MUDTEST™
A LEUTERT COMPANY

API Mud Balance

Instruction Manual

Density

The four-scale mud balance is an accurate, self-contained measuring device used to determine the density of drilling fluids and cement slurries.

Declaration of Conformity

MUDTEST Sp. z o.o.
Chełmońskiego 77, 32-500 Chrzanów, Poland

hereby declares that the following product complies with the provisions of the listed below standards. This including any amendments in force at the time of the declaration:

Name of product	**API Mud Balance**
Drawing number	8010.00.00000

☒ **API RP 13B-1 Field Testing: Water-based Drilling Fluids**
and identical
ISO 10414-1 Petroleum and natural gas industries — Field testing of drilling fluids — Part 1: Water-based fluids

☒ **API RP 13B-2 Field Testing: Oil-based Drilling Fluids**
and identical
ISO 10414-2 Petroleum and natural gas industries — Field testing of drilling fluids — Part 2: Oil-based fluids

SEBASTIAN LEUTERT

QUALITY ASSURANCE
INSPECTED BY MUDTEST

Adendorf, 01.11.2023

Place and date

Management representative for declarations of conformity

Description

The mud balance is used to determine the density of drilling mud and cement slurries. The mud balance is a beam balance with an asymmetrical structure. On the short side of the beam there is a cup to hold the sample. On the long side there is a counterweight.

The sample cup can be closed with a lid. Excess drilling fluid or cement slurry passes through a hole in the center of the lid. In this way a uniform volume is measured. The weight of all mud balance lids is identical. If a lid is lost, a new lid can simply be used.

The counterweight is positioned on the long side of the beam and can be moved over four scales. Scales on the top of the mud balance indicate measurement ranges from 6.5 to 23 lbs/gal and from 0.79 to 2.72 g/cc. Measuring ranges from 49 to 172 lb/ft^3 and from 340 to 1190 psi at 1000 feet depth are engraved on the side of the mud balance.

During operation a level bubble vial shows whether the two sides of the beam are balanced.

The MUDTEST mud balance complies with the requirements of API RP 13B-1 and API RP 13B-2 or the corresponding international standard ISO 10414 for field testing of drilling fluids.

Technical Specifications

Volume of the cup	:	200 cm^3 | 12.2 in^3
Dimensions (LxWxH) *)	:	approx. (550 x 110 x 100) mm | (21.5 x 4.5 x 4) in
Weight *)	:	approx. 1.9 kg | 4.19 lbs

*) incl. carrying case

Operation

1. Place the mud balance base (preferably in carrying case) on a flat level surface.

2. Measure the temperature of the fluid and record on an appropriate mud report form.

3. Fill the clean, dry cup to the top with the freshly obtained mud sample to be weighed.

4. Place the lid on the cup and set it with a gentle twisting motion. Be sure that some mud is expelled through the hole in the cap as this will ensure the cup is full and also will free any trapped air or gas.

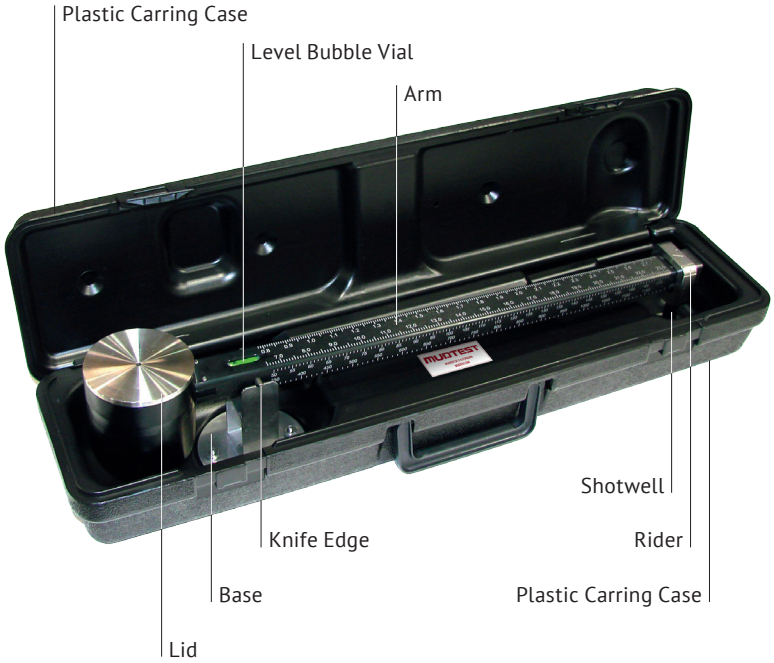
5. Cover the hole in the lid with a finger and wash all mud from the outside of the cup and arm. Then thoroughly dry the entire balance.

6. Place the balance on the knife edge and move the rider along the outside of the arm until the cup and arm are balanced as indicated by the bubble.

7. Read the mud weight at the edge of the rider toward the mud cup.

8. Report the mud weight to the nearest 0.1 pound per gallon, 1.0 pound per cubic foot, 0.01 gram per cubic centimeter (specific gravity) or 10 PSI/1000 ft.

9. Clean and dry the mud balance after each use.



Conversion Table for Density

pounds per gallon lb/gal	pounds per cubic foot lb/ft³	specific gravity sg = g/cm³	kg per cubic meter kg/m³
6,5	48,6	0,78	780
7,0	52,4	0,84	840
7,5	56,1	0,90	900
8,0	59,8	0,96	960
8,3	62,3	1,00	1000
8,5	63,6	1,02	1020
9,0	67,3	1,08	1080
9,5	71,1	1,14	1140
10,0	74,8	1,20	1200
10,5	78,5	1,26	1260
11,0	82,3	1,32	1320
11,5	86,0	1,38	1380
12,0	89,8	1,44	1440
12,5	93,5	1,50	1500
13,0	97,2	1,56	1560
13,5	101,0	1,62	1620
14,0	104,7	1,68	1680
14,5	108,5	1,74	1740
15,0	112,5	1,80	1800
15,5	115,9	1,86	1860
16,0	119,7	1,92	1920
16,5	123,4	1,98	1980
17,0	127,2	2,04	2040
17,5	130,9	2,10	2100
18,0	134,6	2,16	2160
18,5	138,4	2,22	2220
19,0	142,1	2,28	2280
19,5	145,9	2,34	2340
20,0	149,6	2,40	2400
20,5	153,3	2,46	2460
21,0	157,1	2,52	2520
21,5	160,8	2,58	2580
22,0	164,6	2,64	2640
22,5	168,3	2,70	2700
23,0	172,1	2,76	2760
23,5	175,8	2,82	2820
24,0	179,5	2,88	2880

Calibration

MUDTEST mud balances are calibrated at the factory with the lid included in the mud balance kit. However, the balance should be re-calibrated, if necessary, on site. Any time a mud balance lid, or any other part, is replaced, the instrument should be re-calibrated.

1. The calibration of the instrument may be easily checked by measuring the density of fresh water.

2. Fill the cup with fresh water at around 70°F (21°C), and set the rider on 8.3 pounds per gal- lon or 1.0 specific gravity. Add or remove steel shot from the shotwell until the instrument is in balance.

Order Information

Mud balance	**8010.00.00000**
Lid for mud balance	8010.00.00001