

VZOR



Calibration certificate

Kalibrierschein

Object <i>Gegenstand</i>	Nutrunner
Manufacturer <i>Hersteller</i>	DSM Messtechnik GmbH
Type <i>Typ</i>	DS44/10 MDW
Serial-No. <i>Geräte-Nr.</i>	16DH064
Auftraggeber <i>Purchaser</i>	LK Machines, s.r.o.
Order-No. internal <i>Auftrags-Nr. intern</i>	20160511_kalibrace
Order-No. external <i>Auftrags-Nr. extern</i>	-
Number of pages of the certificate <i>Anzahl der Seiten des Kalibrierscheins</i>	4
Date of calibration <i>Datum der Kalibrierung</i>	11.05.2016
By order <i>Im Auftrag</i>	LK169999, 11.05.2016

Cudly
person responsible
Bearbeiter

LK MACHINES
Jičínská 226/17,
130 00 Praha 3
IČ: 043 12 503 | www.LK-machines.cz

Seal
Siegel

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1. Calibration device

QS-Box	DSM digital	Serial-No.	15CB006
Amplifier	SCI 25Nm	Serial-No.	15CA0013
Reference	DR 12_25Nm	Serial-No.	140590
Cal. symbol (Measuring chain)		Nm	
Measuring uncertainty in the applied measuring range in %			0,10

2. Calibration arrangement

Inst. pos.	horizontal
Fixation parts	LM 44

3. Ambient conditions

Cal. temperature (in °C)	20
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4. Entries about calibration item

Designation	Nutrunner
Transducer	
Type	DS44
Serial-No.	43Y248
Ident.-No.	
Adjuster/printer (e.g. measuring card)	
Type	MultiPro
Serial-No.	16LD026
Ident.-No.	-
Supply voltage	5V
Rotational speed	50 r.p.m.
Transducer connection	5m

5. Calibration process

Switch off Torque 10Nm

6. Calibration result

Order	LKM_DEMO_DS44_25NM
Channel	Channel:1
Spindle	1
Testing scope	10

	Torque	Angle
Set value		
Lower limit value	0.00 Nm	0.00 Deg
Upper limit value	20.00 Nm	1500.00 Deg
Arithmetic mean	10.15 Nm	569.30 Deg
Error margin	0.07 Nm	163.00 Deg
Standard deviation	0.02 Nm	68.51 Deg
Sampling stand. dev.	0.02 Nm	72.21 Deg
Minimum Value	10.12 Nm	485.00 Deg
Maximum Value	10.19 Nm	648.00 Deg
CM-Value	176.50	3.46
CMK-Value	173.80	2.63
CP-Value	186.05	3.65
CPK-Value	183.20	2.77
CM/CMK-Evaluation	OK	OK
CP/CPK-Evaluation	OK	OK

7. Measuring values - QS-box

No.	TQ (Nm)	AN (Deg)	Date	Time
1	10.12	641.00	11.05.2016	10:45:08
2	10.16	497.00	11.05.2016	10:45:16
3	10.15	648.00	11.05.2016	10:45:24
4	10.13	508.00	11.05.2016	10:45:32
5	10.15	645.00	11.05.2016	10:45:40
6	10.16	485.00	11.05.2016	10:45:47
7	10.19	640.00	11.05.2016	10:45:55
8	10.15	497.00	11.05.2016	10:46:03
9	10.16	608.00	11.05.2016	10:46:11
10	10.16	524.00	11.05.2016	10:46:19

8. Measuring values - Equipment

No.	TQ (Nm)	AN (Deg)
1	10.01	641.80
2	10.02	642.00
3	10.01	649.60
4	10.01	659.60
5	10.02	646.40
6	10.04	639.00
7	10.04	641.10
8	10.01	640.10
9	10.02	610.20
10	10.01	624.50

9. Result of the equipment

Order LKM_DEMO_DS44_25NM
 Spindle 1
 Testing scope 10

	Torque	Angle
Set value		
Lower limit value	0.00 Nm	0.00 Deg
Upper limit value	20.00 Nm	1500.00 Deg
Arithmetic mean	10.02 Nm	639.43 Deg
Error margin	0.03 Nm	49.40 Deg
Standard deviation	0.01 Nm	12.85 Deg
Sampling stand. dev.	0.01 Nm	13.55 Deg
Minimum Value	10.01 Nm	610.20 Deg
Maximum Value	10.04 Nm	659.60 Deg
CM-Value	278.42	18.45
CMK-Value	277.89	15.73
CP-Value	293.48	19.45
CPK-Value	292.93	16.58
CM/CMK-Evaluation	OK	OK
CP/CPK-Evaluation	OK	OK

10. Notes

Tool meets the specification according to the technical documentation.