AK30,MK30R, AK40GW and AK40GW-P moisture meter models - A Short Introductory User's Manual

2026-20

1. General

In the following we will give you a short introduction on how to quickly become acquainted with the meter and get the best of it. Although the AK30/40/MK30R series meters are unique top level professional tools, simplified use is very much recommended if the highly advanced features are not required. In the following we present the strategies in progressive advancement. Please read each of them in order to get an understanding of this meter. Further reading is found in the **QUICK guide** which shows the purpose and use of each button on the keyboard. The actual manual is the **User's Guide**. All of these are recommended to be read in addition to the **PC program manuals**.

2. How to Start Operating the AK30/AK40GW/MK30R Meter

The portable model AK30 has a **power switch** under the handle. It has two positions, **on** and **off**. In off position it will not do anything nor draw any current. In the on position it will start operating, the bootup taking usually a few seconds. The other models AK40GW, AK40GW-P and MK30R have a similar power switch on the case, easily found. Refer to pictures below. The internal software in all of these models is identical and therefore the operation is practically identical. The only differences are caused by the form of the case and the intention of the use of the meter (portable vs. fixed). The meters have a keyboard for making selections and to launch various tasks. Pressing a key is made a bit slow in response to make sure that the pressing is intentional. There is an audible sound when the pressing is accepted though it may not be heard in noisy environments. Therefore it is advised to look at the screen to see the effect of the key press. The portable meters contain batteries as a power source and need recharging after a use. The meters usually have a simple LED bar display indicating the remaining energy in the battery pack. When the last LED is blinking, it is really time to connect the charger cable to avoid interruption. The charger is with a jack type connector. While charging, one can still use the meter normally, unless the battery went completely dead. Then it is best to allow 30 minutes of charging with the meter turned off before restarting. The MK30R has usually a small toggle switch at the right side panel.



Figure 1. Power switch and charger connector for AK30, a jack 5.5 mm and USB-B connectos



Figure 2. Power switch and power supply connector for AK40GW, a 12-pin ITT Cannon

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3. Extremely Simplified Use

The AK30/40/MK30R meters can be set up to start and be used in the most simple way without any advanced operation. The meter will, after bootup, show in big numbers the moisture it sees in the material under it. The unit can be percent or whatever has been selected for it. **The user only needs to carefully bring the meter to a proper position above the material to see the reading after letting it settle. If this is all needed at this time, everything is done.** The user can then turn off the meter or go to another position for taking more readings. Push the **LowPower** button to save energy while moving to another farther location. Another push to the LowPower button will wake up the meter again. If the reading is needed to freeze on the display, press the **big logo key** to hold it. Pressing it again will release the reading.

The AK30 meter is equipped with either a standard skid under it or a power-user skid (**PUS**) having a wide metal plate. The meter can be placed while taking readings: Touching the running web or rotating reel or touching a stack of papers. The skid can also be kept slightly above the paper with a distance of 0...7 mm. The separation may give rise to a small error in reading. In difficult conditions it is highly recommended to use **air purge** for the PUS through the small tubing connector seen in Fig. 3. to keep out water condensation and dust etc. Also, if the PUS is required to touch a running web, it may quickly overheat to dangerous temperatures. The air purge will limit this but a simple hand test of the PUS temperature is advised to prevent any damage to the meter.

If **averaging** of a batch of readings is required, then the user can start the Autotimer (preset by someone for this) to collect a particular number of samples and then flash the average value on the screen with big red numbers. The data is saved in the meter into a new bank for future reference. Starting is made with the plus sign **(+)** on

Figure 3. Power switch for AK30 and the PUS



Figure 4. Autotimer start/stop buttons for AK30



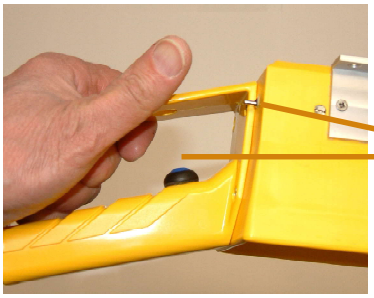
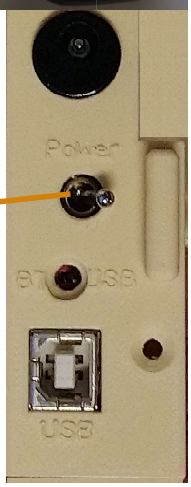


Figure 5. Power switch and the additional Autotimer start/stop switch for MK30R/ AK40GW-P models



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the keyboard or in AK40GW meters it may be performed with a separate push button as well. The data collection will stop itself automatically but it can be forced to stop any time by pressing the minus key **(-)** or the same push-button in AK40GW. While data is collected, the **center display is red or green in colour** . The display behavior is the same with all AK30/40 models.

This simplified use is based on the assumption that the user is measuring the same type of paper or board or other material every time. Usually many similar papers use the same calibration. Therefore, a particular calibration is preset and used every time.

4. Simple Use

The next level of using AK30/40GW/MK30R meters is to use the **recipe** system. One can preset the recipe (5 of them) in a permanent way but changeable at any time. The recipe will consist of the selected calibration and a **text label**. The label may describe shortly what is intended to be measured, like a reel, dryer, MD time series, CD profile etc. The label is attached to all saved measurements and files while that recipe is in use.

Now the user can use either the big numbers or the more detailed displays with the trend curve and textual data. Switching between these two modes is done by pressing the arrow keys LEFT (<-) or RIGHT (->).

Switching between the five recipes available is done by pressing the keys **2** or **3** causing a rotating change of recipes. The calibration table number is flashed and the label becomes visible on the rightmost display. Then the user can start to measure exactly as in paragraph 3. If another position needs to be measured with another recipe, he can press the buttons 2 or 3 to find it and then continue measuring there. It cannot be simpler than that.

You can save the current reading as a set of 64 samples shown on the trend graph by pressing the **Save** key (not within the menu). The data is saved to a new memory bank for later use.

5. Regular Use

It is common practice to make multiple measurements in field conditions targeting various papers and measuring stacks and reels as well, both over the machines and in the laboratory. Therefore, a bit more advanced use is required than in the earlier paragraphs. One can use the same techniques for simplicity but usually the work will require changing the calibration table and observing carefully the data acquired to memory banks.

The calibration table is changed by first pressing the **Bank select** button to make the displays yellowish in colour (**Tables** mode), instead of the bluish colour in the **Banks** mode and back again with the same key. The change is also indicated with a text label on the central display (**TABLE/BANK**). To switch to any of the available tables, press either the arrows **UP/DOWN** one table at a time or keys **4/1** for changing 10 tables at a time. The table number reached is flashed shortly in big numbers. You can immediately start measuring with that table. The table number can also be selected within the menu system (3 = Tables). The name of the table will be shown in the center display, bottom line, once selected.

Philosophy of the meter: One can make a lot of changes to the meter's setup without any permanent effect. Only if you save the configuration within the menu system by pressing the **Save** key, will it be saved for the next session. The idea is that the meter may be used by several people and it is not desirable that everyone would change the setup annoying the next user. **If the power is turned off, the modified setup is lost** . The saving can be effected from the latest PC programs as well with a specific button. The only exceptions to this philosophy are the memory banks which are saved automatically. Adjust (fine tuning) operations can be done to calibrations and are lost if not saved.

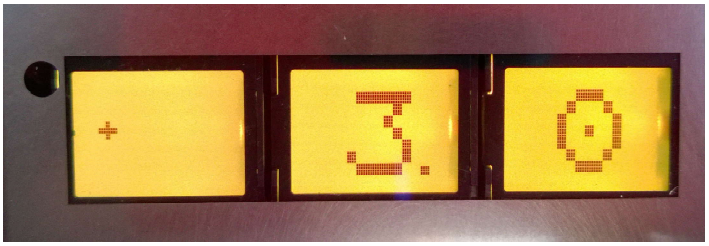


Figure 6. AK30/MK30 display with big numbers in yellowish colour in TABLES mode



Figure 7. AK30/MK30R display with the trend curve and detailed information, in blueish colour in BANKS mode. The menu system is available at the same time.

To see the earlier memory bank data, make first sure that the display is bluish (Banks mode, press the Bank select button). Then one can select any of the memory banks saved in the meter by pressing the keys UP/DOWN/4/1. The bank contents with some data are flashed with its curve. You can stop there and then press the **Stats** key for statistics of this particular memory bank and the trend graph plus the average is shown as last in big red numbers. The memory banks can be transferred to any of the PC programs available for these products. There they are automatically archived for later use. One can also see the curves in bigger size with statistics and get printouts.

6. Advanced Use

Refer to the User's Guide for complete details on how to use and calibrate the meter. The PC programs available have their User's Guides too and contain lots of useful features for handling the memory bank data, calibration tables and the library in its entirety and calibrations, continuous measurements etc. There is also a feature for automatically acquiring new memory banks from the meter while working with it, if kept within the Bluetooth operating range. Bluetooth is the primary option in MK30R but it has also the USB selected with the very small toggle switch near it. When selected, the Bluetooth is not responsive.

7. Preparing for Use

Extremely Simplified Use

Someone in the user's factory is needed to assist in preparing the meter for extremely simple use, unless already prepared at the manufacturer. Actually, even this is very simple and does not require any sort of expert.

Select the calibration which is most often used and covers nicely the paper grades (or other target materials) as guided in earlier paragraphs. Press either one of the arrow keys LEFT/RIGHT to see the big number display. One should now be able to measure with the meter by watching the big numbers only. Press the Menu key (you don't necessarily see the menu at all) and notice the rightmost display colour to change. The big numbers may override it but one can ignore that. Then press the Save key to save the current meter configuration and the press the ESC key. The meter is ready for extremely simple use.

The Recipe System

The **recipe system** is prepared as follows. Press the key 2 or 3 to get the recipe which is to be replaced with a new one. They are always populated with something, possibly useless data. Select then the proper calibration table as usual. Press the key 5 to see a text editing on the rightmost display. This is the text label to be associated with this recipe. You can move the cursor with the arrow keys **LEFT/RIGHT** and modify the contents one character at a time by using the numeric keys like in a mobile phone. More special characters are available by using the keys **UP/DOWN**. Type in a text label describing in one line of 8 characters the type of measurement to be performed with this recipe. When ready, press **Enter**. Then one is asked if the table is really used and one needs to reply by pressing the key **1** to accept. Else any other key will cancel. To prepare another recipe press again 2 or 3 to select it, select some calibration table and then press 5 to edit the text label for this recipe.

When this is completed, press the **Menu** key to enter the menu and then press the **Save** key to save the whole modified recipe system.

The Memory Banks

The memory bank data acquisition can also be prepared for various tasks. The settings changeable are the time interval (0.2 ... 30000 sec) for sampling and the number of samples to acquired (batch size). One can locate these settings in the menu system (Menu --- 1 = BANKS). Option 1 allows changing the time interval and option 2 is for setting the batch size (1...500). One can edit these numbers as usual and then press the Save key if it is desirable to keep these settings in the future. One can calculate for example for measuring the cross profile of a reel of 5 meters width with an accuracy of 10 cm, one will need the 50 samples, at least. For a target like that, a number like 200 would be recommended. The time spent would be 50 x 0.2 sec = 10 sec to measure with the interval 0.2 sec.

The last option in the bank is **clearing** of the memory banks (all of them at once). Care should be exercised with this option since the data can not be retrieved if deleted. It is recommended to make backup copies of all memory banks to your PC if the data has any later value. There is a security question before actually completing the clearing.

Note that the memory bank data will contain in addition to the actual moisture values, the time and date stamp, recipe text label and the calibration table used for acquiring it. This set of data is transferred to a PC together with the bank number which also is indicated in the file name. The meters contain a battery-backed clock maintaining the date and time used for giving a time stamp.

Other Settings and Notes

There are many other settings which will affect the measurement in one way or another. It is best at this point that you start reading the actual **User's Guide** with all features explained and then also the other manuals written for the PC programs plus other manuals attached to your meter. The PC programs will offer a lot of more tools for retrieving old data and seeing the statistics and getting simple reports. HTML reports with JPEG images are available too. The AK30/40/40GW moisture meter family consists of meters of exceptionally advanced instruments with lots of useful features for measurement. Please, get acquainted with the tool and it will pay itself back quickly by offering you reliable information of your products and processes, eliminating problems and being useful in troubleshooting.

Observe that if you use the **menu system**, the hot keys to be used in measurements **are not available** (except the LowPower key). Remember, the TABLES mode is for accessing the calibration tables (selection) and BANKS mode is for accessing the old measurement data in the banks.

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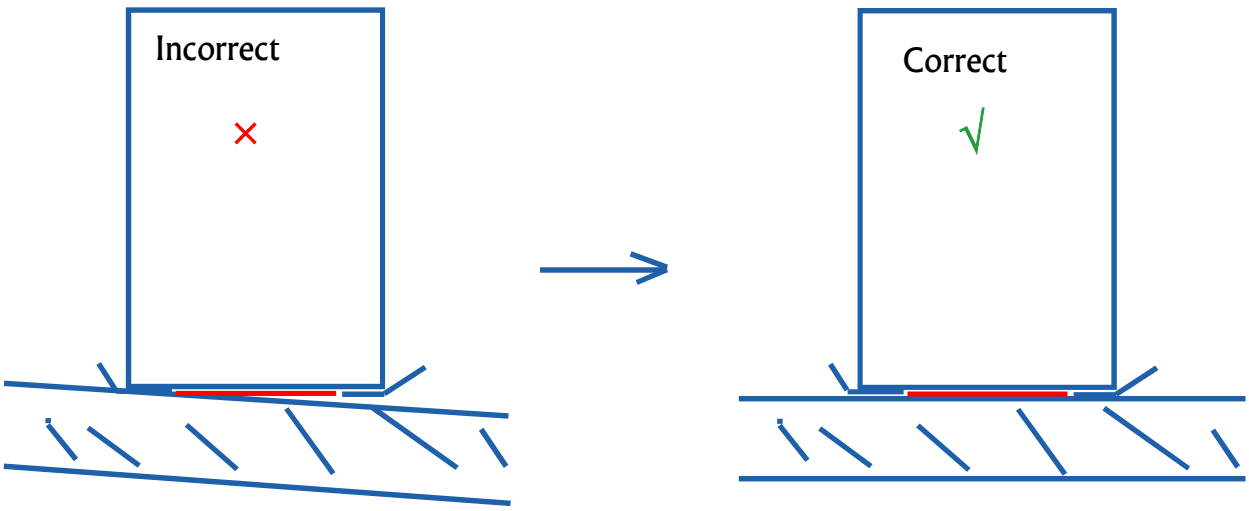
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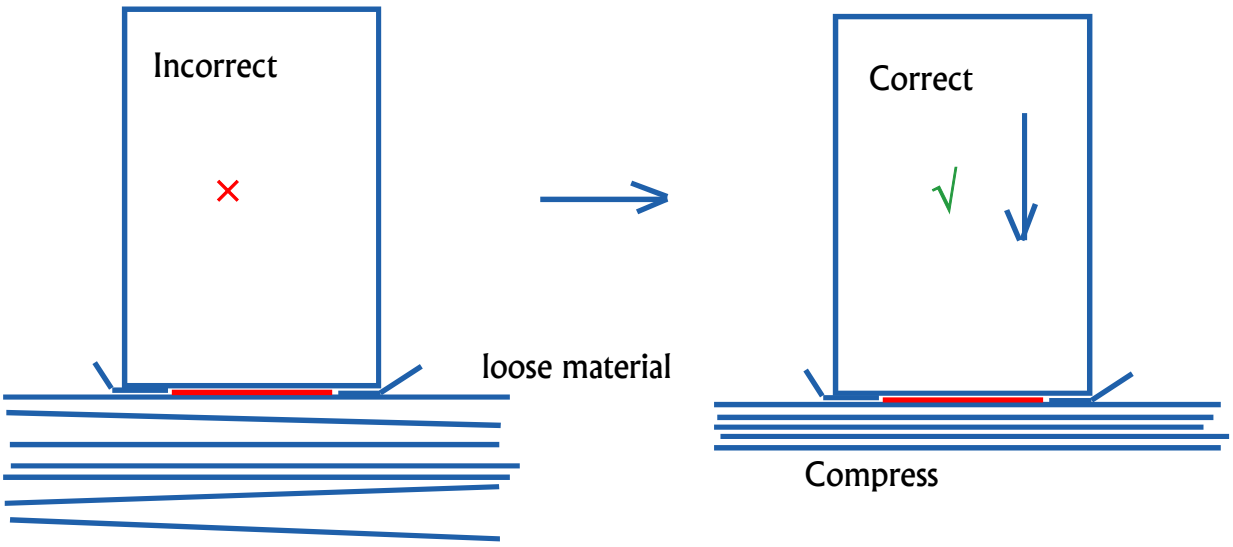
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MK30R Specific Guidance

See the pictures below to quickly guide you in using the MK30R with various materials. Observe carefully the proper use of the travel meter when measuring profiles. It is sensitive to the incorrect rotation direction. Use preferrably for static reels.



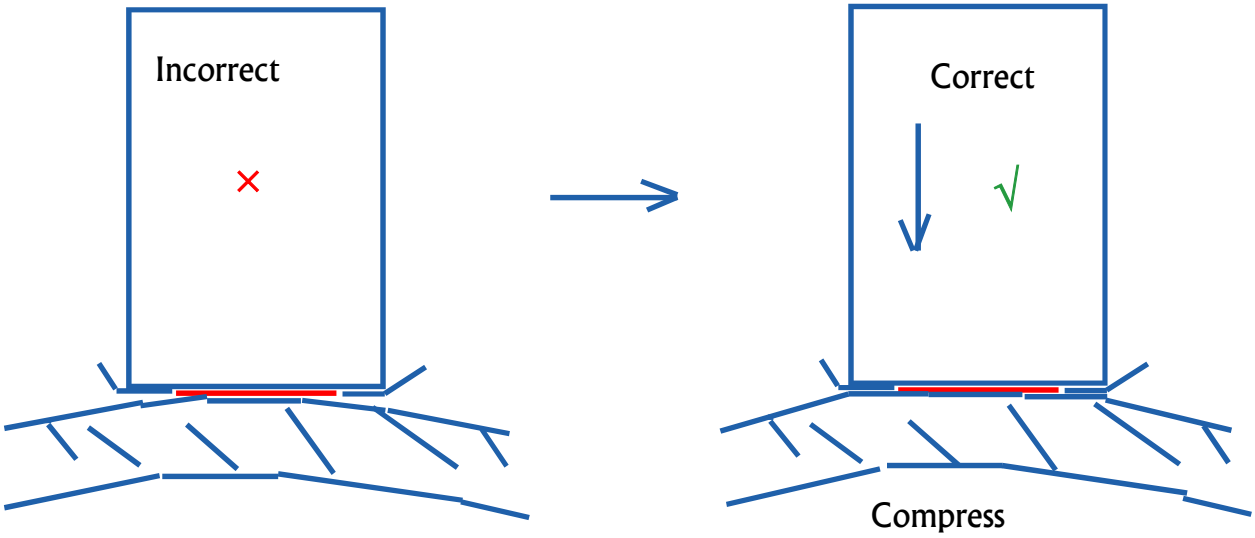


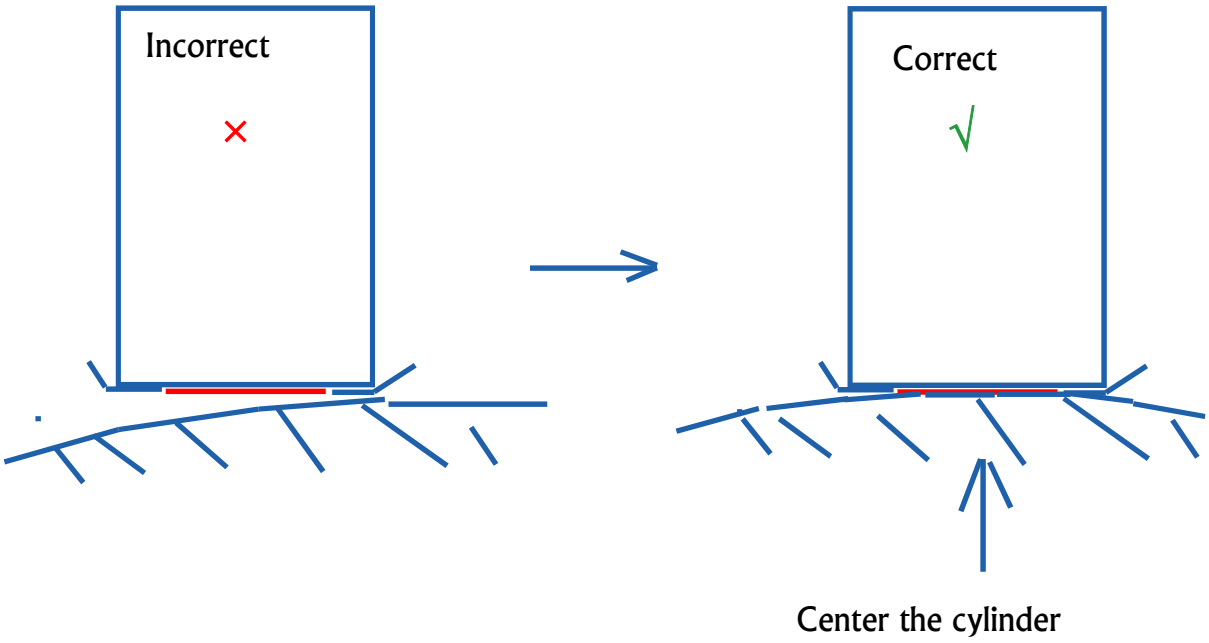
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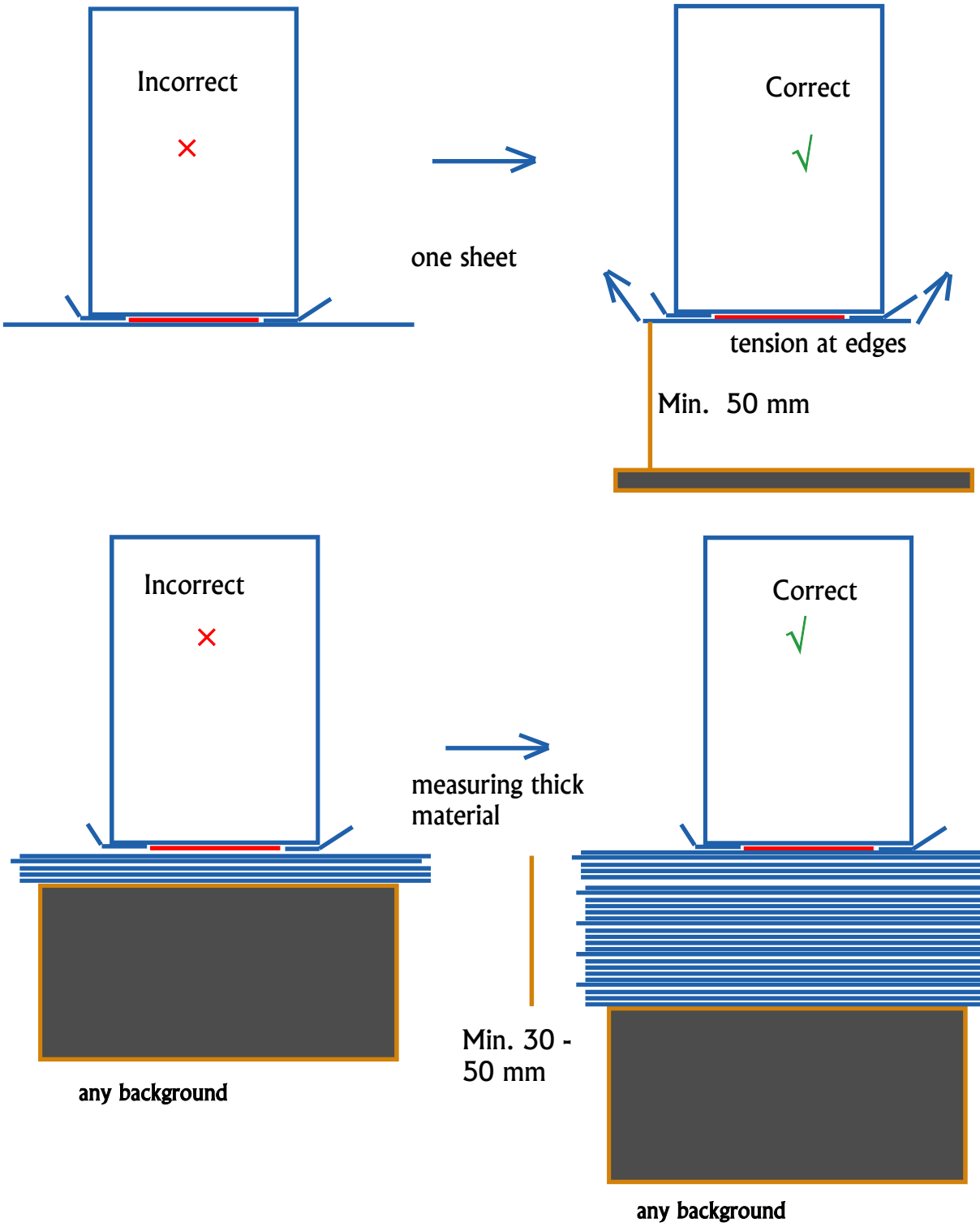


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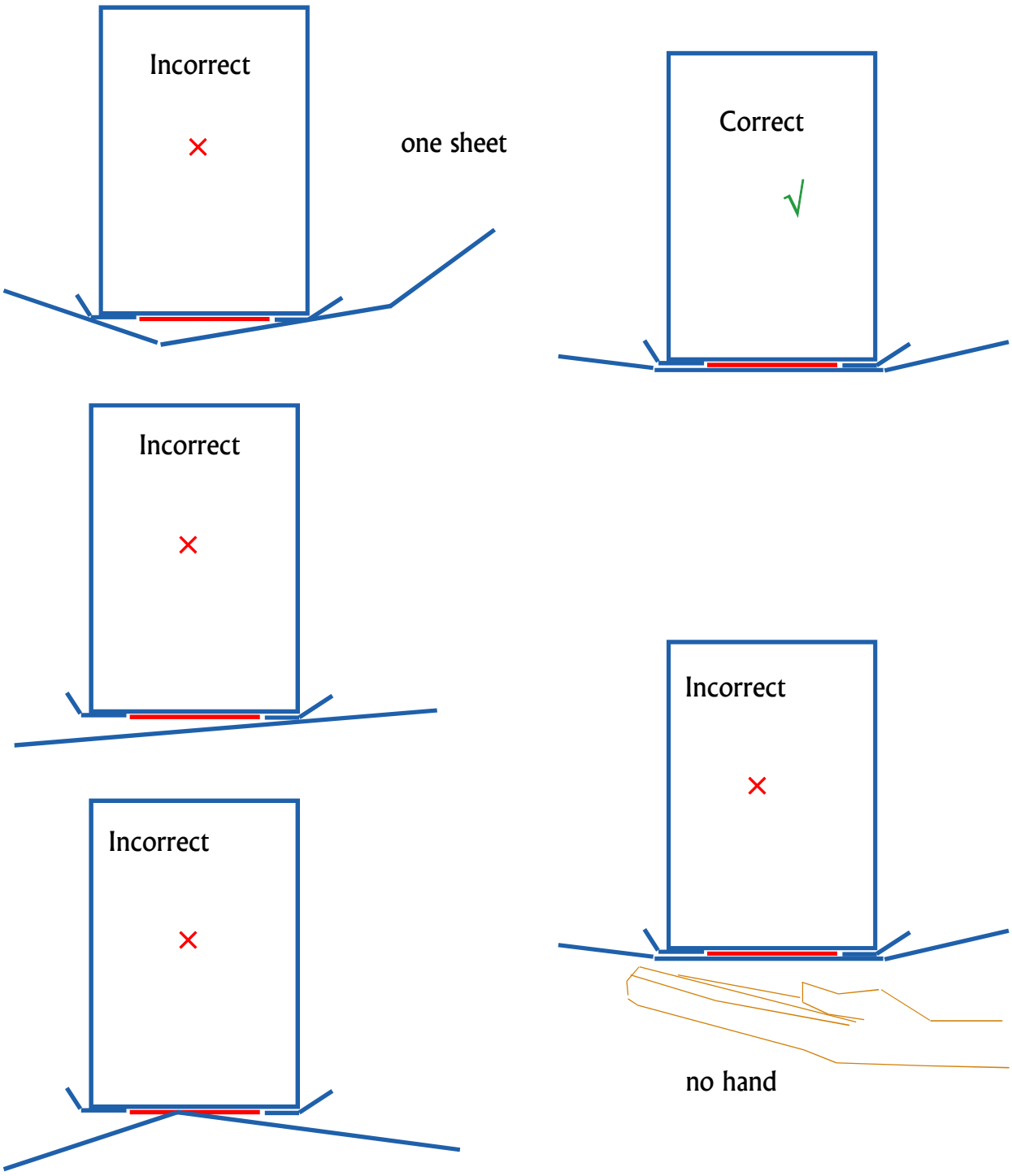


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