

MarForm Primar MX4



A successful combination of Formtester and polar coordinate measuring instrument.

Form, Gear and 3D features in one set-up

Wide range of applications

Extremely efficient

Search for truth
Eccentric Shafts
Gear
Coordinate Measuring
Time
Tolerance
Large-scale volume
Concept
Compensation
Anything but spoiled
Accessibility
Amortization
User-friendly

Features

In future, avoid long re-equipping and transport times from one testing machine to another. With the Primar, clamp in your workpieces only once, start the measuring program, and the machine works through all test parameters fully automatically. There's nothing more efficient.

Extremely high efficiency

Easily accessible turntable for large and heavy parts

Patented machine design with a transport and drive system separated from the measuring and reference system

Use on shop floor possible

The search for truth

The PRIMAR dynamically measures the form and position deviation of rotation-symmetrical parts. Within a short time, it provides you with measured data for your production right down to the last μm . If the CNC tilting and centering table is used, the PRIMAR is able to perform "true form measurements". This type of measurement is familiar from Formtesters, whereby the data is recorded by moving only one spindle (the highly precise C spindle), thus minimizing measurement uncertainty. In the process, thousands of spatial measured values are recorded. The previous CNC-controlled alignment (tilting and leveling) of the part means that the measurement is strictly according to Abbé, and there are no errors in recording the measured values that have to be corrected later mathematically. Although corrections of this kind now can be made very quickly thanks to powerful computers, but the error made in recording measured values is still there, which is why only true form measurements can be considered in the case of narrow tolerances.

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Also for eccentrics

Narrow tolerances are a special problem in the case of eccentric shafts, for example crankshafts. Normally, only one of the stroke bearings can be located in the center of the C-axis and thus be measured "true to form". Help here is provided by the special XXL table of the Primar, which moves fully automatically by up to 180 mm, shifting everything exactly into the center. This enables one-off form measurements, for example also at both eyes of a conrod – in one set-up.

The cogs of time

The PRIMAR does not stop at the form. If your crankshaft or camshaft also has a gear, the PRIMAR measures it at the same time.

On toothed gears, spur gears or gear cutters, it checks involutes, helix angles, tooth flanks, tooth spacing, composite error, and all the parameters required for smooth meshing of teeth. It records every tolerance deviation precisely in the report. And it even goes a step further.

The third dimension

Perhaps you now want to know more about your testpiece, for example the distance or angle reference to two gearings on a shaft? In addition to the gearing measurement, the PRIMAR offers numerous functions as a coordinate measuring center, for example measurement of point, straight line, plane, circle, cylinder, cone, ball and combinations of points, straight lines, and planes. The sampling uncertainty V2 amounts to only 1.0 µm. Simply let the new PRIMAR work for you if you want to measure a large number of features of your parts even more rationally and accurately in future.

Time – the fourth dimension

In future, avoid long re-equipping and transport times from one testing machine to another. With the Primar, clamp in your test pieces only once, start the measuring program, and the machine works through all the test parameters fully automatically. There's nothing more rational. Compared to conventional measuring methods with individual machines, the productivity of the Primar is significantly higher.

It checks every last corner

Whether in mechanical engineering, in vehicle manufacturing, in textile technology, electrical engineering, aerospace, hydraulics or the optical industry – increasingly tighter manufacturing tolerances are demanded everywhere. With the Primar, you handle a wide range of measuring tasks more economically than ever before. In mechanical engineering and electrical engineering, for example, it checks gears, rotors, spindles, ball-bearing cages, spur gear shafts, all parts with involute toothing, hollow shafts with internal toothing, pinion shafts, planetary gears, hollow gears, control valves, tappets, camshafts and conrods. In vehicle manufacturing, these are supplemented by pistons, steering components, axle and shaft studs, cardan shafts as well as bevel gears and other complex components.

Large-scale volume

The four measuring axes of the Primar are designed in such a way that even large and heavy parts can be measured. The easily accessible turntable is generously dimensioned, making it easy to load parts.

Measuring volume of the Primar MX4

X-axis 300 mm

Y-axis 600 mm

Z-axis 700 mm

Separated, but still on good terms

A completely new, patented machine design for the Primar clearly separates the transport and drive system from the measuring and reference system. This enables optimization of both the drive and the measuring machine. The advantages are: greater precision, greater measurement and drive dynamics, and extremely low sensitivity to environmental influences such as vibrations.

Compensation

With its completely new, dynamic compensation process, the Primar compensates for geometry or guidance errors as well as for influences on the measuring result caused by changes in temperature, pressure, vibrations, and other environmental influences – automatically and in real time. For all movements, the Primar compares their values with the built-in standards and corrects itself.

Anything but spoiled

With the Primar, you integrate your quality assurance directly in the manufacturing process. The Primar does not need to be placed in a measuring room, and it only requires simple air conditioning. You can integrate the machine on the shop floor, for example on transfer lines, and have your measurement reports directly on site. The advantages pay off quickly: anything that exceeds the tolerance is detected immediately. You can save time and avoid reworking and also reduce scrap and costs. You are flexible as regards where you set up the machine. Thanks to sturdy mechanical bearings in all axes, you need neither a compressed-air supply nor a special foundation.

Accessibility

With a radial, a vertical and a tangential straight-line measuring axis, and a roundness measuring axis, the Primar can handle practically every testing situation. The universal probe system moves automatically to the optimum probe position and measures in three coordinates. It is equipped with a high-precision probe swiveling facility and an automatic measuring direction and measuring contact force adjustment system. In addition, the measuring contact force is always generated as normal on the part surface, thus preventing

probe errors. For measurement over interrupted surfaces, the probe lift can be limited. In all operating positions, the coordinate system of the measuring probe or the probe arm remains reproducible. And a magazine for automatic probe arm changes is available as an option.

Amortization

With the new Primar, you lower your costs in quality assurance and work more economically. Measuring your wide range of parts in one set-up enables you to utilize the machine continuously and save on re-equipping, transport and processing times. Furthermore, you only invest once in one machine and only have to train your personnel in using one type of software. Nothing could be more economical.

User-friendly

The user-friendly features of the Primar start with the easily accessible turntable, and include the entire machine design, all the way to user-friendly operation and programming via input screens and editors. The familiar Windows user interface ensures short training periods. Different operation levels allow each operator to choose the quickest and simplest method of performing the wide variety of measuring tasks. These range from single measurements started with Quick & Easy to fully automatic measuring programs with entered parameters that can also apply to part families. Clearly laid out dialog boxes and internationally comprehensible symbols represent the individual functions.

Application

With the Primar, you handle a wide range of measuring tasks more economically than ever before.

It is the first unit capable of checking eccentric parts with Formtester accuracy. With easy-to-use family programs for gears, geared tools, bevel gears, camshafts, pistons and connecting rods or customized measuring programs developed specifically for your parts.

Mechanical engineering and electrical engineering: gears, rotors, spindles, ball bearing cages, spur gear shafts, involute toothing, hollow shafts with internal toothing, pinion shafts, planetary gears, hollow gears, control valves, tappets, camshafts and conrods

Vehicle manufacturing: supplemented by pistons, steering components, axle and shaft studs, cardan shafts, bevel gears etc.

Measuring Station Components

The Primar is supplied in different versions precisely tailored to your workpieces. The machine design also provides the possibility to supplement various versions with optional extras. As in the case of the software, they can also be used on a modular basis.

Kontakta oss för mer information!

Mytolerans AB	Besöksadress	Tel. 08-584 301 40	www.mytolerans.se
Box 588	Datavägen 3A	Fax. 08-584 301 49	info@mytolerans.se
S-175 26 Järfälla	175 43 Järfälla		