

The Field Balancer suitable for Flexible Rotors and High Precision Machinery SB-7705series



Field Balancer for General Rotating Machinery and High Precision Grinders



共通項目			初期測定													
			a second second	測定		0B-1		18-2		tB-3		E-4		1B-5		B-6
測定日	時間	No.	全線名称	回転款	位相	振動量	位相	振動量	位相	振動量	位相	振動量	位相	振動量	位相	振動量
2015/9/9	95413 AM	1	Modai001	10987	1.01	0.145	201	0.379								
2015/9/9	95413 AM	2	Modal001	11990	178	0.31	200	0.529								
2015/9/9	95413 AM	3	Modai001	12981	128	1.361	154	0.839								
2015/9/9	95413 AM	4	Modal001	13997	104	0.455	173	0.29								
2015/9/9	95414 AM	.5	Modal001	15008	147	1.26	176	0.63								
2015/9/9	95414 AM	6	Modal001	15976	113	1.744	148	0571								
2015/9/9	95414 AM	7	Modal001	16988	93	1 574	140	0.371								
2015/9/9	95414 AM	8	Modal001	17985	85	1 277	172	0.282								

Model	AC powered	SB-7705R	SB-7705RH	SB7705RS	SB-7705RL					
	Battery powered	SB-7705RB	SB-7705RHB	SB-7705RSB	SB-7705RLB					
ange of	Balancing Speed ^{*1}	180 to 61,000min ⁻¹	180 to 120,000min ⁻¹	180 to 240,000min ⁻¹	60 to 61,000min ⁻¹					
Neasurement	Resolution of rotational speed display									
	Amplitude range of synchronized vibration		0.001 to 999µn	n(at 6,000min ⁻¹)						
	Resolution of vibration		0.00)1µm						
	Vibration input channel	AC Type:2ch, 4ch, 6ch (factory option) / Battery Type:2ch								
	Measuring method	Multi-spe	ed Least square method	, Conventional fixed-speed	d method					
	No. of Correction plane		1, 2, 3 or 4	selectable						
Correction	Polar coordinates		0° to 359° (and	le resolution: 1°)						
nethod	Components of unbalance vector		3 t	o 50						
	Correction weight		Add /	Remove						
/ibration	Unbalance Vibration Analysis		0.001 to 999um	(at 6.000min-1)						
analysis function	Harmonic analysis		0.001 to 999um	(at 6.000min ⁻¹)						
andiyolo ranonon	FFT Analysis (Optional)									
	Overall amplitude monitoring	Acc PA	Maximum analysis frequency: 20kHz Acc P, Acc RMS, Acc CF, Vel R, Disp EQP (range Acc: 0.1 to 40m/s ²)							
	Time domain Waveform (Optional)	A001,A		es max.	60 to 61,000min 2ch d method 40m/s ²) shots) 8(4)/2* ² 240V ±10% 50/60Hz lensing) option) 9 18 1925C (seather, 10c2(m/2)) 1925C (seather, 10c2(m/2)) 1935					
Others	USB memory port									
0111013	USB interface	AC Type:Available as standard / Battery Type:N/A USB mini-B connector (transfer to PC for data and Screenshots)								
	microSD card slot	035111								
	Eccentricity compensation	AC Type:N/A / Battery Type:Available as standard Available as standard								
	Measuring range selection	Available as standara Automatic ranaina								
	No. of stored work data	8(4)/2*2	8(4)/2*2	4(2)/2*2	0(0)(0*2					
		8(4)/2+2		D (LED back light)	8(4)/2-2					
	Graphic display									
	Set up operation			touch screen						
	Power supply	AC type: AC 100 to 240V ±10% 50/60Hz Battery type: Li-lon battery (Operating time: up to 10hours), AC 100 to 240V ±10% 50/60Hz								
	Environment Temperature: 10 to 40°C, Humidity: 20 to 80%RH (Non-condensing)									
	Dimension of measuring unit AC type:204(W) x 71(L) x 137(H)mm, (105(L)mm for printer option Battery type:187.5(W)x53.5(L)x130(H)mm									
	Mass of measuring unit		AC type:Approx. 1.7kg	(2.2kg for printer option)						
			Battery type	Approx. 900g						
	Dimension/Mass of Carrying case *3	AC type:455(W) × 185(L) × 320(H)mm Approx. 8.0kg								
		Ba	Hery type:385(W) x 120(1) × 255(H)mm Approx. 4.2	2kg					
Standard	Vibration sensor		P12SC (Sensitivity: 10pC/(m/s	(7))	P12SC (Sensitivity: 10pC/(m/s²))+V					
accessories	Fixing magnet		KM-025C (Hold	ling force: 100N)						
(one each)	Sensor cable			5m straight)						
	Rotation sensor			th 2m cable)						
	Manual of rotation sensor			adiusting driver						
	Fixing magnet stand	AC Type DG103		Battery type:NF2021 (Hold	ing force: 320N)					
	AC adapter	710 1700.00100		DC6V 2.8A)	19 10100. 02011)					
	Circular protractor			(ø150mm)						
	Manual			igest booklet						
Optional	Unbalance correction with 3 weights (G, GW)	Balance wei			GW: 2-plane)					
ophonul	Vibration input channel	Balance weights arrangement for grinding wheel (G: 1-plane, GW: 2-plane) 2ch, 4ch, 6ch (AC type only)								
	Built-in printer(-P)			(AC type only) rinter (AC type only)						
				with cable:LN-041(2.5m)						
	Additional sensor for multi-point measurement		vibration sensor:PT2SC	with cable:LN-041(2.5m)						

*1 In case of multi-speed measurement, lower limit is 600min⁻¹. *2 values in parenthesis are for 6 channel input option *3 Mass of carrying case with main body and all accessories. *4 Model SB-7705RL and SB-7705RLB attach an additional vibration sensor for low speed (model V10L), cable and mounting magnet.

Specifications may be changed without any notice due to modification, etc.



Balance Monitor

SB-7705series

⁷ The Field Balancer suitable for Flexible Rotors and High Precision Machinery

Multi-speed multi-plane balancing capability performs flexible rotor balancing and suppressing vibrations in all three directions (XYZ).

compared with conventional model Improved performance, twice processing speed and 0.2 times* resolution

> For Balancing of both rigid and flexible rotors All vibrations are suppressed at specified range of rotational speed **Predicting function of residual vibration** High efficiency balancing can be performed with prediction of residual vibration **Screen capture is available**

FFT analyzer is installed as standard USB port is equipped as standard Data can transfer to PC via USB port.

Lissajous Curve Display Function Continuously displays Lissajous curve at each rotational speed. Visual verification of shaft center locus.

RoHS SB-7705RB series Battery and AC powered model



One vibration sensor is attached as standard



Multi-speed multi-plane field balancing capability performs flexible rotor balancing and suppressing vibrations in all three directions (XYZ).

Main spindle of high speed rotating machinery is becomes relatively low stiffness and critical speeds exist in operating speed range. Multi-speed multi-plane balancing capability of SB-7705 series Field Balancer contributes balancing of such high speed machinery.

rolling element.

Balancing of both flexible and rigid rotors

Discrete vibration data are acquired automatically during accelerating: the data are statistically processed and derive optimum balancing weights which suppress vibration at specified speed range. Number of vibration measuring point is 1 to 6, maximum number of correcting plane is 4.

Simultaneously suppress tri-directional (XYZ) vibration

Ordinarily the bearing stiffness is anisotropic, and therefore measured vibration at only one direction is insufficient to obtain the maximum vibration amplitude SB-7705 series field balancer can expand input channel up to 6, then 2 of 3-axial accelerometer can be used. It is useful for balancing in the case of the major axis orientation of elliptic orbit motion is varied with rotational speed.

Easy creation of balancing report, Easy data management

- Each data can be stored with operator defined individual name.
- Measured data can be transferred to PC via USB.
- · Measured data can be stored in USB memory (AC powered model).
- · Measured data can be stored in microSD card (Battery powered model)
- · Data of screen capture can be stored

Battery powered model is convenient to use at field

Battery and AC powered model SB-7705RB is compact and light weight then convenient to use in field. (Battery operation time is approx. 10 hours.)

CE Marking and RoHS compliant

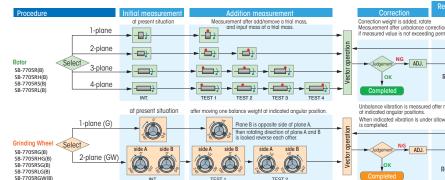
Our products minimize environmental impact and comply with European safety standards (CE Marking) and the RoHS directive, which restricts the use of 6 danaerous substances.

Balancing of grinding wheels (Option)

Balancing of grinding wheels in 1 or 2-plane with angular location adjustment by two or three fixed balance weights (Attach suffix -G: for 1 plane balancing, -GW: for 1-plane and 2-plane balancing)

Other options

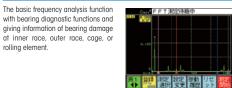
- · Built-in printer (Factory option of AC powered model)
- · Additional input channel; 4 or 6 channels (Factory option of AC powered model)
- · Additional vibration sensor and cable



TEST 1

C E RoHS

FFT analyzer as a standard feature



Lissajous curve display

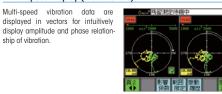


Multi-speed vibration response

ship of vibration

Amplitudes of unbalance vibration in graph with rotational speed as horizontal axis are displayed, convenient to recognizing critical speeds etc. This mode displays not only measured vibration but also expected residual vibration with	
prospective unbalance correction.	100 Mp

Multi-speed display (modal circle)



	1	Correction	Residual unbalance measurement						
		Correction weight is added, rotate Measurement after unbalance correction, the work would be finis if measured value is not exceeding permissible value.							
	4								



Unbalance vibration is measured after moving balance weights When indicated vibration is under allowable value, the operation

Residual unbalance

It is essential to suppress vibration at all speed range in case of high speed precision spindles.

Flexural rigidity of a rotor relatively decreases as higher speed and smaller size, and sometimes not only first mode but also higher mode balancing will be required. In such case, multi plane balancing is reauired.

Sigma field balancer SB-7705 series can perform dynamic balancing at wide speed range simultaneously.

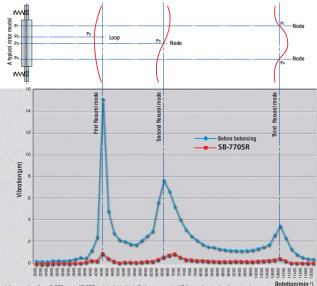
The following is an example of 2-plane balancing utilizing the full range of rotation speeds from 2,000 rpm to 12,000 rpm divided into 51 speeds.

Typical applications

· Machinery with wide variable speed range such as; Machining centers, textile machinery, high-speed tapping centers etc.

· General machinery such as; NC lathe, high-speed die machinina, high speed slicers, dicina saw, inner grinding machines, woodworking machines, crashers, blowers, pumps, compressors etc.

· Grinding machines (grinding wheel balancing option is required) such as; plane grinding machines, centerless grinding machines, cylindrical grinding machines



The Field Balancer suitable for Flexible Rotors and High Precision Machinery BB-7705 series

Natural mode of elastically supported flexible rotor

The rotation number (from 2.000rpm to 12.000rpm) is divided into 2 plane are revised(2 times of correction frequency) Measuring instrument: SB-7705R / Work: Turbo Charger

A vibration actual measurement graph

Vibration Sensor input 1 to 6ch **Balance Monitor** 0 \bigcirc S



Printer model

6ch model Rotation Sensor input

Model SB-7705 Optional P: Internal Printer (for AC model only) **Balancing Speed** Ultra-high speed RS: 180 to 240,000min⁻¹ Unbalance correction **RH:** 180 to 120.000min⁻ **Vibration Channel** High speed Standard speed R: 180 to 61,000min⁻¹ by balance weights 2: 2ch G: 1 plane RL: 60 to 61,000min-1 4: 4ch Low speed GW: 2 plane 6: 6ch In case of multi-speed measurement, lower limit is 600min **Power Supply** only 2ch for Battery(-B) and Printer(-P) model B: Battery and AC adapter blank: AC adapter