

BUILT

**MODULAR PROCESS AND QUALITY CONTROL
SYSTEM FOR MACHINE TOOLS**



MARPOSS

Description of the system

MODULAR CONTROL SYSTEM FOR MACHINE TOOLS

BLÚ LT is the new modular system for process control and monitoring on machine tools.

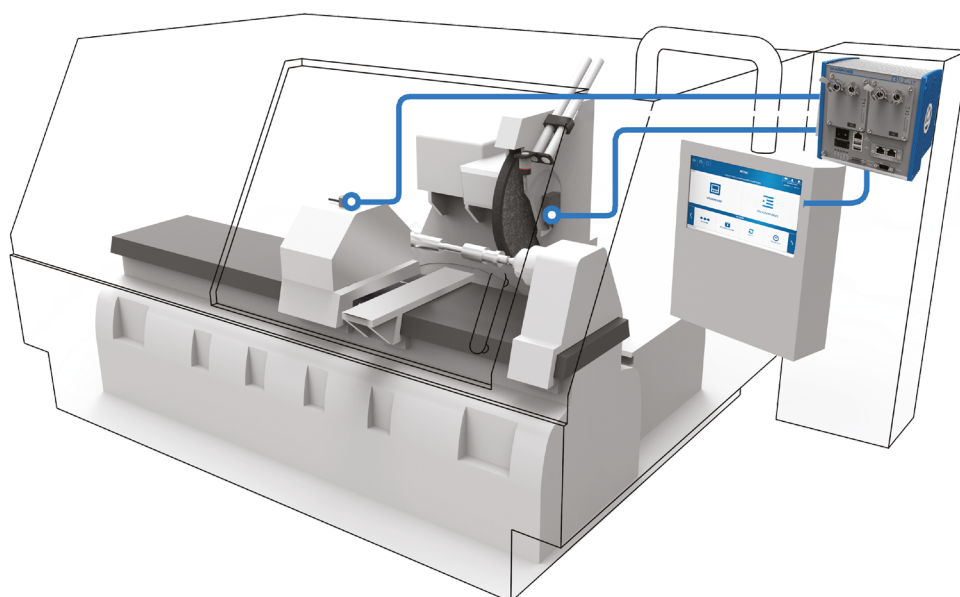
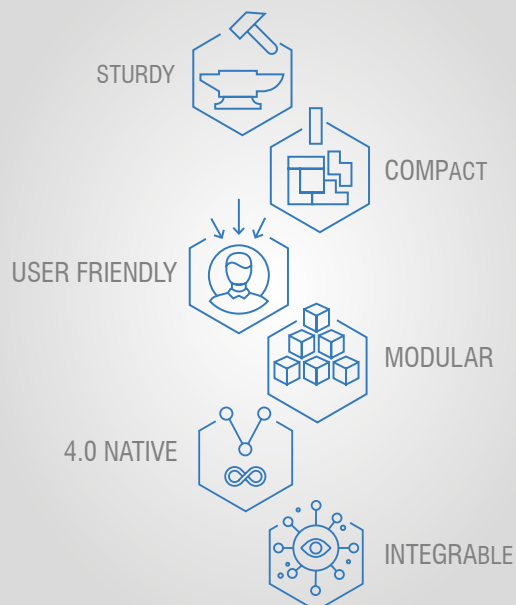
This product, which is derived directly from the Marposs BLÚ measurement system, completes a range of product designed for use on every type of installation and to respond to the customer's every need.

In its two formats, Master Unit can host directly up to two or four Function Nodes, and has been designed to guarantee the maximum level of integration between the measurement system and the machine and the company network, in addition to the operator.

The interface software, BLÚ HI, has been designed to render the system effective and easy to use.

BLÚ LT is the ideal solution for all applications featuring medium complexity in terms of the number of sensors and the dimensions of the machine.

Advantages



Example of Configuration

Example of 4 slot Master with:

- AE Node for monitoring acoustic signals
- ACC Node for monitoring vibration signals
- WB TX Node to pilot balancing systems
- TOUCHE Node for a digital TOUCH type probe.



Example of 2 slot Master with:

- AE Node for monitoring acoustic signals
- ME Node for monitoring measurement signals



Master Unit

The Master is the heart and mind behind the BLU LT system and has been designed for housing in the machine cabinet.

It is compact and very easy to install, which means that it can be used in very small spaces.

The master comes in two formats, 2 SLOT and 4 SLOT which means it can respectively house up to two or four function nodes.

The machine sensors are connected to the function nodes.

The master governs all the information coming from the function nodes and handles the communication flows with the machine thanks to the presence of the fieldbus module and Ethernet communication port.

It handles communication with the operator via the Human Interface that can be shown either on the Marposs Operator Panel or on external control units.

The simple hardware and software reconfigurability means the system can be adapted to the specific needs of each machine tool.

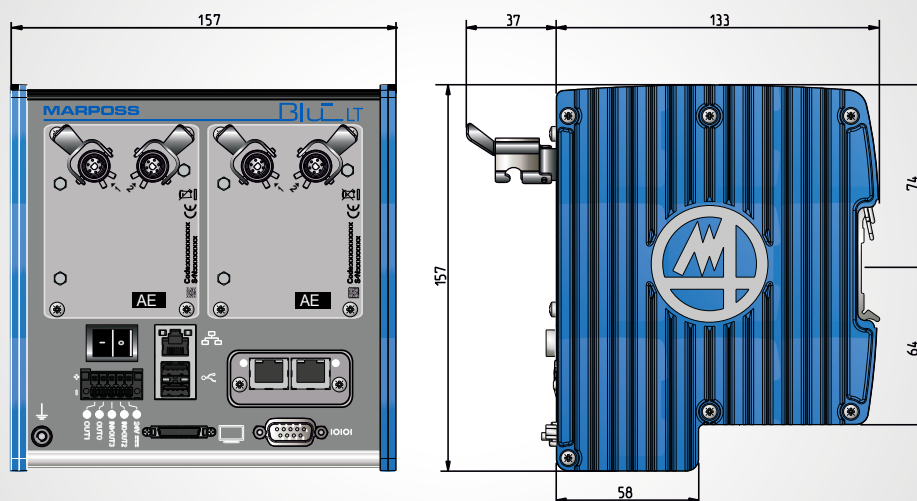
POWER SUPPLY	4 VDC SELV (EN 60950-1) -15 +20%
CURRENT CONSUMPTION	6 A max Max. conductor cross section 1,5 mm ² (AWG 16) Overload protection: replaceable quick-blow fuse
REAR MECHANICAL MOUNTING	35 x 7,5 mm EN 50022 DIN guide
PROTECTION RATING (IEC 60259)	IP40
WORKING TEMPERATURE	5 / 45 °C
STORAGE TEMPERATURE	-20 / 70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)
PERMISSIBLE VIBRATION	2g sinusoidal on three axes
OPERATING ALTITUDE	2000 m max

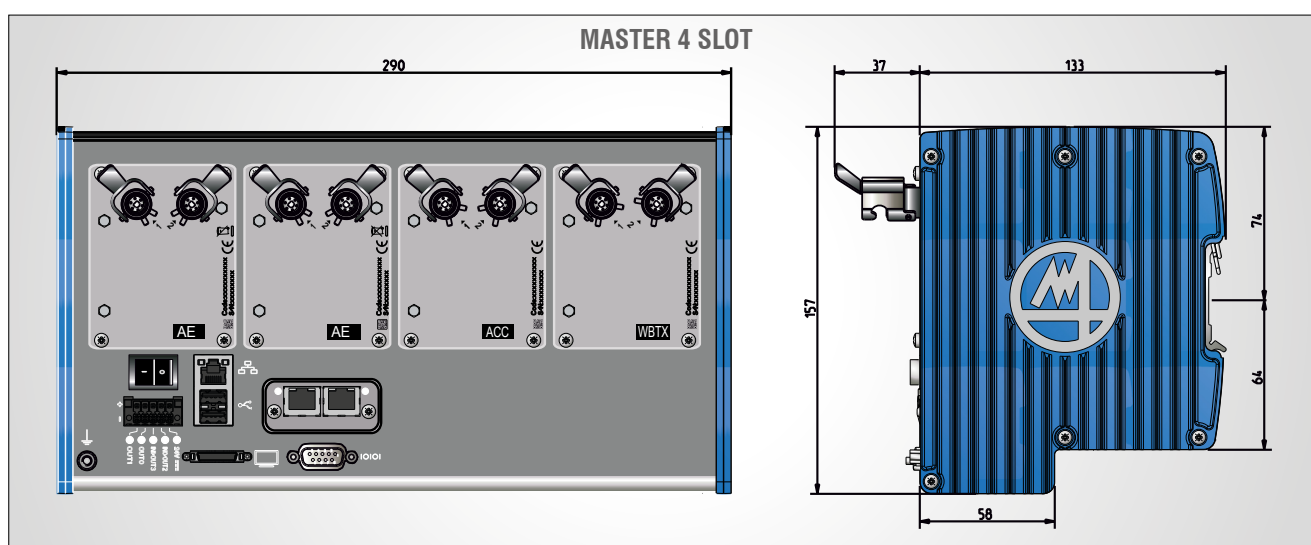
Available interfaces

Ethernet LAN	10/100 Mbps connector RJ45
Operator Panel	Panel formats available: 16.9", 7" TFT, capacitive touch RESOLUTION 800X 480, 256 K colours protection rating IP54
USB HOST	2 x PORTS, type A connector, version 2.0 HS, I _{max} 500 mA, Speed 480 Mbit/s, max. connection distance 4.5 m
FAST I/O	OUT, 24VDC isolated, Sink/Source, I _{out} = 100 mA Short circuit protected Commutation time < 1 ms 2 IN/OUT in accordance with the specification IEN 61101-2 type 1/3
Fieldbus	PROFIBUS DP PROFINET SERCOS III ETHERNET IP ETHERCAT OTHERS ON REQUEST



MASTER 2 SLOT





Fieldbus

BLÚ LT can be connected to all the main fieldbus networks:

- Profibus



- Profinet



- Ethercat



- Sercos



- EthernetIP



The use of a fieldbus connection means the cabling can be greatly simplified.

The communication has absolute reliability features as well as extremely good performance in terms of speed and quantity of data exchanged between the machine and the MARPOSS monitoring system.

Thanks to the reduced dimensions and connection ease, the FIELDBUS interface can be directly inserted onto the Master unit.

ME Node

Node for monitoring measurement signals (ME - Measurement).

There is a measuring node in both the version for 4 LVDT transducers and the version for two LVDT/HBT transducers.

The sensors can be selected, according to the application, from the vast range of Marposs solutions:

- Unimar and NanoUnimar universal heads
- Internal measuring heads
- External measuring heads

The ME node can be installed on both the MASTER 2 SLOT as well as on the MASTER 4 SLOT.

The sensors can be connected to the master unit using sturdy, reliable extensions, with quick-release connectors, designed by Marposs to withstand harsh machine conditions.

PROTECTION RATING (IEC 60259)	IP40
DISTANCE FROM THE SINGLE SENSOR	9m MAX for 4LVDT node 30m MAX for 2LVDT/2HBT node
OPERATING TEMPERATURE RANGE	5/45 °C
STORAGE TEMPERATURE RANGE	-20/70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)



NODE 4 LVDT

NODE 2 LVDT / 2 HBT

AE Node

Node for monitoring acoustic signals and ultrasounds (AE - Acoustic Emission).

The node can handle up to two sensors which can be selected according to the application, within the vast range of Marposs/Dittel solutions:

- Fixed sensor
- Rotating sensor
- Ring sensor
- Liquid sensor
- Internal spindle sensor

The AE node can be installed on both the MASTER 2 SLOT as well as on the MASTER 4 SLOT.

The sensors can be connected to the master unit using sturdy, reliable extensions, with quick-release connectors, designed by Marposs to withstand harsh machine conditions.

PROTECTION RATING (IEC 60259)	IP40
DISTANCE FROM THE SINGLE SENSOR	30 m max
OPERATING TEMPERATURE RANGE	5/45 °C
STORAGE TEMPERATURE RANGE	-20/70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)



ACC Node

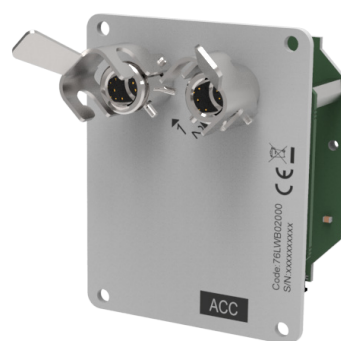
Node for monitoring vibration signals (ACC - Acceleration) that can handle up to two accelerometers.

The sensors can be selected according to the application, within the vast range of Marposs/Dittel solutions.

The ACC node can be installed on both the MASTER 2 SLOT as well as on the MASTER 4 SLOT.

The sensors can be connected to the master unit using sturdy, reliable extensions, with quick-release connectors, designed by Marposs to withstand harsh machine conditions.

PROTECTION RATING (IEC 60259)	IP40
DISTANCE FROM THE SINGLE SENSOR	30 m max
OPERATING TEMPERATURE RANGE	5/45 °C
STORAGE TEMPERATURE RANGE	-20/70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)



WB TX Node

Node to pilot balancing systems which compensate the vibrations triggered by the rotation of the grinding wheels.

The node can handle up to two balancing heads selected, according to the application, from the vast range of Marposs/Dittel solutions:

- "Spindle Type" Heads
- "Flange Type" Heads

The WB TX node can be installed on both the MASTER 2 SLOT as well as on the MASTER 4 SLOT.

The balancing systems can be connected to the master unit using sturdy, reliable extensions, with quick-release connectors, designed by Marposs to withstand harsh machine conditions

PROTECTION RATING (IEC 60259)	IP40
DISTANCE FROM THE SINGLE SENSOR	30 m max
OPERATING TEMPERATURE RANGE	5/45 °C
STORAGE TEMPERATURE RANGE	-20/70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)



PROXI Node

Node to detect the rotating speed signal of the grinding wheel.

The node can handle up to two proximity switches in order to have the signal needed for manual balancing.

The node handles both kinds of sensors: PNP, NPN.

The PROXI node can be installed on both the MASTER 2 SLOT as well as on the MASTER 4 SLOT.

The sensors can be connected to the master unit using sturdy, reliable extensions, with quick-release connectors, designed by Marposs to withstand harsh machine conditions.

PROTECTION RATING (IEC 60259)	IP40
DISTANCE FROM THE SINGLE SENSOR	30 m max
OPERATING TEMPERATURE RANGE	5/45 °C
STORAGE TEMPERATURE RANGE	-20/70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)



TOUCH Node

Node for detecting the switch signal given by a digital TOUCH type probe.

The node can handle up to two probes with a view to detecting references, positions or taking measurements.

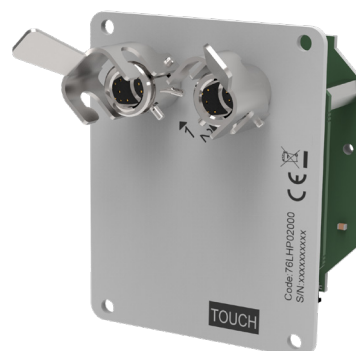
The sensors can be selected according to the application, within the vast range of Marposs MIDA solutions:

- T25
- TT25
- T25P

The TOUCH node can be installed on both the MASTER 2 SLOT as well as on the MASTER 4 SLOT.

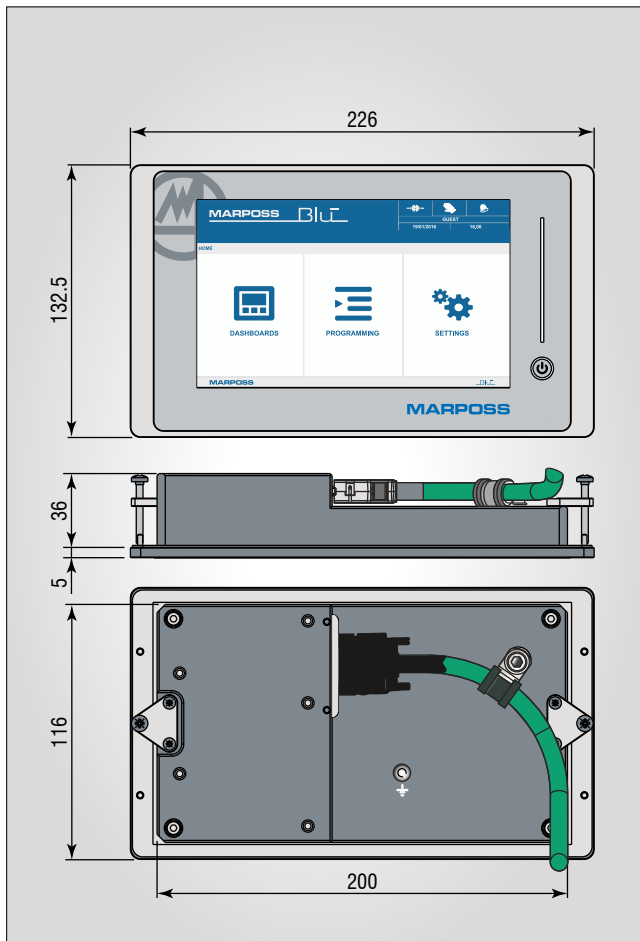
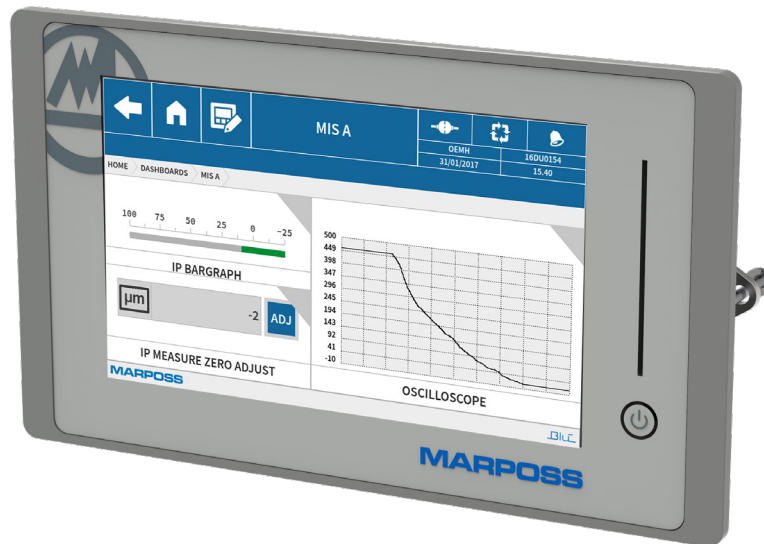
The sensors can be connected to the master unit using sturdy, reliable extensions, with quick-release connectors, designed by Marposs to withstand harsh machine conditions.

PROTECTION RATING (IEC 60259)	IP40
DISTANCE FROM THE SINGLE SENSOR	30 m max
OPERATING TEMPERATURE RANGE	5/45 °C
STORAGE TEMPERATURE RANGE	-20/70 °C
RELATIVE HUMIDITY	5-80% (non-condensing)



Operator Panel

7" 16:9 colour display with capacitive touch screen with which the BLU system functions can easily be programmed and displayed. The Operator Panel has been specifically designed to be used under severe machining conditions.



PROTECTION RATING	IP 40
OPERATING TEMPERATURE RANGE	5/45 °C
MASTER CONNECTION CABLE LENGTH	Maximum 30 m
STORAGE TEMPERATURE RANGE	-20/70 °C

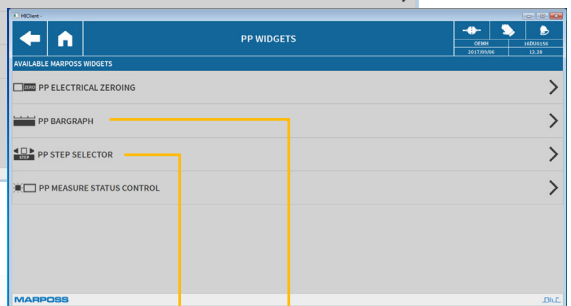
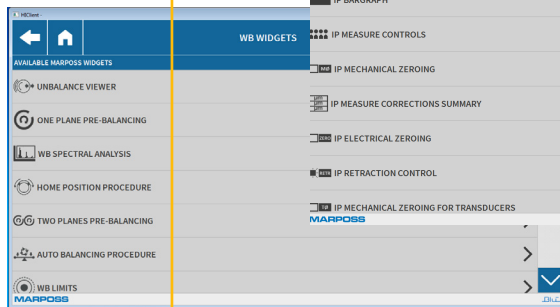
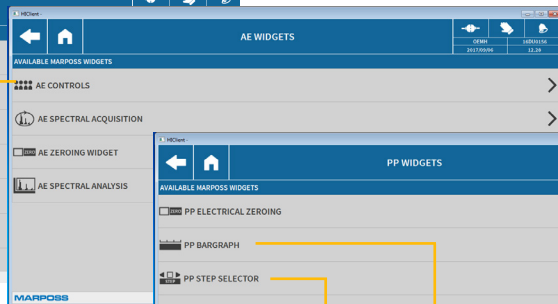
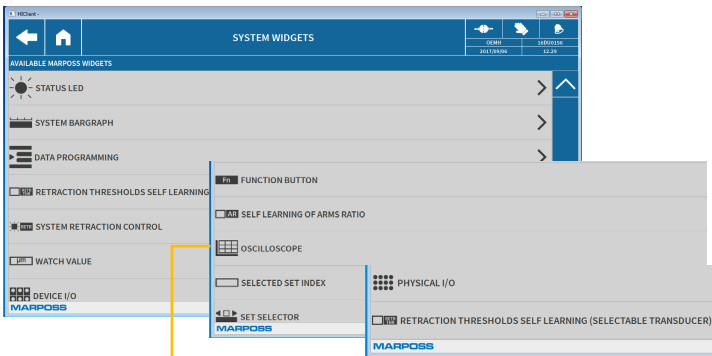
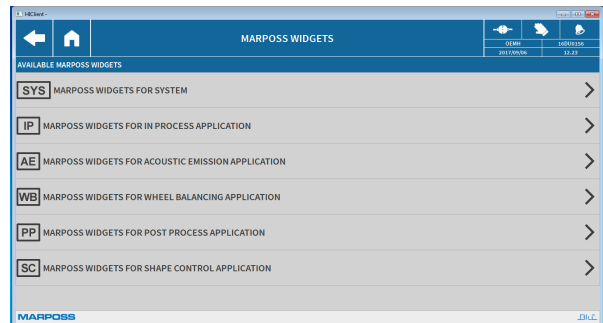
BLÚ HI

BLÚ HI is the interfaces specifically designed for communication between the operator and the BLÚ control system. BLÚ HI has different dashboards which can be easily re-dimensioned and ensure easy integration on BLÚ range devices (i.e. the operator panel) or on external devices such as machine PCs. Properly enabled users can autonomously create new dashboards or alter existing ones. BLÚ HI provides all the functions demanded by the Smart Factory where production flexibility is required and is easy to use.



Widgets

All the dashboards are created with the basic widgets available in the library of the software version being used.



Software Cycles

Generate the signals and information necessary for checking and optimising working cycles in the machine.

Production and machine conditions are monitored.

Intuitive programming allows effective management of the parameters necessary for the main functions which are MEASUREMENT, ACOUSTIC EMISSION and GRINDING WHEEL BALANCING.

MEASUREMENT (ME)

Part dimension check, which can be performed either during (in-process) or before/after (pre /post-process) working.

Various in process cycles are available for measuring:

- positions (in “active/continuous” or “passive/one-shot” mode)
- internal and external diameters
- lengths

particular parts such as: cams, cam diameters, three-lobed parts

The measurements are usually taken by comparing with the reference master, but it is possible to manage “absolute measurement” heads which do not require the presence of a reference master

All of the cycles can be performed both on parts with continuous and interrupted surfaces.

Processing is possible for checking taper, ovality and adaptive cycles which indicate, at programmable intervals, the quantity of material removed.

There are also cycles for post-process and pre-process measurement such as T.I.R. and correction, compensation, coupling measurements.

ACOUSTIC EMISSION (AE)

A check run using ultrasound sensors for monitoring working cycles and machine conditions.

Cycles available:

- “Gap” - for determining contact between the grinding wheel and part, or grinding wheel and dressing wheel.
- “Crash” - for an immediate stop of moving parts in the event of a collision.
- “Monitoring” - for continuously checking working/dressing cycles.

GRINDING WHEEL BALANCING (WB)

Necessary both to guarantee the quality of parts produced and protection of machine parts.

Cycles available:

- Manual balancing/Pre-Balancing in single and double plane
- Automatic balancing in single and double plane

Manual balancing is performed using weights placed by the operator during interaction with the machine cycle.

Automatic balancing uses electro-actuated heads controlled by the system to automatically compensate for imbalances generated by rotating parts, without any interruption of productivity.


The new “deterministic balancing” cycles guarantee better performance.



www.marposs.com

For a full list of address locations, please consult the Marposs official website

D6106000G0 - Edition 07/2023 - Specifications are subject to modifications
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