

FS-*i* Series

INSTRUCTION MANUAL



Check Weighing Scales

FS-6*Ki*
FS-15*Ki*
FS-30*Ki*



This Manual and Marks

All safety messages are identified by the following, "WARNING" or "CAUTION", of ANSI Z535.4 (American National Standard Institute: Product Safety Signs and Labels). The meanings are as follows:

 WARNING	A potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	A potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



This is a hazard alert mark.

Note This manual is subject to change without notice at any time to improve the product. No part of this manual may be photocopied, reproduced, or translated into another language without the prior written consent of the A&D Company.

Product specifications are subject to change without any obligation on the part of the manufacture.

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1. COMPLIANCE

Compliance with FCC rules

2. INTRODUCTION

This manual describes how this scale works and how to get the most out of it in terms of performance.

FS-*i* series check weighing scales have the following features:

4. CAUTION

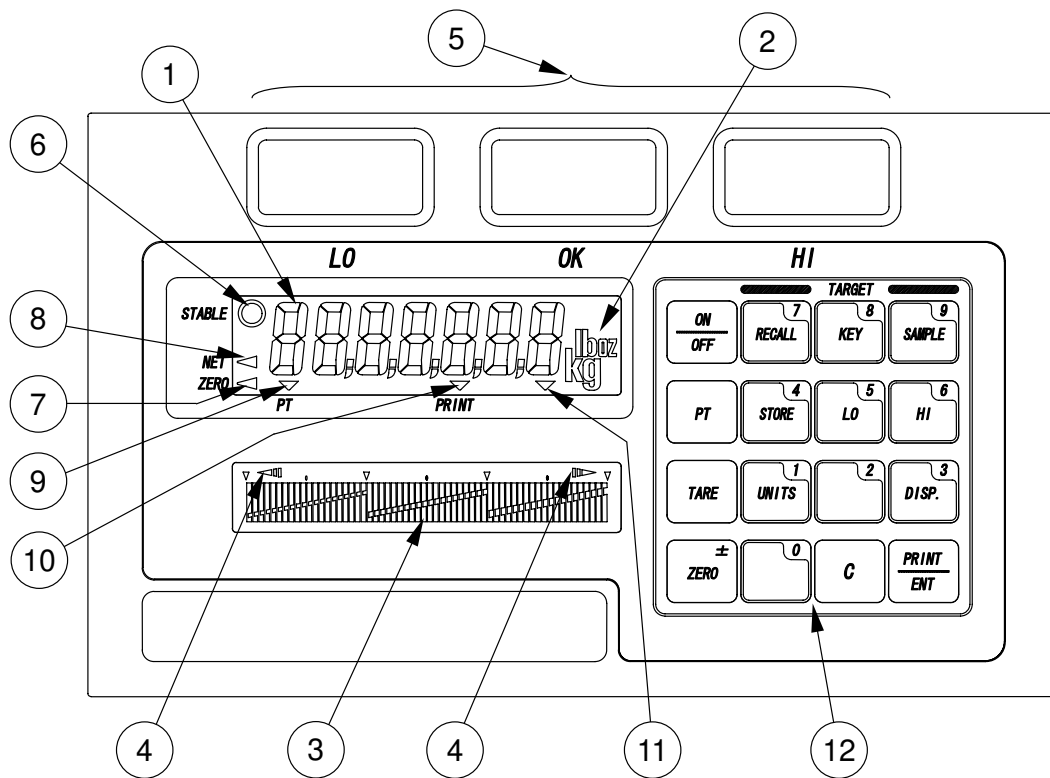
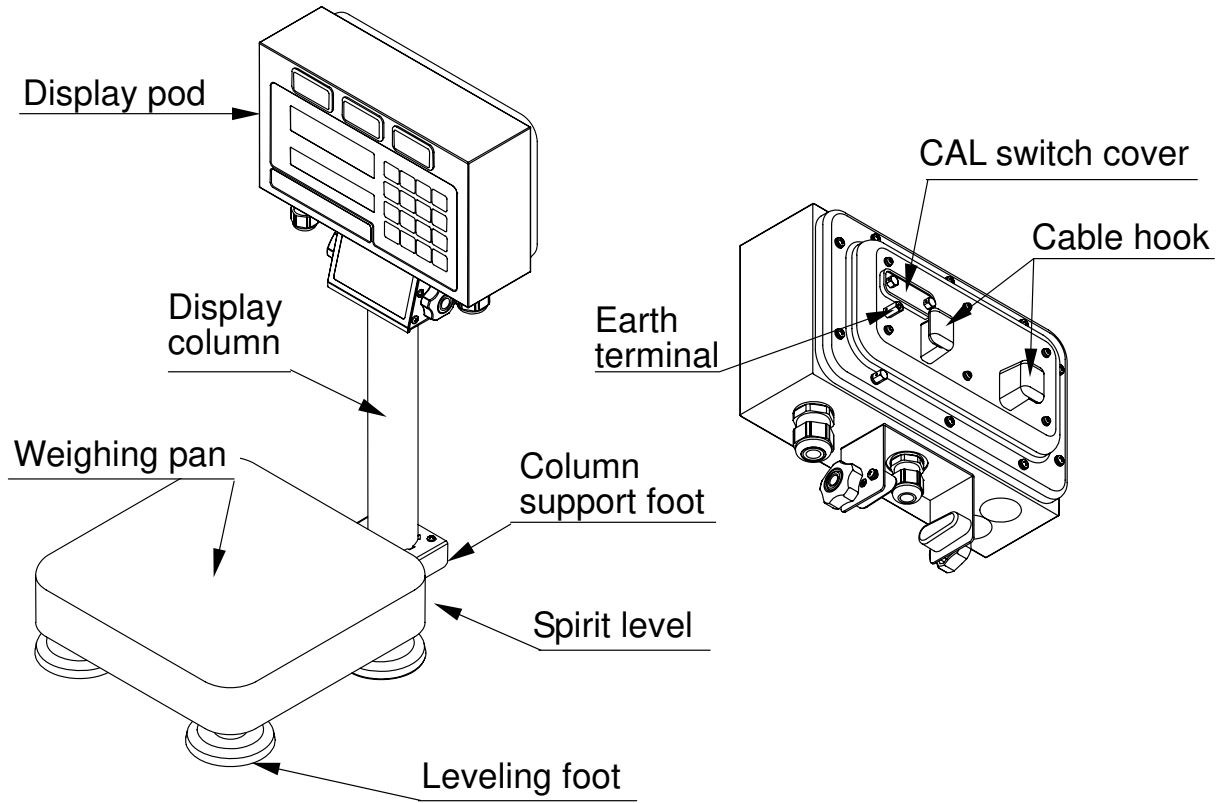
4-1. Precautions for Installing the Scale

5. SETTING UP

5-1. Attaching a display pod to the display support column

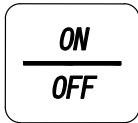
1. Take out whole of the scale from the box taking care not to pull the load cell cable.
2. Remove 2 clamps and 2 M4x12 screws.
3. Attach the display pod to the display support column and tighten the M4x12 screws removed at step 2.
4. Attach the clamps and tighten them after tilting the display pod where you like to use.

6. NAMES AND FUNCTIONS



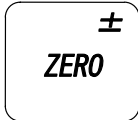
- ① **WEIGHT DATA DISPLAY.**
This display shows the weight on the weighing pan.
- ② **WEIGHING UNIT INDICATOR.**
This display area shows the weighing unit in use.
- ③ **ANALOG WEIGHT DISPLAY.**
This scale has a 60 segments analog sweep display representing zero to full scale when the simple weighing mode display is selected. In the limit check weighing display mode, this display shows comparison limits and results.
- ④ **OVER RANGE INDICATORS.**
This mark comes ON when the weight is outside the range of analog sweep display..
- ⑤ **COMPARISON INDICATORS.**
The indicators LO (RED), OK (GREEN) and HI (YELLOW) show the results of the weight comparison.
- ⑥ **STABLE ANNUNCIATOR.**
This annunciator will come ON when the weight reading is STABLE.
- ⑦ **ZERO ANNUNCIATOR.**
This annunciator will come ON when the scale is showing the center of ZERO.
- ⑧ **NET ANNUNCIATOR.**
This annunciator will come ON when the scale is displaying the NET weight on the weighing pan.
- ⑨ **PT ANNUNCIATOR.**
This annunciator will come ON when the scale is displaying the preset tare weight.
- ⑩ **PRINT ANNUNCIATOR.**
This annunciator will come ON for a moment when the scale sends out the weight data by pressing the PRINT key or auto-printing.
- ⑪ **PRECAUTION AGAINST LOW BATTERY.**
This annunciator will come ON when the optional battery is getting close to low battery.
- ⑫ **KEYPAD.**
A 13 key pad provides control and number keys.

Description of Key Operations



ON/OFF Key

The **ON/OFF** key turns the power on or off. When turned on, the scale will be automatically set to zero (power-on zero).



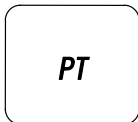
ZERO / ± Key

The **ZERO** key zeros the scale when the weight is stable (STABLE annunciator ON). In the data entry sequence this key switches the sign “+” and “-”.



TARE Key

The **TARE** key switches the scale to net weight mode and zeros the weight display when the weight is plus and stable. The ZERO and NET annunciators will come ON.



PT Key

The **PT** key is used to enter a tare weight via the 10-key pad.



SAMPLE / 9 Key

The **SAMPLE** key will register the sample weight as the target. In the data entry sequence this key displays the number 9.



KEY / 8 Key

The **KEY** key allows you to enter a target weight using the keypad. In the data entry sequence this key displays the number 8.



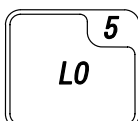
RECALL / 7 Key

The **RECALL** key is used to recall target weight and/or HI/LO limits. In the data entry sequence this key displays the number 7.



HI / 6 Key

The **HI** key allows you to enter the comparator HI limit using the numeric keypad. In the data entry sequence this key displays the number 6.



LO / 5 Key

The **LO** key allows you to enter the comparator LO limit using the numeric keypad. In the data entry sequence this key displays the number 5.



STORE / 4 Key

The **STORE** key is used to store target weight and/or HI/LO limits. In the data entry sequence this key displays the number 4.



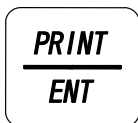
DISP. / 3 Key

When the **DISP.** key is pressed the analog weight display steps through the 4 available modes of simple weighing, target weighing, limit check weighing and display off. In the data entry sequence this key displays the number 3.



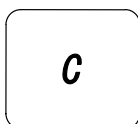
UNITS / 1 Key

The **UNITS** key is used to select the desired weighing unit . In the data entry sequence this key displays the number 1.



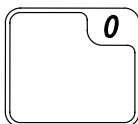
PRINT / ENT Key

The **PRINT** key is used when the serial data option OP-03 or OP-04 is installed and sends one data string. In the data entry sequence this key is used to ENTER the numeric data into the scale memory.



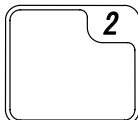
C Key

The **C** key is used to clear an incorrect data entry from the numeric keys.



0 and 2 Keys

These keys are used to display the number 0 or 2 during a data entry sequence.



7. BASIC OPERATION

7-1. Turning the power ON and OFF

1. Press the key to turn the power ON.

All the display symbols are displayed and the scale waits for the weighing data to become stable.

After the weighing value internally becomes stable, the display turns off for a moment and zero is shown with the ZERO annunciator (power-on zero).

If the weighing value is unstable, the display will continue to "88888888". Check if anything touches the weighing pan, or check if there is strong wind or vibration.

The range for power-on zero is within $\pm 50\%$ of the weighing capacity (kg) around the calibrated zero point.

If the power is switched ON while there is a load beyond this range, the scale shows "- - - - -". Remove the load on the weighing pan.

2. Pressing the key again, and the power will be switched OFF.

Note for the Legal for Trade Models

7-6. Weight display resolution

The FS-*i* series has three kinds of weight display resolution, NORMAL, HIGH and HIGHER. The following is about “kg” and “lb” display for reference. See the “12. SPECIFICATIONS” in detail.

NORMAL:	1/3,000
HIGH:	1/6,000 ~ 1/7,500 (depending on capacity)
HIGHER:	1/12,000 ~ 1/15,000 (depending on capacity)

The factory setting is the NORMAL resolution, but it is possible to change by Function “F2”. Set this function according to the application.

8. CHECK WEIGHING

The FS-*i* series provides for easy check weighing of products. There are two comparison modes according to number of parameters to set, "Target weight setting mode" and "Upper & lower limits weight setting mode". The comparator results are indicated by HI (yellow), OK (green) or LO (red) lights on the display. The results are also audible by the buzzer inside the scale.

The analog sweep display will help to see where the weight is in the OK range or how far from the OK range. See "19. ANALOG SWEEP DISPLAY" in detail.

If the optional OP-03 or OP-04 is installed, comparator relay output is also available.

Setting the target weight by sample

1. Press the **ZERO** key to zero the weight display if necessary.
2. Place the sample on the weighing pan. The display shows the sample item's weight.
3. Press the **SAMPLE** key. The sample weight flashes and the central part of analog display turns on.

3. Press the key to store the HI limit weight in memory.
 4. The display shows for a few seconds and returns to weighing mode.
 5. Press the key. Then, the last LO limit weight entered will flash and the left part of analog display turns on.
-
6. Enter the LO limit weight via the 10-key pad.

5. Press the key. Then, the last LO % weight entered will flash and the left part of analog display turns on.

6. Enter the LO limit weight via the 10-key pad.

3. Press the key to store the HI limit weight in memory.
 4. The display shows for a few seconds and returns to weighing mode.
 5. Press the key and the last LO limit weight entered will flash.
-
6. Enter the LO limit weight via the 10-key pad.

Recalling a set of limits from memory

1. Press the RECALL key. Then the display will show r d 00.
2. Press the memory number, for example 3.

9. ANALOG SWEEP DISPLAY

The FS-*i* series has a 60 segments analog sweep display. The DISP. key switches its display mode.

9-2. Example of the analog sweep display

Simple weighing display mode

FS-30Ki / d=0.01 kg
TARGET WEIGHT SETTING MODE
(F07-1 or F07-2)
Target weight = 15.00 kg.
Net weight display (tare entered)

FS-30Ki / d=0.01 kg
UPPER & LOWER LIMIT WEIGHT SETTING MODE
(F07-0)

Target weighing display mode

FS-30Ki / d=0.01 kg
TARGET WEIGHT SETTING MODE
(F07-1 or F07-2)
Target weight = 15.00 kg.

FS-30Ki / d=0.01 kg
UPPER & LOWER LIMIT WEIGHT SETTING MODE
(F07-0)
Target weight = 5.00 kg.
HI = 10.10 kg, LO = 9.91 kg

10. CALIBRATION

This function adjusts the scale for accurate weighing.
Calibrate the scale in the following cases.

7. To calibrate with the different weight, change the displayed value using the 10-key pad.

11. FUNCTIONS

The scale has Function settings to expand your applications. The parameters set in the Function settings are maintained even if the power switched off.

11-1. The procedure for setting parameters

1. Turn the power off.
2. Press and hold the **ZERO** key and turn the power on via the **ON/OFF** key. Then the first function number is displayed.
3. Enter the Function number using the 10-ley pad.
4. Press the **ENT** key. Then the parameter stored is appears.
3. Enter the parameter value using the 10-ley pad.

11-2. Function list

Item	Function number	Description
------	-----------------	-------------

Item	Function number	Description
	f 11- 0	

12. SPECIFICATIONS

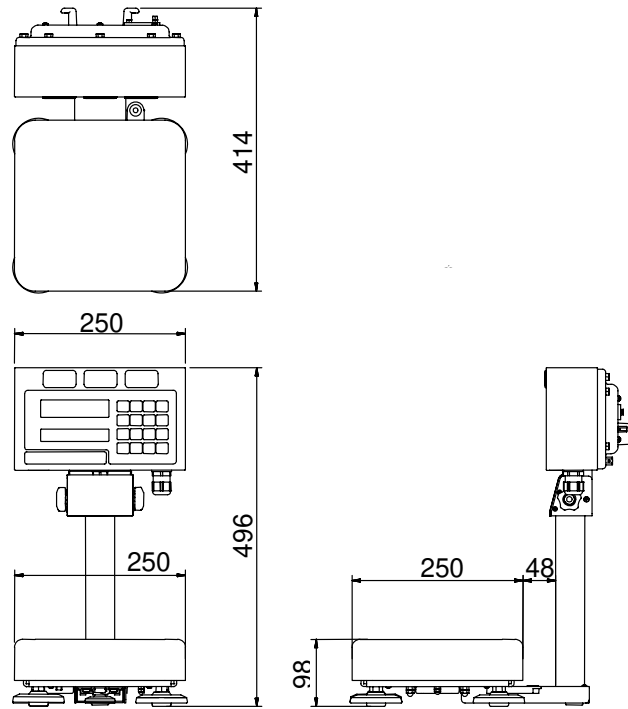
12-1. Specifications

MODEL		FS-6Ki	FS-15Ki	FS-30Ki
kg	Capacity	6	15	30
	Min. display	0.002 *	0.005 *	0.01 *
		0.001 0.0005	0.002 0.001	0.005 0.002
g	Capacity	6000	15000	30000
	Min. display	2 *	5 *	10 *
		1 0.5	2 1	5 2
lb	Capacity	15	35	70
	Min. display	0.005 *	0.01 *	0.02 *
		0.002 0.001	0.005 0.002	0.01 0.005
oz	Capacity	240	560	1120
	Min. display	0.1 *	0.2 *	0.5 *
		0.05 0.02	0.1 0.05	0.2 0.1
lb-oz	Capacity	15	35	70
	Min. display	0.1	0.1	0.1
Repeatability (Std. deviation)		0.001 kg	0.002 kg	0.005 kg
Linearity error		±0.002 kg	±0.005 kg	±0.01 kg
Span drift		±20 ppm / °C (5°C~35°C / 41°F~95°F)		
Display		7 segment LCD display (Character height 18.6 mm) with backlight 60 segment analog sweep display with backlight		
Display update		Approximately 10 times per second		
Operating temp.		-10°C~40°C / 14°F~104°F, less than 85% R.H.		
Power supply		AC main (100V~240V) or SLA Battery (option)		
Weighing pan size		250 x 250 mm / 9.8 x 9.8 in.		380 x 300 mm 15.0 x 11.8 in.
Dimension		250(W) x 414(D) x 496(H) mm 9.8(W) x 16.3(D) x 19.5(H) in.		380(W) x 464(D) x 496(H) mm 15.0(W) x 18.3(D) x 19.5(H) in.
Weight (approximately)		8.1 kg / 17.9 lb		14.9 kg / 32.8 lb
Calibration weight		6 kg 15 lb	15 kg 30 lb	30 kg 60 lb

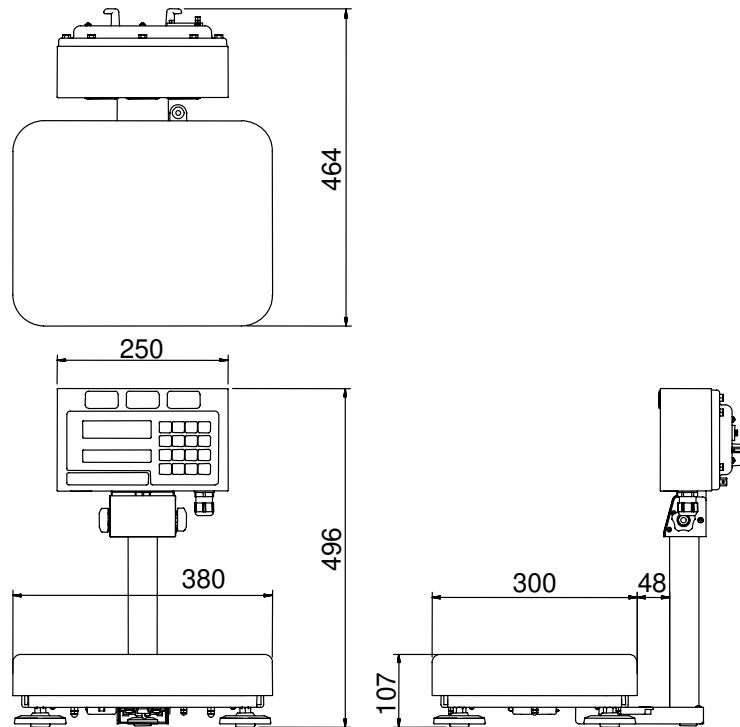
*) Factory setting

12-2. Dimensions

FS-6Ki
FS-15Ki



FS-30Ki

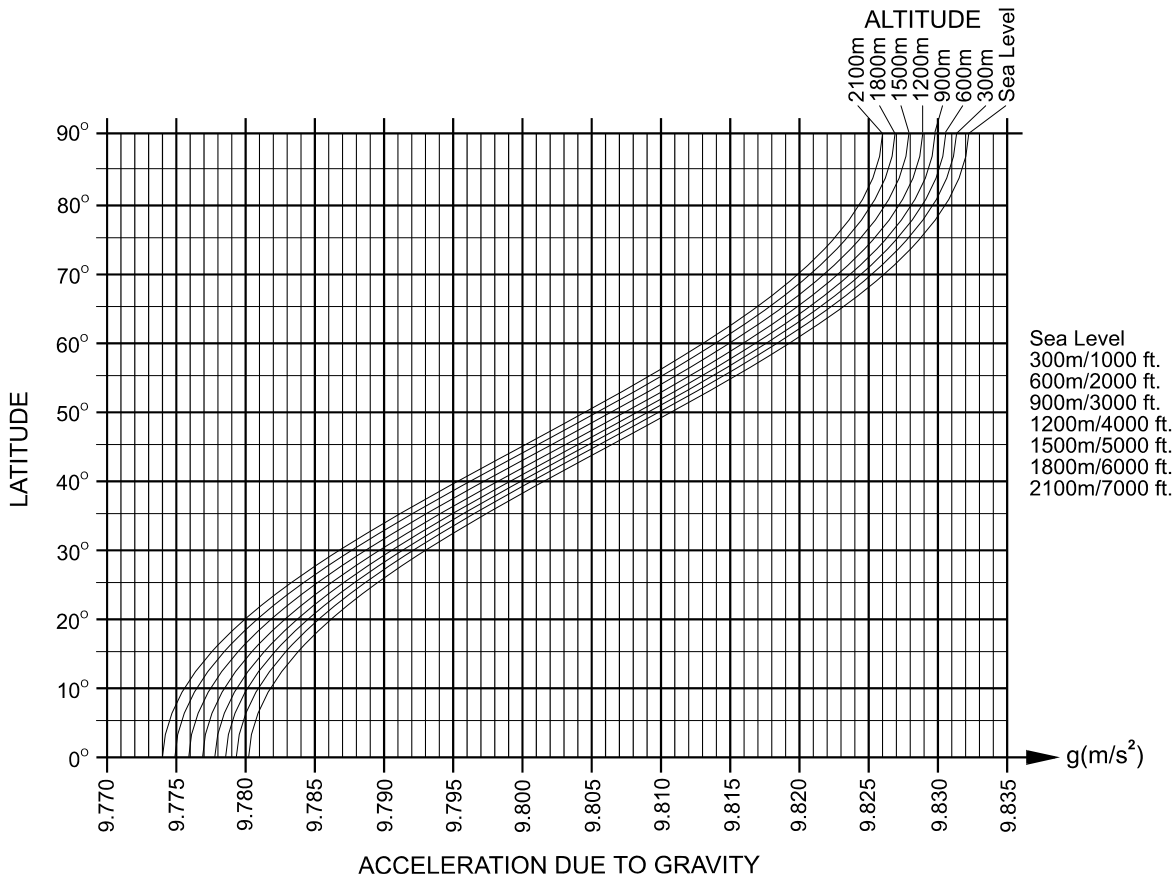


Unit: mm

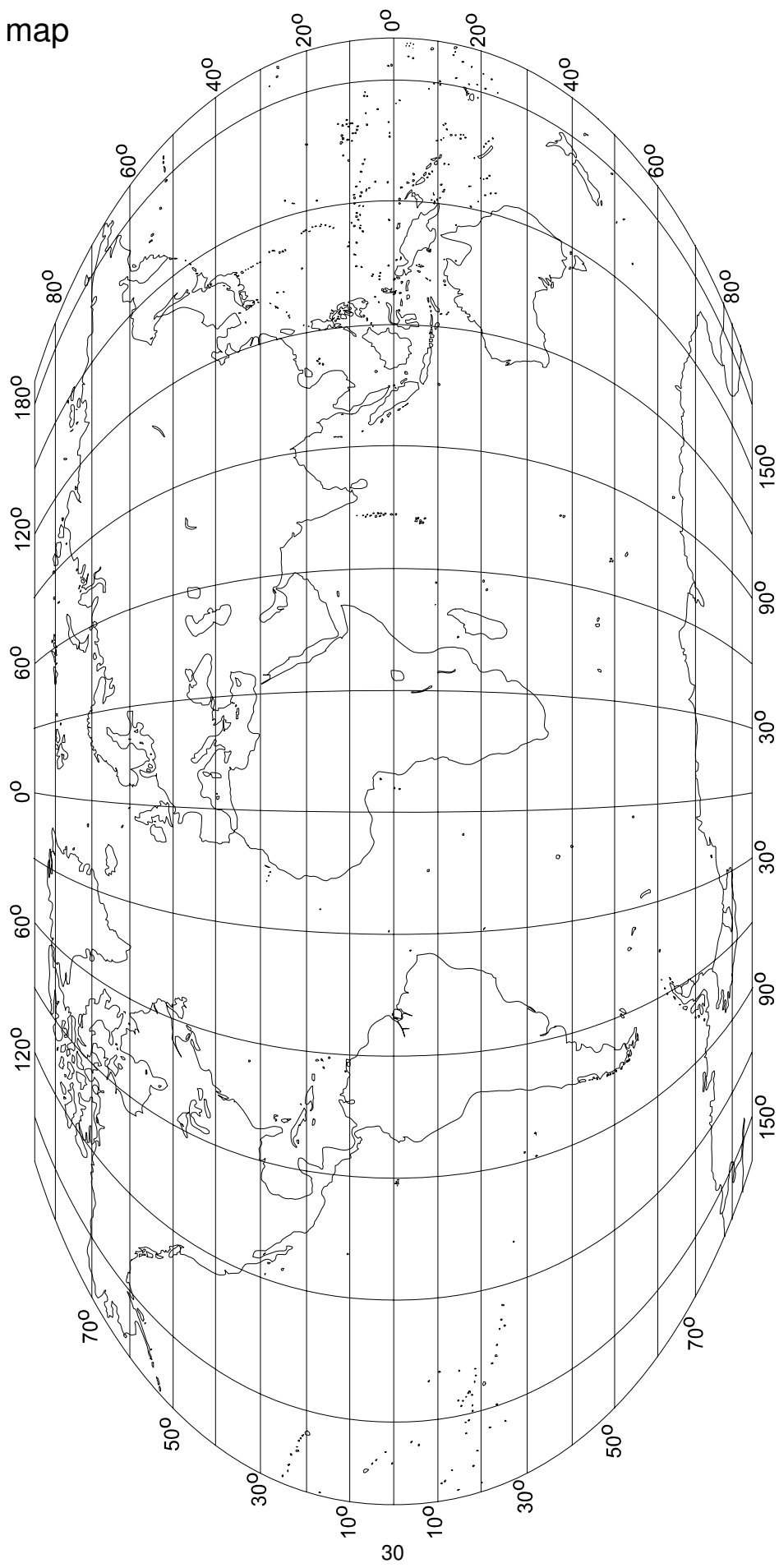
13. GRAVITY ACCELERATION MAP

Values of gravity at various locations

Amsterdam	9.813 m/s ²	Manila	9.784 m/s ²
Athens	9.807 m/s ²	Melbourne	9.800 m/s ²
Auckland NZ	9.799 m/s ²	Mexico City	9.779 m/s ²
Bangkok	9.783 m/s ²	Milan	9.806 m/s ²
Birmingham	9.813 m/s ²	New York	9.802 m/s ²
Brussels	9.811 m/s ²	Oslo	9.819 m/s ²
Buenos Aires	9.797 m/s ²	Ottawa	9.806 m/s ²
Calcutta	9.788 m/s ²	Paris	9.809 m/s ²
Cape Town	9.796 m/s ²	Rio de Janeiro	9.788 m/s ²
Chicago	9.803 m/s ²	Rome	9.803 m/s ²
Copenhagen	9.815 m/s ²	San Francisco	9.800 m/s ²
Cyprus	9.797 m/s ²	Singapore	9.781 m/s ²
Djakarta	9.781 m/s ²	Stockholm	9.818 m/s ²
Frankfurt	9.810 m/s ²	Sydney	9.797 m/s ²
Glasgow	9.816 m/s ²	Taichung	9.789 m/s ²
Havana	9.788 m/s ²	Tainan	9.788 m/s ²
Helsinki	9.819 m/s ²	Taipei	9.790 m/s ²
Kuwait	9.793 m/s ²	Tokyo	9.798 m/s ²
Lisbon	9.801 m/s ²	Vancouver, BC	9.809 m/s ²
London (Greenwich)	9.812 m/s ²	Washington DC	9.801 m/s ²
Los Angeles	9.796 m/s ²	Wellington NZ	9.803 m/s ²
Madrid	9.800 m/s ²	Zurich	9.807 m/s ²



World map





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