

# Taber<sup>®</sup> Linear Abraser

## *Model 5770*



## Operating Instructions

**TABER<sup>®</sup>**  
**INDUSTRIES**



---

## ICONS

---

This instruction manual contains several notes and warnings that should be observed carefully by the user. The following icons denote these notes and warnings:



Indicates a **NOTE** that warrants careful attention. These notes may detail a step in the procedure or point out a unique feature of the instrument.



Indicates a **WARNING** that warrants careful attention. These warnings inform the user of any dangers that may cause injury to the operator and / or damage the instrument. It is imperative that you read and follow all warnings carefully.



The Waste Electrical and Electronic Equipment Directive (**WEEE Directive**) is the European Community Directive on electrical and electronic equipment waste which sets collection, recycling and recovery targets for all types of electrical goods.



Safety label – **Shock hazard**



Safety label – **Caution**



**CE marking** is a certification mark that indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).

---

## SAFETY PRECAUTIONS

---

READ ALL SAFETY PRECAUTIONS BEFORE ATTEMPTING TO OPERATE.

Because of the design requirements, there are potential hazards that an operator should be aware of:



**WARNING:** *The reciprocating motion of the load arm creates an entanglement hazard. Do not place body parts or objects in the area surrounding these components during testing as this may cause injury, damage to the equipment, or both.*



**WARNING:** *Do not place fingers/hands or other body parts under the spline shaft or test attachment, unless the spline shaft is properly secured. Failure to adequately secure the spline shaft may cause injury and can damage the equipment if it is dropped.*

Below are general precautions that one should take when operating the equipment:

- Do not wear loose clothing or jewelry as they can become entangled in the moving parts.
- Do not attempt to handle or adjust the test specimen while the instrument is being operated.
- While mounting / removing test specimens, the spline shaft and test attachment should be secured in the upright position.
- When ready to operate the instrument, ensure clothing and body parts are safely away from any hazard the instrument may present and ensure the test specimen is securely fastened.
- The Linear Abraser load arm safety cover is equipped with a magnetic switch to prevent the instrument from operating unless the cover is closed. Do not attempt to bypass this feature.

---

## LIMITED WARRANTY

---

Taber Industries, ("Taber") warrants that its products are free from defects in material and workmanship. This Limited Warranty shall be applicable for a period of one year from the date of initial shipment of any product. The terms of this Limited Warranty do not in any way extend to parts of the product thereof which have a life, under normal usage, inherently shorter than the one year previously stated. Taber will, at its option, repair or replace the defective product if Taber determines it is defective within the warranty period and if it is returned, freight prepaid, to Taber. Replacement parts will be shipped F.O.B. Taber's plant. Taber is not obligated to furnish service under this Limited Warranty: a) to repair damage resulting from attempts by personnel other than Taber representatives to install, repair, or service the product; b) to repair damage resulting from improper use or from connecting the product to incompatible equipment; or c) if personnel other than Taber representatives, without Taber's prior permission, modify the product.

EXCEPT AS EXPRESSLY SET FORTH HEREIN, TABER MAKES NO OTHER REPRESENTATIONS, PROMISES, GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND TABER EXPRESSLY DISCLAIMS ALL WARRANTIES NOT EXPRESSLY STATED HEREIN. IN THE EVENT THE PRODUCT IS NOT FREE FROM DEFECTS AS WARRANTED ABOVE, A CUSTOMER'S SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. UNDER NO CIRCUMSTANCES SHALL TABER BE LIABLE FOR ANY INJURIES, DAMAGE TO OR REPLACEMENT OF OTHER PRODUCTS OR PROPERTY, COSTS FOR RECOVERING, REPROGRAMMING, OR REPRODUCING ANY PROGRAM OR DATA USED WITH THE PRODUCT.

EXCEPT AS EXPRESSLY PROVIDED HEREIN, IN NO EVENT SHALL TABER BE LIABLE TO ANY CUSTOMER OR ANY THIRD PARTY FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND OR NATURE ARISING OUT OF OR RELATING TO THIS WARRANTY OR CONNECTED WITH OR RESULTING FROM THE MANUFACTURE, SALE, DELIVERY, RESALE, REPAIR, REPLACEMENT, OR USE OF ANY PRODUCT OR THE FURNISHING OF ANY SERVICE OR PART THEREOF, WHETHER SUCH LIABILITY IS BASED IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, EVEN IF WARNED OF THE POSSIBILITY OF ANY SUCH DAMAGES.

TABER IS NOT RESPONSIBLE FOR THE LOSS OF ANY DATA UNDER ANY CIRCUMSTANCES AND ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES THAT MAY RESULT THEREOF.

---

## CLAIMS FOR SHORTAGES

---

We use extreme care during packaging to eliminate the possibility of error. If a shipping error is discovered:

1. Carefully examine the packing materials and ensure nothing was inadvertently overlooked when the shipment was unpacked.
2. Notify the company you purchased the product from and immediately report the shortage.
3. File any claim within 30 days from shipment.

---

## CLAIMS FOR DAMAGES

---

Claims for loss or damage in transit should be made promptly and directly to the transportation company.

---

## CONTENTS

---

Contents of the shipping container include the following:

- *Linear Abraser – Model 5770*
- *Spline Shaft / Weight Support Assembly*
- *Wearaser® Collet Assembly*
- *250 gram Auxiliary Weight Disc (3 each)*
- *CS-10 Wearaser Abradants (pkg. of 10)*
- *H-18 Wearaser Abradants (pkg. of 5)*
- *Wearaser Depth Gage / Refacing Tool*
- *S-14 Refacing Strips (pkg. of 50)*
- *S-12 Hand Brush*
- *Hex L-Key Tools (5/64", 3/32"; 9/64")*
- *T5A Fuses (installed)*
- *Power Cord Kit 115/230 VAC*
- *Operating Instructions*

---

## INTRODUCTION

---

The TABER Linear Abraser offers tremendous versatility by allowing the operator to conduct numerous types of physical property tests. Utilizing optional attachments, this tester can be configured to evaluate the relative resistance or susceptibility of a material surface to damage such as wear and abrasion, scratch, gouge, scrape, rub, color transfer (commonly referred to as crocking), plus others. Test parameters such as stroke length, speed and load are all adjustable so optimal settings for each material can be established. The Linear Abraser can also be used for both wet and dry testing.

Designed to test virtually any size or shape specimen, the Linear Abraser is ideal for material properties of flat or contoured surfaces, permitting the testing of finished products.

Test attachments are secured to the bottom of the spline shaft and accessory weights may be placed on a weight support affixed to the top. A precision bearing on the spline shaft creates a “free-floating” test system. As the load arm moves back-and-forth in a linear manner, the “free-floating” test system follows the contours of the specimen – curved or flat.

The Wearaser collet assembly supplied with each Linear Abraser is used for abrasion testing. For the counterface material, Taber offers a selection of Wearaser abrasivants. The size and shape of a pencil eraser, the Wearaser uses the high-quality Taber abrasive media found in our world-famous wheels. Using the same reliable abrasive material with the Linear Abraser as with the Taber Rotary Platform Abraser allows you to maintain your testing standards. Optional interchangeable attachments (sold separately) provide additional testing flexibility.

---

## INSTRUMENT SET-UP

---

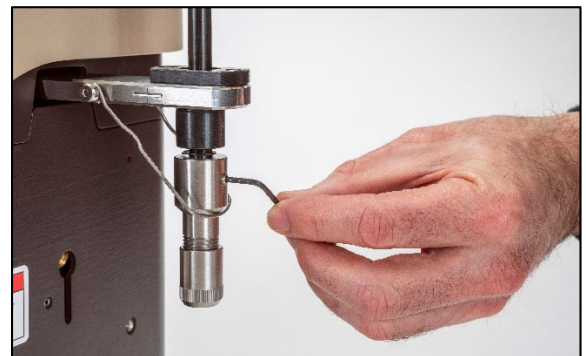
1. Place the Model 5770 Linear Abraser on a flat, level surface.
2. Ensure the lock mechanism is engaged in its detents on the load arm and in a horizontal position.
3. Insert the spline shaft/weight support assembly into the load arm opening so the bearing assembly flange is on the top of the load arm.



4. Secure with two socket head cap screws, tighten using the 9/64” hex L-key.



5. Install the Wearaser Collet assembly to the bottom of the spline shaft and tighten set screw with the 3/32” hex L-key.



- Using the lock mechanism, lock the Wearaser Collet assembly in the “rest” position.



- Adjust the leveling feet as necessary until the small bubble in the weight support circular level is centered.
- This instrument includes an optional battery backup feature for the date/time function. To utilize, install two AAA batteries (not included) in the battery compartment found on the rear of the instrument.



- Connect the instrument to a 115/230V, 50/60 Hz circuit. Two power cords are provided for your convenience, discard the power cord not used.
- Using the ON / OFF power switch located on the back of the instrument, turn the instrument on. The instrument is now ready to operate.

**WARNING:** Failure to connect the 5770 Linear Abraser to a surge protector or surge suppressor may result in damage to the instrument’s electronic components.

**NOTE:** The bottom of the spline shaft is drilled and tapped to accommodate optional Scratch and Mar tools. When installing the spline shaft, ensure it is positioned so this drilled and tapped hole is oriented at the bottom.

**NOTE:** If the bubble in the Weight Holder circular bubble level is not aligned with the center of the circle, the instrument may not be level.

### Using the Lock Mechanism

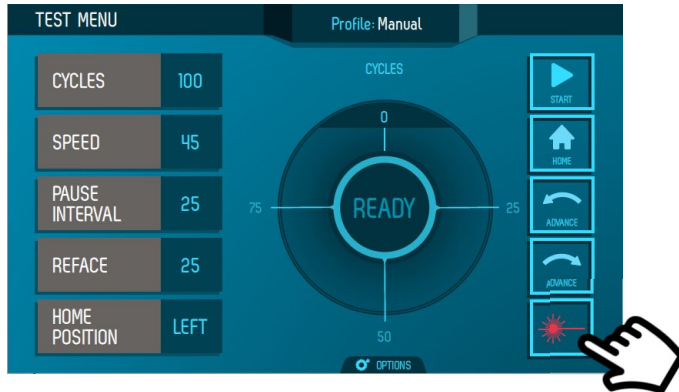
The lock mechanism is a convenient feature to facilitate Wearaser and specimen set-up, cleaning and inspection. This feature can also be used with other accessory attachments.

To use the lock mechanism, raise the accessory attachment (e.g. Wearaser Collet assembly) until it nearly touches the bottom of the spline bearing. Lower the lock mechanism by pressing down on the front end to disengage it from its detents. Gently lower the spline shaft until the lock engages and secures the attachment in place. To “unlock”, carefully hold the attachment with one hand while raising the lock mechanism with the other. Push the lock mechanism back up into the detents to retain the lock mechanism during testing.

**WARNING:** Always support the test attachment during unlocking. Never allow the attachment to fall as injury to the operator and/or damage to the specimen may occur.

## PRECAUTIONS

The Linear Abraser 5770 incorporates a Class II laser that will highlight the path of the test attachment on the specimen and assist with test set up. To activate this feature, press the laser guide button.



Class II Laser  
Output Power = <math><2\text{mW}</math>  
Wavelength = 650nm

**WARNING:** Avoid direct eye exposure with the laser guide.

A magnetic switch is incorporated into the safety cover of the instrument. When the cover is opened, power is interrupted and the instrument will not operate. If the safety cover is opened during a test, the test will stop. After closing the safety cover, press the CONTINUE button to start testing again.

**WARNING:** *DO NOT* defeat or bypass this safety feature or else injury to the operator and/or damage to the instrument may occur.

## SETTING PREFERENCES – OPTIONS

The Model 5770 Linear Abraser allows you to set preferences on how information is displayed. After powering on, press the OPTIONS button and select the desired option. After making your selection, press OK.



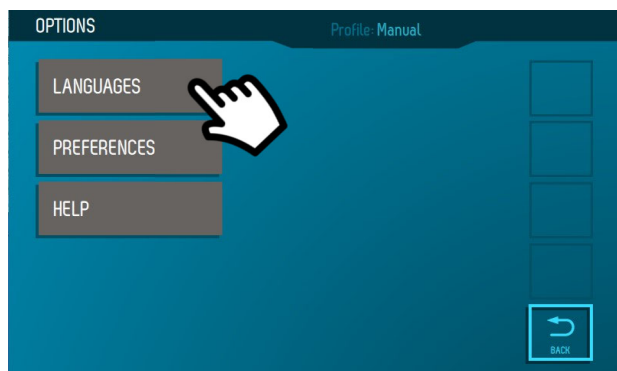
**NOTE:** Options shown below in bold text are factory default settings.

Language: **English**, Mandarin, Japanese, Spanish, French, German, Italian or Dutch  
Date Format: None, **DD/MM/YYYY** or MM/DD/YYYY  
Time Format: 12 Hour or **24 Hour**  
Cycles/Strokes: **Cycles** or Strokes  
Separator: Comma or **Point**  
Counter: **Ascending** or Descending  
Measurements: **Imperial** or Metric  
Advance Speed: 2 CPM or **5 CPM**  
Reface Speed: Maintain, 2 CPM, 15 CPM, 25 CPM, **30 CPM**, 40 CPM, 50 CPM, 60 CPM, 75 CPM



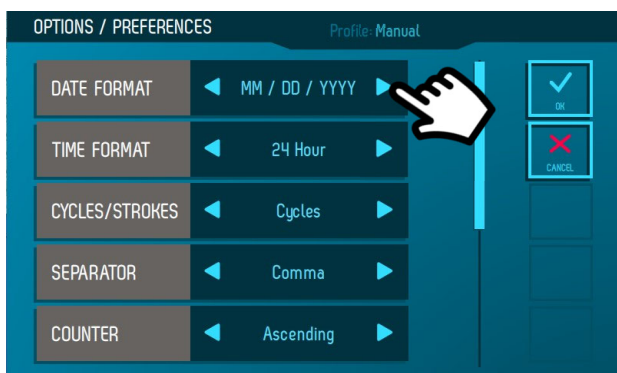
## Language

To select a different language, press OPTIONS then LANGUAGES. Available languages include: *English, Mandarin, Japanese, Spanish, French, German, Italian or Dutch.*



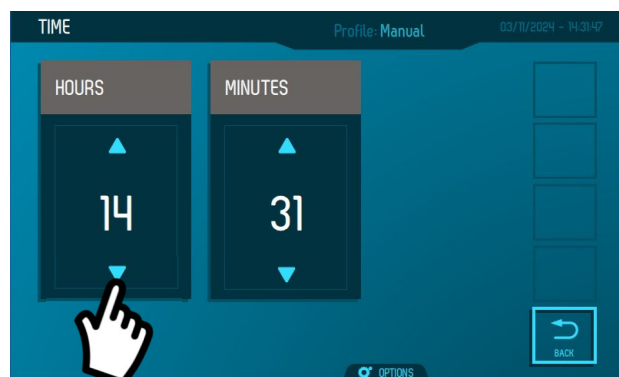
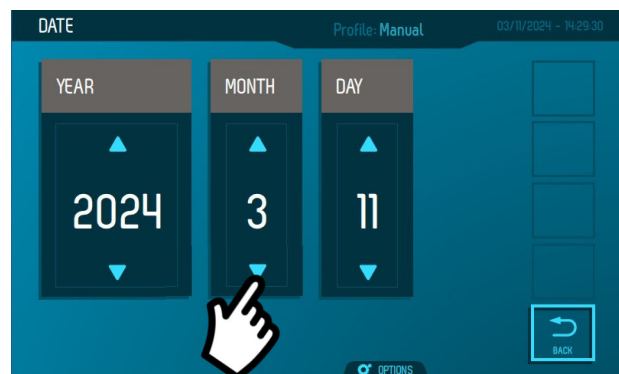
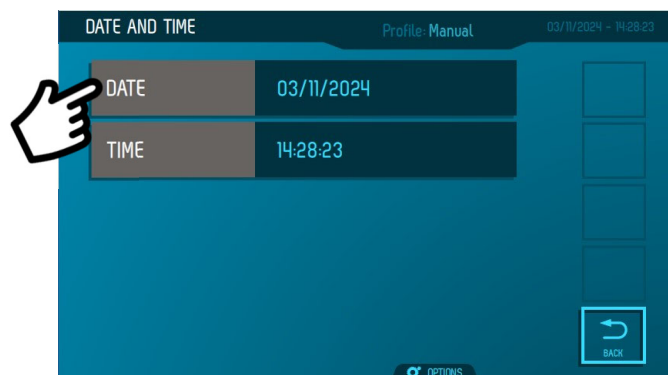
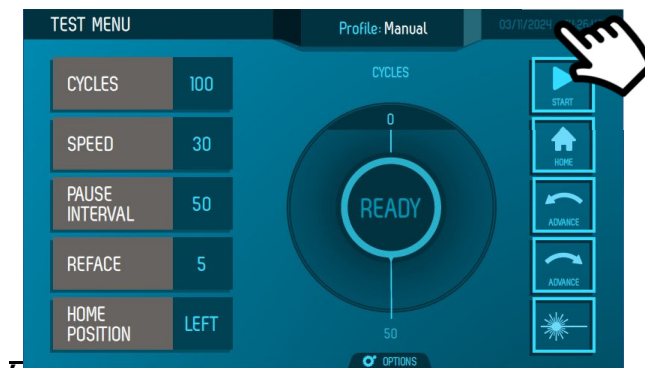
## Preference – Date & Time Format

To change the date or time format, press OPTIONS then PREFERENCES. From this screen, use the arrows to select the desired Date Format: *None, DD/MM/YYYY or MM/DD/YYYY.*



Once the Date Format is activated, you can use the arrows to select the Time Format: *12 or 24 Hour.*

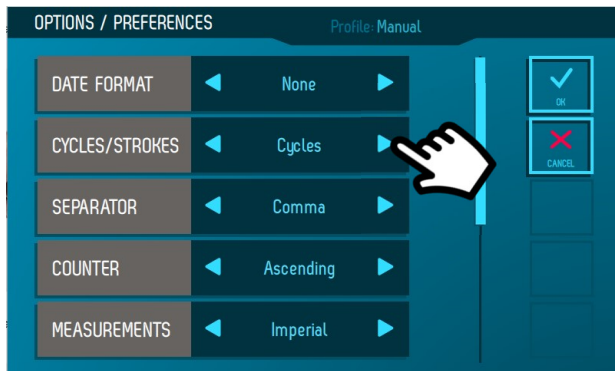
## Updating Time and Date (date format must be active)





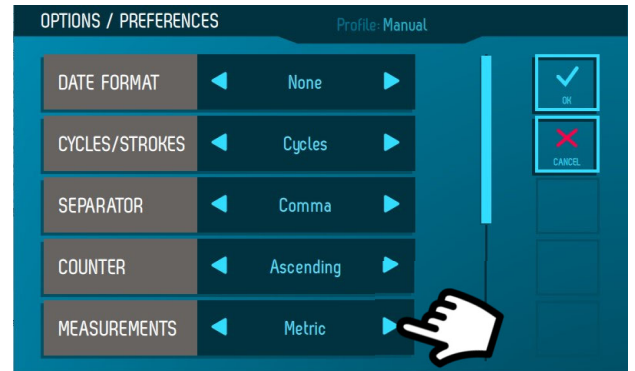
### Preference – Cycles/Strokes

To change the counting from cycles to strokes (or vice-a-versa), press **OPTIONS** then **PREFERENCES**. From this screen, use the arrows to select the desired selection: *Cycles* or *Strokes*.



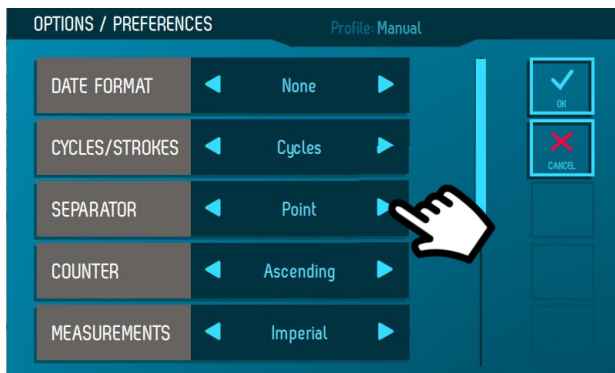
### Preference – Measurements

To change the measurement units, press **OPTIONS** then **PREFERENCES**. From this screen, use the arrows to select the desired unit: *Imperial* or *Metric*.



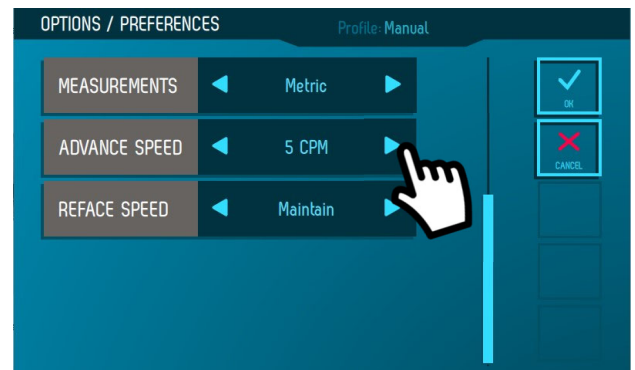
### Preference – Separator

To change the separator, press **OPTIONS** then **PREFERENCES**. From this screen, use the arrows to select the desired separator: *Point* or *Comma*.



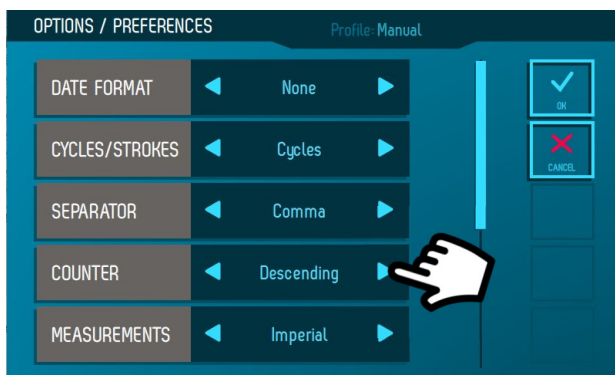
### Preference – Advance Speed

To change the stroke arm speed when advancing manually, press **OPTIONS** then **PREFERENCES**. From this screen, move the slider down then use the arrows to select the desired speed of advancement: *2* or *5 CPM* (cycles per minute).



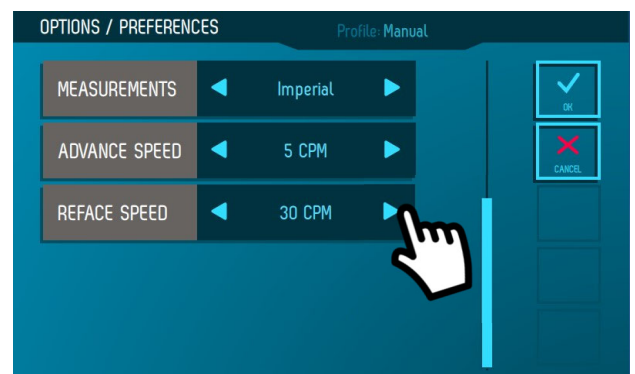
### Preference – Counter

To change how the counter displays, press **OPTIONS** then **PREFERENCES**. From this screen, use the arrows to select: *Ascending* or *Descending*.



### Preference – Reface Speed

To change the reface speed, press **OPTIONS** then **PREFERENCES**. From this screen, move the slider down then use the arrows to select the desired reface speed: *Maintain*, *2*, *15*, *25*, *30*, *40*, *50*, *60*, or *75 cycles per minute (CPM)*. {"Maintain" automatically matches the speed selected for testing.}

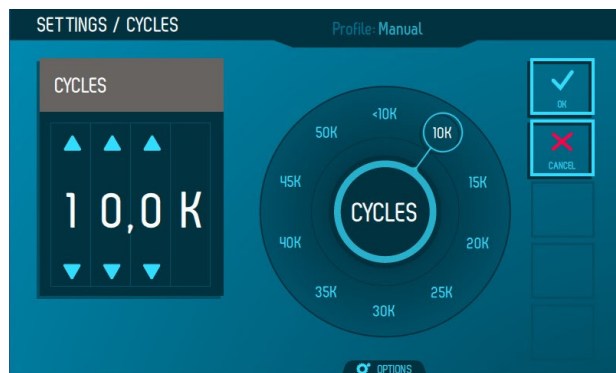
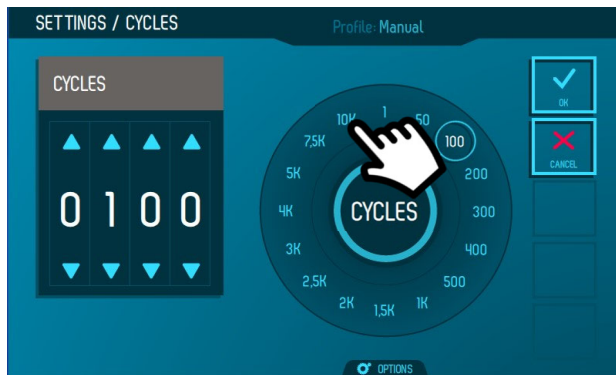


## SETTING TEST PARAMETERS

The Model 5770 Linear Abraser makes it easy to change test parameters. When the instrument is not operating, press the appropriate button and use the dial or arrows to set the value. After making your selection, press OK.

### Test Cycles

The Linear Abraser can be programmed to a maximum of 50K (50,000) test cycles. The total cycle count shown on the display screen defaults to the test duration value that was last selected.



Preset test cycles available include 1, 50, 100, 200, 300, 400, 500, 1K, 1.5K, 2K, 2.5K, 3K, 4K, 5K, 7.5K, or 10K. By selecting 10K, you can access additional options greater than 10K including 15K, 20K, 25K, 30K, 35K, 40K, 45K, and 50K.

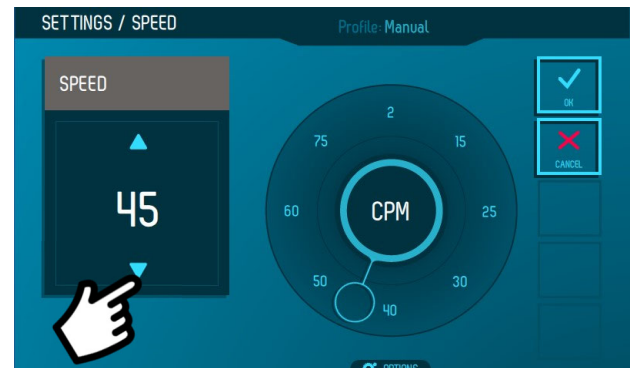
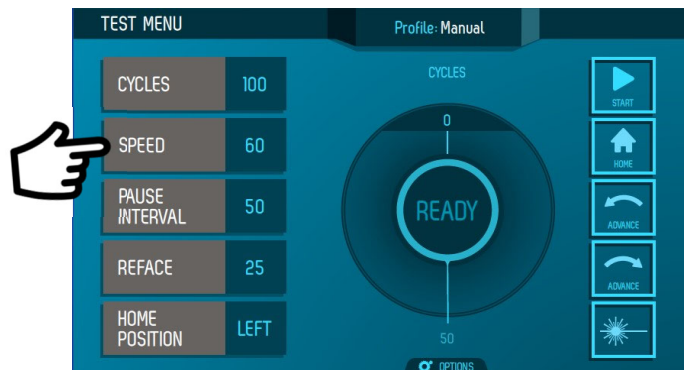
To increase (or decrease) test duration after the original cycles have been entered, the number of cycles (strokes) must be a value greater than the completed cycles. Enter the new value then press OK.

The Linear Abraser will stop automatically at the selected number of test cycles (strokes).

**NOTE:** An abrasion cycle is defined as one complete back and forth movement of the test system.

### Speed

The speed of the Linear Abrasion Tester can be programmed between 2 – 75 CPM (cycles per minute). To change the speed, the Linear Abraser must not be in operation and the status displayed is READY. Use the dial or arrows to set the desired value (preset speeds include 2, 15, 25, 30, 40, 50, 60, and 75 cpm). The tester will store the speed that was last selected in memory and use this as a default until it is changed.



The speed of the Linear Abraser is reported as CPM (cycles per minute), where one cycle is defined as a full revolution of the crank arm (one forward and one backward stroke of the test system). If desired, the Linear Abraser can be set up to count each forward and backward stroke. To do this, see Preferences – Cycles/Strokes (page 8).

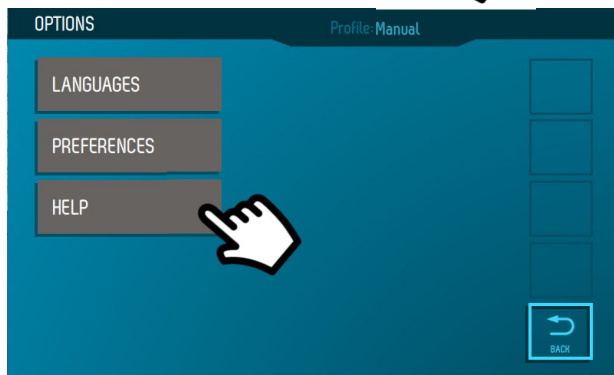
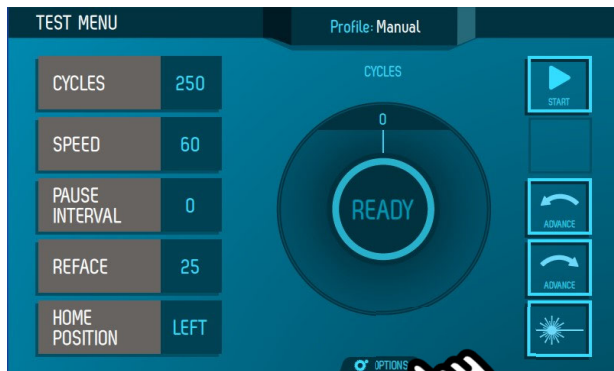
In most instances, it is sufficient to report the speed in CPM. However, in instances where the linear speed may be necessary, the following formulas may be used to derive these values.

$$\text{Max Linear Speed (inches/sec)} = \frac{\text{Stroke Length}}{2} \times \text{Speed}_{\text{CPM}} \times 0.1047$$

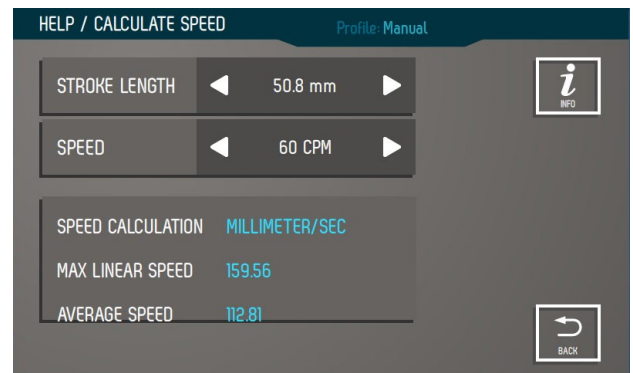
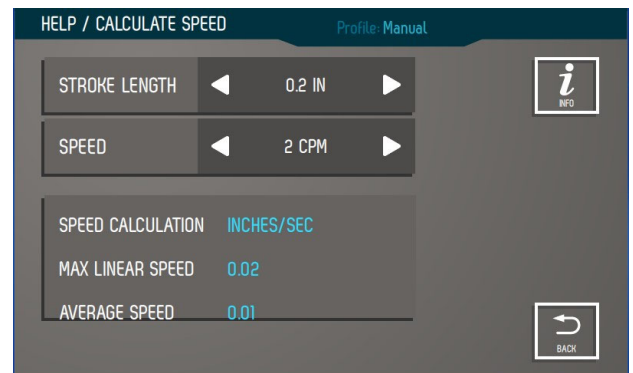
$$\text{Avg Speed} = 0.707 \times \text{Max Linear Speed}$$

Since the speed varies with a sinusoidal profile, the maximum linear speed will occur when the test attachment is in the center of the wear path.

The Model 5770 Linear Abraser includes a speed calculator to help determine the maximum linear speed and average speed for the preset stroke lengths and speed options. To access this function, press OPTIONS then HELP.



Depending on what Measurement preference is selected (Imperial or Metric), the speed will be reported in inches/sec or millimeter/sec.

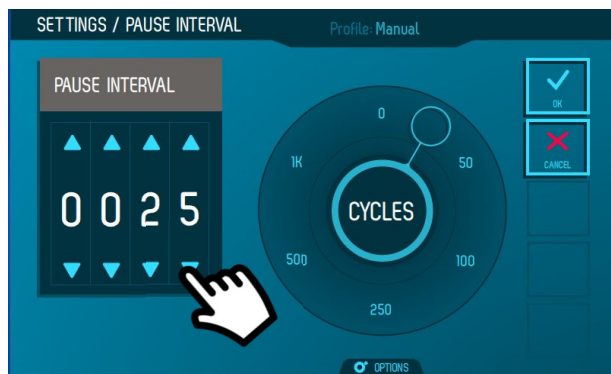
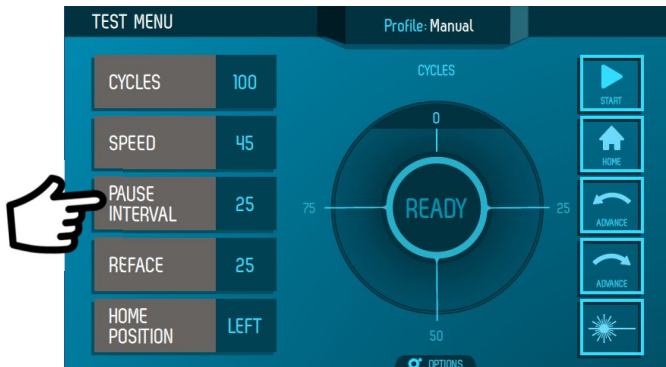


Pressing the INFO button displays the maximum linear velocity of the test system at 30 cycles per minute. Using the formulas, similar charts may be established for other test speeds.

STROKE LENGTH	MAXIMUM VELOCITY	
	inch / sec	mm / sec
0.2' / 5.08mm	0.31	7.87
0.5' / 12.7mm	0.79	20.07
0.61' / 15.49mm	0.96	24.38
0.75' / 19.05mm	1.18	29.97
1' / 25.4mm	1.57	39.88
1.5' / 38.1mm	2.35	59.69
2' / 50.8mm	3.14	79.76
2.5' / 63.5mm	3.93	99.82
3' / 76.2mm	4.71	119.63
3.5' / 88.9mm	5.50	139.70
40' / 101.6mm	6.28	159.51

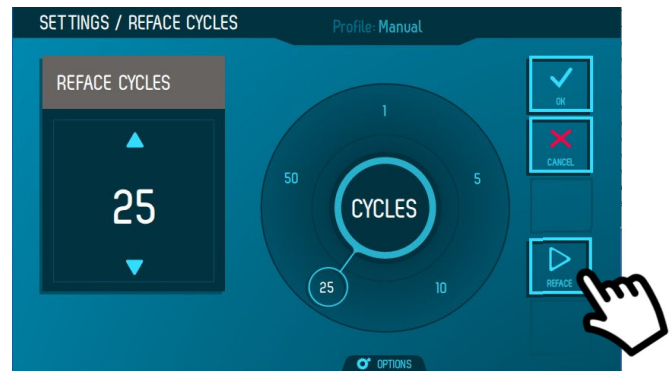
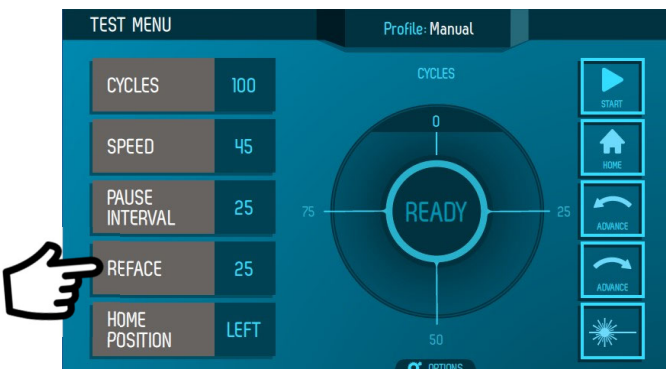
## Pause Interval

The Pause Interval will automatically stop the test at a set interval. An overlay on the screen graphically displays these intervals as a visual indicator. This feature is useful to refresh the abradant or inspect the test specimen or both.



## Reface

Reface allows you to set the number of reface cycles. This screen also displays the REFACE button allowing you to reface the abradant without adding test cycles to the completed (remaining) test cycle count. This convenient feature is ideal for any test that requires the abradant to be refreshed during the test.



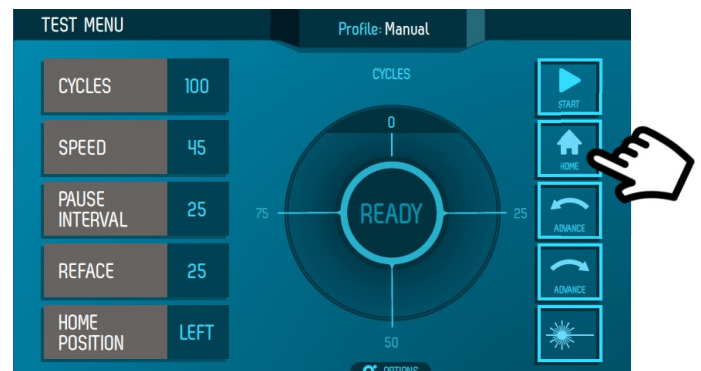
**NOTE:** During testing, the instrument can be paused and the REFACE button pressed to permit the resurfacing of Wearasers. When the refacing cycles are completed, set the mode press CONTINUE to proceed with testing.

**NOTE:** Refacing cycles are not included in the test cycle count.

## Home Position

Home Position allows you to set the location of the test attachment as the desired home position (left or right).

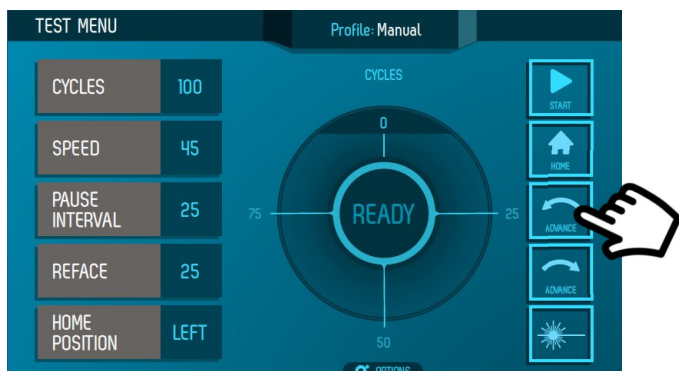
If the HOME button appears on the right hand side of the display, the test attachment is not at its beginning point. Raise the spline shaft, then press the HOME button and the tester will automatically reset its position.





## Advance (Left or Right)

The ADVANCE buttons allow you to manually change the position of the load arm (left or right). Press and hold to advance the load arm to the desired position.



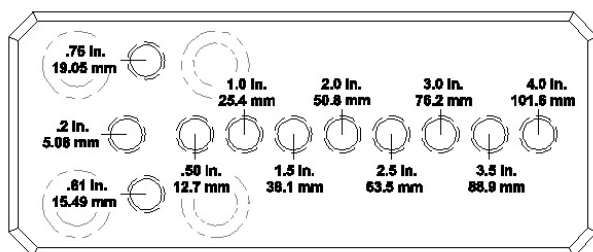
**WARNING:** To prevent damage, ensure the test attachment is secured with the locking mechanism when changing stroke length.

**WARNING:** Ensure the connecting rod is securely fastened to the crank arm while transporting. Damage to the linear bearing can result if connecting rod is loose or disconnected.

**NOTE:** When using stroke lengths 0.61 inch or 0.75 inch, the HOME position will be in the center of the stroke. To reposition the load arm to the end of the stroke, use the ADVANCE button (left or right).

## Setting the Stroke Length

The Linear Abraser has eleven (11) operating stroke lengths that are adjusted manually. For ease of set-up, the reference label under the safety cover indicates the stroke length in both Imperial and Metric units and the corresponding hole in the crank arm.



### STROKE LENGTH

The following instructions describe how to change the stroke length on the Linear Abraser.

1. Secure the collet assembly (test attachment) in the “rest” position using the lock mechanism.
2. Open the safety cover.
3. Unscrew the crank pin from its current stroke length setting by turning it counter-clockwise. DO NOT detach the crank pin from the connecting rod.
4. Lift the connecting rod and crank pin out of the hole and position the crank pin into the desired hole. Tighten by turning the crank pin clockwise.
5. Close the safety cover.

## Base Load / Supplemental Weights

The base load of the abrasion test system is comprised of the weight support, spline shaft, and test attachment (e.g. Wearaser Collet). Without any supplemental weights the base load of the standard test system is **350g ± 1g**.

<i>Spline Shaft, Steel (10mm dia. x 300mm)</i>	180g
<i>Weight Support, for 350g base load</i>	72g
<i>Wearaser Collet Kit, Stainless Steel</i>	98g

The Linear Abraser is supplied with three 250 gram weight discs, which can be used to increase the base load to 1100 grams. Optional auxiliary weights may be added to increase the abrasion test system load to a maximum of 2400 grams. Optional accessories are also available to reduce the base load.



**NOTE:** If no accessory weights are being used, it is possible to remove the weight support to further lighten the test system load.

## WEARASER® SET-UP / REFACING

### Wearaser Set-Up

The following procedure describes the proper procedure for installing a Wearaser into the Wearaser Collet assembly:

1. Using the lock mechanism, secure the Wearaser Collet in the “rest” position.
2. With the Wearaser Collet mounted to the spline shaft, loosen (but **DO NOT** remove) the collet nut by turning it counterclockwise.
3. Insert the Wearaser so that it extends approximately 0.10” from the bottom of the collet. The Wearaser Depth Gage is used to check this measurement.



4. Tighten the collet nut to secure the Wearaser.

**WARNING:** Do not over-tighten the nut or the Wearaser may be permanently deformed or crushed.

### Wearaser Refacing – Resilient Type

The following procedure is recommended for refacing (resurfacing) resilient type Wearasers [such as CS-2, CS-6, CS-8, CS-10F, CS-10, CS-17 or CS-19]. For reproducible test results, it is recommended that you reface the Wearaser prior to each use.

1. Using the lock mechanism, secure the Wearaser Collet in the “rest” position.
2. Set the stroke length to 3.0” and remove all weights from the weight support, so the base load is 350g.
3. Ensure the Wearaser to be refaced is secured and is set to the proper 0.10” distance using the Wearaser Depth Gage.
4. Remove the liner from the back of an S-14 refacing strip and mount the strip directly below the Wearaser, within the refacing path. The Laser Guide can help facilitate this.



5. Release the lock mechanism and gently lower the Wearaser onto the S-14 refacing strip.
6. From the Test Menu screen, press Reface. Confirm the number of reface cycles, then press the REFACE button. Refacing will automatically stop when the cycle count reaches the programmed number of reface cycles (e.g. 5 cycles).
7. When the reface cycles are completed, raise the Wearaser Collet assembly and secure in the “rest” position using the lock mechanism.
8. Gently brush off the Wearaser with the S-12 hand brush. Remove and discard the S-14 refacing strip.

**WARNING:** Failure to reface the abrasant prior to testing may result in debris transfer from a previous test specimen. This may impact your test results.

**NOTE:** To ensure Wearasers are refaced consistently, use a new S-14 refacing strip for each refacing.

**NOTE:** The factory default reface speed is 30 CPM. To change this, see page 8.

**NOTE:** To break-in the Wearaser, you may adhere the S-14 refacing strip directly to a specimen and reface to the actual contour of the part. Prior to testing, remove the refacing strip and ensure that no adhesive is left on the specimen surface.

### Wearaser Refacing – Vitrified Type

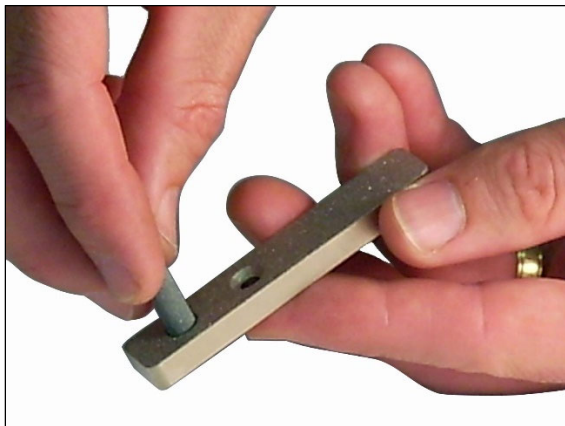
The following procedure is recommended for refacing vitrified type Wearasers [such as H-10, H-18 H-22, or H-38]. For reproducible test results, it is recommended that you reface the Wearaser prior to each use.

1. Using the lock mechanism, secure the Wearaser Collet assembly in the “rest” position.
2. Set the stroke length to 1.0” and remove all weights from the weight support, so the base load is 350g.
3. Ensure the Wearaser to be refaced is secure and




is set to the proper 0.10" distance using the Wearaser depth gage.

4. Position the Depth Gage / Refacing Tool so that it is level to the work area and held firmly in place. Ensure the abrasive diamond coating is below the Wearaser directly within the refacing path.
5. Release the lock mechanism and gently lower the Wearaser onto the Depth Gage / Refacing Tool.
6. From the Test Menu screen, press Reface. Confirm the number of reface cycles, then press the REFACE button. Refacing will automatically stop when the cycle count reaches the programmed number of reface cycles (e.g. 5 cycles).
7. When the reface cycles are completed, raise the Wearaser Collet assembly and secure in the "rest" position using the lock mechanism.
8. Remove the Wearaser from the Wearaser Collet and place the refaced end in the Wearaser Depth Gage / Refacing Tool counter-bored, coated hollow. Using a moderate twisting action, chamfer the edges of the Wearaser - this is normally accomplished with approximately three (3) 'half' turns.



9. Gently brush off the Wearaser with the S-12 hand brush and reinsert into the Wearaser Collet. Use the Wearaser Depth Gage to ensure proper set-up.

 **NOTE:** The Wearaser Depth Gage / Refacing Tool should be replaced when the abrasive diamond coating wears out or after approximately 250 refacings.

---

## SPECIMEN PREPARATION / MOUNTING

---

The Linear Abraser is designed to test a wide range of product shapes and sizes. The benefit of this is that you can test products "off the shelf" without having to carefully prepare a special test coupon.

To produce data that is both meaningful and consistent, use of these guidelines will assist you in developing a test procedure that will yield reproducible test results accurate within the variations of the material itself.

### Specimen Cleaning

Specimens should be cleaned in such a way that the surface is free from grease, fingerprints or other contaminants. Since many different kinds of materials can be tested, a specific cleaning treatment cannot be given. If contact with solvents or cleansers result in changes to the material properties, surfaces might be cleaned with isopropyl alcohol or a soft cloth.


### Specimen Conditioning

Temperature and humidity are known to affect the physical properties of many materials. Prior to testing, it is recommended that specimens be conditioned for at least 24 hours in the test atmosphere. Organic materials should be conditioned for 48 hours. The drying and curing conditions for printing or coating on plastics versus metals can be different and may influence the test results. Cure these specimens under conditions specific to the material. It is recommended that all tests be conducted in the standard laboratory atmosphere of 23°C ± 2°C (73.4°F ± 3.6°F) with 50 ± 5% relative humidity.

### Specimen Mounting Systems

A critical aspect for using the Linear Abraser is determining how to hold the specimen in place during testing. It is up to the end-user to decide on a suitable clamp or fixture device that will sufficiently hold the product to be tested.

Whichever mounting system is used, it is extremely important that the product be held securely. If the product is allowed to move, shift or rock during testing, an inconsistent wear path may develop which will compromise your test results.

 **WARNING:** Caution is necessary to ensure that the mounting method does not deflect the specimen, which may influence the test results.

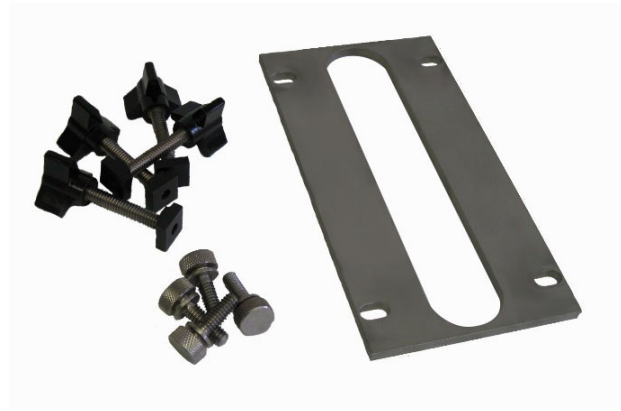
Taber Industries offers the optional T-Slot Universal Table (p/n 136336). This versatile specimen table accommodates most test specimens, and is designed to mount to the side of the model 5770.



Used in conjunction with the T-Slot Universal Table, Taber also offers optional fixtures specific for the type of material you are testing. The Specimen Fixing Plate Kit (p/n 133425) is ideal for flexible specimens. This fixture has an 11mm x 140mm opening and includes an 8mm diameter rod which may be placed under the test specimen enabling you to test a smaller contact area.



The Wide Slot Specimen Holder Kit (p/n 133560) is intended for flat, rigid specimens and offers a 32mm x 140mm opening.



Taber's Wire Support Fixture (p/n 133051) is an anvil type mounting system intended for small diameter wires or cylindrical objects.



### Specimen Positioning

It is recommended that specimens be tested as close to the spline bearing as possible. This reduces the moment arm of the spline shaft, which in turn will minimize the spline shaft's tendency to deflect as the test attachment is being pushed/dragged across the specimen.

The test system of the Linear Abraser is designed to track over non-flat surfaces but care must be taken to ensure the body of the test attachment does not contact the specimen, especially with curved specimens. If the curvature of the specimen is greater than 30°, reduce the stroke length or test another area of the specimen.

**NOTE:** For reproducible test results, it is essential that the specimen be positioned the same way for each test. This may require custom fixtures designed specifically for your product.

## TESTING PROCEDURE

**\*\* This section includes general guidelines on how to conduct your testing to yield meaningful results. It is up to the user to develop and document the test procedure that best applies to the material and yields the best test results.**

Accelerated testing is performed to avoid the months or years required for actual use. It is often the case that materials degrade faster with the more demanding conditions of accelerated testing, so whenever possible test results should be correlated with field observations.

### Selecting Abradant

The choice of which abradant and load combination to use is highly dependent on the material that is being evaluated. A minimum number of cycles should be established before the end point occurs (i.e. 30). Otherwise the abradant and load may be too aggressive. Trial and error is suggested to determine the best abradant / load combination.

Taber Industries offers a variety of standardized abradants for the Linear Abraser made from the same high quality materials used in Genuine Taber abrading wheels.

Abradant materials offered by Taber Industries are available in different configurations. The standard Wearaser collet accepts a ¼" (6.5mm) diameter abradant, which coincides with the size and shape of a pencil eraser. Abradants are also available as a ½"

diameter Jumbo Wearaser or ¾" diameter Weardisc™ (both configurations require optional test attachments). Custom abradants and formulations can also be engineered based on your requirements.



**WARNING:** Because of the slow hardening of the bonding material, resilient Wearasers should not be used after the expiration date marked on the package.

**NOTE:** A new or refreshed abradant should be used for each test. Depending on the material being evaluated, it is possible for the Wearaser to load (become clogged) during the test. Should this occur, the Wearaser should be refaced periodically during testing.

Model #	Abrasive Action	Notes	Standard	Jumbo	Weardisc
H1	Felt	H1 Felt, available Ø 6.5mm or 9mm	135155 or 135155-1		
CS-5	Felt (requires optional Jumbo Wearaser Collet)			132648	
CS-7	Felt (requires optional Jumbo Wearaser Collet)			134013	
Eraser	Resilient	According to MIL-E-12397	133712		
CS-2	No Abrasive (resilient)		134158		
CS-6	Slight (resilient)	Reface with S-14	135796	135973	
CS-8	Mild (resilient)	Reface with S-14	133715	133716	
CS-10F	Moderate (resilient)	Reface with S-14	130684	132075	131433
CS-10	Medium (resilient)	Reface with S-14	130685	132076	131434
CS-17	Harsh (resilient)	Reface with S-14	130686	132077	131435
CS-19	Severe (resilient)	Reface with S-14	134904		
H-38	Medium (vitrified)	Reface with Wearaser Refacing Tool	130683	133588	133589
H-10	Harsh (vitrified)	Reface with Wearaser Refacing Tool	130694	135108	135537
H-18	Severe (vitrified)	Reface with Wearaser Refacing Tool	130681	132078	131400
H-22	Extreme (vitrified)	Reface with Wearaser Refacing Tool	130682	132079	131401

## GENERAL TESTING INSTRUCTIONS

As you start your testing, use of these guidelines should assist you in developing a test procedure that will yield reproducible test results, accurate within the variations of quality inherent in the material itself.

1. Enter the desired number of test cycles (p. 9).
2. Enter the desired speed (p. 9).
3. Press the LASER GUIDE button to determine the location of the abrasion path (p. 6). Secure the specimen so the area to be tested is aligned with the laser guide.
4. Open the safety cover and set the stroke length to the desired distance (p. 12). When finished, close cover. The path of the wearaser should not exceed the size of the specimen.
5. Add the desired amount of weights, if any, to the weight support (p. 12).
6. Ensure that the appropriate Wearaser is properly set up in the collet and has been refaced (p. 13).
7. While holding the spline shaft, release the lock mechanism and gently lower the Wearaser onto the specimen surface (p. 5).
8. Start the test by pressing the START button.
9. When the test is complete, lift the spline shaft and use the lock mechanism to lock the collet assembly in the “rest” position.
10. Remove and evaluate the specimen (p. 18).

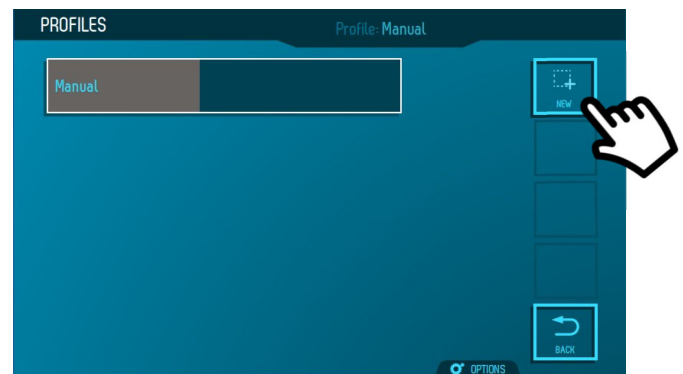
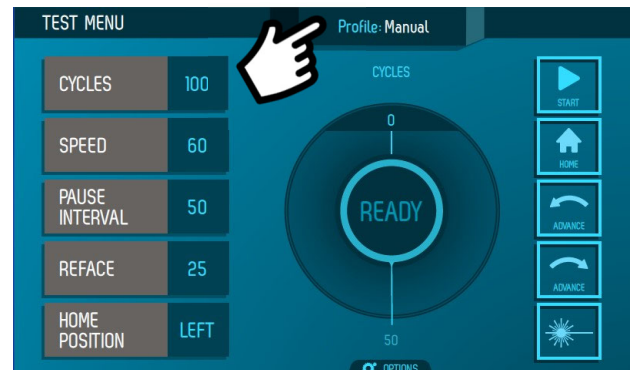
**WARNING:** For heavier loads or high cycle tests, monitor the wear rate of the Wearaser so it does not wear down allowing the collet to contact the surface of the specimen.

**NOTE:** The test will automatically stop when the cycle count reaches the preset number of cycles. For those tests where a visual end-point is required, it is advisable to stop the test periodically to inspect the specimen. The PAUSE INTERVAL setting can be used for this.

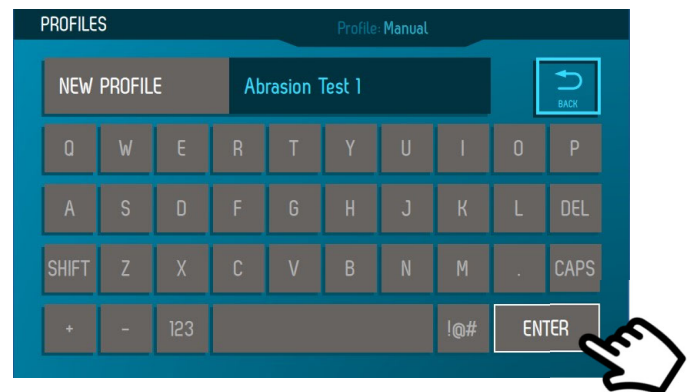
**NOTE:** Periodically, remove any loose abrasive particles or worn material from the test specimen surface by light brushing with the S-12 hand brush.

## Setting up a New Profile

For tests that are regularly run, the model 5770 Linear Abraser offers the ability to save the test parameters. To access this feature, press Profile at the top of the display screen.

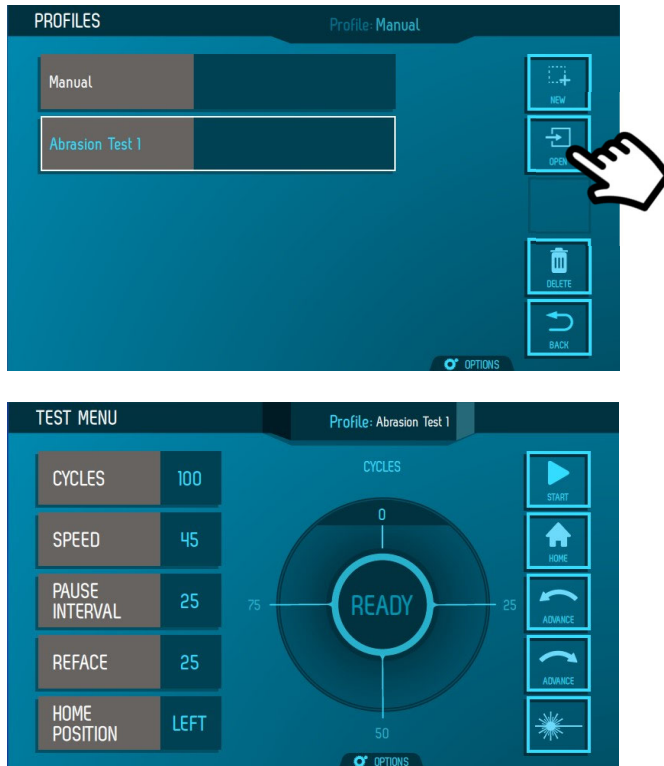


Enter a NEW PROFILE name to identify the test set-up (up to 15 characters). Press ENTER to save and activate the profile.



## Activating an Existing Profile

To select a profile that has already been established, press Profile at the top of the display screen. Select the desired profile, then press OPEN.



---

## ABRASION TEST EVALUATION

---

The two (2) most common methods for evaluating abrasion test results are visual inspection and specimen mass loss.

### Visual Inspection

The visual method is a subjective test that requires examination of the test specimen and test results are typically a written description of the wear. The description should be as thorough as possible to ensure that you capture all of the details necessary to determine the wear mechanism. For example, if your test specimen happens to be a coating or a specimen with printing on it, you may want to check for breakthrough. Breakthrough may be defined as when the surface coating has worn down enough so that the substrate material is visible or when a portion of a printed area has fully worn away. Breakthrough testing can be quantified by recording the number of cycles it took for breakthrough to occur.

Another option is to compare the abraded specimens with a measured abraded standard. A photographic 'ranking' standard can be developed to assist with this type of evaluation.

### Mass Loss

The mass loss test method is a quantifiable method in which you record the weight loss of your test specimen due to abrasion. To perform this method requires access to a precision balance, preferably one that can measure down to the milligram range since some tests may yield very low mass loss. Weigh your test specimen before and after testing to obtain your initial and final mass values. The difference between these two values will be your mass loss.

$$Mass_{loss} = A - B$$

Where,

*A* = mass of test specimen before abrasion, mg

*B* = mass of test specimen after abrasion, mg

When performing this method, loose particulate may adhere to the specimen during testing and handling. It is critical that you clean off the test specimen with the S-12 hand brush or lint-free cloth prior to weighing.



---

## INFLUENCES ON RESULTS

---

For comparable and reproducible tests, it is recommended that all testing be performed under conditions covered by an established test procedure.

The following factors could potentially impact your test results:

- Test methodology
- Test conditions (i.e. temperature and humidity)
- Speed
- Applied load
- Material surface roughness
- Type and thickness of surface treatment
- Method of assessment

When performing scratch or mar testing with the Linear Abraser, recognize that the properties of plastic materials can greatly influence the evaluation of scratch and mar resistance. It is important to be aware of the following factors and take them into consideration:

- Many plastics have elastic recovery upon removal of applied stress.
- Many plastics have visco-elastic properties and the stresses in the plastics may relax during loading.
- Plastics may change structure during material flow, which can also change the mechanical properties of plastics.

The existence of 'chatter' in a scratch path may indicate a non-uniform composition or the presence of surface irregularities. An irregular surface may also cause a scratch tool to 'bounce' on the specimen surface, resulting in additional impact force at landing points and additional damage to the surface.

---

## MAINTENANCE

---

The Model 5770 Linear Abraser is a precision instrument and if used and maintained properly should give you many years of trouble-free service. This section will provide a general guideline in caring for your instrument. Taber recommends annual factory calibration at which time the unit will be thoroughly evaluated.

### General Care

- Lightly brush any debris from the instrument and surrounding work area.
- The bearings and other moving parts DO NOT require lubrication.
- Take caution not to drop accessory weights onto the display screen.
- DO NOT spill any liquids onto or into the Linear Abraser or onto any of the bearing assemblies. Wipe off all spills immediately.

### Battery Replacement

To replace the batteries (not included), open the battery compartment cover found on the rear of the instrument. Install two new AAA batteries in the battery compartment.





## Fuse Replacement

The fuse holder is encapsulated in orange plastic and located behind the rocker switch. There are 2 notches on the bottom side of the orange ring which are used to remove the fuse holder. Place the tip of a small flat head screwdriver in the left notch as shown below (if the screwdriver is too large, it can be rotated 90 degrees and inserted into the right notch). Gently push the screwdriver toward the bottom of the machine until the fuse holder disengages. Remove the fuse holder and replace the blown fuse(s) with a new T5A, 5 x 20mm fuse (p/n 128561). Reinsert the fuse holder.



**WARNING:** Before replacing fuses, ensure the power switch is toggled to the OFF position.

## Spline Shaft Bearing

If wear debris or abrasive particulate adheres to the spline shaft, wipe it with a clean, lint free cloth.

The spline shaft should move freely with no rough motion, binding, or sticking. To check this, move the spline shaft up and down through its full range of motion. If the spline shaft motion is not smooth, clean the spline shaft with a mild cleaning solvent then wipe with a soft cloth. When necessary, one or two drops of a light weight machine oil may be applied to the spline shaft and worked into the bearings to help clean any contaminate from the bearings.

## Carriage Rail Assembly

The carriage rail assembly is a robust component that should not require servicing. In the event this component needs to be replaced, a replacement carriage rail kit is available (p/n 136157).

## Wearaser Collet Insert Replacement

In the event the plastic collet insert becomes worn or damaged, a replacement is available (p/n 130553).

1. Remove the collet assembly from the spline shaft.
2. Loosen and remove the collet nut.
3. Remove and discard the plastic collet insert.
4. Install the new plastic collet insert into the collet assembly body.
5. Install, and tighten the collet nut.
6. Re-install the collet on the spline shaft.



## Laser Guide Alignment

The Laser Guide is aligned at the factory and should not require additional adjustment. If the alignment is off to the left or right, a set screw adjustment can be found adjacent to the laser guide. With the Laser Guide turned on, use a 5/64" hex L-key to make small incremental adjustments until the laser is aligned with the center of the Spline Shaft.

*Clockwise = LEFT*

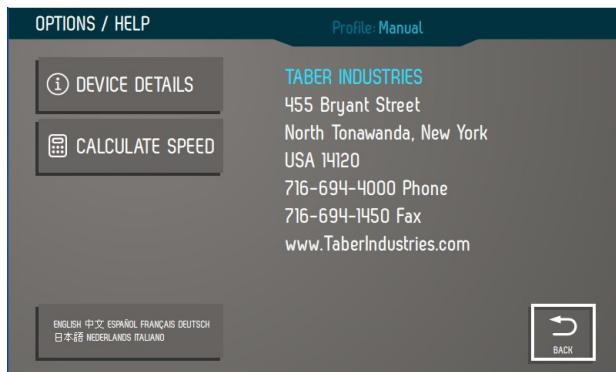
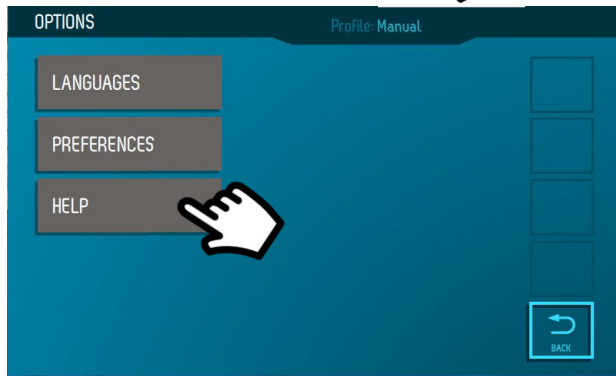
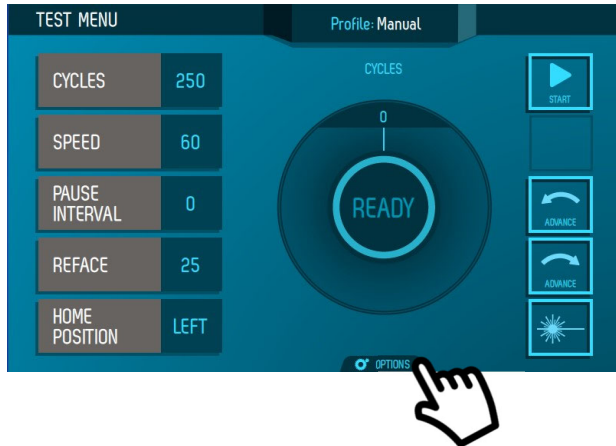
*Counterclockwise = RIGHT*



In the event the laser is not perpendicular, internal components must be accessed and the instrument should be returned to Taber Industries.

## HELP

The HELP button provides information on the device details, including serial number and software version. It also provides details to contact Taber Industries. To access this information, press the OPTIONS button at the bottom of the home screen.



## CALIBRATION / FACTORY SERVICE

Should your Model 5770 Linear Abraser require repair or adjustment, carefully pack the instrument in the original packaging or in a rugged container with adequate cushioning material. After obtaining a return authorization number from the factory, the unit should be shipped, transportation charges prepaid, to Taber Industries.

**TABER® Industries**  
**455 Bryant Street**  
**North Tonawanda, New York 14120**  
**USA**

Phone: 716.694.4000

Fax: 716.694.1450

E-mail: [sales@taberindustries.com](mailto:sales@taberindustries.com)

WebSite: [www.TaberIndustries.com](http://www.TaberIndustries.com)

[www.OrderTaber.com](http://www.OrderTaber.com)

## Model 5770 – Replacement Parts

Part#	Description
130855	Spline Kit – 10mm diam. x 300mm, steel
130553	Wearaser Collet Plastic Chuck
128561	T5A 5 x 20mm Fuse (2 required)
136157	Carriage Rail Replacement Kit
130695	Wearaser Depth Gage / Refacing Tool
130687	S-14 Refacing Strips (pkg. 50)
136043	S-14 Refacing Strips (pkg. 250)
121103	S-12 Hand Brush

# TABER® Linear Abraser

## Optional Accessories & Set-Up Options



The following chart provides a sample listing of available Linear Abraser attachments & accessories, and is provided to assist in establishing a specific test load <sup>1</sup>. To calculate the total load, sum the combined weights of the system:

<b>TOTAL LOAD = Spline Shaft + Weight Support (optional) + Auxiliary Weight Disc(s) (optional) + Attachment</b>
---

Spline Shaft			Wear & Abrasion Attachments			Scratch / Mar Attachments		
*130855	Spline Kit, steel Ø 10mm x 300mm	180g	*130852	Wearaser Collet Kit stainless steel	98g	133566	90° Multi-Mar Scratch, w/ loop stylus	100g
132190	Spline Kit, aluminum Ø 10mm x 300mm	85g	131852	Wearaser Collet Kit aluminum	28g	133136	45° Multi-Mar Scratch, w/ loop stylus	95g
132280	Spline Kit, aluminum Ø 10mm x 150mm	41g	131852-1	Wearaser Collet Kit plastic	16g	135025	Needle Stylus, Ø 1.5mm tip (for Multi-Mar Scratch)	--
<b>Weight Support</b>			131862	Jumbo Wearaser Collet Kit	43g	133139	Hoffman Stylus (for Multi-Mar Scratch)	--
*133554	Weight Support, for steel spline shaft 350g base load	72g	130572	Universal Attachment Ø 25.4mm, stainless steel	98g	133178	Copper Coin (for Multi-Mar Scratch)	--
133556	Weight Support, for alumi- num shaft 350g base load	167g	135430	Universal Attachment Ø 50.8mm, aluminum	98g	135447 135447-1	Stainless Steel Coin (for Multi-Mar Scratch)	--
<b>Auxiliary Weight Discs</b>			132735	Precision Knuckle Attachment	135g	133553	Conical Scratch Tip, 60° Ø 0.10mm, tungsten carbide	9g
132716	Auxiliary Weight Disc, 10g	10g	130570	Crockmeter Kit Ø 16mm	166g	133555	Conical Scratch Tip, 60° Ø 0.25mm, tungsten carbide	9g
136306	Auxiliary Weight Disc, 15g	15g	134571	Crock Block Kit w/holder 19mm x 25.4mm	166g	135167	Conical Scratch Tip, 60° Ø 0.30mm, tungsten carbide	9g
132717	Auxiliary Weight Disc, 20g	20g	132700	Square Crock Finger requires Crockmeter Kit	28g	133557	Conical Scratch Tip, 60° Ø 0.40mm, tungsten carbide	10g
131548	Auxiliary Weight Disc, 50g	50g	134550	Rectangular Crock Block 40mm x 85mm	170g	133559	Conical Scratch Tip, 60° Ø 0.50mm, tungsten carbide	10g
131611	Auxiliary Weight Disc, 75g	75g	134298	Special Crock Attachment stainless steel; R10mm	125g	135166	Conical Scratch Tip, 60° Ø 0.60mm, tungsten carbide	10g
131612	Auxiliary Weight Disc, 100g	100g	135681	Rubbing Adapter C requires Crockmeter Kit	172g	135243	Conical Scratch Tip, 60° Ø 0.75mm, tungsten carbide	10g
135174	Auxiliary Weight Disc, 110g	110g	134656	10mm Padded Square Finger Attachment	27g	134622	Conical Scratch Tip, 60° Ø 1.0mm, tungsten carbide	10g
131373	Auxiliary Weight Disc, 150g	150g	134658	20mm Padded Square Finger Attachment	39g	135193	Hemisphere Scratch Tip, 60° Ø 1mm, steel (HRC 60-66)	10g
*130285	Auxiliary Weight Disc, 250g	250g	134985	Steel Wool Holder Kit	23g	132347	Hemisphere Scratch Tip, 60° Ø 1mm, tungsten carbide	10g
134218-1	Auxiliary Weight, 1000g	1000g	133432	ScotchBrite™ Abrasive Pad Kit	58g	135627	Hemisphere Mar Tip, 60° Ø 3mm, tungsten carbide	11g
134218-2	Auxiliary Weight, 2000g	2000g	133450	Brass Brush Holder Attachment Kit	79g	132348	Hemisphere Mar Tip, 75° Ø 7mm, tungsten carbide	12g
132740	Precision Weight Kit, (mounts to spline shaft)	Min. 7g	133423	Test Wedge Kit, Includes SiC 320 sandpaper	180g	134672	Hemisphere Mar Tip, 75° Ø 15mm, tungsten carbide	59g
132710	Precision Weight Post, (mounts to weight holder)	Min. 35g	134380	Wire Scrape Attachment Kit Ø 1mm rod	81g	130575	Scratch Kit, Stainless Steel w/ Conical Diamond Tools	98g
<b>Accessories</b>			134495	Wire Scrape Attachment Kit Ø 0.025 in. rod	81g	131604	Scratch Kit, Aluminum w/ Conical Diamond Tools	33g
131877	Multi-Head Attachment, with aluminum spline shaft	--	134887	Wire/Cable Scrape Abrasion Kit	63g	132892 132910	Diamond Tool Holder, w/ 90° Conical Diamond Tool	9g
131877-1	Multi-Head Attachment, with steel spline shaft	--	134583	Flexible Material Abrasion Kit	17g	134981	Diamond Tool Holder, w/ 60° Conical Diamond Tool	9g
						133475	Scraper, 5mm	37g
						133476	Scraper, 10mm	46g
						131716 (-1;-2;-3)	Coin Holder Kit, 45°; 60°; or 75°	40g
						133453	Pencil Hardness Scratch Kit includes weight of pencil	34g

\* = Standard Equipment

**NOTES:**

- a) The standard load is 350g (includes mass of spline shaft; weight support; and steel wearaser collet kit).
- b) If no accessory weight discs are required, it is possible to reduce the load by removing the weight support.
- c) Recommended **MAXIMUM** loads:
  - Spline Kit, steel (130855): 2400 grams
  - Spline Kit, aluminum (132190): 2100 grams
  - Spline Kit, aluminum (132280): 2100 grams
- e) T-Slot Universal Table (133336) is strongly recommended.

<sup>1</sup> Mass of attachments are for information purposes only, and do not include tolerances