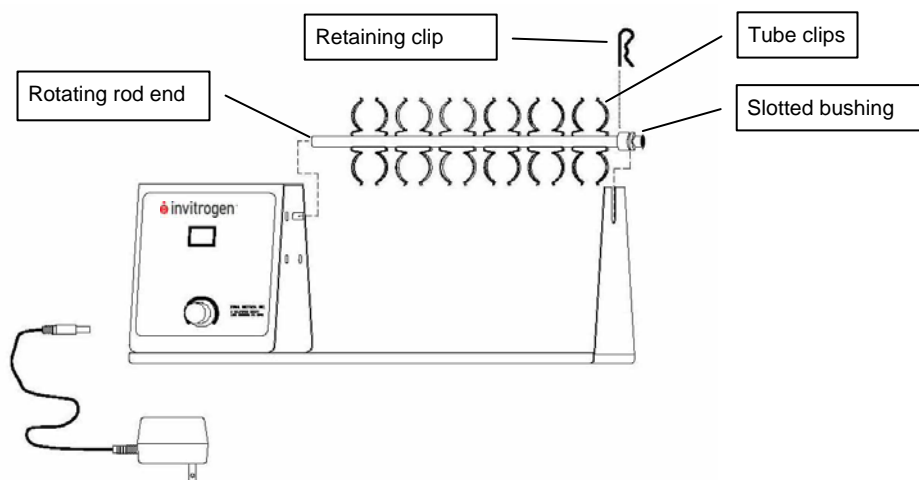
Mixing Rod with Platform

### Assembling the Mixing Rod and Rotator Mixer

Make sure that the Rotator Mixer is switched off before proceeding:

1. Remove the **retaining clip** from the Mixing Rod. For the mixing rod with the platform, wrap the provided elastic cord around the platform for later securing of sample holders.
2. Slide the **slotted bushing** toward the **tube clips** about an inch from the end of the rod.
3. Insert the slotted bushing into the slot on the arm of the Dynabeads<sup>®</sup> Rotator Mixer. Press down firmly to seat the bushing.
4. Align the flat of the “D” on the inside of the **rotating rod end** with the flat on the motor shaft. Slide the rod onto the output shaft of the motor.
5. Insert the retaining clip through the hole in the rod next to the slotted bushing.

The Dynabeads<sup>®</sup> Rotator Mixer is now ready for use.



*Continued on next page*

## Dynabeads<sup>®</sup> Rotator Mixer, continued

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### Using the Dynabeads<sup>®</sup> Rotator Mixer with the Mixing Rod

After you have prepared your samples with Dynabeads<sup>®</sup>, use the Dynabeads<sup>®</sup> Rotator Mixer with the Mixing Rod as described below.

*Note:* See the Dynabeads<sup>®</sup> protocol for mixing times and procedures.

1. To secure the sample tubes to the mixer:
  - For Mixing Rods with tube clips, snap the sealed tubes into the tube clips.
  - For the Mixing Rod with platform, place the Dynal MPC<sup>®</sup>-S magnet(s) or 96-well microcentrifuge plate on the platform and secure with the elastic band provided with the platform.
2. Press the Power Switch on the mixer to turn it on and adjust the Speed Control Knob to the desired rotational speed.
3. After mixing, proceed with bead capture and removal of materials, as described in the Dynabeads<sup>®</sup> protocol.



Mixing Rod supplied with Mixer



Optional Mixing Rod for 30–50-ml tubes



Optional Platform with Dynal MPC<sup>®</sup>-S magnets



Optional Platform with 96-well plate

# Appendix

## Troubleshooting

Problem	Cause	Solution
No power to the mixer	Power cord not fully inserted in the unit power inlet.	Unplug the power cord from wall outlet. Check unit power inlet by applying gentle twisting motion while pushing in the cord. <i>Do not force the connector into place; doing so will cause damage to the power port!</i>
	Dynabeads® MX Mixers: Interchangeable plug assembly has become loosened or detached from the power adapter.	Unplug power adapter from wall outlet. Push the plug assembly into the power adapter in a downward motion until it locks in place with an audible “click.” Check the plug assembly for correct insertion by holding the power cord with one hand and gently pulling on the plug.
Mixing Wheel or Rod not rotating	Dynabeads® MX Mixers: The connection between the Mixing Wheel and the output shaft on the mixer may be loose.	Gently press the mixing wheel or head onto the shaft until it is flush with Dynabeads® MX Mixer Base. Tighten the locking screw with a screwdriver.
	Dynabeads® Rotator Mixer: The connection between the Mixing Rod and the output shaft on the mixer may be loose.	Remove the retaining clip from the Mixing Rod. Slide the rod toward the slotted bushing to fully disconnect the rod from the unit. Align the flat of the “D” on the inside of the rotating rod end with the flat on the motor shaft. Slide the rod back onto the output shaft of the motor. Insert the retaining clip through the holes in the rod next to the slotted bushing.

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# Technical Support

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## Web Resources



Visit the Invitrogen website at [www.invitrogen.com](http://www.invitrogen.com) for:

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## MSDS

Material Safety Data Sheets (MSDSs) are available on our website at [www.invitrogen.com/msds](http://www.invitrogen.com/msds).

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