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#### **OPERATION & SERVICE MANUAL**

Model XRW





**STANDARD COMPACT SCALE** 

# **X**press

### **ABOUT THIS MANUAL AND MT EXPRESS**

Thank you for purchasing a METTLER TOLEDO Xpress product.

All of our equipment is assembled and packed with great care. If you should find any incorrect item, please contact your **METTLER TOLEDO Xpress** Dealer immediately.

This **METTLER TOLEDO Xpress** product was developed, produced, and tested in a METTLER TOLEDO facility that has been audited and registered according to international ISO 9001 quality standards and ISO 14000 environment control program. Properly used and maintained, this product will provide years of accurate weighing. Handle it as you would any piece of fine electronic equipment.

Please READ this manual BEFORE operating or servicing this equipment. Follow the instructions carefully and save this manual for future reference.

We at **METTLER TOLEDO Xpress** want to make sure you received the product you expected. It is important to us that you are satisfied with your purchase. If there is anything we can help you with, or if you are not satisfied with either your product or the services received from the **METTLER TOLEDO Xpress** representative, let us know.

How can you reach us?

# **XPRESS CUSTOMER CARE CENTER, USA**

24/7 Information and Support:

8 AM to 8 PM EST

Xpress Mettler-Toledo, Inc. 60 Collegeview Westerville, OH 43081 www.mt.com/xpress xpress@mt.com Toll Free: 1-866-MTXPRESS

#### FCC Approval

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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# SAFETY NOTICE



Product safety is a fundamental concern at MT Xpress. Use common sense and follow the simple precautions listed below to ensure your safety and to optimize the use and performance of this product.

- Read this manual before operating or servicing this product. Save this manual for future reference.
- Observe safety warnings located throughout this manual.
- Use caution when lifting or moving heavy equipment.
- This product should only be serviced by qualified personnel. Exercise care when moving, testing, or adjusting this product.
- Disconnect all power to this product before installing, servicing, or cleaning.
- Use only **METTLER TOLEDO Xpress** parts for repair.
- Observe electrostatic handling precautions for electronic components. Allow at least thirty (30) seconds after power is disconnected to allow charges to dissipate before servicing any electronic components.
- Allow the product to adjust to room temperature before connecting the power.

FAILURE TO FOLLOW THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT, OR BODILY HARM.

### **PREPARING THE SCALE FOR USE**

This chapter gives detailed instructions and important information regarding the successful installation of the METTLER TOLEDO Xpress XRW scale.

#### **ENVIRONMENT**

Before you install the scale, identify the best location for the equipment. The proper environment enhances its operation and longevity. Keep in mind the following factors, which might have a negative influence on the scale's operation:

Vibration: Vibration diminishes the scale's ability to measure accurately. Electrical machinery such as conveyors and drill presses can cause inaccurate and non-repeatable readings. The scale may also read inaccurately if it is not leveled properly.

Air currents: Moving air can cause the scale to read wind movement as an additional force and cause inconsistency in the weighing results.

**Friction**: A scale cannot measure accurately if an object is rubbing or pressing against the scale platform.

#### UNPACKING AND ASSEMBLY

Please inspect the package immediately upon receipt. If the box is damaged, check for internal damage and file a freight claim with the carrier if necessary. If the container is undamaged, open the box, remove the scale and place it on a solid, flat surface. Please keep the packing material and shipping insert in case you need to return the scale to an Xpress representative.

Package contents for all Xpress XRW units include:

Product

- Xpress XRW scale
- Documents
- Weighing platter

- Quickstart Guide
- Installation Instructions
- AC-DC power adapter
- Open the box and remove the scale by gently pulling the scale upward away from the platform.
- Remove the packing material from each side of the scale.
- Set the unit on a sturdy workplace and remove the three shipping protection screws on the spider, then remove the three plastic inserts under the spider (stainless steel plate).
- Turn the scale feet until they are just against the body of the scale.
- Then adjust the feet to insure that all four feet must touch the working surface to make sure that METTLER TOLEDO Xpress XRW does not rock.



**Operation & Service Manual** 

CD-ROM

**Note:** The rear feet should be against the body of the scale tightly when cleaning the scale. After the scale has been cleaned, loosen the rear feet, this allows the internal and external pressure to equalize.

- Insure that all of the five black plastic bushings are in place on the spider, and then place the stainless steel platter on top of METTLER TOLEDO Xpress XRW.
- Level the scale by turning the adjustable feet. It is leveled correctly when the bubble indicator is in the center of the circle.
- Plug the connector of the adapter to the power connector of the scale, and plug the adapter to local AC outlet.

Top view without platter



Bottom view front





#### POWER UP/DOWN SEQUENCE

**Power Up:** Press the power key (b) to turn on the **METTLER TOLEDO Xpress** XRW. It goes through a series of self-tests when it is turned on. The scale performs diagnostics on its internal memory, and precedes to normal the operating mode. The power up sequence is as follows:

- All segments of the display segments and cursors light to verify operation.
- Next the unit displays the software part number; revision number, GEO value and country one by one.
- The unit captures zero and is ready for normal operation.

**Note**: Before switching on the **METTLER TOLEDO Xpress** XRW scale, always make sure there is nothing on the platter. If you have powered up the unit with something on the scale, the scale may not find the zero value, and shows

"-----". To clear this condition remove the item, press the power key until the unit displays "off". Then press the power key again and the scale will then capture the correct zero value.

**Power Down**: Press the power key 🕑 until "off" is shown on the display to turn off the scale.

# YOUR XPRESS SCALE AT A GLANCE

#### DISPLAY



#### KEYPAD

Key	Name	Function	Over/Under Setting
<del>&gt;</del> 0€	Zero Key	To return the scale to gross zero	Setting complete exit
<b>→T</b> ← 0'59	Tare Key	To tare the scale. Pressing this key at zero clears the tare value from memory	Increment digit 1, 2, 3
FS	Function Key	To enter Over/Under mode	Move to the next digit on the right $\longrightarrow$
٩	Power key	To turn the scale on or off	Confirm choice

#### CURSORS (LED)

Cursor	Description
>0<	Illuminates when weight is gross zero (0)
۲ <b>۶</b>	Illuminates when the power supply is operating or the battery is fully charged Blinks to indicate the battery is fully charged.
UNDER	Illuminates when the weight is less than the programmed "Under"' value
OVER	Illuminates when the weight is more than the programmed "Over" value
(-)	Blinks to indicate the battery voltage is lower than the required for proper operation
Net	Illuminates to indicate the displayed value is net weight (gross minus tare)
lb, oz, g	Weight unit indicates current unit of measure associated with the displayed value

#### **OPERATING YOUR SCALE**

#### STRAIGHT WEIGHING

Place the item to be weighed on the platter. Remove the item from the platter, display will return to 0.000.

#### **RE-ZERO FUNCTION**

There are two ways to re-zero the scale:

Power-up Zero: The scale will automatically capture zero when it is turned on. The power-up zero capture range is +/-10% of the scale capacity.

**Note:** When the scale is turned on with a weight on the platter that is more than 10% of the capacity, the scale will not capture zero (the weight display will show "-----") to indicate that the scale will not be ready for use. Remove the weight and the scale will capture "zero".

• Push-button Zero: ••• The ZERO key sets the gross zero value over a range of +/-2% of the scale capacity. To use this function, the scale must be in the Gross Weighing Mode (NET cursor dark) and in a no-motion condition. When the weight on the platter is more then +/-2% of the scale capacity depressing the zero key will not yield a result until the weight is removed and the Zero key has been depressed a second time

#### TARE FUNCTION

The key subtracts the weight of the container or wrapping material placed on the scale prior to weighing a desired item.

- Place the empty container or wrapping material on the platter, e.g. 50 g.
- Press the 🐯 key. It shows the net weight 0 g and the net weight cursor should light.
- Place the item to be weighed onto the platter; or into the container or wrapping material.
- Note the net weight value and record it if necessary.
- Remove the weighed and container or wrapping material from the platter, the display will show the negative net weight of the container, e.g. -50 g. This indicates the net weight of the container.
- Press key to return the scale back to Gross Weighing Mode. Proper execution of this function is indicated when the net cursor is not illuminated.

#### POWER SAVE

The power saving feature is used to extend battery life between charges. This function can be enabled or disabled through the XRW11's setup procedure. Under battery operation (the transformer is unplugged) and with the power-save mode enabled, the scale enters the power-saving feature (sleep mode) if it is idle (no weight changes) for two minutes. In sleep mode the weight display will show decimal points on the right of each digit and the battery cursor is illuminated to indicate that the unit is still operating. When weight is placed on the platter or any key is pressed, the scale will wake-up.

If there is still no key operation and weight change for fifteen minutes after the power saving status is activated, the scale will turn off automatically if the power-saving feature is enabled. Press the power key to resume use of the scale.

### **SPECIAL MODES - OVER/UNDER**

#### **OVER/UNDER SETUP MODE**

Press 😓 key to access the Over/Under zone setup mode. The display will show the default 0.000.

- The digits on the both sides of the decimal point vary with the capacity and resolution.
- Over/Under values will reset to zero if you change the scale's resolution.
- The XRW will only permit Over/Under values conforming to the minimum resolution of the scale.
- The Over cursor will light to select the Over value, and the Under will light to select that value.

#### FUNCTION OF THE KEYS

In Over/Under Setup Mode, the functions of the keys will be as follows:

Key	Function	Description				
F	Start, then Increment digit	Choose Over/Under Setup. Change the flashing digit one position to the right.				
<b>→T</b> ← 059	Increment	Increase the value of the selected digit.				
٩	Confirm choice	Confirm the choice and move forward.				
<del>&gt;</del> 0€	End Setup	End Setup mode and return the scale to weighing mode.				

#### **SET OVER AND UNDER VALUES**

Example: 3 kg scale, the over value is 50 g, under value is 400 g:

The Procedure	Display	Cursor	Action
<ol> <li>Press State</li> <li>to access to Setup mode</li> </ol>	[ 0.000]	OVER	Enable setup
2) Press 💃	[ 0.000]	OVER	Move one digit to the right
3) Press 👀 5 times	[ 0.500]	OVER	Increase digit value
4) Press 💪 twice	[ 0.500]	OVER	Move on to the next digit
5) Press 😚 3 times	[ 0.506]	OVER	Increase digit value
6) Press 🕑 to proceed	[ 0.000]	UNDER	Select UNDER range
7) Press 💪 1 time	[ 0.000]	UNDER	Move one digit to the right
8) Press 😚 4 times	[ 0.400]	UNDER	Increase digit value
9) Press $\rightarrow 0 \leftarrow$ to end setup	[ 0.000]		Ready to weigh

At zero both the Over and Under cursors are dark. At the first increment over zero the Under cursor will light.

#### **OVER AND UNDER CURSORS**



#### **OPERATION**

When an Over/Under value exists, the XRW will beep to indicate the condition provided that the following functions are enabled in the scale setup. The below table is a matrix of possible conditions:

Setup	S3 is 1	S3 is 2	Cursor
Condition			
Actual weight greater than the Over value	—	Веер	OVER
Actual weight less than the Under value	_	Веер	UNDER
Actual Weight between Over/Under Limits*	Веер	_	OVER and UNDER

\* When both the Over and Under values set to 0.000 the cursors and beeper do not function.

# **SCALE SOFTWARE SETUP**

Several parameters in the scale can be changed to enable you to customize the scale to your individual needs.

#### ACCESS TO SETUP MODE

- Turn off the scale by pressing the Power key until the display displays "Off"; the display should be dark.
- Press the Power key while continuously pressing the 30% until "S1 OFF" is displayed.

#### FUNCTION OF THE KEYS

Key	Name	Function
<del>&gt;</del> 0€	Finish key	Finish Setup
<b>→T</b> ← 059	Toggle key	Chose parameter
FS	Back key	Backwards to last step
٢	Accept key	Confirm choice and move forward to the next step

# PARAMETER LIST

Soft-Switch	Description	Available Parameters	Default		
S1	Automatically turn off the scale	On = Enable this function Off = Disable this function	Off		
S2	Sleeping function	On = Enable this function Off = disable this function			
S3	Beep range	0 = No beep 1 = Beep when weight is between over and under value 2 = Beep when weigh is out of range of over and under	0		
S4	Filter strength	0 = Light 1 = Normal 2 = Strong 3 = Very strong	2		
S5	Weight unit	g/oz/lb	lb		
S6	LED brightness	0 = Normal. Each additional value yields a dimmer display	0		
S7	Display type	Off = Continuous display update; On: quick weight	Off		

#### EXIT SETUP MODE

Press finish key 👀 to finish Setup. "SAVE" is displayed to save all changes. Press 🐯 to toggle between "SAVE" (save changes) and "Abort" (stop , don't save, all changes). Press 🕲 to return the scale to the Weighing Mode.

### CLEANING AND MAINTAINING YOUR SCALE



#### **CLEANING AND MAINTENANCE**

- DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.
- DO NOT attempt to remove the cover or to perform service/maintenance on the internal parts of the scale.
- ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.
- KEEP the scale clean.
- DO NOT put the scale under water. Use a damp cloth to clean the scale.
- DO NOT put the scale upside-down or remove the scale by holding the stainless steel platform.
- LOOSEN the two feet on the back to permit the flow of air between inside and outside of the scale. This compensates changes in atmospheric pressure or temperature changes.
- TIGHTEN these feet tightly to seal the gap between the foot and base to keep water from getting into the scale if you want to wash the scale with water.
- PLUG the rubber plug in the hole (DC power connector) tightly to protect the power connector shown below.

Incorrect

Correct

















Transformer connection access hole

Shown with plug inserted

### **SERVICING YOUR SCALE**



For the following services, please contact your Xpress representative at www.mt.com/xpress.



#### ACCESSING THE SERVICE MODE

The Service Mode allows an authorized **METTLER TOLEDO Xpress** partner to access the Service Mode switches in the software setup.

Open battery holder cover, and remove the calibration plate by breaking the lead sealing wire, and removing the two screws. With the battery power on insure that the scale is `On' then short the two contacts, located in the small rectangular hole, with a small slotted screwdriver. The display will show "S1 ON", it means the scale has accessed the Service Mode.

Calibration switch and sealing stickers:





### **FUNCTION OF THE KEYS**

Key	Name	Function			
<del>&gt;</del> 0€	Finish key	Finish setup			
<b>→T</b> ← 059	Toggle key	Chose parameter			
FS	Back key	Moves back to the last (previous) step			
٩	Accept key	Confirm choice and move forwards to next step			

# PARAMETER LIST

Soft-Switch	Description	Available Parameters	Default
CTY	Area selection	EU = Europe GE = USA	GE
Def	Initiate default	No = Don't initiate the default Yes = Initiate the default	No
S1	Automatically turn off the scale	On = Enable this function Off = Disable this function	Off
S2	Sleeping function	On = Enable this function Off = Disable this function	On
S3	Beep range	<ul> <li>0 = No beep</li> <li>1 = Beep when weight is between over and under value.</li> <li>2 = Beep when weigh is out of range of over and under</li> </ul>	0
S4	Filter strength	0 = Light 1 = Normal 2 = Strong 3 = Very strong	2
S5	Weight unit	g / oz / lb	lb
S6	LED brightness	0 = Normal. Each additional value yields a dimmer display	0
S7	Display type	Off = Continuous display update On = Quick weight	Off
S8	Resolution	On = 6000 / 7500 Off = 3000	Off
S9	Access to S8 in setup mode	On = Enable Off = Disable	Off
S10	Expanded display	On = Expanded display (30000 quantity) Off = Normal display	Off
Bat	Battery type	Bat D = D-cell Bat CH = Rechargeable battery	Bat CH
GEO	GEO	0 to 31	12
Cal	Calibrate	YES = Calibrate scale NO = Don't calibrate scale	no

#### **CALIBRATION**

Example using a 6 lb scale:

Step	Operation	Display	Description
0	Press	[CAL YES]	Choose to calibrate the scale in step "Cal"
1	Press [ON/OFF]	[ kg]	Calibration weight unit
I	Press	[ 1b]	Chose suitable parameter
2	Press [ON/OFF]	[ 3000]	Capacity of the scale*
Ζ	Press 😚 3 times	[ 6000]	Chose suitable parameter
3	Press [ON/OFF]	[]	Capture zero, make sure the platter is empty before press 👀
4	Press [ON/OFF]	[ 5]	The scale count down from 5 to 0, if the scale isn't stable, it
4			will count again until find stable zero.
5	Press [ON/OFF]	[ 4000]	Put the weight of 4 lb (2/3 of the full capacity) on the platter
6	Press [ON/OFF]	[ 6000]	Put the weight of 6 lb (full capacity) on the platter
7	Press [ON/OFF]	[ 5]	Capture span. The scale count down from 5 to 0, if the scale
,			isn't stable, it will count again until find stable zero.
8	Press [ON/OFF]	[ save]	Save calibration and all setting changes
0	Press	[ abort]	Abort calibration and all setting changes
9	Press [ON/OFF]	[ done]	Finish calibration
		[ 0.000]	Weigh display mode

The lines highlighted in gray are for reference of parameter choice.

\* Please see capacities in the following tables

#### Capacity (kg/g) and Display in Setup:

Capacity of the scale in kg	1.5 kg		3 kg		6 kg		15 kg	
Display (in setup)	1500		3000		6000		15000	
Capacity of the scale	1500 g		3000 g		6000 g		15000 g	
2/3 of the capacity	1000	1.0 kg	2000	2 kg	4000	4 kg	10000	10 kg

#### Capacity (Ib) and Display in Setup:

Capacity of the scale	3 lb		6 lb		15 lb		30 lb		
Display (in setup)	3000		600	6000		15,000		30,000	
Full capacity	3000	3 lb	6000	6 lb	15,000	15 lb	30,000	30 lb	
2/3 of the capacity	2000	2 lb	4000	4 lb	10,000	10 lb	20,000	20 lb	

#### **GRAVITY ADJUSTMENT**

The Standard Indicator has built in compensation provisions to allow factory calibration with destination correction capabilities to compensate for variances on gravitational forces. If the Standard Indicator is subjected to a different gravitational force at its destination location, this can be compensated for electronically by adjusting the geo value. The GEO value has 32 settings. The GEO value for any world location can be found in the GEO Value Table in the Appendix of this manual as long as the geographical coordinates and elevation above sea level is known.

#### **BATTERY REPLACEMENT**

# **CAUTION**

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE OR CONNECTED IMPROPERLY. DISPOSE OF USED BATTERIES ACCORDING TO LOCAL LAWS AND REGULATIONS.

• Put the scale on the side as shown.

Open the battery compartment with a Philips screwdriver. To unscrew the six screws on the bottom the scale.

- Remove the metal battery retainer by removing the four screws. Do not over tighten these screws but they should fit snugly.
- Disconnect the wires from the battery power poles and remove the battery. Dispose of the battery in an environmentally friendly manner.
- Re-connect the wires to the new battery. Note the red wire with positive pole (+), and **black** wire with negative pole (-).
- Replace the metal battery retainer and secure the four screws.
- Replace the battery compartment cover insuring that the sealing gasket is in the correct position. Secure the six screws. Do not over- tighten these screws, however they should fit snugly.

#### **CHARGING THE RECHARGEABLE LEAD-ACID BATTERY**

The scale can charge the lead-acid battery (6V/5Ah) as follows:

- Pull out the rubber plug, which seals power connector hole. If you continue to use the scale at this time be sure that the plug is on the left side of the scale so as not to interfere with the weighing result.
- Connect the output end of the adapter to the power connector to initiate charging. Charging will occur
  regardless of whether the scale is turned off or on.
- After a 24-hour charge (Do not charge the scale longer than 24 hours.), reinstall the rubber plug to seal the connector hole. This insures that the power connector is protected when the scale is in the wet environment.

**Important note:** Please charge the battery only in a dry environment. Avoid touching the transformer or cable if they are wet or you are standing in water.

There are two battery cursors. One is 🔄, and the other is 🗂 which indicate the battery condition. Please refer to section entitled, CURSOR, for details.

If the unit is plugged into the wall outlet when battery power is used, the power source will automatically switch to the wall transformer. And when the AC power is off, the scale will automatically switch to the battery.





# BATTERY NOTICE

- The (6V/5Ah rechargeable lead-acid) battery service life will be affected by the charge and discharge conditions. When used properly, it can be effectively charged/discharged 300 times before operating time is significantly reduced.
- The new battery can provide fifty hours of continuous operation once it is fully charged. The charge time is usually fifteen hours if the battery is fully discharged. The charge time will be shorter if the battery is not fully discharged. It is recommended to charge the battery every day.
- Do not short the positive pole (+) and negative pole (-) when replacing the battery.
- Charge the battery at least every three months to keep it in good condition.
- The battery charge is shorter than normal if the battery is not used for a long period of time, e.g. more than two months. If this happens, cycle the battery at least three times by charging it and using it until fully discharged. This returns battery to the normal operating condition.
- After charging the scale, return the rubber plug to protect the power connector.
- The battery is not warranted due to its service time being greatly influenced by individual use.
- The battery charge and scale operating duration will decline with use as is typical with lead-acid batteries. We recommend replacement of the battery after 300 charging cycles. Replacement batteries are available from your local **METTLER TOLEDO Xpress** representative.

# APPENDIX

#### ERROR MESSAGES

The scale will display an error message if a problem or an incorrect keyboard entry is sensed. The error codes are:

Diplay	Error Type	Description				
E 11	RAM error	Power off and power up again.				
E 16	ROM error	Recalibrate the scale.				
E 18	EEPROM error	Replace the main board or loadcell.				
E 48	Alarm setup error	Review setup				
ERROR	Software running error	Restart the scale by pressing the power key. If this doesn't clear the error remove and replace the battery				
	Unsteady or can't find zero	Possible issue with vent holes under the rear feet. Open the feet to equalize the pressure. If water comes out contact your Xpress representative.				
nnnnn	Overload indication	Weight is more than full capacity plus 9e. Remove items from platter and re-zero the scale.				
иииии	Underload indication	Weight on the scale is below gross zero by more than 9e. Increase load on scale.				
		Check that the transformer is plugged in the wall.				
		Insure that the transformer is plugged in the scale.				
Dark display	No Power	Plug the transformer and scale into a different electrical outlet to verify that the local power is present.				
		Insure that the battery is plugged into the scale.				
		Replace the battery if the unit is running on battery operation.				

# SPECIFICATIONS

Feature	Description							
Capacity pounds	3 lb	6 lb	15 lb	30 lb				
Division pounds	0.001 lb	0.002 lb	0.005 lb	0.01 lb				
Capacity grams	1500 g	3000 g	6000 g	15000 g				
Division grams	0.5 g	1 g	2 g	5 g				
Capacity ounces	50 oz	100 oz	200 oz	500 oz				
Division ounces	0.02 oz	0.05 oz	0.1 oz	0.2 oz				
Weight display	6 digits Light Emitting Diode (LED) with variable light level							
Character size	1 in. – 14mm		-					

Operating temperature	-10°C to +40°C (10° to 104°F)							
Storage temperature	-25°C to +50°C (	0° to 122°F)						
Plug in adapter	Transformer	Input: local AC voltage,	Output: 9 VDC/500 mA					
Power consumption	60 mA							
Charge current	500 mA							

Specifications are subject to change without notice.

#### GEO VALUE TABLE

Use the following geo codes if you relocate the scale to a site other than the original location where it was calibrated.

Northern					Height abo	ve sea-leve	el in meters	\$			
and	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
Southern	325	650	975	1300	1625	1950	2275	2600	2925	3250	3575
latitude in degrees and				1	·····	ove sea-le	-			1	
minutes	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10,660
0° 0′ — 5° 46′	1060 5	2130 4	3200 4	4260 3	5330 3	6400 2	7460 2	8530 1	9600	10,660 0	11,730 0
5° 46' — 9° 52'	5	4 5	4	4	3	3	2	2	1	1	0
9° 52′ — 12° 44′	6	5	5	4	4	3	3	2	2	1	1
12° 44′ — 15° 6′	6	6	5	5	4	4	3	3	2	2	1
15° 6′ — 17° 10′	7	6	6	5	5	4	4	3	3	2	2
17° 10′ — 19° 2′	7	7	6	6	5	5	4	4	3	3	2
19° 2′ — 20° 45′	8	7	7	6	6	5	5	4	4	3	3
20° 45′ — 22° 22′	8	8	7	7	6	6	5	5	4	4	3
22° 22′ — 23° 54′ 23° 54′ — 25° 21′	9	8	8	7	7	6	6	5	5	4	4
25° 21′ — 26° 45′	9 10	9 9	8	8	7	7	6 7	6	5	5	4
26° 45′ — 28° 6′	10	9 10	9	8	8	8	7	6 7	6 6	5	5 5
28° 6′ — 29° 25′	10	10	10	9	о 9	0 8	7 8	7	7	6	5 6
29° 25′ — 30° 41′	11	10	10	10	9	9	8	8	7	7	6
30° 41′ — 31° 56′	12	11	11	10	10	9	9	8	8	7	7
31° 56′ — 33° 9′	12	12	11	11	10	10	9	9	8	8	7
33° 9′ — 34° 21′	13	12	12	11	11	10	10	9	9	8	8
34° 21′ — 35° 31′	13	13	12	12	11	11	10	10	9	9	8
35° 31′ — 36° 41′	14	13	13	12	12	11	11	10	10	9	9
36° 41′ — 37° 50′ 37° 50′ — 38° 58′	14	14	13	13	12	12	11	11	10	10	9
37° 50° — 38° 58' 38° 58' — 40° 5'	15	14	14	13	13	12	12	11	11	10	10
40° 5′ — 41° 12′	15 16	15 15	14 15	14	13	13	12 13	12 12	11 12	11	10 11
41° 12′ — 42° 19′	16	15	15	14	14	13	13	12	12	12	11
42° 19′ — 43° 26′	17	16	16	15	15	14	10	13	12	12	12
43° 26′ — 44° 32′	17	17	16	16	15	15	14	14	13	13	12
44° 32′ — 45° 38′	18	17	17	16	16	15	15	14	14	13	13
45° 38′ — 46° 45′	18	18	17	17	16	16	15	15	14	14	13
46° 45′ — 47° 51′	19	18	18	17	17	16	16	15	15	14	14
47° 51′ — 48° 58′ 48° 58′ — 50° 6′	19	19	18	18	17	17	16	16	15	15	14
$50^{\circ} 6' - 51^{\circ} 13'$	20	19	19 19	18	18	17	17 17	16	16	15	15
51° 13′ — 52° 22′	20 21	20 20	20	19 19	18 19	18 18	17	17 17	16 17	16 16	15 16
52° 22′ — 53° 31′	21	20	20	20	19	10	18	17	17	10	16
53° 31′ — 54° 41′	22	21	21	20	20	19	19	18	18	17	17
54° 41′ — 55° 52′	22	22	21	21	20	20	19	19	18	18	17
55° 52′ — 57° 4′	23	22	22	21	21	20	20	19	19	18	18
57° 4′ — 58° 17′	23	23	22	22	21	21	20	20	19	19	18
58° 17′ — 59° 32′	24	23	23	22	22	21	21	20	20	19	19
59° 32′ — 60° 49′ 60° 49′ — 62° 9′	24	24	23	23	22	22	21	21	20	20	19
$60^{\circ} 49^{\circ} - 62^{\circ} 9^{\circ}$ $62^{\circ} 9^{\prime} - 63^{\circ} 30^{\prime}$	25 25	24	24	23	23	22	22 22	21	21 21	20	20
63° 30′ — 64° 55′	25 26	25 25	24 25	24 24	23 24	23 23	22	22 22	21	21	20 21
64° 55′ — 66° 24′	20	25 26	25	24	24	23	23	22	22	21	21
66° 24' — 67° 57'	20	26	26	25	25	24	20	23	23	22	22
67° 57′ — 69° 35′	27	27	26	26	25	25	24	24	23	23	22
69° 35′ — 71° 21′	28	27	27	26	26	25	25	24	24	23	23
71° 21′ — 73° 16′	28	28	27	27	26	26	25	25	24	24	23
73° 16′ — 75° 24′	29	28	28	27	27	26	26	25	25	24	24
75° 24′ — 77° 52′ 77° 52′ — 80° 56′	29	29	28	28	27	27	26	26	25	25	24
77° 52′ — 80° 56′ 80° 56′ — 85° 45′	30	29	29	28	28	27	27	26	26	25	25
85° 45' — 90° 00'	30	30	29	29	28	28	27	27	26	26	25
00 40 - 80 00	31	30	30	29	29	28	28	27	27	26	26

# PHYSICAL DIMENSIONS





# Notes

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STANDARD COMPACT SCALE