



CANCELLED
COMMONWEALTH OF AUSTRALIA

NATIONAL STANDARDS COMMISSION

Weights and Measures
(National Standards)
Act 1960-1966

Weights and Measures
(Patterns of Instruments)
Regulations

Certificate of Approval

CERTIFICATE NUMBER 6/4D/19

This Certificate replaces Certificate No 6/4D/19 dated 18 August 1971. *

In respect of the pattern of

Berkel Self-indicating Price-computing Weighing Instrument of 20-lb Capacity and Variants.

Submitted by: Toledo-Berkel Pty Ltd,
525 Graham Street,
Port Melbourne,
Victoria. 3207.

Manufactured by: Berkel G. m. b. H ,
41 Duisburg,
Postfach 167,
Auf Der Hohe 23,
West Germany.

This is to certify that the pattern and variants of the instrument illustrated and described in this Certificate have been examined by the National Standards Commission under the provisions of the abovementioned Regulations and have been approved as being suitable for use for trade.

The pattern and variants 1 and 2 were approved on 14 May 1968.

* NOTE: Figures 6/4D/19 - 1 and 3 to 8 form part of the Certificate and should be retained.

Variants 3 to 5 were approved on 4 August 1971, and variants 6 to 8 were approved on 23 May 1973.

The pattern and variants are marked "NSC No 6/4D/19" and comply with the General Specifications for Measuring Instruments to be Used for Trade.

This Certificate comprises:

Pages 1 to 6 dated 31 May 1973.

Figure 6/4D/19 - 1 dated 18 August 1971.

Figure 6/4D/19 - 2 dated 31 May 1973.

Figures 6/4D/19 - 3 to 8 dated 18 August 1971.

Figure 6/4D/19 - 9 dated 31 May 1973.

Date of issue 31 May 1973.

Signed



A person authorized by the Commission to sign Certificates under the abovementioned Regulations.

DESCRIPTION OF PATTERN

The pattern (see Figure 1) is of a self-indicating price-computing counter machine of 20-lb capacity, known as the Berkel 171. The instrument comprises a load receptor and lever mechanism, a double-pendulum-resistant mechanism, a graticule marked with weight and price values, a graticule marked with unit-price values, and an optical-projection system (see Figure 2).

The load receptor is supported on a stool which has a cavity filled with lead, protected by a frame and cover. The stool applies the load to a second-order main lever (see Figure 3), through a vertical compression link and knife-edges and self-aligning bearings. The stool is supported by upper and lower parallel stays. The upper stay comprises two links in compression which are connected together by tubular spacers to form a frame. The lower stay is a single link in tension (see Figures 2 and 4). The links pivot on knife-edges and self-aligning bearings. The parallel stays keep the stool and load-receptor level. An oil-filled dashpot is connected to the stool.

The nose-end of the main lever (see Figure 2), which is supported on a fulcrum knife-edge and self-aligning bearing, is connected by a pullrod to the main pendulum resistant. Movement of the main pendulum is transmitted by a compression link to the secondary pendulum.

Mounted on the secondary pendulum is a graticule (see Figure 5) with six weight scales and 151 price scales with 1-cent graduations, representing each increment of the unit-price range; one of these, the 20 lb \times $\frac{1}{4}$ oz weight scale, has 1280 weight graduations over an angle of 43 degrees 50 minutes (29.2 graduations per degree).

An optical-projection system (see Figure 2) projects the 20 lb \times $\frac{1}{4}$ oz weight scale, the price scales, and a unit-price scale on to translucent screens which are viewed by the vendor and purchaser (see Figures 6 and 7).

The angle of the vendor's translucent screen is adjustable to suit the height of the vendor. The adjustment screw is accessible through a hole on the vendor's side of the instrument (see Figure 1).

A carriage which traverses the price scales carries a graticule marked

with a unit-price scale from 10 to 160 in 1-unit increments, and a lens which projects each unit-price scale on to the screens. The movement of the unit-price scale across a fixed lens projects the unit price corresponding to the price scale selected on the weight-price graticule.

The unit price is selected by means of a press-button keyboard which has three rows of keys representing units, tens and hundreds of cents. When a key is depressed, an electric motor moves the carriage along a shaft, positioning the unit-price scale and the price-scale lens to correspond with the key pressed. The maximum unit price obtainable on the keyboard is 159 cents per pound. When all the keys are in the release position, the unit price may be selected manually by a manual unit-price selector knob; when operated manually the maximum unit price obtainable is 160 cents per pound.

DESCRIPTION OF VARIANTS

1. Without the unit-price keyboard, in which case the unit price is selected manually by turning a handwheel attached to the end of the traversing spindle.
2. Being fitted with a tare spring which is operated by a knob on the vendor's side marked "tare", in which case the variant is marked "not for retail counter use"
3. With the unit-price keyboard located in other positions on the housing (see Figure 8).
4. With the tare knob located on the side of the housing
5. In other capacities, with other weight scales, provided there are not more than 45.7 weight graduations per degree, and with other unit-price scales, namely:

<u>Capacity</u>	<u>Graduation Value</u>	<u>Unit-price Scale</u>	
		<u>Range</u>	<u>Increment</u>
*20 lb	$\frac{1}{4}$ oz	10-160 c/lb	1 c/lb
20 lb	0.01 lb	10-160 c/lb	1 c/lb
10 lb	$\frac{1}{4}$ oz	20-320 c/lb	2 c/lb
†10 kg	0.01 kg	20-320 c/kg	2 c/kg
10 kg	10 g	20-320 c/kg	2 c/kg
10 kg	5 g	20-320 c/kg	2 c/kg

* Includes the pattern.

† All graduation lines are of the same length and each line is numbered.

The unit-price keyboard is changed to correspond with the unit-price scale used. A convex lens is fitted over the translucent screens on the vendor's side and over the price scale only on the purchaser's side (see Figure 8).

6. Being known as the Berkel 172, in which case the unit-price and price graticules are arranged in two focal planes with the scales printed on both sides, "A" and "B", of the glass (see Figure 9). Two protective glass sheets are cemented over the graticules.

Each price-projection lens is mounted in a sliding sleeve which forms the core of a solenoid and is held against the stop at one end of the solenoid lens mount by a return spring when the solenoids are not energized. In this position, the lenses focus on graticules "A".

When the solenoids are energized, each sleeve is forced against the stop at the other end of the lens mount and the lenses focus on graticules "B".

Energizing of the solenoids is controlled by the press buttons on the unit-price selector keyboard, which also controls the positioning of the price-traversing carriage. The press buttons are arranged so that, in alternate unit-price positions, the lenses focus on graticules "A" and "B" respectively.

The weight-projection lens is located so that it is permanently focused on any one of the six weight scales which are printed on the weight and price graticule "A" only. These comprise four metric and two imperial weight scales which have a maximum of 45.7 graduations per degree, and the unit-price graticules used are compatible with the scale selected for use.

The six weight scales are:

<u>Weight</u>	<u>Graduation Value</u>	<u>Numbering</u>
10 000 g	10 g	Every second graduation line
10 000 g	5 g	Every fourth graduation line
10 000 g	5 g	Every second graduation line
20 lb	0.01 lb	Every second graduation line
20 lb	$\frac{1}{4}$ oz	Every second graduation line
10 000 g	5 g	Every second graduation line

The unit-price graticules cover the ranges 22 to 620 c/kg in 2-c/kg increments or 11 to 310 c/lb in 1-c/lb increments.

The 300 rows of prices on the price graticules are based on the abovementioned unit prices and have graduation values as follows:

22 to 290 c/kg or 11 to 145 c/lb	1-cent graduations
292 to 620 c/kg or 146 to 310 c/lb	2-cent graduations

The maximum unit price is obtained in the same manner as in the pattern.

7. Being known as the Berkel 172H, in which case the unit prices are selected manually by using a handwheel, fitted with a coaxial press-button switch, attached to the end of the traversing spindle.

The press-button switch controls the energizing of the solenoids which move the unit and price-projection lenses so that they focus on either graticules "A" or "B", as in the Berkel 172.

A magnetic indexing device ensures that the price-projection lenses are correctly aligned with the images on the graticules.

8. Having a tare-indicating light which operates in conjunction with the tare spring. The light, which is located on top of the housing, is illuminated when the tare knob is turned from the zero position.

GENERAL NOTES

A pointer and approximate unit-price scale may be located beneath the vendor's price and weight indicators as a guide to the vendor when manually selecting the unit price.

The Berkel 172 and 172H variants do not need supplementary magnification to make them comply with the requirements for 2-mm graduation widths.



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/4D/19

VARIATION No 1

Pattern: Berkel 171 Weighing Instrument

Submittor: Euroscale Pty Ltd,
19 Evans Street,
Burwood, Victoria, 3125.

Date of Approval of Variation: 11 May 1976

The modifications described in this Schedule apply to the patterns described in Certificate No 6/4D/19 dated 31 May 1973.

All instruments conforming to this approval shall be marked "NSC No 6/4D/19".

Description:

The approved modifications provide for:

1. the self-indicating price-computing Berkel 171 counter machine to have a capacity of 5000 g by 5-g graduations, with a price chart in 5-cent increments from 50 to 800 c/kg, indicating total price to \$40.00 by 1-cent increments. A convex lens is fitted over the weight, unit-price and total-price reading faces on the operator's side of the instrument. The instrument may have the unit price selected manually by a handwheel or automatically by means of a unit-price keyboard. The instrument is marked adjacent to each weight reading face:

III

Max	=	5000 g
Min	=	100 g
d	=	5 g

2. An ungraduated additive tare device of capacity up to 110 g selected by a knob either on the operator's side of the instrument or on the side of the instrument. Selection of any tare greater than 0,25 d causes a light marked "T" on the top of the weighing instrument to illuminate.

The instrument is marked adjacent to the weight reading face:

(III)

Max	=	5000 g
Min	=	100 g
d	=	5 g
T	=	+ 110 g

and "not for retail counter use".

Weight and price indications are only provided on the operator's side of the instrument.

FIGURE 6/4D/19 - 1

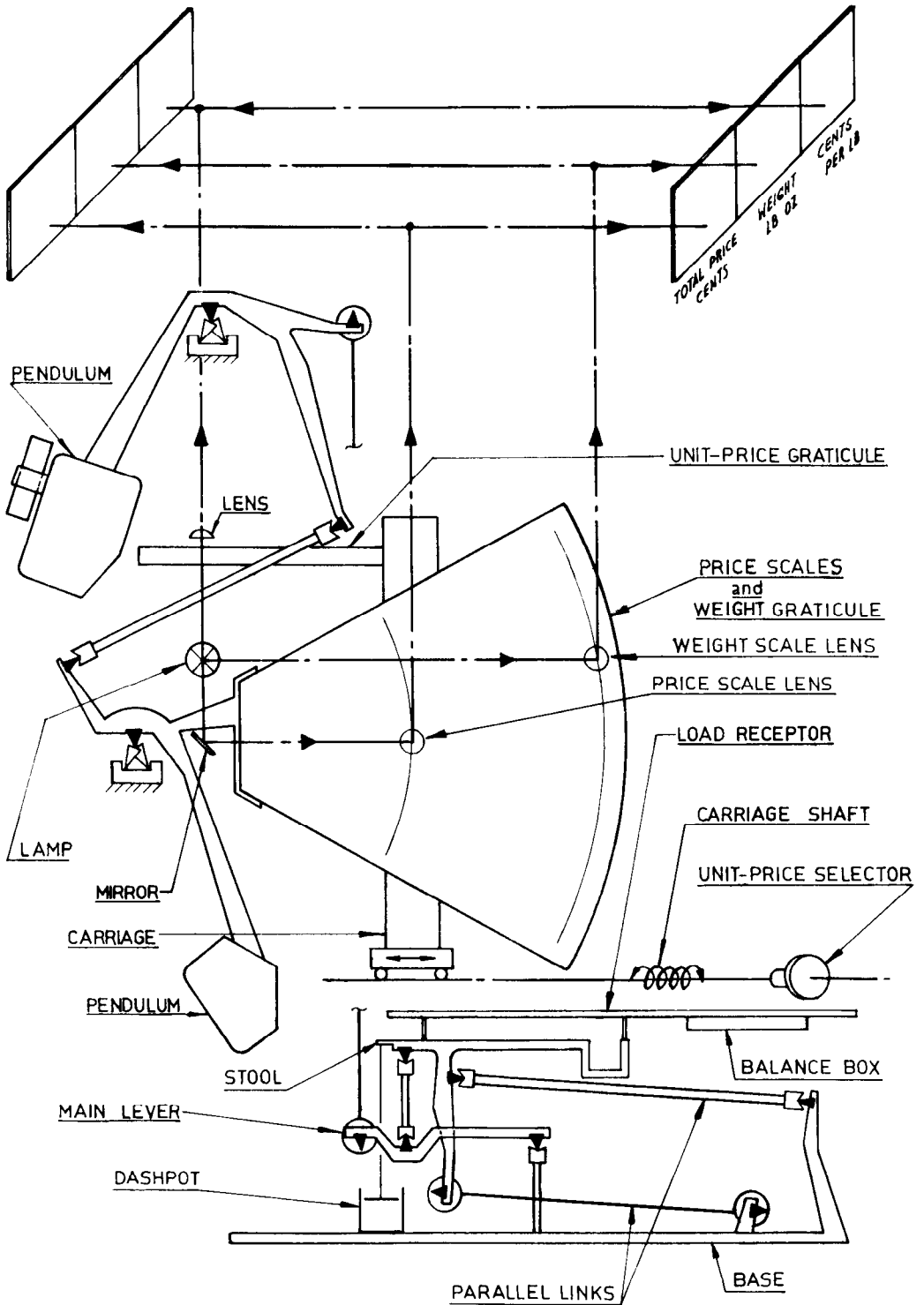


SCREEN
ADJUSTMENT
SCREW

Berkel 171

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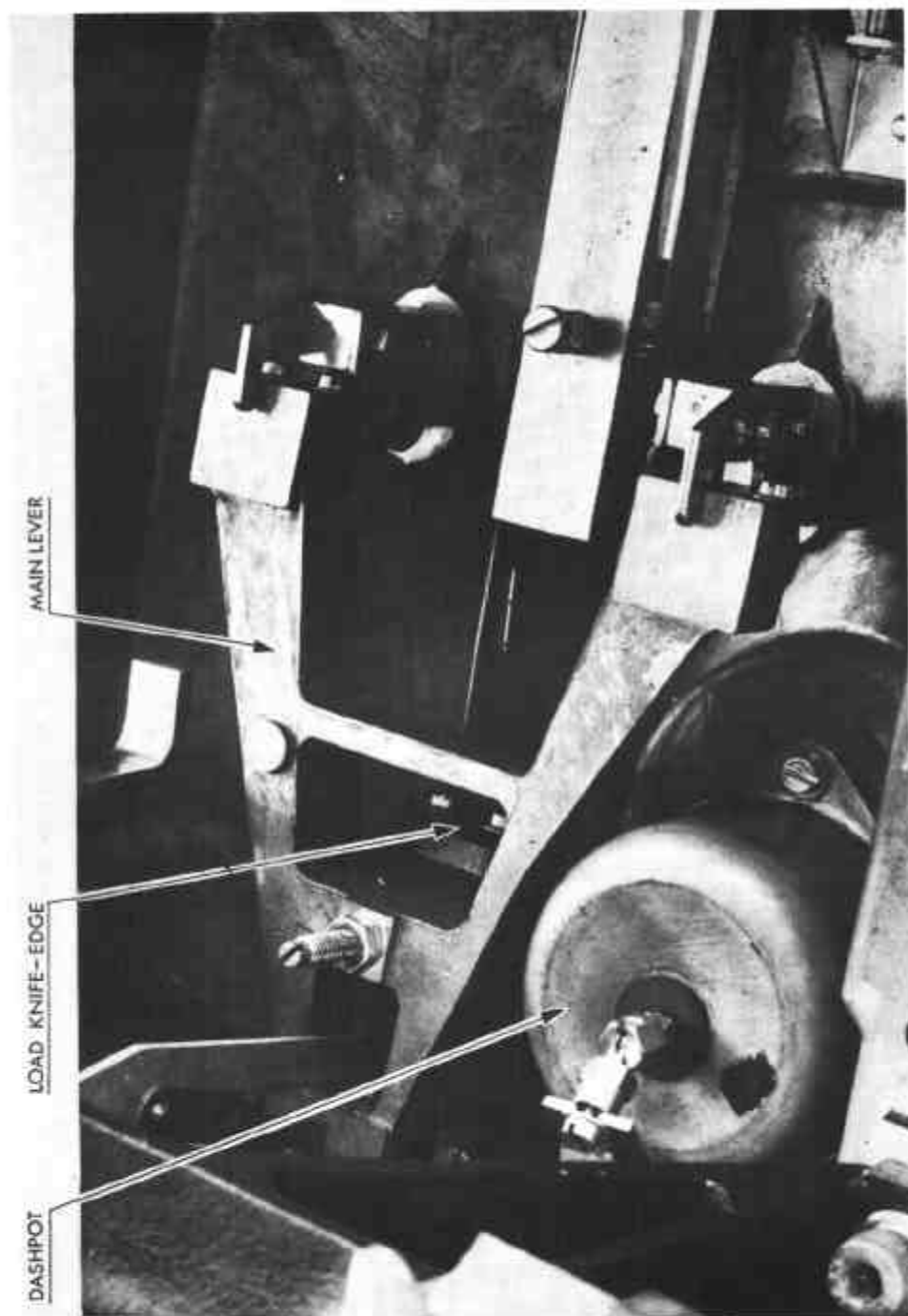
FIGURE 6/4D/19 - 2



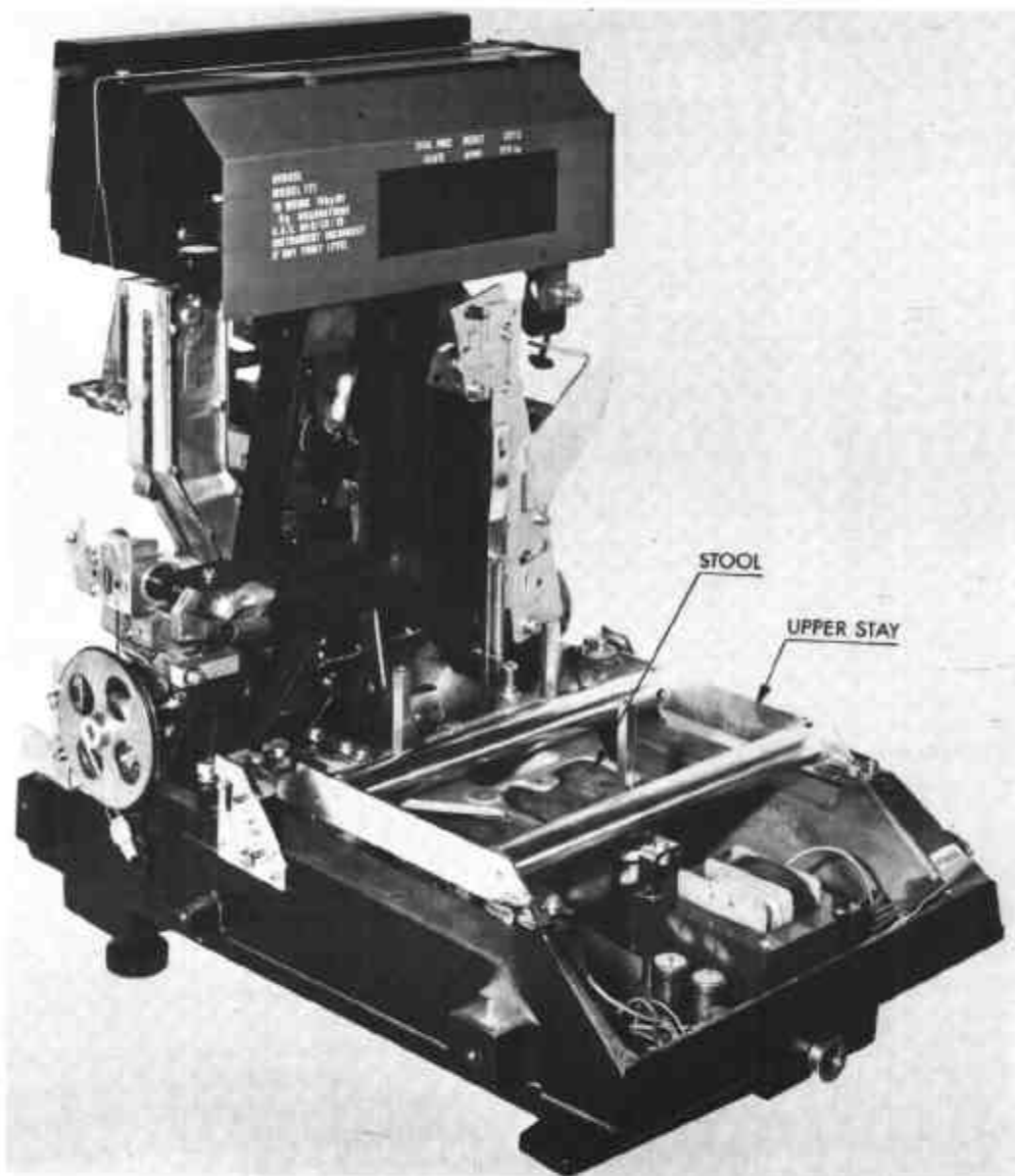
Berkel 171 — Schematic Diagram

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FIGURE 6/4D/19 - 3



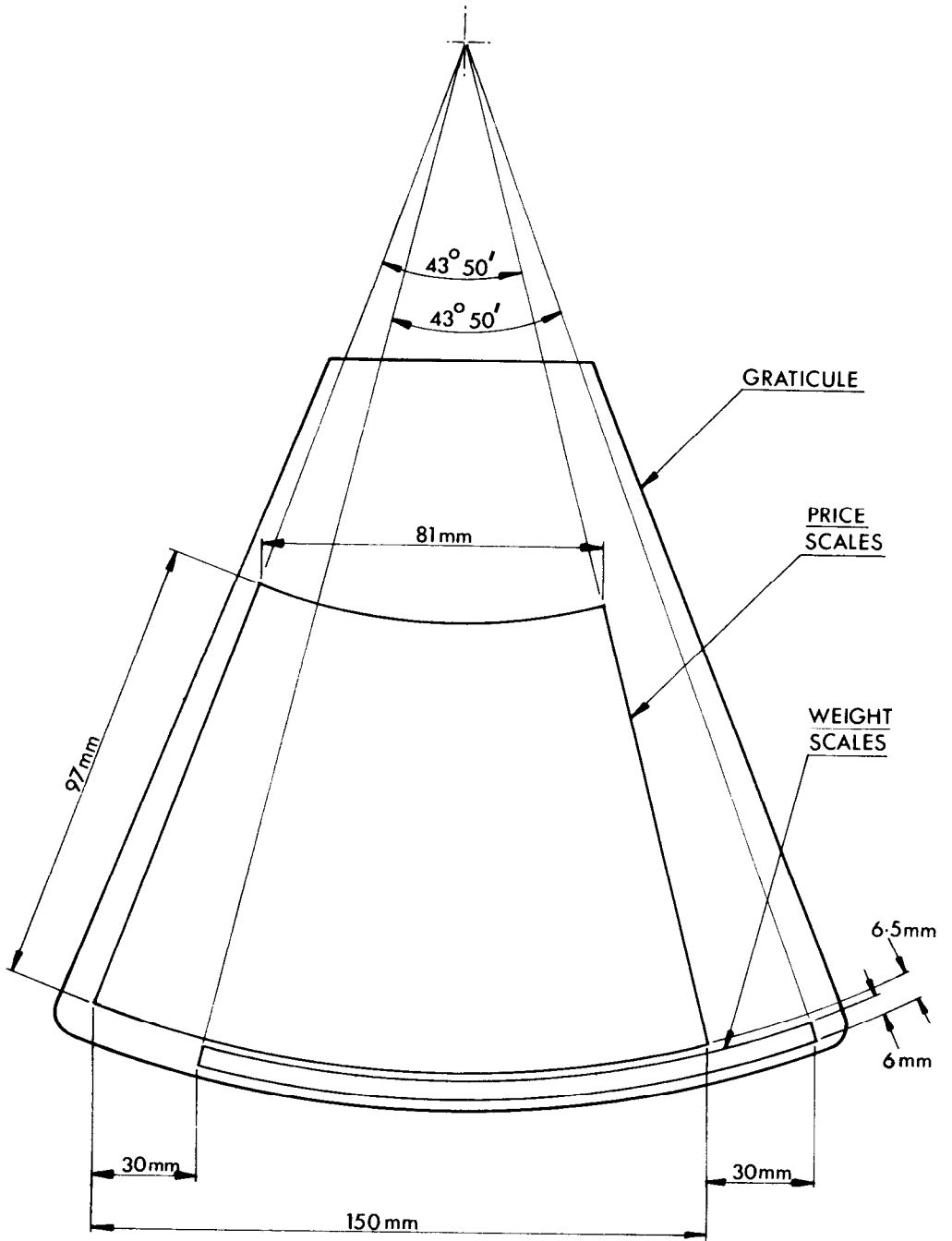
Berkel 171 - Main Lever



Berkel 171
(Shown in 10 kg Capacity)

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FIGURE 6/4D/19 - 5



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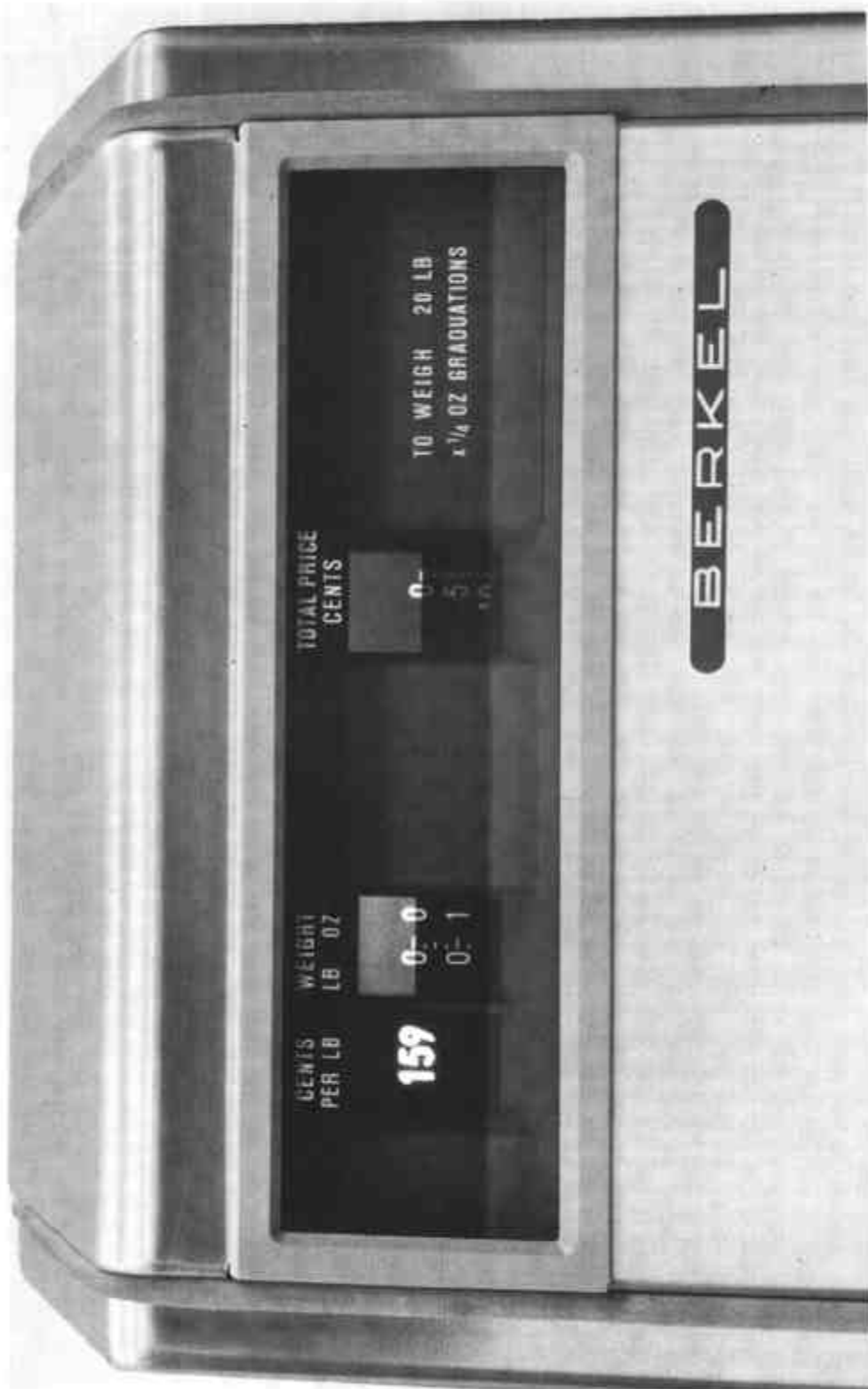
Graticule

FIGURE 6/4D/19 - 6



Berkel 171 — Operator's Side

FIGURE 6/4D/19 - 7



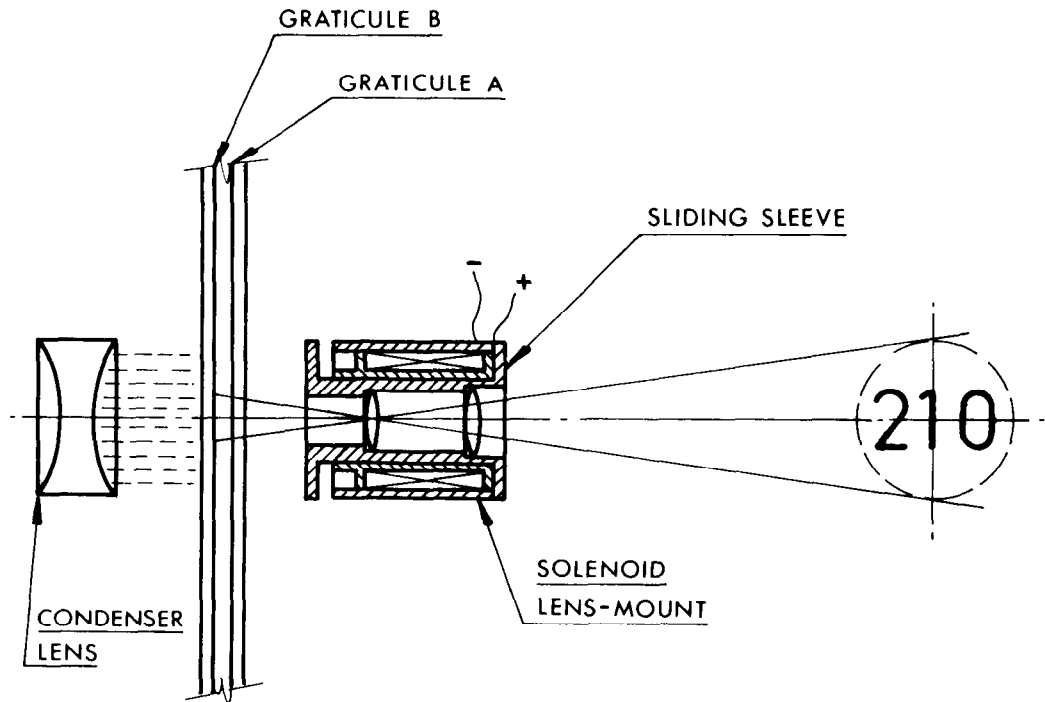
Berkel 171 — Purchaser's Side



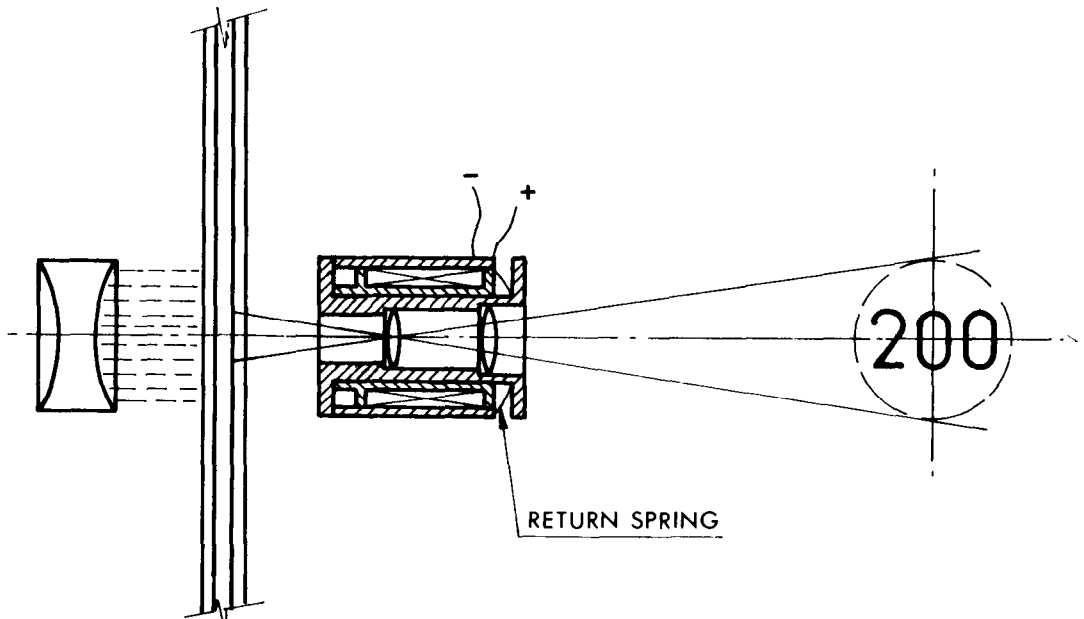
Berkel 171, with Relocated Unit-price Keyboard,
Alternate Goods Receptor and Lens over Price
and Weight Indications.

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FIGURE 6/4D/19 - 9



SOLENOID ENERGISED
(LENS FOCUSED ON GRATICULE B)



SOLENOID NOT ENERGISED
(LENS FOCUSED ON GRATICULE A)

Schematic Diagram of Two-position-focusing Lenses
of the Berkel 172