

15 Test weights

Weights yesterday and today

Weights have always been used to carry out weighing procedures. This original purpose has almost disappeared. Today, weights are used almost exclusively for adjusting and testing = calibration of electronic balances. We therefore call them "Test weights" as this is their purpose of use.

Adjustment or calibration?

Adjusting a balance means that you are intervening in the weighing system, to make sure that the display is set to show the correct nominal value. With calibration, on the other hand, there is no intervention, you are testing whether the display is correct and documenting any deviation. For further information, see the glossary on page 151.

Testing, doing it right!

The internationally valid OIML Directive R111-2004 classifies test weights hierarchically into accuracy classes, where E1 is the most accurate and M3 is the least accurate weight class. With KERN you get the whole test weight range in all OIML accuracy classes E1, E2, F1, F2, M1, M2, M3.

As the appropriate test weight is only classed as checking equipment to ISO 9000ff if it has the relevant proof of accuracy, all KERN test weights come with an appropriate DKD calibration certificate (optional). For further details, see the DKD calibration service section on page 147.

KERN offers you the appropriate test weight package for your balance, consisting of the test weight, box and DKD calibration certificate, as proof of its accuracy ... the best pre-requisite for proper balance calibration.



Information about your KERN test weights

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Test weights

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Selection of the appropriate test weight for your balance:

Correctly selected test weights with DKD calibration certificate are the pre-requisite for ensuring that your balances are not only correctly adjusted, but also correctly calibrated. Scheduled testing of your balances with such test weights helps to guarantee your quality requirements and to maintain your quality targets.

Here's how you find the right test weight for your balance:

A balance can never be more accurate than the test weight used to adjust it, it depends on its tolerance.

Accuracy of the test weight: Should correspond to the readout *d* of the balance, rather than something better.

Nominal weight value: This is shown in adjust mode „CAL“ in the balance display. Given the choice, the heaviest weight is the most suitable for accurate measurement.

Once accuracy and nominal weight value are specified, the suitable test weight is selected according to the tolerances „Tol“ of the individual accuracy classes E2-M3, see column „Tol ± mg“ at the respective weight and table at page 129.

Example:

Balance with weighing range **Max 2000 g = 2 kg** and readout **d = 0,01 g = 10 mg**

- The accuracy of the required test weight is determined by readout *d* with approx. ±10 mg.
- displayed weight size on „CAL“ mode: 1000 g or 2000 g. The required test weight has a 2 kg weight size.
- suitable test weights with ±10 mg tolerance and 2 kg weight size, stand in accuracy class **F1**. KERN-No 327-72, see page 134.

Exception, analytical balances (readout *d* ≤ 0,1 mg):

E1 test weights are recommended. Depending on the safety requirements, E2 test weights with a DKD calibration certificate will also be sufficient.

From brass to stainless steel - the right test weight for every situation



Test weight → Features ↓	Cylindrical shape with lifting knob, polished stainless steel	Compact shape with carrying grip, polished stainless steel	Cylindrical shape with lifting knob, polished stainless steel or nickel-plated and polished brass	Compact shape with carrying grip, finely turned stainless steel	Cylindrical shape with lifting knob, finely turned stainless steel	Cylindrical shape with lifting knob, finely turned brass
conforms to OIML R111	yes	yes	yes	no	yes	yes
Available classes	E1, E2	E2, F1	F1	adjusted to F1 error limit class	F2, M1	M1, M2, M3
Upper surface	polished	polished	polished	finely turned	finely turned	finely turned
Material	Stainless steel	Stainless steel	Stainless steel or nickel-plated brass	Stainless steel	Stainless steel	Brass
Adjusting cavity	no	no	yes	yes	yes	yes
Verification possible	yes	yes	yes	no	yes, from 20 g	yes, except M2
Checking equipment for verification purposes	approved	approved	approved	not approved	approved	approved
Ideal as checking equipment in QM systems (e.g. ISO 9000 ff)	yes	yes	yes	yes	yes	yes
Benefits	<ul style="list-style-type: none"> • High-quality test weight for analytical and precision balances • Highly-refined upper surface • Optimum shape of the top for good grip 	<ul style="list-style-type: none"> • Affordable test weight for analytical and precision balances • Highly-refined upper surface • Affordable price 	<ul style="list-style-type: none"> • Optimum, high-quality test weight for precision balances • Optimum shape of the top for good grip 	<ul style="list-style-type: none"> • Affordable test weight for in-house checking of precision balances • Very affordable price 	<ul style="list-style-type: none"> • Optimum test weight for commercial and industrial scales • Optimum shape of the top for good grip 	<ul style="list-style-type: none"> • Affordable test weight for commercial and industrial scales • Optimum shape of the top for good grip

Test weights CLASS E1

For E1 weights >1g at the point of initial calibration, a volume determination will be carried out in accordance with OIML.
When recalibrating, this is not required.

Milligram weights, wire shape, stainless steel

- Test weight material: Stainless steel
- Container material: Wood



Milligram weight			+	Box		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
308-31	1 mg	0,003		338-090-200			962-251			308-311-600	
308-32	2 mg	0,003		338-090-200			962-252			308-321-600	
308-33	5 mg	0,003		338-090-200			962-253			308-331-600	
308-34	10 mg	0,003		338-090-200			962-254			308-341-600	
308-35	20 mg	0,003		338-090-200			962-255			308-351-600	
308-36	50 mg	0,004		338-090-200			962-256			308-361-600	
308-37	100 mg	0,005		338-090-200			962-257			308-371-600	
308-38	200 mg	0,006		338-090-200			962-258			308-381-600	
308-39	500 mg	0,008		338-090-200			962-259			308-391-600	

Individual weights, cylindrical, polished stainless steel

- Test weight material: Polished stainless steel
- Container material: Lined wood



Individual weight			+	Box		+	DKD certificate Initial calibration		=	Package price		DKD certificate Recalibration	
KERN		Tol ±mg		KERN			KERN			KERN		KERN	
307-01	1 g	0,010		317-010-100			963-231			307-011-610		962-231	
307-02	2 g	0,012		317-020-100			963-232			307-021-610		962-232	
307-03	5 g	0,016		317-030-100			963-233			307-031-610		962-233	
307-04	10 g	0,020		317-040-100			963-234			307-041-610		962-234	
307-05	20 g	0,025		317-050-100			963-235			307-051-610		962-235	
307-06	50 g	0,030		317-060-100			963-236			307-061-610		962-236	
307-07	100 g	0,05		317-070-100			963-237			307-071-610		962-237	
307-08	200 g	0,10		317-080-100			963-238			307-081-610		962-238	
307-09	500 g	0,25		317-090-100			963-239			307-091-610		962-239	
307-11	1 kg	0,5		317-110-100			963-241			307-111-610		962-241	
307-12	2 kg	1,0		317-120-100			963-242			307-121-610		962-242	
307-13	5 kg	2,5		317-130-100			963-243			307-131-610		962-243	
307-14	10 kg	5,0		317-140-100			963-244			307-141-610		962-244	
307-15	20 kg	10,0		317-150-100			963-245			307-151-610		962-245	
307-16	50 kg	25,0		317-160-100			963-246			307-161-610		962-246	

Weight sets, cylindrical shape, polished stainless steel

- Test weight material: Polished stainless steel
- Container material: Lined wood



Weight set		+	DKD certificate Initial calibration		=	Package price		DKD certificate Recalibration	
KERN			KERN			KERN		KERN	
308-42	1 mg - 500 mg		962-250			308-421-600		962-250	
303-02	1 mg - 50 g		963-201			303-021-610		962-201	
303-03	1 mg - 100 g		963-202			303-031-610		962-202	
303-04	1 mg - 200 g		963-203			303-041-610		962-203	
303-05	1 mg - 500 g		963-204			303-051-610		962-204	
303-06	1 mg - 1 kg		963-205			303-061-610		962-205	
303-07	1 mg - 2 kg		963-206			303-071-610		962-206	
303-08	1 mg - 5 kg		963-207			303-081-610		962-207	
303-09	1 mg - 10 kg		963-208			303-091-610		962-208	
304-02	1 g - 50 g		963-215			304-021-610		962-215	
304-03	1 g - 100 g		963-216			304-031-610		962-216	
304-04	1 g - 200 g		963-217			304-041-610		962-217	
304-05	1 g - 500 g		963-218			304-051-610		962-218	
304-06	1 g - 1 kg		963-219			304-061-610		962-219	
304-07	1 g - 2 kg		963-220			304-071-610		962-220	
304-08	1 g - 5 kg		963-221			304-081-610		962-221	
304-09	1 g - 10 kg		963-222			304-091-610		962-222	

Test weights CLASS E2

Milligram weights, flat polygonal sheet, aluminium/German silver

- Test weight material: Aluminium 1 mg - 5 mg / German silver 10 mg - 500 mg
- Container material: Lined plastic



Milligram weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
318-01	1 mg	0,006		347-009-400			962-351			318-014-600	
318-02	2 mg	0,006		347-009-400			962-352			318-024-600	
318-03	5 mg	0,006		347-009-400			962-353			318-034-600	
318-04	10 mg	0,008		347-009-400			962-354			318-044-600	
318-05	20 mg	0,010		347-009-400			962-355			318-054-600	
318-06	50 mg	0,012		347-009-400			962-356			318-064-600	
318-07	100 mg	0,016		347-009-400			962-357			318-074-600	
318-08	200 mg	0,020		347-009-400			962-358			318-084-600	
318-09	500 mg	0,025		347-009-400			962-359			318-094-600	

Individual weights, compact shape, polished stainless steel

- Test weight material: Polished stainless steel
- Container material: Lined plastic or wooden box (317-140-100)



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
316-01	1 g	0,03		317-020-400			962-331			316-014-600	
316-02	2 g	0,04		317-020-400			962-332			316-024-600	
316-03	5 g	0,05		317-030-400			962-333			316-034-600	
316-04	10 g	0,06		317-040-400			962-334			316-044-600	
316-05	20 g	0,08		317-050-400			962-335			316-054-600	
316-06	50 g	0,10		317-060-400			962-336			316-064-600	
316-07	100 g	0,16		317-070-400			962-337			316-074-600	
316-08	200 g	0,30		317-080-400			962-338			316-084-600	
316-09	500 g	0,8		317-090-400			962-339			316-094-600	
316-11	1 kg	1,6		317-110-400			962-341			316-114-600	
316-12	2 kg	3,0		317-120-400			962-342			316-124-600	
316-13	5 kg	8,0		317-130-400			962-343			316-134-600	
316-14	10 kg	16,0		317-140-100			962-344			316-141-600	

Individual weights, cylindrical shape, polished stainless steel

- Test weight material: Polished stainless steel
- Container material: Lined plastic or wooden box (317-140-100 to 317-160-100)



Individual weight				Container			DKD certificate			Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
317-01	1 g	0,03		317-020-400			962-331			317-011-600	
317-02	2 g	0,04		317-020-400			962-332			317-024-600	
317-03	5 g	0,05		317-030-400			962-333			317-034-600	
317-04	10 g	0,06		317-040-400			962-334			317-044-600	
317-05	20 g	0,08		317-050-400			962-335			317-054-600	
317-06	50 g	0,10		317-060-400			962-336			317-064-600	
317-07	100 g	0,16		317-070-400			962-337			317-074-600	
317-08	200 g	0,30		317-080-400			962-338			317-084-600	
317-09	500 g	0,8		317-090-400			962-339			317-094-600	
317-11	1 kg	1,6		317-110-400			962-341			317-114-600	
317-12	2 kg	3,0		317-120-400			962-342			317-124-600	
317-13	5 kg	8,0		317-130-400			962-343			317-134-600	
317-14	10 kg	16,0		317-140-100			962-344			317-141-600	
317-15	20 kg	30,0		317-150-100			962-345			317-151-600	
317-16	50 kg	80,0		317-160-100			962-346			317-161-600	

For individual weights, wooden boxes are also available as an alternative to the plastic containers.
For more details on this, please see page 145.

CLASS E2

Weight sets, compact shape, polished stainless steel



- Test weight material: Polished stainless steel
- Case material: Plastic

Weight set		+ DKD certificate		=	Package price	
KERN		KERN			KERN	
312-024	1 g - 50 g	962-315			312-024-600	
312-034	1 g - 100 g	962-316			312-034-600	
312-044	1 g - 200 g	962-317			312-044-600	
312-054	1 g - 500 g	962-318			312-054-600	
312-064	1 g - 1 kg	962-319			312-064-600	
312-074	1 g - 2 kg	962-320			312-074-600	
312-084	1 g - 5 kg	962-321			312-084-600	

Weight sets, cylindrical shape, polished stainless steel



- Test weight material: Individual weights - polished stainless steel, milligram weights - aluminium/German silver
- Case material: Plastic. Milligram weights 1 mg - 500 mg in removable plastic box

Weight set		+ DKD certificate		=	Package price	
KERN		KERN			KERN	
318-22	1 mg - 500 mg	962-350			318-221-600	
313-024	1 mg - 50 g	962-301			313-024-600	
313-034	1 mg - 100 g	962-302			313-034-600	
313-044	1 mg - 200 g	962-303			313-044-600	
313-054	1 mg - 500 g	962-304			313-054-600	
313-064	1 mg - 1 kg	962-305			313-064-600	
313-074	1 mg - 2 kg	962-306			313-074-600	
313-084	1 mg - 5 kg	962-307			313-084-600	
314-024	1 g - 50 g	962-315			314-024-600	
314-034	1 g - 100 g	962-316			314-034-600	
314-044	1 g - 200 g	962-317			314-044-600	
314-054	1 g - 500 g	962-318			314-054-600	
314-064	1 g - 1 kg	962-319			314-064-600	
314-074	1 g - 2 kg	962-320			314-074-600	
314-084	1 g - 5 kg	962-321			314-084-600	

Weight sets, cylindrical shape, polished stainless steel



- Test weight material: Individual weights - polished stainless steel, milligram weights - aluminium/German silver
- Box material: Lined wood. Milligram weights 1 mg - 500 mg in removable plastic box

Weight set		+ DKD certificate		=	Package price	
KERN		KERN			KERN	
318-22	1 mg - 500 mg	962-350			318-221-600	
313-02	1 mg - 50 g	962-301			313-021-600	
313-03	1 mg - 100 g	962-302			313-031-600	
313-04	1 mg - 200 g	962-303			313-041-600	
313-05	1 mg - 500 g	962-304			313-051-600	
313-06	1 mg - 1 kg	962-305			313-061-600	
313-07	1 mg - 2 kg	962-306			313-071-600	
313-08	1 mg - 5 kg	962-307			313-081-600	
313-09	1 mg - 10 kg	962-308			313-091-600	
314-02	1 g - 50 g	962-315			314-021-600	
314-03	1 g - 100 g	962-316			314-031-600	
314-04	1 g - 200 g	962-317			314-041-600	
314-05	1 g - 500 g	962-318			314-051-600	
314-06	1 g - 1 kg	962-319			314-061-600	
314-07	1 g - 2 kg	962-320			314-071-600	
314-08	1 g - 5 kg	962-321			314-081-600	
314-09	1 g - 10 kg	962-322			314-091-600	

Test weights CLASS F1

Milligram weights, flat polygonal sheet, aluminium/German silver

- Test weight material: Aluminium 1 mg - 5 mg / German silver 10 mg - 500 mg
- Container material: Lined plastic



Milligram weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
328-01	1 mg	0,020		347-009-400			962-451			328-014-600	
328-02	2 mg	0,020		347-009-400			962-452			328-024-600	
328-03	5 mg	0,020		347-009-400			962-453			328-034-600	
328-04	10 mg	0,025		347-009-400			962-454			328-044-600	
328-05	20 mg	0,030		347-009-400			962-455			328-054-600	
328-06	50 mg	0,040		347-009-400			962-456			328-064-600	
328-07	100 mg	0,050		347-009-400			962-457			328-074-600	
328-08	200 mg	0,060		347-009-400			962-458			328-084-600	
328-09	500 mg	0,080		347-009-400			962-459			328-094-600	

Individual weights, compact shape, finely turned stainless steel

- Test weight material: Finely turned stainless steel
- Container material: Lined plastic
- Build type: Not in accordance with OIML, adjusted to error limit class F1



NEW



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
329-01	1 g	0,10		347-030-400			962-431N			329-014-600	
329-02	2 g	0,12		347-030-400			962-432N			329-024-600	
329-03	5 g	0,16		347-030-400			962-433N			329-034-600	
329-04	10 g	0,20		347-050-400			962-434N			329-044-600	
329-05	20 g	0,25		347-050-400			962-435N			329-054-600	
329-06	50 g	0,30		347-070-400			962-436N			329-064-600	
329-07	100 g	0,50		347-070-400			962-437N			329-074-600	
329-08	200 g	1		347-080-400			962-438N			329-084-600	
329-09	500 g	2,50		347-090-400			962-439N			329-094-600	
329-11	1 kg	5		347-110-400			962-441N			329-114-600	
329-12	2 kg	10		347-120-400			962-442N			329-124-600	
329-13	5 kg	25		347-130-400			962-443N			329-134-600	
329-14	10 kg	50		347-140-400			962-444N			329-144-600	

Individual weights, compact shape, polished stainless steel

- Test weight material: Polished stainless steel
- Container material: Lined plastic



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
326-01	1 g	0,10		347-030-400			962-431			326-014-600	
326-02	2 g	0,12		347-030-400			962-432			326-024-600	
326-03	5 g	0,16		347-030-400			962-433			326-034-600	
326-04	10 g	0,20		347-050-400			962-434			326-044-600	
326-05	20 g	0,25		347-050-400			962-435			326-054-600	
326-06	50 g	0,30		347-070-400			962-436			326-064-600	
326-07	100 g	0,50		347-070-400			962-437			326-074-600	
326-08	200 g	1		347-080-400			962-438			326-084-600	
326-09	500 g	2,50		347-090-400			962-439			326-094-600	
326-11	1 kg	5		347-110-400			962-441			326-114-600	
326-12	2 kg	10		347-120-400			962-442			326-124-600	
326-13	5 kg	25		347-130-400			962-443			326-134-600	
326-14	10 kg	50		347-140-400			962-444			326-144-600	

For individual weights, wooden boxes are also available as an alternative to the plastic containers.
For more details on this, please see page 143.

Test weights CLASS F1

Individual weights, cylindrical shape, nickel-plated and polished brass

- Test weight material: Nickel-plated and polished brass
- Container material: Lined plastic or lined wooden box (317-150-100, 317-160-100)



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
327-61	1 g	0,10		347-030-400			962-431			327-614-600	
327-62	2 g	0,12		347-030-400			962-432			327-624-600	
327-63	5 g	0,16		347-030-400			962-433			327-634-600	
327-64	10 g	0,20		347-050-400			962-434			327-644-600	
327-65	20 g	0,25		347-050-400			962-435			327-654-600	
327-66	50 g	0,30		347-070-400			962-436			327-664-600	
327-67	100 g	0,50		347-070-400			962-437			327-674-600	
327-68	200 g	1		347-080-400			962-438			327-684-600	
327-69	500 g	2,50		347-090-400			962-439			327-694-600	
327-71	1 kg	5		347-110-400			962-441			327-714-600	
327-72	2 kg	10		347-120-400			962-442			327-724-600	
327-73	5 kg	25		347-130-400			962-443			327-734-600	
327-74	10 kg	50		347-140-400			962-444			327-744-600	
327-75	20 kg	100		317-150-100			962-445			327-751-600	
327-76	50 kg	250		317-160-100			962-446			327-761-600	

Individual weights, cylindrical shape, polished stainless steel

- Test weight material: Polished stainless steel
- Container material: Lined plastic or wooden box (317-150-100, 317-160-100)



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
327-01	1 g	0,10		347-030-400			962-431			327-014-600	
327-02	2 g	0,12		347-030-400			962-432			327-024-600	
327-03	5 g	0,16		347-030-400			962-433			327-034-600	
327-04	10 g	0,20		347-050-400			962-434			327-044-600	
327-05	20 g	0,25		347-050-400			962-435			327-054-600	
327-06	50 g	0,30		347-070-400			962-436			327-064-600	
327-07	100 g	0,50		347-070-400			962-437			327-074-600	
327-08	200 g	1		347-080-400			962-438			327-084-600	
327-09	500 g	2,50		347-090-400			962-439			327-094-600	
327-11	1 kg	5		347-110-400			962-441			327-114-600	
327-12	2 kg	10		347-120-400			962-442			327-124-600	
327-13	5 kg	25		347-130-400			962-443			327-134-600	
327-14	10 kg	50		347-140-400			962-444			327-144-600	
327-15	20 kg	100		317-150-100			962-445			327-151-600	
327-16	50 kg	250		317-160-100			962-446			327-161-600	

Alternative to plastic container:

Wooden boxes for individual weights. For more details on this, please see page 145.



Test weights CLASS F1

Weight sets, compact shape, polished stainless steel

- Test weight material: Polished stainless steel
- Case material: Lined plastic



Weight set		+	DKD certificate		=	Package price	
KERN			KERN			KERN	
322-024	1 g - 50 g		962-415			322-024-600	
322-034	1 g - 100 g		962-416			322-034-600	
322-044	1 g - 200 g		962-417			322-044-600	
322-054	1 g - 500 g		962-418			322-054-600	
322-064	1 g - 1 kg		962-419			322-064-600	
322-074	1 g - 2 kg		962-420			322-074-600	
322-084	1 g - 5 kg		962-421			322-084-600	

Weight sets, cylindrical shape, nickel-plated and polished brass or polished stainless steel

- Test weight material: Individual weights - nickel-plated and polished brass or polished stainless steel, milligram weights - aluminium 1 mg - 5 mg/German silver 10 mg - 500 mg
- Case material: Lined plastic. Milligram weights 1 mg - 500 mg in removable plastic box



Weight set		+	DKD certificate		=	Package price	
KERN			KERN			KERN	
328-22	1 mg - 500 mg		962-450			328-221-600	
Nickel-plated and polished brass							
323-624	1 mg - 50 g		962-401			323-624-600	
323-634	1 mg - 100 g		962-402			323-634-600	
323-644	1 mg - 200 g		962-403			323-644-600	
323-654	1 mg - 500 g		962-404			323-654-600	
323-664	1 mg - 1 kg		962-405			323-664-600	
323-674	1 mg - 2 kg		962-406			323-674-600	
323-684	1 mg - 5 kg		962-407			323-684-600	
324-624	1 g - 50 g		962-415			324-624-600	
324-634	1 g - 100 g		962-416			324-634-600	
324-644	1 g - 200 g		962-417			324-644-600	
324-654	1 g - 500 g		962-418			324-654-600	
324-664	1 g - 1 kg		962-419			324-664-600	
324-674	1 g - 2 kg		962-420			324-674-600	
324-684	1 g - 5 kg		962-421			324-684-600	
Polished stainless steel							
323-024	1 mg - 50 g		962-401			323-024-600	
323-034	1 mg - 100 g		962-402			323-034-600	
323-044	1 mg - 200 g		962-403			323-044-600	
323-054	1 mg - 500 g		962-404			323-054-600	
323-064	1 mg - 1 kg		962-405			323-064-600	
323-074	1 mg - 2 kg		962-406			323-074-600	
323-084	1 mg - 5 kg		962-407			323-084-600	
324-024	1 g - 50 g		962-415			324-024-600	
324-034	1 g - 100 g		962-416			324-034-600	
324-044	1 g - 200 g		962-417			324-044-600	
324-054	1 g - 500 g		962-418			324-054-600	
324-064	1 g - 1 kg		962-419			324-064-600	
324-074	1 g - 2 kg		962-420			324-074-600	
324-084	1 g - 5 kg		962-421			324-084-600	

CLASS F1

Weight sets, cylindrical shape, nickel-plated and polished brass or polished stainless steel

- **Test weight material:** Individual weights - nickel-plated and polished brass or polished stainless steel, milligram weights - aluminium 1 mg - 5 mg / German silver 10 mg - 500 mg
- **Box material:** Lined wood. Milligram weights 1 mg - 500 mg in removable plastic box



Weight set		+ DKD certificate		=	Package price	
KERN		KERN	KERN		KERN	
Nickel-plated and polished brass						
328-22	1 mg - 500 mg	962-450			328-221-600	
323-62	1 mg - 50 g	962-401			323-621-600	
323-63	1 mg - 100 g	962-402			323-631-600	
323-64	1 mg - 200 g	962-403			323-641-600	
323-65	1 mg - 500 g	962-404			323-651-600	
323-66	1 mg - 1 kg	962-405			323-661-600	
323-67	1 mg - 2 kg	962-406			323-671-600	
323-68	1 mg - 5 kg	962-407			323-681-600	
323-69	1 mg - 10 kg	962-408			323-691-600	
324-62	1 g - 50 g	962-415			324-621-600	
324-63	1 g - 100 g	962-416			324-631-600	
324-64	1 g - 200 g	962-417			324-641-600	
324-65	1 g - 500 g	962-418			324-651-600	
324-66	1 g - 1 kg	962-419			324-661-600	
324-67	1 g - 2 kg	962-420			324-671-600	
324-68	1 g - 5 kg	962-421			324-681-600	
324-69	1 g - 10 kg	962-422			324-691-600	
Polished stainless steel						
323-02	1 mg - 50 g	962-401			323-021-600	
323-03	1 mg - 100 g	962-402			323-031-600	
323-04	1 mg - 200 g	962-403			323-041-600	
323-05	1 mg - 500 g	962-404			323-051-600	
323-06	1 mg - 1 kg	962-405			323-061-600	
323-07	1 mg - 2 kg	962-406			323-071-600	
323-08	1 mg - 5 kg	962-407			323-081-600	
323-09	1 mg - 10 kg	962-408			323-091-600	
324-02	1 g - 50 g	962-415			324-021-600	
324-03	1 g - 100 g	962-416			324-031-600	
324-04	1 g - 200 g	962-417			324-041-600	
324-05	1 g - 500 g	962-418			324-051-600	
324-06	1 g - 1 kg	962-419			324-061-600	
324-07	1 g - 2 kg	962-420			324-071-600	
324-08	1 g - 5 kg	962-421			324-081-600	
324-09	1 g - 10 kg	962-422			324-091-600	



You can make up your own individual weight set yourself:

It contains only the weights which you need for testing purposes. KERN will make your own personal box out of plastic, wood or aluminium. For more details on this, please see page 146.

Test weights CLASS F2

Milligram weights, flat polygonal sheet, aluminium/German silver

- Test weight material: Aluminium 1 mg – 5 mg/German silver 10 mg – 500 mg
- Container material: Lined plastic



Milligram weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
338-01	1 mg	0,06		347-009-400			962-451			338-014-600	
338-02	2 mg	0,06		347-009-400			962-452			338-024-600	
338-03	5 mg	0,06		347-009-400			962-453			338-034-600	
338-04	10 mg	0,08		347-009-400			962-454			338-044-600	
338-05	20 mg	0,10		347-009-400			962-455			338-054-600	
338-06	50 mg	0,12		347-009-400			962-456			338-064-600	
338-07	100 mg	0,16		347-009-400			962-457			338-074-600	
338-08	200 mg	0,20		347-009-400			962-458			338-084-600	
338-09	500 mg	0,25		347-009-400			962-459			338-094-600	

Individual weights, cylindrical shape, finely turned stainless steel

- Test weight material: Finely turned stainless steel
- Container material: Lined plastic or wooden box (337-150-200, 337-160-200)



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
337-01	1 g	0,3		347-030-400			962-431			337-014-600	
337-02	2 g	0,4		347-030-400			962-432			337-024-600	
337-03	5 g	0,5		347-030-400			962-433			337-034-600	
337-04	10 g	0,6		347-050-400			962-434			337-044-600	
337-05	20 g	0,8		347-050-400			962-435			337-054-600	
337-06	50 g	1,0		347-070-400			962-436			337-064-600	
337-07	100 g	1,6		347-070-400			962-437			337-074-600	
337-08	200 g	3,0		347-080-400			962-438			337-084-600	
337-09	500 g	8,0		347-090-400			962-439			337-094-600	
337-11	1 kg	16		347-110-400			962-441			337-114-600	
337-12	2 kg	30		347-120-400			962-442			337-124-600	
337-13	5 kg	80		347-130-400			962-443			337-134-600	
337-14	10 kg	160		347-140-400			962-444			337-144-600	
337-15	20 kg	300		337-150-200			962-445			337-152-600	
337-16	50 kg	800		337-160-200			962-446			337-162-600	



Alternative to plastic container:

Wooden boxes for individual weights. For more details on this, please see page 145.

Test weights, stainless steel, stackable



- Test weight material: Stainless steel

Test weight				+	DKD certificate	
KERN		Tol ±mg	Dim. Ø x H		KERN	
337-141	10 kg	160	137 x 132 mm		962-444	
337-151	20 kg	300	137 x 217 mm		962-445	
337-161	50 kg	800	198 x 250 mm		962-446	

CLASS F2

Weight sets, cylindrical shape, finely turned stainless steel

- **Test weight material:** Individual weights - finely turned stainless steel, milligram weights - aluminium 1 mg - 5 mg / German silver 10 mg - 500 mg
- **Case material:** Lined plastic. Milligram weights 1 mg - 500 mg in removable plastic box



Weight set		+ DKD certificate		=	Package price	
KERN		KERN			KERN	
338-22	1 mg - 500 mg	962-450			338-224-600	
333-024	1 mg - 50 g	962-401			333-024-600	
333-034	1 mg - 100 g	962-402			333-034-600	
333-044	1 mg - 200 g	962-403			333-044-600	
333-054	1 mg - 500 g	962-404			333-054-600	
333-064	1 mg - 1 kg	962-405			333-064-600	
333-074	1 mg - 2 kg	962-406			333-074-600	
333-084	1 mg - 5 kg	962-407			333-084-600	
334-024	1 g - 50 g	962-415			334-024-600	
334-034	1 g - 100 g	962-416			334-034-600	
334-044	1 g - 200 g	962-417			334-044-600	
334-054	1 g - 500 g	962-418			334-054-600	
334-064	1 g - 1 kg	962-419			334-064-600	
334-074	1 g - 2 kg	962-420			334-074-600	
334-084	1 g - 5 kg	962-421			334-084-600	

Weight sets, cylindrical shape, finely turned stainless steel

- **Test weight material:** Individual weights - finely turned stainless steel, milligram weights - aluminium 1 mg - 5 mg / German silver 10 mg - 500 mg
- **Box material:** Wood



Weight set		+ DKD certificate		=	Package price	
KERN		KERN			KERN	
338-22	1 mg - 500 mg	962-450			338-224-600	
333-02	1 mg - 50 g	962-401			333-022-600	
333-03	1 mg - 100 g	962-402			333-032-600	
333-04	1 mg - 200 g	962-403			333-042-600	
333-05	1 mg - 500 g	962-404			333-052-600	
333-06	1 mg - 1 kg	962-405			333-062-600	
333-07	1 mg - 2 kg	962-406			333-072-600	
333-08	1 mg - 5 kg	962-407			333-082-600	
333-09	1 mg - 10 kg	962-408			333-092-600	
334-02	1 g - 50 g	962-415			334-022-600	
334-03	1 g - 100 g	962-416			334-032-600	
334-04	1 g - 200 g	962-417			334-042-600	
334-05	1 g - 500 g	962-418			334-052-600	
334-06	1 g - 1 kg	962-419			334-062-600	
334-07	1 g - 2 kg	962-420			334-072-600	
334-08	1 g - 5 kg	962-421			334-082-600	
334-09	1 g - 10 kg	962-422			334-092-600	



You can make up your own individual weight set yourself:

It contains only the weights which you need for testing purposes. KERN will make your own personal box out of plastic, wood or aluminium. For more details on this, please see page 146.

Test weights CLASS M1

Milligram weights, flat polygonal sheet, aluminium/German silver

- Test weight material: Aluminium 1 mg - 5 mg/German silver 10 mg - 500 mg
- Container material: Lined plastic



Milligram weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
348-01	1 mg	0,20		347-009-400			962-651			348-014-600	
348-02	2 mg	0,20		347-009-400			962-652			348-024-600	
348-03	5 mg	0,20		347-009-400			962-653			348-034-600	
348-04	10 mg	0,25		347-009-400			962-654			348-044-600	
348-05	20 mg	0,30		347-009-400			962-655			348-054-600	
348-06	50 mg	0,40		347-009-400			962-656			348-064-600	
348-07	100 mg	0,50		347-009-400			962-657			348-074-600	
348-08	200 mg	0,60		347-009-400			962-658			348-084-600	
348-09	500 mg	0,80		347-009-400			962-659			348-094-600	

Individual weights, cylindrical shape, finely turned brass or finely turned stainless steel

- Test weight material: Individual weights - finely turned brass or finely turned stainless steel
- Container material: Lined plastic



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
Finely turned brass											
347-41	1 g	1,0		347-030-400			962-631			347-414-600	
347-42	2 g	1,2		347-030-400			962-632			347-424-600	
347-43	5 g	1,6		347-030-400			962-633			347-434-600	
347-44	10 g	2,0		347-050-400			962-634			347-444-600	
347-45	20 g	2,5		347-050-400			962-635			347-454-600	
347-46	50 g	3,0		347-070-400			962-636			347-464-600	
347-47	100 g	5,0		347-070-400			962-637			347-474-600	
347-48	200 g	10		347-080-400			962-638			347-484-600	
347-49	500 g	25		347-090-400			962-639			347-494-600	
347-51	1 kg	50		347-110-400			962-641			347-514-600	
347-52	2 kg	100		347-120-400			962-642			347-524-600	
347-53	5 kg	250		347-130-400			962-643			347-534-600	
347-54	10 kg	500		347-140-400			962-644			347-544-600	
Finely turned stainless steel											
347-01	1 g	1,0		347-030-400			962-631			347-014-600	
347-02	2 g	1,2		347-030-400			962-632			347-024-600	
347-03	5 g	1,6		347-030-400			962-633			347-034-600	
347-04	10 g	2,0		347-050-400			962-634			347-044-600	
347-05	20 g	2,5		347-050-400			962-635			347-054-600	
347-06	50 g	3,0		347-070-400			962-636			347-064-600	
347-07	100 g	5,0		347-070-400			962-637			347-074-600	
347-08	200 g	10		347-080-400			962-638			347-084-600	
347-09	500 g	25		347-090-400			962-639			347-094-600	
347-11	1 kg	50		347-110-400			962-641			347-114-600	
347-12	2 kg	100		347-120-400			962-642			347-124-600	
347-13	5 kg	250		347-130-400			962-643			347-134-600	
347-14	10 kg	500		347-140-400			962-644			347-144-600	

Test weights, stainless steel, stackable



- Test weight material: Stainless steel

Test weight				+	DKD certificate	
KERN		Tol ±g	Dim. Ø x H		KERN	
347-141	10 kg	0,50	137 x 132 mm		962-644	
347-151	20 kg	1,00	137 x 217 mm		962-645	
347-161	50 kg	2,50	198 x 250 mm		962-646	

CLASS M1

Weight sets, cylindrical shape, finely turned brass or finely turned stainless steel

- **Test weight material:** Individual weights - finely turned brass or finely turned stainless steel, milligram weights - aluminium/German silver
- **Case material:** Plastic. Milligram weights 1 mg - 500 mg in a removable plastic box



Weight set		+ DKD certificate		= Package price	
KERN		KERN		KERN	
Finely turned brass					
348-22	1 mg - 500 mg	962-650		348-224-600	
343-424	1 mg - 50 g	962-601		343-424-600	
343-434	1 mg - 100 g	962-602		343-434-600	
343-444	1 mg - 200 g	962-603		343-444-600	
343-454	1 mg - 500 g	962-604		343-454-600	
343-464	1 mg - 1 kg	962-605		343-464-600	
343-474	1 mg - 2 kg	962-606		343-474-600	
343-484	1 mg - 5 kg	962-607		343-484-600	
344-424	1 g - 50 g	962-615		344-424-600	
344-434	1 g - 100 g	962-616		344-434-600	
344-444	1 g - 200 g	962-617		344-444-600	
344-454	1 g - 500 g	962-618		344-454-600	
344-464	1 g - 1 kg	962-619		344-464-600	
344-474	1 g - 2 kg	962-620		344-474-600	
344-484	1 g - 5 kg	962-621		344-484-600	
Finely turned stainless steel					
343-024	1 mg - 50 g	962-601		343-024-600	
343-034	1 mg - 100 g	962-602		343-034-600	
343-044	1 mg - 200 g	962-603		343-044-600	
343-054	1 mg - 500 g	962-604		343-054-600	
343-064	1 mg - 1 kg	962-605		343-064-600	
343-074	1 mg - 2 kg	962-606		343-074-600	
343-084	1 mg - 5 kg	962-607		343-084-600	
344-024	1 g - 50 g	962-615		344-024-600	
344-034	1 g - 100 g	962-616		344-034-600	
344-044	1 g - 200 g	962-617		344-044-600	
344-054	1 g - 500 g	962-618		344-054-600	
344-064	1 g - 1 kg	962-619		344-064-600	
344-074	1 g - 2 kg	962-620		344-074-600	
344-084	1 g - 5 kg	962-621		344-084-600	

Weight sets, cylindrical shape, finely turned brass or finely turned stainless steel

- **Test weight material:** Individual weights - finely turned brass or finely turned stainless steel, milligram weights - aluminium 1 mg - 5 mg / German silver 10 mg - 500 mg
- **Box material:** Wood



Weight set		+ DKD certificate		= Package price	
KERN		KERN		KERN	
Finely turned brass					
348-22	1 mg - 500 mg	962-650		348-224-600	
343-42	1 mg - 50 g	962-601		343-422-600	
343-43	1 mg - 100 g	962-602		343-432-600	
343-44	1 mg - 200 g	962-603		343-442-600	
343-45	1 mg - 500 g	962-604		343-452-600	
343-46	1 mg - 1 kg	962-605		343-462-600	
343-47	1 mg - 2 kg	962-606		343-472-600	
343-48	1 mg - 5 kg	962-607		343-482-600	
343-49	1 mg - 10 kg	962-608		343-492-600	
344-42	1 g - 50 g	962-615		344-422-600	
344-43	1 g - 100 g	962-616		344-432-600	
344-44	1 g - 200 g	962-617		344-442-600	
344-45	1 g - 500 g	962-618		344-452-600	
344-46	1 g - 1 kg	962-619		344-462-600	
344-47	1 g - 2 kg	962-620		344-472-600	
344-48	1 g - 5 kg	962-621		344-482-600	
344-49	1 g - 10 kg	962-622		344-492-600	

Test weights CLASS M1

Continuation of weight sets, cylindrical shape, finely turned brass or finely turned stainless steel

Weight set		+ DKD certificate		= Package price	
KERN		KERN		KERN	
Finely turned stainless steel					
343-02	1 mg - 50 g	962-601		343-022-600	
343-03	1 mg - 100g	962-602		343-032-600	
343-04	1 mg - 200 g	962-603		343-042-600	
343-05	1 mg - 500 g	962-604		343-052-600	
343-06	1 mg - 1 kg	962-605		343-062-600	
343-07	1 mg - 2 kg	962-606		343-072-600	
343-08	1 mg - 5 kg	962-607		343-082-600	
343-09	1 mg - 10 kg	962-608		343-092-600	
344-02	1 g - 50 g	962-615		344-022-600	
344-03	1 g - 100 g	962-616		344-032-600	
344-04	1 g - 200 g	962-617		344-042-600	
344-05	1 g - 500 g	962-618		344-052-600	
344-06	1 g - 1 kg	962-619		344-062-600	
344-07	1 g - 2 kg	962-620		344-072-600	
344-08	1 g - 5 kg	962-621		344-082-600	
344-09	1 g - 10 kg	962-622		344-092-600	



You can make up your own individual weight set yourself:

It contains only the weights which you need for testing purposes. KERN will make your own personal box out of plastic, wood or aluminium For more details on this, please see page 146.

Newton weights

All slotted and hook weights are available with N adjustment according to M1 tolerances

We need to know the location of use and post code. **DKD-calibration certificate for N weights:** identical to DKD prices for individual weights M1

Hook weights, finely turned brass

- Test weight material: Finely turned brass
- Container material: Lined plastic



Hook weight			+ Container		+ DKD certificate		= Package price	
KERN	Tol ±mg		KERN		KERN		KERN	
347-416	1 g	1,0	347-030-400		962-631		347-4164-600	
347-426	2 g	1,2	347-030-400		962-632		347-4264-600	
347-436	5 g	1,6	347-030-400		962-633		347-4364-600	
347-446	10 g	2,0	347-050-400		962-634		347-4464-600	
347-456	20 g	2,5	347-050-400		962-635		347-4564-600	
347-466	50 g	3,0	347-070-400		962-636		347-4664-600	
347-476	100 g	5	347-090-400		962-637		347-4764-600	
347-486	200 g	10	347-090-400		962-638		347-4864-600	
347-496	500 g	25	347-110-400		962-639		347-4964-600	
347-516	1 kg	50	347-120-400		962-641		347-5164-600	
347-526	2 kg	100	347-130-400		962-642		347-5264-600	
347-536	5 kg	250	347-140-400		962-643		347-5364-600	
347-546	10 kg	500	-		962-644		-	

Test weights CLASS M1

Slotted weights, finely turned brass

- Test weight material: Finely turned brass
- Container material: Lined plastic



Slotted weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
347-415	1 g	1,0		347-030-400			962-631			347-4154-600	
347-425	2 g	1,2		347-030-400			962-632			347-4254-600	
347-435	5 g	1,6		347-030-400			962-633			347-4354-600	
347-445	10 g	2,0		347-030-400			962-634			347-4454-600	
347-455	20 g	2,5		347-080-400			962-635			347-4554-600	
347-465	50 g	3,0		347-080-400			962-636			347-4654-600	
347-475	100 g	5		347-090-400			962-637			347-4754-600	
347-485	200 g	10		347-090-400			962-638			347-4854-600	
347-495	500 g	25		347-110-400			962-639			347-4954-600	
347-515	1 kg	50		347-130-400			962-641			347-5154-600	
347-525	2 kg	100		347-130-400			962-642			347-5254-600	
347-535	5 kg	250		347-140-400			962-643			347-5354-600	
347-545	10 kg	500		347-140-400			962-644			347-5454-600	

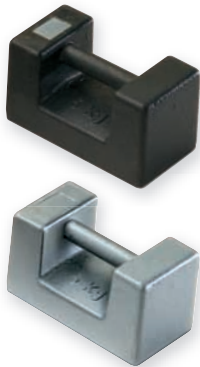
Beam bars, finely turned brass, for fixing slotted weights



- Carrier bar material: Brass, aluminium (347-445-100)

Carrier bar				+	DKD certificate	
	Size	Largest slotted weight possible	Maximum total load		KERN	
347-445-100	10 g	100 g	200 g		962-634	
347-475-100	100 g	1 kg	2 kg		962-637	
347-495-100	500 g	10 kg	20 kg		962-639	
347-515-100	1000 g	10 kg	40 kg		962-641	

Rectangular weights, lacquered cast iron/stainless steel



- Test weight material: Lacquered cast iron/stainless steel (in OIML classes F1 and F2 on request)

Rectangular weight			+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN	
Lacquered cast iron								
346-86	5 kg	0,25		962-643			346-860-600	
346-87	10 kg	0,50		962-644			346-870-600	
346-88	20 kg	1,00		962-645			346-880-600	
346-89	50 kg	2,50		962-646			346-890-600	
Stainless steel								
346-06	5 kg	0,25		962-643			346-060-600	
346-07	10 kg	0,50		962-644			346-070-600	
346-08	20 kg	1,00		962-645			346-080-600	
346-09	50 kg	2,50		962-646			346-090-600	

Heavy duty weights, cast iron, stackable. Designed to be lifted with forklift trucks or cranes.

- Test weight material: Lacquered cast iron



Heavy duty weight				+	DKD certificate	
KERN		Tol ±g	Dimensions W x D x H		KERN	
346-81	100 kg	5	340 x 225 x 280 mm		962-691	
346-82	200 kg	10	465 x 340 x 291 mm		962-692	
346-83	500 kg	25	750 x 500 x 314 mm		962-693	
346-84	1000 kg	50	750 x 500 x 500 mm		962-694	
346-85	2000 kg	100	1000 x 750 x 500 mm		962-695	

Test weights CLASS M2

Individual weights, cylindrical shape, finely turned brass

- Test weight material: Finely turned brass
- Container material: Plastic



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg		KERN			KERN			KERN	
357-41	1 g	3		347-030-400			962-631			357-414-600	
357-42	2 g	4		347-030-400			962-632			357-424-600	
357-43	5 g	5		347-030-400			962-633			357-434-600	
357-44	10 g	6		347-050-400			962-634			357-444-600	
357-45	20 g	8		347-050-400			962-635			357-454-600	
357-46	50 g	10		347-070-400			962-636			357-464-600	
357-47	100 g	16		347-070-400			962-637			357-474-600	
357-48	200 g	30		347-080-400			962-638			357-484-600	
357-49	500 g	80		347-090-400			962-639			357-494-600	
357-51	1 kg	160		347-110-400			962-641			357-514-600	
357-52	2 kg	300		347-120-400			962-642			357-524-600	
357-53	5 kg	800		347-130-400			962-643			357-534-600	
357-54	10 kg	1600		347-140-400			962-644			357-544-600	



Alternative to plastic container:

Wooden boxes for individual weights. For more details on this, please see page 145.

Rectangular weights, lacquered cast iron



- Test weight material: Lacquered cast iron

Rectangular weight			+	DKD certificate		=	Package price	
KERN		Tol ±g		KERN			KERN	
356-86	5 kg	0,8		962-643			356-860-600	
356-87	10 kg	1,6		962-644			356-870-600	
356-88	20 kg	3,0		962-645			356-880-600	
356-89	50 kg	8,0		962-646			356-890-600	

Weight sets, cylindrical shape, finely turned brass

- Test weight material: Finely turned brass
- Box material: Wooden box



Weight set			+	DKD certificate		=	Package price	
KERN				KERN	€		KERN	
354-42	1 g - 50 g			962-615			354-422-600	
354-43	1 g - 100 g			962-616			354-432-600	
354-44	1 g - 200 g			962-617			354-442-600	
354-45	1 g - 500 g			962-618			354-452-600	
354-46	1 g - 1 kg			962-619			354-462-600	
354-47	1 g - 2 kg			962-620			354-472-600	
354-48	1 g - 5 kg			962-621			354-482-600	
354-49	1 g - 10 kg			962-622			354-492-600	

Test weights CLASS M3

Individual weights, cylindrical shape, finely turned brass

- Test weight material: Finely turned brass
- Container material: Lined plastic



Individual weight			+	Container		+	DKD certificate		=	Package price	
KERN	Tol	±mg		KERN			KERN			KERN	
367-41	1 g	10		347-030-400			962-631			367-414-600	
367-42	2 g	12		347-030-400			962-632			367-424-600	
367-43	5 g	16		347-030-400			962-633			367-434-600	
367-44	10 g	20		347-050-400			962-634			367-444-600	
367-45	20 g	25		347-050-400			962-635			367-454-600	
367-46	50 g	30		347-070-400			962-636			367-464-600	
367-47	100 g	50		347-070-400			962-637			367-474-600	
367-48	200 g	100		347-080-400			962-638			367-484-600	
367-49	500 g	250		347-090-400			962-639			367-494-600	
367-51	1 kg	500		347-110-400			962-641			367-514-600	
367-52	2 kg	1000		347-120-400			962-642			367-524-600	

Individual weights, cylindrical, lacquered cast iron

- Test weight material: Lacquered cast iron. 20 kg and 50 kg with bracket



Individual weight			+	DKD certificate		=	Package price	
KERN	Tol	±g		KERN			KERN	
366-91	100 g	0,05		962-637			366-910-600	
366-92	200 g	0,10		962-638			366-920-600	
366-93	500 g	0,25		962-639			366-930-600	
366-94	1 kg	0,50		962-641			366-940-600	
366-95	2 kg	1,0		962-642			366-950-600	
366-96	5 kg	2,5		962-643			366-960-600	
366-97	10 kg	5		962-644			366-970-600	
366-98	20 kg	10		962-645			366-980-600	
366-99	50 kg	25		962-646			366-990-600	

Rectangular weights, lacquered cast iron



- Test weight material: Lacquered cast iron

Rectangular weight			+	DKD certificate		=	Package price	
KERN	Tol	±g		KERN			KERN	
366-86	5 kg	2,5		962-643			366-860-600	
366-87	10 kg	5		962-644			366-870-600	
366-88	20 kg	10		962-645			366-880-600	
366-89	50 kg	25		962-646			366-890-600	

Weight sets, cylindrical, lacquered brass and cast iron

- Test weight material: Brass lacquered and cast iron
- Container material: Wooden block



Weight set			+	DKD certificate		=	Package price	
KERN				KERN			KERN	
362-96	1 g - 1 kg			962-619			362-963-600	
362-97	1 g - 2 kg			962-620			362-973-600	
362-98	1 g - 5 kg			962-621			362-983-600	
362-99	1 g - 10 kg			962-622			362-993-600	

Test weights-accessories

Tweezers, weight forks, weight grips, gloves, dusting brush



Tweezers to be able to safely grip small test weights

For weights of the class	For weights	KERN	Length	Version
E1 - F1	1 mg - 200 g	315-243	105 mm	Stainless steel with silicone-coated tips
E1 - F1	500 g - 2 kg	315-245	250 mm	Stainless steel with silicone-coated tips
F2 - M3	1 mg - 200 g	335-240	100 mm	Stainless steel
E1 - M1	1 mg - 200 g	315-242	100 mm	Plastic



Weight fork to be able to better grip the individual, cylindrical weights

KERN	For weights
315-253	2 kg
315-254	5 kg



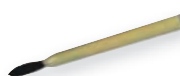
Weight carrying handle to be able to safely grip heavy, individual cylindrical weights

KERN	For weights
315-264	10 kg
315-265	20 kg
315-266	50 kg



Gloves, cotton. Help to protect the test weights when being used daily, from grease from fingers, damp etc.

KERN
317-280



Dusting brush to clean the weights

KERN
318-270

Wooden boxes for individual weights

- **Box material:** Lined wood.
Suitable for individual weights
KERN No. 307, 317, 327

Wooden box
for individual weights E1 - F1

For weights	KERN
mg	338-090-200
1 g	317-010-100
2 g	317-020-100
5 g	317-030-100
10 g	317-040-100
20 g	317-050-100
50 g	317-060-100
100 g	317-070-100
200 g	317-080-100
500 g	317-090-100
1 kg	317-110-100
2 kg	317-120-100
5 kg	317-130-100
10 kg	317-140-100
20 kg	317-150-100
50 kg	317-160-100



- **Box material:** Wood.
Suitable for individual weights
KERN No. 337, 347, 357, 367

Wooden box
for individual weights F2 - M3

For weights	KERN
mg	338-090-200
1 g	337-010-200
2 g	337-020-200
5 g	337-030-200
10 g	337-040-200
20 g	337-050-200
50 g	337-060-200
100 g	337-070-200
200 g	337-080-200
500 g	337-090-200
1 kg	337-110-200
2 kg	337-120-200
5 kg	337-130-200
10 kg	337-140-200
20 kg	337-150-200
50 kg	337-160-200



Made specially for you

Cases/boxes for individual weight sets

Individual weight sets:

You can make up your own "tailor-made" individual weight sets yourself.

KERN will make your own personal wooden box / plastic carrying case. The largest individual weight which will fit is given in the table.

Sample order: Your individual weight set: 1 x 50 g, 2 x 100 g, 1 x 500 g, 2 x 1 kg, 1 x 2 kg. The correct individual box is **KERN No. 313-080-400** (plastic) or **KERN No. 315-070-100** (wood).



Plastic case for weight classes E1, E2 and F1

KERN	For weights
313-050-400	≤ 500 g
313-080-400	≤ 5 kg



Wooden box for weight classes E1, E2 and F1

KERN	For weights
315-040-100	≤ 200 g
315-060-100	≤ 1 kg
315-070-100	≤ 2 kg
315-080-100	≤ 5 kg
315-090-100	≤ 10 kg



Plastic case for weight classes F2, M1, M2 and M3

KERN	For weights
333-050-400	≤ 500 g
333-080-400	≤ 5 kg



Wooden box for weight classes F2, M1, M2 and M3

KERN	For weights
335-040-200	≤ 200 g
335-050-200	≤ 500 g
335-060-200	≤ 1 kg
335-070-200	≤ 2 kg
335-080-200	≤ 5 kg
335-090-200	≤ 10 kg

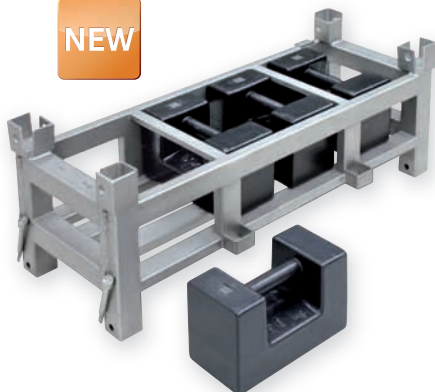


Aluminium case

for safe storage and transportation under harsh industrial conditions. Ideal for test weights of accuracy classes E2-M3. Please ask for details.

Weight carriers for rectangular weights or other test weights

NEW



Individual weight carriers for testing high capacity floor scales, pallet scales, pallet truck scales, crane scales, etc.

On request, KERN will make you a "tailor-made" weight carrier to your specifications.

16 DKD calibration service

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DKD calibration service	147
Precision is our business (Range of calibration services)	147
DKD calibration service	147
Calibration service for balances	148
Calibration service for test weights	149
Recalibration of test weights	150



The DKD = Deutscher Kalibrierdienst (German Calibration Service) is responsible for measuring „correctly“ in accordance with legally binding international standards. It is part of DAkkS = Deutsche Akkreditierungsstelle (German accreditation organisation) which was founded in Germany. The basis is the European range of standards DIN EN ISO/IEC 17 000 for conformity assessment, in particular the accreditation standard 17

025, which governs the organisation of a calibration laboratory, as well as basic metrological technical requirements.

Only an accredited calibration laboratory can issue DKD calibration certificates. This defines not only the measuring method, but also gives information on tracing the test means to a national standard and the relevant measuring uncertainty is given.



KERN – Precision is our business

The KERN DKD calibration laboratory for electronic balances and weights has been accredited by DKD since 1994 and today is one of the most modern and best-equipped DKD calibration laboratories for balances, test weights and force-measurement in Europe.

Thanks to the high level of automation, we can carry out DKD calibration of balances, test weights and force-measuring devices 24 hours a day, 7 days a week.

Do you have any further requests or questions on this matter? We would be pleased to help you further, or why not visit us on the web at www.kern-lab.com

Range of services:

- DKD calibration of balances with a maximum load of up to 6 t
- DKD calibration of weights in the range of 1 mg – 500 kg

Calibrations can be carried out in the following classes: E1, E2, F1, F2, M1, M2 and M3.

- Database supported management of checking equipment and reminder service
- In combination with periodic recalibration we can offer you a wide range of further services:
 - Reconditioning of weights, e.g. cast weights (sand blasting, painting, adjustment,..)
 - Collection service with special transport packaging, even for heavy weights
 - Volume determination for weights of accuracy class E1
 - Measuring of sensitivity (magnetic characteristics)
- Calibration of force-measuring devices
- DKD calibration certificates in the following languages
D, GB, F, I, E, NL, PL

DKD calibration

Why? DKD calibration is always necessary when checking equipment (balance or test weight) is to be used in a QM process (e.g. to ISO 9000ff, GS 9000, TS 16949, VDA 6.1, FDA, GLP, GMP, ...)

What? Any checking equipment in proper condition can be DKD calibrated.

How? Determination of accuracy throughout the world by a laboratory which is accredited to DIN EN ISO 17025. Traceability to internationally recognised standards.

The DKD calibration certificate confirms both the measurement characteristics of the checking equipment and the general requirements for the control of checking equipment.

Where? Internationally recognised – this is monitored by ILAC (International Laboratory Accreditation Cooperation) and in Germany, for example the DKD (German calibration service)

When? The operator controls the use of checking equipment and periodic recalibration time intervals themselves

DKD calibration certificate for balances (extract)
 Further details on the internet at www.kern-lab.com

DEUTSCHER KALIBRIERDIENST DKD
 Kalibrierlaboratorium / Calibration laboratory

Akkreditiert durch die / accredited by the
 Akkreditierungsstelle des Deutschen Kalibrierdienstes

KERN
 WAAGEN · GEWICHTE · BALANCES · WEIGHTS
 KERN & Sohn GmbH
 DKD-K-11801

Alteste europäische Feinwaagen und Gewichtefabrik seit 1844
 Oldest European Manufacturer of Precision Balances since 1844

Kalibrierschein
 Calibration Certificate

Kalibrierzeichen
 Calibration mark

B-60
DKD-K-11801
10-01

Gegenstand / Object: Präzisionswaage / Precision Balance

Hersteller / Manufacturer: KERN & Sohn GmbH, Ziegelei 1, 72336 Balingen, GERMANY

Typ / Type: PBJ 620-3M

Fabrikate/Serien-Nr. / Serial number: W1012345

Auftraggeber / Customer: Max Mustermann GmbH, Teststr. 1, 42446 Musterstadt

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheiten-system (SI).
 Der DKD ist Unterzeichner der multilateralen Übereinkommen der European cooperation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the

Messergebnisse / Measurement results

1. Wiederholbarkeit / Repeatability

Messung / Measuring	Prüflast / Load	Waagenanzeige / Indication
No. 1	500 g	499,999 g
No. 2	500 g	499,999 g
No. 3	500 g	500,000 g
No. 4	500 g	500,000 g
No. 5	500 g	500,000 g

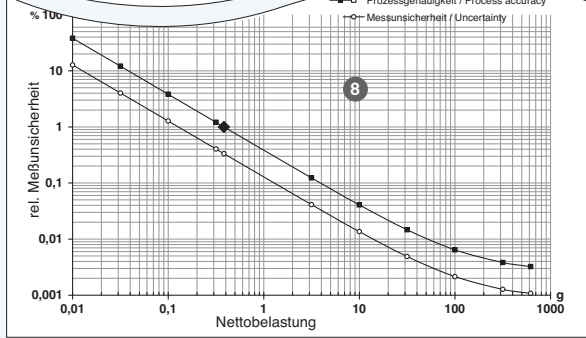
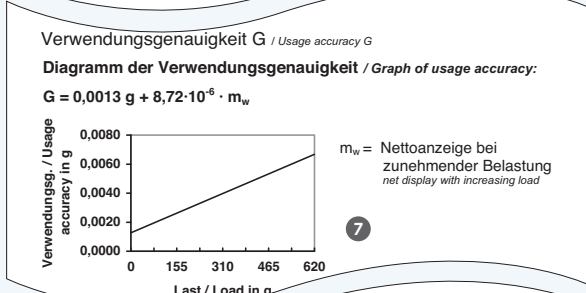
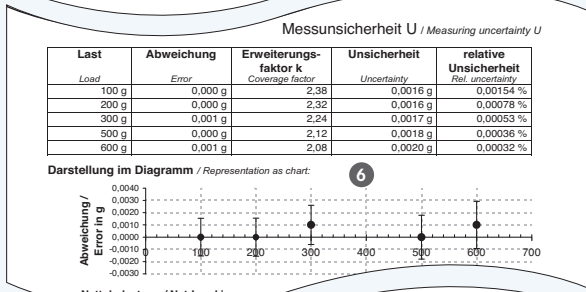
Standardabweichung: s = 0,0006 g
 Standard deviation:

2. Richtigkeit / Linearity

Prüflast / Load	Waagenanzeige / Indication
100 g	100,000 g
200 g	200,000 g
300 g	300,001 g
500 g	500,000 g
600 g	600,001 g

3. Außermitige Belastung / Eccentricity

Position / Position	Prüflast / Load	Waagenanzeige / Indication
No. 1	500 g	500,000 g
No. 2	500 g	499,999 g
No. 3	500 g	500,001 g
No. 4	500 g	500,001 g
No. 5	500 g	500,001 g



The advantages of using KERN in-house calibration

You send your balance to us.

To be recommended with new equipment and for balances which can be transported economically, as the travel costs for on-site calibration are then not applicable.

The advantages of using KERN on-site calibration

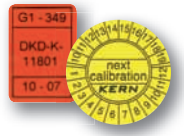
We visit you.

In Germany, KERN has access to a comprehensive network of employees at the KERN DKD calibration laboratory, who can carry out on-site calibration of scales up to 6 t.

The calibration service is **independent of the brand.**

Preliminary maintenance work by agreement.

Prices for on-site calibration on request.



Recalibration

- The recalibration schedule depends on the frequency of use, the conditions of use and the safety requirements.
- We would recommend that you recalibrate your test weights every 6 months if they are used intensively, and every 12 months with normal use.

Initial calibration and recalibration of scales at the KERN factory	KERN
Weighing range	
Analytical balances	
Max ≤ 5 kg	963-101
Max ≤ 5 kg	963-102
Precision balances/Industrial scales	
Max ≤ 5 kg	963-127
Max > 5 kg - 50 kg	963-128
Max > 50 kg - 350 kg	963-129
Max > 350 kg - 1500 kg	963-130
Max > 1500 kg - 2000 kg*	963-131
Max > 2000 kg - 6000 kg*	963-132
Preparation for recalibration (cleaning, adjustment, function test)	969-003R
Additional services:	
Minimum weight of sample (for details see internet)	969-103
Digital calibration certificate (by e-mail as pdf file)	969-102
DKD Express service with delivery time 1 day (only on initial purchase)	962-116
Express shipping: Express supplement for guaranteed delivery on the next working day (if ready for shipment before 12:00 noon)	

* floor scales only. Please ask for further details.

- 1 Official document
- 2 Item to be calibrated
- 3 Traceability
- 4 Identification
- 5 Metrological component
- 6 Measuring uncertainty
- 7 Usage accuracy
- 8 Minimum weight of sample

DKD calibration certificate for weights (extract)
Further details on the internet at www.kern-lab.com

DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium / Calibration laboratory **1**

Akkreditiert durch die / accredited by the
Akkreditierungsstelle des Deutschen Kalibrierdienstes



KERN & Sohn GmbH



DKD-K-11801

Älteste europäische Feinwaagen und Gewichtefabrik seit 1844
Oldest European Manufacturer of Precision Balances since 1844

Gegenstand Object	Gewichtssatz, 1 mg - 500 g Klasse E2 Set of weights, 1 mg - 500 g Class E2	Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI). Der DKD ist Unterzeichner der multilateralen Übereinkommen der European cooperation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Für die Einhaltung eines angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich. This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the
Hersteller Manufacturer	KERN & Sohn GmbH Ziegelei 1 D-72336 Balingen Germany	
Typ Type	313-054	
Fabrikate/Serien-Nr. Serial number	G123456789	
Auftraggeber Customer	Max Mustermann GmbH Teststr. 1 42446 Musterstadt Deutschland	

Kalibrierschein
Calibration certificate

Kalibrierzeichen
Calibration mark

G1-236
DKD-K-11801
10-02

Umgebungsbedingungen:
Ambient conditions:

Die Kalibrierung wurde bei folgenden Umgebungsbedingungen ausgeführt:
The calibration was carried out under the following ambient conditions:

	von from	bis to
Temperatur / °C temperature	24,0	24,9
rel. Luftfeuchte / % relative humidity	49,3	52,4
Luftdruck / mbar air pressure	952,3	953,7

Material / Angenommene Dichte:
Material / Assumed density:

Nennwert nominal value	Dichte density	Unsicherheit uncertainty	Material material	Form shape
1 mg - 5 mg	2700 kg/m ³	130 kg/m ³	Aluminium	Plättchen Flat sheet
10 mg - 500 mg	8600 kg/m ³	170 kg/m ³	Neusilber German silver	Plättchen Flat sheet
1 g - 500 g	8000 kg/m ³	100 kg/m ³	Edelstahl Stainless steel	Knopf Cylindrical form

DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium / Calibration laboratory

Akkreditiert durch die / accredited by the
Akkreditierungsstelle des Deutschen Kalibrierdienstes

Seite 5 zum Kalibrierschein vom 19.01.2011
Page 5 of the calibration certificate dated

G1-236
DKD-K-11801
10-02

Messergebnisse:
Measurement results:

Nennwert nominal value	Kennzeichnung marking	konventioneller Wägewert conventional mass	Unsicherheit k=2 uncertainty	Fehlergrenze max. perm. error	Klasse* class*
1 mg		1 mg - 0,002 mg	0,002 mg	± 0,006 mg	E2 ✓
2 mg		2 mg + 0,001 mg	0,002 mg	± 0,006 mg	E2 ✓
2 mg	*	2 mg - 0,002 mg	0,002 mg	± 0,006 mg	E2 ✓
5 mg		5 mg - 0,001 mg	0,002 mg	± 0,006 mg	E2 ✓
10 mg		10 mg + 0,000 mg	0,003 mg	± 0,008 mg	E2 ✓
20 mg		20 mg - 0,002 mg	0,003 mg	± 0,010 mg	E2 ✓
20 mg	*	20 mg + 0,006 mg	0,003 mg	± 0,010 mg	E2 ✓
50 mg		50 mg - 0,007 mg	0,004 mg	± 0,012 mg	E2 ✓
100 mg		100 mg - 0,000 mg	0,005 mg	± 0,016 mg	E2 ✓
200 mg		200 mg + 0,003 mg	0,007 mg	± 0,020 mg	E2 ✓
200 mg	*	200 mg + 0,007 mg	0,007 mg	± 0,020 mg	E2 ✓
500 mg		500 mg + 0,007 mg	0,008 mg	± 0,025 mg	E2 ✓
1 g		1 g - 0,008 mg	0,010 mg	± 0,03 mg	E2 ✓
2 g		2 g + 0,015 mg	0,013 mg	± 0,04 mg	E2 ✓
2 g	*	2 g + 0,012 mg	0,013 mg	± 0,04 mg	E2 ✓
5 g		5 g + 0,005 mg	0,017 mg	± 0,05 mg	E2 ✓
10 g		10 g - 0,005 mg	0,020 mg	± 0,06 mg	E2 ✓
20 g		20 g - 0,043 mg	0,027 mg	± 0,08 mg	E2 ✓
20 g	*	20 g - 0,019 mg	0,027 mg	± 0,08 mg	E2 ✓
50 g		50 g - 0,00 mg	0,03 mg	± 0,10 mg	E2 ✓
100 g		100 g - 0,03 mg	0,05 mg	± 0,16 mg	E2 ✓
200 g		200 g - 0,03 mg	0,10 mg	± 0,3 mg	E2 ✓
200 g	*	200 g - 0,08 mg	0,10 mg	± 0,3 mg	E2 ✓
500 g		500 g - 0,39 mg	0,27 mg	± 0,8 mg	E2 ✓

Calibration of test weights

Calibrated measuring equipment requires calibrated checking equipment. For balances, these are calibrated test weights, also called "standard weights".

We calibrate test weights...

- in all OIML classes E1 through M3 with permissible error limits (for tolerance tables, see page 129), in sizes 1 mg to 500 kg.
- with free nominal value
- in Newtons
- independent of design (special designs)

The advantages of using KERN in-house calibration

You send your test weights to us.

- Excellent price performance ratio
- The quickest process time
 - standard DKD service: 4 working days
 - DKD Express service: 48 hours (new weights)
- The most modern calibration methods with robot controlled comparators allow the most accurate calibration results and fastest throughput time
- A calibration service which is independent of the brand
- KERN also reconditions existing customer weights (e.g. readjustment or cleaning)
- We would be pleased to monitor your recalibration schedule
- On request, with our parcel service, we can also provide a pick-up and collection service
- KERN DKD calibration certificates are internationally recognised

The advantages of using KERN on-site calibration

We visit you.

We would be pleased to visit you within Germany and carry out the calibration of your reference standards to OIML classes M1 to M3, 10 to 50 kg with permissible error limits, using our mobile MACOS system. Minimized downtime of your checking equipment and direct contact with our expert are the major benefits of this service. Price on request.

Recalibration

- The recalibration schedule depends on the frequency of use, the conditions of use and the safety requirements.
- In terms of standardisation, no particular recalibration interval is specified.
- We would recommend that you recalibrate your test weights every 6 months if they are used intensively, and every 12 months with normal use.

- 1 Official document
- 2 Item to be calibrated
- 3 Traceability
- 4 Identification
- 5 Environmental conditions
- 6 Metrological component
- 7 Conventional mass
- 8 Measuring uncertainty

Recalibration price of test weights

OIML Class: →	E1 with volume determination		E1 without volume determination		E2		F1 / F2 * Only F2		M1 / M2 / M3	
Weight value: ↓	KERN		KERN		KERN		KERN		KERN	
1 mg	-		962-251R		962-351R		962-451R		962-651R	
2 mg	-		962-252R		962-352R		962-452R		962-652R	
5 mg	-		962-253R		962-353R		962-453R		962-653R	
10 mg	-		962-254R		962-354R		962-454R		962-654R	
20 mg	-		962-255R		962-355R		962-455R		962-655R	
50 mg	-		962-256R		962-356R		962-456R		962-656R	
100 mg	-		962-257R		962-357R		962-457R		962-657R	
200 mg	-		962-258R		962-358R		962-458R		962-658R	
500 mg	-		962-259R		962-359R		962-459R		962-659R	
1 g	963-231		962-231R		962-331R		962-431R		962-631R	
2 g	963-232		962-232R		962-332R		962-432R		962-632R	
5 g	963-233		962-233R		962-333R		962-433R		962-633R	
10 g	963-234		962-234R		962-334R		962-434R		962-634R	
20 g	963-235		962-235R		962-335R		962-435R		962-635R	
50 g	963-236		962-236R		962-336R		962-436R		962-636R	
100 g	963-237		962-237R		962-337R		962-437R		962-637R	
200 g	963-238		962-238R		962-338R		962-438R		962-638R	
500 g	963-239		962-239R		962-339R		962-439R		962-639R	
1 kg	963-241		962-241R		962-341R		962-441R		962-641R	
2 kg	963-242		962-242R		962-342R		962-442R		962-642R	
5 kg	963-243		962-243R		962-343R		962-443R		962-643R	
10 kg	963-244		962-244R		962-344R		962-444R		962-644R	
20 kg	963-245		962-245R		962-345R		962-445R		962-645R	
50 kg	963-246		962-246R		962-346R		962-446R		962-646R	
100 kg	-		-		-		962-591R*		962-691R	
200 kg	-		-		-		962-592R*		962-692R	
500 kg	-		-		-		962-593R*		962-693R	
1 mg - 500 mg	-		962-250R		962-350R		962-450R		962-650R	
1 mg - 50 g	963-201		962-201R		962-301R		962-401R		962-601R	
1 mg - 100 g	963-202		962-202R		962-302R		962-402R		962-602R	
1 mg - 200 g	963-203		962-203R		962-303R		962-403R		962-603R	
1 mg - 500 g	963-204		962-204R		962-304R		962-404R		962-604R	
1 mg - 1 kg	963-205		962-205R		962-305R		962-405R		962-605R	
1 mg - 2 kg	963-206		962-206R		962-306R		962-406R		962-606R	
1 mg - 5 kg	963-207		962-207R		962-307R		962-407R		962-607R	
1 mg - 10 kg	963-208		962-208R		962-308R		962-408R		962-608R	
1 g - 50 g	963-215		962-215R		962-315R		962-415R		962-615R	
1 g - 100 g	963-216		962-216R		962-316R		962-416R		962-616R	
1 g - 200 g	963-217		962-217R		962-317R		962-417R		962-617R	
1 g - 500 g	963-218		962-218R		962-318R		962-418R		962-618R	
1 g - 1 kg	963-219		962-219R		962-319R		962-419R		962-619R	
1 g - 2 kg	963-220		962-220R		962-320R		962-420R		962-620R	
1 g - 5 kg	963-221		962-221R		962-321R		962-421R		962-621R	
1 g - 10 kg	963-222R		962-222R		962-322R		962-422R		962-622R	

Additional costs for preparation, overhaul and adjustment	KERN
Preparation of weights (e.g. cleaning, etc.)	
Single weight	969-001R
Weight set	969-002R
Subsequent services are carried out after confirmation	
Continued overhaul of weights (e.g. wet-cleaning, markings, repair, special packaging)	969-005R
Adjustment, per weight (only available for weights with adjustment chamber (F1-M3))	969-010R
Second calibration after adjustment per weight	
Class E1	969-210R
Class E1 incl. volume determination	969-211R
Class E2	969-310R
Class F1/F2	969-410R
Class M1-M3	969-610R
Testing of magnetic properties according to OIML R111-2004, per weight	972-000

KERN DKD-Express Service

DKD standard service Class E2-M3	4 working days
DKD standard service Class E1, 1mg-500mg, and recalibration 1g-10kg with a known volume	15 working days
Class E1, 1g-1kg, incl. volume determination	25 working days
Class E1, ≥ 2kg, incl. volume determination	40 working days

DKD express service in 48 hours
except for class E1

- Urgent order is received at KERN by 12:00 noon at the latest
- Ready for shipping at KERN on the next working day but on, at 12:00 noon
- Return by standard parcel service or express shipping
- Additional cost for DKD Express Service, for each KERN test weight KERN 962-115
- For Express shipping, see page 148

▪ **Adjusting of measuring equipment:**

precise setting of a measure value via a professional intervention in the measurement system.

▪ **Adjusting the weighing range of a balance:**



either with the external test weight via the **adjusting program (CAL)**, or with the **internal automatic adjustment resp. adjusting switch**. It is necessary with variations in temperature, a change of environmental conditions, change of location, etc. **Recommended as a daily check routine.**

▪ **Application accuracy:**

Allowance for → *measuring uncertainty* during practical use of a balance. Is given in the appendix to the DKD calibration certificate.

▪ **Calibration of measuring equipment:**

determination of the precision of a measure value without intervention in the measurement system. Example: to check a balance you load a → *test weight upon it*. The term “Calibrating” was formerly also used for → *Adjusting*.

▪ **Calibration or verification:**



DKD-Calibration is possible for every balance in perfect condition. DKD calibration is a private service monitored by the state for ensuring high quality requirements according to ISO 9000ff and others, e.g. in production or research.

M Verifying is only possible for type-approved balances marked with the green **M**

→ *Verification*

▪ **Calibration Certificate DKD:**



documentation of measured characteristics of balances or test weights and of traceability to the national standard. Additional price. See pages 147-150.

▪ **Capacity display:**

a bar lights up to show the currently selected and optionally available weighing range.

▪ **Certificate:**

The term is no longer used within DKD

→ *Calibration certificate*

▪ **Control of measuring equipment:**

required for quality management systems according to ISO 9000ff, GLP etc. Measuring equipment (e.g. balances) and checking equipment (e.g. test weights) must be controlled (= calibrated) at certain intervals for their precision

→ *Recalibration.*

▪ **Data interface/parameters:**



For the most part RS 232C, bidirectional. For direct connection of a printer or PC to the balance. The interface parameters can be set on the balance keypad. Interface cable, see page 126.

▪ **Density determination:**

(previously “Specific weight”)

▪ **DKD = German Calibration Service:**

See pages 147-150.



▪ **DMS = Strain gauge:**

An electrical resistor strip that is glued to an elastic deforming body made of aluminium. As the strain gauge is mechanically deformed its resistance value changes, allowing the measured value to be calculated.

▪ **Draught shield:**

Required for balances with → *Readout d* ≤ 1 mg, to avoid disturbing air movements.

▪ **Dual-range balance:**

the complete weighing range of a balance is divided and starts with → *Readout d₁*. Beyond this fine range the → *Readout d₂*, usually 2 x *d₁*. The change-over occurs automatically.

▪ **Dynamic weighing:**

→ *Filter*

▪ **External test weight (previously calibration weight):**

for adjusting or checking the balance accuracy → *Adjusting the weighing range*. The external test weight can be DKD calibrated at any time, even afterwards, see page 149.

▪ **Filter for adaptation to the ambient conditions:**

vibrations are compensated due to an increase of the measurement cycles within the balance, this means an extension of the integration time.

▪ **FORCE = Electromagnetic force compensation:**



A counterforce is created by means of a coil in a permanent magnet. This counterforce is the same as the load of the weight being measured on the scale and therefore maintains the balance. The measured value is calculated via the change in the coil current.

▪ **Gravitational force:**

very important influence for precise electronic balances. Due to the varying influence balances have to be → *adjusted* at the location of use.

▪ **GLP:**

Good Laboratory Practice → *ISO/GLP*

▪ **Internal test weight:**

like test weight external, but installed in the balance and powered.

▪ **IP 65 protection in accordance with DIN EN 60529**



Designed for temporary contact with liquids. Use a damp cloth for cleaning. Dustproof.

▪ **IP 67 protection in accordance with DIN EN 60529**



Designed for temporary use in wet areas. Can be cleaned with water jet. Temporary submersion is possible. Dustproof.

▪ **IP 68 protection in accordance with DIN EN 60529**



Designed for continuous use in wet areas. Can be cleaned with water jet. Submersion is possible. Dustproof.

▪ **ISO 9000ff:**

Quality Management System in the form of a DIN Norm for quality assurance in a factory.



▪ **ISO/GLP record keeping:**

Quality Assurance Systems demand record keeping of weighing results and the correct adjusting of the balance giving details of date, time and balance identification. The easiest way of obtaining this documentation is by means of a connected printer.

▪ **Linearity/precision:**

greatest deviation of the weight display of a balance to the value of the respective test weight in terms of plus and minus over the whole weighing range.

▪ **Manufacturer’s declaration of conformity:**

this documents that a product meets the EC directives. With electronic balances always in conjunction with CE mark.

▪ **Minimum load Min:**

lower limit of the verifiable weighing range. Is marked on the verification plate. The function of the balance is also given below the minimum load.

▪ **Net total:**



= total weight of all components of a mixture without the weight of the tare cup.

▪ **Percentage determination (example):**



reference weight prior to drying: 50g = balance display 100 %. After drying 40 g = balance display 80 % absolute (dry mass) or 20 % relative (humidity).

▪ **Permissible ambient temperature:**

measuring errors are possible with readings either side of the limits. With verified balances this is stated on the identification plate.

▪ **Proof of compatibility:**

This documents the verification compatibility for combinations of weighing modules such as display devices, load cells and connecting elements.

▪ **Piece counting of single pieces:**



when weighing e.g. 10 identical pieces; the → *reference quantity* is 10. The balance automatically indicates the average weight per piece. As from now each loading of identical pieces to be counted will be directly indicated as the quantity of pieces. The following applies: **The higher the reference quantity, the higher the counting accuracy.**

▪ **Readout d:**

Smallest readable weight increment on a digital display.

▪ **Reference weight (when piece counting):**

representative piece weight with piece counting of same pieces. The **reference quantity of pieces** is the number of pieces selected to determine the average reference weight. Mostly between 10 and 50 pieces.

→ *Piece counting of single pieces.*



▪ **Recalibration:**

periodic checking of the precision of measurement equipment/checking equipment (e.g. balances/weights) to keep control over accuracy,

→ *Control of measuring equipment.*

▪ **Reproducibility (standard deviation):**

the measure of conformity in repeat weighing (e.g. balances) subject to the same conditions. Mostly 1 **d** or less. Quality feature.



▪ **SC-TECH = Single cell technology:**

Advanced version of the classic electromagnetic force compensation principle. The load cells are milled from a single aluminium block achieving high mechanical strength, fast response characteristics and greater measurement stability, e.g. temperature behaviour and high reproducibility.

▪ **Semi-micro balance:**

analytical balance with a readout **d** = 0,01 mg.

▪ **Taring, subtractive:**

the available weighing range of a balance is reduced by the value of the tare load. Example: weighing range of a balance **Max** 6000 g, Tare (= container) 470 g, available weighing range 5530 g.

▪ **Taring, automatic:**

when the tare pan is put in place the balance immediately displays zero. Saves time.

▪ **Test weights: classes of accuracy E, F, M**

and their general relation to the types of balances:

- E2** the most accurate test weights for high resolution analytical balances of verification class I ≥ 100.000 e
- F1** Precision weights for analytical balances/precision balances for verification class I/ II, up to 100,000 e
- F2** Test weights for precision balances of verification class II, up to 30,000 e
- M1** Precision weights for industrial and commercial balances of verification class III, up to 10,000 e

more closely defined rules to determine the correct test weight and example of application, see page 128.



▪ **T-FORK = Tuning fork principle:**

A resonating body (like a tuning fork) is electromagnetically excited, causing it to oscillate. The measured value is calculated via the change in frequency corresponding to the load of the weight being measured on the scale.

▪ **Tolerance checks:**

→ *Weighing with tolerance ranges.*



▪ **Totalising:**

various individual weighings are added automatically to aggregate, e.g. all individual weighings of a batch.

▪ **Traceability to the National Standard:**

ISO 9000 ff requires the correctness of all checking equipment (e.g. test weights) with the official standard in accordance to the defined tolerance. Thereby incorrect measurement is prevented.

▪ **Uncertainty of measurement of a balance (= standard deviation):**

determined for each balance according to a precisely given test method and documented in the → *Calibration certificate*. It depends on various factors both internal and external. With increasing weight the uncertainty of measurement rises, see page 148.



▪ **Verification:**

Only type approved balances can be verified officially. These balances are marked with an **M**. Verification is stipulated by the state for commercial trade. It is to protect the consumer.

▪ **Balances which are verified / not approved for verification:**

Metrologically almost identical. For verified balances certain details are regulated by law, e.g. software changes and additional markings.

▪ **Verification validity for balances:**

Generally 2 years for all verification categories, for control balances generally 1 year, after expiry the balance has to be reverified.

▪ **Verification categories of balances:**

- Class I – Analytical balance (precision balance),
- Class II – precision balance,
- Class III – industrial scale (commercial scale).

▪ **Verification:**

According to the EU directive 2009/23/EG, balances must be verified if they are used as follows:

- a) in commercial trade when the price of a commodity is determined by weighing.
- b) in the manufacture of pharmaceuticals in pharmacies and analysis in pharmaceutical and medical laboratories.
- c) for official purposes.
- d) in the production of prepackaging.
- e) in medical applications.

Every balance is tested by the metrological service and stamped with a verification mark. Its accuracy within the framework of permissible standard tolerances is thereby confirmed. EU verification applies to all member states of the EU

▪ **Verification of a balance with adjusting program CAL EXT:**

the adjusting program is sealed with an official mark after the verification. Thus the verification is only valid for the specific location of use.

→ *Gravitational force*

For the preparation of verification it is therefore necessary to advise the location of use and post-code. See individual model details for the information as to whether verification can be carried out in the factory or at the location of use.

▪ **Verification of a balance with automatic internal adjusting CAL INT:**

the above restrictions in respect of the location of use do not apply, because the automatic internal adjusting works also after the verification, therefore it is not sealed. In this case the verification does not depend on the location.

▪ **Verification value e:**

measure of the verification tolerance, depending on balance, mostly between 1 **d** and 10 **d**

→ *Readout*

▪ **Weighing range Max:**

is the working range of the balance. The balance can be loaded up to the specified upper limit.



▪ **Weighing with tolerance ranges:**

the lower and upper limiting values are programmed individually. Input is possible in grams, pieces or %. With tolerance checks such as dosing, portion division or grading, the balance displays the value over or under the limits.



Important notice



Explosion hazard or humidity

Our balances are not suitable for rooms with explosion hazard or extreme humidity. Please observe relevant electrical instructions.

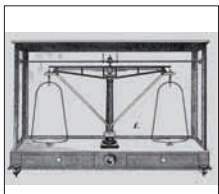
Earth's Gravitational force

Electronic balances are subject to location regulations due to the earth's gravitational force. If location of use is changed, reverification and recalibration of the electronic balance is needed.

See the glossary, page 151 → „Adjusting“.

Tradition and innovation for more than 167 years

1844



KERN is founded – precision balances are produced

1863



A proud Gottlieb Kern with his staff

1880



Pharmaceutical balance with Aesculap

1923



Inflation – KERN wages are paid with self printed currency



The electronic balance ousts mechanical devices



Accredited for weights DKD laboratory (ISO 17025)



New premises in Balingen

2002



Existing QM system certification in accordance to DIN EN ISO 9001:2000 standards

2007



Approval for the Manufacture of Medical Products (DIN EN 13485 and 93/42/EEC)

2008



Approval for manufacturer's initial calibration (90/384/EEC)

2009



Approval for the manufacture and sale of height rods (DIN EN 13485 and 93/42/EEC)

2009



Expansion of accreditation services to include calibration of force-measurement devices

% X-TRA PRICE % X-TRA PRICE % X-TRA PRICE %

% SPECIAL OFFERS

We are clearing out our stocks!

Any number of special offers and deals are waiting on you - so act quickly!

Note: You can find even more great deals on our Website under the heading „Special offers“.

In addition to sell-out models, **you can also find unbeatably cost-effective devices with slight signs of wear.**

Of course, they all have a 2-year warranty.

ONLY WHILE STOCKS LAST!!!



%



%



Bench scale FWN 1K0.5IP

Weighing range: 1 kg
Read-out: 0,5 g

Precision balance PCB 4000-1

Weighing range: 4000 g
Read-out: 0,1 g

Platform scale EFB 20K10D

Weighing range: 10 | 20 kg
Read-out: 10 | 20 g

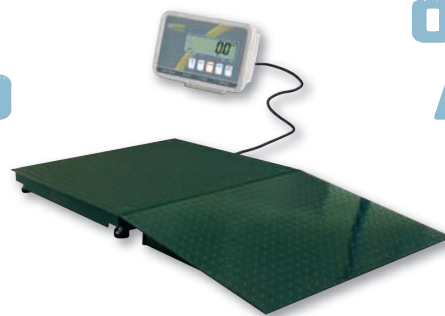
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Bench scale GAS 15K5DM

Weighing range: 7,5 | 15 kg
Read-out: 5 | 10 g

Floor scales BVBP 600K200M

Weighing range: 600 kg
Read-out: 200 g

Platform scale VB 300K50DLM

Weighing range: 150 | 300 kg
Read-out: 50 | 100 g

Bench scale GAS 30K10DM

Weighing range: 15 | 30 kg
Read-out: 10 | 20 g

Floor scales BVBP 3T1M

Weighing range: 3000 kg
Read-out: 1000 g

%

%

%