T E S T R E P O R T

Issued by: NWML Test Laboratory

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Tests requested by:	P Dixon
On behalf of:	The National Weights & Measures Laboratory
Submitter:	Intercomp 3839 County Road 116 Minneapolis Minnesota 55340 USA
Application number:	F20041
Reference number:	T10/0001
Pattern Designation:	LP600
Procedures:	Tests were carried out on the Equipment in accordance with the following international recommendation: **OIML R60 Edition 2000 (E)**
Performed at:	The National Weights & Measures Laboratory Stanton Avenue Teddington Middlesex TW11 0JZ
Checked by:	G Stones

Information concerning the pattern

Application no.: F20041

Accuracy class: [ ] A [ ] B [ ] C [X] D

Maximum number of load cell intervals (n_{max}): 500

Direction of loading: (for load cell characteristics, see 4.6.3)

[ ] Tension [ ] Beam (shear) [X] Compression
[ ] Universal [X] Beam (bending)

Safe load limit (Lim): 200 % of Max Apportionment factor. p_{LC} (see *NOTE*): 0.7

Limits of working temperature: (only if other than -10 °C to +40 °C, see 5.5.1.1)

Upper: _____ °C Lower: _____ °C

Power voltage: V_{min}: _____V V_{max}: _____V

or V: 5 V [ ]ac [X] dc Recommended: [ ]ac [ ] dc

Humidity evaluation symbol:

NH	[ ] Yes	[X] No
SH	[ ] Yes	[X] No
CH or no markings	[X] Yes	[ ] No

Electronic load cell: [ ] Yes [X] No

NOTE: This value of P_{LC} is assumed to be 0.7 unless otherwise declared by the manufacturer.

Information concerning the pattern

Application no.: F20041

Specify other conditions that must be observed to obtain the specified performance (for example, electrical characteristics of the load cell):

Various designs within model range:

Maximum capacity E_{max} (g, kg or t)	Minimum load cell verification interval v_{min} (g, kg or t)	Minimum dead load E_{min} (g, kg or t)	Maximum number of load cell intervals n_{max}	Minimum dead load Output return DR (g, kg or t)
1900 kg	0.75 kg	0 kg	500	

All values within this table are taken from documentation pages

Load cell(s) submitted:

Model designation	Serial number	E_{max}
LP600	X203	1900

Secondary equipment (specify load adapters, etc.):

Remarks:

General information concerning test conditions

Ref.: A.3

Application no: F20041

Load cell model: LP600 Serial no: X203 E_{max}: 1900 kg

n_{max}: 500 v_{min}: 0.75 kg DR (if applicable):

Force-generating system – description:

NWML hanging weight system, with 20 x 100 kg weight stack

Comprising 20 off 100 kg stainless steel masses, with self-centring linking system, mounted in an earth support system. The masses are applied or removed by lowering and raising a hydraulic platform that constitutes part of the earth support framework.

The 100 kg stainless steel masses are calibrated at NWML, Teddington, United Kingdom and are traceable to national standards

Minimum test load:

0 kg

Indicating instrument – description:

Load cell output monitored by HBM DMP 39
Load cell input monitored by HBM DMP 39

Environmental equipment - description:

Temperature:

Monitored by 1 PRT in the environmental chamber and 1 PRT attached to load cell body

Humidity:

Monitored by 1 off Protimeter DP996 cyclic chilled mirror hygrometer.

Barometric pressure:

Monitored by precision aneroid barometer.

Test location:

National Weights and Measures Laboratory

Acceleration of gravity at test location:

9.811818 ms^2 (determined by the National Physical Laboratory, Teddington, United Kingdom)

Evaluator:

G Yates

Summary of the test

Application No:	F20041		
Load cell model	LP600		
Serial No:	X203		
E_{max}:	1900	n_{max}:	500
v_{min}:	0.75 kg	DR:	
Force generating system	NWML hanging weights	p_{LC}:	0.7
Indicating instrument:	HBM DMP 39		
Evaluator	G Yates		

No	Test description	Pass	Fail	Report page	Remarks
D.2	Load cell errors (E_L)	+			
D.3	Repeatability error (E_R)	+			
D.4	Temperature effects on MDLO (C_M)	+			
D.5	Creep (C_C)	+			
D.5	DR (C_{OR})	+			(see Note 2) DR = 1.67 kg
D.6	Barometric pressure effects (C_P)	+			
D.7	Humidity effects (CH or no mark) (C_{Hmin})	+			
D.8	Humidity effects (SH)	NA			
D.9	Marking requirements	+			
D.10	Load cells equipped with electronics	NA			
D.11	Warm-up time	NA			
D.12	Power voltage variations	NA			
D.13	Short time power reductions	NA			
D.14	Bursts (electrical fast transients)	NA			
D.15	Electrostatic discharge	NA			
D.16	Electromagnetic susceptibility	NA			
D.17	Span stability	NA			

The following table checks the required calculation as per the *General notes* provisions of C.4:

Para. No.	Description	n_{max}		n_{max} - 500		n_{max} - 1000	
		Pass	Fail	Pass	Fail	Pass	Fail
C.4.2 C.4.3 C.4.5	Check all calculations using values of n at n_{max} and at lower than n_{max}	+					
C.4.4	Check that $v_{min} \leq \frac{D_{max} - D_{min}}{n_{max}}$	Pass					

Worst case figure for minimum dead load output return error (in mass units) = DR = 1.67 kg see *Note 3*

Notes: 1 Enter "NA" for "the test is not applicable"
2 Record error to accommodate OIML R 76
3 This DR value is used in association with OIML R 76

Form D.1 (3 runs) Load test data (E_L)

Ref.: A.4.1.1 to A.4.1.11

Application No:	F20041
Load cell model:	LP600
Serial no:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75 kg
$p_{LC:}$	0.7 DR :
Force generating system:	NWML hanging weights
Indicating instrument:	HBM DMP 39
Evaluator:	G Yates

	At start	At end	
Date:	07:12:04	07:12:04	dd.mm.yy
Temperature	20.9	20.9	°C
Relative humidity	46.3	43.5	%
Barometric pressure	1.0305	1.0312	kPa
Indicator Temp.	20.9	20.9	°C

Table D.1 (3 runs) (Initial 20°C)

Test load (kg)	Run No 1		Run No 2		Run No 3		Average indication runs 1,2&3
	Indication (units)		Indication (units)	Time	Indication (units)	Time	
0	0.048190	09:17					
1700	1.945240						
0	0.047790						
1700	1.946400						
0	0.047750						
1700	1.945200						
0	0.047700	09:23					
0	0.048070	09:28	0.047790	09:34	0.047780	09:38	0.047880
100	0.160009		0.159900		0.159860		0.159923
400	0.495030		0.494730		0.494640		0.494800
1000	1.164080		1.163100		1.162290		1.163157
1700	1.943940		1.942020		1.940160		1.942040
1000	1.164700		1.163720		1.162910		1.163777
400	0.495060		0.494850		0.494710		0.494873
100	0.160010		0.160080		0.159980		0.160023
0	0.047790	09:34	0.047780	09:38	0.047790	09:43	0.047787

Note: 1 * = Average initial minimum test load indication
2 Absolute (not relative) time shall be recorded

Form D.1 (3 runs) Load test data (E_L)

Ref.: A.4.1.1 to A.4.1.11

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75
p_{LC}:	0.7 DR:
Force generating system:	NWML hanging weights
Indicating instrument:	HBM DMP 39
Evaluator:	G Yates

	At start	At end	
Date:	7:12:04	7:12:04	dd.mm.yy
Temperature	39.7	39.3	°C
Relative humidity	18.6	20.4	%
Barometric pressure	1.0301	1.0302	kPa
Indicator Temp.	20.7	20.8	°C

Table D.1 (3 runs) (40°C)

Test load (kg)	Run No 1		Run No 2		Run No 3		Average indication runs 1, 2 & 3
	Indication (units)		Indication (units)	Time	Indication (units)	Time	
0	0.047340	09:19					
1700	1.939800						
0	0.047020						
1700	1.939400						
0	0.046950						
1700	1.939532						
0	0.046946	09:25					
0	0.047128	15:22	0.046960	15:27	0.046942	15:32	0.047010
100	0.159146		0.159074		0.159090		0.159103
400	0.493868		0.493748		0.493970		0.493862
1000	1.161080		1.160760		1.161632		1.161157
1700	1.938000		1.937562		1.939082		1.938215
1000	1.161650		1.161380		1.162244		1.161758
400	0.493926		0.493914		0.494070		0.493970
100	0.158990		0.158998		0.158194		0.158727
0	0.046960	15:27	0.046942	15:32	0.046938	15:37	0.046947

Note: 1 * = Average initial minimum test load indication
2 Absolute (not relative) time shall be recorded

Form D.1 (3 runs) Load test data (E_L)

Ref.: A.4.1.1 to A.4.1.11

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75
p_{LC}:	0.7 DR:

	At start	At end	
Date:	8:12:04	8:12:04	dd.mm.yy
Temperature	-9.8	-9.5	°C
Relative humidity	64.3	62.1	%
Barometric pressure	1.0310	1.0308	kPa
Indicator Temp.	21.0	21.1	°C

Force generating system: NWML hanging weights

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.1 (3 runs) (-10°C)

Test load (kg)	Run No 1		Run No 2		Run No 3		Average indication runs 1, 2 & 3
	Indication (units)		Indication (units)	Time	Indication (units)	Time	
0	0.052756	14:08					
1700	1.948106						
0	0.052198						
1700	1.947326						
0	0.051940						
1700	1.947326						
0	0.051780	14:15					
0	0.052404	14:20	0.052038	14:25	0.051930	14:30	0.052124
100	0.164988		0.165048		0.164782		0.164939
400	0.500170		0.499914		0.499926		0.500003
1000	1.169500		1.169640		1.169240		1.169460
1700	1.949472		1.949148		1.949372		1.949331
1000	1.169938		1.169640		1.169700		1.169759
400	0.499942		0.499806		0.499792		0.499847
100	0.164830		0.164678		0.164700		0.164736
0	0.052038	14:24	0.051930	14:30	0.051968	14:35	0.051979

Note: 1 * = Average initial minimum test load indication
2 Absolute (not relative) time shall be recorded

Form D.1 (3 runs) Load test data (E_L)

Ref.: A.4.1.1 to A.4.1.11

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75
p_{LC}:	0.7 DR:

	At start	At end	
Date:	13:12:04	13:12:04	dd.mm.yy
Temperature	20.8	20.8	°C
Relative humidity	37.0	38.0	%
Barometric pressure	1.0292	1.0292	kPa
Indicator Temp.	20.8	20.7	°C

Force generating system: NWML hanging weights

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.1 (3 runs) (Final 20°C)

Test load (kg)	Run No 1		Run No 2		Run No 3		Average indication runs 1, 2 & 3
	Indication (units)		Indication (units)	Time	Indication (units)	Time	
0	0.048842	09:38					
1700	1.944036						
0	0.048416						
1700	1.943648						
0	0.048372						
1700	1.943340						
0	0.048372	09:45					
0	0.048694	09:50	0.048536	09:55	0.048502	10:03	0.048577
100	0.160488		0.160476		0.160612		0.160525
400	0.496110		0.496020		0.496050		0.496060
1000	1.164306		1.164002		1.164038		1.164115
1700	1.943140		1.942330		1.942490		1.942653
1000	1.164874		1.164508		1.164600		1.164661
400	0.496130		0.495986		0.496064		0.496060
100	0.160340		0.160430		0.160560		0.160443
0	0.048536	09:54	0.048502	10:03	0.048512	10:05	0.048517

Note: 1 * = Average initial minimum test load indication
2 Absolute (not relative) time shall be recorded

Form D.2 Load cell errors (E_L) calculation

Ref. 5.1.1; A4.1.12 to A.4.1.14; C.2.2.

Application No: F20041
Load cell model: LP600
Serial No: X203
E_{max}: 1900
n_{max}: 500
v_{min}: 0.75 kg
p_{LC}: 0.7 DR :

Force generating system: NWML hanging weights
Conversion factor, f: 0.00379
Indicating instrument: HBM DMP 39
75% test load (g, kg or t):
Evaluator: G Yates
Reference indication at 75% test load:

Table D.2

Test load (kg)	Reference indicat. (units)	20.9 °C (20 °C) Indicat. (units)	error (v)	39.7 °C Indicat. (units)	error (v)	-9.8 °C Indicat. (units)	error (v)	20.8 °C (20 °C) Indicat. (units)	error (v)	mpe (v)
0	0.000000	0.000000	0.00	0.000000	0.00	0.000000	0.00	0.000000	0.00	0.35
100	0.111472	0.112043	0.15	0.112093	0.16	0.112815	0.35	0.111948	0.13	0.35
400	0.445888	0.446920	0.27	0.446852	0.25	0.447879	0.53	0.447483	0.42	0.75
1000	1.114719	1.115277	0.15	1.114147	-0.15	1.117336	0.69	1.115538	0.22	1.05
1700	1.895022	1.894160	-0.23	1.891205	-1.01	1.897207	0.58	1.894076	-0.25	1.05
1000	1.114719	1.115897	0.31	1.114748	0.01	1.117635	0.77	1.116083	0.36	1.05
400	0.445888	0.446993	0.29	0.446960	0.28	0.447723	0.48	0.447483	0.42	0.75
100	0.111472	0.112143	0.18	0.111717	0.06	0.112612	0.30	0.111866	0.10	0.35
0	0.000000	-0.000093	-0.02	-0.000063	-0.02	-0.000145	-0.04	-0.000061	-0.02	0.35

Minimum test load, D_{min}: 0 kg

Notes:
1 Load/reference indications: if a 75% load point was not obtained, a straight line interpolation between the adjacent higher and lower load point indications is used (see 5.2.2 and calculation procedures in C.2.2).
2 Error, E_L: the difference between the test indication and the reference indication divided by the conversion factor, f.
3 Test load values are values above minimum test load, $D_{min.}$

Form D.3 Repeatability error (E_R) calculation

Ref.: 5.4, A.4.1.13; C.2.3

Application No: F20041
Load cell model: LP600
Serial No: X203
E_{max}: 1900
n_{max}: 500
v_{min}: 0.75 kg
$p_{LC:}$ 0.7 DR:
Force generating system: NWML hanging weights Conversion factor, f: 0.00379
Indicating instrument: HBM DMP 39
Evaluator: G Yates

Table D.3

Test load (kg)	20.9 °C (20 °C)		39.7 °C (40 °C)		-9.8 °C (- 10 °C)		20.8 °C (20 °C)		mpe (v)
	Repeatability error (units)	Repeatability error (v)	Repeatability error (units)	Repeatability error (v)	Repeatability error (units)	Repeatability error (v)	Repeatability error (units)	Repeatability error (v)	
0	0.00029	0.08	0.00019	0.05	0.00047	0.13	0.00019	0.05	0.35
100	0.00015	0.04	0.00007	0.02	0.00027	0.07	0.00014	0.04	0.35
400	0.00039	0.10	0.00022	0.06	0.00026	0.07	0.00009	0.02	0.75
1000	0.00179	0.47	0.00087	0.23	0.00040	0.11	0.00030	0.08	1.05
1700	0.00378	1.00	0.00152	0.40	0.00032	0.09	0.00081	0.21	1.05
1000	0.00179	0.47	0.00086	0.23	0.00030	0.08	0.00037	0.10	1.05
400	0.00035	0.09	0.00016	0.04	0.00015	0.04	0.00014	0.04	0.75
100	0.00010	0.03	0.00080	0.21	0.00015	0.04	0.00022	0.06	0.35
0	0.00001	0.00	0.00002	0.01	0.00011	0.03	0.00003	0.01	0.35

Note: Error, E_R: the maximum difference between the three test indications divided by the conversion factor, f.

Form D.4 Temperature effects on MDLO (C_M) calculation

Ref.: 5.5.1.3, A.4.1.14; C.2.4

Application No:	F20041		
Load cell model:	LP600		
Serial No:	X203		
E_{max}:	1900		
n_{max}:	500		
v_{min}:	0.75 kg		
$p_{LC:}$	0.7	DR:	
Force generating system:	NWML hanging weights	Conversion factor, f:	0.00379
Indicating instrument:	HBM DMP 39		
Evaluator:	G Yates		

Table D.4

Temperature °C	Indication (units)	Change (v)	Change (V_{min}/5 °C)	mpc (V_{min}/5 °C)
20.9	0.047880			
39.7	0.047010	-0.23	0.28	0.70
-9.8	0.052124	1.35	0.63	0.70
20.8	0.048577	-0.94	0.70	0.70

Notes:

1 MDLO: minimum dead load output.
2 Indication: the average initial minimum load indication obtained from Table D.1
3 The maximum permissible change (mpc) allowed is: (v_{min}/5 °C) for classes B, C, and D; (v_{min}/2 °C) for class A.
4 Change C_M(v): the difference between the observed indications and the indications at the prior temperature divided by the conversion factor, f.

Form D.5 Creep test (C_C) and DR test (C_{OR}) one sheet for each test temperature)

Ref.: 5.3.1, 5.3.2; A.4.2, A.4.3

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75 kg
p_{LC}:	0.7 DR :

	At start	At end	
Date:	7:12:04	7:12:04	dd.mm.yy
Temperature	21.9	21.9	°C
Relative humidity	52.5	53.0	%
Barometric pressure	1.0311	1.0303	kPa
Indicator Temp.	21.9	21.9	°C

Force generating system: NWML hanging weights Conversion factor, f: 0.00379

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.5 (Initial 20°C)

load (kg)	Indication (units)	Barometric pressure		Change (v)	mpc (v)
0	0.048190		09:17		
1700	1.945240				
0	0.047790				
1700	1.946400				
0	0.047750				
1700	1.945200				
0	0.047700		09:23		
0	0.048130	1.03	10:49		
1700	1.942650	1.03	10:49		
1700	1.942240	1.03	10:54	-0.11	0.74
1700	1.942210	1.03	10:59	-0.12	0.74
1700	1.942190	1.03	11:09	-0.12	0.74
1700	1.942180	1.03	11:19	-0.12	0.74
0	0.047558	C_{MDLOR}	11:19	-0.151	0.50
Difference	20 - 30 minutes			0.003	0.16

DR (v):	0.151
actual time (s)	1800
specified time (s):	1800
mpc for DR (v):	0.5

30 minute creep:	PASS:	X	FAIL:	
30 - 20 minute creep difference:	PASS:	X	FAIL:	
DR ≤ 0.5v:	PASS:	X	FAIL:	
MDLOR within manufacturer specified DR requirements:	PASS:		FAIL:	

Notes:

1 Change (v) for creep: the observed indication minus the initial "load" indication divided by the conversion factor, f.

2 Determine the difference between the reading obtained at 20 minutes and the reading obtained at 30 minutes (see 5.3.1)

3 Change (v) for DR: the initial indication minus the initial “no load” indication divided by the conversion factor, f.

4 Absolute (not relative) time shall be recorded

Form D.5 Creep test (C_C) and DR test (C_{OR}) one sheet for each test temperature)

Ref.: 5.3.1, 5.3.2; A.4.2, A.4.3

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75 kg
p_{LC}:	0.7 DR :

	At start	At end	
Date:	7:12:04	7:12:04	dd.mm.yy
Temperature	40.0	39.8	°C
Relative humidity	18.6	19.1	%
Barometric pressure	1.0325	1.0326	kPa
Indicator Temp.	20.9	21.0	°C

Force generating system: NWML hanging weights

Conversion factor, f: 0.00379

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.5 (40°C)

load (kg)	Indication (units)	Barometric pressure		Change (v)	mpc (v)
0	0.047340		09:19		
1700	1.939800				
0	0.047020				
1700	1.939400				
0	0.046950				
1700	1.939532				
0	0.046946		09:25		
0	0.047264	1.03	10:29		
1700	1.941002	1.03	10:29		
1700	1.940680	1.03	10:34	-0.08	0.74
1700	1.940658	1.03	10:39	-0.09	0.74
1700	1.940634	1.03	10:49	-0.10	0.74
1700	1.940600	1.03	10:59	-0.11	0.74
0	0.046757	C_{MDLOR}	10:59	-0.13	0.50
Difference	20 - 30 minutes			0.01	0.16

DR (v):	0.13
actual time (s)	1800
specified time (s):	1800
mpc for DR (v):	0.5

30 minute creep:	PASS:	X	FAIL:	
30 - 20 minute creep difference:	PASS:	X	FAIL:	
DR ≤ 0.5v:	PASS:	X	FAIL:	
MDLOR within manufacturer specified DR requirements:	PASS:		FAIL:	

Notes:

1 Change (v) for creep: the observed indication minus the initial "load" indication divided by the conversion factor, f.

2 Determine the difference between the reading obtained at 20 minutes and the reading obtained at 30 minutes (see 5.3.1)

3 Change (v) for DR: the initial indication minus the initial “no load” indication divided by the conversion factor, f.

4 Absolute (not relative) time shall be recorded

Form D.5 Creep test (C_C) and DR test (C_{OR}) one sheet for each test temperature)

Ref.: 5.3.1, 5.3.2; A.4.2, A.4.3

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75 kg
p_{LC}:	0.7 DR :

	At start	At end	
Date:	8:12:04	8:12:04	dd.mm.yy
Temperature	-9.1	-9.1	°C
Relative humidity	60.9	60.9	%
Barometric pressure	1.0307	1.0307	kPa
Indicator Temp.	21.0	21.0	°C

Force generating system: NWML hanging weights Conversion factor, f: 0.00379

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.5 (- 10°C)

load (kg)	Indication (units)	Barometric pressure		Change (v)	mpc (v)
0	0.052756		14:08		
1700	1.948106				
0	0.052198				
1700	1.947326				
0	0.051940				
1700	1.947326				
0	0.051780		14:15		
0	0.053052	1.03	15:35		
1700	1.949778	1.03	15:35		
1700	1.948652	1.03	15:40	-0.30	0.74
1700	1.948282	1.03	15:42	-0.39	0.74
1700	1.947958	1.03	15:55	-0.48	0.74
1700	1.947870	1.03	16:05	-0.50	0.74
0	0.051400	C_{MDLOR}	11:40	-0.44	0.50
Difference	20 - 30 minutes			0.02	0.16

DR (v):	0.44
actual time (s)	1800
specified time (s):	1800
mpc for DR (v):	0.5

30 minute creep:	PASS:	X	FAIL:	
30 - 20 minute creep difference:	PASS:	X	FAIL:	
DR ≤ 0.5v:	PASS:	X	FAIL:	
MDLOR within manufacturer specified DR requirements:	PASS:		FAIL:	

Notes:

1 Change (v) for creep: the observed indication minus the initial "load" indication divided by the conversion factor, f.

2 Determine the difference between the reading obtained at 20 minutes and the reading obtained at 30 minutes (see 5.3.1)

3 Change (v) for DR: the initial indication minus the initial “no load” indication divided by the conversion factor, f.

4 Absolute (not relative) time shall be recorded

Form D.5 Creep test (C_C) and DR test (C_{OR}) one sheet for each test temperature)

Ref.: 5.3.1, 5.3.2; A.4.2, A.4.3

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75
p_{LC}:	0.7 DR :

	At start	At end	
Date:	13:12:04	13:12:04	dd.mm.yy
Temperature	21.0	21.1	°C
Relative humidity	36.4	38.2	%
Barometric pressure	1.0293	1.0290	kPa
Indicator Temp.	21.0	21.0	°C

Force generating system: NWML hanging weights Conversion factor, f: 0.00379

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.5 (Final 20°C)

load (kg)	Indication (units)	Barometric pressure		Change (v)	mpc (v)
0	0.048842		09:38		
1700	1.944036				
0	0.048416				
1700	1.943648				
0	0.048372				
1700	1.943340				
0	0.048372		09:45		
0	0.048772	1.03	11:12		
1700	1.946148	1.03	11:12		
1700	1.945690	1.03	11:17	-0.12	0.74
1700	1.945642	1.03	11:22	-0.13	0.74
1700	1.945622	1.03	11:32	-0.14	0.74
1700	1.945600	1.03	11:42	-0.14	0.74
0	0.048200	C_{MDLOR}		-0.15	0.50
Difference	20 - 30 minutes			0.01	0.16

DR (v):	0.15
actual time (s)	1800
specified time (s):	1800
mpc for DR (v):	0.5

30 minute creep:	PASS:	X	FAIL:	
30 - 20 minute creep difference:	PASS:	X	FAIL:	
DR ≤ 0.5v:	PASS:	X	FAIL:	
MDLOR within manufacturer specified DR requirements:	PASS:		FAIL:	

Notes:

1 Change (v) for creep: the observed indication minus the initial "load" indication divided by the conversion factor, f.

2 Determine the difference between the reading obtained at 20 minutes and the reading obtained at 30 minutes (see 5.3.1)

3 Change (v) for DR: the initial indication minus the initial “no load” indication divided by the conversion factor, f.

4 Absolute (not relative) time shall be recorded

Form D.6 Barometric pressure effects (C_P)

Ref.: 5.5.2; A.4.4.

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75 kg
$p_{LC:}$	0.7 DR :

	At start	At end	
Date:	04:01:05	04:01:05	dd.mm.yy
Temperature	20.2	20.2	°C
Relative humidity	44.9	45.7	%
Barometric pressure	1.0228	1.0229	kPa
Indicator Temp.	20.2	20.2	°C

Force generating system: NWML hanging weights

Conversion factor, f: 0.00379

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Table D.6

Pressure (Kpa)	Indication ( )	Time	Change (v)	Change (v_{min}/kPa)	mpc (V_{min}/kPa)
1.0228	0.050250	11 :04	0	0	0
1.0152	0.050250	11 :06	0	0	1
0.0313	0.050252	11 :07	0	0.15	1

Notes:
1 Change (v_{min}): the difference between the observed indication and the initial indication divided by the conversion factor, f.
2 Although A.4.4 specifies a change of only 1 kPa for this test, additional measurements may be taken.
3 Absolute (not relative) time shall be recorded

Form D.7 Humidity effects (CH or no mark)

Ref: 5.5.3.1; A.4.5

Application No:	F20041
Load cell model:	LP600
Serial No:	X203
E_{max}:	1900
n_{max}:	500
v_{min}:	0.75 kg
$p_{LC:}$	0.7 DR :

	At start	At end	
Date:	13:12:04	26:01:05	dd.mm.yy
Temperature	20.8	19.6	°C
Relative humidity	37.0	20.0	%
Barometric pressure	1.0292	1.0337	kPa
Indicator Temp.	20.8	19.7	°C
Conversion factor, f:			

Force generating system: NWML hanging weights

Indicating instrument: HBM DMP 39

Evaluator: G Yates

Conditions during damp heat, cyclic test:

Chamber temp. (high): 40 °C Rel. hum.: 96 %

Chamber temp (low): 25 °C Rel. hum.: 80 %

Table D.7

Test load (g, kg or t)	Before humidity test		After humidity test		Change (v)	mpe (v)	
	Indication (units)	Time	Indication (units)	Time			
0	0.048842	09:38	0.056274	14:17			
1700	1.944036	-	1.948470				
0	0.048416	-	0.055640				
1700	1.943648	-	1.950870				
0	0.048372	-	0.055590				
1700	1.943340	-	1.949320				
0	0.048372	09:45	0.055480	14:23			
0	0.048694	09:50	0.055967	14:28			
1700	1.943140	09:52	1.947150	14:30			
0	0.048536	09:54	0.055690	14:32			
1700	1.942330	09:57	1.947600	14:35			
0	0.048502	10:00	0.055600	14:38			
1700	1.942490	10:02	1.947200	14:40			
0	0.048512	10:05	0.055600	14:43			
Average (*)	0.048561		0.055714		1.89	19.96	≤ 4 % n_{max}
Average (**)	1.942653		1.947317				
Av. dif. (***)	1.894092		1.891603		0.66	1.0 v	

(*) Indications at minimum test load Change (*), CH_{min}: Pass:[X] Fail:[ ]

(**) Indications at maximum test load (see Note 3) Change (***), CH_{max}: Pass:[X] Fail:[ ]

(***) Average, see 5.5.3.1 and C.2.7

Notes:
1 This test is not necessary if the load cell is marked NH or SH.
2 Change (v): the difference between the after indication and the before indication divided by the conversion factor, f.
3 Use five test runs for class A and B; use three test runs for classes C and D.
4 Absolute (not relative) time shall be recorded.

Form D.9 Marking requirements
Ref.: 4.6, 4.7.

Application No: F20041
Load cell model: LP600
Serial No: X203
E_{max}: 1900
n_{max}: 500
v_{min}: 0.75 kg
$p_{LC:}$ 0.7 DR :
Force generating system: NWML hanging weights
Indicating instrument: HBM DMP 39
Evaluator: G Yates

Table D.9.1

R60 reference	Mandatory information	On load cell	In document
4.6.1	Accuracy class designation	-	+
4.6.2	Maximum number of load cell verification intervals, n_{max}	-	+
4.6.3	Loading designation	-	+
4.6.4	Working temperature designation	-	+
4.6.5.1	Humidity symbol "NH"	/	/
4.6.5.1	Humidity symbol "SH"	/	/
4.6.6.1, 4.7.1	Name or trademark of manufacturer (*)	+	+
4.6.6.1, 4.7.1	Manufacturer's own designation or load cell model (*)	+	+
4.6.6.1, 4.7.1	Serial number (*)	+	+
4.6.6.1	Year of manufacture	-	+
4.6.6.1	Minimum dead load (E_{min})	-	+
4.6.6.1, 4.7.1	Maximum capacity (E_{max}) (*)	+	+
4.6.6.1	Safe load limit, (E_{lim})	-	+
4.6.6.1	Minimum verification interval (v_{min})	-	+
4.6.6.1	Other pertinent conditions	-	+
4.6.6.1	Apportionment factor, $p_{LC(}$if not equal to 0.7)	/	/
4.6.7	Classification symbol	-	+
4.6.8	Multiple classifications	-	+

(*) Required on both

Table D.9.2

R60 reference	Non-mandatory information	On load cell	In document
4.6.5.2	Humidity symbol "CH"	/	/
4.6.6.2	Relative V_{min}, Y	/	/
4.6.6.2	Relative DR, Z	/	/

Include references to the following:
Documents supplied with the load cell:
Diagrams supplied showing the markings on the load cells:

Notes:
Indicate that the marking is present with a "+"
Indicate that the marking is not present with a "-"
Indicate that the marking is not applicable with a "/"