Mildot Master®

(Pat. Nos. 5960576, 6196455) www.mildot.com

...a direct path to firing solutions.®

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Mildot Master®

Section I

Introduction

Situation: The mildot reticle is in increasingly widespread use among long-range rifle shooters as a means of estimating the range to the target. This estimation is critical in order to correct for the varying degree of projectile drop (and/or wind drift) at different ranges and thereby enable the shooter to hit the target. With training and familiarization, an experienced marksman can accurately estimate range to target by using this type of reticle and by making the appropriate calculations.



Originally fitted to telescopic sights designed for military (and later police) use, the mildot reticle has seen growing acceptance in the civilian sector among target shooters and hunters.

Principle: By using a set of fixed references within the telescopic sight, the shooter can compare the size of a target, a portion of the target, or a nearby reference target to a series of precisely sized dots and spaces. These dots are placed at a constant 1 mil (36" @ 1000 yds. or 1 meter @ 1000 meters) center-to-center spacing. By estimating the size of the target or reference and noting the number of mils that equal the size of the target, the shooter can determine the range to target by applying a formula (Size of target in yards multiplied by 1000, divided by Size of target in mils, equals Range in yards), usually by employing a conventional hand-held electronic calculator.

Problems: A series of difficulties arises in the effective use of this system:

- The necessary calculations are somewhat complex and depend upon the shooter's ability to remember and correctly apply the formula.
- The size of the target is more often than not mentally estimated in inches, necessitating an additional calculation to convert the target size into a decimal equivalent of yards. If the range is to be calculated in meters, an additional conversion from yards to meters is necessary.
- Even after the shooter has gone through the range calculation procedure, the amount of bullet drop (or wind drift) applicable to that range must now be applied to the sight picture to enable a hit on the target. Either the telescopic sight must be adjusted or the sighting point "held over", which necessitates a second series of calculations to translate the needed amount of correction into a sight adjustment or hold-over figure for that range and load.
- Aside from the possibility of errors occurring during these calculations, the time involved in such calculations can prove problematic in certain scenarios, such as military or police counter-sniping operations, timed competitive target-shooting events, or hunting situations.

Solution: Eliminate the need for multiple data entry steps and simplify the calculations by the use of an analog calculator designed expressly for this purpose.

Description

of Device:

The **Mildot Master**® is an analog calculator designed along the principle of a slide rule, utilizing logarithmic and inverse logarithmic scales developed specifically for performing the following operations:

- Rapid and simple calculation of range to target, based on a measurement of the target with a mildot reticle, by aligning the estimated target size directly opposite the mildot measurement, and then reading the range at an index mark.
- Rapid and simple calculation of the amount of sight correction necessary to compensate for bullet drop and/or wind drift for a given range, enabling the shooter to determine **either** the equivalent telescopic sight adjustment (minute-of-angle, or MOA) **or** the equivalent hold-over (mils), by reading equivalents in both MOA and mils directly opposite the bullet drop/wind drift figure.
- Additionally, angle of fire for uphill or downhill shots can be accurately measured, and the up/down compensation can be closely calculated to reduce the errors such shots can induce.





Front

Rear

Notes: The portion of the Mildot reticle represented on the front of the **Mildot Master**® is for illustration only and is **not to scale**.

The scale on the rear of the **Mildot Master**® is for conversion of inches to centimeters and centimeters to inches, and is **not to scale**.

- Advantages: The Mildot Master® exhibits numerous advantages over the use of a conventional handheld electronic calculator, such as:
 - No conversion of estimated target size from inches into decimal equivalent of yards is necessary, as the Target Size Scale is in increments of feet and inches.
 - No entry of data or operations through a keypad is necessary, as the device is purely analog and only requires the alignment of figures on scales.
 - No memorization of formulae is necessary, as the correct formulae are built into the scales.
 - No complex calculations for determination of telescopic sight adjustment or hold-over at various ranges are necessary, as the scales of the device convert drop/drift figures directly into **both MOA and mils**.
 - No separate data sheet is necessary for bullet drop figures, as the reverse side of the device is designed to accommodate either commercially available data decals or user-produced data strips.
 - Speed of calculations necessary to determine range to target and required telescopic sight adjustment and/or hold-over can be significantly reduced by using this device in lieu of a conventional hand-held electronic calculator.
 - The **Mildot Master**® is comprised of only two parts and utilizes no electrical or electronic parts. It needs no batteries, and its simplicity of construction and operation results in extreme reliability under adverse conditions.
 - Unlike an electronic calculator, the **Mildot Master**® can measure the angle of a shot (up to 60° above or below the horizontal), and can be used to correct for the effects of uphill/downhill shooting.

Section II

Instructions

Estimating Target Size:

Target Size Estimation is the single most critical factor in the process of range estimation and the subsequent determination of aiming corrections.

It is essential that the shooter become proficient in accurately estimating the size of various target objects and of "reference" objects. This can only be accomplished through practice!

If the target size is not known or cannot be confidently estimated, often an object nearby (i.e., at the same range as the target object) can be used as a reference object. An example of this situation would be a deer of unknown size standing next to a fence estimated to be 5 feet high. Range can be determined by using the fence as the reference object.

Determining

Range:

In the example below, the distance between the top and bottom of the deer's chest is estimated to be 18 inches. Note that in this case 18" measures 1.5 mils.



To determine the range to the deer, align the 18" mark of the Target Size Scale with the measured number of mils (1.5), and then read the range directly opposite the Target Range index mark. In this example, the range is determined to be approximately 330 yards.



This example assumes a horizontal shot. For uphill or downhill shots, see **Section III, "Additional Information"** later in this manual.

Important Note: There are two basic differences between a digital device (such as an electronic calculator) and an analog device (such as the Mildot Master®):

1. The digital display is **apparently** more accurate ("333.333 yards") than the analog reading ("approx. 330 yards"); and,

2. The analog device is faster and easier to use.

Please be aware that the range determination performed by either a conventional hand-held electronic calculator or by the Mildot Master® is only as accurate as the estimation of the target size (and measurement in mils) performed by the shooter. The margin of error in the target size estimation is typically greater than the difference between the range calculations displayed by these two methods.

The Mildot Master®'s advantage is in its ease and speed of use, more than compensating for a lack of a readout which displays yardage to three or four decimal places.

Please Note:

IF FINER MIL GRADUATIONS ARE NEEDED WHEN RANGING, SEE APPENDIX I AT THE END OF THIS MANUAL.

Correction For Bullet Drop:

Once the range to the target has been determined, the shooter must now either adjust the telescopic sight or change the sight picture (hold-over) to compensate for the bullet drop at that range.

This means that a second calculation must be performed in order to convert bullet drop at the determined range into a correction factor.

The Mildot Master® makes this process extremely simple by performing range determination, sight adjustment, and hold-over calculations simultaneously.

Once the range has been determined by aligning the Target Size with the measured number of mildots, **bullet drop/drift figures are automatically aligned with the corresponding sight adjustment/hold-over figures.**



The reverse side of the **Mildot Master**® is designed to accept commercially available, self-adhesive decals which serve as a Ballistic Data Strip (such as the Drop Decal[™], available from EXD Engineering, Inc., P.O. Box 4408, Lawrence, KS 66046).

Using a fine point felt-tip marker, the shooter can enter the drop data for the rifle and load being used and affix the decal in the space provided, thus eliminating the need for separate data sheets.

These data may also be typed or hand-written on a similarly sized strip of paper and affixed using transparent tape. Examples of these Ballistic Data Strips are given at the end of this manual (See Appendix II).

YARDS DROP	100 +2.1"	150 +1.8"	200 0"	250 -3.4"	300 -8.7"	400 -25.1"	500 -50.7'
6, 6,	10" S 9" ME	AFFIX E	BALLIST		HERE		970 876 776 776 800
	Defer to	Owner's	Manual	for Dota	ilod Inc	truction	

These data must be provided by the shooter!

It is essential that the data entered on the decal be **verified** by sighting the rifle in at measured ranges, **with the specific load** that will be used. The amount of drop **must be verified at the various ranges** to ensure that the sight adjustment or hold-over correction calculations will be accurate.

Important

Note:

By verifying elevation changes ("come-ups") necessary at various ranges and entering them on the Ballistic Data Strip, the following step of converting a Bullet Drop figure to a scope adjustment or mil hold-over can be eliminated.

Once the range has been calculated, your Data Strip will then give you the needed number of "clicks" of elevation for that range.

Please be aware that not all scopes adjust in the same increments!

It is imperative that all data entered on the Data Strip be accurate and verified!

Look down the Bullet Drop Scale and locate the amount of drop that is appropriate for the range to the target, as entered on the Ballistic Data Strip.

In this example (330 yards), let's assume that the shooter is using a .308 caliber rifle zeroed at 200 yards, and knows that the drop at 300 yards is 8.7" and at 400 yards is 25.1".

A good estimation for a 330 yard drop would be in the vicinity of 10". Select 10" on the Bullet Drop Scale.

Simply read the necessary adjustment (either in Mils or MOA) opposite the 10" reading on the Bullet Drop Scale.



The shooter can now correct for this amount of drop by either holding over by 0.8 mils (a little more than $\frac{3}{4}$ mil), or by adjusting the elevation of the telescopic sight to raise the point of impact by 2.75 MOA.

Section III

Additional Information

Use With Other

Equipment: Because the **Mildot Master**® can be used to easily convert a bullet drop figure into a telescopic sight adjustment figure (independent from range calculations), it is useful for non-mildot scopes, and can also be used in this capacity in conjunction with optical or laser rangefinders.

Wind Drift

Correction: Wind drift can be estimated by several methods. The shooter must develop these estimation skills to ensure consistent long-range hits under windy conditions. An excellent source of information on this topic is U.S. Army Field Manual FM 23-8, "M14 and M14A1 Rifles and Rifle Marksmanship", Section II (Ballistics).

The **Mildot Master**® will convert a wind drift estimation into a sight adjustment figure (MOA) or a hold-off figure (Mils) in exactly the same manner as calculating a bullet drop correction.

Correction for

Uphill/Downhill

Shots:

Range calculations (whether performed by a mildot reticle, a laser rangefinder or other means) are a measure of the **line-of-sight distance** to the target. Bullet drop figures are always expressed in terms of deviation from a horizontal trajectory.

It is important to remember that bullet drop figures are not accurate if the shot is uphill or downhill. The effect of up or down slope increases with the angle of deviation from the horizontal and with increasing range.

The range determination on such shots must be adjusted to enable a hit.

If shooting uphill or downhill (for example, when hunting in mountainous terrain), the shooter must estimate the angle by which the shot deviates from horizontal, and **reduce** the estimated range accordingly. **This "actual horizontal range"** will determine the bullet drop.

Please note that it does not matter if you are shooting uphill or downhill, the effect on bullet drop is the same. In either case, the actual horizontal range will be less than the estimated (line-of-sight) range, which means that the amount of bullet drop will also be less.

Important Information: It is imperative that the shooter realize that the two methods presented here are approximations only.

While the **Mildot Master**® is extremely accurate in calculating range to target and resultant MOA/Mil corrections (given an accurate target size estimation), these are strictly geometric functions based on line of sight measurements.

The calculations necessary to exactly correct for shooting at angles other than horizontal are complex and time consuming.

External factors as diverse as altitude, air temperature, and relative humidity can all affect the results of these approximations. This is because, in each of the two methods, the corrected bullet drop figure is based on a reduced "actual horizontal range" to account for the lessening of gravitational effect on the bullet's trajectory as the firing angle deviates further from the horizontal. The bullet's path through the air, however, is still at the (longer) "line-of-sight" distance, subjecting the bullet to slight additional air resistance not accounted for in these two approximation methods. Due to the effects of the above-mentioned factors on air density, it is impossible to simplify the calculations and incorporate them into these two approximation methods.

If the shooter elects to use the **Mildot Master®** for calculating corrections for uphill/downhill shots, **it must be with the realization that the results are approximations.** While close enough for hunting and target-shooting situations, the margin of error increases with range and angle and precludes the use of these methods in critical situations.

Bullet Drop Compensator Method:

This method is adapted from the "Quick Fix" method described by Maj. John Plaster, in turn derived from an earlier FBI technique.

It is only applicable to scopes equipped with a Bullet Drop Compensator.

There are two advantages of the use of this method (or the next method described) with the **Mildot Master**®:

- The **Mildot Master**® can determine the firing angle by adding a simple weighted string and using the body of the device as a sighting mechanism.
- Automatic calculation of the "actual horizontal range" at various angles is performed at the same time that the range to target is determined.

To utilize this method, first obtain an 12" length of thin nylon string or very flexible fishing line (braided multi-strand or fly-fishing backing line, **not** monofilament) that will pass through the rivet located in the upper right-hand corner of the rear side of the **Mildot Master**[®]. Knot one end, and crimp a $\frac{1}{2}$ oz. lead fishing sinker to the other end (refer to the following illustrations).

Note: If this string is to be permanently attached to the **Mildot Master**®, the lead weight should be stored outside of the protective plastic sleeve when the **Mildot Master**® is stored, in order to prevent the lead from scuffing or smudging the device.



After the range to target has been determined by aligning the estimated target size with the measured number of mildots, sight at the target along the upper edge of the rear side of the device. Allow the weighted string to swing freely with no contact with either hand. When the string has steadied, use the thumb or a finger of one hand to "trap" the string at its intersection with the lower margin of the rear side of the device.

Holding the string in place, turn the device and read the indicated angle. This is the firing angle to the target.



On the front side of the device, just below the Target Range index mark, there is a series of marks corresponding to firing angles, up to 60°. Select the angle measured, and read the "actual horizontal range" directly opposite that figure. In the example below, a target determined to be 300 yards distant and at an angle of 45° results in an actual horizontal range of 210 yards.



Note: The effect on trajectory of firing angles less than 15° are minimal, as evidenced by the correction scale on the front of the device.

To correct for the uphill or downhill shot, **simply set the Bullet Drop Compensator on the scope to the "actual horizontal range" which you have just determined.** This method is the preferred method for compensating for an uphill or downhill shot with the **Mildot Master**[®]. However, be aware that long ranges or extreme angles will decrease the accuracy of the calculations, and thereby reduce the probability of a hit, with this or any other method.

Range Compensation Method:

This method can be used when the scope being used is **not equipped with a Bullet Drop Compensator.**

Important: This method is only valid if the computed actual horizontal range is greater than the distance at which the rifle is zeroed. Consequently, the rifle should be zeroed at 100 yards if this method is to be employed.

While a little more complicated, it is still reasonably accurate, particularly when confined to ranges of 500 yards or less and to angles of 45° or less.

In the example of the deer used in Section II, the line-of-sight range was determined to be 330 yards.

Now let's assume that the shot is to be taken at an uphill angle measured at 45° (determined as previously described with the weighted string).

If the shot were to be taken uphill at an angle of 45°, the line-of-sight range would be greater than the actual horizontal range that the bullet would travel. A bullet drop figure selected from the Bullet Drop Data Strip (10" in the example) would be excessive, and the actual point of impact would be too high.

With the Target Range indicated as 330 yards, we see that the **45° mark is aligned with 235 yards.** This is the "actual horizontal range" and will be the basis for determining the **bullet drop** for this shot (but **not** for the scope adjustment or mil correction, as we will see later).

In this example, even though the rifle is not zeroed at 100 yards, **the actual horizontal range (235 yards)** is greater than the range at which the rifle is zeroed (**200 yards**), so this method can be used in this case.



Select the appropriate bullet drop figure **using the actual horizontal range** (235 yards).

DROP +2.1" +1.8" 0" -3.4" -6.7 -20.1	-50.7	-25 1"	300	250	200	150	100	YARDS
AFEIX BALLISTIC DATA HEBE		-20.1	-0.1	-3.4	0"	+1.8"	+2.1"	DROP
Refer to Owner's Manual for Detailed Instruct	ons	structio	ailed In:	I for Det		Owner's	Pofor to	

In this case, we see that a good estimate for the bullet drop at 235 yards would be **approximately 2**" rather than the 10" calculated using the line-of-sight range.

Because the distance (line of sight) to the target is still 330 yards, the bullet drop figures are still properly aligned with the MOA and Mil figures.



In this case, we see that the drop (2") is off scale, so we must use some multiple of 2". Note that a 20" drop (10 x 2") calls for corrections of either 5.8 MOA (scope adjustment) or 1.7 Mil (hold-over). By using one-tenth of these figures, we can determine that the proper correction for this particular 45° uphill shot would be either 0.58 MOA (scope adjustment) or 0.17 Mil (the length of a mildot is typically $\frac{1}{4}$ mil, so the hold-over would be a little less than the length of one dot).

Once again, please note that correction for uphill or downhill shots is a very complex procedure. These methods are only approximations ...practice and verification remain the <u>only</u> options in critical situations.

Metric Conversion:

If the **Mildot Master**® is to be operated using range calculated in meters, simply remove the center (sliding) section and turn it over, so that the Range Scale marked "Meters" is used.



Note that the Target Size and Bullet Drop Scales are still in inches and feet, so that no additional conversions are necessary.

Bullet Drop/Drift calculations will now be correct for the indicated ranges in meters.

The Bullet Data Strip on the reverse of the device must be replaced with one reflecting drop/drift values for ranges in meters for the rifle/load combination being used.

If it is desired to use Target Size and Drop/Drift figures expressed in centimeters instead of inches, the reverse side of the device incorporates a conversion scale which shows the metric equivalents of inches.

IN O	1			2			3			4			5		6			7		8			9		1	0
Internet	Intelato	hilli	alutad	Indiato	tulut	hitit	tulut	d.d.d.	tulut	4		L.L.	Him		+++		444	44	111	44	111		14	111	L.L.	mm
CM 0 1	2	3	4	5	6	7	8	9	1	0 .	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Additionally, a "fully metric slide" is available, which expresses Target Size and Bullet Drop dimensions in centimeters, and Range in meters. Direct inquiries to the address shown on the front cover of this manual.

СМ	CM
E 600 METERS	250
550 2000	
500 1800	<u>≡</u> 200 <u>=</u>
450 1600	190
	170-

Summary: The **Mildot Master**® is operated in a series of three simple steps:

- 1. Align Estimated Target Size with number of mils covered by the target.
- 2. Read range at the Target Range index.
- **3.** Determine correct bullet drop for this range from Bullet Drop Data Strip and read hold-over amount (mils) or sight adjustment (MOA) directly opposite the bullet drop figure (adjust drop figure if shot is not horizontal).

Important Note:

The Mildot Master® is designed to be "a direct path to firing solutions®"an alternative to cumbersome calculations performed on an electronic calculator.

IT WILL NOT GUARANTEE A HIT!

The shooter must:

- Become familiar with its operation (Practice!)
- Estimate target size accurately (Practice!)
- Supply accurate bullet drop/"come-ups" data (Verify data!)
- Accurately estimate wind drift (Practice!)
- Be proficient in marksmanship skills (Practice!)
- Assign one Mildot Master® to one rifle/load combination only. Once the data set for that combination is verified, do not try to use that Mildot Master® with any other rifle/load combination.
- Reverify bullet drop /"come-ups" data if any change to load or rifle is made.

It is the responsibility of the user of this product to properly zero their rifle and to test this product to their complete satisfaction, before using it in an actual hunting or tactical situation. We have no control over the shooter's knowledge, skills, equipment, ammunition or ability to comprehend and properly operate this device, or over the countless environmental variables that may be encountered when using this device (such as temperature, wind, altitude, humidity, etc.) The manufacturer accepts no responsibility for the misuse, misinterpretation or misapplication of this product. Always wear eye and ear protection when shooting and <u>Always Practice Firearms Safety!</u>

If you have any questions, please do not hesitate to call us at: (505) 565-0760.

Also, please visit our website: www.mildot.com

The next section of this manual is comprised of a series of practice exercises that will demonstrate just how easy it is to operate the Mildot Master®.

(Answers follow the exercises.).

Section IV

Practice Examples

1. Target size is estimated to be 48". The target measures 3.5 mils in the reticle.

What is the range?

2. Target size is estimated to be 16". The target measures 1.25 mils in the reticle.

What is the range?

3. Target size is estimated to be 42". The target measures 3 mils in the reticle. The angle of the shot is estimated to be 35° downhill.

What is the actual horizontal range?

4. Target size is estimated to be 36". The target measures 2.5 mils in the reticle. The angle of the shot is estimated to be 25° uphill.

What is the actual horizontal range?

5. Target size is estimated to be 48". The target measures 4.5 mils in the reticle. The load being used has the following bullet drop data:

YARDS	100	150	200	250	300	400	500
DROP	+2.1"	+1.8"	0"	-3.4"	-8.7"	-25.1"	-50.7"

What is the correct bullet drop?

6. Target size is estimated to be 54". The target measures 3.75 mils in the reticle. The load being used has the following bullet drop data:

YA	RDS	100	150	200	250	300	400	500
DR	ROP	+2.1"	+1.8"	0"	-3.4"	-8.7"	-25.1"	-50.7"

What is the correct bullet drop?

7. Use the same conditions as Example 5 (above).

What is the necessary hold-over in Mils?

8. Use the same conditions as Example 6 (above).

What is the necessary hold-over in Mils?

9. Use the same conditions as Example 5 (above).

What is the telescopic sight correction in MOA?

10. Use the same conditions as Example 6 (above).

What is the telescopic sight correction in MOA?

Section V

Answers to Practice Examples

Note: These answers have been computed mathematically, and range figures are rounded off to the nearest whole number. Because the Mildot Master® is an analog device, your answers will not be as exact.

The final and most important result, however, is the amount of sight adjustment or hold-over for a particular rifle, load, and range combination. Here you will see that the Mildot Master® compares favorably with an electronic calculator, but is much simpler and faster to use.

- **1.** 381 yards.
- **2.** 356 yards.
- **3.** 318 yards.
- **4.** 363 yards.
- **5.** 8.7" (Range = 300 yards).
- **6.** 25.1" (Range = 400 yards).
- **7.** 0.8 mils high.
- **8.** 1.8 mils high.
- **9.** 2.8 MOA up.
- **10.** 6 MOA up.

Appendix I

Sub-Mil Measurements

Situation: The Mildot Master® has a "working range" of 1 to 10 mils for measurement of target size.

In certain extreme, long-range situations, it may occur that the only target or reference object that can be measured produces a reading of less than one mil.

Some members of the Armed Forces and of Law Enforcement Teams have undergone extensive training that enables them to measure a target in 1/10th mil increments, and have requested the ability to range a target when the target reading produced is less than one mil, **and to utilize these 1/10th mil gradations.**

Problem: To extend the Mil Scale on the left-hand side of the device down to 0.1 mil would almost double the length of the device, due to the nature of logarithmic scales.

This would negate the current benefit of a compact device that stows neatly in a pocket or data book.

Solution: Use existing scales to perform range-finding functions when the measured dimension of the observed target or reference object appears to be less than one mil, or when mil measurements are finer than 1/4 mil.

The following procedure will allow target measurements as small as 1.75" and 0.3 mil, well beyond the capabilities of most marksmen.

Procedure: If measuring a small target at long range results in a measurement of less than one mil, **or if divisions finer than** ¹/₄ **mil are needed**,

Use the right-hand window (Bullet Drop) to determine range.

Example #1:

Target Size = 9", Mil Measurement = 0.7 mil

Set **9**" on the Bullet Drop Scale opposite **0.7** mil on the right-hand Mil Scale..... Range = **357 yards**.

Example #2: Target Size = 32", Mil Measurement = 1.7 mil

Set **32**" on the Bullet Drop Scale opposite **1.7** mil on the right-hand Mil Scale..... Range = **523 yards**.

Example #3:

Target Size = 72", Mil Measurement = 3.4 mil

Set **72**" on the Bullet Drop Scale opposite **3.4** mil on the right-hand Mil Scale..... Range = **588 yards**.

All other operations of the Mildot Master® are unchanged (MOA and Mil figures for specific drop/drift figures and Angle Correction).

Appendix II

BALLISTIC DATA STRIPS

If the shooter chooses to create ballistic data strips rather than to purchase commercially available decals, the following example is offered as a suggested format.

Rifle: D6850XXX		Load: Fed. Match 55 gr. BTHP				
Range	100	200	300	400	500	
Drop	0.0"	-2.7'	-10.6"	-24.5"	-47.7"	
Drift (10 mph)	1.3"	5.8"	14.2"	27.7"	47.6"	

The blank data strip below is offered as a template for your personal use. It is sized to fit the appropriate area on the reverse side of the Mildot Master®.

Permission is hereby granted to photocopy this blank strip subject to the following restrictions:

- 1. Copies will only be used on the Mildot Master® in the manner described in this manual.
- 2. Copies are for your personal use only and may not be sold.

Rifle:			Load:		
Range	100	150	200	250	300
Drop					
Drift (10 mph)					
Range	350	400	450	500	550
Drop					
Drift (10 mph)					
Range	600	650	700	750	800
Drop					
Drift (10 mph)					