

MPM

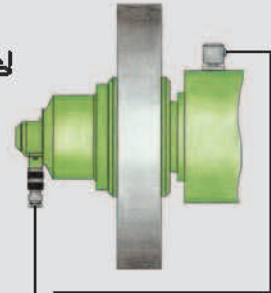


BALANCING SYSTEM

- Grinding wheels
- Boring tools
- Turing Parts

바란싱 측정 및 보정

연마지석
자동 바란싱



각종 회전체들이 더욱더 고속으로 회전한다.

아주 작은 불균형(Unbalance)이지만 고속으로 회전할때는 기계동작(기계수명) 또는 가공물 정밀도(표면 조도, 원통도)에 아주 나쁜 영향을 준다.

MPM-System을 이용함으로써 이러한 불균형의 문제들을 적은 비용으로 여러형태의 불균형상의 문제들을 쉽게 해결할 수 있다.

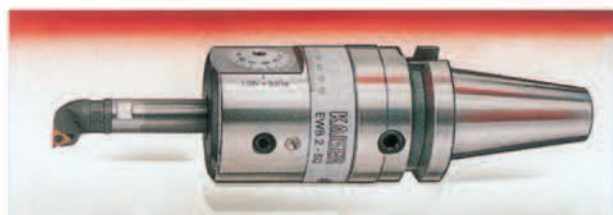
Balancing of grinding Wheels (연마 지석)

- ▶ 기계운전상태에서 직접 바라싱 (회전체에 부착)
- ▶ 각종 형상과 크기의 연마 - 휠에 적용.
- ▶ 모든 종류의 연마기에 적용.



Balancing of tool (회전공구 바라싱)

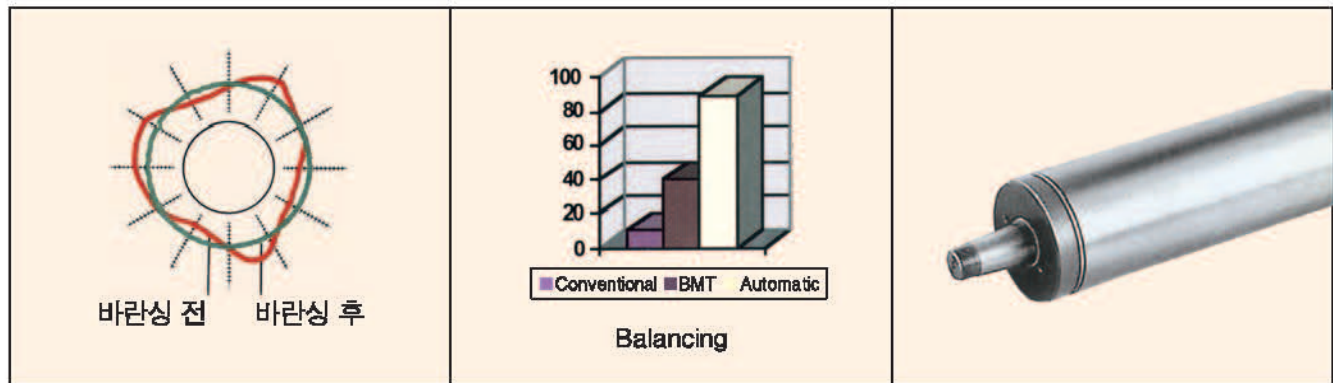
- ▶ 특히 고속 스피ن들의 기계를 위하여
- ▶ 값비싼 기계의 스피ن들 마모를 최소화 시키므로 기계수명 연장.
- ▶ 우수한 안전성.
- ▶ 부드럽고 원활한 동작.
- ▶ 공구의 수명연장.



Precision boring tool

Advantages and Benefits

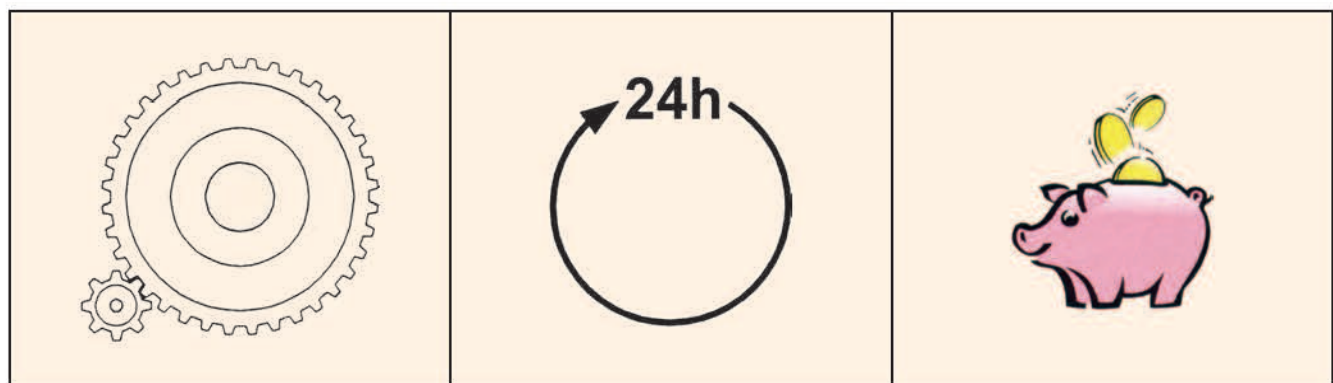
- 간단하고 안전한 운전방법 안내.
- μm , gmm 단위로 측정.
- 1대의 콘트롤 장치로 4개의 바란서와 연결사용 가능.(연마기)
- 수요자의 요구에 충족.
- 우선(先) 바란싱 기능 : 적은 규격의 바란싱도 가능.
- 견고하고 감촉이 좋은 접촉식 Key-Pad.
- 작업현장에 적합.
- 고객주문에 따른 판넬(Panel)제작 및 색상선택.
- 영어, 독어, 불어, 이태리어 사용 선택.
- 24시간 서비스



훨씬 좋아진 원의 형상

생산 시간 증가

베어링과 스피들의 마모 최소화로 스피들 수명연장



기계정지시간 불필요

신용, 서비스 24시간

저비용, 원가절감

고속회전체는 필히 바란싱을!

왜 밸런싱을 잡아야 되는가?	밸런싱 후 장점!
모든 것들이 빠르게 회전하고 있다. • 오늘날에 새로운 기계와 절삭공구들은 고속의 작업속도를 요구한다. • 밸런싱이 잡히지 않는 공구는 기능수행을 감소시킨다. • 밸런싱이 잘 잡혀진 공구는 고속작업과 아울러 생산기능을 증가시킨다.	밸런싱이 잘 잡혀진 공구 • 값비싼 기계스핀들의 수명을 연장시킨다. • 공구마모를 적게하므로 공구수명 연장된다. • 표면조도와 원형의 정밀도가 증가된다. • 공구비 절감, 능력향상으로 제조원가 절감된다.

- 운전이 쉽고 이해하기 쉬운 프로그램 안내
- 터치 스크린(Graphical touch screen display)
- 240개 이상의 데이터 저장
- 정밀한 구조
- 다양한 Tool holder / Main spindle taper : ISO50
Reduction sleeve 사용가능
- 무게의 가감 또는 보정-링을 사용하여 밸런싱 작업
- 전기적 센서에 의한 안전 카-버
- 작은공간에 설치 및 이동편리
- 유지관리 편리하고 간단함.
- 밸런싱기에서 프린터로 직접 데이터 프린팅(컴퓨터 불필요)
- 자동 Air Clamping
- 밸런싱 측정후 자동정지 및 자동위치 표시
- 자체 캘리브레이션(Calibration) 작업(다른 기구나 기기 불필요)
- 2면 밸런싱 기능(선택)
- 폭넓은 사용, 기타 회전 부품들의 밸런싱작업 가능



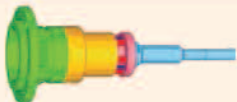
밸런싱작업 가능한 회전체들



The properties in its entirety....

Technical Data BMT200S	Size 40	Size 100
Power supply	115/230V, 50-60Hz	
Power consumption approx.	140W	
Number of balancing planes	1, 2 as an option	
For tool holders	SK10 up to SK40 HSK 25 up to HSK63	SK30 up to SK50 HSK 32 up to HSK100
Unbalance reduction	> 95%	
Expression of unbalance	gmm; quality grade acc. to DIN; μ m; mm/s	
Max. rotor- $\varnothing$ approx.	270mm	
Max. rotor length approx.	300mm	
Rotor weight approx.	0,2-10kg	0,5-20kg
Laser-pointer	$\pm 1^\circ$	
Language	G/E (other languages upon request)	
Printer connection	V24 RS232 integrated	
Compressed air consumption	6-8 bar	
Protection hood	Electrically controlled	
Size WxHxD ca.	458x670x590mm	
Weight approx.	33kg	50kg
Temperature (in use):	0°C...+50°C	
Temperature (on stock):	-10°C...+60°C	

Accessories for size 40

Adapter for HSK-tools with central fixing	Sizes / Order-#
	3.AD.HSK32.ZK 3.AD.HSK40.ZK 3.AD.HSK50.ZK 3.AD.HSK63.ZK
	3.AD.P.HSK32 3.AD.P.HSK40 3.AD.P.HSK50 3.AD.P.HSK63
	3.AD.P.SK30 3.AD.P.SK40
DIN A4 protocol printer (for S.40 und S.50)	
 Protocol printer, EPSON LQ 300+ # : 3.DR.01	 Data cable # : 3.AK 1503M

Accessories for size 100

Adapter for SK-tools	Sizes / Order-#
	3.A.SK30 3.A.SK40 3.A.SK50
Adapter for automatic clamping (All HSK-tools up to size 100)	
	3.A.HSK32 3.A.HSK40 3.A.HSK50 3.A.HSK63 3.A.HSK80 3.A.HSK100
Manual clamping for SK-tools	
	3.SK50.M

Example for an order: Balancing station size 100, 2-planes with pneumatic clamping and reduction for SK40

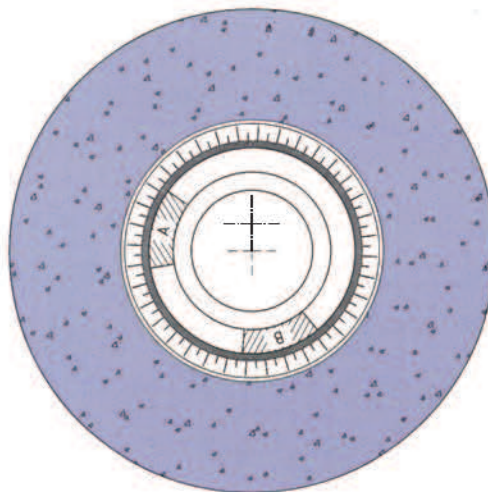
Order-# : **3.BMT200-2.S100** = balancing station
Order-# : **3.A.SK.P.40** = Adapter

.... your
profit!

Balancing Electronics BMT240M

과제	적용 용도	장점
- 어떤 회전체라도 바란심해야함. - 불균형(Unbalance)이 변화된 것의 재 바란심 - 기타등등	- 연마저석(Grinding wheel) - 공구류(회전체) - 부품가공(회전체) - 기계 스펀들	- 간단하고 안전한 운전 - 특별한 지식 불필요 - 기계에 직접 바란성(動바란성) - 저렴한 가격 - 다양한 용도로 활용가치가 높다.

측정
↓
교정(바란성)
↓
교정 완료(운전)
시간과 비용의 절약



연마-지석



회전공구

작업기능(자동진행)

- 회전수 감지
- 스핀들의 진동감지
- 불균형(Unbalance)의 상태의 진도(진동상태)와 위치(각도)측정
- 교정하여야할 양(量)을 계산하여 스크린에 표시함

화면에 지시된 각도에 따라 A와 B를 이동시키기만 하면된다.

바란심 전(前)

MEAS. VALUES 1
2500min⁻¹
2.643µm
140°

교정지시(자동계산)

BAL. VALUES 1
actual: set:
A=126° A→ 10°
B=293° B→ 270°

바란심 후(後)

MEAS. VALUES 1
2500min⁻¹
0.012µm
140°

이 상태면 더 이상 교정작업 불필요함

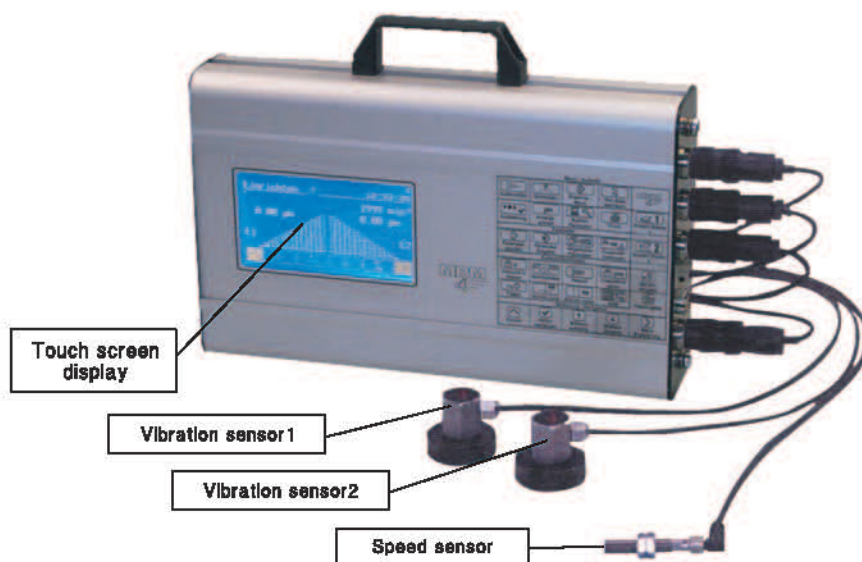
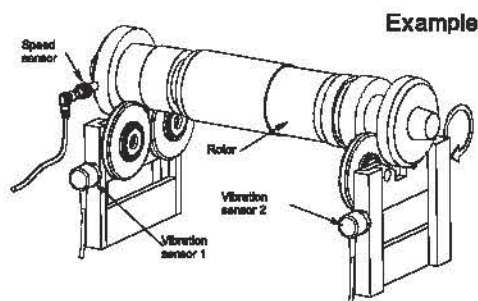
(예)



Technical Data

BMT240M		Vibration sensor	
Power supply	115/230V, 50Hz	Dimensionsø xH	50×50mm
Power consumption	approx, 10W	Cable	3m, oil - protected, 4-way
RPM range	300 to 100,000rpm ± 1rpm	Mounting	magnetic base
Vibration range	0.002 to 65µm ± 0.002µm		
Angle	0 to 359° ± 2°	RPM sensor, inductive, Magnetic, Optical	
Display resolution	± 1 digit	Dimensionsø xL	8×30mm
Temperature(operation)	0℃..... +50℃	Cable	3m, oil - protected, 3-way
Operation	Touch screen	Mounting	M8×1
Dimensions W×H×D	305×190×70mm		
Weight	3kg		

3. BMT240M, Profiline housing



▶ 2-면 바람실 : 각종 기계의 회전축에서 BMT240M을 이용한다!

▶ 어떻게 작업 되는가?

- 회전 센서로 스피들의 기존 rpm을 측정.
- 1개(1plane) 또는 2개의 진동센서로(2plane)불균형량을 측정한다.
- 불균형량과 각도 위치를 측정 및 계산.
- 1면(1plan) 또는 양쪽면(2plane)에서 수정하여야 할 정확한 위치에 무게를 더하거나 빼내어야 할 량이 스크린에 안내된다.
- 프린터와 연결하면 측정값을 인쇄한다.
- 그래프식(도표) 디스플레이 : 선명한 화면(240×128pixel)과 읽기 쉽다. 쉬운기호(표기)로 구성된 사용자 가이드
- 접촉식 스크린(Touch screen) : 표기된 심벌을 터치하여 작동
- 많은 메모리 용량 : 약 240데이터 저장
- 불균형수정 : 모든 바란식 방법 안내 자유로운 각도입력과 무게가감(加減) 그리고 바란식 추를 이용한 각이동방법

[illegible]

모든 회전체 바람싱!

BMT240M

- 이동식 바란싱.
- 불균형의 크기와 위치의 자동계산.
- 수정위치의 자동산출.
- 이동이 편리하여 어떠한 회전체도 측정 및 교정이 용이하다.



Example : PROFILE-line-housing

AB100

- 완전 자동 바란싱.
- 작업자나 CNC로부터 신호를 받아서 자동 바란싱 작업
- 불균형 상태가 되면 적색(Red)램프가 점등
- 바란싱이 잡히면 청색(Blue)램프가 점등



Example : Desktop housing

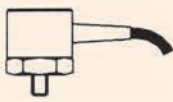
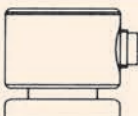
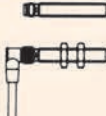
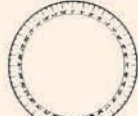
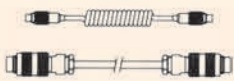
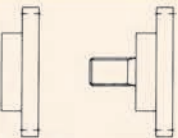
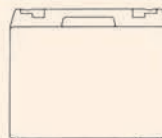
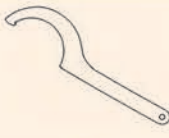
AB 50 (Touch screen)

- 완전 자동 바란싱.
- 작업자나 CNC로부터 신호를 받아서 자동 바란싱 작업
- 터치 스크린 타입으로 AB50과 BMT기능을 가지고 있음.



Example : 19" with drawble housing

Accessories

 Vibration sensor $\varnothing 25 \times 25$ Cable outlet at side	 Vibration sensor $\varnothing 50 \times 50$ Cable outlet at side	 Speed sensor M8 x 1 Inductiv or optical, Magnatic	 360° aluminium-scale rings Customer-specific
 Connecting cable Special lenght up to 30m	 Adapter flange customer-specific	 Carrying case	 Other accessories on request

Electro-mechanical balancers

External standard balancer = Type ESB and Type SL(ESB... CF)



연마 지석 측면에 부착

Internal standard balancer = Type ISB



스핀들 내부에 부착

Technical Data

Electro-mechanical Balancers

Type	External		Internal	Ring
Capacity[gcm]	ESB	ESB....CF	ISB	ER
200	□	●	●	
500	□	□	□	
650	○		□	
800	□	□	●	
1000	○		●	
1350	□		●	
1500	○	□	□	○
1700	□		●	○
2000	○		●	○
2850	○		□	
3300	□		●	
4000			□	
4300	□		●	
5400	○		□	
6500	○		●	
7500	○		●	
max. rpm.[min-1]F	6000	6000	12000	3000

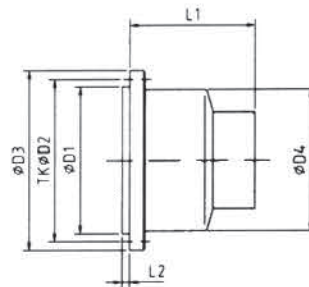
- =standard-balancer
●=Modified standard-balancer
○=Special solutions on request:

All balancer are equipped with CONLESS™-receivers

최신 비접촉 효율전송 및 데이터전송을
(R.G.FASS에서 개발) 활용하여 발란싱
시스템을 완벽하게 제작하였다.

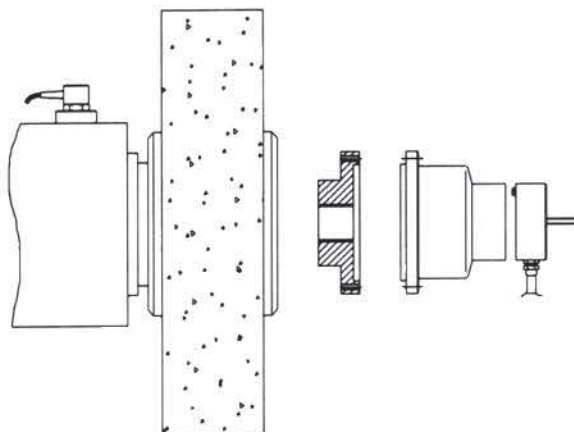
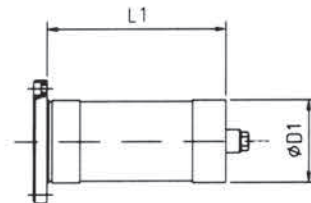
Flange-mounted balancers type ESB

Type	ØD3 [mm]	ØD1 [mm]	ØD4 [mm]	TK ØD2 [mm]	L1 [mm]	L2 [mm]
ESB ≤ 1700gcm	120	95	90	106	98	6
ESB > 3300gcm	140	114	110	126	98	6

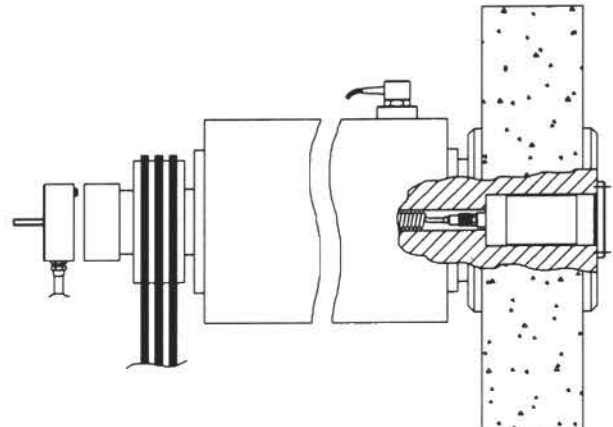


Spindle-mounted balancers type ISB:

Nominal-Ø (mm)	Nominal length L1 (mm) min.	Nominal length L1 (mm) max.	Balancing capacity (gcm) min.	Balancing capacity (gcm) max.
Ø42	105	232	60	1000
Ø50	105	225	100	1000
Ø55	120	200	650	1200
Ø60	105	420	700	3800
Ø63	160	420	2000	4700
Ø70	120	230	1200	3500
Ø80	120	190	2600	3500



(연마지석 측면 설치)



(스핀들 내부에 설치)

Technical Data

Technology-Electronics

CONLESS™

- 비접촉 전류전송
- 발신기와 수신기의 거리간격 5mm
- 마모가 없음
- 냉각수 공급상태에서 간섭받지 않음
- 특히 고속 스프indle에 적합
- 타 전파 방해받지 않음

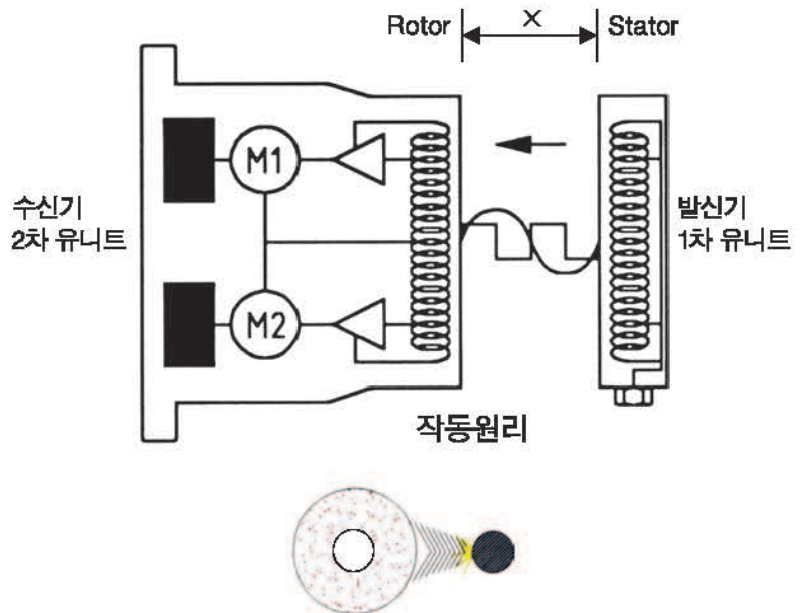
and

PROMETEC-MSL3000

Modular process analysis system

- 비접촉 구조로 마모와 소음이 없다.
- 충분한 비접촉거리 유지
- 바란싱의 측정한계 설정
- 향상된 안전성
- 생산시간 증대

CONLESS 최대의 요구조건을 충족한 최신의 기술



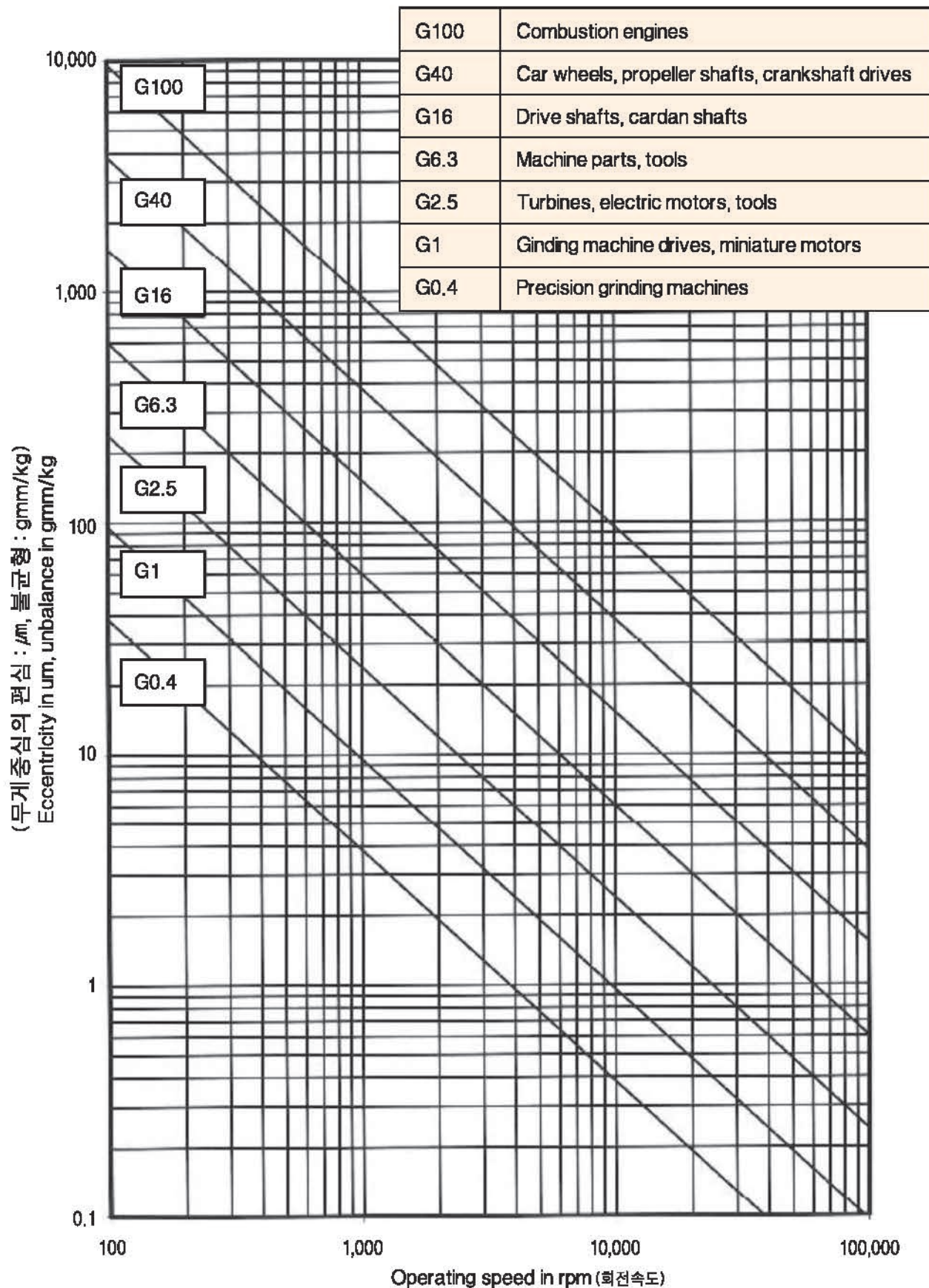
Electronic display and control units:

	BMT240	AB100	AB50
Power connection	115/230V, 50-60Hz		
Power consumption	approx. 3W	max. 60W	
Speed range	300~100,000rpm	200...50,000rpm ± 1rpm	
Vibration displacement[RMS]	0.002...65µm ± 0.002µm		
Display resolution	± 1 Digit		
Display element	Touch Screen	LCD 4×16, lit	Touch Screen
Keypad	Touch Screen	tactile touch, lit, IP67	Touch Screen
Standard housing	PROFILE	Desktop housing	19" withdrawable housing
Dimensions W×H×D	305×190×70mm	320×135×265mm	483(320)×135×265mm
Weight	approx. 3kg	approx. 6kg	
Serial Interface	optional		

Different types of housings:

PROFILE	Desktop housing	19" withdrawable housing
1/2 19" operator panel with cabinet-mounted housing	19" operator panel with cabinet-mounted housing	cabinet-mounted housing

Quality grade—diagram acc. to DIN ISO 1940 (바란스 품질 등급표)



Example of calculation of balancing quality to DIN

Example of calculation of balancing quality(바란싱 품질의 계산 예)

Balancing weight:
Mass $m = 1,5 \text{ g}$
Radius $r = 30\text{mm}$
Angular position $a = 75^\circ$

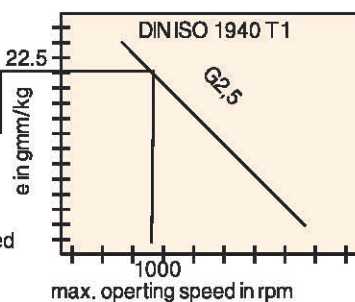
Rotor data (Tool):
Mass $M = 2,0\text{kg}$

Display
after setting up
and 1st unbalance measurement

General unbalance:
 $U = m \times r$
 $U = 1,5\text{g} \times 30\text{mm}$
 $U = 45\text{gmm}$

BALANCING VALUES 1
Mater. +1,5g
Angle 75°

Remaining unbalance
with reference to rotor mass:
 $e = U / M$
 $e = 45\text{gmm} / 2,0\text{kg}$
 $e = 22,5\text{mm/kg}$



Balancing quality G:
for quality grade G2.5
max. permissible operating speed
ca. 1000 rpm

Balancing weight:
Mass $m = 0,1 \text{ g}$
Radius $r = 30\text{mm}$
Angular position $a = 75^\circ$

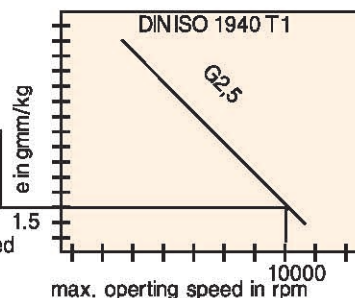
Rotor data (Tool):
Mass $M = 2,0\text{kg}$

Display
after measurement
and check measurement

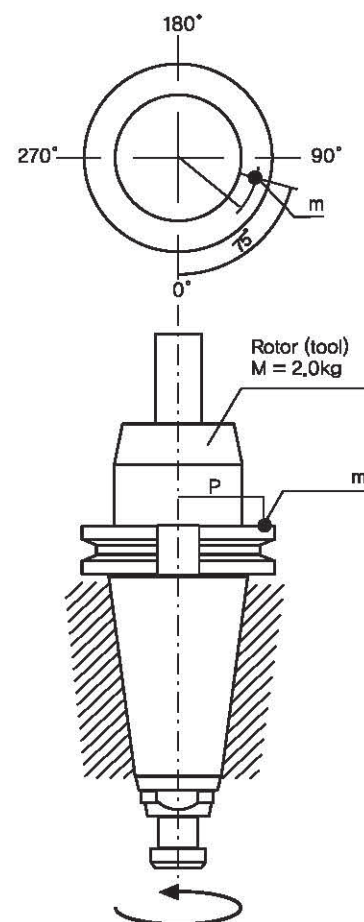
General unbalance:
 $U = m \times r$
 $U = 0,1\text{g} \times 30\text{mm}$
 $U = 3\text{gmm}$

BALANCING VALUES 2
Mater. +0,1g
Angle 75°

Remaining unbalance
with reference to rotor mass:
 $e = U / M$
 $e = 3\text{gmm} / 2,0\text{kg}$
 $e = 1,5\text{gmm/kg}$

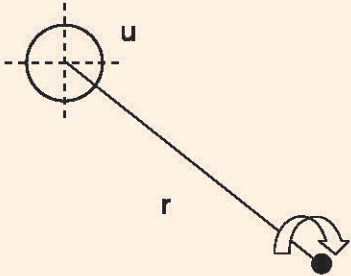
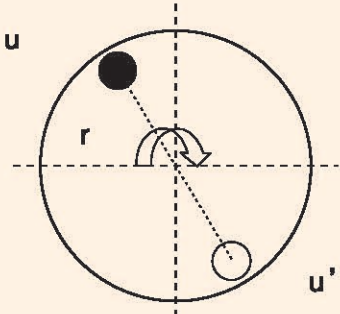
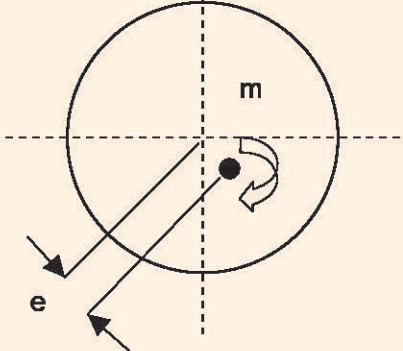


Balancing quality G:
for quality grade G2.5
max. permissible operating speed
ca. 10000 rpm



Technical information—appendix—

When a rotating body has a gap between the center of gravity and the axis of rotation is an unbalance present. This unbalance can be measured with BMT200 Station

Unbalance 	$U = u \cdot r$ U: Unbalance in gmm u: Weight of unbalance in g r: Radius in mm (gap between the center of gravity and the axis of rotation is an unbalance) Example: u = 3.3g r = 300mm U = 3.3g • 300mm = 1000gmm
	A material addition u creates an unbalance. A material removal u' 180° opposite creates the same unbalance Example: u = 33g r = 30mm U = 1000gmm
 Unbalance through Eccentricity	Rotates a body not around the axis of rotation but eccentric is an unbalance present. The gap between the center of gravity and the axis of rotation is called center of gravity eccentricity e, the unit is μm. Instead of radius r, is eccentricity e used in the formula. Example: m = 2.5kg e = 8μm U = 2.5kg 8μm = 2500g 0.008mm = 20gmm The formula for unbalance with eccentricity is: $U = m \cdot e$ U: Unbalance in gmm m: Weight of rotating body in kg e: Eccentricity in μm Eccentricity is not the same as vibration displacement, where the unit is also μm

The accuracy of the BMT200 Station is better than 1gmm!

Product Training

Short Balancing Encyclopedia

For all rotating parts ... (모든 회전체 바란싱)



Product Training

Short Balancing Encyclopedia

모든 연삭기에 적용되는 전자동 바란싱 시스템



Table unit



Operating module
½-19" and 19"
housing



Module for switching
cabinets



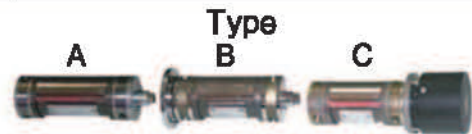
Visualization
software

External balancers type ESB

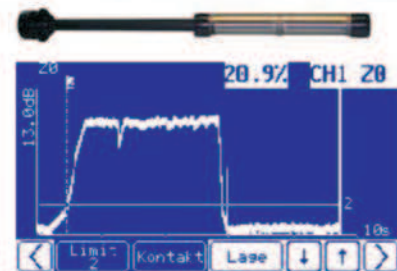
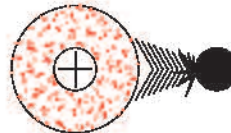


or

Internal balancers type ISB



요청에 따라 GAP/Crash/Dress
기능을 적용시킬 수 있다



BMT system으로 Balance 작업을 할 수 있는 것들은?

e.g. workpieces, fans, turbine blades, belt drives,
tool holders HSK, SK, MK, tools, diamond-impregnated wheels, etc.



Selection Guide

Automatic Balancing Systems

List of Types

Types of cases

① Mobile balancing instruments = PROFILINE housing



BMT100M / BMT240M



Electronic display and control units fully automatic

② Table-top housing



AB50 / AB300



③ Cabinet-mounted housing, $\frac{1}{2}$ 19", 19"



AB50 / AB300



④ Switch cabinet module



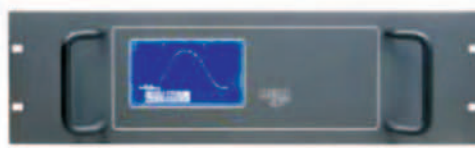
AB50 / AB300



⑤ Operating module



BM240 / 300



PCU 50



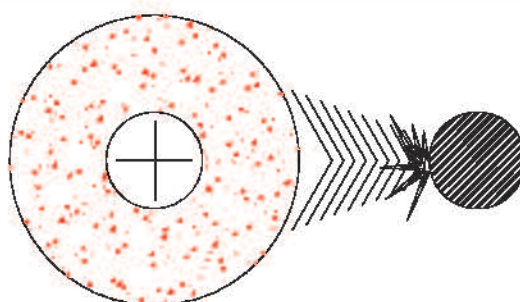
Multifunctional unit AB300



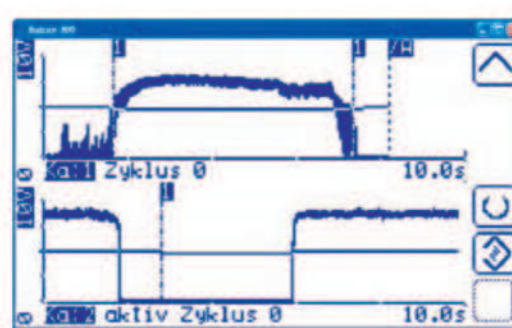
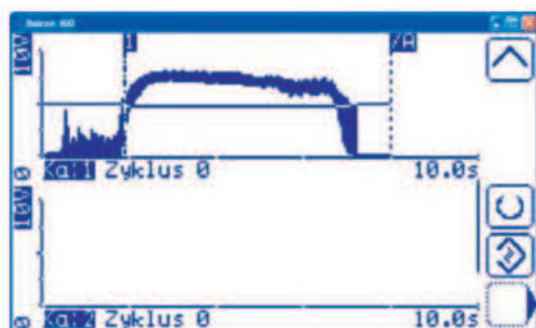
Operating module



Machine monitor



Optionally with GAP-CRASH-DRESS functions



**Efficient balancing
quick amortisation**

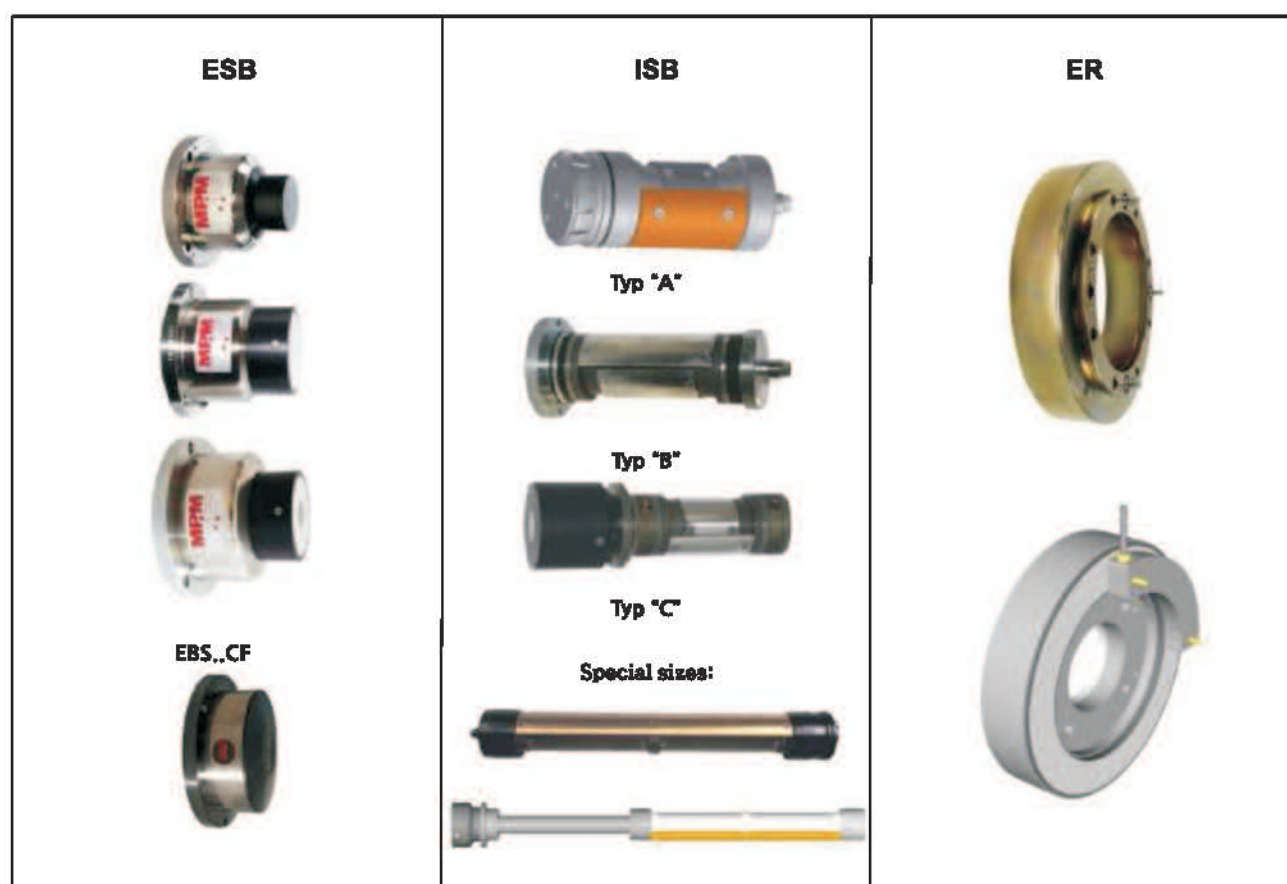
Selection Guide

Automatic Balancing Systems

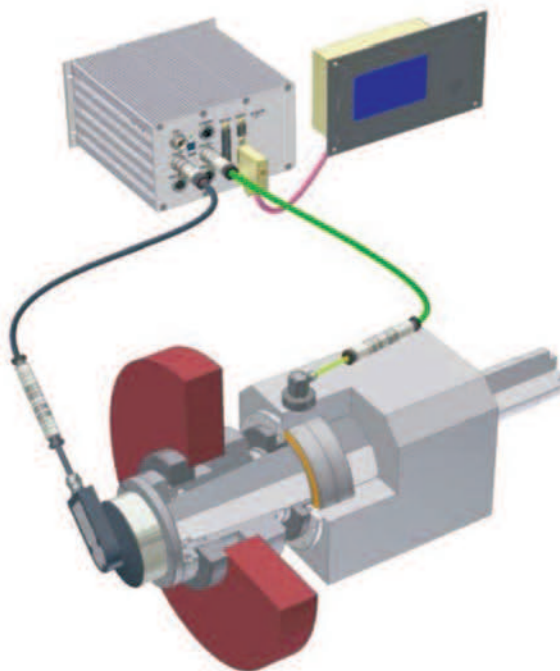
Listing Types of Balancers

Type	External		Internal	Ring
Capacity [gcm]H	ESB	ESB....CF	ISB	ER
200	□	●	●	
500	□	□	□	
650	○		□	
800	□	□	●	
1000	○		●	
1350	□		●	
1500	○	□	□	○
1700	□		●	○
2000	○		●	○
2850	○		□	
3300	□		●	
4000			□	
4300	□		●	
5400	○		□	
6500	○		●	
7500	○		●	
max rpm [min ⁻¹] F	6000	6000	12000	3000

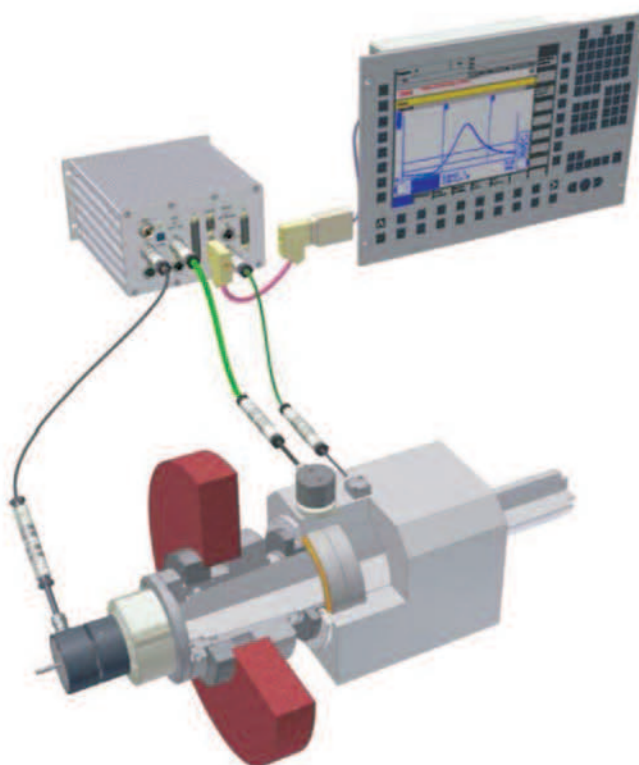
□ = Standard type, ● = Modified Standard type, ○ = Special type)



Fully automatic balancing Examples with ESB external balancers



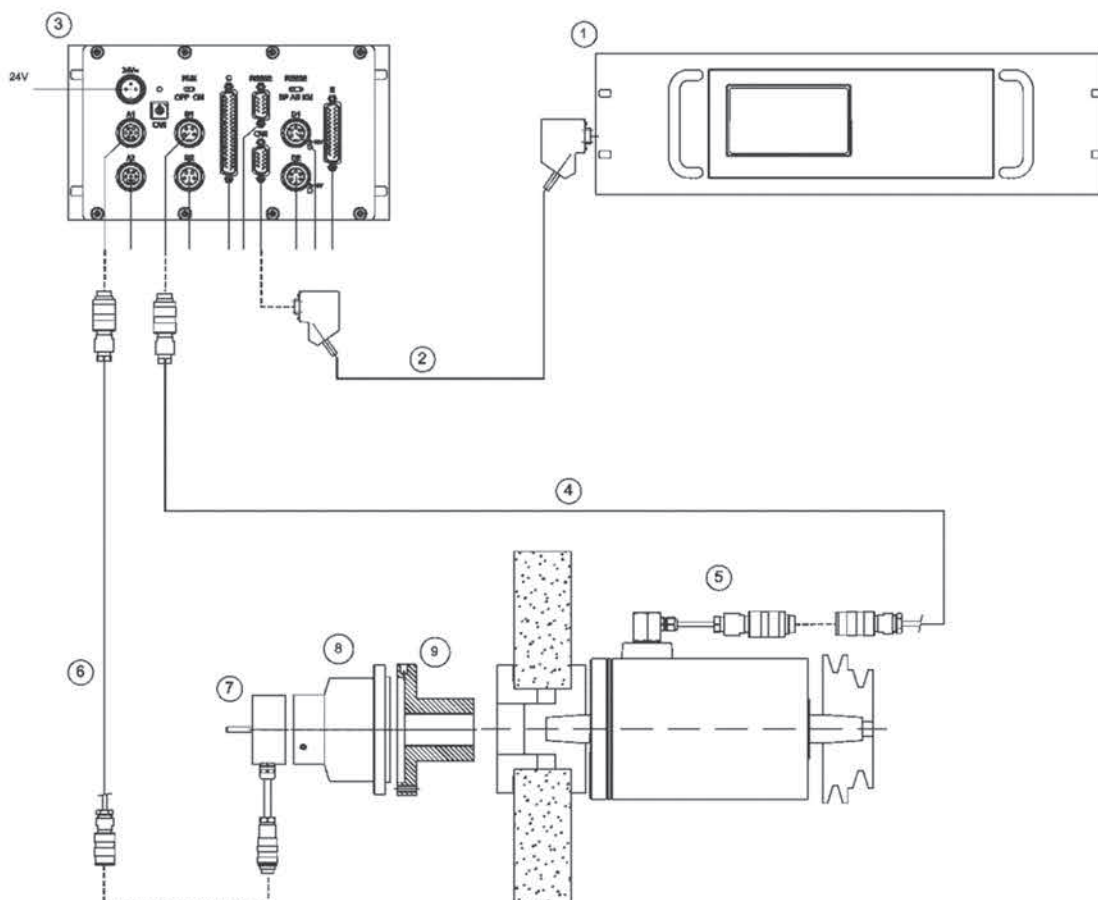
Power transmission at flange side



Power transmission at flange side, with GAP/crash/dress analysis

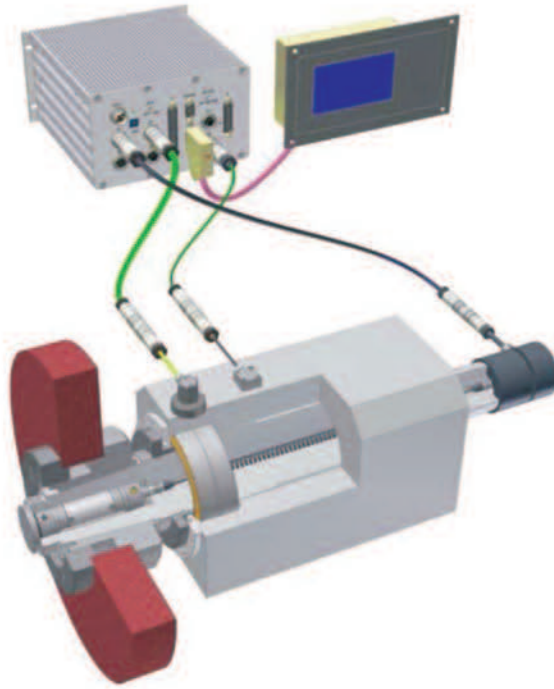
Application – Example

- Full Automatic Electronics display and Control unit, 19" Rack
- Balancing Head at Flange side with Receiver
- Contactless Transmitter, CONLESS, Flange side

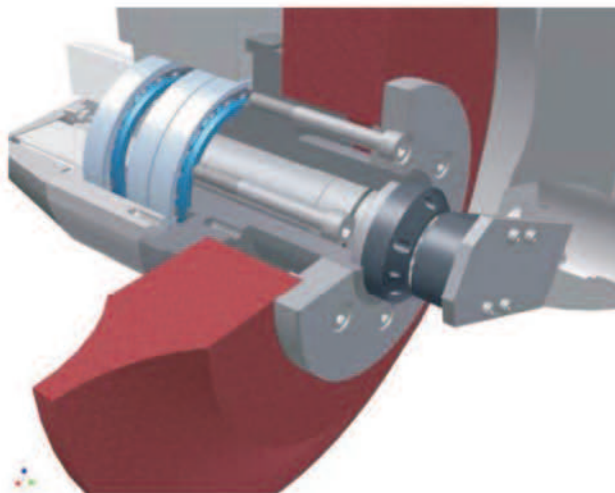


①	Operation module, BM240/300P01, 19" rack
③	Balancing module, AB300SM3, Fullautomat
⑤	Vibration sensor
⑦	CONLESS – transmitter with integrated rpm-sensor
⑧	External balancer, ESB...C
⑨	Flange
②;④;⑥	Connection cable: 9-way; 4-way; 7-way;

Fully automatic balancing with ISB internal balancers (내장용 바란서)



Power transmission at the end of the spindle

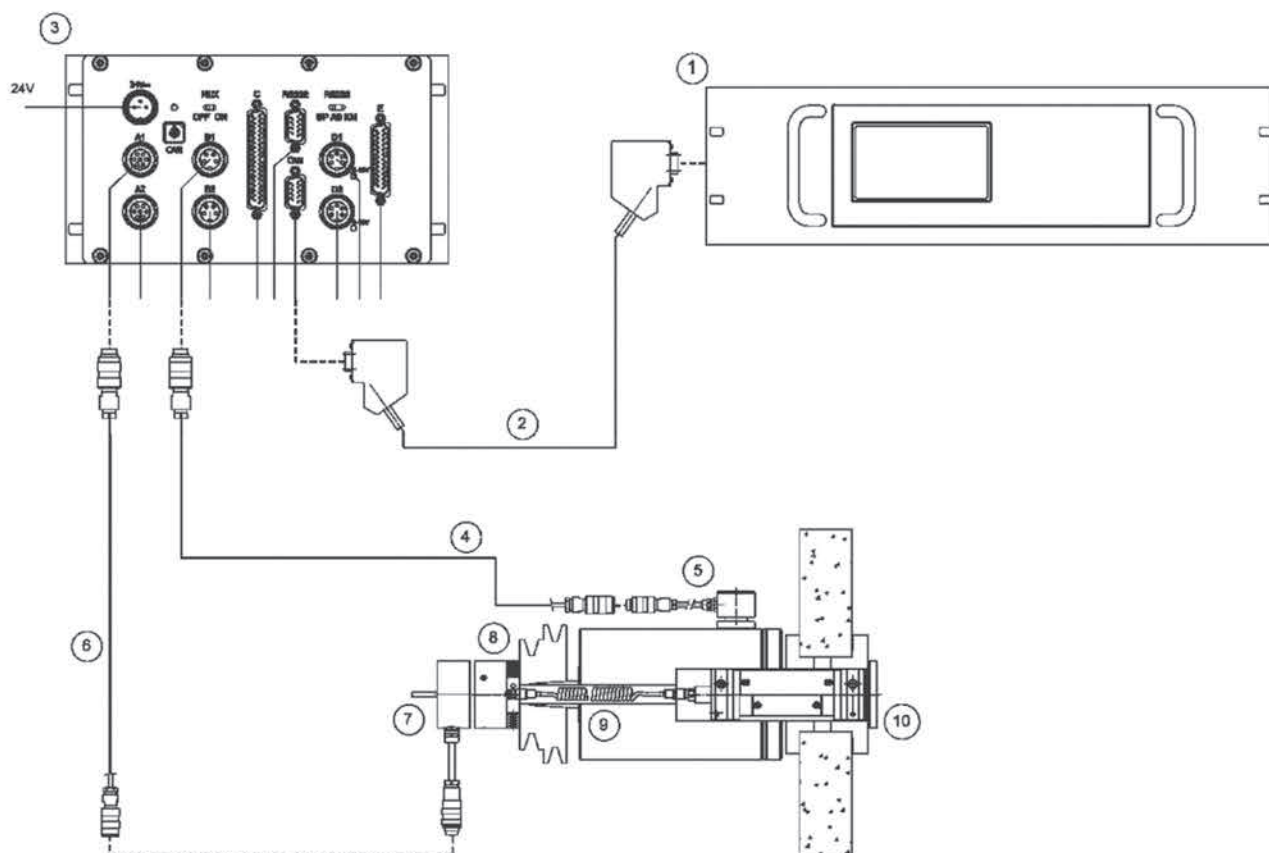


Power transmission at flange side

**The perfect solution for all grinding machines
at a very reasonable price**

Application – Example

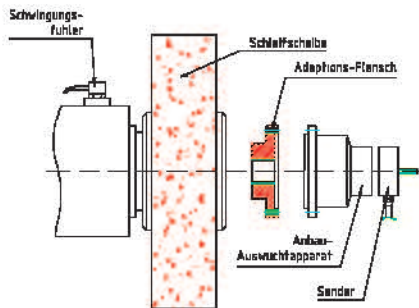
- Full Automatic Electronics display and Control unit, 19" Rack
- Internal Balancer in the Spindle–Receiver
- Contactless Transmitter, CONLESS, Flange side



①	Operation module, BM240/300P01, 19" rack
③	Balancing module, AB300SM3, Fullautomat
⑤	Vibration sensor
⑦	CONLESS – transmitter with integrated rpm–sensor
⑧	CONLESS – receiver
⑨	Coiled cable
⑩	Internal balancer, ISB, type " B"
②;④;⑥	Connection cable: 9–way; 4–way; 7–way;

Automatic balancing systems

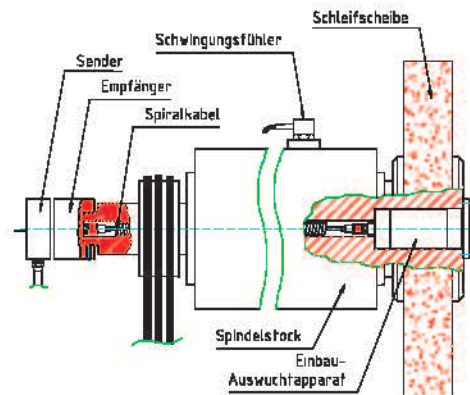
External balancers



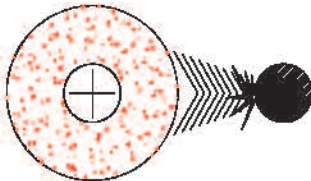
Result



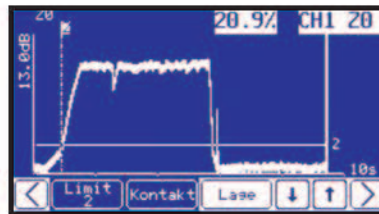
Internal balancers



Contact Scope GAP/Crash/Dress systems grinding process control



- 에어그라인딩 시간 단축
- 충돌방지
- 스톨과 가공물과의 간격 최소화(μ)



그래픽으로 진행상황이 보여진다.

Dressing control:
드레싱 - 량이 많지도 적지도 않아야 함.



> 20% 시간 절약

제조
원가절감

Balancing machines

Vertical



Horizontal



치과용 공구부터 대형 회전체까지 모든 밸런싱 작업

**With your individual balancing application
you are always in good hands!**

Balancing ring for chucks

(선반 척 바란싱)



- 모든 선반 척에 적용 가능
- 여러가지 직경의 – 링 규격이 가능함
- 용량이 다른 바란스 – 링 가능함
- 고속 회전이 가능함
- 바란싱 – 추 조절이 쉽다.

Customer benefits (장점)

- 가공제품의 원통도, 표면조도 향상
- 스피들 보호, 안정되고 부드러운 운전
- 공구수명 연장
- 작업속도 증대로 같은 시간에 생산성 증가

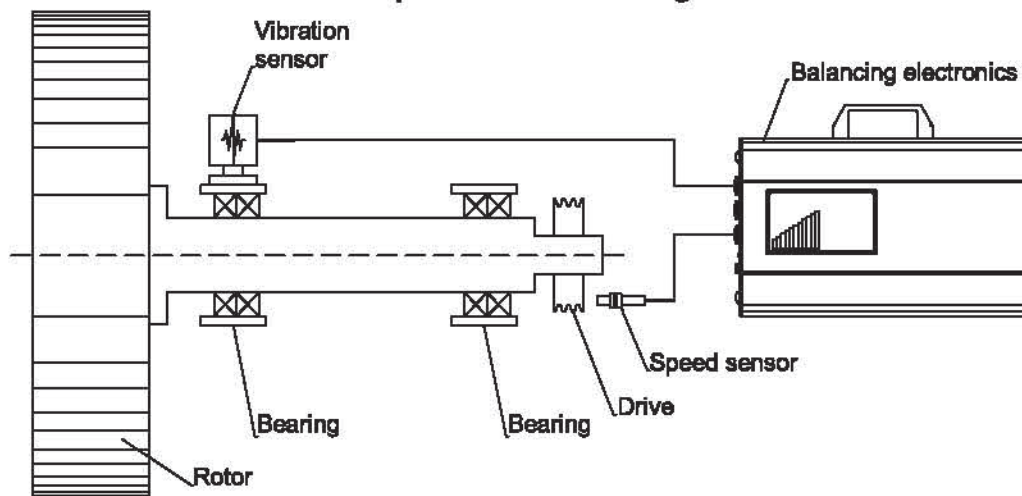
Offer your customers this proven balancing possibility!
You emphasise the competence and precision of your products.

For your detailed inquiry we need the following information:

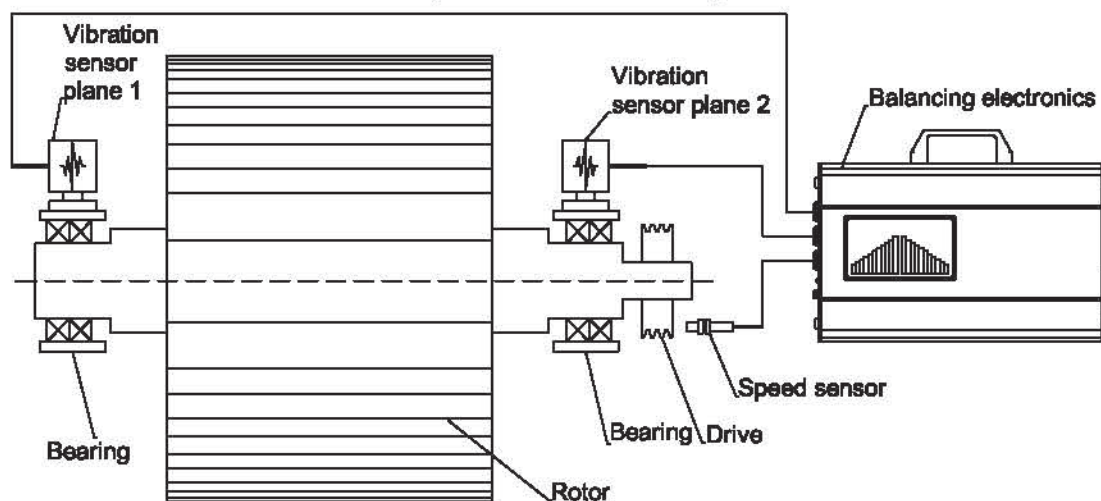
Ring inside- $\varnothing$, max. outside- $\varnothing$, max. ring width, max. speed

Application – Example

1-plane balancing



2-plane balancing



- Easy comfortable operation.
- Immediately available.
- Low price.

Example for a 2-plane equipment:

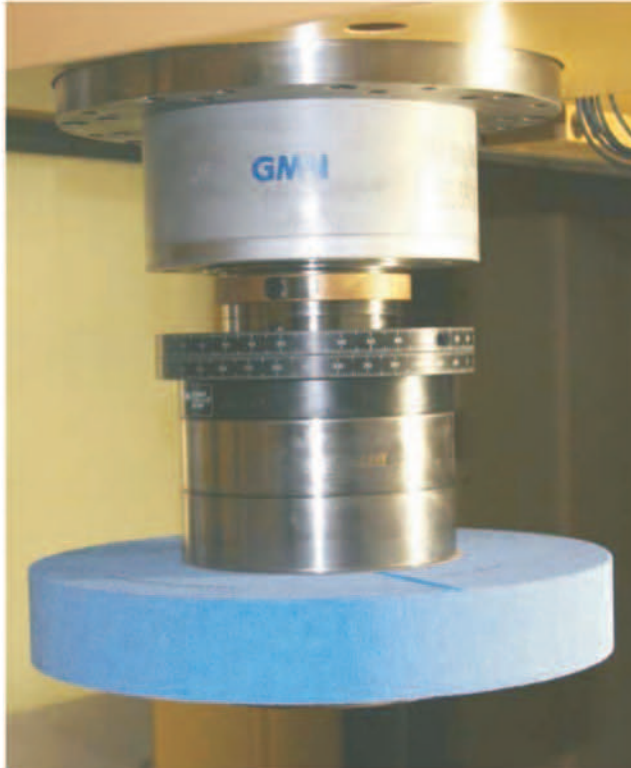
1 piece balancing electronics
3.BMT240M.2

2 pieces vibration sensor
3.PU.M1.4.3

1 piece speed sensor 3.DS.03.3

1 piece carrying case 3.TK01





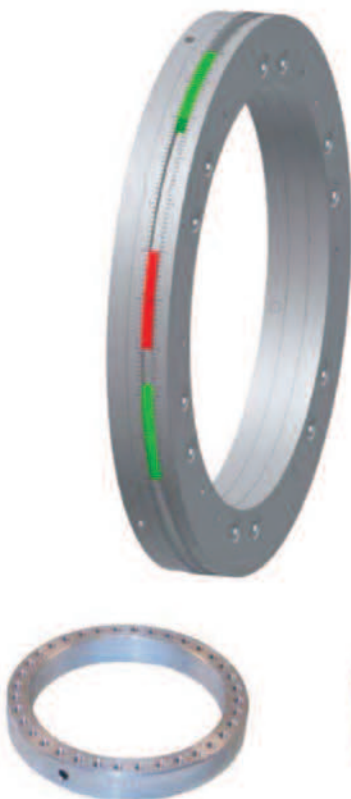
Invest 1 minute and gain a perfect concentricity!

Unbalance compensation:

- Easy manual positioning of the balancing rings acc. to display information.

Advantages:

- Comfortable easy operation, high efficiency.
- Small rings, less need of space.
- Variable ring Ø possible.



MPM balancing rings with adjustable balancing segments

Balancing rings are produced customized and are available in different designs and dimensions.

Application examples at turning lathes



Production of fittings



Balancing of rollers before turning



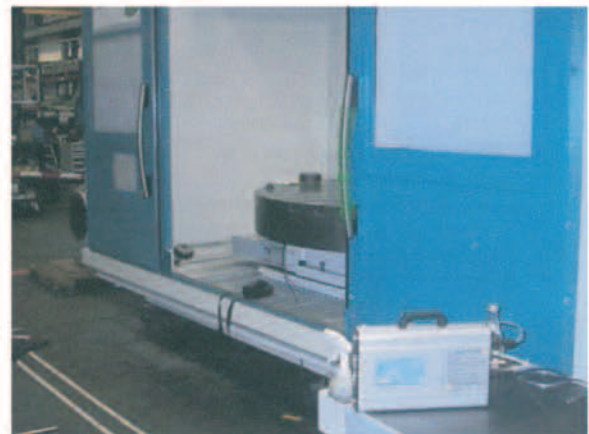
Balancing of rollers before turning



Balancing of rollers before turning



**Rollers for a production machine
in the food production**



**Balancing of big round tables
at milling / turning centres**

Application examples at turning lathes



Processing of electric motor housing



Processing of axle shafts



Production of optical lenses

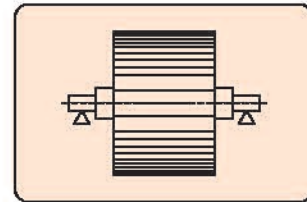
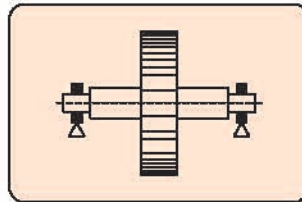
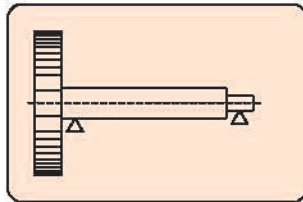


Processing of heat exchangers

General fact:
All castings or forgings to be processed on
turning lathes have an unbalance!
Balance the 1st part of a series then all further
parts can be processed perfectly.

Horizontal Balancing Machines

Easy handling – high precision – attractive price
for 1 and 2 plane balancing of shafts, rolls, etc.



Modular concept for parts from the dental burr to ...

HM5



회전체 무게 최대 약 500 g
잔류 불균형 량 최소 0.1 gmm
회전체 직경 최대 Ø80 mm
회전체 길이 최대 약 200mm

Start module
with
frequency
converter
3.HM5.SM

Operating and Start module for HM5

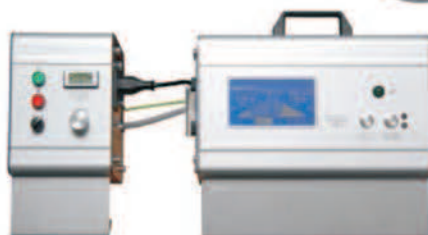


Operating
module
3.BMT240M

HM50



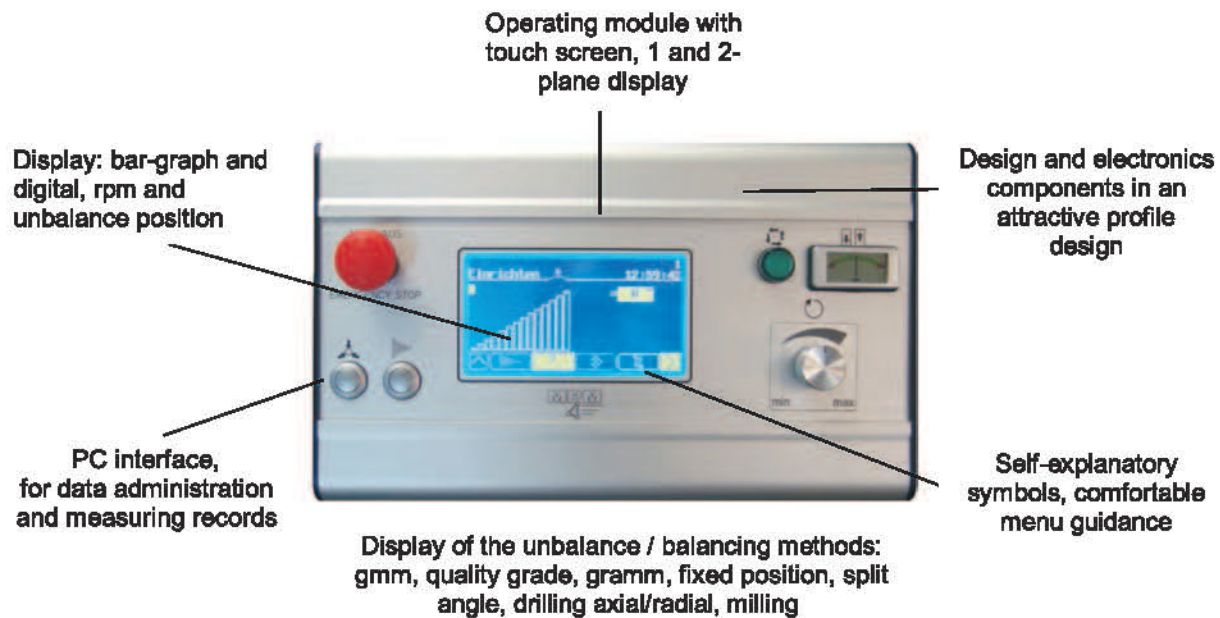
회전체 무게 최대 약 10 kg
잔류 불균형 량 최소 1 gmm
회전체 직경 최대 Ø150 mm
회전체 길이 최대 약 800mm



Operating and Start module for HM50

터치 스크린과 기능 키
심볼에 의한 편리한 운전 안내

Precision with comfort



HM1500



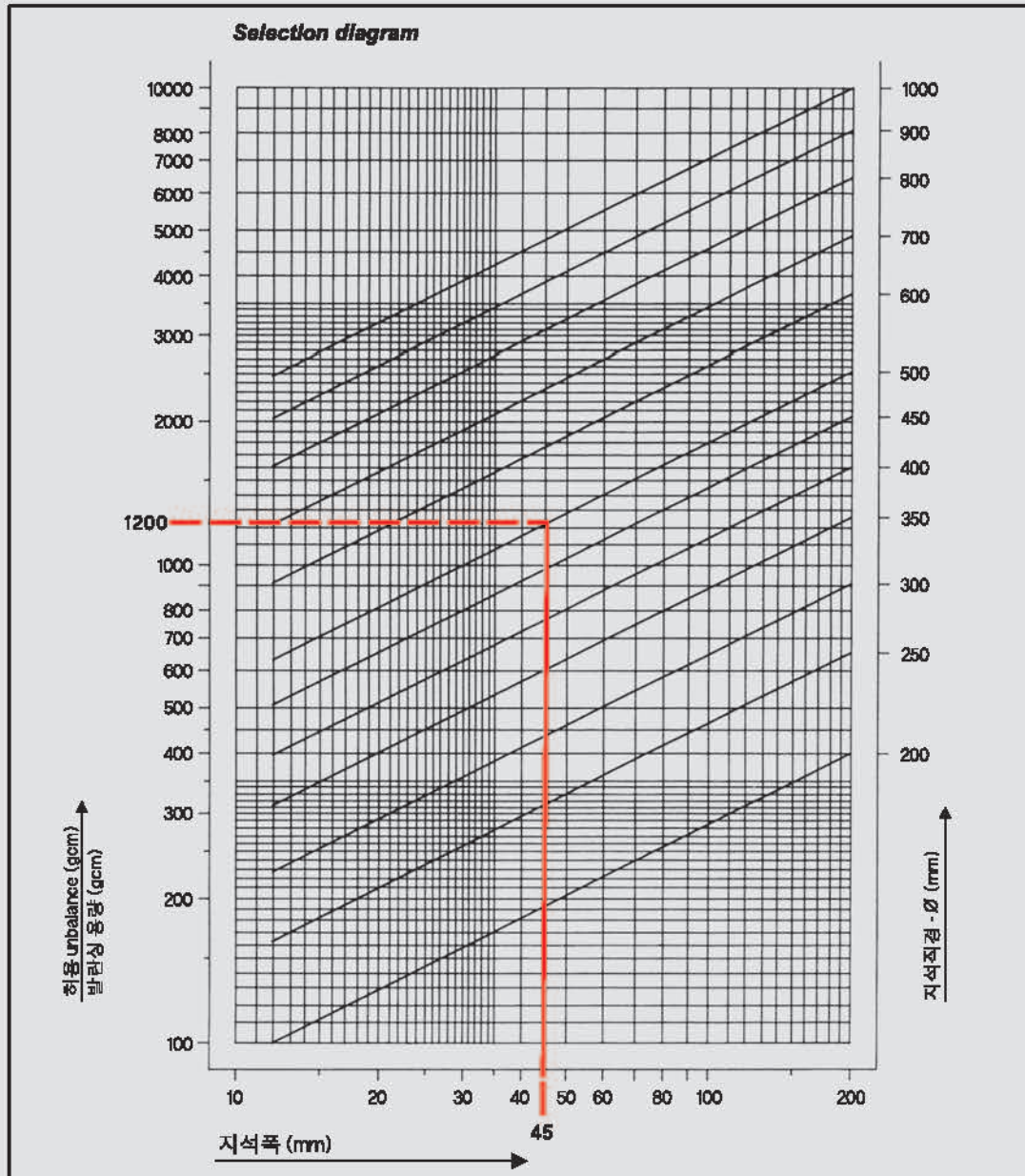
회전체 무게 최대 약 100kg
회전체 직경 최대 Ø450 mm 회전체 길이 최대 약 1300mm
잔류 불균형량 최소 1 gmm

- Easily adjustable belt drive
- Drive: frequency controlled E-motor with strong power up to 1,5kW
- Prism or roll holders upon request.
- Quick installation, easy repositioning, immediately ready for use.
- For heavy parts a comfortable loading with a crane is possible
- Customized colours for the HM1500
Special sizes upon request

Complete unit with:
Operating module and control unit with frequency converter

발란싱웨이트 범위 선정방법

연삭절삭속도 100m/s까지



DBE

대봉산업

D. B. Enterprise

경기도 부천시 소사구 송내대로 30번길 13
송내테크노밸리 303A호(송내동 299-5호)
TEL: (032) 666-2464 FAX: (032) 666-2466
http: www.dbenter.co.kr
E-mail: dbkorea@yahoo.co.kr

예:

지석직경	500mm
지석폭	45mm
허용 불균형량	
발란싱 용량	1200gcm

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http://www.mpmgmbh.de