

## Technical report

Subject : Balancing of a measuring roll

Customer : Name of Company  
address

Performed at : see above

Article No.: : xxx

File number : xxx

Order No. : xxx

Official in charge : Mr. Trojahn      Tel.-Nr.: (06151) 428-1418  
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Performed on : 12.01.2007

Attendants : Mr. xxx      Name of Company      Mr. Trojahn  
Mr. Trojahn      Brüel & Kjær Vibro GmbH

Sitz der Gesellschaft in Darmstadt  
Handelsregister Darmstadt HRB 6803  
Geschäftsführung:  
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This report comprises 3 pages and 2 enclosures.

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## 1.0 PROBLEM DEFINITION

Balancing of a measuring roll

## 2.0 TEST OBJECT

Rotational speed of impeller	2.120 U/min
Impeller weight	1135 kg
Impeller diameter	252 mm
Radius for balance weights	126 mm

## 3.0 MEASURING PROCEDURE

All values measured are root mean squares (RMS) of the vibration speed.

According to DIN 10816-3 resp. ISO 2372, the summarised vibration values "SUM" are made up of all individual vibrations in the frequency band from 10 Hz to 1000 Hz.

The selective values „SEL“ are measured by means of a band-pass filter with a band width of 0,25 Hz.

A photoelectric reference encoder creates a speed- and angle reference to the rotor.

The mark used for photo scanning has been applied to the measuring roll.

## 4.0 MEASURING DEVICES

Vibration meter	VIBROPORT 41
Vibration speed sensor	VS-080

## 5.0 MEASURING RESULT

At a balancing speed of 2.120 U/min, the smoothness of running could be improved as follows by using compensating masses on 2 levels:

Measuring level	Measuring direction	Before compensation		After compensation	
		SUM mm/s	SEL mm/s	SUM mm/s	SEL mm/s
Driving side	horiz.	1,35	1,18	0,60	0,42
	vert.	3,48	5,54	0,68	0,23
	axial	1,52		---	---
Driven side	horiz.	5,59	2,88	0,87	0,71
	vert.	1,19	0,97	0,84	0,64
	axial	0,60		0,59	0,45

## 6.0 EVALUATION

According to our perception, the evaluation of the measuring roll has to be done in measurements at non-rotating machine parts according to standard DIN ISO 10816-3.

Therefore, the measuring roll has to be classified in group „2“ . The substructure of the measuring roll is rigid.

The vibration size is fixed as an evaluation criterion. This criterion defines the determination of vibration size limits, with regard to permissible dynamic bearing load and permissible vibration transmission into the environment, substructures and foundations.

The maximum vibration value identified by means of a broadband measurement at each bearing or bearing stand is classified in the evaluation zone of the respective subgroup.

## 6.1 Evaluation zone

<b>Zone</b>	<b>Determination of evaluation zone</b>	<b>permissible limits</b>
A	Usually, machines that have just been put into operation show such vibration values.	1,4 mm/s
B	Machines, whose vibration values are within this zone, are usually regarded to be suitable for unrestricted continuous operation.	2,8 mm/s
C	Machines, whose vibration values are within this zone, are usually not regarded to be suitable for continuous operation. However, the machine may be operated in this condition for a limited period of time, until a favourable opportunity for corrective action arises.	4,5 mm/s
D	Vibration values in this zone are usually regarded to be dangerous enough to cause damages to the machine.	> 4,5 mm/s

## 6.2 Determination of the evaluation zone

The measuring roll has to be classified in zone „A“ .

Darmstadt, 15.01.2007

Brüel & Kjær Vibro GmbH

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