Manual for PutterPractise (ver 2)

The **PutterPractise** unit is used foremost to practise length and direction-feeling when you put. The most important thing is to get a skill in the speed of the club in the muscle memory for certain fix distances, and at the same time practise the skill to put straight ahead. When you have practised a skill on the unit, then you are ready to go to the real putting green with these pillars of speed feeling contra distance. You put a test put and see the relation for what you have practised and what is valid for the specific green; then you adapt the putts according to this test put and have the practise skill of the fixed distances as a base for the adaptation. You can for example practise your putts after fix distances where a imagined hole is, e.g. 2, 5 or 10 meters (you can choose feet in settings if you like), and for every distance one can for example put 100 times and then get statistics like the average and standard deviation (this gives a value of the spread of the putts similar to the average distance the putts where away from the average – for example you can have 0.5 meters in standard deviation from a average av 5 meters, which means approximately that the average put is 0.5 meters away from 5 meters, the average put came 4.5 or 5.5 meters in length). If you have practised 2 and 5 meters and the hole is 3.5 meters away then you know you should put in between the practised 2 and 5 meter bases. Notice that the unit is made for a somewhat constant speed of the putter head between the measuring zones, therefore you should adopt such a style. If you accelerate the putter head randomly between the putts, then the error percent will increase.

Before you swing, it can be good to know where you should rest the club. The putter head is best rested to the left of the display with the underside of the putter at a maximum height of 30 mm above the units top, typically 5-15 mm is good. When you have decided for a certain height, try to keep the same height in all putts for best measuring accuracy (although accuracy is alright even if you vary the height).

The unit is accurate, if you let a pendulum swing over the unit, then the repeatability is within 1% error, you see that the value is decreasing steadily with the pendulums lower and lower speed; the direction accuracy for a pendulum varies with 1 cm at a value of 1 meter, i.e. 1% error. The unit is calibrated after a real semi moist putting green. The unit is driven by one AA Alkaline battery, that lasts for about 100 hours of active use, in other words if you practise half an hour every day then the battery will last 200 days. A rechargeable AA battery can also be used. If the unit is inactive (no swing or push button action), then the unit automatically turns itself off after 5 minutes, this value can be changed in settings.

The unit is sensitive to infrared light, that exists in sunlight. That means that the unit only can be used when it is dusk or dark, if used outside. The unit shall not be to near lamps with filaments, because they generate infrared light. The unit indicates when there is too much infrared light, with the text "LIGHT", when one have chosen a command for putting. If this happens move the unit to a darker place.

First before you can use the unit for putting practise, you must have a putter bottom that reflect enough light. If you have a putter with a shiny metallic surface as the underside, then you do not have to do anything. But if you have a surface that is not in this way, then you must attach two of the aluminium tape strips that come along with the purchase, to the under side of the putter. The strips long sides shall be parallel with the front part of the putter head; the important part is that the two sensors to the left on the unit have reflecting material right above them when you swing, and when the putter head is straight the reflecting leading edges shall be straight. In case you should have placed the strips non-parallel with the leading edge of the putter, you can adjust this is settings to get a correct direction reading.

You start the unit by pushing the only button for about one second until the status lamp shines. The status lamp sits right and down in the display, it blinks with 2 seconds interval when the unit is on. The status lamp shines whole when one pushes the button to choose command. Then you shall release the button. If you hold the button longer, then the status lamp starts to blink, and if you release it then a help text for the current command is shown in the display. When the unit is first started "Welcome" is shown and then "battery XXX" where XXX tells how many percent of the power of the battery is left. The text can be somewhat hard to read because it scrolls on a 7-segment display, but this is something one gets used to, and hopefully can read the display. (You can slow down or speed up the scroll speed in "settings"); both capital and small letters are mixed. "M" is shown as "||".

Then you arrive at the PUT->COM that lets you practise, press half a second to exit to the command choser. You shift between different commands by pressing momentarily on the button, and then choose command by pressing the button for half a second until the status lamp shines, and then release the button. If you hold the button for 1.5 seconds or longer then the status lamp flashes and when you release the button then the help text is shown.

The command structure is as follows. (TOP get you to PUT)

PUT (Putting) -> DIS (Distance), DIR (Direction), COM (Combined), TOP
TRA (Train) -> DIS (Distance), DIR (Direction), COM (Combined), TOP
GAM (Game) -> MINI GOLF, BEST SHOT, TOP
SET (Settings)
OFF (Turn off)

For example, if you want to practise and get statistical data, like average and standard deviation on your putts, and the display shows "PUT", press shortly once to get to "TRA" to display, then you choose this

command by pressing the button for 0.5 seconds, then "DIS" is shown, choose this command by pressing 0.5 seconds again. Then you input those data that are requested. The same method is used to choose a value in the requested data; a short button press to see next data value, and 0.5 second press to choose that value.

You can at any time when the unit waits for a put press the button for half a second to exit that mode.

PUT->DIS When you have chosen this command, the text "METERS", "FEET" or "M PER SEC" (meter per second) are scrolled and shown depending on what unit has been chosen in "settings"; meter is the unit that is factory default, this can be changed in "settings". The unit is put on the ground, and you swing above the unit, where the centre of the putter head is swung near the centre of the line in the putt swing direction (the important point is that the sensors gets infrared light to bounce from the putter head). After a swing, the result of a imagined balls length in meter or feet or if you have chosen the putter heads speed, meter per second for the putter head. Do not swing higher than 30 mm above the unit, otherwise you risk that the swings are not registered. After the swing the distance is shown in the units you have chosen (meters default).

PUT->DIR The direction is shown here in the form a distance from the centreline 10 meters or 30 feet away, depending on what unit you have chosen. If you put completely straight, you get 0, if you put 1 meter off centre to the left at the 10 meter mark (if you do not put this length or longer, imagine a line that continues until you reach 10 meters) "DN 1.00" is shown. To the right is shown as "UP". Since the diameter of the hole is 108 mm, a result of 0,54 or less will mean that you sink a 1 meter putt (a 20 hcp golfer sinks 70% of 1 meter putts). To sink a 2 meter putt you need 0,27 or less (40% sunk by 20hcp golfer).After the swing direction is shown.

PUT->COM Here is both distance and direction shown on a put, if you have chosen meters per second, then first meters per second for speed is shown then the direction in the unit you have chosen (meter or feet). After the swing, distance is shown first then direction.

TRA->DIS After showing what unit is current, then you have to choose the number of statistical samples, i.e. how many times one shall put before one gets that statistics for theses samples. Then you choose if you want one distance (one) to practise on or automatically a series. If you choose "one", then you shall choose the distance you want to have as a target, depending on the unit you have chosen in "settings". If you choose to end the practise before all samples are counted, you can choose to save the samples you have done, then you can turn off the unit, and next time you start the unit you can choose to recall the saved values. If you missed the text one can choose "SHOW AGAIN". If you want to do another try with the same settings, choose "ANOTHER TRY", otherwise you choose "EXIT". After the swing distance is shown. After the session, statistics is shown, first average, then standard deviation, standard deviation from target, target percentage standard deviation.

TRA->DIR Here you get statistics on the direction. See PUT->DIR and TRA->DIS. After swing direction is shown.

TRA->COM Here you get statistics on both distance and direction, see PUT->DIR and TRA->DIS. After swing distance and then direction is shown.

GAM->MINI GOLF First meters or feet is shown indicating the units the numbers are referred to. Then you shall choose the number of players, and then the number of holes to be played. Then "PLAYER 1 HOLE 1" is shown and the distance that the hole is from the ball (randomly chosen initially). Player one swings. Then you see how far and the direction that player putted. Then next player putts. When player 1 putts again, the remaining distance to the hole is shown. If you put the ball in the hole this is shown by "BALL IN HOLE". When all have putted all the holes, then in order the players with least number of putts are shown and the number of putts together with the player is shown. If you missed the text one can choose "SHOW AGAIN". If you want to do another try with the same settings, choose "ANOTHER TRY", otherwise you choose "EXIT".

GAM->BEST SHOT First the unit is shown, then you choose the number of players and lastly the number of shots you want to put. Then "SHOT 1" "PLAYER 1" is shown, and then the distance to the hole. Then player 1 shall put and get as close as possible to the hole in one put. After the swing, the distance is shown and next player putts. The player that got closest gets one point. Then next hole is shown. You can exit any time by pressing the button 0.5 seconds. When finished the score is shown.

->SET

FACTORY DEFAULT Sets all settings to factory default.

UNITS Choose meters or feet as the unit.

M PER SEC Choose this to show the speed of the club in meters per second.

DISPLAY SPEED Scroll speed of characters in the display in hundreds of a second.

NUMBER DURATION Time in tens of seconds of how long the display of the number shall remain.

LENGTH PERCENT Show the each length in percent of the target in TRA->DIS and TRA-COM.

LEFT RIGHT HANDED Choose if you are left handed or right handed putter; if left handed turn unit the other way.

OFF CENTRE Calibrate the direction result in centimetres. Negative number means more down. If the unit shows too much up, then you shall have a negative number and vice verse. The number is centimetre calibration.

AUTOMATIC TURN OFF Choose time in minutes when the unit automatically turns off when inactive.

CF, CV Constants that determine how fast the simulated green is according to the formula $V^2 = D*CF/100 + (D^2)/CV$, where V is the speed in meters per second and D is the distance in meters; if you want a different green, put the ball on a book in front of the unit put in darkness/dusk 20-50 times and write down meters per second and actual distance. Calculate V^2/D for all samples which will approximately agree with $V^2/D = k1 + k2*D$. Find values for k1 and k2. CF=k1*100 and CV=1/k2

DISPLAY BRIGHTNESS Choose intensity of light in display, 1 strongest, 10 weakest (saves most battery).

SERIAL NO Serial number of the unit.

->OFF - Turns off