

BEARING INSTALLATION AND HANDLING TRAINING SET



GENERAL DESCRIPTION

It is a very comprehensive training set that is not produced in our country and produced by only a few companies in the world. The production of such a comprehensive set in our country will fill a big gap. The design of the set was made by our technical staff. It contains innovations that are not available in other training sets and for which patent applications have been filed.

With the help of the Bearing Installation and Handling Training Set, various types, sizes and features of bearings can be easily installed and removed using different methods. All the methods that can be used such as mechanical impact, mechanical stress, hydraulic pressure, hydromechanical force, heating and expansion have been used in the installation and removing of the bearings.

The Bearing Installation and Handling Training Set consists of 15 different modules. With the training set, it is possible to install and remove ball bearings, angular contact ball bearings, cylindrical roller bearings, tapered roller bearings, axial bearings etc.



Modül Modern Eğitim Teknolojileri A.Ş

+90 236 304 45 75

+90 236 304 45 75

info@metdidactic.com.tr

Muradiye Mah 8. Sk.

No: 21/I Yunusemre

Manisa / Türkiye



- Work bench 800 (L)x 600 (W)x 800 (H) mm
- **Head 220 x 220 x 300 mm**
- Bearing mounting mechanism on shaft (Nr. 1 stainless steel)
- **In-bore bearing mounting mechanism (Nr. 2 stainless steel)**
- Hydraulic tapered bearing mounting-dismounting mechanism (Nr. 3 stainless steel)
- **Thermal bearing mounting and hydraulic dismounting mechanism (Nr. 4 stainless steel)**
- Hydraulic plain bearing remover mechanism (Nr. 5 stainless steel)
- **Hydraulic nut mounting mechanism (Nr. 6 stainless steel)**
- Bearing mounting mechanism and backlash-free slant (37 pieces)
- **Internal puller kit (forged steel, 28 pieces)**
- Ball bearing removal kit (blind puller, forged steel, 28 pieces)
- **External pull (mechanical)**
- Hydraulic puller (5 tons)
- **Hydraulic hand pump (700 bar)**
- Induction heater machine (2 kVa)
- **Application bearings (consists of bearings with different specifications)**



APPLICATIONS

- Application of introducing bearing types and features
- **Application of bearing mounting with the help of bearing rings**
- Bearing dismounting application by hydraulic puller method
- **Bearing dismounting application using hydraulic nut**
- Bearing dismounting application with the help of hydraulic pressure
- **Bearing dismounting application by external pulling method**
- Bearing dismounting application by internal pulling method
- **Bearing dismounting application by blind pulling method**
- Application of heated mounting of bearing with induction heater

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APPLICATION OF INTRODUCING BEARING TYPES AND FEATURES

In the training set, 10 bearings of various types and features were used. The aim here is to understand the points to be considered in the selection and use of bearings. With the training set;



- Types of bearings according to loads (axial, radial, etc.),
- Types of bearings according to their structures (ball, angular ball, cylindrical roller, tapered roller, etc.),
- Types of bearings according to their materials (metal, ceramic, plastic, etc.),
- Types of bearings according to their covers (without cover, with gasket, with metal cover, etc.)

It is aimed to teach bearings of different types and structures that are mentioned above

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APPLICATION OF BEARING MOUNTING WITH THE HELP OF BEARING RINGS



It allows the mounting of bearings of different sizes, starting from small calibers to large calibers. With the help of the recoiless hammer included in the set, the hammering process is both facilitated and occupational safety is ensured.

Bearing rings made of plastic material included in the set are designed to be used on both sides. For the hammering of the rings, 4 different sizes of nailing sleeves made of metal material are used. One side is made of hard plastic so that the sleeves are not affected by the hammer. With the help of this set, it is possible to drive bearings with less depth as well as bearings with greater depth on the shaft or into the hole.

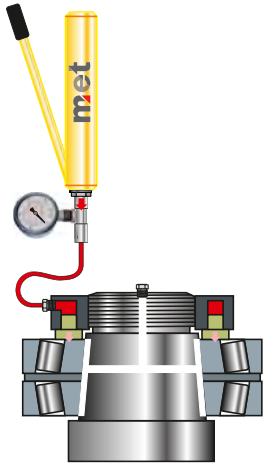
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BEARING DISMOUNTING APPLICATION BY HYDRAULIC PULLER METHOD



Large forces are required to dismount large caliber bearings, and in such cases it has become necessary to use special mechanisms. This module has been added to the set in order to meet this need and teach the use of hydraulic puller. With the help of hydraulic puller, a great force of 5,000 kg can be obtained.

In hydraulic pullers, there may be a hand pump specially made for the puller on the upper part of the puller, as well as the possibility of operating it from outside by means of a hand pump. This type of pullers can be used for removing bearings as well as for mounting bearings.



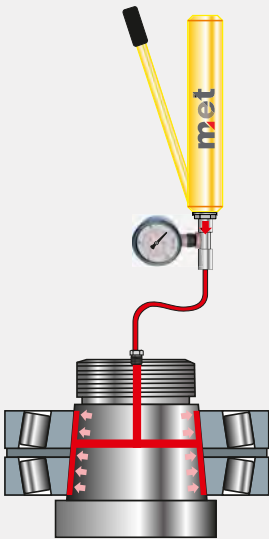
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BEARING DISMOUNTING APPLICATION USING HYDRAULIC NUT

Especially in cases where large scaled and high forces are required, using hydraulic nuts provides a serious advantage. The positive aspects of this method are that the applied force can be adjusted, the movement distance can be controlled, and it allows the application of axially parallel forces. Another advantage is that the preparation area is easy and short. This method is used for mounting tapered roller bearings where high precision is required.

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BEARING DISMOUNTING APPLICATION WITH THE HELP OF HYDRAULIC PRESSURE

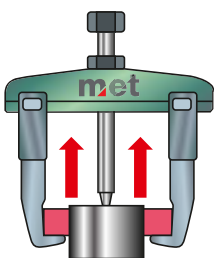


This method is generally used to remove bearings that have been mounted using a hydraulic nut. High forces are required for dismounting large caliber bearings. A hydraulic hand pump is used to achieve high power without any serious effort. With the help of this pump, which can be pressured up to 700 bar, it is possible to obtain large forces and easily remove the bearings.

In order to remove the bearing, which was mounted on a special mechanism, oil channels were opened inside the mechanism. With the help of a quick coupling, the pump is connected to the mechanism. High pressure oil is applied hydraulic pressure to the oil channels opened inside the mechanism with the help of a pump. The inner diameter of the bearing is exposed to diameter enlargement by the action of pressure; thus allowing easy removal of the bearing.

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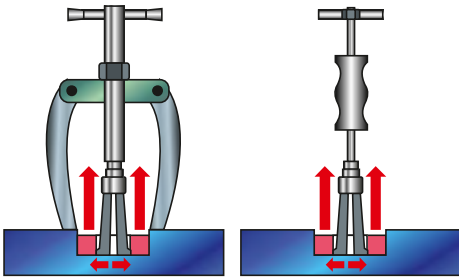
BEARING DISMOUNTING APPLICATION BY EXTERNAL PULLING METHOD



It is the most commonly used method of dismounting bearings. It can be used from both large caliber and small caliber bearings. In the external pulling method, the hydraulic pulling module included in the training set is used. The puller can be adjusted depending on the caliber of the bearing and the length of the place where the bearing is mounted.

After the adjustment process, the bearing is removed with the help of the hand pump on the module. It provides great convenience especially in dismounting large caliber bearings. This method is also used to remove machine elements such as pulleys and gear wheels as well as bearings.

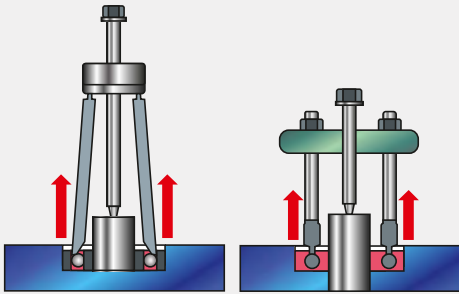
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BEARING DISMOUNTING APPLICATION
BY INTERNAL PULLING

The internal pulling method is used in applications where the bearing can only be held by its inner ring. The diameter range varies depending on the size of the pulling collets inside the internal drawing module. Each collet in the module can be adjusted according to the desired diameter between two minimum and maximum values. With the help of this method, which is not known and frequently used in the industry, dismounting can be done without damaging the bearing.

The collet, which is selected in accordance with the inner diameter of the bearing, is placed in such a way that it grasps the inner diameter of the bearing. The bearing is removed by striking it with the help of a sliding hammer. Using the puller body instead of a sliding hammer, dismounting can also be done like a regular pulling.

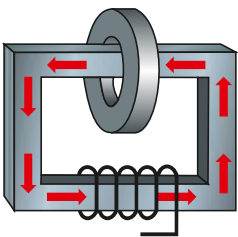
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BEARING DISMOUNTING APPLICATION
BY BLIND PULLING METHOD

In the blind pulling method, the blind pulling module in the training set is used. It is a rarely used method of removing ball bearings. This method can be applied no matter where the bearing is mounted. We can say that the bearing is welded when it is impossible to hold it from the inside or outside diameter; this method makes it possible to remove the bearing without having to be cut. It is used to remove both large caliber and small caliber bearings. The puller can be adjusted depending on the caliber of the bearing and the length of the place where the bearing is mounted.

To use this method in covered bearings, the cover must first be removed. The cage of the bearing is disintegrated and the bearing is removed by attaching the puller feet to the grooves in the collar. In the removal of small caliber bearings, the removal process is carried out by contacting the puller feet with the surface of the ball.

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APPLICATION OF HEATED MOUNTING
OF BEARING WITH INDUCTION HEATER

Contrary to popular belief, it is one of the most used methods. The production of such heaters in our country is limited. It is generally supplied from abroad. The induction heater machine is designed and manufactured by our technical staff.

It is a method used in situations where there is a space problem and especially in the mounting of large caliber bearings. The heater, which performs heating with the induction method, provides controlled heating of the bearing. The temperature setting is continuously measured by a sensor and controlled by the controller. When the desired heat setting is reached, the heating process is stopped automatically.

In this method, the size of the bearing is not very important. It is sufficient to be large enough to be attached to the machine. The size of the bearing only affects the duration. It reaches the desired temperature in 3-4 minutes. Heating of the bearing causes its inner diameter to expand dimensionally. The bearing, which is held with the help of a protective glove, is mounted by arm force without applying excessive force to the place to be attached.