

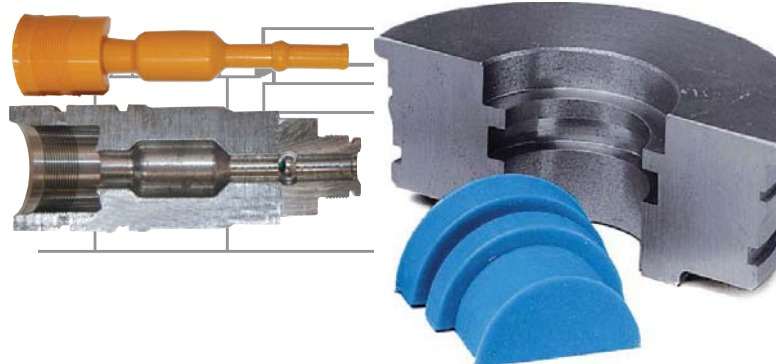
FLEXBAR®

Unique Products • Innovative Solutions



www.flexbar.com

Catalog 212





Innovation, Quality and Service... Since 1965



For almost fifty years we at Flexbar have led the way in offering unique and innovative products. With this new Catalog 212, we are proud to continue to offer an expanding array of more sophisticated products in the areas of metrology, inspection, and machine tool accessories. Our products range from our world famous metrology grade replica and casting materials, Facsimile® and Reprorubber®, precision gages and testers, industrial borescopes, and optical and video inspection/measurement systems.

The vast majority of products contained within our catalog are designed and manufactured by Flexbar or are Quality Manufactured in the U.S.A. In addition, we are proud to represent some of the world's finest manufacturers of precision industrial products.

Above and beyond our extensive product offering, we at Flexbar are committed to working with you, the customer, in providing innovative solutions to your special applications and requirements.

Throughout the U.S. and abroad, our network of trained industrial distributors stand ready to handle sales and service for the complete line of Flexbar products.

Thank You for putting your trust in all of us at Flexbar.

Visit our Website at:

www.flexbar.com

to view the latest products, application information, and more.

Or Call Us Toll-Free at:

1-800-879-7575

to speak with a product specialist ready to help you!



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CATALOG 212 QUICK GUIDE

*Unique
Products
Innovative
Solutions!*



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PRODUCTS FEATURED IN CATALOG 212

FLEXBAR HIGH ACCURACY REPLICA, PROOFING & MOLDING MATERIALS



facsimile



Fine Proofing and Fixturing Alloy

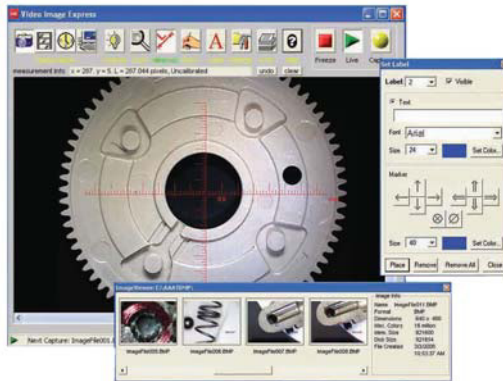


Machinable Wax

FLEXBAR VIDEO INSPECTION & MEASUREMENT SYSTEMS



Optiflex & Ultra-Flex Granite "Z" Inspection/Measurement Systems



Video Image Express™



Flexbar Macro-Zoom Systems

INSPECTION MICROSCOPES, BORESCOPIES, VIDEO BORESCOPES & ACCESSORIES



PRODUCTS FEATURED IN CATALOG 212

STATE-OF-THE-ART TESTING PRODUCTS & METROLOGY ACCESSORIES



HIGH PRECISION DIMENSIONAL GAGES



Flexbar Mobile Collect Wireless Measurement System

MACHINE TOOL ACCESSORIES/MACHINE SAFETY



Machine Safety Guard System



Protection with Productivity



QUICK REPLICAS!

ZERO SHRINKAGE!

METROLOGY CASTING MATERIAL

Exotic Metrology-Grade Rubber—Self-Curing in Minutes
Virtually Perfect Replica Casting of Internal and External Forms
Non-Toxic—Easy To Use—100 Times Faster Than RTV Silicones
No Release Agent is Ever Needed.
Excellent For Checking Parts With Optical Comparators!

NOW SUPPLIED IN THREE VISCOSITIES:

Ia. Original Reprorubber Thin Pour



Final Color - LIGHT GREEN

For internal-shape applications where a thin pour will completely fill the cavity without voids. A complete replica casting is quickly formed.

- Manipulation time is approximately 2 minutes and cure time is approximately 10 minutes.
- Start to finish: 15-20 minutes.
- Kits include graduated mixing cups, wooden spatulas and instructions.

Trial Size Kit:

Order No. 16116 - Thin Pour 130ml Trial Kit

Standard Size Kits:

Order No. 16135 - Thin Pour 380ml Kit

Order No. 16137 - Case of 10 380ml Kits

Ib. New Reprorubber Thin Pour Prefilled Cartridges



Final Color - LIGHT GREEN

Same viscosity and durometer as Original Reprorubber Thin Pour. Disposable prefilled dual barrel 50 ml cartridges can quickly mix and dispense casting material utilizing the REPRO-MIX II Gun System.

For internal-shape applications where a thin pour will completely fill the cavity without voids. A complete replica casting is quickly formed.

- Cure time is approximately 10 minutes.
- Start to finish: 10-15 minutes.

Available in Complete System Kits & Refill Packs. See Pages 6-7 for more information and ordering.



II. New Reprorubber Orange - Medium Body



Final Color - ORANGE

New Medium Body (Medium Viscosity - Medium Durometer) casting material ideal for both internal and external applications. Disposable prefilled dual barrel 50ml cartridges can quickly dispense casting material utilizing the REPRO-MIX II Gun System.

- Cure time is 5-6 minutes.
- Start to finish: 6-8 minutes.

Available in Complete System Kits & Refill Packs. See Pages 6-7 for more information and ordering.





CLONE ANY PART QUICKLY WITH



Made in U.S.A.

III. Original Reprotubber Quick Setting Putty

Final Color - LIGHT BLUE

Roll two equal-sized balls of catalyst putty and base putty and simply knead them together like dough. Excellent for external shapes. Simply spread over master pushing down with fingers and wait for cure 8-10 minutes. You have 3 or 4 minutes of manipulation time. Therefore 14 minutes start to finish. You can also cast internal shapes and cavities but some pressure should be applied such as a weighted object on top.

Trial Size Kit

Order No. 16129 - 220ml Trial Quick Setting Putty Kit

Other Kits:

Order No. 16130 - 1³/₄ lb. (520ml) Introductory Kit

Order No. 16131 - 7 lb. (2150ml) Economy Kit



PHYSICAL PROPERTIES AND APPLICATIONS

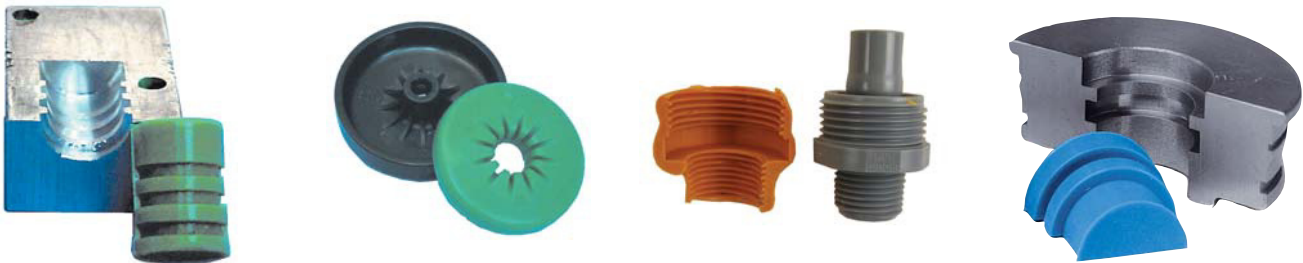
	REPRORUBBER THIN POUR	REPRORUBBER MEDIUM BODY ORANGE	REPRORUBBER QUICK SETTING PUTTY
Mix Time (Stirring in a cup)	30 - 45 seconds	45 - 60 seconds	30 - 45 seconds
Working Time (Manipulation Time)	2 minutes	N/A	2 minutes (from beginning of mix)
Setting Time (at room temperature)	10 - 15 minutes	5-6 minutes	6 minutes
Permanent Deformation	0.2%	0.3%	0.3%
Dimensional Stability	less than 0.50%	less than 0.40%	less than -0.25%
Tear Strength	44 pounds per sq. inch	300psi	105 pounds per sq. inch
Elongation	60% at break	70% at break	6.3% at break
Durometer (Shore A-2)	30 (at 15 minutes)	40 (at 10 minutes)	50 (at 7 minutes)
Temperature Stability	1 week @ 23°C (72°F)	1 week @ 23°C (72°F)	1 week @ 23°C (72°F)
Detail Reproduction	EXCELLENT	EXCELLENT	EXCELLENT

APPLICATIONS:

- ALL METALS
- ALL PLASTICS
- NON METALS
- RUBBER
- PAPER OR CARDBOARD ITEMS
- CERAMIC AND GLASS ITEMS
- WOOD, MARBLE, ETC.

Other Uses Include:

- Prototypes of rubber type components such as gaskets, washers, etc.
- Making joints where flexibility is required.
- As a mask for high temperature plasma spray of metallic coatings.
- Fixturing where semi-rigid structure is desired.



PHYSICAL ADVANTAGES OVER THE HARD-COPY REPLICAS

- Replica is easy to remove - even if there are under cuts or grooves.
- Cross-sectioning of replica is easily accomplished with a knife or razor.
- It can then be checked on an optical comparator or microscope.
- Surface finish replication is exact with excellent optical properties.
- Reprotubber copies can be recopied (copy from a "female mould" yields a male-shaped replica). See page 9 —EPOXY PARFILM ULTRA.
- Replicas are permanent - will not leach or ooze out nor outgas.
- NO MORE 16 HOUR CURE TIME AS WITH RTV SILICONES
- MORE ACCURATE THAN ALL OTHER RTV COMPOUNDS
- REPRORUBBER PUTTY will withstand up to 600°F (or more).

METROLOGY-GRADE SELF-CURING CASTING FORMULA

Now Available In Easy-To-Use, Prefilled Quick Dispense Cartridges

Supplied in Two Viscosities:

- I. The Original Reprorubber Thin Pour (Green) ideal for internal-shape applications.
- II. The New Reprorubber Orange, Medium Body, Multi-Use Formula for internal & external applications.



Shown Above: Quick Dispense internal casting (left) and external casting (right) using the new Flexbar Repru-Mix II Dispensing Gun System.

Now Available for Use with Reprorubber® Prefilled Cartridges:
REPRO-MIX II DISPENSING GUN SYSTEM & KITS*

A Mixing and Dispensing System that Enables You to Make Quick and Accurate Reprorubber Replicas...Without Manual Mixing and Fuss!

Helix-design mixer guarantees complete mixing of base and catalyst.

Prefilled 50ml Dual Barrel Cartridges 1:1 Ratio



Orange (Medium Body)

Thin Pour (Green)



Reusable, Rugged REPRO-MIX II GUN

Snap-on Micro Inject Nozzle (optional) for small holes and cavities

Low cost, disposable mixing nozzle tips allow multiple applications



* Please note, Repru-Mix II System Components are not interchangeable with original Repru-Mix Dispensing Gun System.



QUICK DISPENSE CARTRIDGE SYSTEM KITS

Repro-rubber Quick Dispense Cartridge System Kits contain everything you need to easily create Highly Accurate, Zero Shrinkage replicas. Each kit includes 1 each Repro-Mix II Reusable Dispensing Gun, 6 each 50ml Prefilled Repro-rubber Disposable Cartridges, 15 Disposable Mixing Nozzles, 2 Micro Injector Snap-On Nozzles, and a Deluxe Fitted Carrying Case.



Kit No. 16300, Repro-rubber Thin Pour (Green)



Kit No. 16305, Repro-rubber Orange



Kit No. 16309, Repro-rubber Combo Thin Pour & Orange

ORDERING COMPLETE KITS:

No. 16300, Repro-rubber Thin Pour (Green) Quick Dispense Cartridge System Kit Complete.

No. 16305, Repro-rubber Orange (Medium Body) Quick Dispense Cartridge System Kit Complete.

No. 16309, Repro-rubber Combo Kit Quick Dispense Cartridge System Kit, Includes 3 each Thin Pour & 3 each Orange.

SYSTEM REFILLS:

No. 16301, Repro-rubber Thin Pour (Green) 50ml Cartridge, 1 each.

No. 16302, Repro-rubber Thin Pour (Green) 50ml Cartridges, 6 pack.

No. 16306, Repro-rubber Orange (Medium Body) 50ml Cartridge, 1 each.

No. 16307, Repro-rubber Orange (Medium Body) 50ml Cartridges, 6 pack.

No. 16311, Repro-Mix II Dispensing Gun (reusable).

No. 16313, Repro-Mix II Helix Mixing Nozzles, 15 Pack.

No. 16316, Repro-Mix II Helix Mixing Nozzles, 100 Pack.

No. 16315, Quick Dispense Cartridge System Fitted Case (without contents).

No. 16314, Micro Injector Snap-On Nozzle, Pack of 15.





CLONE ANY PART QUICKLY WITH

Made in U.S.A.



facsimile[®] QUICK-SETTING COMPOUND

MAKES ACCURATE HARD PLASTIC REPRODUCTIONS IN 6 TO 8 MINUTES

facsimile is a special plastic compound kit which is used for duplicating surface flats, roughness and for dimensional transfer of inaccessible locations. Many other applications are listed below and many more in our free 16 page applications booklet.

- Make duplicates for measuring, such as gages, etc.
- Test surface geometry, flatness, microfinish, etc.
- Make permanent records of surface geometry, etc.
- Make custom holding and nesting fixtures.
- Make quick jigs.
- Make excellent stylus patterns.
- Make instant molds and patterns.

- Cast small run parts and prototypes.
- Mask, fill in and seal.
- Fretting depth of blade dovetails in jet engines.
- Make potting, bonding and repairing easy.
- Closer inspection can be performed by allowing the casting to cure in a pressure vessel (15 p.s.i.).
- *facsimile* will not affect the surface of ferrous or non-ferrous materials to which it is applied.
- When casting in a "CONFINED" area, it is better to cast 1/2 of the internal shape.
- Remember—when casting without releasing agent, an ACETONE soak removes *facsimile*.

AVAILABLE IN LARGER "ECONOMY" KITS

TECHNICAL DATA

A test submitted by E.I. Dupont DeNemour & Company to an independent test lab showed the following properties of *facsimile*:

TEST PIECE APPROXIMATELY 1" BY 1/4" THICKNESS...

COMPRESSION TEST...Maximum load 6,800 lbs. Compression strength 9,650 PSI.

MECHANICAL PROPERTIES...Ultimate tensile 3,415 PSI.

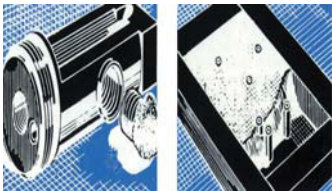
WATER ABSORPTION...(24 hours at 73°) 0.31% by weight.

The kit contains all material and instructions. The *facsimile* can be diluted from a putty consistency to a watery to best suit your job needs. If larger quantities of *facsimile* are desired they can be ordered in 3 lb. and 25 lb. kits at proportionately lower prices per pound.

facsimile is Made in U.S.A.

APPLICATIONS AND TECHNICAL INFORMATION

SOME OF FACSIMILE'S MANY USES:



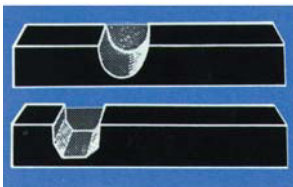
USE #1: To create a master or checking gage, just pour in facsimile and wait 6 to 8 minutes. Parts later can be conventionally ground, machined, etc., if desired. Drawing above shows creation of a thread gage.



USE #2: Shown above is a quick and inexpensive method of creating a drill fixture. Just pour facsimile around drill bushings and wait 6 to 8 minutes. Casting must be a thick section 3/8" or more. USE MAGNETS TO HOLD PLATES.



USE #3: Without removing work from the machine set-up you can create a "facsimile" test sample which can be carried away for testing. Duplicates from 3 to 1,000 Microinches perfectly.



USE #4: Used for checking radii and angular internal and external recesses, often in difficult to measure areas.



USE #5: Optical projections of forms made with "facsimile" are duplicates within millionths!



USE #6: Highly accurate and reliable casted replicas of internal thread forms are not only possible but they are being performed daily by facsimile users the world over.

facsimile is 100% Government approved for ANTI-CONTAMINATION and all ATOMIC and NUCLEAR APPLICATIONS by virtue of not containing (even traces of): All Halogens—Mercury—Sulphur—Lead—Copper—Brass—Phosphorous—Zinc—Arsenic—Antimony—Aluminum—Cadmium—Tin—Bismuth—Boron or any compounds thereof. CERTIFICATES WILL BE PROVIDED.

FLEXBAR[®] facsimile[®] QUICK-SETTING COMPOUND

Made in U.S.A.

ORDERING INFORMATION:

INTRODUCTORY KIT One Lb. Kit No. 16000

- Complete Kit Contains:
- FACSIMILE POWDER, 1 lb. Tray
 - 1 - 120cc FACSIMILE liquid
 - 1 - 60cc Flexbar Release Agent
 - 1 - Powder scoop
 - 1 - Molding clay
 - 10 - Disposable cups (graduated)
 - 10 - Wooden spatulas
 - 1 - 1 oz. polypropylene measuring cup



Introductory Kit - 1 lb kit No. 16000



Free 16 page applications book available on request.
CATALOG F-206

COMPLETE KITS*

- 16000** 1 lb. Kit FACSIMILE
- 16003** 3 lb. Kit FACSIMILE*
- 16025** 25 lb. Kit FACSIMILE

#16000, one pound kit yields 20 cubic inches of solid (cured) material.
#16003, three pound kit yields 62 cubic inches of solid (cured) material.
#16025, twenty five pound kit yields 518 cubic inches of solid (cured) material.

REFILLS FOR FACSIMILE KITS

Order No.

- | | |
|--|---|
| <ul style="list-style-type: none"> 16200 60cc Release Agent, soap based 16201 Pint Release Agent, soap based 16202 1 lb. Jar Facsimile Powder 16203 3 lb. Jar Facsimile Powder 16204 25 lb. Drum Facsimile Powder 16205 120cc Bottle Facsimile Liquid 16206 Pint Can Facsimile Liquid 16207 Quart Can Facsimile Liquid | <ul style="list-style-type: none"> 16208 Gallon Can Facsimile Liquid 16209 100 ea. 3 oz. Paper Cups Graduated 16210 100 ea. 1 oz. Plastic Cups Graduated 16211 25 ea. 6-1/2 oz. Plastic Cups Graduated 16212 100 ea. Sticks, Mixing, Narrow 16213 1 lb. Bar Molding Clay 16214 100 ea. Sticks, Mixing, Wide 16914 60cc Release Agent, oil based 16915 Pint Release Agent, oil based |
|--|---|

For Air Shipments, EXTRA CHARGE for D.O.T. Approved.
Containers and Overpacking for Facsimile Liquid only.

NEW—SUPER RELEASE AGENT

EPOXY PARFILM ULTRA

**A NEW and Highly Effective Release Agent
for users of Facsimile "measure image".
NON-CFC, NON-VOC Formula.**

Epoxy ParFilm is the culmination of a search for a suitable release agent for epoxies.

Epoxy ParFilm offers better release than polyvinyl alcohol and wax with a much thinner film application.

The highly effective, very thin film obtainable from Epoxy ParFilm Release is non-melting and will not carbonize. This makes it suitable for use with exothermic cures, such as Facsimile "measure-image" replication compound.

Epoxy ParFilm can be applied quickly with the easily operated directional valve which is standard.

Epoxy ParFilm is non-combustible, non-toxic and non-allergenic. Contains NO CHLORINATED SOLVENTS.



Order No. 16136, Epoxy ParFilm, 18 ounce spray

Important Notice to Users of REPRORUBBER by Flexbar:

SEPARATION OF REPRORUBBER NOW POSSIBLE WHEN CASTING REPRORUBBER FROM REPRORUBBER.

For Reprorubber[®] Thin Pour and Facsimile[®] Users

MONOJECT PRECISION DISPENSING SYRINGES



.060" dia. curved tip for injecting Reprorubber or Facsimile into small holes. Tip can be cut to allow greater flow.

Provides User With An Easy Method Of Injecting Pre-Mixed Reprorubber or Facsimile Into Small Holes, Grooves or Small Spaces.

10cc capacity syringes are easily filled and disposable once used. Sold in low cost packages of 10 each.

Model No. 16190, Monoject 10cc Syringe Pac (10 each)



Made in U.S.A.

FLEXBAR FINE PROOFING ALLOY

No. 16117 - Reusable Low-Melting Alloy (finest grade).

KEYNOTE OF APPLICATIONS

Growth after casting is +.0002" after 6 minutes. However, after 30 minutes the change is .0000 (zero), so that this is the best time for removal and inspection. After 1 hour and up to 21 days, the change is between .0001" and .0002" on the minus side.

USES: PROOFING VIA REPLICATION OF:

Dies—Moulds—Internal and External Thread Forms—Texture Check—Grooves—Slots—O-Ring Grooves—Gear Teeth—Splines—Surface Finish Replication—Extra-Fine Fixturing—Checking Undercuts

OTHER USES:

1. Precision holding of irregular work pieces during machining.
2. Dental-type model making.
3. Drill bushings for drill jigs.
4. Chucks for lens buffing—gem cutting.
5. Transfer templates in contour jigs.
6. Cores for electroforming.
7. Compound wax patterns—lost wax patterns.
8. Duplicating plastic. Facsimile or Plaster patterns.
9. Fusible elements in safety devices and alarms.
10. X-Ray (radio opaquing).



GOING:

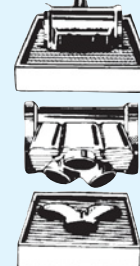
Male to Female to Male or
Female to Male to Female

Flexbar No. 16117 Fine Proofing Alloy can be used for both in conjunction with our Facsimile Measure-Image Replicating Material.

Steps: Make your first impression with No. 16117 alloy and let it cool down or accelerate cool down with water. Put oil or Release Agent on alloy replica. Dam off where necessary with plasticene or clay and mix Facsimile and pour into alloy replica.

Note: In some cases the configuration might call for reversing the procedure by taking first replica with "Facsimile" and then pouring No. 16117 alloy into Facsimile cavity. Obviously the configuration of the original would dictate which way to go.

Accordingly—you can clone or reproduce original parts for prototypes-small production runs, etc.



PHYSICAL PROPERTIES No. 16117

Melting Temperature or Range °F	Latent Heat of Fusion BTU/lb.	Composition %	Growth-Shrinkage Time After Casting
117	6	Bismuth 44.7	6 Minutes +.0002
Weight lb./in. ³	Brinell Hardness No. 12	Lead 22.6	30 Minutes .0000
Specific Heat-	Tensile Strength-	Tin 8.3	1 Hour -.0001
Liquid .035	Lbs./in. ² 5400	Cadmium 5.3	5 Hours -.0002
Solid .035	% Elongation in Slow Loading 1.5	Indium 19.1	24 Hours -.0002
			21 Days -.0002

No. 16117, Fine Proofing Alloy (price per pound*)

*Each 1 lb. cake may vary slightly in weight.

PRICE SUBJECT TO CHANGE ACCORDING TO MARKET CONDITIONS



Made in U.S.A.

FLEXBAR FIXTURING ALLOY No. 15158

- Reusable low-temperature melting Alloy (158°F) for supporting thin-walled sections which require machining. No. 15158 does not shrink upon solidification rather it exhibits slight "growth" so that it **locks** into the part being machined. After machining you simply melt it out in hot water.
- It melts at 54°F below boiling point of water so that when you go to use it you simply put it in a cast iron, stainless steel or porcelain lined pot and into hot water bath to melt it.
- Reusable many times.
- No drosses created owing to low heat required prior to pouring it.



USES OF NO. 15158:

ANCHORING:

- Locator Members in Aircraft & Automotive Assembly, Drill, Inspection & Welding Fixtures.
- Precision Parts for Testing & Inspection.
- Reamers for Axial & Concentric Alignment in Turret Tool Holders.

CHUCKS, JIGS AND FIXTURES:

1. Spinning Metal into Re-Entrant or Bottle Neck Shapes.
2. Holding Irregular Shaped Work Pieces During Machining.
3. Bushings Anchored in Drill Jigs.
4. Cast Ref. Surfaces in Assembly, Checking, Die Spotting, Drilling, Inspection Fixtures.
5. Transfer Templates in Contour Jigs.

DIES AND PUNCHES:

1. Drop Hammer, for Short Run Sheet Metal Forming.
2. Light Sheet Metal Embossing Dies.

CORES FOR:

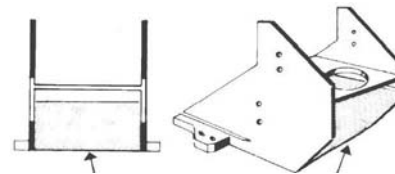
1. Intricate, Compound Foundry Cores.
2. Holding & Forming Fiberglass Laminates.
3. Compound Wax Patterns.

MODELS AND PATTERNS:

1. Duplicate Patterns for Foundry Match Plates, Ceramics, Plastics and Pottery.
2. Patterns Compensated for Shrinkages.

PROCEDURE

- A. The molten alloy is poured around the item to be machined. A simple dam or jug to contain the alloy until solidified is all that is required.
- B. Although the molten alloy can be solidified more quickly with water or a fan, it is not necessary, but it would produce a finer crystal structure. As the alloy is used at such a low temperature, there is no danger of affecting the temper of the work piece.
- C. The part is then machined to the necessary configuration.
- D. Removal of the alloy is accomplished in hot water or with a steam-bath. Chips that float to the top of the molten alloy are removed by skimming, leaving the alloy clean enough to be reused.



Flexbar Fixturing Alloy

OTHER USES:

- Heat Transfer • Tempering • Sheet Plastic Curing • Vulcanizing • Dyeing
- Tube Bending (replaces other materials such as lead, tar, sand and rosin) which have disadvantages such as: Flammability—difficulty of removal—inadequacy to fill void fully, etc. Plated tubes can be bent without flaking of surface. As a tube filler it allows tubes to be bent-swaged-rolled-or drawn.
- Reveals pin holes or cracks owing to liquidity of No. 15158, also thin sections revealed by slight expansion of No. 15158 upon solidification.
- Bending procedures and other data as well as Do's and Don't's included with material.

Melting point °F	158
Density (Lb./in. ³)	0.34
Latent heat of fusion (BTU/Lb. °F)	14
Specific heat—Liquid (BTU/Lb. °F)	0.04
Specific heat—Solid (BTU/Lb. °F)	0.04
Thermal Conductivity (BTU/Hr. Ft. °F)	10

PHYSICAL PROPERTIES No. 15158

Melting Temperature or Range °F	158	Latent Heat of Fusion BTU/lb.	14	Composition %	Growth-Shrinkage Time After Casting
Weight lb/in. ³	.339	Brinell Hardness No.	9.2	Bismuth 50.0	6 Minutes +.0027
•Specific Heat- Liquid	.040	Tensile Strength- lbs./in. ²	5990	Lead 26.7	30 Minutes +.0045
		• % Elongation in Slow Loading	200	Tin 13.3	1 Hour +.0051
Solid	.040	Loading, Lbs./in. ²		Cadmium 10	5 Hours +.0051
		•Max. Load 30 sec.	10,000	Indium None	24 Hours +.0051
		•Max. Load 5 min.	4,000		

Model No. 15158, Fixturing Alloy (price per pound*)

*Each 1 lb. cake may vary slightly in weight.

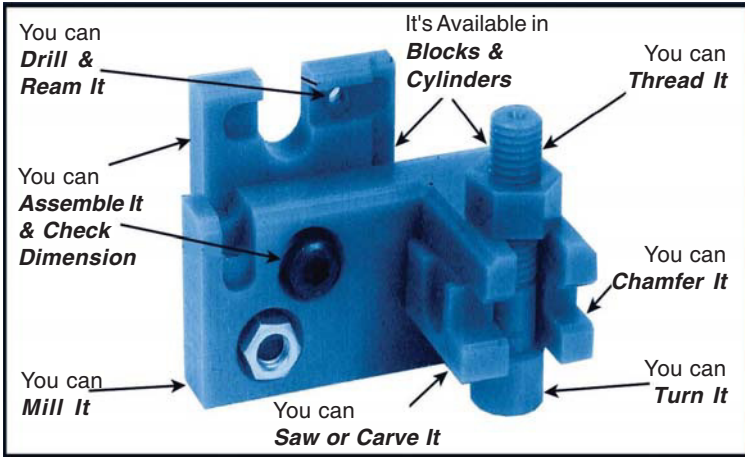


MACHINABLE WAX PATENTED

Made in U.S.A.

Use Flexbar Machinable Wax

To Reduce Your Costs, Time, and Risk Factors Associated with **PROOFING CNC Tooling Programs, TRAINING CNC Programmers or DEMONSTRATING CNC Machinery and CAD/CAM Systems**



STATE-OF-THE-ART MATERIAL

Computer-controlled machining and designing methods have revolutionized manufacturing world-wide. With these advancements has arisen a growing need to evaluate data "up front" more economically and safely, in less time and with accurate results. Because of these concerns, the material used in the "prove-out" phase has become a major factor.

MACHINABLE WAX, (patented) unlike metal, plastic and wood, features all the properties necessary to meet the requirements of CNC and CAD/CAM program proofing. It's very machinable, dimensionally stable, safe to work with and very economical because it is reclaimable and remachinable.

From lathe to mill (handled robotically) in only 55 minutes ...that's how short of a cycle time it took for Computervision, Inc., to produce the CAD/CAM generated prototype (shown at right) out of MACHINABLE WAX. Computervision, Inc. estimated that it would have taken at least 8 hours to machine using steel. And the wax prototype provided all the necessary data to verify the CAD/CAM-CNC program.

ECONOMICAL

Flexbar Machinable Wax will reduce your proofing costs because it is inexpensive, easy to work with and best of all...it can be reclaimed and machined repeatedly. MACHINABLE WAX is available in a wide range of blocks and cylinders (standard or custom sizes).

FLEXBAR MACHINABLE WAX

VERY MACHINABLE MATERIAL

You can easily machine Flexbar Machinable Wax without the need for costly and messy coolants or lubricants, because MACHINABLE WAX is "self-lubricating", "non-abrasive" and it will not fuse when machined at high-end spindle rpm's and feed rates.

Unlike wood or plastic, MACHINABLE WAX will not "gum up" on tool bits. As illustrated by the machined and assembled prototype on the front of this bulletin, sharp edges can be maintained, accurate threads can be cut and thin wall sections maintained with the quality of surface finish capable of being produced by your cutting tools and machine. MACHINABLE WAX is not cellular, grainy, or abrasive so "voids" in machined surfaces (common with plastics and wood) and "tool wear" are negligible. Flexbar Machinable Wax will also machine "within designated tolerances" to provide you with a dimensionally accurate prototype that can be assembled for checking.



SAFE MATERIAL TO WORK WITH

Flexbar Machinable Wax has a very high flash point of 575°F, and is formulated with non-toxic, self-lubricating components. MACHINABLE WAX, unlike most plastics, will not release any offensive or hazardous dust particles or odors during or after machining. Unlike metal, MACHINABLE WAX does not require coolants for machining and will not produce "sharp" machine chips which otherwise could be unsafe due to splashing. Coolant also obscures visual inspection of piece during machining.



MACHINABLE WAX SPECIFICATIONS

Hardness	50-55 (Shore "D" Scale)
Specific Gravity	.92
Flash Point	575°F.
Softening Point	226°F.
Volumetric Shrinkage @ room temperature	7%
Coloring	permanent, oil base, blue dye

Machine Wax is Available in Rectangular Blocks and Cylinders.

Model No.	Size	
15160	3" x 7" x 1.5"	Rectangular Block
15161	3" x 7" x 3"	Rectangular Block
15162	5" x 10" x 3"	Rectangular Block
15163	6" x 12" x 3"	Rectangular Block
15164	24" x 24" x 2"	Rectangular Block
15170	1.5" dia. X 12"	Cylinder
15165	2" dia. X 12"	Cylinder
15166	3" dia. X 12"	Cylinder
15167	4" dia. X 14"	Cylinder
15168	6" dia. X 18"	Cylinder

Other Standard Sizes Available In The Following Dimensions:

RECTANGULAR	CYLINDRICAL	
THICKNESS- 2" through 8" (1" increments)	DIAMETER 1.5" 2" 3" 4"	MAX LENGTH Up to 12" Up to 12" Up to 18" Up to 24"
WIDTH- 6" through 24" (6" increments)	5" 6" 7"	Up to 30" Up to 30" Up to 18"
LENGTH- 6" through 48" (6" increments)		

Phone or Email for Prices



FLEXBAR OPTIFLEX 3000 SERIES VIDEO INSPECTION/MEASUREMENT SYSTEMS

Easy to use turnkey systems now featuring the New Metronics QC-300 Touch-Screen SVGA Video DRO with Automatic Video Edge Detection and Measure Magic® Technology



Available turnkey system options:

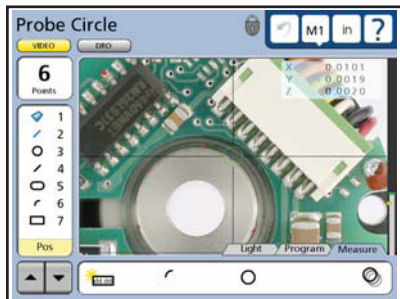
System Version	w/Manual Stage (System No.)
Opti-Flex QC300, 8" x 4" Measurement System, 2 micron	No. QCZ-3000
Opti-Flex QC300, 8" x 4" Measurement System, 1 micron	No. QCZ-3010
Opti-Flex QC300, 12" x 12" Measurement System, 2 micron	No. QCZ-3000-12
Opti-Flex QC300, 12" x 12" Measurement System, 1 micron	No. QCZ-3010-12

Shown: QCZ-3000



Quadra Chek 300 Features:

- 8.4" LCD Color Touch Screen with Integrated live video display.
- Enhanced Alpha-Numeric Programming
- Direct Camera Input - No external devices such as crossline generator needed.
- Integrated Video Edge Detection - Four types of color changeable video tools include Straight Cross-line, Offset Crossline, Single Edge VED and Multi-Edge VED for multiple points inside and outside the field-of-view.



Automatic Video Edge Detection For improved throughput and accuracy.



Tolerance displays Translates data-intensive reports into visual displays that are readable at a glance.



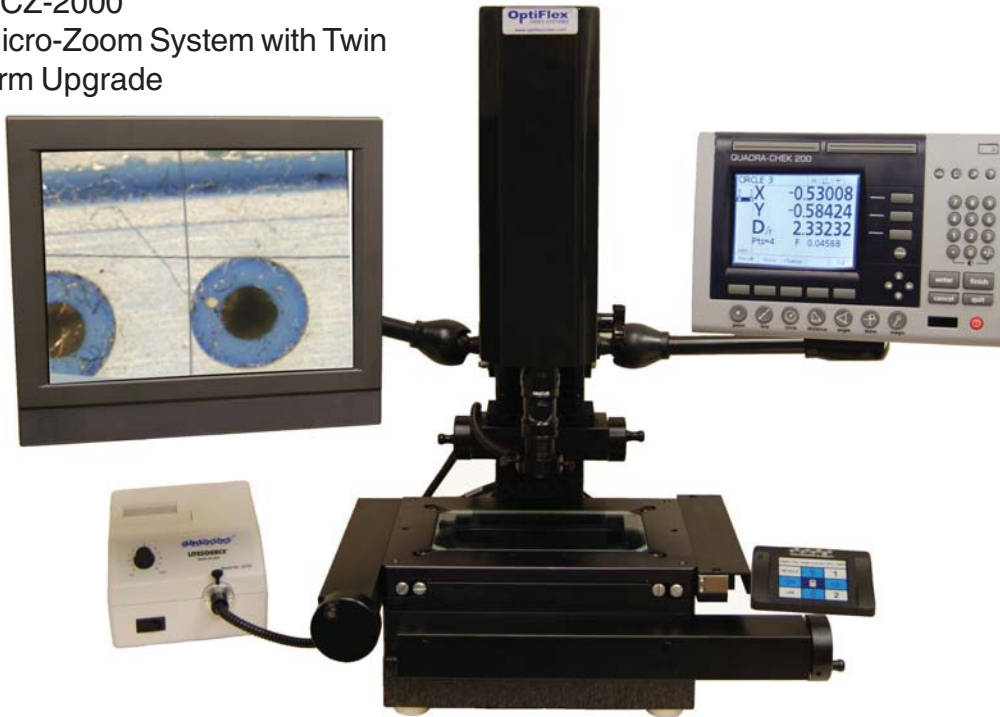
Also Now Included

Video Image Archiving Capture and edit high-resolution JPEG pictures of video screen images for process control and quality reports. Add text and graphic content for clear and detailed communication.



OPTIFLEX QCZ-2000 SERIES "GRANITE Z" VIDEO INSPECTION & MEASUREMENT SYSTEMS

Shown:
QCZ-2000
Micro-Zoom System with Twin
Arm Upgrade



Flexbar presents OptiFlex QCZ-2000 "Granite Z" Series Measurement and Inspection Systems. Offering exceptional value for the money, these systems offer highly flexible and upgradeable capability. The QCZ-2000 Series are compact and easy to use turnkey systems packed with powerful features including state-of-the-art color video, quality zoom optics and the new Metronics **QC200 Series Geometric Measurement DRO** now featuring Geometric Tolerancing! All Systems Available in 8" x 4" (200mm x 100mm) and 12" x 12" (300mm x 300mm) Formats. Call for Z Measurement Upgrades.

Performance With OptiFlex "Granite Z" you'll get a durable granite Z-column and base, with a precision machined 4" X 8" or 12" x 12" crossed roller bearing stage. Optional macro magnification of 10x to 120x with a field of view of up to 2 ½ inches! Our superb color optics combined with high resolution Sony Monitor provide an image that is amazing!

Options There are many optional upgrades that are available for the base system. The twin arm upgrade is shown. Also available are fiberoptic bottom lighting, megapixel digital camera and total LED lighting upgrades.



OPTIFLEX QCZ-2000 "GRANITE Z" INSPECTION/ MEASUREMENT SYSTEMS

SYSTEM FEATURES:

- Solid granite frame and column guarantees strength, accuracy and stability
- Superb full-color high resolution image with zoom optics
- Precision 4" x 8" or 12" x 12" crossed roller bearing stages are available
- High quality macro-zoom lens or micro-zoom lens both with fine focus
- High resolution S-video color 1/2" CCD camera
- Hi-Res LCD monitor
- Adjustable fiber optic top lighting (bottom lighting optional)
- S-Video digital crosshair generator, moveable x-y crosshairs
- Z-Axis measurement available
- Adjustable lens mount dovetail on Granite Z column
- Tooling holes on stage plate for fixturing
- LED lighting available
- Easily upgraded to software-based configurations
- Easily upgraded from manual to motorized or CNC configurations
- The QC 200 Series geometric DRO



The Ultimate Manual System The Optiflex "Granite Z" System has been designed for the shop floor or any inspection lab requiring quick and easy operation. Operators of any skill level will measure and inspect parts.

Quadra-Chek 200 Digital Readout

The Industry Standard Worldwide for Measuring and Inspecting Geometric Components

- Bright and crisp LCD with adjustable tilt
- Small footprint with ergonomic design
- Allows operators to accomplish simple to complex measurements quickly and easily
- Print measurement results using serial or parallel printer
- Part programming allows creation, editing, and running of programs in measurement sequence
- Measure guide leads operators through each feature's measurement sequence to assure consistent data
- Measure a part once and operators can repeat the same steps indefinitely
- Measures circles, angles, points and lines
- Feature construction capabilities



Now Available from Flexbar...

High Resolution Digital System Upgrade Package: 18-DGTLUP
Upgrades any existing or new system with 2.0 MegaPixel Camera and High Resolution Monitor Providing 5 times the image resolution.

Other Features include:

- Built-in Image Capture and color crossline generator in camera.
- 2GB SD Card with USB adapter
- WSXGA 20" LCD High Resolution Color Flatscreen Monitor (no PC required)

Some Standard available turnkey system options:

System Version	w/Manual Stage (Model No.)	w/Motorized Stage (Model No.)
Opti-Flex QC200, 8x4 Measurement System, 2 micron	#QCZ-2000	#QCZ-2500
Opti-Flex QC200, 8x4 Measurement System, 1 micron	#QCZ-2010	#QCZ-2510
Opti-Flex QC200, 12x12 Measurement System, 2 micron	#QCZ-2000-12	#QCZ-2500-12
Opti-Flex QC200, 12x12 Measurement System, 1 micron	#QCZ-2010-12	#QCZ-2510-12

Contact us today for a free Application Evaluation.

Some Optional Upgrades:

Model No. 18-BLF, Fiberoptic Bottom Light Pad with #18-12720 Litesource (see page 29)

Model No. 18-TWINARMUP, Dual Arm Support System for monitor & DRO (shown page 14)



ULTRAFLEX 5000 SERIES "GRANITE Z" VIDEO INSPECTION & MEASUREMENT SYSTEMS



UFX-5310 with Twin Arm Upgrade

Flexbar introduces UltraFlex, its most powerful software-based series of video measurement and inspection systems. UltraFlex systems combine high accuracy measurements, repeatable edge detection, video documentation and electronic communications into a powerful inspection tool. System packages available in manual, motorized and CNC controlled formats. All systems available in 8" x 4" (200mm x 100mm) and 12" x 12" (300mm x 300mm) formats.

All UltraFlex systems utilize the easy-to-use icon-driven Quadra-Check 5000 software by Heidenhain. System packages are available in manual, motorized and CNC controlled formats.

The Ultimate Inspection Tool - The UltraFlex has been designed for the shop floor or any inspection lab requiring quick and easy operation. By using our On-Screen Measurement Tools and Repeatable Video Edge Detection operators of any skill level will measure and inspect parts quickly, accurately, and efficiently.

Call today for part application analysis!
Send your parts and prints to Flexbar. We will test our systems to prove out measurement capability. Upon completion, we will provide a custom quotation to fulfill your metrology needs!



**UFX-5300-12
w/ 18-BENCH-TPX**

Systems are very versatile and can be setup with different upgrade options.



18-LEDUP



ULTRAFLEX 5000 SERIES "GRANITE Z" SYSTEMS

SYSTEM FEATURES:

- Solid granite frame guarantees strength, accuracy and stability
- Superb full-color high resolution image with zoom optics
- Precision 4 x 8 crossed roller bearing stage (larger size available in 12 x 12 format)
- Systems supplied with either 2 micron or 1 micron high accuracy scales. Call for .5 or .1 micron specials.
- Motorized and CNC control of X, Y, and Z axes
- Standard magnification of 30X to 200X with optional auxiliary lenses to increase or decrease magnification
- Programmable lighting included
- Z-axis measurement with auto-focus is standard on 5300
- Adjustable lens mount dovetail on granite Z column
- Tooling holes on stage plate for fixturing
- LED lighting available
- Powerful Pentium computer running Windows XP included
- Easily upgraded from manual to motorized/CNC control

SOFTWARE FEATURES:

- Easy-to-use icon driven Quadra-Chek 5000 software
- Repeatable Video Edge Detection tools which remove operator uncertainty with sub-pixel accuracy
- Powerful feature recall, construction, and skew features
- Combine on-screen measurements with stage-based measurements
- Manual part programming
- Tolerancing with pass/fail results
- Automatic data collection with customized report generation
- Real-time link to SPC
- Image capture and annotation
- E-mail and video print for documentation
- Live image overlay comparison with CAD import/export
- No hidden costs for report generation capability
- Software upgrades available periodically
- Quadra-Chek products are the industry standard worldwide

UltraFlex 5200/5300 Automated Systems:

Increase Speed and Productivity with Automation - If your application warrants the ability to measure parts quickly and without the need for operator intervention, the **UltraFlex 5200/5300 automated system**. Part programs may be recorded and later recalled for automatic measurement and data processing. Utilizing our CNC controlled motorized stage, programmable lighting, and **Video Edge Automatic Measurement Tools**, you can accomplish multiple part measurements quickly and efficiently.

Easily Expandable and Upgradeable - The open architecture design provides **many upgrade options** for future enhancement. Options may include magnification increase/decrease, power zoom, LED lighting and more.



Shown: UltraFlex 5100 Manual System

Available turnkey system options:

System Version	w/Manual Stage (Model No.)	w/Axis CNC Control (Model No.)	w/3 Axis CNC Control (Model No.)
Ultra-Flex QC5000, 8x4 Measurement System, 2 micron	#UFX-5100	#UFX-5200	#UFX-5300
Ultra-Flex QC5000, 8x4 Measurement System, 1 micron	#UFX-5110	#UFX-5210	#UFX-5310
Ultra-Flex QC5000, 12x12 Measurement System, 2 micron	#UFX-5100-12	#UFX-5200-12	#UFX-5300-12
Ultra-Flex QC5000, 12x12 Measurement System, 1 micron	#UFX-5110-12	#UFX-5210-12	#UFX-5310-12

Some Optional Upgrades:

Model No. 18-BLF, Fiberoptic Bottom Light Pad with #18-12720 Litesource (see page 29)

Model No. 18-TWINARMUP, Dual Arm Support System for monitor & DRO (shown page 14)

FLEXBAR VISION GAUGE™

VIDEO IMAGING & MEASUREMENT SOFTWARE



Dramatically Increases the Capability Of Any Video Camera Based System with....

- Superb Color Image
- High Accuracy Measurements with Sub Pixel Edge Detection within the Field of View
- Overlay Imaging Capabilities
- Image Capture-Annotation and Instant E-mail
- Built-in Report Generation with Statistics
- Image Overlay Comparison Capability (Go-No Go Gaging)
- Supports Multiple Formats: bmp, jpeg, tga
- Works with Windows XP, Vista, and 7

Transforms Your Computer Into A POWERFUL VIDEO MEASUREMENT TOOL!!

Vision Gauge Can Be Used With Any Video Based System Including:

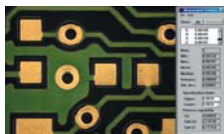
- Cameras • Boom Stand Systems • Microscopes • Borescopes
- Any Video Inspection/Measurement System including **Flexbar Opti-Flex**

HIGH ACCURACY ON-SCREEN MEASUREMENTS WITH SUB PIXEL EDGE DETECTION

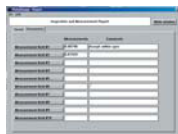
Utilizing the comprehensive, high accuracy tool box, a wide range of simple to complex geometric measurements can be performed. The "Snap to Edge" feature automatically finds the edge, removing operator uncertainty.

Vision Gauge supports the following features:

- Standard Geometric Measurements (Distance, Angle, etc.)
- Unique Measurement Tools (Distance between parallel lines, etc.)
- Marker to Marker Measurements (Center of Circle to Circle, Rectangle, Line Midpoint, etc.)
- Comparisons to Nominals and Tolerances
- Sub Pixel Edge Detection



Measurement Statistics
Toolbox/Generator



Inspection & Measurement
Report with Customizable
Fields



Word Document &
DDE Integration

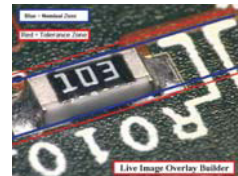
IMAGE CAPTURE/ANNOTATION & E-MAIL: Featuring Easy-To-Use Annotation Tool Box...allows the operator to quickly and easily work with any Vision Gauge or imported digital image. Add text, labels, markers and free-hand drawings on top of the image for re-storage and e-mail. One does not need to be a computer or graphics expert to utilize this feature.

- Easy-To-Use Windows Functionality
- Quickly and Easily Grab the Image*
- Add Text and Markers including Labels, Arrows, Lines, Circles and Boxes
- On-Screen Measurements
- Automatically Added to Image
- E-mail Images Instantly
- Import Data/Images Using DDE
- Merge Data into Reports
- *Also includes Image Sequence Capture Feature



Live Image Overlay for Fast Go/No Go Inspection

- Quickly and Easily Create Go/NoGo Overlays on "Live Image"
- Create Lines, Circles, Boxes, etc.
- Choose Multiple Colors to Define Nominal and Tolerance Zones
- Unlimited Storage of Overlays on Disk for Later Recall
- Overlay Storage Capability Allows Overlays to be Stored with Image as a File



Vision Gauge seamlessly transfers data into Word, Excel, Custom Reports and SPC collection modules using DDE exchange!!

Vision Gauge is a powerful data exchange program which allows data to be transferred into any Windows-based documentation program like Microsoft Word and Excel. A custom report generator is included to provide a report template that easily imports the measurement and image data. The statistics toolbox offers a quick reference for statistical analysis and charting capabilities.

VISION GAUGE Field of View Software and Computer Hardware Accessories:

Model No. VG-200, VISION GAUGE Field of View Measurement/Imaging Software Package (for Windows XP, Vista and 7). Also includes 1" x .005" graduation set-up scale

Model No. 18-VA-PC, Video Acquisition & Display Board for PC (required for analog cameras)



VISION GAUGE VG-500 FIELD OF VIEW MEASUREMENT SYSTEM

VISION GAUGE VG-500...a turnkey video inspection and measurement system featuring the power of VISION GAUGE. Ideal for the inspection and measurement of small parts and features within the field of view.



SYSTEM FEATURES:

- Precision machined aluminum alloy Z-column and open-frame base for optional bottom lighting
- Micro-zoom lens with detents
- Micro-Zoom Detent Lens yields 35x to 220x with auxiliary lenses. Can increase or decrease from 15x to 400x in seconds.
- Adjustable lens mount dovetail with fine adjustor bracket
- Tooling holes on stage plate for fixturing
- High resolution S-video color CCD camera
- Adjustable fiber optic top lighting (bottom lighting optional) with 150w light source

VISION GAUGE SOFTWARE FEATURES:

- Superb color image
- High accuracy measurements with sub pixel edge detection within the field of view
- Overlay imaging capabilities (Go/NoGo Gaging)
- Image capture-annotation and instant e-mail
- Built-in report generation with statistics
- Supports full screen live video mode
- Built-in Focus Meter
- Supports multiple formats: bmp, jpg, tga
- Easy to use Windows operation
- Integrates with any Pentium-based IBM compatible computer

The VG-500 System comes complete with High Resolution Video Acquisition/Display Board and Vision Gauge VG-200 Software including setup scale. **PC Computer and Monitor not included,** available upon request.

System No. VG-500, VISION GAUGE Inspection/Measurement Package Complete

* **Note:** PC computer not included. Available separately upon request per quotation.

Model No. 18-BLF, Bottom (Substage) Lighting Option. Includes fiberoptic light pad, cable and lightsource



FLEXBAR MICRO-ZOOM SYSTEM COMPONENTS

Standard Micro-Zoom Lens Assembly & Accessories Used on Flexbar
Opti-Flex Video Systems - Available For Custom Applications.

I. MICRO-ZOOM LENS ASSEMBLY (includes 1X adapter & C-mount coupler): **Model No. 18-19970FF**, Micro-Zoom Lens, 6.5X with 12mm fine focus.

OPTIONAL MECHANICAL DETENTS UPGRADE FOR MICRO-ZOOM LENS (At 1X, 2X, 3X, 4X on zoom scale ring) available - phone or email.

II. AUXILIARY LENSES & ADAPTERS:

- * **Model No. 18-19971**, 0.5X Auxiliary Lens Attachment
- * **Model No. 18-19972**, 0.75X Auxiliary Lens Attachment
- ** **Model No. 18-19974**, 2.0X Auxiliary Lens Attachment
- * **Model No. 18-19969**, 0.5X Adapter Tube
- * **Model No. 18-19977**, 0.67X Adapter Tube
- ** **Model No. 18-19978**, 2X Adapter Tube
- * Decreases magnification, increases field of view - refer to chart below.
- ** Increases magnification, decreases field of view- refer to chart below.



18-19971



18-19969



18-19970FF

Calculated Magnification Matrix

Electro-Optical (onscreen) Magnification using Flexbar Micro-Zoom Lens Configurations (shown below) with the Flexbar 1/2" CCD Video Camera (No. 18-19940) and Flexbar 14" S-VHS Color Monitor

Micro-Zoom Lens No. 18-19970 with Auxiliary Lens Attachment		MICRO-ZOOM LENS NO. 18-19970 WITH:			
		.5X Adapter No. 18-19969 Low to High	.67X Adapter No. 18-19977 Low to High	1X Adapter* Included Low to High	2X Adapter No. 18-19978 Low to High
.5X No. 18-19971	MAG F.O.V. W.D.			14X to 93X .72 to .11" 7"	
.75X No. 18-19972	MAG F.O.V. W.D.	12X to 85X .84 to .12" 4"	17X to 107X .60 to .09" 4"	25X to 165X .41 to .06" 4"	50X to 320 .20 to .03" 4"
NONE	MAG F.O.V. W.D.	16X to 107X .67 to .09" 3"	22X to 145X .45 to .07" 3"	35X to 220X .31 to .04" 3"	66X to 430X .15 to .02" 3"
2X No. 18-19974	MAG F.O.V. W.D.	36X to 235X .29 to .04" 1"	48X to 310X .22 to .03" 1"	72X to 460X .14 to .02" 1"	143X to 910X .07 to .01" 1"

*1X Adapter included standard with No. 18-19970FF Micro-Zoom Lens Assembly.

ALL DIMENSIONS IN INCHES

W.D. = Working distance, clearance between object and the lowest part of the system with the Ring Light installed.

F.O.V.= Field of View, viewing distance horizontally across the screen.

MAG. = Total electro-optical magnification using 1/2" CCD camera and a 14" video monitor



FLEXBAR MACRO-ZOOM LENS WITH DETENTS

Permits user to lock in working distance and zoom lens magnification. Ideal for use with inspection/measurement systems and software including Flexbar Video Image Express™ (see pages 22 and 23)



Features:

- Manual Zoom with Manual Iris
- 6X Zoom Lens
- Multiple Field of View Stops at Low, Medium & High and Working Distance Stops at 5", 7", 9" and 11"(see chart below)
- C-Mount for use with most inspection video cameras

Working Distance	High	Medium	Low
5 Inches	5mm	20mm	33mm
Best Accuracy	.002 inch	.002inch	.003 inch
7 inches	8mm	30mm	50mm
Best Accuracy	.002 inch	.003 inch	.003 inch
9 inches	11mm	40mm	65mm
Best Accuracy	.003 inch	.004 inch	.004 inch
11 inches	14mm	45mm	90mm
Best Accuracy	.004 inch	.005 inch	.005 inch

Model No. 18-19930-D

FLEXBAR VIECAM 5 MEGAPIXEL CAMERA

Fully Software Driven Camera Providing Full Camera Control Via PC or MAC



Specifications:

Sensor Type: CMOS
 Sensor Size: 5.70mm x 4.28mm (1/2" type)
 Pixel Size: 2.2µ x 2.2µ
 Array Size: 2592 x 1944
 Dynamic Range: 71.1 dB
 S/N Ratio: 38.1 dB
 Min. Illumination: 0.5 lux (with IR filter removed)
 Bits per Pixel: 8(per color component)
 Frame Rate: 3/sec. (max full frame)
 20/sec. (800 x 600)
 Shutter: Rolling, progressive scan
 Gain: Manual or automatic
 Lens Mount: C or CS
 Camera Housing: Anodized aluminum
 Camera Body: 45 (H) x 45 (W) x 58 (D) mm
 Camera Weight: 128g (w/out lens)
 Mounting: 1/4" threaded socket

Features:

- 5 Megapixel 2592 x 1944 Resolution
- USB Powered & Compact size
- No Drivers Required
- Connect to any C Mount or CS Mount
- Single Cable connection to laptop or desktop computers with USB 2.0
- Windows (32 & 64 bit) and MAC compatible (with optional MAC Software)
- One Button Click within Video Image Express Software to Change Resolution and Speed
- Digital Zoom combined with Measurement Tools Increase Accuracy and Sharp Image
- Fully Compatible with Video Image Express Software (see page 22)

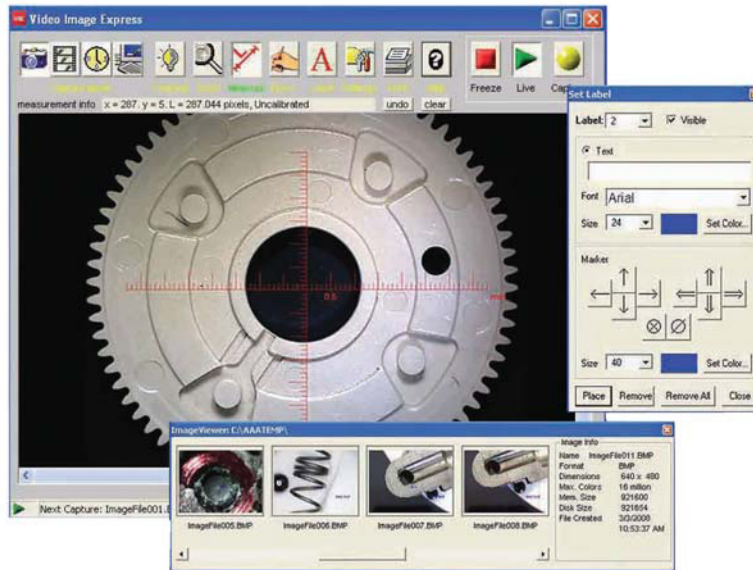
Model No. 18-VIECAM-5



FLEXBAR VIDEO IMAGE EXPRESS™

Video Measurement & Imaging Software System

Easily Connects your Laptop to any Video Inspection System or Microscope



FEATURES and BENEFITS:

- Full screen live video display in high resolution
- Quick image capture in jpg, bmp, and tif format
- Measures diameter, cracks, & other defects
- On screen reticle for Go/No-Go analysis
- Overlay imaging capabilities (Go/No-Go Gaging)
- Easy annotation of text and arrow
- Instant email communication with printout



USB 2.0 Frame Grabber with S-Video (above), composite video input. It accepts both NTSC and PAL formats. Pixel size up to 640 x 480 pixel at 30 FPS (frames-per-second) for NTSC format.

NEW “HANDS FREE” FOOTSWITCH OPERATION:

- Hold and move parts under lens
- Freedom of movement
- Click to capture



COMPUTER REQUIREMENTS:

- Pentium II 500 MHz or faster (Pentium III+ recommended)
- Windows 2000/XP/VISTA, Internet Explorer 5.0 (or later) installed.
- 128 MB of Free Memory, Video card with 16 MB of video RAM, minimum 800 x 600 resolution at 16-bit (65,000 colors): DirectX 8.1+ (included on the CD).

AVAILABLE IN TWO DIFFERENT SYSTEM VERSIONS:

Model No. VIE-300, Video Image Express USB Version (USB Key)

Model No. VIE-400, Video Image Express Analog Version (Capture Link)



VIDEO IMAGE EXPRESS™ FIELD OF VIEW MACRO-ZOOM INSPECTION/MEASUREMENT SYSTEM

A Quick & Easy Wide FOV Turnkey System featuring Macro-Zoom Optics with Detent Stops supported by Flexbar Video Image Express



SYSTEM FEATURES:

- Precision machined aluminum alloy Z-column and open-frame base for optional bottom lighting
- Macro-Zoom lens with detents, Model No. 18-19930-D, (see page 21 for full features).
- 6x Zoom magnification to easily increase/decrease magnification and field of view
- Adjustable lens mount dovetail with fine adjustor bracket
- Tooling holes on stage plate for fixturing
- Flexbar VIECAM 5MP software driven camera (see page 21 for features)
- 4-Quadrant LED Ring Light with 10-step adjustment controller

VIDEO IMAGE EXPRESS SOFTWARE FEATURES (also see page 22)

- Superb color image, high resolution- full screen
- On screen reticle for Go/No-Go Analysis
- Overlay imaging capabilities (Go/No-Go Gaging)
- Image capture- annotation and instant e-mail
- Data export to excel for custom reports
- Supports full screen live video mode
- Supports multiple formats: bmp, jpg, tif
- Easy to use Windows operation

System No. VIE-1000, Video Image Express Macro-Zoom Inspection/Measurement System Package Complete. Laptop computer not included.

Computer requirements:

- Pentium II 500 MHz or faster (Pentium III+ recommended)
- Windows 2000/XP/VISTA, Internet Explorer 5.0 (or later) installed.
- 128 MB of Free Memory, Video card with 16MB of video RAM, minimum 800 x 600 resolution at 16-bit (65,000 colors): DirectX 8.1+ (Included on the CD).

Model No. 18-BLF, Bottom (Substage) Lighting Option. Includes fiberoptic light pad, cable and lightsource

Additional system configurations, upgrades and accessories available upon request.



FLEXBAR MACRO-ZOOM BASIC VIDEO INSPECTION SYSTEMS

For Inspection Of Small & Large Parts Requiring Longer Working Distances (2.5" & up) Using A Wide Field of View Macro-Zoom Lens. Provides Up To 50X Electro-Optical Magnification*
COMPLETE SYSTEM PACKAGES NOW AVAILABLE TO MEET A WIDE RANGE OF INSPECTION AND MEASUREMENT REQUIREMENTS

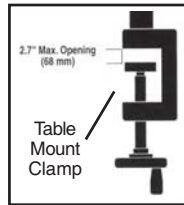
Granite Base & Table Mount Universal Boom Stand Systems

Macro-Zoom Lens and CCD Camera are mounted on Heavy Duty Boom Stand incorporating a Focus Block Positioner (2" travel). System workstations available with either a Granite Base or Table Mount Clamp with a 2.7" capacity.

- Vertical Post: 1.40" dia. x 24" H
- Horizontal Travel: 12"
- Manually adjustable with secure locking

Additional System Components include:

- 19941, 1/2" CCD Color Video Camera
- 12370, 17" LCD Color Monitor (S-VHS)
- 19930 Macro Zoom Lens (18-108mm)
- 18-12720 Lite Source (150W)
- 18-12794 Fiberoptic Ring Lite
- 18-19946 S-VHS Cable (6")



System No. VMZ-1500

Ordering:

Model No. VMZ-1500, Granite Base (12" x 18") Boom Stand Macro-Zoom Video System Complete.

Model No. VMZ-1000, Table Mount Boom Stand Macro-Zoom Video System Complete.

***Model No. 18-19931**, 2X Extender Lens. Doubles Magnification of systems up to 100X mag.

Now Also Available: High Resolution 2 Megapixel Digital Macro-Zoom Video Inspection Systems. Features 2MP Digital Camera and a UXGA Resolution 21.5" LCD Monitor featuring .25 dot pitch images. System camera (Model No. 12365-see page 25) features image capture and crosshair reticles. Measurement upgrade also available. Phone or email for quote.

FLEXBAR DIGITAL CROSSHAIR GENERATOR

New Model Features 5 Built-In Reticle Patterns Plus 5 Built-In Line Types
Fully Adjustable Reticles on a Live Image For Precise Positioning with Optics

Reticle Types:

- Single Crosshair
- Dual Crosshair
- Box
- Crosshair with 2 Sizable Centered Circles
- Fixed in the Center Single Crosshair

Line Types:

- Solid Black Lines
- Dashed Black Lines
- Solid White Lines
- Dashed White Lines
- No Lines

Additional Features:

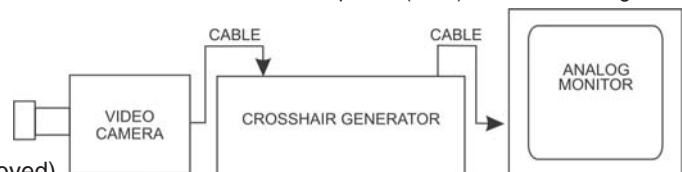
- Convenient "Hold" or Lockout Capability
- Digital Circuitry for Maximum Stability
- Digital Memory of Reticle Position and Line Type When Powered Off
- Accommodates both Composite and S-Video
- Operates in Color and BW
- Phase Locked to Camera



Above: Rear Panel Video Input/Output Connectors for Composite (BNC) and S-Video Signals

Specifications:

- Signal: .7-1.4vp-p@75 ohms (NTSC, PAL, EIA, CCIR)
- Video Input: RS170, Composite and S-Video
- Video Output: Unity Gain, Loop Through
- Power Input: 12V dc 400ma, 110VAC Standard (UL Approved)
- Dimensions: (w) x (h) x (l) 5.75" x 4.25" x 1.375" (includes rear connectors)
- Weight: 0.5 lbs.
- CE Certified



Model No. 18-18842-MX, Flexbar Digital Crosshair Generator complete with Power Supply and Operation Manual



2.0 MEGAPIXEL 1.25" CMOS SENSOR DIGITAL CAMERA

No Computer Necessary

Features Built-In Image Capture and Crosshair Reticles



Features & Specifications:

- 1680 x 1050 Resolution at 30 F.P.S.!
- Plugs right into VGA port or any high resolution monitor.
- Built in image capture.
- Easy to use on screen menu allows:
 - All Camera adjustments/multiple crosshair reticles (up to 4 Horizontal & 4 Vertical - 6 color selections)
- Color: RGB (individual adjustment)
- C-Mount lens mount
- Camera size: 77 x 61 x 61mm

Model No. 12365, Flexbar 2.0 Megapixel Camera, complete with power supply and custom 2(GB) SD Storage card with built-in USB adapter to download images.

UNIVERSAL HIGH RESOLUTION VIDEO MONITORS

Class-A LCD Panels ensure exceptional Image Quality

4:3 Aspect Ratio

17" 1280 x 1024 Resolution
VGA, SVHS & Composite Inputs
75mm Vesa Mount and Base



20" UXGA 1600 x 1200 Resolution
.25 Pixel pitch
Outstanding Images
Perfect for metrology applications
VGA, SVHS, DVI, Composite input

Model No. 12370, Universal 17" LCD Video Monitor

Model No. 12372, Universal 20" LCD Video Monitor

SONY HIGH PERFORMANCE 21.5" VIDEO MONITOR

Works with all Flexbar analog & HDMI Direct cameras. This monitor has multiformat signal support with selectable aspect ratios of 16:9 on 4:3. Includes 100 x 100 VESA mount.

Features:

- Sony FHD
- 21.5" Monitor
- 1920 x 1080 Resolution

Input Ports

- Composite (BNC)
- S-VHS (YC)
- RGB
- HDMI



Model No. 12375, Sony 21.5" High Performance Video Monitor



FLEXBAR REAL TIME HI-RESOLUTION DIGITAL CAMERAS

For use with Microscopes, Borescopes and Video Systems.

These New and Innovative Cameras Feature State of the Art Performance.
Guaranteed No Nonsense Software Installation

Available in Three Models. Compact Lightweight USB Mini Design.*

* -USB Cable not Included, order separately below



18-USB-M1024 1/3" CCD 1024 x 768 Resolution
Best performance with a XVGA monitor
Lightning fast 60 fps

18-USB-M1280 HD 1/3" CCD 1280 x 960 Resolution
Best performance with an SXVGA monitor
30 fps perfect for video borescope applications



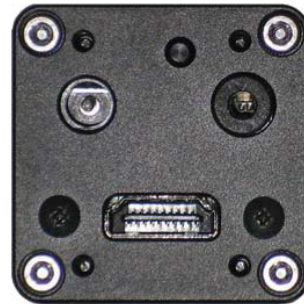
18-USB-M1360 WF 1/2" CCD 1360 x 1024 Resolution
Best Performance with an SXVGA + monitor
1/2" chip is great for a wider field of view

18-USB-MCABLE Camera to PC USB Cable, required-order separately

Higher resolution cameras also available from UXGA-QSXGA! Call for Quotation.

HDMI DIRECT HIGH DEFINITION 720P CAMERA

Includes Built-In Crosshair Generator



No need for a computer! These DVI 16:9 Aspect Ratio Color Cameras connect right into a HDMI port. Superb Images and an Internal Multi-Color Crosshair Generator. The 1280 x 720 image is the new Standard for Video Inspection.

Model No. 18-HDMI, Flexbar HDMI 720P Digital Camera (Power supply and HDMI Cable - order separately below)

Model No. 18-HDMI-PWR, Power Supply for HDMI Digital Camera

Model No. 18-HDMI-CABLE, Cable for HDMI Digital Camera



FLEXBAR[®]

FLEXBAR LED POWERED FIBER OPTIC ILLUMINATOR

Designed and manufactured in U.S.A.

Now - A High Output, Long Life, Energy Efficient Light Source

Offering Optimal Performance Similar to Higher Consumption Halogen Illuminators.

Features Precision Engineered Cooling System

Features:

- 1000 Lumen Light Output into 9mm fiber bundle
- Small footprint (Dimensions below)
- Heat pipe technology for superior cooling
- Current/voltage limited for long life
- Consistent color temperature
- Linear light intensity control with continuous dimming
- Quick change nose pieces available to accept virtually any light guide
- Stackable housing suitable for mounting in space constrained applications
- Universal power input



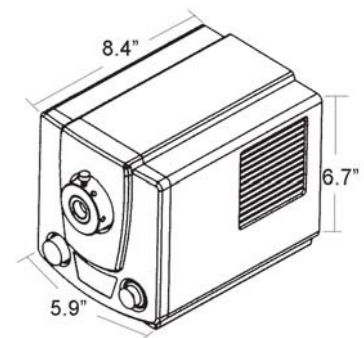
Industrial Applications:

- Microscopes and Video Microscopes
- Borescopes
- Industrial Imaging (Machine Vision)
- Custom process and inspection equipment
- Wire Bonders & Laser Welding

Technical Data:

- Long Life (25,000 hr) eliminates well over 100 lamp replacements
- High Brightness LEDs
- Precision Molded lensing assembly with anti-reflective coatings
- Specifically designed for borosilicate fiber bundles
- Less than 25% the energy consumption of standard 150W halogen
- Lower energy consumption enhances safety & reliability
- 1 Year Warranty
- Over temperature protection and dual fuse protection
- ROHS Compliant
- CE and UL/CSA pending

Dimensions:



Model No. 12360, Flexbar LED Fiber Optic Illuminator, Daylight Color Temperature, Wide Angle, High Intensity, Optimized for Large Fiber Bundles. Comes with Standard 15mm (.590") Nosepiece, Dimmable, Minimum 65 CRI, Multichip Design, CCT Range 5000-8500

Model No. 12721, Bushing Adapter - please specify I.D. & O.D. when ordering



FLEXBAR QUARTZ HALOGEN LITESOURCE

Made in U.S.A



Made in U.S.A.

Flexbar 150 watt LITESOURCE Model No. 18-12720 - a bright, cool fiber optic light supply using Quartz Halogen lamps, with solid state components, variable intensity, control and carrying handle. Ideal for all industrial and laboratory use. Our **Model 18-12720** is designed for microscope and borescope illumination without creating the dark spot shadow effect. High efficiency cooling fan is whisper quiet and designed to prolong bulb life. At 90% of full intensity, bulb life increases 50 to 100 hours. Color temperature is 3,450°K with a lamp radiance of 4,500 Lumens.

USE WITH FLEXBAR FIBER-OPTIC LITE-PIPES or ANNULAR RINGLITES AND FIBEROPTIC LIGHTPAD.

Model No. 18-12720, Flexbar Fibre Optic LITESOURCE

Model No. 12721, Bushing Adapter for different diameter Lite-Pipes, etc. **(Specify size (I.D. & O.D.) when ordering)**

Model No. 18-12727, Long Life (200 Hrs. plus) Replacement Bulb

Technical Data:

Lamp:	150W quartz halogen, 21V EKE	Safety Approvals:	115 VAC-UL & C-UL, 230 VAC-CE
Voltages:	115 VAC, 200W, 50/60 Hz or 230 VAC, 200W, 50/60 Hz (Set at factory)	Dimensions:	8 in. L x 7 in. W x 7 in. H
Lamp Life:	200-10,000 hours, depending on intensity	Weight:	7 lbs (3.6 kg.)
Fuse:	115 VAC: 3 Am, 250V, 3A slow blow, 5x20 mm 230 VAC: 2 Am, 250V, 2A slow blow, 5x20 mm	Max. Housing Temp.:	15 degrees above ambient
Color Temperature:	3100-3400 degrees Kelvin depending on lamp used	Fiber Optic Connection:	The Litesource illuminator uses a B-type fiber optic nosepiece with a 0.585 in. (15mm) ID.

FLEXBAR FIBEROPTIC RINGLITES

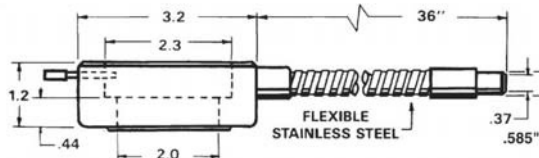
360° Ring Illuminators Available in Standard Annular Style

STANDARD ANNULAR RINGLITES:

Available in 1.125" I.D. and 2" I.D. Models. Ringlite Adaptors available for custom I.D. configurations. 2" model has 36" PVC Sheathing on guide with .585" diameter end. 1" model has 36" PVC Sheathing on guide with .585" diameter end.

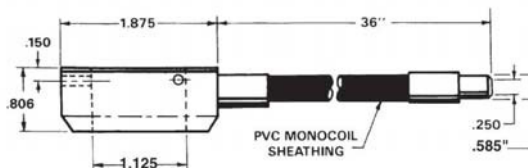


Model No. 18-12794, 2" I.D. Annular Ringlite



Model No. 18-12794

FULL 360° ANNULUS MOUNTS DIRECTLY TO MICROSCOPE POD. CONCENTRATES LIGHT INTO A DISC OF BRIGHT WHITE, EVEN ILLUMINATION AT EFFECTIVE WORKING DISTANCES OF 1.5" TO 8".



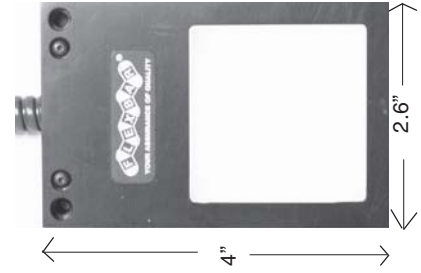
Model No. 18-12795, 1.125" I.D. Annular Ringlite



FLEXBAR FIBEROPTIC LIGHT PAD

Ideal for all bottom lighting applications requiring even diffuse illumination. Use with Flexbar Litesource Model 18-12720 (order separately)

- Large 2" x 2" square illuminating area.
- Flexible 3' PVC coated metal guide.
- Light Pad block: 2.6" x 4" x .610" high, black anodized aluminum.
- Includes 2 corner mounting holes.



Model No. 18-12793, Flexbar Fiberoptic Light Pad

Model No. 18-BLF, Fiberoptic Light Pad with #18-12720 Litesource

Model No. 18-BLF-LED, Fiberoptic Light Pad with #12360 LED Fiberoptic Illuminator

FLEXBAR FIBER-OPTIC LITE-PIPES™

For Use With Flexbar Litesources

Use fiber-optic LITE-PIPES™ to solve your lighting problems.
Get a BRIGHT beam of COLD light into inaccessible locations.

Flexible or Stayset, Single or Bifurcated, Vinyl or Metal Covered ... Use them in the lab, shop or field ... wherever you need to add a flexible, pencil sized beam of cold, bright light. Used with our variable intensity, quartz-halogen Litesource™, you can light microscopes, machine tools (even under oil), borescopes, and deep bores. You can even use them to light up dark, inaccessible locations on tools, dies or piece parts you want to inspect. All styles have stainless steel end ferrules.

AVAILABLE IN 3 DIFFERENT FIBER BUNDLE DIAMETERS



A.

FLEXIBLE METAL

Rugged stainless steel flexible armor cover gives you strength and protects the fibers. Good for temperatures up to 600°F.



B.

FLEXIBLE VINYL

Easy to clean vinyl cover is over a crush resistant, fiber protecting, steel monocoil. Must be held firmly in position. Has smallest O.D. for comparable size bundle and can be bent to smallest radius of curvature compared to other types. Good for use in temperatures up to 225°F.



C.

GOOSE-NECK STAYSET-METAL

Strong, chrome plated steel, "goose-neck" cover protects the fibers. Just point the LITE-PIPE™ where you want it and it will stay there without being held. More rigid than stainless steel "goose-neck" LITE-PIPE™.



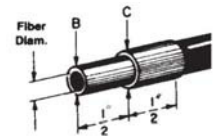
D.

BIFURCATED LITE-PIPES™

These have two identical arms with a common end. Available in STAYSET-METAL only.

FIBER-OPTIC LITE-PIPE™ SELECTION CHART

TYPE OF BUNDLE COVERING	FIBER BUNDLE DIA.	2 FT. LONG PART NO.	4 FT. LONG PART NO.
FLEXIBLE-METAL SINGLE A.	1/16	12750	12770
	1/8	12751	12771
	1/4	12753	12773
FLEXIBLE-VINYL SINGLE B.	1/16	12754	12774
	1/8	12755	12775
	1/4	12757	12777
STAYSET-METAL SINGLE GOOSENECK C.	1/16	12758	12778
	1/8	12759	12779
	7/32	12761	12781
STAYSET-METAL BIFURCATED (GOOSENECK) D.	7/32	12769	12789



FOR ALL LITE-PIPES™

FIBER DIAM	B	C
1/16"	.187	.281
1/8"	.187	.281
1/4"	.312	.500

LITE-PIPES ALSO AVAILABLE IN OTHER LENGTHS, ie. 3 FT. LONG. PHONE OR FAX. All Above Models include 5/8" dia. bushing adapter for use with most Lightsources (including Flexbar).



FLEXBAR LED ANNULAR RING LIGHTS



Top View



Bottom View

4-QUADRANT LED RING LIGHT WITH 10-STEP VARIABLE INTENSITY CONTROL

- 72 LED bulbs with 10-step variable intensity light control
- Sectional lighting control; allows users to direct the light from 4 separate quadrants
- 60.5mm inner diameter
- Color temperature: 6400 Kelvin
- Lamp Life: 10,000 hours
- Power Supply: AC90-265v 50/60Hz
- Output: 12v 400mA
- RoHS compliant, ESD safe

Model No. 10585, Flexbar 4-Quadrant LED Ringlight complete with power supply

LED RING LIGHTS WITH VARIABLE LIGHT CONTROL BOX - 2 MODELS AVAILABLE

I. Model No. 10586, Standard Model

- 60 LED bulbs with variable light control and external power supply
- 62mm inner diameter
- Color temperature: 6400 Kelvin
- Lamp Life: 10,000 hours
- Power Supply: 110V
- Output: 24v 6w
- External power supply dimensions: 122 x 94 x 44mm
- ESD Safe



II. Model No. 10587, Polarizer Model

- Same features as Model No. 10586 above but with:
- Variable LED ring light with removable polarizer attachment
- The polarizer reduces glare from highly reflective surfaces and is easily rotatable
- 70mm inner diameter

FLEXBAR LED DUAL GOOSENECK ILLUMINATOR



- Dual gooseneck variable intensity LED illuminator
- Each gooseneck has a 3 watt LED bulb allowing for pinpoint light control
- Lamp Life: 10,000 hours
- Power Supply: AC 100-240v. 50/60Hz
- ESD safe

Model No. 10588, Flexbar LED Dual Gooseneck Illuminator Complete with power supply



FLEXBAR DIGI-ZOOM VIDEO MICROSCOPE SYSTEM

Featuring Auto-Focus, Image Capture, Documentation and Manual Measurement In One Easy-to-Use Package



Digi-Zoom Technical Specifications

Sensor	1/4" CCD Sensor (SONY)
Maximum Pixel	795 (H) x 596 (V) 470K
Effective Pixel	752 (H) x 582 (V) 440K
Recognition	>480 Lines
Output	USB, Composite, S-Video
System	NTSC
Scanning Frequency	15.625KHz (Horizontal) 50 Hz (Vertical)
Signal Processing System	Digital Signal Process
White Balance	Auto White Balance
Shutter	Auto/Manual (1/50 ~ 1/1000)
Sensitivity	1 Lux
Power of Consumption	4.2W (Maximum)

Above: System No. DGZ-1000 in use with PC computer (not included). USB output for use with all computers including laptops.

MAIN SYSTEM FEATURES:

- Continuous 1:14 Ratio Optical Zoom Auto-Focus System
- 0.5X Standard Objective with 7"/172mm working distance
- Optional available 1X and 1.5X Auxiliary Objectives for increased magnification
- Control Box for simultaneous USB, RCA and S-Video output
- Hand Remote Control Unit allows user assist control of CCD zoom system for zoom, fine zoom, focus, brightness and power functions
- Foot pedal for magnification adjustment
- PC Control of Zoom system using system software
- Software Package (included) includes manual measurement, calibration, image capture & comparison and documentation (see example above)

Ordering: COMPLETE SYSTEM PACKAGE & OPTIONAL ACCESSORIES

System No. DGZ-1000, Flexbar Digi-Zoom Video Microscope System Complete. Includes CCD Zoom Camera, 0.5X Std. Objective, Plain Stand with Focus Block, Hand Control Unit, Foot Pedal, Control Box, Image Capture Card, Software Package, Calibration Slide and Output Cables.

Optional Accessories:

Model No. 19340, 1.0X Auxiliary Objective

OPTIONAL STANDS & STAGES other accessories available upon request.



FLEXBAR INSPECTION STEREO MICROSCOPE 4.3:1 ZOOM RATIO SERIES

High Resolution Image Ideal for Industrial Inspection, Assembly and Quality Control. Available with binocular or trinocular viewing heads.



Featuring outstanding optics and a large field of view with a high depth of focus, this series reduces sample handling times allowing for faster inspections and a more efficient work process.

Standard Specifications

- 0.7x to 3.0x zoom magnification range
- 4.3:1 Zoom ratio
- Magnification range 7x to 30x (with 10x eyepieces)
- Interpupillary Distance Adjustment 52mm - 75mm
- WF10x/20mm focusing eyepieces
- Airtight and anti-mold design
- 97mm working distance
- 4 inches (100mm) of continuously smooth travel
- Black and white stage plate (plus clear glass on E-LED model)

Optional Accessories

LED ring lights, fiber optic illuminators and fluorescent ring illuminators, 0.5x, 0.63x and 2.0x auxiliary objectives, Digital cameras and c-mount adapters, 15x and 20x focusing eyepieces, reticles and stage micrometers.

Shown Above: Model No. 20131, 4.3:1 Zoom Stereo Microscope with plain focusing stand with tension adjustment.

ADDITIONAL PRE-CONFIGURED SYSTEMS AVAILABLE:



Model No. 20132, 4.3:1 Zoom Stereo Microscope on E-LED Stand

Specifications:

- Standard Specifications (see above)
- E-LED stand
- Variable reflected and transmitted illumination
- LED reflected and transmitted illuminators can be used independently or simultaneously
- Light quality: homogenous daylight 6500°K for both the reflected and transmitted illuminators
- LED bulbs emit light that is UV and IR free
- Approximate service life of the LED bulbs is 50,000 hour
- Base dimensions (LWH): 260mm x 184mm x 267mm
- Universal power supply 100v to 240v, voltage sensitive, integrated



Model No. 20133, 4.3:1 Zoom Stereo Microscope on Boom Stand

Specifications:

- Standard Specifications (see top of page)
- Boom stand with Delrin® insert on focus block for smooth, precise movement
- Bonder Arm (E-Arm)



4.3:1 ZOOM RATIO STEREO MICROSCOPE (cont.)

Pre-Configured Systems: Trinocular Models with 45° Viewing Angle.
Accepts Flexbar C-Mount Digital Cameras (not included).



Model No. 20134
Plain Focusing Stand



Model No. 20135
w/ E-LED Stand



Model No. 20136
w/ Boom Stand

OPTIONAL ACCESSORIES:

<u>Model No.</u>	<u>Description</u>
20137	0.5X Auxiliary Objective
20138	0.63X Auxiliary Objective
20139	2.0X Auxiliary Objective
20140	10X Eyepieces (pair) with diopter adjustment & reticle holder
20141	15X Eyepieces (pair) with diopter adjustment & reticle holder
20142	20X Eyepieces (pair) with diopter adjustment only

Optical Data

Auxiliary Objective	Working Distance (mm)	EYEPIECE					
		WF10X/20		WF15X/16		WF20X/12.5	
		Total magnification	Visual Field (mm)	Total magnification	Visual Field (mm)	Total magnification	Visual Field (mm)
	97	7-30X	25.7-6	10.5-45X	20.0-4.7	14-60X	15.7-3.7
0.5X	180	3.5-15X	51.4-12	5.2-22.5X	40.0-9.4	7-30X	31.4-7.4
0.63X	140	4.4-18.9X	43.9-10.6	6.6-28.3X	31.7-7.4	8.8-37.8X	24.9-5.8
2X	30	14-60X	12.8-3	21-90X	10.0-2.3	28-120X	7.9-1.8



Model No. 20143
125mm Movable Gliding Stage
• Movable gliding stage with 125mm O.D. adapter for use with the Plain Focusing stand



Model No. 20144
100mm Movable Gliding Stage
• Movable gliding stage with 100mm O.D. adapter for use with the E-LED stand





FLEXBAR HIGH PERFORMANCE STEREO MICROSCOPE 6.3:1 ZOOM RATIO SERIES

Featuring high performance optics with unsurpassed ergonomics, this ergonomically design microscope series is ruggedly built to withstand years of heavy usage.



21470

Shown Above:

Model No. 21470, 6.3:1 Zoom Stereo Microscope with plain focusing stand with tension adjustment

Standard Specifications

- 0.8x - 5.0x zoom magnification range
- 6.3:1 Zoom ratio
- Magnification range 8x-50x (with 10x eyepieces)
- Click-stops at 1x, 2x, 3x, 4x and 5x to ensure quick and consistent measurement results
- 45° viewing angle, 360° rotation of viewing head
- 115mm working distance
- Interpupillary Distance Adjustment 52mm - 75mm
- WF10x/22mm focusing eyepiece
- Field of View 27.5mm-4.4mm
- Airtight and anti-mold design

Optional Accessories

LED ring lights, fiber optic illuminators and flourescent ring illuminators, 0.5x, 0.7x and 2.0x auxiliary objectives, Digital cameras and c-mount adapters, 15x and 20x focusing eyepieces, Reticles and stage micrometers.

ADDITIONAL PRE-CONFIGURED SYSTEMS AVAILABLE:

Model No. 21471, 6.3:1 Zoom Stereo Microscope on E-LED stand



21471

Specifications:

- Standard specifications (see above)
- E-LED stand
- Variable reflected and transmitted illuminators can be used independently or simultaneously
- Light quality: homogenous daylight 6500°K for both the reflected and transmitted illuminators
- LED bulbs emit light that is UV and IR free
- Approximate service life of the LED bulbs is 50,000 hours
- 4 inches (100mm) of continuously smooth focus travel
- Black, white and clear glass stage plates
- Base dimensions (LWH): 260mm x 184mm x 267mm
- Universal power supply 100v to 240v, voltage sensitive, integrated

Model No. 21472, 6.3:1 Zoom Stereo Microscope on Ball Bearing Boom Stand



21472

Specifications:

- Standard specification (see top of page)
- Ball Bearing Boom Stand
- Bonder Arm (E-Arm)

More versions: continued next page



6.3:1 ZOOM RATIO STEREO MICROSCOPE (cont.)

Model No. 21473, 6.3:1 Zoom Stereo Microscope on Articulating Flex-Arm Stand



Specifications

- Standard specification (see top of page 35)
- Articulating Arm with Lockable 14.5" vertical motion range and 3' scannable range
- Horizontal or vertical c-clamp mount
- Bonder Arm (E-Arm)

Pre-Configured Systems: Trinocular Models with 45° Viewing Angle. Accepts Flexbar C-Mount Digital Cameras (not included).



Model No. 21474
Plain Focusing Stand



Model No. 21473
w/ E-LED Stand



Model No. 21476
w/ Ball Bearing Boom Stand



Model No. 21477
w/ Flex-Arm Stand

OPTIONAL ACCESSORIES:

Model No.

Description

21478	0.5X Auxiliary Objective
21479	0.7X Auxiliary Objective
21480	2.0X Auxiliary Objective
21481	10X Eyepieces (pair) with diopter adjustment & reticle holder
21482	15X Eyepieces (pair) with diopter adjustment & reticle holder
21483	20X Eyepieces (pair) with diopter adjustment only

Optical Data

Auxiliary Objective	Working Distance (mm)	WF 10X/222		EYEPIECE WF 15X/16		WF 20X/12.5	
		Total Magnification	Visual Field (mm)	Total Magnification	Visual Field (mm)	Total Magnification	Visual Field (mm)
	115	8-50X	27.5-4.4	12-75X	20.0-3.2	16-100X	15.6-2.5
0.5X	211	4-25X	55.0-8.8	6-37.5X	40.0-6.4	8-50X	31.2-5.0
0.7X	136	5.6-75X	39.3-6.3	8.4-52.5X	28.6-4.6	11.2-70X	21.4-3.4
2X	43.5	16-100X	13.8-2.2	24-150X	10.0-1.6	32-200X	7.8-1-3



Model No. 20143
125mm Movable Gliding Stage
• Movable gliding stage with 125mm O.D. adapter for use with the Plain Focusing stand



Model No. 20144
100mm Movable Gliding Stage
• Movable gliding stage with 100mm O.D. adapter for use with the E-LED stand





FLEX-ZOOM™ 10:1 SERIES STEREO MICROSCOPES

Highest Quality Optics - Innovative Performance & Ergonomics
Available as pre-configured systems or modular components

Flex-Zoom 10:1 Series is a modular system designed to deliver exceptional ergonomic and optical performance. This Series is an ideal choice for medical device manufacturers, industrial inspection and assembly, quality control, OEM integration and research applications.

Users can select either an ergo tilting binocular head with an adjustable viewing angle of 0°-45° for true fatigue-free viewing, or a binocular head with a 20° angle and extended eyetubes for maximum viewing comfort. All systems can easily add a photo port/beam splitter for attaching a camera to enable image capture or output to a video monitor.

Offers a high depth of focus and resolution up to 289 lpm.

Standard Specifications

- 0.8x to 8x zoom magnification range (8x to 80x with 10x eyepieces)
- Interpupillary Distance Adjustment 51mm - 75mm
- WF10x/24mm focusing eyepieces
- Airtight and anti-mold design
- 78mm working distance with 1x plan achromat objective

***Shown left: Model No. 10220**, Flex-Zoom 10:1 Series Stereo Microscope with plain focusing stand with tension adjustment, 4" (100mm) of smooth focus travel.



10220

Flex-Zoom with Beam Splitter, Built-in 2MP Camera & LCD Computer Digital Imaging Made Easy!

Integrated hi-resolution Digital LCD Stereo Zoom Microscope is an all in one solution for capturing, analyzing and storing your images.

Complete System Features:

- Beam splitter with camera port on one-side and an integrated 2 mega pixel camera with a hi-resolution, 8.4 inch LCD TFT touch computer screen on the other side.
- LCD computer is equipped with Windows CE operating system, Wi-Fi enabled, 100m Ethernet, USB 2.0, AV and VGA outputs
- Built-in SD Card slot with 2 MB SD card
- NMS Image Analysis Software for image measurement and annotation
- Beam Splitter/LCD/Camera module can be added to any Z10 series optical system
- Plain Focusing Stand with tension adjustment, 4" (100mm travel)
- Choice of 20° inclined or ergo/tilting viewing head
- WF10x focusable eyepieces, 24mm field of view
- 1x Plan achromat objective
- 78mm working distance

*** System No. 10221**, Flex-Zoom Digital LCD Stereo Zoom Microscope with 20° Binocular Viewing Head

*** System No. 10222**, Flex-Zoom Digital LCD Stereo Zoom Microscope with 0-35° ergonomic viewing head.



10221

* Above systems are shown with Model No. 10585 LED Ring light - not included, please order separately- See page 30



FLEX-ZOOM 10:1 SERIES STEREO MICROSCOPE SYSTEM

Build Your Own System - Modular Components Made Easy

I. Microscope Head Components:

- | | Model No. | Description |
|---|--|-------------------------------------|
| 1 | 10223 | Optical body 10:1 |
| 2 | 10224 | 20 degree binocular viewing head |
| 3 | 10225 | 0-35 degree ergonomic viewing head |
| 4 | 10226 | Beam Splitter/photo port |
| 5 | 10227 | Iris Diaphragm |
| 6 | Eyepieces: | |
| | 10228* | 10X, pair (accepts 26.5mm reticle) |
| | 10229* | 15X, pair (accepts 20mm reticle) |
| | 10230 | 20X, pair (does not accept reticle) |
| | *-with dipoter adjustment and reticle holder | |
| 7 | Objectives: | |
| | 10231 | 0.3X Achromat Objective |
| | 10232 | 0.5X Plan APO Objective |
| | 10233 | 0.5X Achromat Objective |
| | 10234 | 1.0X Plan Achromat Objective |
| | 10235 | 2.0X Plan Achromat Objective |
| 8 | 10236 | Standard photo tube |
| | 10236-C | C-Mount adapter (optional) |



Resolution and N.A.		
Magnification	Resolution (Lp/mm)	Numerical Aperture (N.A.)
8X	289	0.08
6X	256	0.078
4X	228	0.064
3X	204	
2X	128	0.032
1X	64	0.02
0.8X	57	0.0224

Flex-Zoom Series 10:1 Parallel Zoom Body - Optical Data

Objective Lens	Working Distance (mm)	EYEPIECE					
		WF 10X (Ø24MM)		WF 15 (Ø16MM)		WF 20x (Ø12MM)	
		Total Magnification	Visual Field (mm)	Total Magnification	Visual Field (mm)	Total Magnification	Visual Field (mm)
0.3X	280	2.4X-24X	100-10	3.6X-36X	66.7-6.67	4.8X-48X	50-5
0.5X	126	4X-40X	60-6	6X-60X	40-4	8X-80X	30-3
1X	78	8X-80X	30-3	12X-120X	20-2	16X-160X	15-1.5
2X	32.5	16X-160X	15-1.5	24X-240X	10-1	32X-320X	7.5-0.75

II. Bonder Arm (E-Arm)



- Ø76mm focus mount
- 5/8" mounting pin
- For use with Boom Stand, Ball Bearing Stand, and Articulating Arm (Flex Arm)

Model No. 10581, Std. Coarse Focus Bonder Arm



FLEXBAR MICROSCOPE STANDS

III. Microscope Stands - all stands will accommodate all Flexbar 4.3:1 Series, 6.3:1 Series and Flex-Zoom 10:1 Series Microscopes.

A. Plain Focusing Stand, Model No.10571

10571



- Thin design keeps sample position low for user comfort
 - Two-position points allow for easy adjustments when working with small or large size samples
 - Great for small or tight work spaces
- | | |
|-----------------------------|---|
| Focus Mount Diameter | 76mm |
| Focusing Stroke | 100mm |
| Dimensions | 240mm(l) x 290mm (d) x 318mm (h) |
| Plate Size | 125mm black and white contrast plate |

B. E-LED Stand, Model No. 10572

10572



- Variable reflected and transmitted illumination
- LED reflected and transmitted illuminators can be used independently or simultaneously
- Light quality: homogenous daylight 6500°K for both the reflected and transmitted illuminators
- LED bulbs emit light that is UV and IR free
- Approximate service life of the LED bulbs is 50,000 hours
- 4 inches (100mm) of continuously smooth focus travel
- Black, white and clear glass stage plates
- Base dimensions (LWH): 260mm x 184mm x 267mm
- Universal power supply 100v to 240v, voltage sensitive, integrated

C. Pole Stand, Model No. 10573

10573



- Rack and pinion focusing with safety collar
 - Allows for quick adjustments to working distances
 - Thin design of base allows users to keep sample positions low
 - Great for small or tight work spaces
- | | |
|-----------------------------|---|
| Focus Mount Diameter | 76mm |
| Focusing Stroke | 193mm |
| Pole Height | 305mm |
| Dimensions | 240mm (l) x 290mm(d) x 318mm (h) |
| Plate Size | 125mm black and white plate |

D. Boom Stand, Model No. 10574

10574



- Safety tracks on the horizontal arm
 - Features Delrin® inserts in the focus block to ensure smooth, precise movements
- | | |
|-----------------------------------|----------------------------------|
| Base Dimensions | 254mm x 254mm (10" x 10") |
| Vertical Post Dimensions | 365mm |
| Horizontal Post Dimensions | 518mm |
| Weight | 37lbs. |



III. FLEXBAR MICROSCOPE STANDS (continued)

E. Ball Bearing Boom Stand, Model No.10575



10575

- Precise, stable movement
- Sturdy and ruggedly built
- Ideal for observation applications where magnification adjustment and the ability to move across a sample are needed

Base Dimensions	254mm x 254mm (10" x 10")
Vertical Post Dimensions	394mm
Horizontal Post Dimensions	585mm
Weight	42lbs.

- Optical vertical extension post can extend vertical post by 9", order separately (**Model No. 10576**)

F. Articulating Arm (Flex Arm) Stand, Model No. 10577



- Provides maximum freedom, flexibility and adjustability
- Ideal for the inspection of specimens that require a lot of movement or to scan a large sample area
- Articulating arm easily adjusts into hard to reach positions and moves easily out of the way
- The maximum bearing load on the front of the horizontal bar is 21lbs.
- 14.5" lockable vertical motion range with adjustable counterbalanced support
- 3' scannable range
- Flex Arm must be mounted to either the C-Clamp, Wall Mount or Table Mount which are listed below.

C-Clamp Mount, Model No. 10578

- Horizontal or vertical mount
- Maximum opening size of c-clamp is 1.575"(40mm)
- For use with Articulating (Flex-Arm) Stand No. 10577

Wall Mount, Model No. 10579

- Used for mounting the Articulating (Flex-Arm) Stand No. 10577
- Mount attaches to a wall with 4 screws (not included)
- Dimensions 5" x 5" (127mm x 127mm)
- Diameter of mount opening: 22mm

Table Mount, Model No. 10580

- Used for mounting the Articulating (Flex-Arm) Stand No. 10577 to a table/bench
- Mount attaches to a table/bench with 4 screws (not included)
- Dimensions 5" x 5" (127mm x 127mm)
- Diameter of mount opening: 22mm

IV. Micrometer Measuring Stages- Available Upon Request

For use with Plain Focusing, E-LED and Pole Mount Microscope stands. Available in 2" x 2" and 6" x 2" Travel Models. Choice of Manual or Digital micrometer heads in 1" or 2" Travel Ranges.





FLEXBAR HI-RESOLUTION DIGISCOPE 5 MEGAPIXEL ZOOM MICROSCOPE SYSTEM

Crisp, high resolution, three-dimensional images with a built-in 5 megapixel CMOS camera system and removable SD memory card* with push-button control, allow for fast and easy image capture and transfer without a computer!

The direct-connect ports for USB*, HDMI*, or AV* output make this a versatile and integrated system for a wide range of professional industrial applications.

**4GB SD memory card, USB, HDMI and video cables are included.*

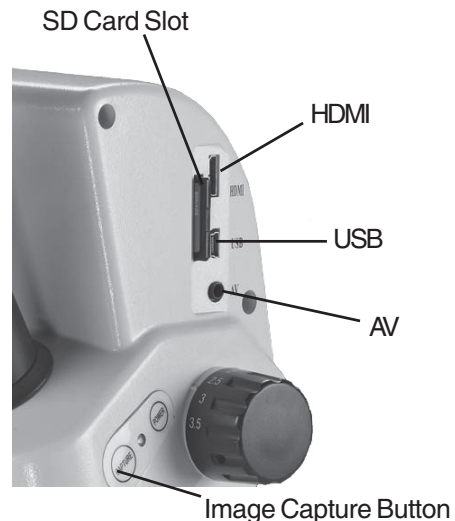
System includes completely integrated LED illumination!



21485

Microscope Specifications	
Optical System	10° Greenough
Eyepieces	WF 10x/20mm field of view; 50-75mm interpupillary distance
Viewing Angle	60°
Working Distance	95mm
Magnification	8x - 35x
Focusing System	Large dual focusing knobs with coarse adjustment: focusing range: 90mm
Illumination	Maintenance-free, 5 watt LED transmitted and incident illuminators with intensity control; 100V-240V; bulb life approx. 25,000 hours
Dimensions	285 (L) x 355 (H) x 186 (D) mm

Digital Specifications	
Camera	5 megapixel CMOS built-in camera system
Digital Output	USB 2.0 PC Compatible
HDMI Port	720p High Definition output for desktop or large HD displays
Integrated Slot	SD (Secure Digital); *4GB SD card included
Recording	Camera record push button control for image capture



Ordering:

- Model No. 21485**, Flexbar Hi-Resolution DigiScope Zoom Microscope System Complete
- Model No. 21486**, 15x/16mm Eyepieces with built-in diopter adjustment & eyeguard, pair
- Model No. 21487**, 20x/12mm Eyepieces with built-in diopter adjustment & eyeguard, pair



FLEXBAR HIGH DEFINITION VIDEO BORESCOPE CAMERA INSPECTION SYSTEM

Narrow diameter cameras with 5.7" High Definition Color LCD Monitor.

Deliver high image resolution on large color display where images and videos can be stored on SD memory card (included)

- Systems configurations available in a range of standard or wide field of view camera heads in diameters from 4mm to 25mm.
- Available in Flexible or Semi-Rigid Cable Versions with lengths from 1 meter up to 30 meters

FEATURES:

- 5.7" color LCD TFT with high definition 640 x 480 resolution
- Mini, high-resolution water-proof (IP57) camera head
- Rugged water and drop proof housing (IP67/2m)
- Non-slip ergonomic handles for ambidextrous use
- SD Memory card included to store >14,600 images
- Video recording (up to 4 hours) with voice annotation
- AV output for viewing images and video directly on a monitor
- Video and images can be transferred to a PC via the SD card or USB output



Industrial Applications:

- Industrial: Inspect weld integrity, process equipment, gears, molding machines and much more
- Aerospace: Aircraft inspections for debris or damages
- HVAC: Inspect inside ducts, behind motors & compressors
- Automotive: view inside or around engines & transmissions

All Complete Systems include:
 Videoscope, LCD monitor/Controller Unit, SD memory card, 3.7v rechargeable Li-Polymer battery, patch cable, AC adaptor, USB and AV cables, camera with cable, and carrying case.



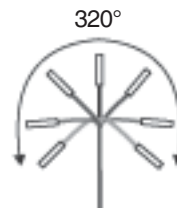
Camera with 4 built-in bright LED lights illuminate dark areas



Camera probes with cable length greater than 3 meters will be coiled on a spool as shown above



Optional Wireless Transmitter transmits video to the main display from tight or hard to reach places up to 100ft (30m) away



Optional articulating (6mm diameter) camera probes adjust to 320° viewing angle

For Complete Information on Available Systems and Optional Accessories, visit www.flexbar.com, email: sales@flexbar.com or speak with our Borescope Applications Specialist



FLEX-BORE™ I SMALL DIAMETER VIDEOBORESCOPE

View & Inspect Inaccessible Areas Quickly & Easily



FEATURES:

- High Resolution Full Color Image
- 9mm diameter fits many small access applications
- Adjustable LED Lighting
- Detachable, wireless monitor 2.4" LCD for remote viewing
- Standard one meter (39") lengths with optional extension cable
- Runs on 4 AA batteries

Model No. 13290, Flex-Bore™ Small Diameter Videoboreoscope

Model No. 13291, 3 Foot Extension Cable*

*When using extension, must have entrance diameter of .710"

Model No. 13293, Replacement 9mm Cable/Camera head w/LED

Model No. 13299, Recordable Monitor for 13290/13295

Model No. 13292, RCA Video Adapter Cable



WIRELESS USB VIDEO RECEIVER

Compatible with Flex-Bore I (13290) and Flex-Bore II (13295) Videoboscopes

Features:

- Stream live video from your borescope to your laptop or desktop PC
- Video can be viewed, transmitted over the internet or saved as a file for future viewing
- Compatible with Windows® XP, Vista and 7

Model No. 13580, Wireless USB Video Receiver Unit





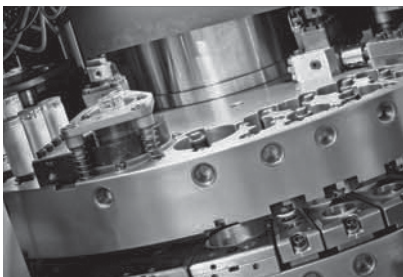
FLEX-BORE™ II MICRO DIAMETER VIDEOBORESCOPE

Reach & Record Video from Inaccessible Areas Quickly & Easily



FEATURES:

- High Resolution Full Color Image
- 4.5mm diameter fits many small access applications
- Includes SD Card for recording
- Detachable, wireless monitor LCD for remote viewing
- Standard one meter (39") lengths
- Runs on 4 AA batteries
- Includes fitted carrying case
- Adjustable LED Lighting at viewing tip



APPLICATIONS:

- Home inspection
- HVAC
- Automotive
- Safety and Security inspections
- Industrial
- Aerospace
- Many more!

Model No. 13295, Flex-Bore™ II Micro Diameter Videoboreoscope, 4.5mm (.177") x 39" long, Complete System

Model No. 13296, Replacement 4.5mm cable/Camera head w/LED

Model No. 13299, Recordable Monitor for 13290/13295

Model No. 13291, 3 Foot Extension Cable (Must have entrance diameter of .710" to use extension)



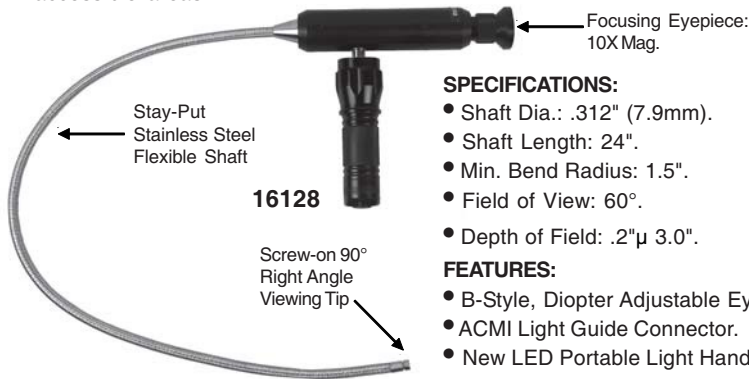
FLEXBAR FIBEROPTIC FLEXIBLE BORESCOPIES

Made in U.S.A.

General Purpose Industrial Scopes Handling Multiple Inspection Tasks

I. General Purpose Models: Direct & Right Angle Viewing

This general purpose fiberscope is designed to be a valuable inspection device which is capable of reducing or eliminating costly machine & equipment teardown for inspection purposes. With the portable battery handle light source, the General Purpose model becomes a self-contained, versatile inspection device to detect worn, damaged or inadequate conditions in hidden or normally inaccessible areas.



SPECIFICATIONS:

- Shaft Dia.: .312" (7.9mm).
- Shaft Length: 24".
- Min. Bend Radius: 1.5".
- Field of View: 60°.
- Depth of Field: .2" μ 3.0".

FEATURES:

- B-Style, Diopter Adjustable Eyepiece.
- ACMI Light Guide Connector.
- New LED Portable Light Handle included.



Now Available in Standard Viewing and Convertible Direct/Video Models:

Model No. 16128, Standard Viewing General Purpose Flexible Borescope, 7.9mm x 24" Complete with light handle, right angle attachment and heavy-duty carrying case

Model No. 16128-DVM, Convertible Direct Viewing/Video Adaptable General Purpose Flexible Borescope, 7.9mm x 24". Complete Kit as above.

LONGER LENGTHS QUOTED UPON REQUEST — PHONE OR EMAIL.

II. High Resolution: Smaller Diameter (3mm) Model: Direct and Right Angle Viewing

Designed to be a portable, rugged inspection device capable of producing a high-resolution image of critical components through access holes as small as 3.0mm. With intense fiber optic illumination and a crisp image delivered by high-resolution quartz optical fiber, this fiberscope is able to handle a host of inspection requirements where there is limited access.



Standard Features:

- High Resolution Fiber Imaging Bundle
- New Portable LED Light Handle
- Custom Foam Lined Carrying Case

Options:

- 150 Watt Illuminator (12720)
- Flexible Light Guide (13283)
- "C" Mount Video Camera Coupler (13285)
- "C" Mount Video Camera and Monitor, see page 48
- Right Angle Viewing Adapter (13542)

Specifications:

- | | | | |
|---------------------------|--|----------------------|--|
| • Shaft Outside Diameter: | .120 in. - (3mm) | • Field of View: | 50 Degrees Standard
70 Degrees Available |
| • Bend Radius: | 1.5 in. - (38mm) | • Depth of Field: | .2 in. to 3.0 in. - (5mm to 75mm) |
| • Shaft Construction: | Braided Stainless Steel | • Eyepiece: | B-Style, Diopter Adjustable and Photo Capability |
| • Shaft Lengths: | 36 in. - (91 mm) STD
Custom Lengths Available | • Direction of View: | Forward Viewing Standard
Right Angle Viewing with Adapter |

Model No. 13541, High Resolution, 3mm x 36" Flexible Borescope. Complete with light handle and carrying case.

Model No. 13542, 90° Right Angle Viewing Attachment for above models.



Made in U.S.A.

FLEXBAR 2-WAY AND 4-WAY ARTICULATING FIBEROPTIC BORESCOPIES

Now Available In Standard High Resolution (10K Fiber Bundle) And Super High Resolution (17K Fiber Bundle) Video Direct Models

Specifically designed for QA applications and preventative maintenance inspection programs, Flexbar flexible fiberscopes provide high-resolution images of difficult to reach areas. Look around corners and into deep recesses without the need for costly, time consuming tear down. High grade optics produce very bright images, and the Dura-Flex™ articulation system provides outstanding range of motion and durability. Dura-Flex™ articulation was primarily designed to dramatically reduce repair costs by as much as 75%.

I. Standard Viewing 2-Way & 4-Way Systems include:

- Articulating borescope, with 10K imaging bundle.
- Portable LED battery handle
- Custom foam lined carrying case



2 way articulation guides the viewer around corners and dark recesses.



4 way articulation maximizes versatility and effectiveness.



New High Intensity LED Light Handle

I. Standard Viewing & Video Compatible Models*:

Model No. 18960-VC, 2 Way Articulating Flexible Borescope Video Compatible Kit, 6mm dia. x 40" (1meter)

Model No. 18961, 4-Way Articulating Flexible Borescope Kit, 6mm dia. x 40" (1meter)

Model No. 18961-VC, 4-Way Articulating Flexible Borescope Video Compatible Kit, 6mm dia. x 40" (1meter)

Model No. 18962, Right Angle Viewing Adapter for above models.

* Video Compatible Models have special eyepiece for use with all standard video camera couplers.

Specifications:

Shaft O.D.	Bend Radius	Shaft Construction	Shaft Length	Articulation	Field of View	Depth of Field	Eyepiece Type	Direction of View	Light Guide Conn.
.236in (6mm)	1.5in. (38mm)	Flexible, braided SS covering	40 in. (1000mm)	Four Way: (Up) ± 180°; Left, right and Down ± 120°	50° STD**	.2:4.0in. (5-100mm)	Diopter Adjustable	Forward Viewing STD	ACMI

II. Super High Resolution (17K Fiber Bundle)

Video Direct Models: 6mm Diameter

- Can be used direct (manual) viewing with eyepiece or you can directly connect a c-mount video CCD camera to the eyepiece without a camera coupler.
- Highest quality image available today!



Model No. 19460, Video Direct 2-Way Articulating Flexible Borescope Kit, 6mm dia. x 40" (1meter)

Model No. 19461, Video Direct 4-Way Articulating Flexible Borescope Kit, 6mm dia. x 40" (1meter)

OTHER LENGTHS & DIAMETERS QUOTED UPON REQUEST — PHONE OR EMAIL.

OPTIONAL ACCESSORIES FOR GENERAL PURPOSE & ARTICULATING FLEXIBLE BORESCOPE MODELS: See Page 48



FLEXBAR FIBEROPTIC MICROBORESCOPIES

Made in U.S.A.

Provide High Resolution Image Of Critical Components
Through Very Small Access Holes:

Semi-Rigid & Flexible Models from .039" dia. to .078" dia.

I. Fiberoptic Microborescope Models:

Now Available in 1mm (.039") and 2mm (.078") diameters.

This Fiberoptic Microborescope was designed to be a portable, rugged inspection device capable of producing a high resolution image of critical components through access holes as small as 1.0mm or .039". With intense fiber optic illumination and a crisp image delivered by high resolution quartz optical fiber, this microborescope is able to handle a host of inspection requirements where limited access is a constraint. Unlike standard lens-type borescopes, this borescope will tolerate moderate shaft deflection due to its fiberoptic construction. **Includes portable light handle and heavy-duty carrying case.**



SPECIFICATIONS:

- Shaft Outside Dia.: .039" or .078"
- Outside Dia. with Mirror Tube: .05" or .095"
- Shaft Deflection: $\pm 15^\circ$
- Field of View: 50° Standard, 70° Available
- Depth of Field: .118"-2.0"

FEATURES:

- 10X Mag. Eyepiece.
- ACMI Light Guide Connector.

Available Standards Models:

Model No. 18955, 1mm (.039") x 6" Fiberoptic Microborescope Kit.

Model No. 18955-RA, .05" Right Angle Mirror Tube for 18955

Model No. 18956, 1mm (.039") x 12" Semi-Rigid Microborescope Kit.

Model No. 18956-RA, .05" Right Angle Mirror Angle Tube for 18956

Model No. 18957, 2mm (.078") x 6" Semi-Rigid Microborescope Kit.

Model No. 18957-RA, .095" Right Angle Mirror Tube for 18957

Model No. 18958, 2mm (.078") x 12" Semi-Rigid Microborescope Kit.

Model No. 18958-RA, (.095") Right Angle Mirror Tube for 18958

**OTHER LENGTHS & DIAMETERS QUOTED UPON REQUEST —
PHONE OR EMAIL.**

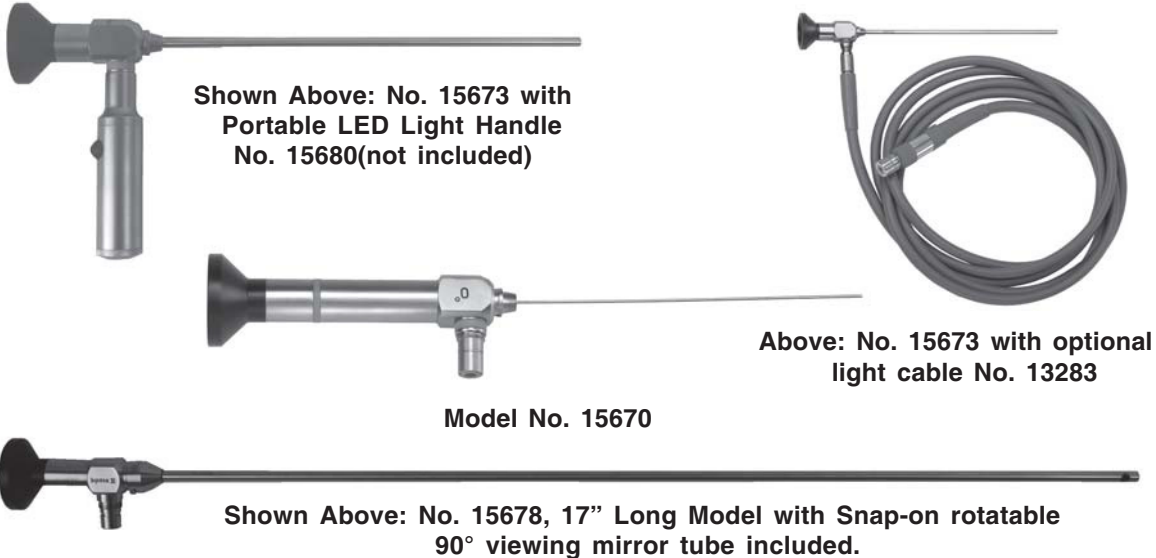
**OPTIONAL ILLUMINATION & VIDEO ACCESSORIES
AVAILABLE FOR USE WITH ALL ABOVE MODELS; see page 48.**



FLEXBAR SHARP-VIEW™ RIGID BORESCOPIES & MICROBORESCOPIES

Featuring Superb Quality Optics Which Provide Clear, Bright Images For
Any Standard Industrial Application.

IDEAL FOR USE WITH FLEXBAR VIDEO BORESCOPE SYSTEMS



Standard scopes available in diameters from 1.5mm (.060") up to 5.5mm (.220"), lengths up to 17".

MAIN FEATURES:

- Probe tubing is stainless steel for extra durability.
- Eyepiece is standard 32mm...accepts Flexbar C-mount coupler No. 13285 for video system usage.
- Integral cool fiberoptic lighting provides bright and even lighting.
- Wide angle field of view for direct and lateral viewing.
- Light guide post connects with Flexbar light guide (No. 13283) for use with Flexbar Lightsource or optional Flexbar portable light handles (see next page).

ORDERING:

Model No.	Diameter	Shaft Length	Viewing Angle	Field of View
15670	1.2mm (.047")	4.75" (120mm)	0°	Standard (45°)
15671	2.7mm (.106")	7" (175mm)	0°	Standard (45°)
15672	3mm (.118")	7" (175mm)	30°	Standard (45°)
15673	4mm (.160")	7" (175mm)	0°	Standard (45°)
15674	4mm (.160")	7" (175mm)	0°	Wide Angle (70°)
15679	4mm (.160")	7" (175mm)	70°	Standard (45°)
15675	4mm (.160")	7" (175mm)	90°	Standard (45°)
15676	4mm (.160")	12" (300mm)	0°	Standard (45°)
15677	4mm (.160")	12" (300mm)	70°	Standard (45°)
*15678	4mm (.160")	17" (425mm)	0° & 90°	Standard (45°)
15683	8mm (.315")	7" (175mm)	70°	Standard (45°)
15684	8mm (.315")	7" (175mm)	90°	Standard (45°)

* Model No. 15678 includes snap-on rotatable 90° viewing mirror tube accessory.

See next page for available light handles, light cables, light sources, couplers and video camera systems.



BORESCOPE ACCESSORIES

For Use With Flexbar Rigid and Flexible Borescopes.

I. ILLUMINATION ACCESSORIES:



15695



15680



13283



18-12720



12360

Model No. 15695, High Intensity LED Portable Light Handle.

Model No. 15680, Economy LED Portable Light Handle.

Model No. 13283, Flexible Fiberoptic Light Guide Cable, 10 foot (3 meters).

Model No. 18-12720, 150 Watt Halogen Lightsource, See Page 28.

Model No. 12360, Flexbar LED Fiberoptic Illuminator, See Page 27.

II. VIDEO CAMERA & VIDEO COUPLER ACCESSORIES:



15682



19941



13287



13285

Model No. 15682, Flexbar Color Borescope Camera with Built-In Focusable Borescope Coupler, BNC output (includes output cable).

Model No. 19941, Flexbar 1/2" CCD Color Video Camera, Compact, S-VHS, includes power supply.

Model No. 13287, Fixed Focus C-Mount Video Coupler.

Model No. 13285, Focusable C-Mount Video Coupler.

Model No. 18-19946, S-VHS Cable (6 foot)



Also Available:

Flexbar Real Time High Resolution Digital Cameras - Compact, Lightweight USB Mini Design. Choice of models suited to most applications.

See Pages 25-26 for more information.

III. VIDEO MONITORS:



High Resolution - High Performance Video Monitors Available for use with Flexbar Video Borescope System Configurations-

See Page 25

FLEXBAR



FLEXBAR DIGITAL IMAGE RECORDER

Perfect for use as a Video Borescope System!

The Digital Image Recorder is a standalone inspection system that can be used to record both Still Images and Live Video. All images can be displayed on screen or SD Memory Card for inspection, emailing or archival storage. Ideal for use with Microscopes and Borescopes!



Features:

- Comes with 8GB SD Memory Card and Compact USB Reader
- Still Image Capture (BMP) and Live Video Capture (MPEG)
- Footswitch included- For instant hands-off control
- Accepts S-VHS, RGB, Composite BNC Inputs, or RCA (with adapter - see below)
- Works with Analog cameras: PAL or NTSC
- Screen: 3.5" High Resolution LED Display

Model No. 18-DIR, Flexbar Digital Image Recorder. Includes: 8GB SD Memory card, USB Reader, Footswitch, all cables.

Model No. 13292, RCA Video Adapter.

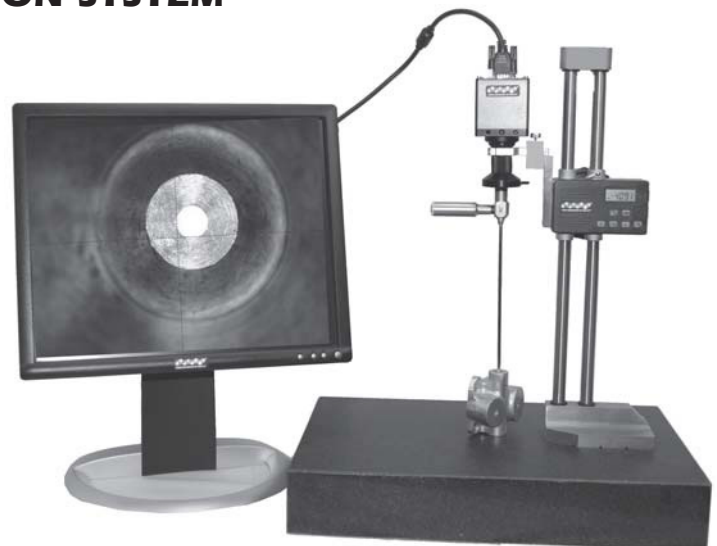


FLEXBAR INTERNAL BORE VIDEO MEASUREMENT/INSPECTION SYSTEM

- Inspects bores with precise vertical control
- P.C. is not required
- Camera connects directly to monitor
- Measures groove heights
- Measures through hole distance
- Inspect for F.O.D.
- 0-7" Range
- 7.5" Part Height
- 2-3" Throat Clearance

System Includes:

- 2.0 Megapixel camera w/internal crosshair generator
- 2.0GB SD memory Card
- Digital Vertical measurement stand
- 7" 4mm 90° borescope
- Battery Illuminator
- 21" Hi-Resolution monitor



Surface Plate not included

Model No. BVM-100, Flexbar Internal Bore Video Measurement/Inspection System
Larger Stands & Scopes Available. Please call with your application requirements.



FLEXBAR OPTIVIEW™ RIGID BORESCOPIES

Quality Portable Scopes at Affordable Prices
Now Available in 7" and 17" Lengths



New! Optional 90° Viewing Mirror Tube

Features:

- Portable, rugged design enables user to view critical components in high resolution through access holes as small as .160" (4mm).
- Utilizes a high intensity tungsten halogen light source operated by 2 AA batteries.
- Built-in light source affords user extreme versatility anywhere in the shop.

Specifications:

	Model No. 15735	Model No. 15733
• Working Length:	7" (175mm)	17" (425mm)
• Overall Length:	9" (225mm)	19" (475mm)
• Diameter:	.160" (4mm)	.160" (4mm)
• Field of View:	65° Wide Angle	65° Wide Angle

Model No. 15735, OptiView 7" Rigid Borescope. Complete with battery light handle, 2AA batteries and hard plastic carry case.

Model No. 15736, 90° Viewing Mirror Tube Adapter for above.

Model No. 15733, OptiView 17" Rigid Borescope. Complete with Battery light handle

Model No. 15734, 90° Viewing Mirror Tube Adapter for above.

FLEXBAR PORTABLE SHOP MICROSCOPES

High Power Yet Economical Microscopes Featuring Built-in Measurement Reticule and External Illuminator



Now Available in 3 Models: 20X, 40X, and 60X

FEATURES:

- Dual inch/metric glass scale
- High Quality Aluminum Frame
- Smooth Focus and Fine Adjustment Utilizing Graduated Vernier
- Adjustable penlight illuminator, uses 2 AA batteries (Model No. 15728 uses 2 AAA batteries)

SPECIFICATIONS:

Model No.	Magnification	Focal Distance	Field of View	Retical Scale
15728	20X	.630"/16MM	.078"/2MM	.005"/.1MM
15729	40X	.500"/13MM	.078"/2MM	.001"/.02MM
15730	60X	.387"/10MM	.090"/2.3MM	.001"/.02MM



MICRO-BORE OPTICAL DEEP BORE CHECKER

Can Be Used On Tiny and Large Bore Diameters For Openings from .039" and Up. Depth of focus from .020" to 10.00".

The Micro-Bore Viewing System is a unique concept for checking micro-bores and cavities. It is composed of 17 different lenses each with a predetermined focal length. These lenses are mounted in a rotary disc and marked from ,5 to 25 determining the focal length in millimeters when multiplied by a factor of 10. The disc is rotated clockwise to focus from the minimum to the maximum depth. Magnification is 10x at minimum focal point and decreases to 2x at the furthest point. The illumination system is on the Optical Axis and provided by a miniature 2.5 volt Halogen Light Bulb. It is adjustable with an exterior intensity switch. The light is then collimated and projected on a mirror that bends the light path 90° down the length of the tube or cavity. For deep cavities, additional illumination may be needed. This can be provided as back lighting.

Model No. 16059, Micro-Bore Kit Complete

Model No. 16119, Replacement Halogen Bulb/Assembly



THE FLEXBAR INSPECTO-SCOPE

Precision German Made

Inspecto-Scope - an economically priced, general inspection scope ideal for magnifying and illuminating hard to see areas. This compact functional instrument reflects the same level of craftsmanship and precision as the most expensive medical instruments on today's market. Includes plastic carrying pouch. Uses convenient "C" batteries. Up to 4x magnification.

IDEAL FOR QUICK INSPECTIONS

Model No. 12280, Inspecto-Scope. Complete with 3 specula, and soft plastic carry pouch.

Model No. 12281, Replacement Bulb



FLEXBAR HANDY-VIEW PORTABLE INSPECTION TOOL

A High Quality, Affordable Viewing Scope. Ideal for illuminating and viewing holes and cavities at 5X magnification.



Features:

- Bright, clear viewing image, 5X magnification
- Battery handle with on/off halogen lamp illumination
- Power source: 2AA Batteries
- Includes padded nylon carrying case

Model No. 19311, Handy-View Inspection Tool

DELUXE POCKET OPTICAL COMPARATORS



12223

7X and 10X Series

The scales are Photo etched into a glass reticle which is placed in actual contact with the measured object, thus obtaining simultaneous enlarged images of the scale and measured object. Highly accurate measurements are thus obtained. Can be used also as a high grade magnifier. These are interchangeable in the screw-in mount on the bottom unit. With them, measurements of diameter, radius, angle, and thickness can be made.

FEATURES:

10X Series

- 10 Power.
- Four Elements.
- Coated Lenses.
- Focusing Ring.
- For inspection use.
- Sharp undistorted images.
- Interchangeable Glass Reticles.

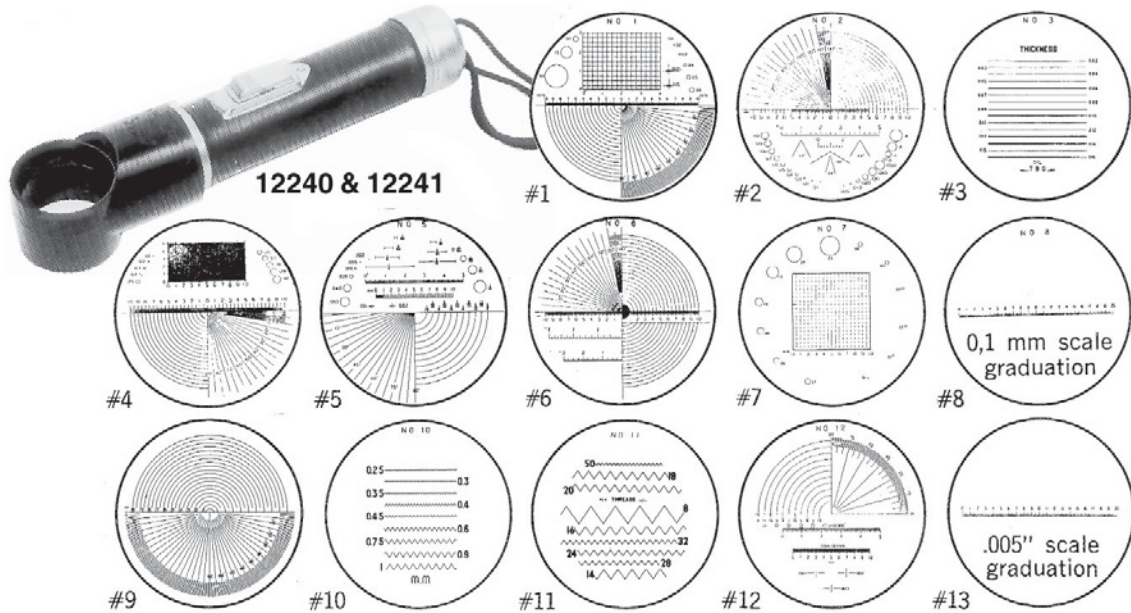
7X Series

- 7 Power.
- Three Elements.
- Coated Lenses.
- Focusing Ring.

Model

Description

- 12220** Pocket Comparator with 7X reticle No. 5
- 12221** Pocket Comparator with 7X reticles Nos. 1, 5, 7, 8, 12
- 12240** Illuminator for 7X Pocket Comparator (w/o battery)
- 12222** Pocket Comparator with 10X reticle No. 5
- 12223** Pocket Comparator with 10X reticles Nos. 1, 5, 7, 8, 12
- 12241** Illuminator for 10X Pocket Comparator (w/o battery)



Individual Reticles:

For 7X Series; 1" Diameter

Model No.	Reticle No.	Model No.	Reticle No.
12240-1	1	12246-7	7
12241-2	2	12247-8	8
12242-3	3	12248-9	9
12243-4	4	12249-10	10
12244-5	5	12250-11	11
12245-6	6	12251-12	12
		12252-13	13

Individual Reticles:

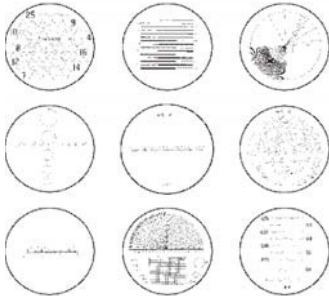
For 10X Series; 1 3/8" Diameter

Model No.	Reticle No.	Model No.	Reticle No.
12255-1	1	12261-7	7
12256-2	2	12262-8	8
12257-3	3	12263-9	9
12258-4	4	12264-10	10
12259-5	5	12265-11	11
12260-6	6	12266-12	12
		12267-13	13



FLEXBAR 10X POCKET OPTICAL COMPARATOR SET

Featuring 9 photo etched glass reticle scales covering a wide range of measurement applications. Convenient for checking angles, thread measurements, hole sizes, length and more. 10X magnifier produces sharp, undistorted and aberration-free images.



12240



12501

Comes with Reticle # 1, 11, 13, 2, 5, 7, 10, 3, 8

Ordering:

Model No. 12501, 10X Pocket Optical Comparator with 9 Reticles and Case

Model No. 12240, Illuminator for No. 12501 Optical Comparator (w/o battery)

THE FLEXBAR FLEXIBLE BEND-A-LIGHT

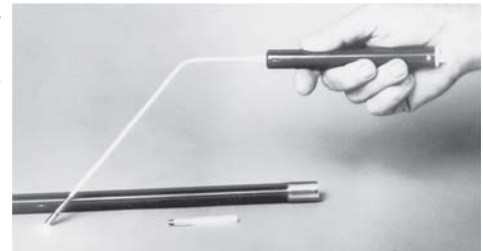
High Intensity Light Tool - Flexible Shaft Holds Its Shape

- High intensity, long life, shock resistant inspection light can be bent at any angle!
- Replaceable broad spectrum bulb, .195" diameter will enter small holes easily. Shaft length = $9\frac{3}{8}$ ".
- Durable plastic shaft cover doubles as extender for 25" total reach (end to end).

Model No. 12270, $9\frac{3}{8}$ " Flexible Shaft Bend-A-Light. Includes 2 "AA" replaceable batteries.

Model No. 12273, Replacement Bulb for 12270

Made in U.S.A.



FLEXBAR ECONOMY DEEP HOLE INSPECTO-LITE

NOW AVAILABLE IN TWO KITS

- Self-contained light for easier viewing of hard to reach areas.
- Ideal for inspection of tools, dies, machined parts, castings; checking deep surfaces, etc.
- Chrome plated and distortion free.
- Furnished in handsome case.

Available in two Kits:

Model No. 12790, Deep Hole Inspecto-Lite Kit A, Complete. While Supplies Last

• **Kit A** includes: Battery housing for use of 2 AA penlight batteries—Instant on-off switch—6" straight lucite conductor—4" curved lucite conductor—2½" lucite pin-point light—Clip-on mirror.

Model No. 12799, Deep Hole Inspecto-Lite Kit B, Complete

- **Kit B** includes: Battery housing for use of 2 AA penlight batteries—Instant on-off switch—2¼" and 6" straight lucite conductors—4" curved lucite conductor—6" magnetic conductor—½" dia. and 1" dia. clip-on mirrors.



Above: Model 12790
Batteries not included.



FLUORESCENT ILLUMINATED MAGNIFIERS

Top Quality Illuminated Magnifiers...designed for inspection, laboratory and assembly uses.

Prolite® Dual-Mag™

Dual-Mag™ DMSC Series Prolite® Magnifiers

Features:

- 5" Round Viewing Area
- Crown White, Distortion free, Optical Quality lenses
- Free Swing Away 10 Diopter Lens on All models
- E-Z Swivel®, allows unlimited angles of use
- Dual magnification levels of 3 diopter and 13 diopter
- Supplied in Carbon Black for ESD reduction
- Shielded Bulb
- Full Spectrum 22 Watt Bulb
- Economy Arm
- Clamp on or Weighted Base
- Internal Springs
- Value Priced



Model No. 12819, Illuminated Magnifier with universal clamp

Model No. 12820, Illuminated Magnifier with weighted base

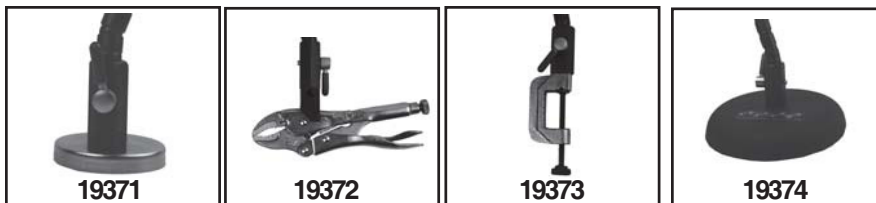
Model No. 12821, Full Spectrum Vision Lite Replacement 8" bulb

FLEXBAR LED FLEXI-LAMP

Advanced Technology 15-LED Lamp Providing Up To 1000 Hours Continuous Use.
Light Runs On 3 AAA Batteries

High Intensity, Cordless, Heavy-Duty Aluminum Light Is Mounted On Our Original Flexbar® Instant Positioning - Instant Locking Arm.

5 MODELS AVAILABLE WITH A CHOICE OF MOUNTING OPTIONS



ORDERING:

1. **Model No. 19370**, Flexi-Lamp on V-Bottom On/Off Mag Base
2. **Model No. 19371**, Flexi-Lamp on Disc Mag Base, 3 1/8" dia.
3. **Model No. 19372**, Flexi-Lamp on No. 7CR Vise Grip (U.S.A.)
4. **Model No. 19373**, Flexi-Lamp on C-Clamp, 1 3/8" Capacity
5. **Model No. 19374**, Flexi-Lamp on 6" dia. Weighted Base

Also Available:

Model No. 19375, 15-LED High Intensity Light, 4" Long



FLEXBAR PORTABLE SURFACE-ROUGHNESS TESTER

A Precision, Fully Self-Contained Compact Tester Incorporating An Advanced Microprocessor. Performs data acquisition, data processing and display of all test measurements.

The **Model No. 15950** Portable Surface Roughness Tester features an integrated processor, display and sensor, and allows for user selectable readings in Ra and Rz. Measures flat, round and sloping planes, grooves, and recesses greater than 3.1" x 1.2".

Other features include:

- Use in any position, horizontal, vertical or anywhere in between
- Ra, Rz, μm , μinch at touch of a button
- Multi-functional LCD
- 3 cut-off lengths
- Rechargeable
- Easy calibration

Surface Roughness parameter	Ra (ISO), Rz (DIN), Rms (Rq), Rt
Measuring Range	Ra: 0.05-10.0 μm / Rz 0.1-50mm
Resolution	0.01 μm (1.6minch)
Cut-off lengths	0.0009in., 0.03in., 0.09in.
Tracing Length	0.23in (6mm)
Accuracy	$\pm 12\%$ of actual Value
Pick-up stylus	Piezo-electric
Tracer Tip	Diamond, radius 5mm
Power	3.6v / 2xNiMH batteries
Charger	9V DC
Contact force on probe	<1.8ozf (<50gf)
Static measuring force of sensor stylus	<0.06ozf (<1.6gf)
Dimensions	4.9 x 2.8 x 1.0in. (125 x 73 x 26mm)
Weight	0.4 lbs (200g)



Ordering:

Model No. 15950, Flexbar Portable Surface Roughness Tester, includes certified reference specimen, instructions and compact durable carrying case

Model No. 15951, Replacement Stylus for No. 15950

Model No. 16037, Precision Reference Standard & Stylus Check (see page 56)

SURFACE ROUGHNESS TESTER WITH PROFILE ARM

The latest in "State-of-the-art" surface roughness testing. This model is distinguished by a high level of accuracy, multiple functions and simplicity of operation. Extremely sensitive and highly accurate readings are offered via multiple parameters in Ra, Rq(Rms), Rt,Rz, and many more. Able to handle round parts, bores, flats, I.D's and O'D's and all types of special applications, the 17880 utilizes an easy interface to allow for changes of in/mm(μin / μm), cutoff lengths, sampling lengths, level of test (stylus position), digital filters and more! Measurement results are displayed as large characters on the LCD screen for easy recognition. Battery powered portability allows productivity throughout the shop.



Model No. 17900 Surface Roughness Gauge

Model No. 17881 Precision Support Stand w/special adapter for 17880

Model No. 17882 Replacement Stylus

Model No. 17883 Deep Groove Stylus

Model No. 17884 Small Hole Stylus

Model No. 17885 Curved Surface Stylus

Model No. 17886 Extension for Stylus

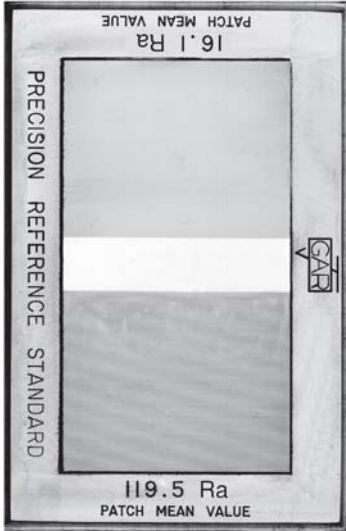
Measures grooves and recessions	wider than 0.16in (4mm)
Roughness Parameter	Ra, Rz, Ry, Rq, Rt, Rp, Rs, Rv, Rms(Rq), Rmax, Rm, R3z, Rsk, Rpc, Rmr
Roughness Standards	ISO/DIN/JIS/ANSI
Assessed Profiles	Primary profile (p), Roughness profile (R) tp curve (Mr)
Display Resolution	0.001 μm / $\pm 20\mu\text{m}$
	0.002 μm / $\pm 40\mu\text{m}$
	0.004 μm / $\pm 80\mu\text{m}$
Measuring accuracy	$\leq \pm 10\%$
Repeatability	Less than or equal to 6%
Measuring Range	Ra, Rq: 0.01-40 μm
	Rz, Ry, Rp, Rt, R3z, Rm: 0.02 -160 μm
	Sm, S: 2-4000 μm
	Rsk: 0-100%
Maximum drive range	0.7in (17.5mm)
Cut-off lengths	0.0009/0.03/0.09inch (0.25/0.8/2.5mm)
Sensor	Inductance type
Sensor-stylus	Diamond, radius 5 μm
Pick up Force	<4mN
Data Output	USB
Weight	0.97lb (440g)
Dimensions	119mm x 47mm x 65mm
Power	Li-Ion rechargeable battery

Optional Precision Reference Standard with Signed Certificate of Traceability to N.I.S.T., see page 56. Model No. 16037, Precision Reference Standard & Stylus Check



PRECISION REFERENCE STANDARD AND STYLUS CHECK

Made in U.S.A.



16037

Dimensions: 2 1/2" x 3 3/4"

Shows actual patch mean values certified by the National Institute of Standards and Technology (NIST) CALIBRATE YOUR SURFACE ANALYZING EQUIPMENT TO PEAK EFFICIENCY.

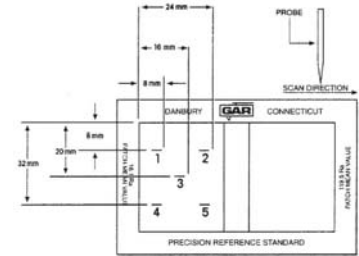
The Precision Reference Standard provides an economical calibration tool which permits the technician to calibrate surface analyzing equipment to its peak efficiency. It is the only calibration block on the market to show the actual patch mean values of low and high microinch surfaces and certified by N.I.S.T.

Since the surface character of the Precision Reference Standard is unlike normally machined surfaces, it is not recommended for use in visual or tactual comparison.

Report of Calibration by N.I.S.T.

The property of surface roughness in the 125 microinch range and below is maintained by N.I.S.T. by means of master roughness specimens conforming to ANSI-B 46.1. The master specimens were calibrated by measuring their surface profile with a stylus instrument which in turn was calibrated by an interferometrically measured step. The areas under the profile curves were then measured and the roughness average computed. The accuracy of this measurement is 2% for the 119.5 and 1 microinch for the 16.1.

Set No. 16037-CAL, Precision Reference Standard and Stylus Check, individually serialized, calibrated and certified to N.I.S.T.



Has actual mean patch values. Each duplicate of master plate tested and certified by N.I.S.T. Conforms to ANSI-B 46.1-1985.

PATCH MEAN VALUE

Area No.	18.10 microinches*	119.5 microinches
1	16.20	119.40
2	16.20	119.16
3	15.66	118.10
4	16.00	119.63
5	16.26	119.50

Set No. 16037, Complete with Metric Conversion Chart plus signed Certificate of Traceability to NIST. Made of pure electroformed nickel. Provided with protective case.

SURFACE FINISH COMPARATORS

For Engineers, Inspectors, Purchasing Agents
HANDY, INEXPENSIVE, USE AS A GIVE-AWAY
For Classes on Drafting, etc.

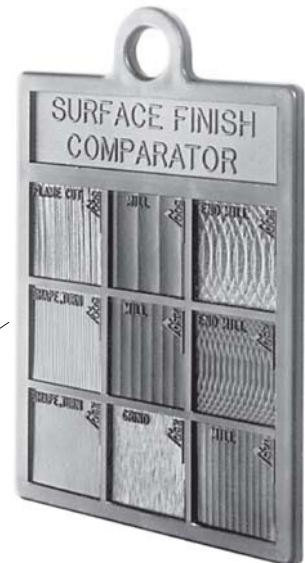
Made in U.S.A.

- ACCURATE - Exact Reproductions. Range: 16 to 500 Microinch Finish.
- CONVENIENT - Pocket Size (3 1/2" x 5"), Weight: 1 oz.
- Has handy "hang-up hole".
- VERSATILE - Specimens include Mill, End Mill, Grinding, Shape Turning, and Flame Cut.

18 SPECIMENS:

Machining Method	Microinches (AA or Ra)
Grinding	16, 32, 63, 125 and 250
End Milling	63, 125, 250 and 500
Milling	63, 125, 250 and 500
Shape Turning	63, 125, 250 and 500
Flame Cutting	500

9 more Specimens on Obverse Side



Model No. 16007, Made of tough, scratch resistant ABS Unbreakable Plastic. Black Color. Complete with Plastic Wallet.

Model No. 16045, Durable Nickel-Chrome Metal Finish. Complete with Plastic Wallet.



Made in U.S.A.

THE EVER POPULAR —
MICROCOMPARATOR
 ORIGINAL MADE IN U.S.A. MODEL

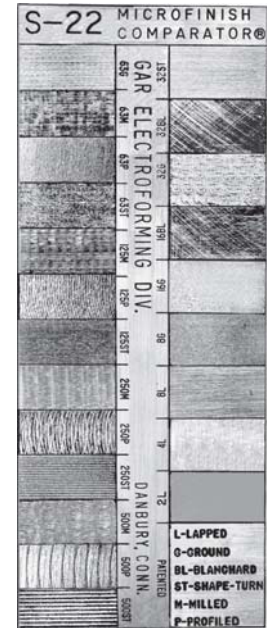
Composite Set of 22 Specimens
5 MACHINE FINISHES - MOST USEFUL VALUES
 Made of Solid Electroformed Nickel — Premium Quality
INCH AND METRIC MODELS AVAILABLE

Model No. 16038 (in microinches)

Lapped	2, 4, 8
Ground	8, 16, 32, 63
Blanchard Ground	16, 32
Shape Turned	32, 63, 125, 250, 500
Profiled	63, 125, 250, 500
Milled	63, 125, 250, 500

No. 16038 (microinches) Made of Solid Electroformed Nickel
All Complete with Case and Instructions

No. 16038-M (micrometers) Made of Solid Electroformed Nickel
All Complete with Case and Instructions

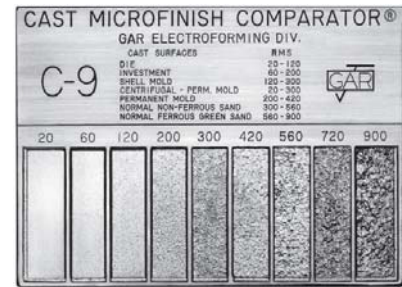


CAST MICROFINISH COMPARATORS

9 - SPECIMENS — Made in U.S.A

9 Specimens provided. Cast surface values for Die Casting, Investment, Shell, Centrifugal, Permanent Mold Ferrous and Non-Ferrous, Sand and Green Sand from 20 to 900 microinches.

No. 16039 Complete with Instructions, Engineering Data and Case
No. 16039-M (metric) 0.51 to 22.86 micrometers



GRIND AND TURN COMPARATORS

Made in U.S.A.

4 MODELS — INCH AND METRIC
MADE OF SOLID NICKEL

Furnished in attractive vinyl case with instructions.

Each model has 10 specimens:

5 each Internal Diameter (concave) and 5 each Outside Diameter (convex)

Cylindrical Turning Comparator
10 Specimens - (shows I.D. and O.D.)
 5 each I.D. (concave) 16, 32, 63, 125 and 250 R_a
 5 each O.D. (convex) 16, 32, 63, 125 and 250 R_a

No. 16041 (in microinches)

Cylindrical Grinding Comparator
10 Specimens - (shows I.D. and O.D.)
 5 each I.D. (concave) 4, 8, 16, 32 and 63 R_a
 5 each O.D. (convex) 4, 8, 16, 32 and 63 R_a

No. 16042 (in microinches)

Metric Cylindrical Turning Comparator
10 Specimens - (shows I.D. and O.D.)
 5 each I.D. (concave) 0.4, 0.81, 1.6, 3.18, 6.35
 5 each O.D. (convex) 0.4, 0.81, 1.6, 3.18, 6.35

No. 16041-M (in micrometers)

Metric Cylindrical Grinding Comparator
10 Specimens - (shows I.D. and O.D.)
 5 each I.D. (concave) 0.1, 0.2, 0.4, 0.81, 1.6
 5 each O.D. (convex) 0.1, 0.2, 0.4, 0.81, 1.6

No. 16042-M (in micrometers)

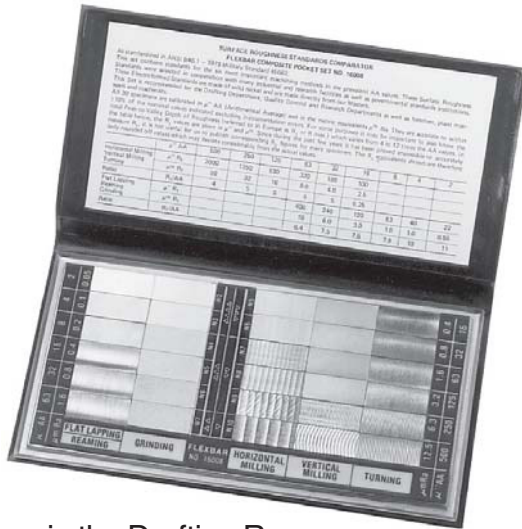


16041 TURNING



COMPOSITE SET OF SURFACE ROUGHNESS STANDARDS

Now Available With Individual Serialized Calibration Report Traceable to N.I.S.T.



Made in U.S.A.

SET NO. 16008
 INCLUDES SPECIAL WALLET
 AND INSTRUCTIONS
also
 FREE GRAPH WHICH
 CORRELATES CLA,
 AA, AND Ra VALUES
 PLUS I.S.O. "N" SCALE
 OVERALL SIZE OF SCALE IS
 6" X 3"

Ideal for use in the Drafting Room,
 Engineering Department or in the small shop.
 This set has 30 specimens, each are $7/8"$ x $3/8"$ comprising:

- 3 Specimens Flat Lapping —2, 4 and 8μ " AA
- 3 Specimens Reaming —16, 32 and 63μ " AA
- 6 Specimens Grinding —2, 4, 8, 16, 32 and 63μ " AA
- 6 Specimens Horizontal Milling —16, 32, 63, 125, 250 and 500μ " AA
- 6 Specimens Vertical Milling —16, 32, 63, 125, 250 and 500μ " AA
- 6 Specimens Turning —16, 32, 63, 125, 250 and 500μ " AA

The scale conforms to S.A.E. and military specifications for visual and tactile inspection.

FEATURES: Our economy, composite Set No. 16008 as shown here consists of 30 specimens $7/8"$ x $3/8"$ of electroformed solid nickel. Each type of surface finish, such as flat lapping, reaming, grinding, horizontal milling, vertical milling, and turning, is truly and consistently reproduced so as to give the operator or designer a realistic idea of the feel, appearance, and texture of the machined components. A set of instructions is included with each set. By means of this set, or one of our individual (larger) standards specimen scale sets, quick and easy comparisons can be made, thus eliminating costly checking methods, saving valuable production time, and stopping the production of scrap caused by poor finishes.

Manufactured to ANSI-B-46.1-1985

MADE OF SOLID ELECTROFORMED NICKEL A TRULY INTERNATIONAL SET WITH MARKINGS IN AA (microinches) and METRIC IN Ra (micrometers)

Set No. 16008, Composite Set - Surface Roughness Standards (Includes Certificate of Conformance)
Set No. 16008-CAL, Composite Set - Surface Roughness Standards complete with Long Form Calibration Report Traceable to N.I.S.T.

PHONE OR EMAIL FOR SAMPLE CALIBRATION REPORT



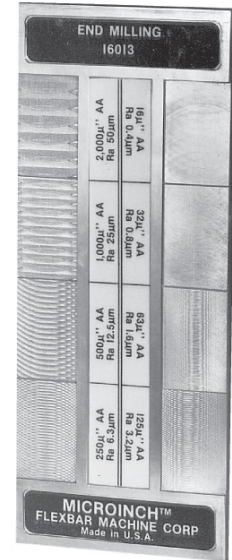
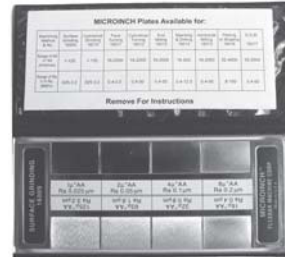
MICROINCH™ COMPARATOR PLATES

SURFACE ROUGHNESS (Texture) COMPARISON STANDARDS MADE OF SOLID ELECTROFORMED NICKEL

The LARGEST VARIETY OF STANDARDS available for assessing and specifying, by Symbol, the DEGREE OF ROUGHNESS of machined parts - including every machining method known.

EVERY OBTAINABLE VALUE

- 15 DIFFERENT SETS AVAILABLE (See Chart Below).
- Each value size is 16mm x 25mm (or 5/8" x 1").
- Overall dimensions of each plate 52mm x 128mm (or 2-1/16" x 5").
- Light in weight - can be carried in pocket. **Supplied in Plastic Wallet.**



MARKINGS: Graduated in American values - AA (microinches) as well as I.S.O. standards such as Metric Equivalents RA (μ).

Made in U.S.A.

Standard Models supplied with Certificate of Conformance

Calibrated Models supplied with Long Form NIST Traceable Certificate

Standard Model No.	Calibrated Model No.	Machining Method	No. of Specimens	Range Ra μ m	Range AA μ "	N Numbers
16009	16009-CAL	Surface Grinding	8	.025-3.2	1,2,4,8,16,32,63,125	1-8
16010	16010-CAL	Cylindrical Grinding	8	.025-3.2	1,2,4,8,16,32,63,125	1-8
16011	16011-CAL	Face Turning	8	0.4-50	16,32,63,125,250,500,1000,2000	5-12
16012	16012-CAL	Cylindrical Turning	8	0.4-50	16,32,63,125,250,500,1000,2000	5-12
16013	16013-CAL	End Milling	8	0.4-50	16,32,63,125,250,500,1000,2000	5-12
16014	16014-CAL	Reaming & Drilling	8	0.4-12.5	16,32,63,125 Reaming 63,125,250,500 Drilling	5-10
16015	16015-CAL	Horizontal Milling	8	0.4-50	16,32,63,125,250,500,1000,2000	5-12
16016	16016-CAL	Planing & Shaping	8	0.8-100	32,63,125,250,500,1000,2000	6-13
16017	16017-CAL	E.D.M	8	0.4-50	16,32,63,125,250,500,1000,2000	5-12
16019	16019-CAL	Cylindrical Lapping	8	.025-0.2	1,2,4,8 Cyl. Lap	1-4
		Superfinishing	8	.025-0.2	1,2,4,8 Superfin.	
16021	16021-CAL	Grit Blasting	8	3.2-18	128,350,520,720	5-10
		Shot Blasting	8	3.2-25	128,420,720,1000	
16022	16022-CAL	Hand Filing	5	0.4-6.3	16,32,63,125,250	5-9
16023	16023-CAL	Casting	7	0.8-50	32,63,125,250,500,1000,2000	6-12
16026	16026-CAL	Polishing	5	.0125-0.20	0.5,1,2,4,8	0-4
16044	16044-CAL	Belt Sanding	6	0.10-3.2	4,8,16,32,63,125	3-8

* Manufactured to ANSI-B-46. 1-1985. Each set is supplied in rugged vinyl case which contains a durable instruction card with valuable information in easily understood language This enables the user to obtain best results when assessing roughness or finish by sight and touch. All 15 plates conform to S.A.E. and Mil Specs.



FLEXBAR BENCH TOP HARDNESS TESTER ROCKWELL TYPE

This hardness tester comprises the very best in “state of the art” design coupled with dynamic precision. It is easy to operate yet engineered to obtain highly sensitive and accurate readings. A perfect, rugged performer suited for almost any environment including heat treat facilities, tool rooms, workshops, laboratories and inspection labs.



Model No. 16232

Accessories Included:

- C-scale Diamond Indentor
- 1/16” Ball Indentor
- 3-HRC Test Blocks
- 1-HRB Test Block
- 1-HRA Test Block
- Test Table 5.87” (150mm)
- Flat Anvil 2.5” (63mm)
- Spot Anvil .38”(10mm)
- Std. Vee Anvil
- H/D Accessory Case
- Dust Cover

Specifications:

Minor Load	10 Kgf
Major Load	60 Kgf, 100 Kgf, 150 Kgf
Test Force Application	Dead Weight
Test Force Control	Hydraulic Dashpot System
Results Display	Analog Dial Gage
Vertical Capacity	6.7 in.
Throat Depth	6.6 in.
Height	30.0 in.
Width	8.50 in.
Depth	20.0 in.
Shipping Weight	22.0 in.

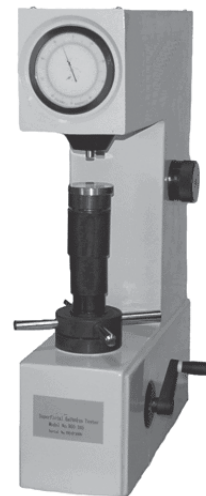
Optional Indenters:

Model No.	Description
16233	120° Diamond Indentor
16234	1/16” Carbide Steel Indentor
16235	1/2” Carbide Ball Indentor
16236	1/4” Carbide Ball Indentor
16237	1/8” Carbide Ball Indentor

Model No. 16232-D, Bench Top Digital Rockwell Hardness Tester - Available at flexbar.com

ROCKWELL SUPERFICIAL HARDNESS TESTER

The Superficial Rockwell Hardness Tester comprises “state of the art” design and dynamic precision. Used for testing thin and soft material in the Superficial Rockwell Hardness scales, this hardness tester is ruggedly engineered to obtain highly sensitive and accurate readings. Conforming to ASTM E-18 Superficial Hardness standards, this tester will offer unmatched repeatability in all Superficial Rockwell Hardness scales. A perfect performer suited for any environment including heat treat facilities, tool rooms, workshops, laboratories and inspection labs.



Specifications:

Minor Load	10 Kgf
Major Load	15 Kgf, 30 Kgf, 45 Kgf
Test Force Application	Dead Weight
Results Display	Analog Dial Gage
Vertical Capacity	6.7 in.
Throat Depth	6.6 in.
Height	28 in.
Width	8.9 in.
Depth	19.6 in.
Shipping Weight	190 lbs.

Accessories:

- N-scale Diamond Indentor
- 1/16” Steel Ball Indentor
- 3-HRN Test Blocks
- 3-HRT Test Blocks
- Test Table 5.87” (150mm)
- Flat Anvil 2.5” (63mm)
- Spot Anvil .38” (10mm)
- Std. Vee Anvil
- Accessory Case
- Dust cover

Model No. 16231

ROCKWELL SUPERFICIAL TWIN HARDNESS TESTER

The Superficial Rockwell Twin Hardness Tester tests both Rockwell and Superficial Hardness in one unit, with state of the art design and dynamic precision. It is ruggedly engineered to obtain highly sensitive and accurate readings. Conforming to ASTM E-18 Rockwell hardness standards, this hardness tester will offer unmatched repeatability in all Rockwell hardness scales. A perfect performer suited for any environment including heat treatment facilities, tool rooms, workshops, laboratories and inspection labs.



Specifications:

Minor Load	3 Kgf	10 Kgf
Major Load	15 Kgf	60 Kgf
	30 Kgf	100 Kgf
	45 Kgf	150 Kgf
Test Force Application	Dead Weight	
Test Force Control	Manual	
Results Display	Dual Scale Dial	
Vertical Capacity	6.0 in.	
Throat Depth	5.5 in.	
Height	26.0 in.	
Width	18.2 in.	
Depth	9.4 in.	
Shipping Weight	250 lbs.	

Hardness Scales: HRA, B, C, D, E, F, G, H, K, L, M (superficial)
HR15N, HR15T, HR30N, HR30T, HR45N, HR45T

Accessories:

- Diamond Conical Indentor
- 1/16” Ball Indentor
- 2- HRC Test Blocks
- 1- HRB Test Block
- 1- HR15N Test Block
- 1- HR30N Test Block
- 1- HR45T Test Block
- Test Table 5.87”
- Flat Anvil 2.5”
- Std. Vee Anvil
- Accessory Case
- Dust Cover

Model No. 16230



Made in U.S.A.

ROCKWELL HARDNESS TEST BLOCKS

Manufactured from the highest quality steel with a special heat treat and cold treat process which insures maximum consistency and repeatability.

Accuracy exceeds ASTM E10, E18, E92 and E384 standards.

I. ROCKWELL CERTIFIED TEST BLOCKS

"A" Scale Model No.	A-Diamond 60 kg (Round)
20520	HRA 28.5
20521	HRA 33
20522	HRA 37.5
20523	HRA 41.5
20524	HRA 46.5
20525	HRA 52.5
20526	HRA 55.5
20527	HRA 63
20528	HRA 68
20529	HRA 73
20530	HRA 78.5
20531	HRA 83
"B" Scale Model No.	1/16 Ball 100kg (Square)
20532	HRB 35
20533	HRB 45
20534	HRB 55
20535	HRB 65
20536	HRB 75
20537	HRB 85
20538 (Round)	HRB 95



"C" Scale Model No.	C-Diamond 150 kg (Round)
20539	HRC 25
20540	HRC 35
20541	HRC 45
20542	HRC 55
20543	HRC 60
20544	HRC 63
"15N" Scale Model No.	N-Diamond 15 kg (Round)
20545	HR15N 72
20546	HR15N 78
20547	HR15N 83
20548	HR15N 88
20549	HR15N 91.5

II. NIST TRACEABLE ROCKWELL TEST BLOCKS

The new NIST Traceable Test Blocks for the Rockwell "C" Scale will provide complete traceability to NIST. These test blocks are ground, lapped and polished to a mirror finish of one micron.

Model No.	Rockwell "C"
20550	HRCN 25
20551	HRCN 35
20552	HRCN 45
20553	HRCN 55
20554	HRCN 60
20555	HRCN 63

ANIST Traceable Certificate is furnished with each block at no charge. Available in Rockwell "C" Scale. Blocks are Round.



BRINELL TEST BLOCKS

Brinell Test Blocks are made of only the highest quality steel and aluminum. The impressions in the test bars are made with a Brinell machine whose accuracy is maintained by a proving ring traceable to the National Institute of Standards and Technology (NIST). Before certifying the Test Blocks, we double-check the impressions with an electronic microscope accurate to .01mm. Each Test Block exceeds all ASTM-E10 Standards to provide you with the highest degree of accuracy.

Model No.	Load	Hardness Range
20576	3000kg	150 to 550*
20577	500kg	60 to 140**

*in increments of 25
**in increments of 10



When ordering please specify: 1) Part No., 2) Hardness No. (e.g.: 20576/150)



FLEXBAR PORTABLE DIGITAL HARDNESS TESTER

An advanced integrated hardness tester distinguished by its very compact size, high accuracy, wide measuring range and simplicity of operation. It is suitable for testing the hardness of all metals and widely applied in many areas of industry.

It automatically computes all Vickers, Brinell, Rockwell and Shore hardness values. RS232 output enables this new model to print any of its memory from up to 2000 locations. The impact direction can be set so that the accurate values can be achieved at any angle, even upside down! Statistical mean value is automatically provided.



External Impact Probes for a variety of applications available. Visit our website or contact our product specialist.

Model 15970, Standard Applications Model - provides exceptional reliability for a wide measuring range, and is capable of automatically converting and displaying measurements into Brinell, Rockwell, Vickers and Shore hardness values. Complete kit including Standard Integrated Hardness Tester, Impact device D, Calibrated Test Block, Fitted Case, cleaning brush and Instructions.

MATERIALS AND TESTING RANGE					
MATERIAL	HRC	HRB	HB	HV	HS
STEEL & CAST STEEL	20-68	60-100	93-674	83-976	32-100
COLD TOOL STEEL	20-67			80-898	
STAINLESS STEEL	20-62	46-100	85-655	85-802	
GREY CAST IRON			93-334		
NODULAR CAST IRON			131-387		
CAST ALUMINUM ALLOYS			27-159		
COPPER/ZINC ALLOYS (BRASS)		13-95	40-173		
CuAl/CuSn ALLOYS (BRONZE)			60-290		
WRAUGHT COPPER ALLOYS			45-315		

Impact Device	D
Impact Energy	8 Ft.-Lbs. (11nm)
Test Tip	Tungsten Carbide
Max. Hardness of Sample	980hv
Impact Direction	Any Angle
Accuracy	± 0.5% (referred to L=800)
Repeatability accuracy	± 4L units L=Leeb
Measuring Range	200-960 HL
Battery Type	2 AAA alkaline (supplied)
Operating Temperature	5-104 degrees F
Dimensions	108 x 62 x 25mm
Weight	0.51 lbs (230 grams)
Min. Thickness of Sample	0.2in (5mm) (Coupled: 3mm)
Min. Weight of Sample	11lbs. / 5kg (less than 5kg to 0.1kg coupled on solid support)
Min. Thickness of Layers	0.8mm
Min. Radius of Curved Surface	1.2in (30mm)
Minimum Thickness	.500in Steel

FLEXBAR MINI-INTEGRATED PORTABLE HARDNESS TESTER

Advanced integrated portable hardness tester distinguished by its very compact size, high accuracy, wide measuring range and simplicity of use! It is suitable for testing the hardness of all metals and widely applied in many areas of industry.



MATERIAL	HRC	HRB	HB	HV	HS
Steel & cast steel	20-70	60-100	93-674	83-976	32-100
Cold tool steel	20-70			80-898	
Stainless Steel	20-70	46-100	85-655	85-802	
Grey Cast Iron			93-334		
Nodular cast iron			131-387		
Cast aluminum alloys			27-159		
Copper/zinc alloys (brass)		13-95	40-173		
CuAl CuSn alloys (bronze)			60-290		
Wrought copper alloys			45-315		

Dimensions	6.10" x 2.36" x 1.49" (155 x 60 x 38mm)
Impact Device	D
Impact Energy	8 Ft.-Lbs (11nm)
Test Tip	Tungsten Carbide
Measuring Accuracy	± 0.8% (Corresponding to ± 1 Hrc at Hrc =58)
Max. Hardness of Sample	980hv
Weight	0.48lb (220g)
Impact Direction	Any Angle
Operating Temperature	32 to 122 Degrees F (0 to 50 Degrees C)
Min. Weight of Sample	11 lbs. / 5 kg
Min. Radius of Curved Surface	1.2 in (30mm) (With Support Rings: 11mm)
Power Supply	3.6V Lithium Rechargeable Battery

Model No.15585, Flexbar Mini-Integrated Portable Hardness Tester Complete with Case.



Made in U.S.A.

FLEXBAR PORTABLE QUICK-CHECK ROCKWELL HARDNESS TESTER



A Quick & Easy Checking Gage For Flat Workpieces. Ideal For Spot or Production Checking.

- Pocket Size - Length is 9¼", Weight is 4 oz.
- Precise reading in Rockwell C scale – Pretested for positive release and dependable accuracy. No moving parts to get out of adjustment. Accuracy: +/- 2 Rockwell points.
- Covers the entire range of heat treated steel from 20 Rc to 65 Rc hardness of the Rockwell C scale.
- The piece to be checked should have a section size of 1" square or more and at least ½" thick.
- Convenient for hardness testing on your surface plate, your work bench or office desk.
- Will not mar the surface of heat treated parts.
- Includes carrying case.

Model No. 17295, Quick-Check Portable Hardness Tester.

FLEXBAR HARDNESS TESTING FILES

**Easy To Use, Portable Rockwell Hardness Testing System- For Use In All Metalworking Facilities.
*Files Can Now Be Ordered Individually***

Flexbar introduces a unique new set of six specially shaped files, each with a non-slip grip, color-coded handle. The Rockwell value is printed on each handle and the files range from HRc 40 through HRc 65.

Flexbar precision testing files have specially curved tips which can reach into internal slots, grooves and bores which cannot otherwise be tested using conventional types of fixed or portable hardness testers. They can be taken to out-of-factory sites to test for hardness on large structures or segments of machinery. For example large surface-hardened gears, large printing cylinders or weld zones of heat affected pipe lines which cannot be moved to a stationary tester.



Set No. 18750

MODEL NO.	COLOR	NOMINAL	ACTUAL HARDNESS	
18750-RD	Red	HRC40	HRC40-42	V ₈ 392-412
18750-YE	Yellow	HRC45	HRC45-47	V ₈ 446-471
18750-LG	Light Green	HRC50	HRC50-52	V ₈ 513-544
18750-GR	Green	HRC55	HRC55-57	V ₈ 595-633
18750-BL	Blue	HRC60	HRC60-62	V ₈ 697-746
18750-BK	Black	HRC65	HRC64-66	V ₈ 800-865

FLEXBAR HARDNESS TESTING FILE SET NO. 18750

Includes deluxe fitted case complete with instructions and conversion chart Rockwell C to Vickers.



Made in U.S.A.

FLEXBAR PORTABLE STEEL HARDNESS TESTER



- Range of 20 to 65 HRC (equivalent Rockwell C Scale)
- Accuracy of ±1.5 Points

Complete kit includes a hand-held impact indenter, an illuminated 60X measuring microscope, batteries, test block, hardness conversion calculator, instructions, and carrying case.

A hand-held impact indenter drives a 1/16" diameter carbide ball into the sample with a calibrated impact. The impression diameter is read directly with a microscope containing a calibrated reticle.

Certification of the calibrated test block in accordance with ASTM E18 (Section 20) is available upon request for a nominal fee.

Model No. 20680, Flexbar Portable Steel Hardness Tester, Complete Kit



FLEXBAR DIGITAL SHORE DUROMETERS

These testers are crafted and engineered to perform at the highest level of accuracy. An ergonomic and attractive design combined with lightweight assists in taking precise hardness measurements of rubbers, plastics, waxes, etc.

	18880- Shore "A"	18881- Shore "D"
Measurement Range	0-100HSA	0-100HSD
Deviation	<1%H	<1%H
Resolution	0.1H	0.1H
Repeatability	20-90 HAS $\pm 1H$	20-90 HAD $\pm 1H$
Conforms to Standards	ASTM D-2240 ISO 7619 DIN 53505	ASTM D-2240 ISO 7619 DIN 53505
Peak Value Lock In	Yes	Yes
Statistics	Mean, Min, Max, No. of Measurements and Deviation	Mean, Min, Max, No. of Measurements and Deviation
RS232 Output	Yes	Yes
Power Supply	4 AAA batteries	4 AAA batteries



Model No. 18880, Digital Shore "A" Durometer for Soft Rubber, Elastomers, Waxes, etc.

Model No. 18881, Digital Shore "D" Durometer for Hard Rubber and Plastics

TYPE A & TYPE D CLASSIC STYLE DUROMETERS

Made In USA

Type A for Soft Rubber, Elastomers, Waxes, etc.

Type D for Hard Rubber and Plastics

Ideal for Use as a Hand-Held Tester or with Test Stand*

Features:

- 1" x 1-5/8" base
- Easy to read dial indicator with 240° dial
- Range: 0 to 100 points
- Accuracy of ± 1 point
- All durometers meet or exceed current ASTM D2240 specifications
- Maximum reading pointer standard
- Certification traceable to NIST standards available (optional)
- Test block and carrying case included



20706

Ordering:

Model No. 20705, Type A Durometer Tester

Model No. 20706, Type D Durometer Tester

Model No. 20707, 10 Point Certification for each above tester, traceable to NIST.

*Test Stands Available-
Call or fax for quote

FLEXBAR DUROMETER TEST KITS

Hardness Test Block kits designed to help maintain Durometer read-out accuracy.

Shore "A" for Soft Rubber, Soft Metals, Waxes, etc.

Shore "D" for Plastics and Hard Rubber

Includes:

(7) Color-coded rubber test blocks with various nominal durometer hardness values ranging from 30 to 90 in increments of 10.

Block size: 2" x 2" x 1/4"

Model 18882 Shore "A" Kit

Model 18883 Shore "A" Kit w/ Certification



Includes:

(3) Color-coded test blocks with nominal durometer hardness values of 20, 40, and 60.

Block size: 2" x 2" x 1/4"

Model 18884 Shore "D" Kit

Model 18885 Shore "D" Kit w/ Certification





FLEXBAR PORTABLE SHORE HARDNESS TESTERS

Shore A and Shore D Types • For Rubber and Plastics

- Designed to comply with DIN 53505 and ASTM 2240 for the measurement of rubber and plastics
- Zero Backlash Feature
- Test Block Included
- Includes 2 Hands-Driving hand and Peak retaining hand to hold readings
- Dial face graduated in equal increments of one degree (1°) with a total range of 0° - 100°
- Highly durable cast housing
- Includes wooden case



18888



18889

Model No.	Shore Type	Range	Indenter
18888	A	1 DIV. 1° 0° - 100°	Blunt Taper
18889	D	1 DIV. 1° 0° - 100°	Sharp Point

FLEXBAR ULTRASONIC THICKNESS GAGES

This handheld unit has precise touch and read capabilities yet is economically priced. The 15945 is designed to measure the thickness of metallic and non-metallic materials such as aluminum, titanium, plastics, ceramics, glass and any other good ultrasonic wave conductor as long as it has parallel top and bottom surfaces. The 15945 will accurately display readings in either inch or millimeter after a simple calibration to a known thickness or sound velocity.

Display Type	Large 4-digit LCD
Minimum Display Unit	0.001"/0.1mm
Measuring Range	0.040" - 8in. (0.1mm-200mm) in steel w/standard probe (other values depending on material)
Lower Limit steel pipes	Min. dia. 0.8in. X 0.1in. (20mm x 3mm)
Display Accuracy	± 0.1mm
Sound Velocity range	1640 - 29,527 ft/s (500 - 9000m/s)
Operating Temperature	32-122 degrees F (-5 - 40 degrees C)
Frequency	5MHz
Update range	4Hz
Power supply	1.5v AA alkaline batteries (4pc)
Battery Life	Approx. 250 hours / battery set
Dimensions	4.9 x 2.6 x 0.9in. (161 x 69 x 32mm)
Weight	0.7lbs (300g)
Operating Current	<20mA (3V)

Ordering:

Model No. 15945, Flexbar Ultrasonic Thickness Gage complete with 5MHz probe, Bottle of Ultrasonic Couplant Gel, operations manual and compact durable fitted carrying case

Model No. 15944, .250" Dia. 90 Degree Probe

Model No. 15946, Ultrasonic Couplant Gel, 4 oz. bottle

Model No. 15948, 5 Steps Test Block with certificate of conformance



15945



15948



FLEXBAR DIGITAL PORTABLE COATING THICKNESS GAGES

The Flexbar Coating Thickness gages can perform two different methods of calculating thickness measurement by utilizing the characteristics of both eddy current and magnetic induction. Testing performance is both non-destructive and extremely accurate. With these state of the art thickness gages, you can easily detect the thickness of non-magnetic coating on a magnetic substrate (ferrous) or an insulating coating on a non-magnetic conductive substrate (non-ferrous) utilizing either an integrated probe or our version that comes with an external probe. Can be used in many areas of industry including manufacturing, general engineering, commercial inspection, etc.

Main Technical Data

- **Measuring Range:** 0-1000 μ m max. or 0-40 mils.
- **Resolution:** 0.1 μ m / 0.01mils(0-99 μ m) or 1 μ m (over 100 μ m)
- **Guaranteed tolerance:**
After one-point calibration: +/- 1-3% n or 2 μ m (whichever is greater)
- **Display:** 4 digits (digit height=10mm/0.4")
- **Min. measuring area:** 0.2" x 0.2" (5mm x 5mm)
- **Min. radius or curvature:** Convex: 0.12" (3mm)
Concave: 1.2" (30mm)
- **Min. substrate thickness:** Ferrous: 20 mils (0.5mm)
Non-ferrous: 2 mils (50 μ m)
- **Calibration:** Zero Calibration/Foil Calibration
*Max. Surface temperature of test object: 302 degrees F (contact time max is 2 seconds)
- **Power Source:** 4 AA batteries
- **Dimensions:** 161 x 69 x 32mm
- **Weight:** 9 oz. (260g)



Model No. 15963, Coating Thickness Gage w/ External Probe
Model No. 15964, Integrated Coating Thickness Gage

Both Units come complete with 2 substrate samples (steel, aluminum) 4 calibrated thickness samples, carry case, batteries, and operation manual.



FLEXBAR FORCE & TORQUE GAGES

Full Line of Testers available online at www.flexbar.com



Premium Force Gages



Basic Force Gages



Force Gage Stands & Accessories

Here are Just Some of the Applications:



Tensile Testing



Wire Pull Testing



Peel Testing



Puncture Testing



Pill Crush Testing



Cap Torque Tester

TORQUE TESTERS



Torque Tool Tester

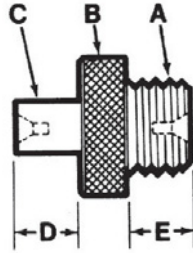
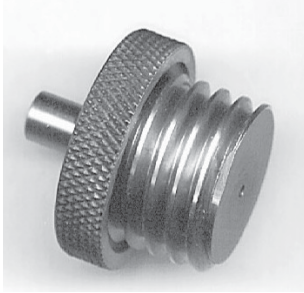
For Our Full Line of Testers or For Detailed Product Descriptions, please visit www.flexbar.com

For Application Questions, please contact our customer service and technical department by email: sales@flexbar.com or by phone at 800-879-7575



Premium Quality

HOLE LOCATION PLUGS



All diameters concentric within .0001 T.I.R.

Shaft dia. (C) .2500 + .0002, - .0000 on all gages to simplify calculation of hole spread.

Shaft length (D) is 3/8" on all gages.

U.N.C. SIZES

Model No.	Thread A	Dia. B	E
10317	2-56	5/16	1/4
10318	4-40	5/16	1/4
10319	5-40	5/16	1/4
10320	6-32	5/16	1/4
10322	8-32	5/16	1/4
10301	10-24	5/16	1/4
10302	1/4-20	3/8	3/8
10303	5/16-18	1/2	3/8
10304	3/8-16	1/2	3/8
10305	7/16-14	3/4	3/8
10306	1/2-13	3/4	3/8
10307	5/8-11	3/4	3/8
10330	3/4-10	1	1/2
10331	7/8-9	1 1/8	1/2
10332	1-8	1 1/4	1/2

U.N.F. SIZES

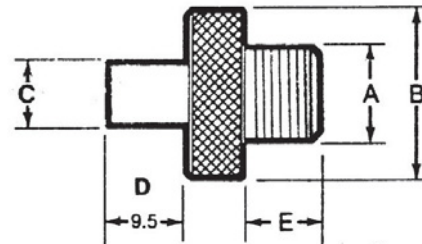
Model No.	Thread A	Dia. B	E
10321	6-40	5/16	1/4
10309	10-32	5/16	1/4
10310	1/4-28	3/8	3/8
10311	5/16-24	1/2	3/8
10312	3/8-24	1/2	3/8
10313	7/16-20	3/4	3/8
10314	1/2-20	3/4	3/8
10315	5/8-18	3/4	3/8
10336	3/4-16	1	1/2
10337	7/8-14	1 1/8	1/2
10338	1-14	1 1/4	1/2

SPECIALS AVAILABLE:

Left hand thread, helicoil, or other non-standard gages quoted on request.

METRIC HOLE LOCATION PLUGS

Model No.	Thread A	Dia. B	E
10201	M 1.6 x .35	7.9	6.35
10202	M 2.0 x .40	7.9	6.35
10203	M 2.5 x .45	7.9	6.35
10204	M 3.0 x .50	7.9	6.35
10205	M 4.0 x .70	7.9	6.35
10206	M 5.0 x .80	9.5	6.35
10207	M 6.0 x 1.00	9.5	6.35
10208	M 8.0 x 1.25	12.7	12.7
10209	M 10.0 x 1.50	12.7	12.70
10210	M 12.0 x 1.75	19.1	12.70
10211	M 16.0 x 2.00	19.1	12.70
10212	M 20.0 x 2.50	23.8	12.70
10213	M 24.0 x 3.00	28.6	12.70



All diameters concentric within .0001 T.I.R.

Shaft dia. (C) 6.35mm +.005mm, - .000mm.

Shaft length (D) is 9.5mm on all gages.



FLEXBAR LANO-LUBE™

Multi-Purpose Pure Lanolin AAA Quality, U.S.P.

**MOISTURE FREE • STOPS RUST • ALWAYS CLEAN
NO ODOR • ANTI-SEIZE PROPERTIES • MADE IN U.S.A.**



USES INCLUDE:

INSPECTION • GAGING • DRILLING CENTERS • TURNING • TAPPING

LANO-LUBE protects valuable gage libraries better than any other coating. It is also an excellent lubricant, making gage entry easy. The coating is dimensionally minuscule so that gaging accuracy is never sacrificed.

SIMPLE TO USE:

Coat the gage or component completely, then wipe off the excess using a soft cloth. No matter how hard you wipe, a thin monolithic coating will still cling to the surface resulting in an invisible and impenetrable shield against moisture and against acid from the fingers of the technician's hands.

MANY USES OF LANO-LUBE INCLUDE:

1. Coating gages and gaging accessories: gage blocks, plug gages, thread gages, ring gages, thread rings, vee blocks, sine bars, etc. Important! When gaging holes in soft metals such as aluminum or brass, LANO-LUBE will prevent gouging of inside surfaces.
2. Coating of "manufactured components", especially heat-treated parts which often times rust easily.
3. Machining: tapping of metals, tapping of plastics, drilling centers, machining of plastics.
4. Instruments in coolant environment: e.g. coating of shank and spindle of dial indicators and similar instrument. Coolant splashes will not penetrate the LANOLIN shield.
5. Anti-seize properties: a lubricant for lead screws, ball screws, slides on positioners and micro-manipulators, plastic and metal gears.
6. Release agent for moulds, die cavities and the like.
7. Use to protect lead screw on micrometer.

**LANO-LUBE is 100% pure anhydrous lanolin, AAA Grade.
There are no additives; no other chemicals or solvents.
It does not contain water and does not absorb water. It does not evaporate.**

Model No. 11152, Lano-Lube, 2 oz. Tube

Model No. 11153, Lano-Lube, Box of Twelve 2 oz. Tubes



RECTANGULAR GAGE BLOCK SETS

Available in Steel or Carbide Sets
 All Sets are Calibrated and Certified to NIST Standards.

Steel Rectangular Gage Block Sets:
 Three different grade sets with accuracy at a very significant price savings.

Carbide Rectangular Gage Block Set:
 Available in 81 piece, Grade 3

- Steel Sets: Constructed of the finest grade of high Carbon-Chrome steel, fully stress relieved, hardened to 65 RC, lapped and mirror polished to a very low microinch surface finish. Carbide Set: hardened to 70 RC.
- Low coefficient of thermal expansion.
- Carefully inspected for accurate size, parallelism and flatness.
- Standard industrial sizes, interchangeable with all accessories.
- Each set complete with deluxe fitted case and Certificate of Inspection traceable to the NIST.



Set Number	Blocks Per Set	Grade of Blocks	Size of Blocks Included in Set
12585	36 Steel	± .000050 (50 millionths)	36 pcs. in wood case. Consists of: 9 Blocks .1001" through .1009" step of .0001" 9 Blocks .1001" through .109" step of .001" 9 Blocks .110" through .190" step of .01" 5 Blocks .100" through .500" step of .1" 3 Blocks 1", 2", 4" 1 Block .050"
12586	36 Steel	Grade #3 (+8 millionths, -4 millionths)	Same as above
12587	36 Steel	Grade #2 (+4 millionths, -2 millionths)	Same as above
12588	81 Steel	± .000050 (50 millionths)	81 pcs. in wood case. Consists of: 9 Blocks .1001" through .1009" step of .0001" 49 Blocks .101" through .149" step of .001" 19 Blocks .050" through .950" step of .050" 4 Blocks 1.000" through 4.000" step of 1.000"
12589	81 Steel	Grade #3 (+8 millionths, -4 millionths)	Same as above
12590	81 Steel	Grade #2 (+4 millionths, -2 millionths)	Same as above
12591	81 Carbide	Grade #3 (+8 millionths, -4 millionths)	Same as above

FLEXBAR CALIBRATION LABELS

Made in U.S.A.

Ideal for keeping accurate quality control records of calibration
 for all precision tools, gage blocks, etc.

CALIBRATION LABEL	
IDENT:	_____
DATE:	_____
DATE DUE:	_____
INSP. BY:	_____

FEATURES:

- 500 labels per roll.
- White background and black lettering.
- Dimensions of each label — 3/4" x 1 1/2".

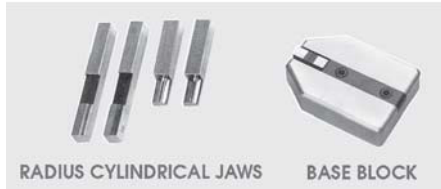
Model No. 12728, Roll of 500



RECTANGULAR GAGES BLOCK ACCESSORIES



- Precision Made From Gage Block Steel with Gage Block Accuracy
- Base Block's mounting surface is lapped, flat & parallel with base



Model No.	Description
14960	Base Block (4"x2.750"x1/7")
14961	Clamp 4" capacity
14962	Clamp 8" capacity
14963	Knife Edge Jaws (pair)
14965	Radius (0.0787") Cylindrical Jaws (pair)
14966	Radius (0.200") Cylindrical Jaws (pair)
14967	Radius (0.750") Cylindrical Jaws (pair)

81 PIECE SQUARE GAGE BLOCK SETS (Inch)



Set Nos. 12890 & 12891

Same Features As Our Rectangular Gage Block Sets

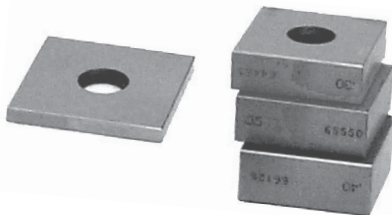
Calibrated and Certified to NIST Standards

36 Piece and 81 Piece Square Gage Block Sets

Available in Grade 2 and Grade 3

Block Combination in 81 Piece Sets

- 1 Block .050
- 10 Blocks .100-.1009 in .0001 steps
- 49 Blocks .101-.149 in .001 steps
- 17 Blocks .150-.950 in .50 steps
- 4 Blocks 1.000-4.000 in 1.000 steps



- Set No. 12892**, 36 Piece Grade 2 Square Gage Block Set
- Set No. 12890**, 81 Piece Grade 3 Square Gage Block Set
- Set No. 12891**, 81 Piece Grade 2 Square Gage Block Set



INSPECTION GAGE BALL SETS

Range: 1/8" to 1"

Now available in certified Master Set -
Calibrated Within 15 Millionths

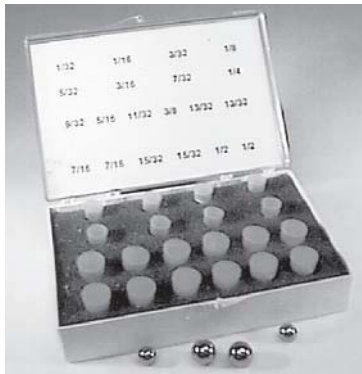


26 pairs of precision balls ranging from 1/8 to 1 inch diameter. Chrome steel hardened to 63RC. Ground and lapped. Grade 25 Accuracy - AFBMA Certified. In a plastic case, with 4 wells provided for odd sizes. Set includes 1 pair of each size: 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8, 13/32, 7/16, 15/32, 1/2, 17/32, 9/16, 19/32, 5/8, 21/32, 11/16, 23/32, 3/4, 13/16, 7/8, 15/16 and 1".

Model No. 16169, Standard Inspection Gage Ball Set. 26 pairs in fitted plastic case, with Certificate of Conformance.

PRECISION SPHERICAL BALL SET

Range: 1/32" to 1/2"



- Excellent for checking micrometers and other related inspection equipment.
 - Checking hole tapers.
 - Checking radius.
 - Good for ball burnishing.
- GR .25 & .000025 sphericity
Chrome steel balls.

16 sizes: 1/32, 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8, 13/32, 7/16, 15/32, 1/2
3 each of sizes 1/32" through 3/8", and 2 each of 13/32" through 1/2".

Model No. 16168 Precision Spherical Ball Set complete with case.

INDIVIDUAL PRECISION GRADE GAGE BALLS

Chrome Steel Hardened To 63RC, Ground and Lapped
Certified to Grade 25 accuracy ±.0001" dia., .000025" sphericity*

INCH AND METRIC SIZES AVAILABLE



Inch Gage Balls			
Size	Model No.	Size	Model No.
0.0625 (1/16)	32230	0.6562 (21/32)	32250
0.0833 (1/12)	32231	0.6875 (11/16)	32251
0.0937 (3/32)	32232	0.7817 (23/32)	32252
0.1250 (1/8)	32233	0.7500 (3/4)	32253
0.1562 (5/32)	32234	0.7812 (25/32)	32254
0.1857 (3/16)	32235	0.8125 (13/16)	32255
0.2187 (7/32)	32236	0.8750 (7/8)	32256
0.2500 (1/4)	32237	0.9375 (15/16)	32257
0.2812 (9/32)	32238	1.000 (1)	32258
0.3125 (5/16)	32239	1.0625 (1 1/16)	32259
0.3437 (11/32)	32240	1.1250 (1 1/8)	32260
0.3750 (3/8)	32241	1.1875 (1 3/16)	32261
0.4062 (13/32)	32242	1.2500 (1 1/4)	32262
0.4375 (7/16)	32243	1.3125 (1 5/16)	32263
0.4687 (15/32)	32244	1.3750 (1 3/8)	32264
0.5000 (1/2)	32245	1.4375 (1 7/16)	32265
0.5312 (17/32)	32246	*1.500 (1 1/2)	32266
0.5625 (9/16)	32247	*1.6250 (1 5/8)	32267
0.5937 (19/32)	32248	*1.7500 (1 3/4)	32268
0.6250 (5/8)	32249	*1.8750 (1 7/8)	32269
		*2.000 (2)	32270

Metric Gage Balls			
Size	Model No.	Size	Model No.
1mm	32335	18mm	32356
1.5mm	32336	19mm	32357
2mm	32337	20mm	32358
2.5mm	32338	21mm	32359
3mm	32339	22mm	32360
3.5mm	32340	23mm	32361
4mm	32341	24mm	32362
4.5mm	32342	25mm	32363
5mm	32343	26mm	32364
6mm	32344	27mm	32365
7mm	32345	28mm	32366
8mm	32346	29mm	32367
9mm	32347	30mm	32368
10mm	32348	31mm	32369
11mm	32349	32mm	32370
12mm	32350		
13mm	32351		
14mm	32352		
15mm	32353		
16mm	32354		
17mm	32355		

* Sizes of 1.5000" to 2.000" are grade 50 accuracy +/- .0002" dia., .000050" sphericity
SPECIAL SIZES QUOTED UPON REQUEST



Made in U.S.A.

FLEXBAR PRECISION INDICATOR GAGE BALLS™

PRECISION GRADE GAGE BALLS WITH AFFIXED THREADED STEMS FOR USE WITH DIAL GAGES AND CALIPERS.

Available In 31 Piece Sets or Individual Sizes

Inch or Metric Sizes from 0.0938" to 1.2500"/2mm to 32mm.

Individual Gage Balls Also Available.

Enables you to measure critical internal taper angles, taper openings, chamfers, groove locations and hole depths quickly and accurately. With the Precision Indicator Gage Balls you eliminate complicated and costly setups with sine plates (gage block), optical comparators, flush pin gages, plug gages, chamfer, micrometers and similar checking devices for any related taper bore dimensions.

ORDERING INFORMATION - COMPLETE SETS

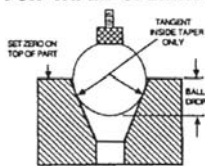
Model No. 22301, 31 Piece Inch Ball Set (With Case and Stand)

Model No. 22301-M, 31 Piece Metric Ball Set (With Case and Stand)

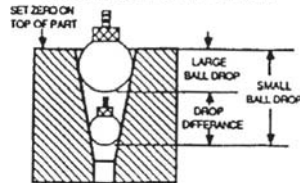


Set No. 22301

DROP FOR TAPER OPENING



DROP FOR TAPER ANGLE



Shown above: Flexbar Precision Indicator Gage Balls in use with Electronic Indicator and Stand (not included) and Electronic Caliper with Vernier Adapter.

INDIVIDUAL PRECISION INDICATOR GAGE BALLS AND ACCESSORIES:

Inch Indicator Balls with -48 Stems	
Size	Model No.
0.0938	22305
0.1250	22306
0.1562	22307
0.1875	22308
0.2188	22309
0.2500	22310
0.2812	22311
0.3125	22312
0.3438	22313
0.3750	22314
0.4062	22315
0.4375	22316
0.4688	22317
0.5000	22318
0.5312	22319
0.5625	22320
0.5938	22321
0.6250	22322
0.6562	22323
0.6875	22324
0.7188	22325
0.7500	22326
0.7812	22327
0.8125	22328
0.8750	22329
0.9375	22330
1.0000	22331
1.0625	22332
1.1250	22333
1.1875	22334
1.2500	22335
22336	Caliper Attachment for use with Flexbar Indicator Balls
22337	Right Angle Adapter for 4-48 Stems

Metric Indicator Balls	
Size	w/4-48 Stems Model No.
2mm	22340-I
3mm	22341-I
4mm	22342-I
5mm	22343-I
6mm	22344-I
7mm	22345-I
8mm	22346-I
9mm	22347-I
10mm	22348-I
11mm	22349-I
12mm	22350-I
13mm	22351-I
14mm	22352-I
15mm	22353-I
16mm	22354-I
17mm	22355-I
18mm	22356-I
19mm	22357-I
20mm	22358-I
21mm	22359-I
22mm	22360-I
23mm	22361-I
24mm	22362-I
25mm	22363-I
26mm	22364-I
27mm	22365-I
28mm	22366-I
29mm	22367-I
30mm	22368-I
31mm	22369-I
32mm	22370-I



FLEXBAR CALIPER & HEIGHT GAGE CHECKER

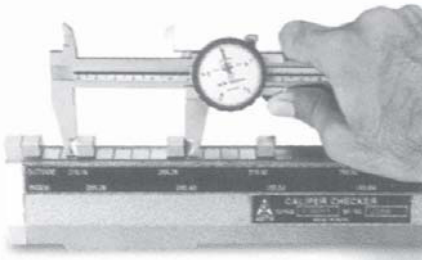
A Calibration Master for In-House Calibration of Vernier, Dial and Digital Calipers and Height Gages. Includes Certificate of Calibration Traceable To N.I.S.T.



Hardened and ground, permanently wrung, high-grade gage blocks are stacked in the rigid housing. All gage blocks are sub-zero treated for dimensional stability. Selected sizes of measuring slips provides for calibration of main scale as well as vernier scales of the instrument.

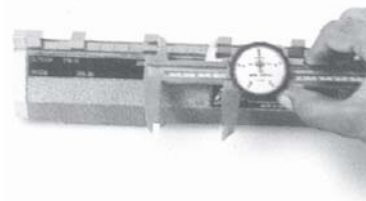


Calibration of Height Gauge using vertical position



Checking the accuracy of Dial Calipers by external jaw

- Accuracy: $\pm 5\mu\text{m}$ ($\pm .0002''$)
- Available in Two Checking Ranges:
Lengths to check up to 12" and up to 24"



Checking the accuracy of Calipers by internal jaw

Model No. 15930, Caliper/Height Gage Checker, 12" range
Model No. 15931, Caliper/Height Gage Checker, 24" range

Above models supplied with Certificate of Calibration to N.I.S.T. METRIC MODELS AVAILABLE UPON REQUEST.

FLEXBAR DIAL CALIBRATION TESTER

Provides A Quick & Highly Accurate Method For Calibrating Dial Indicators, Test (Lever Style) Indicators, Dial Bore Gages and Probe Style Readout Systems.

FEATURES:

- Precise and sensitive micrometer drum with non rotating anvil provides the required fine drive to the reference master on one side and on the other side the gauge under calibration.
- Can be used in two different combinations with
 - 1) Digital Dial Gauge with .00005"/0.001mm resolution for calibration of .005"/0.01mm least count dial gauges.
 - 2) Digital Display Unit and Probe with 0.0001mm resolution for 0.001 and 0.002mm (or inch equivalents) least count dial gauges.
- The DG Cal software provides calibration results.

1. Model No. 19350, Flexbar Dial Calibration Tester, 0-25mm/1" Calibration Range complete with accessories and case. Does not include indicator, probes or readout -order separately.

2. Model No. 19351, Flexbar DG Cal Software Package Complete.



Complete Information on the Tester and the Calibration Software can be found on our Website at www.flexbar.com



FLEXBAR MOBILE COLLECT WIRELESS MEASUREMENT SYSTEM

Featuring the latest in wireless data collection technology, the system consists of a transmitter and base receiving unit allowing quick and seamless relay of measurement. Easy connection transmitter units available for use with most Flexbar digital gages and other popular brands. An affordable, yet powerful solution to today's data collection SPC demands.



A basic wireless system consists of a Base and a Mobile Module. Just one Base per PC will support an unlimited number of Mobile Modules.

The **USB Base** receives measurements from an Unlimited Number of Mobile Modules and Remotes. Connects directly to a USB port on a PC or a laptop. It is powered by the USB port



18342-USB Base

.Features:

- RF Sniffer determines clear channels for the most reliable operation.
- Configured by an easy-to-use Windows setup program.
- Range is up to 133 feet.
- Data sent to the PC consists of ASCII strings that are accepted by virtually all SPC-DAQ software.
- WedgeLink Xpress keyboard wedge included at no additional charge.

The **Digital Mobile Module** is used to capture measurements from most digital and RS-232 handheld gages such as calipers, micrometers, digital indicators, etc. Includes Opto Cable used with all Flexbar Digi-Met and Sylvac gages.

Features:

- Securely attaches to all handheld gages.
- LEDs positioned to provide highly visible user feedback.
- User replaceable cable gage.
- Range up to 133 feet.
- Typical battery life in excess of 2 years.
- Automatically turns itself off after each reading. No power switch required.
- Read button is rated for 1 million cycles.

Model No. 18342, USB Base.

Model No. 18341, Digital Mobile Module



18341-Digital Mobile Module

For Other Manufacturer's Gages, Contact our Sales Department For Quotation.



FLEXBAR DIGITAL MULTI-GAGE™ FEATURING DIGI-MET® TECHNOLOGY

A Multi-Function, Precision Measuring Instrument
with Virtually Unlimited Application Adaptability

With today's high costs for measuring equipment and increased inspection and metrology requirements, the FLEXBAR DIGITAL MULTI-GAGE SYSTEM provides a highly effective and economical solution for a myriad of measurement applications including:

Now Available In Measuring Ranges Up To 25" (625mm).



- General I.D. & O.D. Measurements.
- Grooves and Recesses.
- Center-to-Center.
- Tapers, Chamfers.
- Many other applications.
- Deep Measurements.

Left: Flexbar Multi-Gage with various measurement accessories. Multi-Gage will accept any 4-48 threaded mounting hardware. Shown with flip-up & permanent depth stops for accurate alignment.

Introducing the latest in electronic measuring instrument technology...the Flexbar Multi-Gage utilizes a Preisser DIGI-MET electronic scale featuring Sylvac Direct RS-232 Output. Using a totally new, high accuracy capacitive sensor, **DIGI-MET PLUS** gages can be connected to any computer, data collector or printer without an interface. Other new features include:

- Large, high contrast LCD display.
- Freeze hold feature.
- Low drain lithium battery (2-3 yr life).
- ON/OFF feature.
- PRESET function.
- DIGI-MET electronic functions.
- Scale accuracy to DIN 862.
- New optoelectronic cable available for direct RS-232 output.

SPECIFICATIONS:

- Resolution: .0005" (.01mm).
- Accuracy: .001" (.02mm).
- Repeatability: 1 digit
- LCD display indicated in/mm, hold, PRESET and zero functions.
- Completely hardened throughout stainless steel construction.
- Hold feature freezes display for later viewing –perfect for hard to reach measurements.
- Direct inch/metric conversion.
- Measuring/tracking speed: 60"/sec.

MEASUREMENT RANGES*:

Model No. 19230

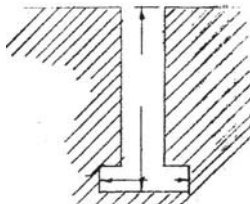
- 0-11¹/₂" Outside Measurement
- 1¹³/₁₆" to 13¹/₂" Inside Measurement

Model No. 19230-L

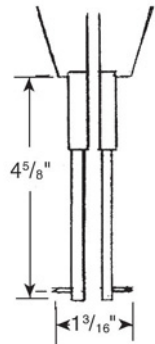
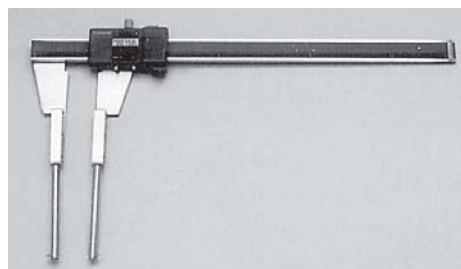
- 0-23" Outside Measurement
- 1¹³/₁₆" to 25¹/₂" Inside Measurement

* Above ranges may vary nominally according to accessories used and applications.

MEASUREMENT APPLICATIONS:



Left: Precision Pointed Tips (reversible) for measuring grooves, slots, webs, shoulders, recesses, etc. Length of tips: .450". Tip diameter before taper: .086".



Extension Tips (above): Easy to install; can be mounted inwards or outwards. Extends depth range of Multi-Gage up to 4.5" (6.5" total). Also ideal for groove or recess measurement.



FLEXBAR DIGITAL MULTI-GAGE™

Made in U.S.A.



Any Flexbar System Precision Indicator Gage Balls(available see page 72) can be affixed in-line (left) for center to center measurements. They can also be attached horizontally for other measurement applications.

FLEXBAR MULTI-GAGE ORDERING:

Flexbar Digital Multi-Gage Basic Kit No. 19230 and No. 19230-L Includes:

- Multi-Gage
- Pair of Extension Tips
- Pair of Cone Tips
- Pair of 1 1/4" Dia. Gage Balls
- Combination Tapered/Flat Tips
- Floating Locator Pins
- Pointed Groove Measuring Tips
- Durable Molded Plastic Case

Basic Kit Model No. 19230, Standard Measuring Range*

Basic Kit Model No. 19230-L, Extra-Long Measuring Range*

* See Page 76 for inside and outside measuring ranges.

REPLACEMENT COMPONENTS:

Model No. 19231, Pair of Extension Tips

Model No. 19232, Pair of Cone Tips

Model No. 19233, Pair of Tapered/Flat Tips

Model No. 19234, Pair of Pointed Measuring Tips

DIGI-MET Accessories: See page 78.

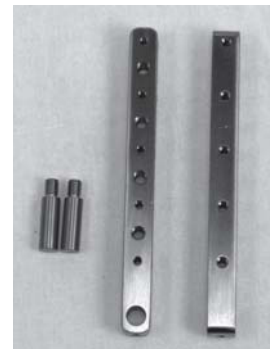
OPTIONAL ACCESSORIES FOR FLEXBAR MULTI-GAGE™ SYSTEM

I. Universal Pillar Block Extension Kit

This bolt on replacement set adds 2.25" in length, for all ID & OD Depth Measurement Applications.

When used with the Multi-Gage's supplied round extension tips, a 1.25" ID can be measured up to 7" deep!

These custom pillar blocks have 6-32 & 4-48 threaded holes every .75" for creating custom gauge heads or setting up depth stops. Side faces have 6-32 threaded every .75" as well.

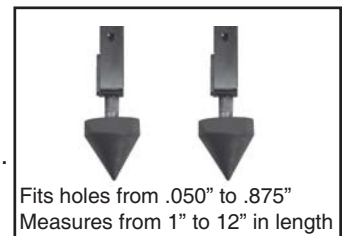


Model No. 19235, Flexbar Universal Pillar Block Extensions, Set of 2 Pillar Blocks and Floating Locator Pins

II. Variable Height Cone Point Measuring Kit

These versatile points allow you to check hole dimensions of varying diameters simultaneously. Set the first point and add supplied spacers to vary cone depth.

* Kit comes with enough height spacers to measure up to 1/2" difference in diameters. Detailed instructions included.

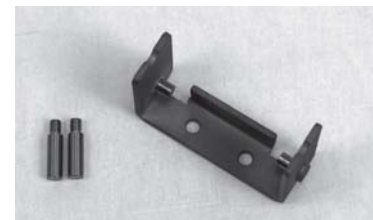


Model No. 19236, Flexbar Variable Height Cone Points, Two Piece Set with spacers

III. Multi-Gage 2" Calibration Kit

Permits accurate pre-setting of Multi-Gage for hole-to-hole direct measurement and other applications.

Model No. 19237, 2" Calibration Gage with 2 each floating Locator Pins





PREISSER
MADE IN GERMANY

DIGI-MET® UNIVERSAL STYLE CALIPERS

With 4-Way Measurement - .0005"/.01mm Resolution
Made from hardened stainless steel. High precision machined frame.



FREE
INCLUDES
CERTIFICATE OF CALIBRATION
TRACEABLE TO N.I.S.T.

Features:

- DIGI-MET electronic functions.
- 4-way measurement - inside, outside, depth and step.
- Sliding internal top cross jaw.
- Length of bottom jaws: 1.574" (40mm).
- Resolution: .0005" (.01mm) Accuracy: .001" (.02mm).
- REPEATABILITY: 1 DIGIT 10µm ±2s

6" (150mm), 8" (200mm) and 12" (300mm) Models
All models include OPTO RS232C SPC Output



- Model No. 18200**, 6" (150mm) Digi-Met Universal Style Caliper
- Model No. 18314-C**, 6" (150mm) Digi-Met Caliper with Carbide Coated Top & Bottom Jaws
- Model No. 18329**, 8" (200mm) Digi-Met Universal Style Caliper
- Model No. 19245**, 12" (300mm) Digi-Met Universal Style Caliper (does not include depth rod)

Accessories:

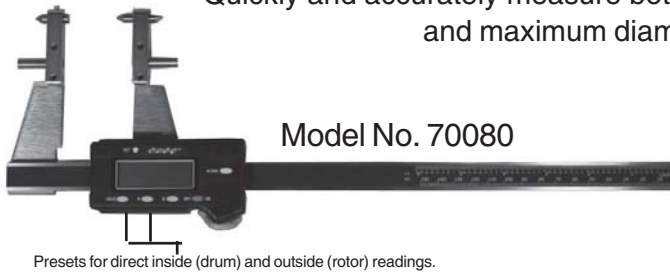
- Model No. 18316**, Stainless Steel Depth Measuring Base Attachment
- Model No. 18317**, Replacement Lithium Battery, 3V

Direct RS232C Opto-Electro Output Cable
for all DIGI-MET direct output gaging
Model No. 18315, includes 80" connecting cable
with 9 pinIBM RS232C connector

FLEXBAR COMBI-GAGE

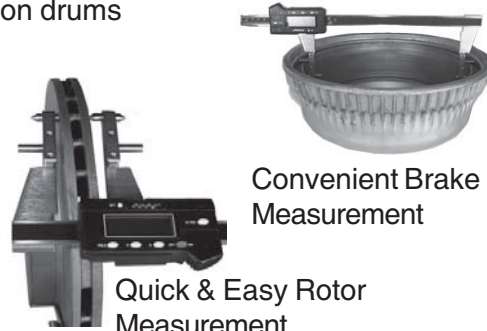
ALL IN ONE TOOL for Automotive Service and a variety of measurement applications.

Quickly and accurately measure both minimum thickness on rotors,
and maximum diameter on drums



Model No. 70080

Presets for direct inside (drum) and outside (rotor) readings.



Convenient Brake Drum Measurement

Quick & Easy Rotor Measurement

Measuring Ranges (Inch/Metric)

- Brake Drums: 2" to 13.9" (50.8mm to 353mm)
- Rotors: 0" to 11.9" (0mm to 302mm)
- Resolution: .0005" (.01mm)
- Accuracy: .001" (.02mm)

- Rugged heavy duty construction resists flexing
- Large, easy to read LCD display makes it simple to use as a sales tool with your customers
- Push button preset for direct reading of scale with no math conversion necessary



Model No. 70080, Complete kit includes Combi-Gage, 2" Calibration Gage, Deluxe Blow Molded Case & Instructions

* Compatible with Multi-Gage Replacement Components. See Page 77.

DIGI-MET® PRECISION WORKSHOP CALIPERS



Made from hardened stainless steel
with ground and lapped measuring surfaces.
MEASURING RANGES UP TO 80"/2000MM.

FEATURES:

- DIGI-MET electronic functions.
- Standard models with knife points for line contact.
- Model No. 18202 with cross jaws for direct inside measurement.
- Resolution: .0005"/.01mm.
- All models with fine adjustment and locking screws.

FREE
INCLUDES
CERTIFICATE OF CALIBRATION
TRACEABLE TO N.I.S.T.

*DIGI-MET Features:

- Non-contacting linear SYLVAC Swiss measuring system.
- OPTO RS232C output for Direct connection to any RS232C computer port.
- One cable fits all DIGI-MET instruments.
- Available WedgeLink software utility to send measurements directly to Microsoft Excel or to your favorite SPC software.
- EXTRA-LARGE High Contrast LCD display for easy reading (6mm/.236")
- Direct inch/metric conversion.
- On/Off switch.
- Hold function - freezes display for later viewing.
- Zero setting at any point.
- Easily configured for SPC data output.
- High speed measuring/tracking: 60"/second.
- Low energy consumption 3V lithium battery - will last up to 3 years.
- Temperature range: 10° to 40°C working; -20° to +70°C storage.

Model No.	Measuring Range	Top Jaws Style	Overall Accuracy	Length of Bottom Jaws	Length of Top Jaws
18201	0-12" (0-300mm)	Standard	.001"	3.5"	1.65"
18202	0-12" (0-300mm)	Cross Jaws	.001"	3.5"	1.3"
18203	0-20" (0-500mm)	Standard	.0015"	4.9"	2.25"
18204	0-32" (0-800mm)	Standard	.002"	5.9"	2.25"
18205	0-40" (0-1000mm)	Standard	.002"	5.9"	2.25"
18206	0-60" (0-1500mm)	None	.003"	7.8"	None
18207	0-80" (0-2000mm)	None	.003"	7.8"	None

Above models include wooden case. DIGI-MET Accessories: see page 78.



Made in Italy

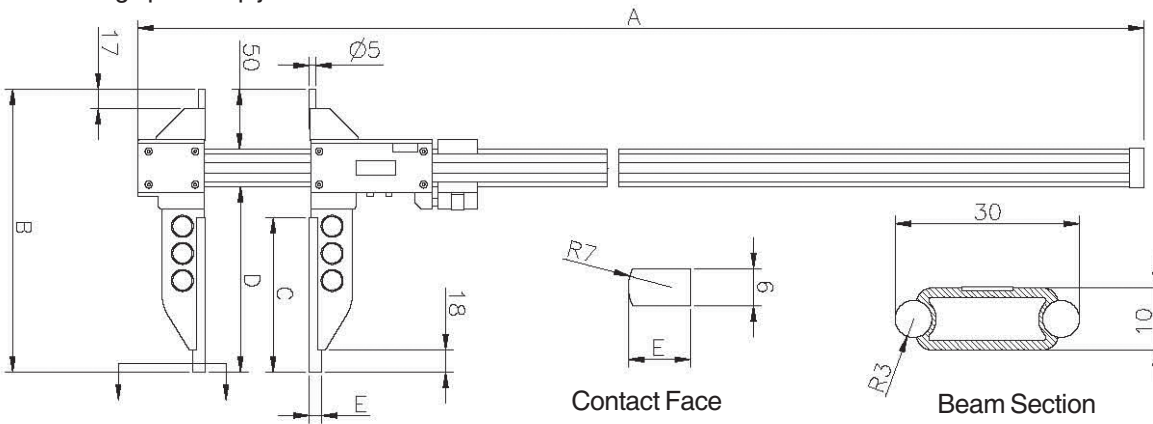
FLEXBAR ERACLE HIGH PRECISION, ULTRA-LIGHT DIGITAL ELECTRONIC VERNIER CALIPERS

Light Weight & Balanced for Highly Accurate Readings



.0005"/.01mm Resolution
 Measuring Ranges Up to 40"/1000mm
 Jaw Depths Up to 8"/200mm
 IP54 Protection
 Swiss Sylvac Electronics with RS232 Output

Flexbar's new series of precision lightweight calipers are constructed from light alloys, stainless and a carbon fiber beam providing both stability and balance for highly accurate measurements. Features special cylindrical measuring tips on top jaws.



Models Available with Standard or Extended Length Jaws

Model No.	Measuring Range	Dimensions (mm)						Overall Accuracy
		A	B	C	D	E	Beam Dim.	
*19430	20"/500mm	710	180	75	100	5	30 x 10	.0015"/.03mm
*19431	24"/600mm	810	180	75	100	5	30 x 10	.0015"/.03mm
*19432	32"/800mm	1010	180	75	100	5	30 x 10	.0015"/.03mm
*19433	40"/1000mm	1210	180	75	100	5	30 x 10	.002"/.04mm
19434	20"/500mm	710	205	100	125	10	30 x 10	.0015"/.03mm
19435	24"/600mm	810	205	100	125	10	30 x 10	.0015"/.03mm
19436	32"/800mm	1010	205	100	125	10	30 x 10	.002"/.04mm
19437	40"/1000mm	1210	205	100	125	10	30 x 10	.002"/.04mm
19438	20"/500mm	710	230	125	150	10	30 x 10	.0015"/.03mm
19439	24"/600mm	810	230	125	150	10	30 x 10	.0015"/.03mm
19440	32"/800mm	1010	230	125	150	10	30 x 10	.002"/.04mm
19441	40"/1000mm	1210	230	125	150	10	30 x 10	.002"/.04mm
19442	20"/500mm	710	280	160	200	10	30 x 10	.0015"/.03mm
19443	24"/600mm	810	280	160	200	10	30 x 10	.0015"/.03mm
19444	32"/800mm	1010	280	160	200	10	30 x 10	.002"/.04mm
19445	40"/1000mm	1210	280	160	200	10	30 x 10	.002"/.04mm

*-Stock Models. For all other models, Please contact us for Price and Delivery

All Calipers come in fitted wooden case.

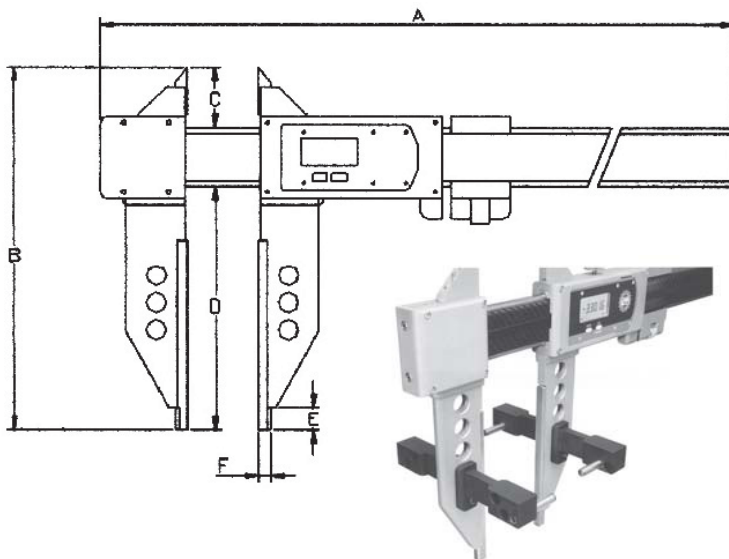
FLEXBAR DIGI-FIBER HIGH PRECISION, ULTRA LIGHT EXTENDED RANGE ELECTRONIC VERNIER CALIPERS

Balanced & Light Weight Construction For Highly Accurate Readings

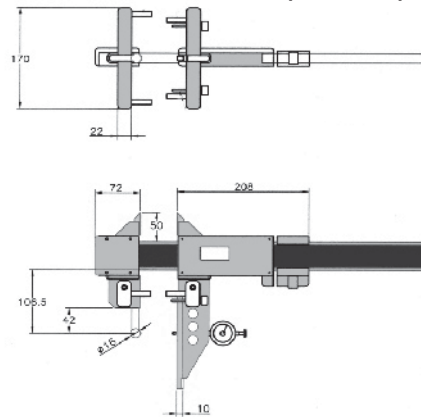


.0005"/.01mm Resolution
 Measuring Ranges Up to 120"/3000mm
 Jaw Depths Up to 12"/300mm
 IP54 Protection
 Swiss Sylvac Electronics with RS232 Output

The new Flexbar Digi-Fiber Calipers are constructed with light weight, high strength materials making them easy to handle for high accuracy measurements. The jaws are a "Niploy" coated light alloy with hardened "TIN" coated stainless measuring faces. The mainframe is in Carbon Fiber with slides in plated steel and bronze gibs.



Optional Stabilizing and Measuring Attachments Available Upon Request



Model No.	Useful Measurement	Jaws Length D	A	B	C	E	F	Carbon Bar Section	Overall Tolerance
*19410	40"/1000mm	150mm	1300	247	50	18	10	16 x 38	.002"/0,04mm
19411	40"/1000mm	200mm	1300	297	50	18	10	16 x 38	.002"/0,04mm
19412	40"/1000mm	300mm	1300	397	50	18	10	16 x 38	.0025"/0,05mm
19413	40"/1000mm	500mm	1300	497	50	18	10	16 x 38	.0035"/0,07mm
*19414	60"/1500mm	200mm	1800	297	50	18	10	16 x 38	.0025"/0,05mm
19415	60"/1500mm	300mm	1800	397	50	18	10	16 x 38	.004"/0,08mm
*19416	80"/2000mm	200mm	2300	297	50	18	10	16 x 38	.0035"/0,07mm
19417	80"/2000mm	300mm	2300	397	50	18	10	16 x 38	.0045"/0,09mm
*19418	100"/2500mm	200mm	2800	297	50	18	10	16 x 38	.005"/0,10mm
19419	100"/2500mm	300mm	2800	397	50	18	10	16 x 38	.005"/0,10mm
*19420	120"/3000mm	300mm	3300	397	50	18	10	16 x 38	.005"/0,10mm

*Stock Models- For all other models, please contact us for price and delivery

All Calipers come in fitted wooden case.



Made In Italy

FLEXBAR DIGI-CIRCE MULTI-FUNCTION GAGE

High Precision Double Sliding Gage Accepts A Range of Interchangeable Accessories For Measuring:

- Inside/Outside Dimensions • Center Distances
- Grooves • Offset Dimensions • Diameters and more



Shown above: Model No. 19400 Digi-Circe Double Sliding Gage with No. 19402 Conical Measuring Attachments for direct measurement of hole center distances.

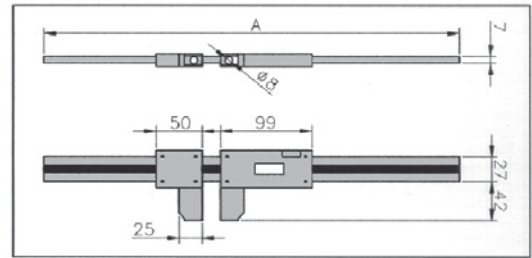
Main Features:

- Heavy-Duty hardened stainless steel and **light weight** carbon fiber beam.
- Mobile double sliding jaws allows balanced weight for taking small measurements
- Swiss Sylvac Electronics, .0005"/.01mm reading, RS232C Output
- Pre-Set functions for zeroing setting at any position

DIGI-CIRCE Base Unit:

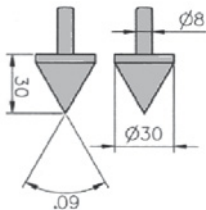
Available in Standard and Extra-Long Measuring Ranges

Model No.	Overall Length (A)	Graduations
19400	24"/600mm	.0005"/.01mm
19401	40"/1000mm	.0005"/.01mm



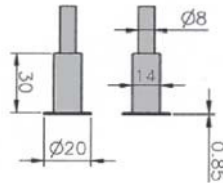
Above models do not include measuring attachments- order separately below.

INTERCHANGEABLE MEASURING ACCESSORIES FOR DIGI-CIRCE:



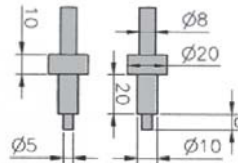
19402

Conical shaped jaw blades for direct measurement of hole center distances (self-centering).



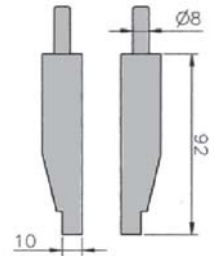
19403

Disc jaw blades for stable measurement of grooves and slots.



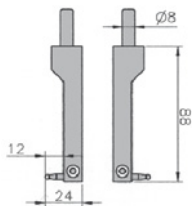
19404

Cylindrical jaw blades for measuring hole and wall center distances. 5, 10 and 20mm diameters can be used as shown by always using an anti-pivot support.



19405

"Femo" model long jaw blades for measuring inside and outside walls and holes.



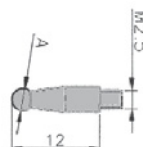
19406

UL Accessory

By inserting this accessory in the special slots on the "Circe" gauge, it is possible to measure inside and outside diameters and grooves.

Interchangeable Ball Contacts

Additional diameters up to 10mm available upon request.



Model No.	A	B
19383	Ø 1.5	12
19384	Ø 2	12
19385	Ø 2.5	12
19386	Ø 3	12
19387	Ø 3.5	12
19388	Ø 4	12
19389	Ø 4.5	12
19390	Ø 5	12
19391	Ø 5.5	12
19392	Ø 6	12

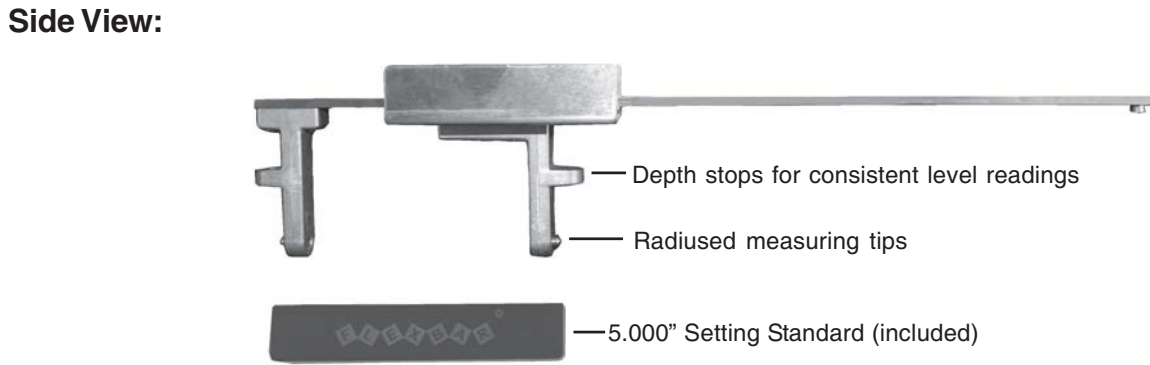
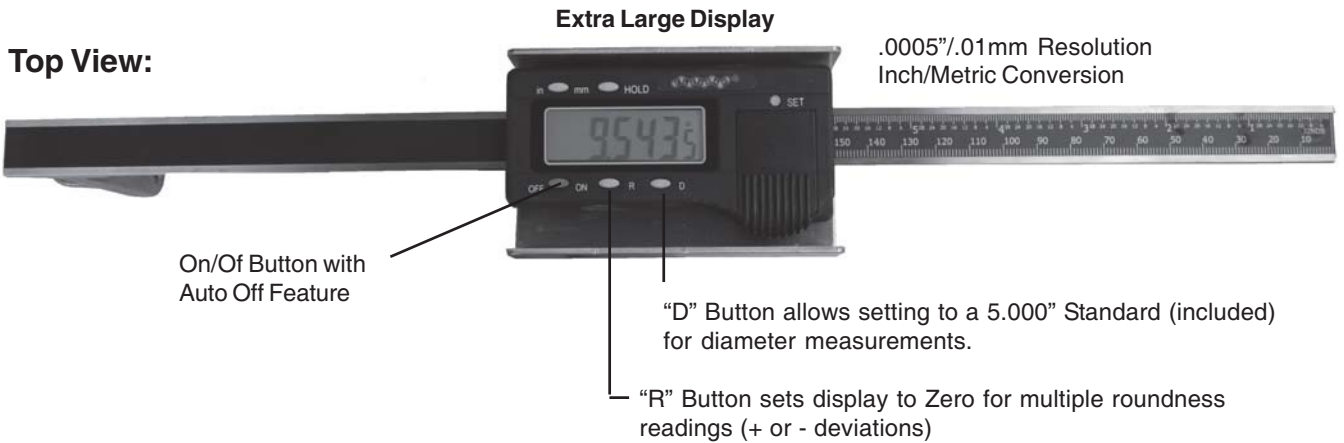
All Calipers come in fitted wooden case. Additional Accessories Available Upon Request.



Made in U.S.A.

FLEXBAR LARGE I.D. MEASUREMENT CALIPER

A Quick & Easy Tool For Measuring Internal Diameters of Large Pipes, Drums and Other Dimensions Ranging from 5" (125mm) to 15" (375mm)
Ideal for determining Out-of-Round Conditions



Shown Above: Internal Drum Diameter Measurement



Shown Above: No.70062 Kit Complete

Model No. 70062, Flexbar Large I.D. Measurement Caliper Complete with 5.000" Setting Standard and Molded Hard Plastic Carrying Case

Model No. 15814, Replacement Battery, 3V type CR2032



FLEXBAR EASY-READ DIGITAL CALIPERS

High Speed Digital Accuracy at Economy Pricing



Features Extra-Large LCD Display!

Features:

- 6"/150mm Range
- Stainless Steel Frame
- Large Easy-to-Read display (10mm high)
- Direct inch/metric conversion
- Battery: 3V, type CR2032 Lithium, approx. 1 yr life
- 4-way measurement inside-outside depth and step
- Absolute/Incremental Measurement
- SPC output
- Resolution: .0005/.01mm
- Accuracy: .001"/.02mm
- Repeatability: .0005"/.01mm

Model No. 15810, Flexbar 6"/150mm High Speed Digital Caliper

Model No. 15811, Flexbar 8"/200mm High Speed Digital Caliper

Model No. 15812, Flexbar 12"/300mm High Speed Digital Caliper

Model No. 15813, Flexbar SPC Output Kit with Connection Cable

Model No. 15814, Replacement Battery, 3V type CR2032

UNIVERSAL CALIPER ACCESSORY KIT

Made in U.S.A.



**"MEASURES PLACES OTHERWISE IMPOSSIBLE TO REACH"
CAN BE TURNED 180° FOR GROOVE MEASURING**

The square bodies attach to the jaws of any 4", 6", 8" Caliper. Threaded holes are located in the front, both sides, and the bottoms of the bodies, allowing the use of the points on any side. Measures slots, grooves, shoulders, holes, pockets, and takes ID and OD measurements. Steel, Black Oxide plated, Made in USA.

Model No. 16999, Universal Caliper Accessory Kit (Does not include caliper)

KIT CONTAINS: (2) Universal caliper bodies, (4) PAIR (8 Pcs) Accessory Points:

(2) Flat, (2) Conical, (2) Stem, (2) Ball End, Allen Wrench included. User friendly instructions.

ALWAYS HAVE YOUR CALIPER HANDY WITH

THE FLEXBAR

DELUXE CALIPER HOLSTER

A heavy gage black leatherette holster providing years of use. Designed for all 6" calipers.



FEATURES:

- Front flap cover with easy velcro closure.
- Easily attaches to belt or pants using unique strap/velcro closure system.
- Heavy-duty stitching.
- Made in U.S.A.

Model No. 18807, Flexbar Caliper Holster



FLEXBAR BASIC USE ELECTRONIC DIGITAL CALIPERS

A Quality Instrument with the Basic Digital Functions at a Super Price!
Now Available in Standard (Right) & Left Hand Models
Available in 6" & 12" Models



- Resolution: 0.0005"/0.01mm
- Repeatability: 0.0005"/0.01mm
- Data Serial Output
- Inch/Metric Conversion
- Includes Hard Plastic Fitted Case
- Max. Measuring Speed 1.5m/s; 60"/s
- Zero Setting function
- On/Off Button
- Use on 1.55V (SR44W) battery
- Inside, outside, depth & step measuring

Model No. 15791, 6"/150mm Electronic Digital Caliper

Model No. 15791-L, 6"/150mm Left Hand Electronic Digital Caliper

Model No. 15792, 12"/300mm Electronic Digital Caliper

Model No. 15792-L, 12"/300mm Left Hand Electronic Digital Caliper

Model No. 15831, Replacement Battery for above models.

FLEXBAR "SNAP GAGE STYLE" DIGITAL CALIPER

Featuring Wide Measuring Face and Spring Loaded Jaws - Ideal for Use as a Snap Gage or Thickness Gage!

Features

- Easy Operation
- Manual Power on/off
- Metric/Inch Conversion
- Zero Setting at Any Position
- Measuring Face Width: 1/2"
- Jaw Length: 1 1/8"
- Resolution: 0.0005"/.01mm
- Measuring Range: 0-1.2"/30mm



Model No. 18535, Snap Gage Style Caliper with Fitted Case

FLEXBAR MINI DIGITAL THICKNESS/GROOVE GAGE

A Dual Purpose Gage Featuring "Snap" Style Spring Loaded Jaws for the Measurement of Thickness and External Grooves (Top Jaws) and Internal Dimensions (Bottom Jaws)

Features

- Easy Operation
- Manual Power on/off
- Metric/Inch Conversion
- Zero Setting at Any Position
- Data Output Interface
- Resolution: 0.0005"/0.01mm
- Measuring Range: 0-1"/25mm



Model No. 18536, Mini Digital Thickness/Groove Gage



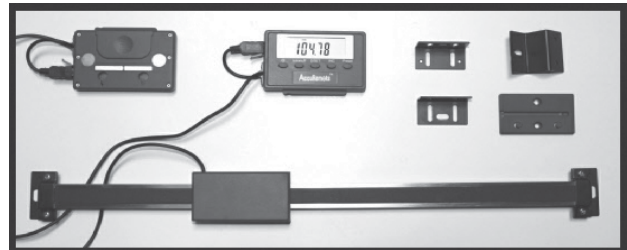
FLEXBAR DIGITAL REMOTE READOUTS

Super High Accuracy: 0.001" -- Reading: .0005"/0.01mm/64ths/inch

Upgrade your Milling Machine or Lathe to Digital reading. This digimatic scale is designed specifically for convenient display of any axis of a machine tool movement. Precise depth control floating zero allows you to set "zero" anywhere within operating range with a push of a button.

- Can be cut down to any desired length!
- Rule made of stainless steel to promote high accuracy and repeatability
- Super Large, easy to read display shows inch, decimal, fractional and metric readings
- Magnetic remote display with 50" cord for easy installation and access
- Preset function: Easy to set up and convenient to use.
- Can be used in Vertical, Horizontal or any position - Brackets Included
- Can be mounted on almost any surface.

Model No. 17877, 6" Digital Remote Readout
Model No. 17878, 12" Digital Remote Readout
Model No. 17879, 24" Digital Remote Readout
Model No. 17880, 38" Digital Remote Readout



FLEXBAR LONG JAW INSIDE MEASUREMENT CALIPER

Designed for the measurement of Hard-to-Reach Inside Grooves & Dimensions



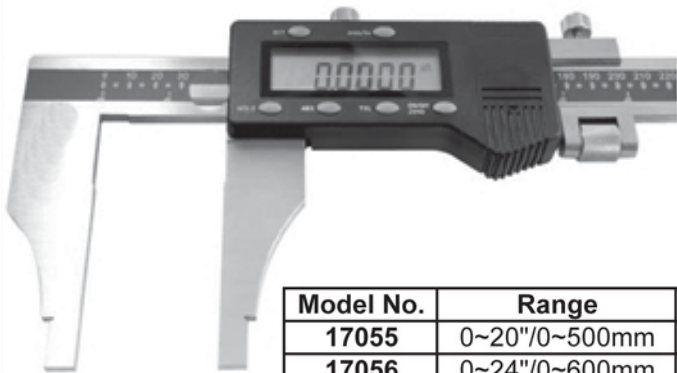
FEATURES:

- Measuring Range: .8-6.0"/20.3-154mm
- Resolution: .0005"/.01mm
- Inch/Metric and Zero Setting
- Jaw Width(with measuring points): .67"/17mm
- Jaw Depth: 2.18"/55.5mm
- Groove Measuring Points Depth: .15"/3.8mm
- RS232 Data Output
- Includes Fitted Case

Model No. 19252, Flexbar Long Jaw Groove Caliper
Model No. 15831, Replacement Battery for above

LONG RANGE DIGITAL ELECTRONIC CALIPERS

.0005"/.01mm Resolution



Features:

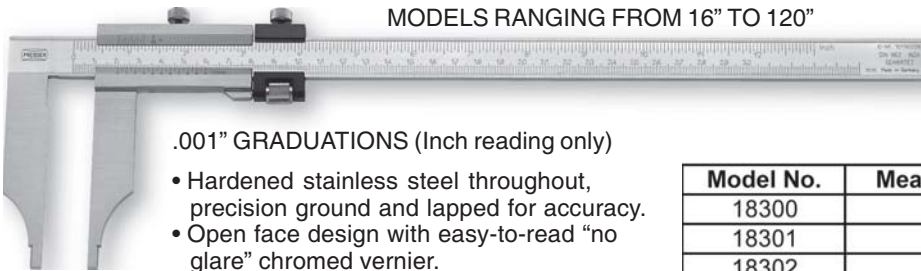
- Switchable inch/metric.
- High contrast LCD Display
- Preset function.
- On/Off button.
- Internal and external measurement.
- Absolute/Incremental measurement with fine adjustment.
- Body is hardened stainless steel, no-glare satin reading.
- Standard CR-2032, 3V battery included.
- Comes with fitted case.

Model No.	Range	Accuracy
17055	0~20"/0~500mm	±0.001"/0.02mm
17056	0~24"/0~600mm	±0.0015"/0.03mm
17057	0~40"/0~1000mm	±0.002"/0.05mm
17058	Replacement CR-2032, 3V battery	



PRECISION WORKSHOP VERNIER CALIPERS

MODELS RANGING FROM 16" TO 120"



.001" GRADUATIONS (Inch reading only)

- Hardened stainless steel throughout, precision ground and lapped for accuracy.
- Open face design with easy-to-read "no glare" chromed vernier.
- Fine adjustment screw on all models.
- Extra-long jaws for larger workpieces.
- Meets or exceeds Federal accuracy specs.
- Case not included.*

*Available upon request. Phone or Fax.

Model No.	Measuring Range	Depth of Jaw
18300	0-16"	5"
18301	0-24"	6"
18302	0-40"	6"
18303	0-60"	8"
18304	0-80"	8"
18305	0-100"	8"
18306	0-120"	8"

FLEXBAR PRECISION DIAL CALIPERS

Available in Standard (White Face) and Black Face Models



Features a thumbroll for rapid setting and easy adjustment.



Black face with orange needle.

Smooth, precise feel and accuracy.
Stainless Steel - Hardened and Precision Ground Throughout.

Special Features:

- Dial hand completes one revolution per each .100"; large dial means wider-spaced, easy-to-read graduations.
- Inverted covered rack helps prevent excess dirt accumulation in rack gear teeth to ensure long caliper life.
- Dual pinion drive mechanism reduces wear on rack and pinion.
- Adjustable dial reads directly to .001".
- Features outside, inside and depth measurements.
- Beam is graduated in .10" increments for easy reference points.

- Self-contained movement eliminates gear misalignment.
- Hardened stainless steel throughout with measuring faces precision-ground and micro-lapped for exceptional accuracy.
- Knurled lock assures precise settings.
- Accuracy = .001".
- Depth of jaws: **6" Models** = 1³/₁₆", **8" Models** = 1.6"; **12" Models** = 2". Extra length of jaws ensures squareness & perfect alignment.
- A raised bearing surface for sliding jaw eliminates wear & defacement of graduations on the beam.
- Price includes a fitted case.

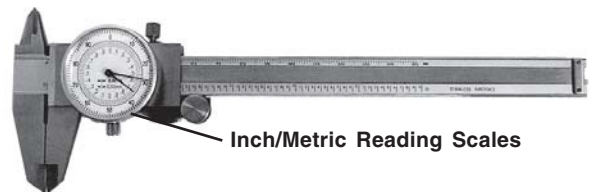
Available in 4", 6", 8" and 12" measuring ranges

STANDARD MODELS (White Face)			BLACK FACE MODELS		
Model No.	Range	Dial Grad.	Model No.	Range	Dial Grad.
16278	0-6"	.001"	15780	0-6"	.001"
16279	0-8"	.001"	15781	0-8"	.001"
16329	0-12"	.001"	15782	0-12"	.001"

PRECISION DUAL READING DIAL CALIPERS

Features Inch and Metric Reading Dial

- Ranges: 0-6" and 0-150mm, .001"/.02mm grad. 0-12" and 0-300mm, .001"/.02mm grad.
- Same features as inch reading models above. Inch/Metric reading dial with independently moving hands reads inch and metric simultaneously. Complete with fitted case.



Inch/Metric Reading Scales

Model No. 15787, 6" and 150mm Dual Dial Caliper
Model No. 15789, 12" and 300mm Dual Dial Caliper



DIGI-MET® DEPTH GAGES

Resolution: .0005"/.01mm.

Repeatability: 1 digit 10µm/.0005".

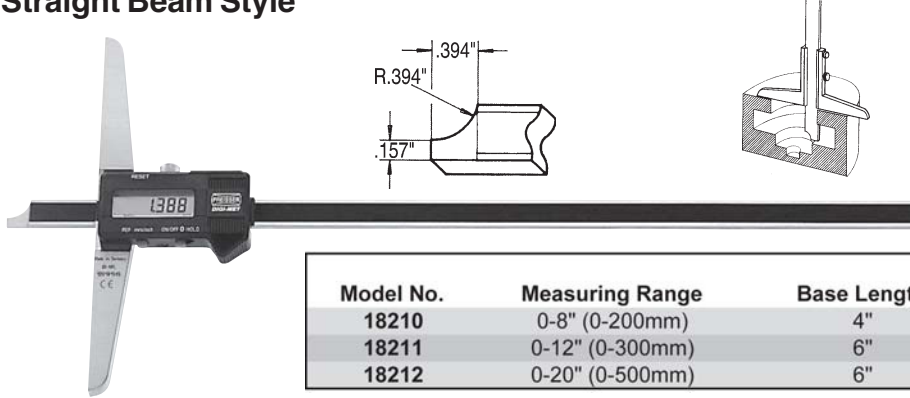
Precision made of stainless steel -
measuring surfaces hardened and lapped.

All gages feature DIGI-MET Features; See Page 79.



FREE
INCLUDES
CERTIFICATE
OF CALIBRATION
TRACEABLE TO N.I.S.T.

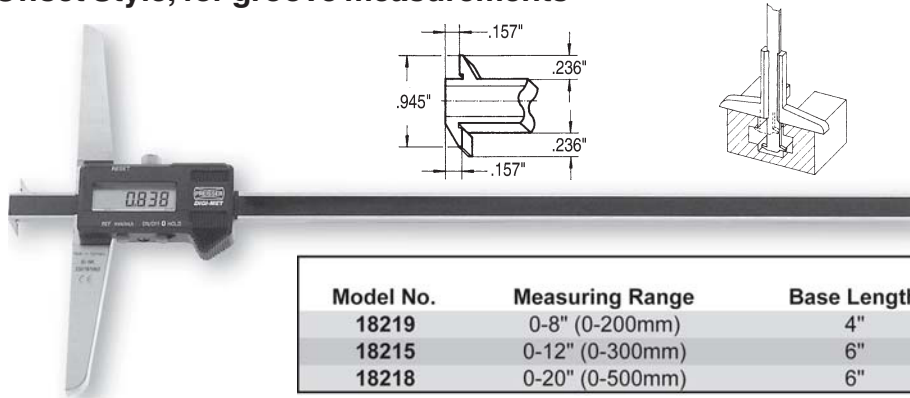
1. Straight Beam Style



Model No.	Measuring Range	Base Length	Cross Section of Beam (mm)
18210	0-8" (0-200mm)	4"	12 x 4
18211	0-12" (0-300mm)	6"	12 x 4
18212	0-20" (0-500mm)	6"	12 x 4

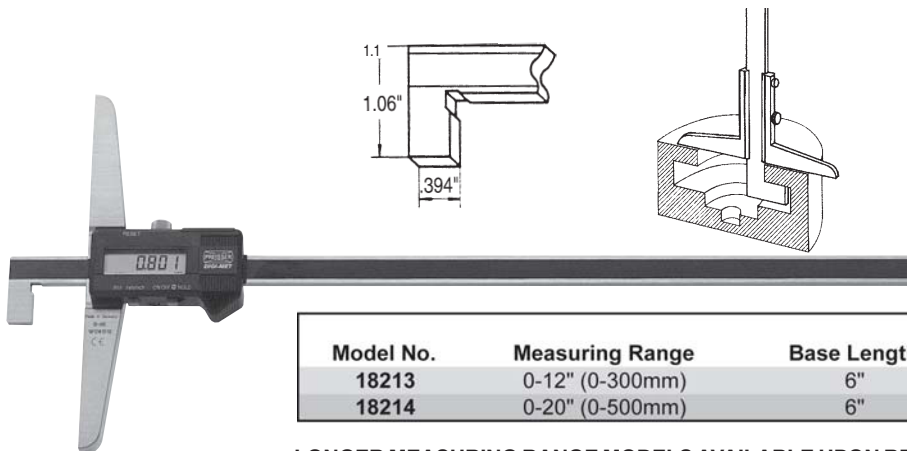
ALL DEPTH GAGE MODELS INCLUDE DELUXE WOODEN CASE
Digi-Met Accessories: see page 78.

2. Offset Style, for groove measurements



Model No.	Measuring Range	Base Length	Cross Section of Beam (mm)
18219	0-8" (0-200mm)	4"	12 x 4
18215	0-12" (0-300mm)	6"	12 x 4
18218	0-20" (0-500mm)	6"	12 x 4

3. Leg Style, for groove measurements



Model No.	Measuring Range	Base Length	Cross Section of Beam (mm)
18213	0-12" (0-300mm)	6"	12 x 4
18214	0-20" (0-500mm)	6"	12 x 4

LONGER MEASURING RANGE MODELS AVAILABLE UPON REQUEST.
PHONE OR FAX FOR PRICING AND AVAILABILITY.

DIGI-MET DEPTH GAGE WITH IP-65 PROTECTION

Deluxe Waterproof Depth Gage System with Interchangeable Base Attachments* and Offset Measuring Attachment*

*Order Separately

Specifications:

- IP-65 protection acc. to EN 60529
- Stainless Steel
- 7,5 mm LCD display
- DIN 862
- Locking screw
- Contact pin dia. 1,5 mm

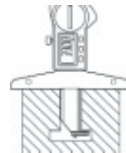
Measuring Lengths Up to 20"/500mm

I. Digi-Met Depth Gage Basic Units (with standard base)

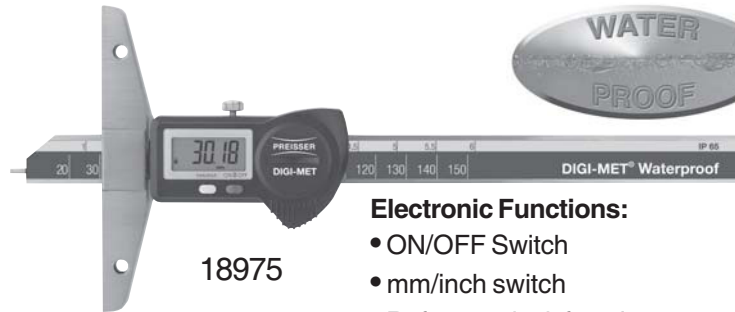
Model No.	Range		Base Width		Reading	
	mm	inch	mm	inch	mm	inch
18975	150	6	100	4	0,01	.0005
18976	300	12	150	6	0,01	.0005
18977	500	20	150	6	0,01	.0005

II. Base Attachments for Above

Model No.	Depth Base Length	
	mm	inch
18978	200	6
18979	300	12



Above: Extension Base Attachment
Left: Offset Measuring Attachment



Electronic Functions:

- ON/OFF Switch
- mm/inch switch
- Reference lock function
- Zero point setting in any position

III. Offset Measuring Attachment for Above (Optional)

Model No. 18980

FREE
INCLUDES
CERTIFICATE OF CALIBRATION
TRACEABLE TO N.I.S.T.

DIGI-MET DEPTH GAGE WITH STEEL POINT

For Small Hole Depth Measurement

Resolution: .0005"/.01mm.
Repeatability: 1 digit 10µm/.0005".
Precision made of stainless steel -
measuring surfaces hardened
and lapped.
DIGI-MET electronic functions.



17458

Designed for depth measurements or shoulders inside small bores or inside tire tread pattern.

Base Width = 1.89".

Stainless steel point, length - 1.0", dia. .079".

Useful length: 1"/25mm.

Includes Deluxe Wooden Case. • Digi-Met Functions: see page 79.

FREE
INCLUDES
CERTIFICATE OF CALIBRATION
TRACEABLE TO N.I.S.T.

Model No. 17458, Depth Gage with Steel Point

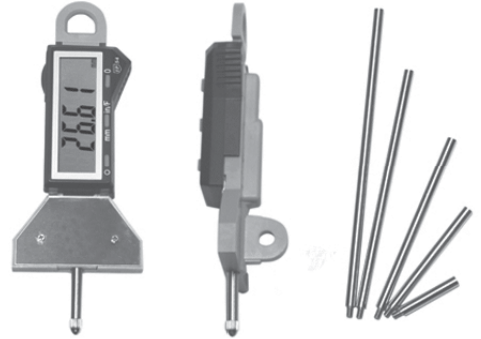


FLEXBAR DIGITAL 3-IN-1 DEPTH GAGE

Versatile Multi-Function Gage- Handheld or Mount on Indicator Stand

FEATURES:

- Large, Easy-to-Read LCD Display
- 3-way reading: inch, inch fractional, metric
- Can be used as a Digital Depth Gage
- Can be used as a Digital Indicator
- Can be used as a Digital Tire Tread Gauge
- Lugback and 3/8" stem mountings
- Hold Function
- Battery: 3V CR2032
- 1", 2", 3", 4", 5" Extension Rods (included)
- Total measurable range up to 16 inches



Model No. 16365 Digital 3-in-1 Depth Gauge, Range: 0-16".406mm, Reading: 0.0005"/0.01mm/
Fraction, Accuracy: 0.001"

POCKET DIAL THICKNESS GAGE

For rapid measurements of metal sheets, wire, plastic, paper, rubber, etc.



- Graduation .001" or 0,01mm
- Continuous Dial.
- Large revolution counter.
- Easy zero adjustment.
- Measuring range .500".
- Dial face diameter 1⁹/₁₆".
- Throat .500".
- Measuring pressure 3.5 ounces.
- Complete in plastic case.

Model No. 18170, Pocket Dial Thickness Gage, .001" grad.

PRECISION DIAL THICKNESS GAGES

Made in Japan

FEATURES:

- Gage mounted in hand grooved enameled frame with thumb release mechanism.
- High grade steel measuring faces.
- Hardened stainless steel spindle.
- Hardened, ground and lapped for accuracy.
- Dull chrome plated indicator case.
- Supplied in a plastic case.



INCH AND METRIC MODELS				
Model No.	Range	Throat Capacity	Graduation	Reading
18120	0.5"	1.02"	.001	0-100
18122	1.0"	1 1/8"	.001	0-100
18123	1.0"	4 3/4"	0.001	0-100



TWIN COLUMN ELECTRONIC HEIGHT GAGES

FEATURES:

- Electronic LCD version of our standard twin column height gage.
- Easy inch/metric conversion.
- Can be zeroed out at any height.
- .001/.01mm reading.
- Carbide tipped scriber.
- Locking mechanism.
- Battery included.

Model No. 15795, Range : 0-12"/300mm

Model No. 15797, Range: 0-24"/600mm

Model No. 15831, Replacement Battery



6" SINGLE BEAM DIAL HEIGHT GAGE

- Range: 0-6", .001" graduations, .100" per revolution
- Fine adjustment and lock
- Made of stainless steel with carbide tipped scriber
- Complete with fitted wooden case



Model No. 16561, 6" Dial Height Gage

STANDARD BEAM ELECTRONIC HEIGHT GAGE

FEATURES:

- Large, clear LCD display eliminates errors in reading.
- Non-contact measuring system; oil and chip proof.
- Can be zeroed out at any height.
- Instant inch/metric conversion.
- .0005/.01mm resolution.
- Carbide tipped scriber.
- Fine adjustment mechanism.
- Battery included.



Available in 2 ranges:

Model No.	Range
15800	0-12"/300mm
15801	0-20"/500mm

Model No. 15831,
Replacement Battery

DIGITAL-DIAL HEIGHT GAGES

Combines a Large .100" Revolution Dial Indicator with a Dual Digital Counter for Fast and Easy, Error-Free Reading.

Main Features:

- Double digital counter for convenient up and down readings in .100" increments.
- Two independent floating zero adjustment buttons.
- 2³/₁₆" dia. dial with wide spread .001" graduation, .100" per revolution.
- Continuous dial with secondary numbers for reverse reading.
- Large feed wheel for fast course movement and fine adjustment.
- Positive carriage lock.
- Cylindrical dual beam construction for maximum stability.
- Wear resistant chrome plated beams.
- Heavy base with hardened, ground and lapped bottom surface.
- Carbide tipped off-set scriber to cover entire range from bottom surface.
- Scriber clamp also accepts 1/4" rectangular indicator holder. (Model No. 12937, see page 105)
- Furnished in molded styrofoam shipping container.

12", 18" and 24" Models Available- .001" Reading

Model No. 18265, 0-12" Range

Model No. 18266, 0-18" Range

Model No. 18267, 0-24" Range

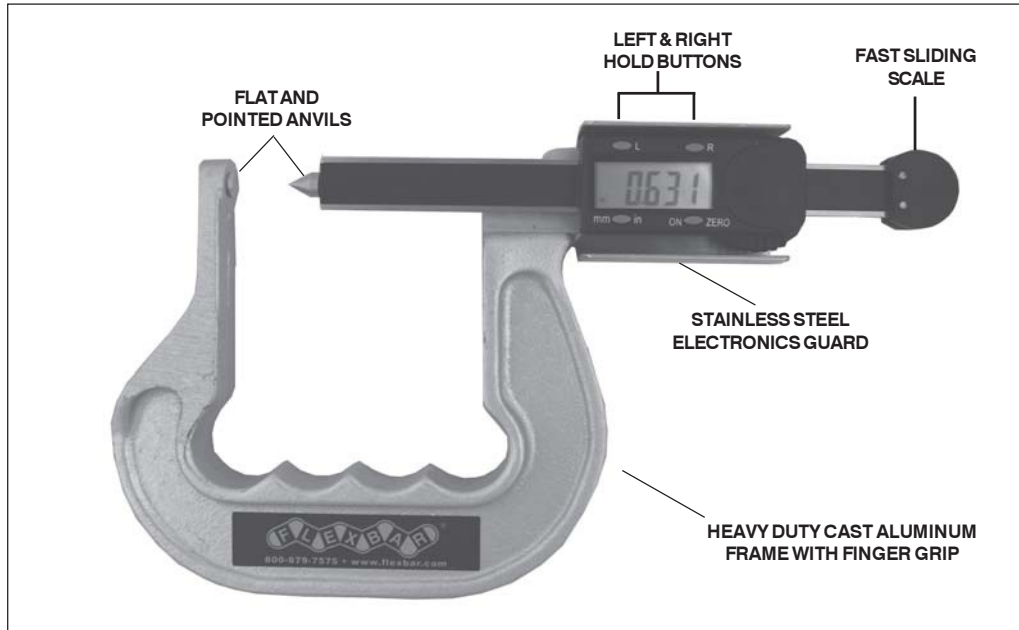




FLEXBAR ELECTRONIC DIGITAL DEEP THROAT MICROMETER

Made in U.S.A.

New Improved Model Now Features Extra Large Digital Display and
Stores 2 Readings For Quick Reference.



This rugged, yet lightweight micrometer provides quick and easy measurements for ranges up to 2.400"/61mm and will accommodate depths up to 3.3"/83.8mm. Ideal for shop requirements.

Dual hold/storage function (L&R) useful for taking 2 measurement readings such as left and right brake rotor measurements.

Main Features:

- Fast sliding scale for quick measurements
- Easy to read extra-large digital display
- Easy to hold – ergonomic finger grip
- Cast aluminum frame - rugged and lightweight
- Includes Heavy Duty Molded Plastic Case

Specifications:

- Measurement Range: 0-2.400" (61mm)
- Maximum Measuring Depth: 3.3" (83.8mm)
- Resolution: .0005"/.01mm
- Accuracy: .001"/.02mm
- Inch/Metric conversion
- New Auto Shut Off Feature
- Zero setting
- IP54 Water Resistant Protection Against Moisture, Oil & Dust



Model No. 15785-DR, Flexbar Electronic Deep Throat Micrometer
Model No. 15814, Replacement Battery, 3V type CR2032



FLEXBAR IP54 DIGITAL MICROMETERS

Superior Protection Against Water, Coolants, Dust & Oil



Available in Ranges Up to 4"/100mm

Features:

- Large LCD Display
- Inch-metric and zero setting at any position
- SPC output
- Friction thimble
- Chrome plated frame
- Carbide tips
- Resolution: .00005"/.001mm
- Automatic power off
- Easy single-handed use
- Heat Insulated frame
- Fitted case included

Model No.	Range	Resolution	Accuracy (mm)
19260	0-1"/0-25mm	.00005"/.001mm	+/- 0.004
19261	1-2"/25-50mm	.00005"/.001mm	+/- 0.004
19262	2-3"/50-75mm	.00005"/.001mm	+/- 0.005
19263	3-4"/75-100mm	.00005"/.001mm	+/- 0.005

Model No. 15831, Replacement Battery

IP54 DIGITAL DISC MICROMETERS

With Disc Measuring Faces for Gear Tooth Measurements



Same Features as Flexbar IP54 Digital Micrometers (see above).

Model No. 19265, 0-1"/25mm IP54 Digital Disc Micrometer

FLEXBAR IP54 DIGITAL DEPTH MICROMETER SET



0-6"/150mm Range
Resolution: .00005"/.001mm

FEATURES:

- Interchangeable stainless rods, .160" dia.
- Satin Chrome Base, 4"L x .640"W, hardened with micro lapped finish
- Inch/Metric conversion
- Automatic zero-setting
- IP54 Protection Level
- Hold function
- SPC output
- Includes fitted wooden case

Model No. 15777, Electronic Digital Depth Micrometer, 0-6" range
Model No. 15831, Replacement Battery



FLEXBAR ELECTRONIC MICROMETERS

Quality Electronic Digital Readout Micrometer
Provides Error-Free Readings To .00005"/.001mm



Available in ranges up to 3"/75mm.

Features:

- Large LCD display, high contrast
- Friction stop and locking lever
- Carbide tips on anvil and spindle
- Anvil diameter: .256"
- Function Key
- Uses 1 SR44 Battery
- Instant inch/metric conversion
- Resolution: .00005"/.001mm
- Accuracy: .00015"
- Zero-set key allows comparative measurements
- RS-232 SPC Output
- Heat insulated frame cover
- Includes fitted case

Model No. 15751, 0-1" (0-25mm) Electronic Micrometer

Model No. 15753*, 2-3" (50-75mm) Electronic Micrometer

Model No. 15752*, 1-2" (25-50mm) Electronic Micrometer

Model No. 15831, Replacement Battery

*Includes setting standards.

ELECTRONIC POINT & BLADE MICROMETERS

Similar features as above Electronic Micrometer models.

- For measurement of small grooves, keyways & other hard to reach measurements.
- 30 degree points. (Model No. 15756)
- Points are carbide tipped.
- Resolution: .00005"/.001mm.
- Includes fitted case.
- Non-rotating spindle



15767



15756

Model No. 15756, 0-1" (0-25mm) Electronic Point Micrometer

Model No. 15767, 0-1" (0-25mm) Electronic Blade Micrometer

Resolution: .00005"/.001mm

FLEXBAR DELUXE MICROMETER

HOLSTER



Features:

A heavy gage black leatherette holster providing years of use. Designed for all 0-1" micrometers.

- Front flap cover with easy velcro closure.
- Easily attaches to belt or pants using unique strap/velcro closure system.
- Heavy duty stitching.
- Made in U.S.A.

Model No. 18806, Flexbar Micrometer Holster

FLEXBAR DELUXE MICROMETER STAND

Adjustable To Any Position



Micrometer not included

- Modern styled cast iron stand
- Lacquer coating
- Adjustable clamp

Model No. 15768, Deluxe Micrometer Stand

FLEXBAR 0-6" DEPTH MICROMETER SET

.001" Graduations

FEATURES:

- Base is hardened and ground.
- Length of base — 4".
- Hardened and ground screw has 1" movement.
- 0-6" depth measurement capability.
- Rods are easily interchangeable.
- Satin chrome finish.
- Fitted Wooden Case

Model No. 15775, 0-6" Depth Micrometer Set





FLEXBAR DIAL SNAP GAGES

FEATURES:

- Aluminum frame with plastic handle provides handy design & better grip.
- Ground & lapped carbide measuring anvils provides better wear resistance & longer life. Chamfered anvil ensures easy insertion of workpiece without damaging the workpieces.
- Collet chuck covers dial indicators, digital dial gauges with 8mm mounting shank to ensure rigidity in clamping & alignment with measuring axis.
- Smooth and antirotational movement of the measuring spindle by guide pin.
- Adjustable work rest for proper positioning of work piece for repetitive measurements, particularly for round jobs.
- Powder coated dial protector provides adequate protection to the dial gage.

TECHNICAL SPECIFICATIONS:

Measuring Face: 14 x 14mm (carbide tipped) **Parallelism:** 5µm
Movement of measuring anvils: 2mm **Flatness of anvil:** 0.0015mm



Above: No. 14791
 (Includes DIGI-MET Multi-Mode Indicator with GO-NO GO Tolerance LEDs.)

***Only Available with 8mm Mounting Shank**

Measuring Range	Dial Snap Gage w/o Dial Indicator*	Dial Snap Gage W/DIGI-Met** Multi-Mode Indicator No. 18515
Inch/Metric	Model No.	Model No.
0-1"/0-25mm	14780	14790
1-2"/25-50mm	14781	14791
2-3"/50-75mm	14782	14792
3-4"/75-100mm	14783	14793

TOLERANCE SIGNAL LIGHTS

.00005" (.001mm) Resolution



18515

**Model No. 18515, DIGI-MET® Multi-Mode Indicator with NIST calibration certificate.

FEATURES: See Page 98.

FLEXBAR ULTRA PRECISION INDICATING MICROMETERS

.00005" Resolution



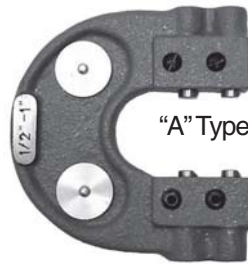
- Indicator Range: +/- 0.0015"
- Direct GO/NO GO reading for mass-produced parts
- Carbide tipped measuring faces
- Constant measuring force 5-10N
- Comes with fitted case
- IP 54 Protection

Model No. 17060, 0-1" Ultra Precision Indicating Micrometer

Model No. 17061, 1-2" Ultra Precision Indicating Micrometer



FLEXBAR SNAP GAGES



MODEL CS Type "C" (2 Round Buttons and Anvil)		
Model No.	Frame No.	Range
11-1001	1	0 - 1/4
11-1002	2	1/4 - 1/2
11-1003	2X	1/2 - 3/4
11-1004	3	3/4 - 1
11-1005	3X	1 - 1 1/4
11-1006	4	1 1/4 - 1 1/2
11-1007	4X	1 1/2 - 1 3/4
11-1008	5	1 3/4 - 2
11-1009	5X	2 - 2 1/4
11-1010	6	2 1/4 - 2 1/2
11-1011	6X	2 1/2 - 2 3/4
11-1012	7	2 3/4 - 3 1/16
11-1013	7X	3 1/16 - 3 7/16
11-1014	8	3 7/16 - 3 13/16
11-1015	8X	3 13/16 - 4 3/16
11-1016	9	4 3/16 - 4 9/16
11-1017	9X	4 9/16 - 4 15/16
11-1018	10	4 15/16 - 5 5/16
11-1019	10X	5 5/16 - 5 11/16
11-1020	11	5 11/16 - 6 1/8
11-1021	11X	6 1/8 - 6 5/8
11-1022	12	6 5/8 - 7 1/8
11-1023	12X	7 1/8 - 7 5/8

MODEL AR Type "A" (2 Round Buttons Top and Bottom)		
Model No.	Frame No.	Range
11-2001	1	0 - 1/2
11-2002	2	1/2 - 1
11-2003	3	1 - 1 1/2
11-2004	4	1 1/2 - 2
11-2005	5	2 - 2 1/2
11-2006	6	2 1/2 - 3
11-2007	7	3 - 3 3/4
11-2008	8	3 3/4 - 4 1/2
11-2009	9	4 1/2 - 5 1/4
11-2010	10	5 1/4 - 6

TYPE "U" STYLE

Features Special Grooved Top and Bottom Anvils For Groove & Recess Applications

Model No.	Frame No.	Range
11-3001	1	0 - 1/4
11-3002	2	1/4 - 1/2
11-3003	2X	1/2 - 3/4
11-3004	3	3/4 - 1
11-3005	3X	1 - 1 1/4
11-3006	4	1 1/4 - 1 1/2
11-3007	4X	1 1/2 - 1 3/4
11-3008	5	1 3/4 - 2
11-3009	5X	2 - 2 1/4
11-3010	6	2 1/4 - 2 1/2
11-3011	6X	2 1/2 - 2 3/4

TOLERANCE TABLE	
SIZE RANGE - IN.	GAGE TOLERANCES
0-6	+0
	-0.00015
6-12	+0
	-0.00025

OPTIONS: Order No. 11-0000

Setting and Sealing*: Quoted Upon Request

*Includes N.I.S.T. Certification

Larger Frame Models Up to 11"
Available upon Request

THE FLEXBAR CHECKMASTER COMPARATOR

The Ideal Inspection Tool for Both the Metrology Lab or Shop Floor-
Where Repeatability, Accuracy & Speed Are Required.



Model No. 20910

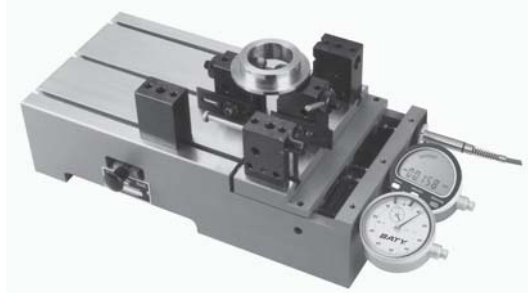
Above: Checkmaster
Basic Unit accommodates up to
3 different inputs.

The Checkmaster is a bench gage that gives repeatable gaging results. Readings can be taken from dial indicators or transducers.

- Excellent gage repeatability and reproducibility, (GR and R) capability
- Robust design for shop floor use
- Ideal for S.P.C. and 100% inspection
- Leaf spring measuring system - unaffected by oil, swarf, etc.
- Reversible bias for internal and external measurements



Above: Model No. 20911
Universal Tooling Set



Left:
Checkmaster in
use with Universal
Tooling Set
to create custom
measuring
applications.

The power of the Checkmaster lies in its flexibility to deliver accurate, repeatable readings for a wide variety of measurements. In use with the Universal Tooling Set the Checkmaster can address the following applications and more:

- Diameters, internal and external
- Undercuts, O ring grooves, ball tracks, internal and external
- Gear and spline pitch diameter internal and external
- Rolling gear test, gear to gear or gear to master
- Gear pitch diameter to shaft bore run out
- Holes center to center
- Concentricity bore to O.D.
- Step height, lengths, depths
- Three gage positions
- Accepts any 8mm or 3/8" stemmed gage or transducer



Above: Checkmaster can be used with the Flexbar Gage-Chek Multi-Axis Metrology Display and Flexbar Digital Probes (See website) to create a powerful Metrology Gaging System.

Please visit our website for Applications & Examples.
www.flexbar.com

Model No. 20910, Flexbar Checkmaster Comparator, Basic unit only.

Model No. 20911, Universal Tooling Set for Checkmaster Comparator.

Model No. 20912, Checkmaster Comparator & Universal Tooling Set Complete.



DIGI-MET® ELECTRONIC INDICATORS

Featuring Direct RS232C Output And Swiss SYLVAC Electronics.
 A sophisticated non-contact linear measuring system... can be connected to any computer or printer with no interface necessary. Featuring .00005" (0,001mm) Resolution with ±.00012" Accuracy; Repeatability: 0,003mm/.00012".

FEATURES:

- AGD Group 2, 8mm stem with 3/8" bushing adaptor.
- Rugged Polyamid housing.
- Stainless shank and spindle.
- Tracking Speed: 60"/second.
- Display rotates 270°.
- Top lifting knob.
- Measuring force: 0.6-1.1N.
- Low Drain Lithium Battery: 4500 continuous on time or 2-3 years with on/off switch.

FREE
 INCLUDES
 CERTIFICATE OF CALIBRATION
 TRACEABLE TO N.I.S.T.

**EXTRA-LARGE
 DIGITAL DISPLAY
 FOR EASY
 READING!**



FUNCTIONS:

- Direct inch/metric conversion.
- Zero-setting at every point.
- HOLD - function.
- PRESET - function with dual measuring references to ±99.99999.
- Incremental floating zero. If tool is used for SPC, the zero button can automatically be configured as a data I/O switch.
- RS232C Opto Electronic Output.

Four Measuring Ranges Available: Up to 4" (100mm)

Model No.	Description
18318	DIGI-MET Electronic Indicator with 0-1" (0-25mm range)
18319	DIGI-MET Electronic Indicator with 0-1/2" (0-12.5mm range)
18530	DIGI-MET Electronic Indicator with 0-2" (0-50mm range)
18531	DIGI-MET Electronic Indicator with 0-4" (0-100mm range)
Accessories	
18517	Lugback attachment for DIGI-MET Indicators
18518	Lifting lever for models 18318 & 18319
18317	Replacement Lithium Battery, 3V
18315	Direct RS232C Opto-Electric Output Cable for all DIGI-MET direct output gaging: includes 80" connecting cable with 9 pin IBM RS232 connector

DIGI-MET® MULTI-MODE ELECTRONIC INDICATORS

Preisser introduces the next generation of Digi-Met Indicators:
NEW DIGI-MET MULTI-MODE

FREE
 INCLUDES
 CERTIFICATE OF CALIBRATION
 TRACEABLE TO N.I.S.T.



TOLERANCE SIGNAL LIGHTS

FEATURES:

- MIN/MAX/TIR Modes
- Tolerance Signal Lights
- Selectable Resolution
- Bidirectional RS-232 Output
- Preset Recall

- .00005" (.001mm) resolution
- AGD Group 2 specifications, 8mm stem with 3/8" bushing adaptor
- Display face rotates 270° for easy viewing
- Two presets with preset recall
- Floating zero
- Accuracy .00008"±2s (.002mm±2s)
- Repeatability .0002" (.005mm)

Model No. 18515, DIGI-MET Multi-Mode Indicator with 0-1" (25mm) range

Model No. 18516, DIGI-MET Multi-Mode Indicator with 0-1/2" (12.5mm) range

Accessories: Please refer to above.



FLEXBAR DIGITAL ELECTRONIC INDICATOR

New Advanced Feature Model Offering Dual Analog and Digital Display



Features:

- **Inch/Metric**
- 0-1"/0-25mm measuring range
- .0005"/.01mm Resolution
- **Zero/on/off**
Zero Setting at any position/manual power on/off
- **Data Hold**
TIR, min and max hold functions
- **TOL**
Set tolerance for pass/fail indication
- **ABS**
Switch between absolute and incremental mode
- 3/8" Diameter stem mount
- Supplied with 3mm diameter steel ball contact
- Large Character Height: 10mm
- Dual analogue and digital display
- RS232 Data Output

Model No. 15830, 0-1"/25mm Digital Electronic Indicator

Model No. 15829, Replacement Battery for above

FLEXBAR ECONOMY DIGITAL INDICATOR

Featuring Extra Large Display

A Quality General Purpose Indicator at an Affordable Price



Features:

- Measuring Range: 0-1"/25mm
- Inch/Metric/Fraction conversion
- Resolution: 0.0005"/0.01mm/1/64"
- Accuracy: 0.001"/0.02mm
- Repeatability: 0.0005"
- Measuring System: Capacitive
- Display: LCD (11mm high)
- Battery: 3V, type CR 2032 Lithium
- Battery Life: Approx. 1 year
- Hold Button
- Zero Setting
- REL/ABS Conversion
- On/Off Button
- 3/8" Diameter Stem
- Flat Back & Lug Back Included
- RS-232 Interface (Data Output)

Model No.15828, Flexbar Economy Digital Indicator, 0-1"/25mm

Model No. 15829, Flexbar Battery for above

FLEXBAR ELECTRONIC DIGITAL DEPTH GAGE SET



- Includes Model No. 15828 Digital Indicator (see above)
- Measuring range 0-10"
- Graduations: .0005"/.01mm
- Available with 2 1/2" or 4" wide base
- Uniform pressure over full range of travel
- Complete with 6 extension rods in fitted case

Provides convenient and rapid measurement of bore depths.

Model No. 15915, Flexbar Electronic Digital Depth Gage Set with 2 1/2" wide base

Model No. 15916, Flexbar Electronic Digital Depth Gage Set with 4" wide base

FLEXBAR DIAL INDICATOR DEPTH GAGE BASES



Made in U.S.A.

Precision ground and hardened Depth Base accepts any standard AGD Dial Indicator with 3/8" stem. Manufactured from hardened Steel, ground for flatness, and Black Ox plated.

TWO MODELS AVAILABLE:

Model No. 16837, 2 1/2" Long Base

Model No. 16838, 4" Long Base



FLEXBAR BATY PRECISION DIGITAL INDICATOR

Features Fifty Millionths Resolution

FEATURES:

- Inch/Metric
 - 0-12.7mm (0-0.5") measuring range
 - 0.001mm (0.00005") resolution
- Zero/on/off
 - Zero setting at any position/manual power on/off
- Data Hold
 - TIR, min and max hold functions
- TOL
 - Set tolerance for pass/fail indication
- ABS
 - Switch between absolute and incremental mode
- Universal 8mm stem mount
- Includes 3/8" stem bushing
- Supplied with 3mm diameter steel ball contact
- Rotating bezel
- Dual analog and digital display



15600

Model No. 15600, Digital Indicator, Range: 0-12.7mm/0.5", Accuracy: 0.008mm/0.0003"

FLEXBAR PRECISION DIAL INDICATORS- AGD2

Each Face Has Dual Scale Continuous & Balanced.
Inch and Metric Models Available.

SPECIFICATIONS AND QUALITY FEATURES:

- Tolerance pointers standard
- Bearings made from special brass.
- Bezel clamp standard.
- Lug Back is integral with case.
- Constant measuring pressure return spring lever.
- Hardened and lapped pinions.
- Stainless steel hardened stem.
- Superfinished stainless steel rack spindle.
- Revolution counter on face.
- Rotatable Bezel with positive clamp for zero setting.
- Unbreakable crystal.
- All parts interchangeable.
- Totally enclosed case protects movement from dust and oil.



Meets or Exceeds AGD Specifications

Model No.	Graduations	Range	Dual Scale	Dia. Stem	Mounting
11998	.0005"	1"	0-100	3/8"	Central Lug 1/4" dia. Hole
12001	.001"	1"	0-100	3/8"	Central Lug 1/4" dia. Hole
12003	.001"	.500"	0-100	3/8"	Central Lug 1/4" dia. Hole
12005	.01mm	20mm	0-100	8mm	Central Lug 1/4" dia. Hole
12038	.001"	2"	0-100	3/8"	Central Lug 1/4" dia. Hole



PREMIUM QUALITY PRECISION DIAL INDICATORS - AGD 2

Made in Japan

**Features Extremely Smooth Precision Gears
INCH AND METRIC MODELS**

OTHER FEATURES:

- Contact point made of tool steel, hardened ground and chrome plated.
- Stem made of stainless steel with a high strength is malfunction-free due to fastening.
- Micro-fine graduation for easy reading.
- Adjustable bezel for convenient zero setting with clamp screw—continuous dial.
- Tolerance pointers standard
- Satin chrome finish.
- AGD 2 style with central lug back.



Black Face Model

12742-B



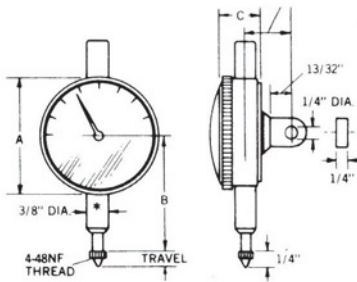
12741



12744



12745



DIMENSIONS:

AGD 2 A B C
 2-3/64" 2" 25/32"

Model No.	Range	Reading	Graduation
12741	.500"	0-50-0	.001"
12742	1.000"	0-100	.001"
12742-B	1.000"	0-100	.001"
12746	1.000"	0-50-0	.001"
12743	2.000"	0-100	.001"
12747	.250"	0-25-0	.0005"
12744	.050"	0-10	.0001"
12745	.050"	0-5-0	.0001"
12748	1mm	0-100-0	0,001mm
12749	20mm	0-100	0,01mm



12743

Model No. 12739, Flat Back for AGD Group 2 Indicators

PRECISION DIAL INDICATORS - AGD 1

SAME FEATURES AS AGD INDICATORS ABOVE

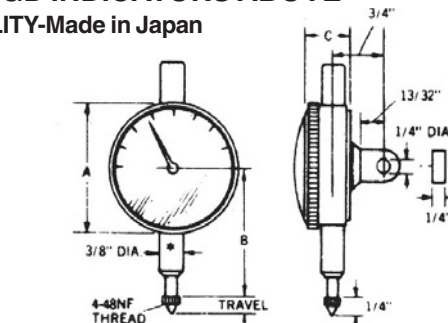
PREMIUM QUALITY-Made in Japan



12857



12855



DIMENSIONS: A B
 AGD 1 1-37/64" 1-5/8"

C 11/16"
 *)8mm on metric models

MODEL NO.	RANGE	READING	GRADUATION	REVOLUTION COUNTER
12855	.250"	0-100	.001"	-
12856	.250"	0-50-0	.001"	-
12857	5mm	0-100	.001"	YES

Model No. 12858, Flat Back for AGD Group 1 Indicators



Made in U.S.A.

INDIVIDUAL DIAL INDICATOR POINTS

The same quality points that make up our deluxe indicator point sets. Available from stock with standard inch AGD 4-48 threads. Our Metric-to-English Conversion Point. Model No. 17350 (see bottom of page) allows the use of any of the below points to be used with metric (M2.5 x 0.45 thread) indicators.

TYPE	LENGTH	INCH ORDER NO.
FLAT	0.175"	18570
FLAT	0.250"	18571
FLAT	0.385"	18572
FLAT	0.500"	18573
FLAT	0.625"	18574
FLAT	0.750"	18575
FLAT	0.875"	18576
FLAT	0.895"	18577
FLAT	1.250"	18578
BALL	0.225"	18579
BALL	0.395"	18580
BALL	0.625"	18581
BALL	0.875"	18582
BALL	0.825"	18583

TYPE	LENGTH	INCH ORDER NO.
CONICAL	0.875"	18584
CONICAL	0.750"	18585
CONICAL	0.625"	18586
CONICAL	0.500"	18587
STEM (Bent)	0.312"	18588
STEM (Measuring Tip-.120" Length)	1.025"	18589
STEM	1.160"	18591

INDICATOR POINT KITS

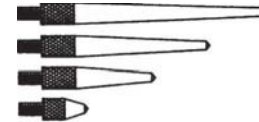
Made in U.S.A.



Contains a selection of contact points in styles of half round, flat, bent, soft, long stem, taper and ball type, in all popular lengths. A.G.D. Specification 4-48 thread.

TAPERED CONTACTS

Hardened Steel with Black Oxide Plating. A.G.D. 4-48 threads.



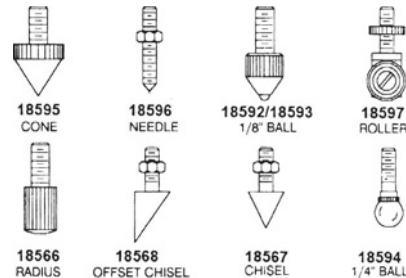
Set No. 17260, 22 pc Indicator Point Kit
Set No. 18614, 11 pc Indicator Point Kit

Model No.	Length
18615	13/32"
18616	1"
18617	1 1/2"
18618	2"

SPECIAL INDICATOR CONTACTS

Hardened Steel - Black Oxide Finish

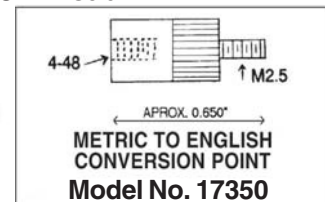
DESCRIPTION	MODEL NO.
Radius Contact	18566
Chisel Point Contact	18567
Offset Chisel Point Contact	18568
1/8" Dia. Steel Ball	18592
1/8" Dia. Carbide Ball	18593
1/4" Dia. Steel Ball	18594
5/16" Dia. Cone Point	18595
1/16" Needle Stud Contact	18596
Roller Anvil Contact 3/8" Roller	18597



INDICATOR POINT EXTENSIONS

Hardened Steel with Black Oxide Plating. A.G.D. 4-48 Thread.

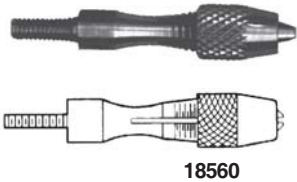
Model No.	Length	Model No.	Length
17262	1/2"	17267	1 3/4"
17263	3/4"	17268	2"
17264	1"	17269	3"
17265	1 1/4"	17825	4"
17266	1 1/2"		





Made in U.S.A.

FLEXBAR INDICATOR PIN VISE ACCESSORY



Has
4-48
Thread

Allows any A.G.D. dial indicator to hold any diameter probe, needle, etc. 0 to .040" capacity. Uses standard 4-48 thread for easy mounting to indicator spindle.

Model No. 18560 Pin Vise Accessory for Dial Indicators

CARBIDE AND RUBY BALL PRECISION INDICATOR CONTACT TIPS



Precision contact tips manufactured for use on standard drop style dial indicators. Available with Grade 25 Tungsten Carbide, or Grade 25 Ruby Ball tips. Both Tungsten Carbide and Ruby have extremely hard and smooth measuring surfaces. Fits all AGD standard Groups 1, 2, 3, 4 indicators. **Tungsten Carbide Ball Tips** - Extremely smooth and hard, perfect for use in any repetitive measuring application. Will last much longer than standard steel tips.

Ruby Ball Tips - Ruby tips have the following desirable properties that make it the material of choice for all measuring applications: Hardness, resistance to wear, chemical and thermal stability, extremely low friction coefficient, negligible thermal expansion. Made in U.S.A.

Carbide Ball Tips				
Tip Length	Ball Size	Ball Material	Threads	Model No.
¼	3mm	Carbide	4-48	15320
¼	3mm	Carbide	M2.5	15321
½	3mm	Carbide	4-48	15322
¾	3mm	Carbide	4-48	15323
¼	4mm	Carbide	4-48	15324
¼	4mm	Carbide	M2.5	15325
½	4mm	Carbide	4-48	15326
¾	4mm	Carbide	4-48	15327

Ruby Ball Tips				
Tip Length	Ball Size	Ball Material	Threads	Model No.
¼	3mm	Ruby	4-48	15328
¼	3mm	Ruby	M2.5	15329
½	3mm	Ruby	4-48	15330
¾	3mm	Ruby	4-48	15331
¼	4mm	Ruby	4-48	15332
¼	4mm	Ruby	M2.5	15333
½	4mm	Ruby	4-48	15334
¾	4mm	Ruby	4-48	15335

FLAT & BUTTON TYPE INDICATOR CONTACTS

Standard contact points for all AGD standard Dial Indicators with 4-48 threads.
All Contacts are Low Carbon Steel, Case Hard, and Black Oxide Plated.



Flat Contacts		
Model No.	Width	Thickness
20690	¼"	.112"
20691	⅜"	.093"
20692	½"	.100"
20693	⅝"	.160"
20694	⅞"	.100"
20695	¾"	.100"
20696	1"	.125"
20697	1½"	.125"
20698	2"	.125"

2" Contact has ground face

Button Contacts		
Model No.	Width	Thickness
20699	⅜"	.090"
20700	½"	.156"
20701	¾"	.156"

Made in U.S.A.



FLEXBAR V-ANGLE DIAL DEPTH GAGE BASE

Features 120° Prismatic Base • Made in U.S.A.

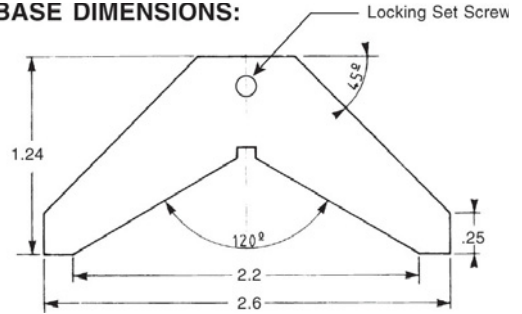


Ideal for checking cylindrical parts ranging from 10mm/.394" to 100mm/3.94". This "Keyway" base will accept any dial or digital gage with a .375 stem, or 8mm stem using supplied reducer bushing.

FEATURES:

- Made of tempered stainless steel with ground base.
- Other surfaces are rust-proof treated.
- Thickness: .630".

BASE DIMENSIONS:



Above: Flexbar Depth Gage Base (Model No. 16839) in use with No. 12745, .0001" reading dial indicator (not included).

Model No. 16839, Flexbar V-Angle Depth Gage Base only

PRECISION QUALITY HORIZONTAL TYPE TEST INDICATORS

Auto-Reversing • Made in Japan

- Accuracy meets or exceeds Federal Specifications.
- Large, easy reading dial with microfine graduations.
- Fully jeweled movement.
- Independent and interchangeable movement.
- Movement is not influenced by any outside pressures.
- Adjustable bezel and dial are easily set to zero.
- Automatic reversing contact point.
- Contact point adjustable 180°.
- The indicating hand is sensitive and quick to respond because of the jeweled bearings featured with all indicators.
- Rugged, one-piece housing.
- Satin chromed finish.
- Universal - 2 dovetails for back & top mounting plus screw-in mounting of stems for greater versatility.
- Furnished with 2 stems, 3/8" and 5/32" dia., including dovetail adapter, wrench, plus .080" dia. hard chromed contact point.
- Complete in fitted box.

**New Special Pricing
For A Limited Time!**

Black Dial Face Model



18598-B

White Face Model



18599

Model No.	Reading	Dial	Range	Length of Point
18598	.0005"	1-3/8"	.030"	.750"
18598-B	.0005"	1-3/8"	.030"	.750"
18598-L	.0005"	1-3/8"	.030"	1.52"
18599	.0001"	1-3/8"	.010"	.625"

ECONOMY TEST INDICATOR HOLDER

For Milling Machines and Jigborers

Model No. 18412 Features:

- Adapts immediately for fast and positive indicating
- Suitable for all popular indicators with 5/32" shank or dovetail
- Reach from 0-12" diameter
- Guaranteed accurate readings
- 1-7/8" capacity





FLEXBAR ECONOMY DIAL TEST INDICATORS

Fully Jewelled Movement • Auto-Reversing

FEATURES:

- Precision quality
- Adjustable bezel and dial
- $\frac{5}{32}$ " and $\frac{3}{8}$ " diameter mounting shanks
- Contact tip diameter: .080"
- Dovetails top, back and front
- Includes fitted case



Model No.	Reading	Graduation	Travel	Dial Face Dia.
12874	0-15-0	.0005"	.030"	1 1/4"
12875	0-4-0	.0001"	.008"	1 1/4"
12876	0-15-0	.0005"	.030"	1 1/2"

ASSORTED TEST INDICATOR HOLDERS

Holders for fastening at the dovetail or the stem permits use on any test indicator.



Indicators not included

Model No. 12933, Axial Support Bracket (Made in USA)

Model No. 12936, Holder for lathes, clamp $\frac{1}{2}$ " x $\frac{1}{4}$ " x $2\frac{3}{4}$ " Length

Model No. 12937, Turning holder, clamp $\varnothing \frac{1}{4}$ ", 1" Length

Axial Support Bracket



12933

Used for mounting indicators with dovetails or rods $\frac{3}{8}$ " diameter body for secure clamping with 5-1/2" overall reach. **Made in USA.**

Specifications:

- 1 dovetail fits all indicators
- (1) $\frac{1}{8}$ dia. hole at an angle
- (1) $\frac{1}{8}$ hole inside dovetail
- (1) $\frac{1}{4}$ hole
- (3) pivot points

UNIVERSAL DOVETAIL INDICATOR HOLDER

For use with **all** Test Indicators and Probes with Dovetails. • Made in U.S.A.



FEATURES:

- 3" Overall Length - $\frac{1}{4}$ " Shank diameter - Locks in four 90 Degree Quadrants - Allows infinitely variable angles - Non scarring Brass Gib will not mark indicators - Packed in Hi Impact reusable storage tubes.

Model No. 17490, Universal Dovetail Indicator Holder (indicator not included)

DOUBLE JOINTED TEST INDICATOR HOLDER

- Double jointed holder fits all dovetail equipped indicators. Mount on either front or rear of instrument.
- Indicators may be swiveled to any angular position.
- Because the extended reach allows large diameter centering, this jointed holder is an ideal attachment for jig boring.



17271

Made in USA

Model No. 17271, Double Jointed Holder*, $\frac{3}{8}$ " Shank Diameter. *Indicator not included.

INDICOL UNIVERSAL INDICATOR HOLDER

FOR MILLING MACHINES AND JIGBORERS • Made in U.S.A.

- Reach from 0-12" dia.—Larger reach is possible by replacing and using a longer rod.
- Guaranteed accurate readings.
- Versatility in applications include: Alignment of work -Spindle perpendicularity checking—Concentricity reading.
- Indicator is not included in prices.
- Fits all popular indicators with $\frac{5}{32}$ " shank or dovetail.

MODEL NUMBER	CLAMPING DIAMETER	LENGTH FROM CLAMPING BRACKET TO INDICATOR
18131	+1 1/8"	4 1/2"
18132		4 1/2"
18133	2 1/4"	5"
18134	2 1/2"	5 3/4"

+) For Bridgeport Mill "J", "2J", Moog, Index, Rockwell and Lagun Mills.



Fits all popular indicators with $\frac{5}{32}$ " shank or dovetail



HEAVY DUTY DIAL GAGE STANDS

Premium Quality Stands Easily Adapted For Thickness Readings and Comparator Work.



19281

Model No. 19281*

- Measuring Base: Hardened & precision ground special tool steel.
- Size: 2.36"/60mmØ
- Vertical Range: 4.72"/120mm
- Fine Adjustment: 3mm by rack & pinion arrangement
- Throat Depth: 3"/75mm
- Pillar Diameter: 1"/25mm
- Net Weight: 3.25kg

Model No. 19283*

- Measuring Base: Hardened & Precision ground special tool steel with square grids
- Size: 2.75" x 2.75" / 70x70mm
- Vertical Range: 6"/150mm
- Throat Depth: 3.35"/85mm
- Pillar Depth: .86"/22mm
- Net Weight: 3.75kgs.

*Dial Gage Holder: 3/8" dia. with 8mm bushing adapter.

Dial Indicator Not Included.



19283

FLEXBAR HEAVY DUTY DIAL GAGE STAND

Premium Quality Stand Easily Adapted For Thickness Readings and Comparator Work.

- Serrated Measuring Plate: 3 3/4" x 3 3/4".
- Measuring Surface: Hardened, ground and lapped.
- Flatness: 0.002mm/.0001".
- Dial Gage Holder: 3/8" dia. with 8mm bushing adapter.
- Heavy Duty Cast Iron Base, enameled.
- Fine Adjustment Knob for Zero Setting.
- Post Dimensions: 9" Long x 1.18" diameter.
- Measuring plate is removable.
- Weight: 12 lbs.

Model No. 18422, Flexbar Heavy Duty Dial Gage Stand

(Does not include Dial Indicator)

18422

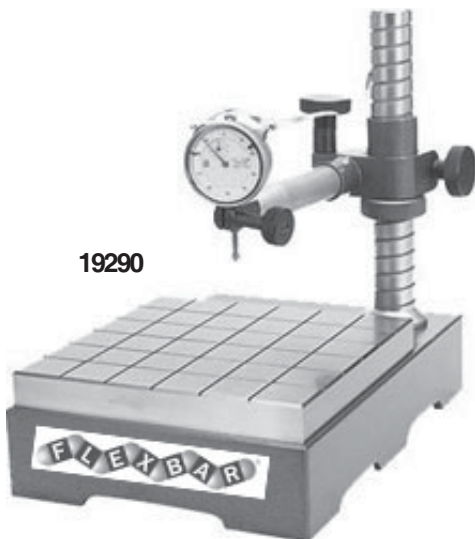


FLEXBAR LARGE FORMAT HEAVY DUTY COMPARATOR STAND

Available in Standard and Extended Height Models. Both Models feature a vertical pillar boom arm which is mounted asymmetrically to allow the dial gauge to be positioned over virtually all points on the base.

Features:

- Measuring Base: Hardened & precision ground special tool steel with square grids.
- Size: 8" x 8" / 200mm x 200mm
- Vertical Range:
 - Model No. 19290: 6.5"/190mm
 - Model No. 19291, 12"/300mm
- Throat Depth: 7.5"/190mm
- Pillar Diameter: 1.2"/31mm
- Dial Gage Holder: 3/8" dia. with 8mm bushing adapter
- Net Weight: 22.75Kgs.



19290

Model No. 19290, Flexbar Large Format Heavy Duty Comparator Stand, Standard Height

Model No. 19291, Flexbar Large Format Heavy Duty Comparator Stand, Extended Height



Made in U.S.A.

FLEXBAR GRANITE BASE INDICATOR STANDS

A Wide Range of Sizes and Styles To Fit Most Needs

EXCLUSIVELY FROM FLEXBAR

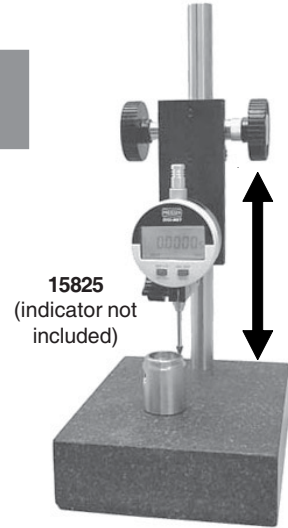
THE GRANITE QUICK CHECK DIAL INDICATOR STAND

**Provides Rapid Height Positioning And Fine Adjustment
With The Turn Of A Knob**

Features:

- Ultra-Smooth Rack & Pinion Indicator Positioner offers 2" of vertical travel
- Rapid adjustment for checking multiple height features on parts
- Twin knobs for left or right hand positioning
- Stem mount indicator holding arm accommodates both 3/8" and 8mm diameter stems
- Granite Base: 8" x 6" x 2" high .00005" flatness
- Stainless Steel Column
- Column Height: 12"
- Column diameter: 9/16"

Can be used with any AGD indicator



15825
(indicator not included)

Model No. 15825, Flexbar Granite Quick Check Indicator Stand (Dial indicator is not included - order separately)

FLEXBAR PRECISION GRANITE CHECK

Lugmount Style Indicator Stands

2 Models: Standard & Large

IT'S A BLACK GRANITE SURFACE PLATE!
IT'S A DIAL COMPARATOR STAND!

- Microscrew Fingertip Control, Fine Adjustor.
- .00005" Flatness.
- Granite Base: 6" x 6" x 2" High or 8" x 6" x 2" H.
- 10" Height.
- Accepts All AGD Indicators.

Model No. 12034, 6" x 6" x 2" Base Model



(Dial Indicator not included)

12034

NEW LARGE MODEL GRANITE CHECK

Model No. 12035, 8" x 6" x 2" Base

HEAVY-DUTY LUGMOUNT AND STEM-MOUNT GRANITE BASE INDICATOR STANDS

Made in U.S.A.

Now Available in 2 Sizes:
9" x 12" and 12" x 18"

- Grade B granite bases are supplied with either lugmount or stem-mount* indicator holder.
- *3/8" diameter stem-mount includes bushing for 8mm stems.
- All models include adjustable indicator holding arm with fine adjustor knob.
- Column diameter is 1.250".
- Column height is 12".
- Distance from column to indicator mount : 4 3/4"

Model No.	Base Size	Style	Overall Height
17493	9" x 12" x 2"	Stem-Mount	15"
17552	9" x 12" x 2"	Lugmount	15"
17494	12" x 18" x 3"	Stem-Mount	15"
17553	12" x 18" x 3"	Lugmount	15"

Above Models: Indicator not included



Shown: Model No. 17552

Exclusive North American Agent

Precision Swiss Made

**STRATO LINE & CLASSIC LINE
3D ARTICULATED GAGING ARMS
Universal Positioning - Highest Stability**

FISSO articulated arms can be positioned in any way desired both easily and precisely. All three arm sections can be fixed and moved with the central tightening knob.

The quick lock ensures a high degree of comfort for the user. A short twist is all that is required to operate the infinitely adjustable clamping system. As a result, work is speeded up and made more efficient.

Main System Features:

• **Powerful and permanent clamping**

The friction clamp is based on an infinitely adjustable and purely mechanical clamping system. Its precisely fitting ball-and-socket joint produces a high degree of static friction which ensures maximum stability. The pre-tension prevents the arm from collapsing unexpectedly, which protects sensitive measuring instruments from damage.

• **Precise microfne adjustment**

Made of high-quality steel, the zero-play fine adjustment ensures precise positioning of the gauging instrument and a high degree of measuring precision and repeatable accuracy. Combined holder for dial gauges and electronic length probes with shaft diameters of 8mm (or 3/8") and gauges with dovetails.

• **Cleverly designed central tightening system**

Three joints can be fixed and moved in five different directions with a single touch. The purely mechanical and infinitely adjustable central tightening system with the quick lock offers the greatest possible ease of operation.

• **Stability**

The precisely fitting in the ball-and-socket joint produces a great deal of static friction. Generously dimensioned components provide the desired stability.

• **Secure, stable bases**

A safe, stable base provides the essential foundation for precise measurements. The articulated arms can be mounted as desired, on a strong magnet, vacuum or a granite sliding base.

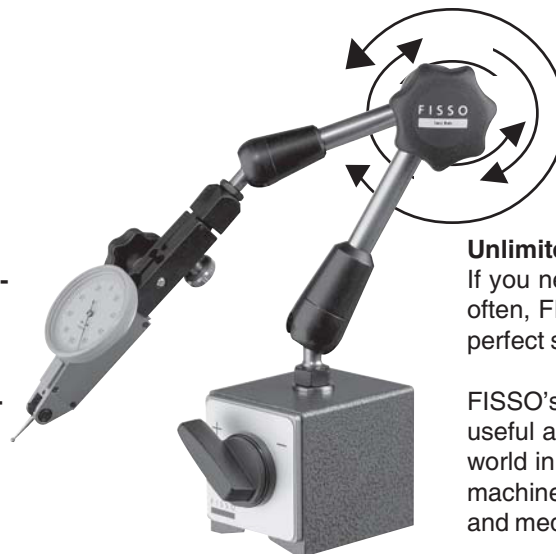


Shown Above:
The Strato line is a modern series with red anodized arm sections made of a high-quality light metal alloy. The arms are available in three sizes with radiuses of movement of 130, 200 and 280 mm and can be mounted on a magnetic, vacuum or granite sliding base.

FISSO articulated arms are maintenance free and have an extremely long service life.

Shown Right:

The Classic line contains proven products with chrome-plated arm sections. The articulated arms themselves are available in four different sizes, with radiuses of movement of 200, 280, 420 or 620mm. As desired, they can be mounted on magnetic or vacuum bases.



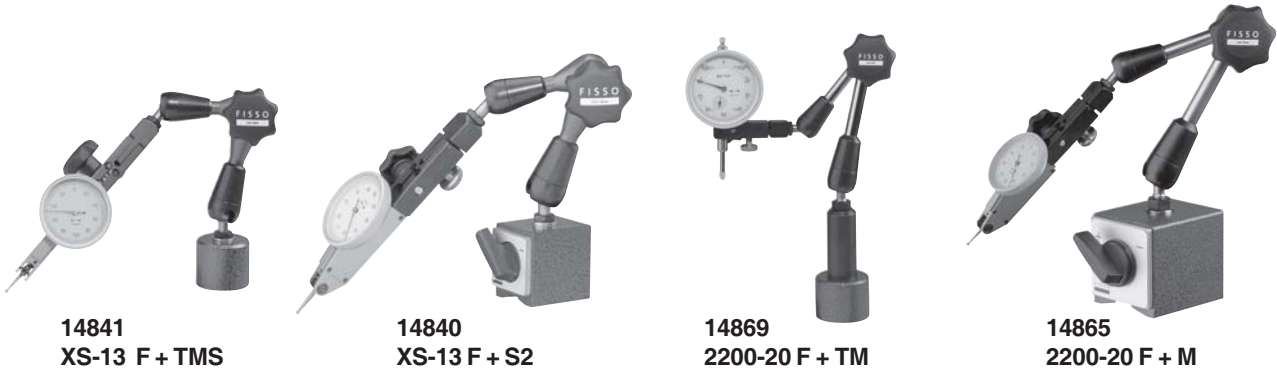
Unlimited number of uses

If you need to precisely position objects often, FISSO articulated arms are the perfect solution.

FISSO's wide variety of models and their useful accessories are used around the world in a variety of ways, e.g. metrology, machine engineering, optics, photography and medicine.

STRATO LINE & CLASSIC LINE MODELS AVAILABLE IN FOUR BASIC SIZES:

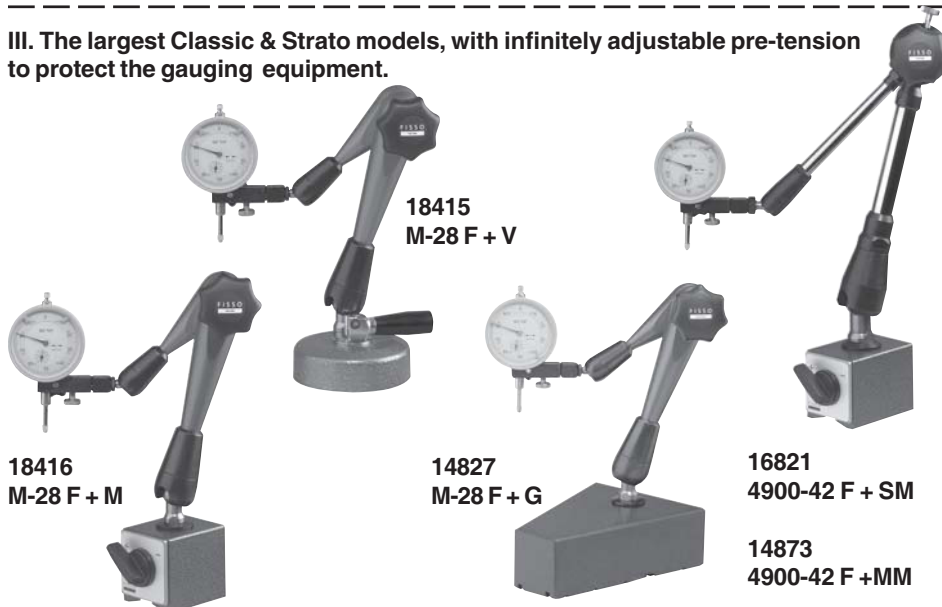
I. The smallest Classic & Strato models, designed for use with probes mounted on machine tools, in measuring devices and when space is at a premium. The pre-tension is not adjustable.



II. The medium-sized Classic & Strato models, for meters and dial gauges, can be used in all manufacturing areas. The pre-tension is not adjustable.



III. The largest Classic & Strato models, with infinitely adjustable pre-tension to protect the gauging equipment.



IV. The Maxi Classic model, for the largest workpieces and machines, with infinitely adjustable pre-tension to protect the gauging equipment.



See next page for complete range of models & specifications



FISSO

FISSO 3D ARTICULATED GAGING ARMS SPECIFICATIONS & ORDERING

I. Strato Line 3D articulated arms for gauges, with fine adjustment and base

Model (Type)	Order No.	Approx. total height mm/in.	Approx. radius of movement mm/in.	Base Type	Base Size (L x W x H) mm	Switchable on/off	Approx. adhesive power, Lbs.
XS-13 F + S2	14840	215/8.5"	130/5.15"	Switch magnet S2	34 x 30 x 35	Yes	67
XS-13 F + TMS	14841	210/8.3"	130/5.15"	Pot magnet TMS	∅ 30 x 25	No	38
XS-13 F	14842	185/7.3"	130/5.15"	None	Thread M6	-	-
S-20 F + M	14845	310/12.3"	200/8"	Switch magnet M	60 x 50 x 55	Yes	168
S-20 F + TM	14846	335/13.25"	200/8"	Pot magnet TM	∅ 40 x 30	No	67
S-20 F + AM	14847	310/12.3"	200/8"	Anyform magnet AM	77 x 48 x 55	No	134
S-20 F + V	14848	285/11.3"	200/8"	Vacuum Base V	∅ 88 x 27	-	-
S-20 F	14849	255/10"	200/8"	None	Thread M8	-	-
M-28 F + M	18416	390/15.4"	280/11"	Switch Magnet M	60 x 50 x 55	Yes	168
M-28 F + V	18415	365/14.4"	280/11"	Vacuum Base V	∅ 88 x 27	Yes	-
M-28 F	18417	335/13.25"	280/11"	None	Thread M8	-	-
M-28 F + G	14827	385/15.2"	280/11"	Granite sliding base G	150 x 120 x 50	No	-
M-28 F + SM	14828	390/15.4"	280/11"	Switch magnet SM	75 x 50 x 55	Yes	202

US standard; micro adjustment with a seat diameter of 3/8" is supplied unless 8mm is specified

II. Classic Line 3D articulated arms for gauges, with fine adjustment and base

Model (Type)	Order No.	Approx. total height mm/in.	Approx. radius of movement mm/in.	Base Type	Base Size (L x W x H) mm	Switchable on/off	Approx. adhesive power, Lbs.
2200-20 F + M	14865	310/12.3"	200/8"	Switch magnet M	60 x 50 x 55	Yes	168
2200-20 F + V	14866	285/11.3"	200/8"	Vacuum Base V	∅ 88 x 27	Yes	-
2200-20 F	14867	255/10"	200/8"	None	Thread M8	-	-
2200-20 F + AM	14868	310/12.3"	200/8"	Anyform magnet AM	77 x 48 x 55	No	134
2200-20 F + TM	14869	335/13.25"	200/8"	Pot magnet TM	∅ 40 x 30	No	67
3300-28 F + M	16820	390/15.4"	280/11"	Switch magnet M	60 x 50 x 55	Yes	168
3300-28 F + V	14870	365/14.4"	280/11"	Vacuum Base V	∅ 88 x 27	Yes	-
3300-28 F	16822	335/13.25"	280/11"	None	Thread M8	-	-
3300-28 F + SM	14871	390/15.4"	280/11"	Switch Magnet SM	75 x 50 x 55	Yes	202
4900-42 F + SM	16821	530/21"	420/16.6"	Switch Magnet SM	75 x 50 x 55	Yes	202
4900-42 F	16823	475/19"	420/16.6"	None	Thread M8	-	-
4900-42 F + MM	14873	550/22"	420/16.6"	Switch Magnet MM	120 x 60 x 55	Yes	269
5000-62 F + MM	14875	730/28.9"	620/24.5"	Switch Magnet MM	120 x 60 x 55	Yes	269
5000-62 F	14876	675/27"	620/24.5"	None	M10 x 1,25	-	-

US standard; micro adjustment with a seat diameter of 3/8" is supplied unless 8mm is specified

Classic Line Articulated Arms Only (w/o fine adjuster or base)

Model (Type)	Order No.	Approx. radius of movement mm/in.	Approx. carrying capacity Lbs.
2200-20	14860	200/8"	9
3300-28	14861	280/11"	15
4900-42	14862	420/16.6"	16
5000-62S	14863	620/24.5"	27

Strato Line Articulated Arms Only (w/o fine adjuster or base)

Model (Type)	Order No.	Approx. radius of movement mm/in.	Approx. carrying capacity Lbs.
XS-13	14830	130/5.15"	6
S-20	14831	200/8"	9
M-28	14832	280/11"	15

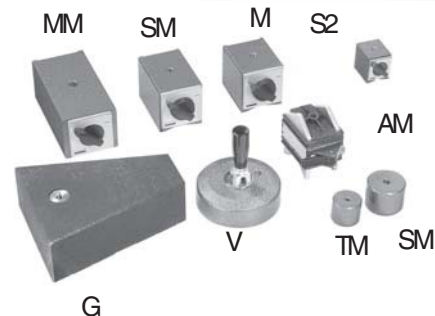
Microfine adjustment only

Model	Order No.	Hole Diameter	Dovetail	Connection Thread
D8, M6	14834	8mm	Yes	M6
D8, M8	14835	8mm	Yes	M8
D $\frac{3}{8}$ ", M6	14836	$\frac{3}{8}$ "	Yes	M6
D $\frac{3}{8}$ ", M8	14837	$\frac{3}{8}$ "	Yes	M8



Base Only

Model	Order No.	Dimen. LxWxH mm	Approx. adhesive power, Lbs.	Connection Thread
M	10998	60 x 50 x 55	168	M8
SM	14850	75 x 50 x 55	202	M8
MM	14856	120 x 60 x 55	269	M10 x 1,25
TM	14851	∅ 40 x 30	67	M8
AM	11018	77 x 48 x 55	134	M8
S2	14853	34 x 30 x 35	67	M6
TMS	14854	∅ 30 x 25	38	M6
V	18418	∅ 88 x 27	-	M8
G	14855	150 x 120 x 50	-	M8



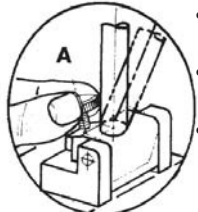
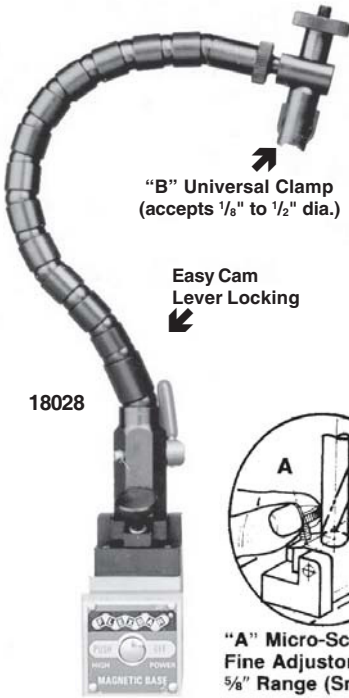


THE ORIGINAL MADE IN U.S.A.

FLEXBAR®

Instant Positioning—Instant Locking UNIVERSAL HOLDER/POSITIONERS FOR ALL AGD INDICATORS AND ELECTRONIC SENSORS (Lug Backs Too!)

The heavy duty FLEXBAR is completely flexible; lets you reach over, under, around, instantly and surely. Elimination of the large assortment of rods, swivels, clamps and other hardware necessary to reach and measure in obstructed areas. Cuts set-up time as much as 75% to 90%. FLEXBAR sets and locks with a simple twist of the lever.



"A" Micro-Screw Fine Adjustor Block
5/8" Range (Smooth).

- Top Mounting Clamp ("B"): (Telescopic Action) Grips objects from .125" up to .510" diameter.
- Cable and swaged fittings are stainless aircraft and Mil Spec Grade.
- Locked by Tensioning of Cable, incredible rigidity is achieved by this design. (No Movement once locked).
- Cam Action Locking.



18030
(5/16-18 Thread)
or
18031
(8mm Thread)

VARIETIES OF FLEXBARS

HEIGHT	BASE FEATURE	MAGNET PULL (lbs)	MODEL No.	NOTES
14"	Fine Adjustor	NONE	18026	Fine Adjustor No Magnet
15"	Mag Base	65 On/Off	18027	No Fine Adjustor
16"	Mag Base with Fine Adjustor	65 On/Off	18028	See Picture
13"	5/16-18 Thread	NONE	18030	See Picture
13"	8mm x 1.25 Thread	NONE	18031	See Picture

Flexible Arm has 14 Balls & Sockets and When Flexed Can turn a 2 1/2" Dia. Circle; Above Units support 3 Lb. Payload. Black Oxide Finish.
On/Off Mag Base: 1 5/8" x 1 7/8" x 2" High (approx.). Push-button Type.

Replacement Cables for Flexbars:

Model No. 80060-2, 2 Ball Cable for Flexbar Models 18026-18038, 18051, 18058-18063, 11014

MORE FLEXBARS:



Model No. 18038:

Same Flexbar as on Models 18026 through 18031 but top end has fine adjustor universal rod—5 1/2" long for easy adjustment in any plane. Total reach 22 inches. On/Off Mag Base with V on bottom.

Flexbar on V-Bottom Mag Base

Model No. 18035 Without Universal Fine Adjustor Rod.

Flexbar on V-Bottom Mag Base

Model No. 18038 Base 2" x 2 1/4" x 2 5/8". With Fine Adjustor Rod as shown.

Flexbar on C-Clamp*

All Made in U.S.A.

Model No. 18032 *Capacity of C-Clamp:

- 1 3/8" Vertically.
- Throat to Center of Screw - 3/4".





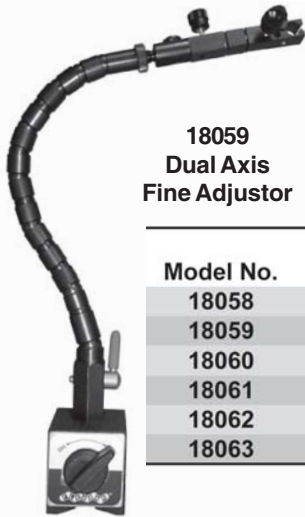
FLEXBAR ADDS NEW

"IN-LINE" FINE ADJUSTOR

TO ITS FLEXBAR UNIVERSAL HOLDER/POSITIONER

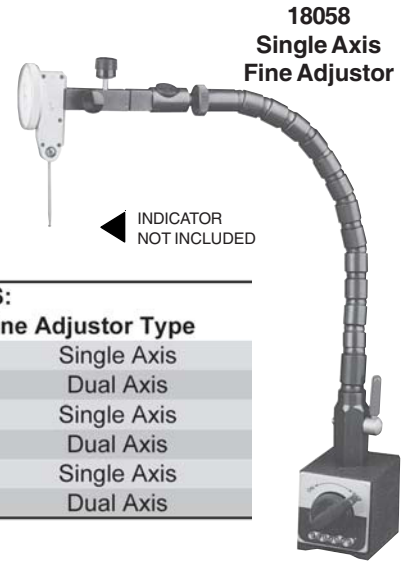
Flexbar Machine Corporation, innovators for over 40 years of the Flexbar® Instant Positioning-Instant Locking flexible holding arms, has introduced a new top-end, in-line fine adjustor which holds all AGD dial indicators as well as test indicators with dove tail fittings. FLEXBAR models are now available with either single axis or dual axis top end fine adjustors. The fine adjustment assembly is actuated by a very smooth micro-screw thumb adjustor making the FLEXBAR ideal for high precision indicating applications.

- Fine adjustor end holds AGD dial indicators with $\frac{3}{8}$ " stems (8mm bushing adaptor included) and test indicators with dovetail
- On/Off Mag Base with V on Bottom: 2" x 2- $\frac{1}{4}$ " x 2- $\frac{5}{8}$ ", 90lbs. pull.



18059
Dual Axis
Fine Adjustor

Available with
Single Axis and Dual Axis Fine
Adjustors



18058
Single Axis
Fine Adjustor

INDICATOR
NOT INCLUDED

FLEXBAR IN-LINE FINE ADJUSTOR MODELS:

Model No.	Base Feature	Mag. Pull	Height	Fine Adjustor Type
18058	V-Mag Base	90	17 $\frac{1}{2}$ "	Single Axis
18059	V-Mag Base	90	18 $\frac{1}{2}$ "	Dual Axis
18060	5/16-18 Thread	None	15 $\frac{1}{4}$ "	Single Axis
18061	5/16-18 Thread	None	16 $\frac{1}{4}$ "	Dual Axis
18062	8mm x 1.25 Thread	None	15 $\frac{1}{4}$ "	Single Axis
18063	8mm x 1.25 Thread	None	16 $\frac{1}{4}$ "	Dual Axis

FLEXBAR® FLEXARM VISE-GRIP & FLEXARM VISE-GRIP INDICATOR KIT

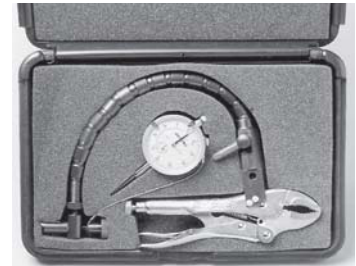
Attaches To Any Convenient Object • Made in U.S.A.

FLEXBAR® VISE-GRIP INDICATOR KIT NO. 18051-KIT INCLUDES:

- Flexbar® No. 18030
- Vise-Grip No. 7 CR (curved jaws) with saddle mount block.
- No. 12001, 0-1", .001" reading dial indicator (see page 100).
- Indicator Safety Cable.
- Heavy-Duty Fitted Case.



No. 18051 Flexbar® Vise-Grip shown above with No. 12001, 0-1" travel dial indicator.



Above: No. 18051-KIT

The Flexbar® Vise-Grip Model No. 18051 and 18051-KIT features a Model No. 18030 Flexbar® (see page 111) attached to a No. 7 CR Vise-Grip (Made in U.S.A.). Included on the vise-grip saddle block is a second tapped hole which permits the Flexbar® arm to be mounted horizontally to the vise-grip.

Model No. 18051-KIT, Flexbar® Vise-Grip Indicator Kit Complete

Model No. 18053, Flexbar® Vise-Grip Only (Includes Flexarm and Vise-Grip - indicator not included)



Made in U.S.A.

JUMBO FLEXBARS

Heavy-Duty Flexible Holding Devices

- Cam-lever locking, extra heavy cable.
- Extra heavy ball joints - $1\frac{1}{16}$ " Diameter.
- Holds heavier payload - 5 lbs. or more.

2 MODELS: ON FLANGE OR HEAVY POWERFUL MAGNETIC BASE



18040

Model No. 18040
Cam-lever locking Flexbar on extra heavy, powerful on/off magnetic base.
Dimensions of Mag Base: $2\frac{3}{4}$ " x $2\frac{3}{4}$ " x $3\frac{1}{8}$ ".
Total Height: 21".

Model No. 18039
Cam-lever locking Flexbar on flange mounting base.
Height: 18". Net Wt.: $1\frac{1}{2}$ lbs.
Flange Dimension: $2\frac{3}{8}$ " x $1\frac{3}{4}$ " x $\frac{3}{8}$ ".



18039

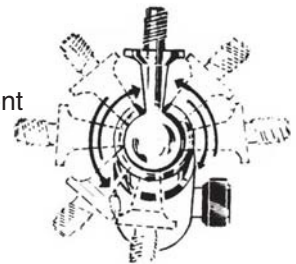
Replacement Cable for 18039 & 18040:
Model No. 80060-1
Long 2-Ball Cable for Jumbo Flexbar Models 18039-18040.

ON EXTRA HEAVY POWERFUL VEE-BOTTOM MAGNETIC BASE

FLOAT 'N LOCK

UNIVERSAL POSITIONERS AND WORK HOLDERS

- It's an excellent Dial Indicator Holder.
- All metal parts used.
- Precision angled bearings interface and lock the ball precisely with a small turn of the locking knob. Excellent rigidity factor.
- Self-compensating - no need to disassemble to re-establish tension (as with other designs).
- Right angle notch (for 90° positioning) can be swung to any point 360° and then locked.



18001

Model No. 18001 Basic Unit - Bottom Hole - for mounting in $\frac{3}{8}$ -16. NC-Class 2B

Model No. 18001-S Basic Unit - Same as above- $\frac{1}{4}$ -20 Threaded Post, No Flange

Model No. 18002 Basic Unit on 90 lbs. pull Mag. Base - $3\frac{1}{4}$ " dia. x .435" high

Model No. 18004 Basic Unit complete with 2-posts, lug back & Heavy Duty Magnet (No.11001) (On/Off Lever Type).
Total Height - 13". Main Post - $\frac{1}{2}$ " dia. x 8" long.
Second Post - $\frac{7}{16}$ " dia. x $3\frac{3}{4}$ " long. 2 each - Post Clamps.
Variable Clamping Capacity - from .125" up to .510".



18002

Right angle notch (for 90° positioning) can be swung to any desired point 360° around the clock and then locked in place.



18004



SIZE THINGS UP INSTANTLY WITH THE FLEXBAR TOM THUMB

Ideal For Very Tight Work Areas

Precision Engineered • Made in U.S.A.

Universal flexible arm locks into an extremely rigid position by turning knob.
Supports up to 2 lb. load when fully tightened.



18009 (Indicator not included)



Model 18050

Accommodates mounting rods or studs up to 1/4" diameter.
Turns 1 1/4" diameter circle and locks securely to let you reach "impossible" areas. Mounting clamp fits 5/16" diameter posts.

Model No. 18009 Mounted Pot Mag. Base - 1 1/8" dia. x 1 3/8" high, 25 lbs. pull with 5" post and fine adjustor

Model No. 18050, 6" Tom Thumb arm only

Model No. 18052, 9" Tom Thumb arm only

Replacement Cables:

Model No. 80061-2 Ball & Thread Cable for Tom Thumb Flexbar
Models 18009 and 18050

Model No. 80061-3 Ball & Thread Cable for Tom Thumb Flexbar
Models 18052

PRECISION TRANSFER STAND



Model No. 18282

- Fast set-ups with dial and electronic probes for accurate transfers.
- Holder for dial indicators with 3/8" diameter stem.
- Rapid coarse adjustment knob and sensitive fine-adjustment.
- Sturdy triangular cast iron base 5" x 5".
- Weight 9.25 lbs.

Model No. 18282 12" Precision Transfer Stand. Indicator not included in price.

MINI UNIVERSAL MAGNETIC BASE

- 3-D rigid steel arm movement.
- Unique central locking mechanism.
- Accepts all A.G. D. dial indicators and test indicators.
- On/Off magnet power switch.
- Max. Reach: 7.5".
- Base Dimension: 1.2" (width) x 1.5" depth



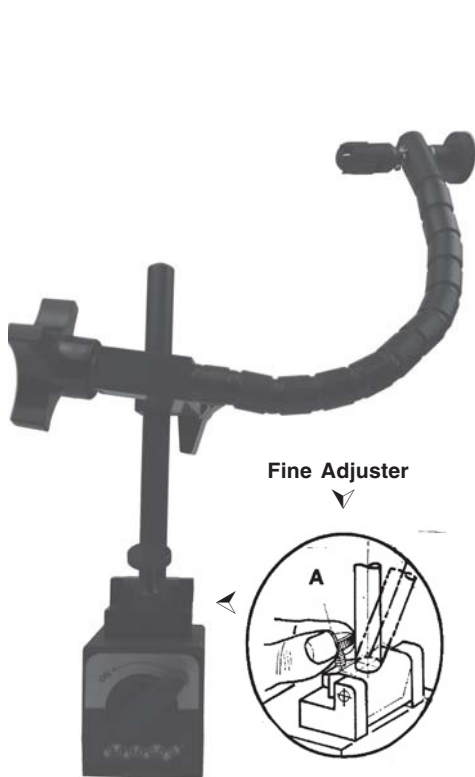
Model No. 19276, Mini Universal Magnetic Stand



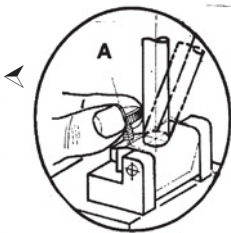
OFF-THE-POST FLEXBARS®

Maximum Rigidity • Excellent Positioning

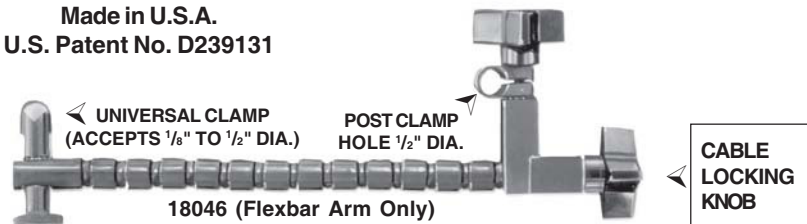
Made in U.S.A.
U.S. Patent No. D239131



Fine Adjuster



"A" Micro-Screw"
Fine Adjuster
Block $\frac{5}{8}$ " Range
(Smooth)



UNIVERSAL CLAMP
(ACCEPTS $\frac{1}{8}$ " TO $\frac{1}{2}$ " DIA.)

POST CLAMP
HOLE $\frac{1}{2}$ " DIA.

CABLE
LOCKING
KNOB

18046 (Flexbar Arm Only)

PRECISION ENGINEERED

- Instruments held by Flexbar do not drift.
- Instant Positioning - Instant Locking.
- Post Clamp (Clevis) Fits $\frac{1}{2}$ " Dia. Post.
- Supports up to 4 lb. Load.
- Accurate tool and instrument positioner.

USE WITH: AGD and Test Indicators, Sensors, Magnifiers, Optic Probes, Wires for Welding, etc.

FLEXBAR DIMENSIONS:

- Bottom of base to top of $\frac{1}{2}$ " Dia. Post - 9".
- Length of Flexbar itself - 10".
- Cable: 19 strand stainless steel wire has aircraft grade swaged fittings.
- Patented Drawbar & Locking Knob design produces incredibly rigid arm, once locked.
- Top Mounting Clamp grips all shapes .125" to .510" dia.

FLEXBAR MODELS:

Model No. 18046 Flexbar without mag. base (as shown above). (Post Clamp fits $\frac{1}{2}$ " dia. Post) Other sized post clamps supplied upon request.

Model No. 18047* Flexbar with mag. base and fine adjustment.

*On/Off Mag. Base - 2" x 2 $\frac{1}{4}$ " x 2 $\frac{5}{8}$ ".

Replacement Cable:

Model No. 80063-6 Ball & Thread Cable for Flexbar Models 18045-18047 (comes with easy instructions for replacing cable).

OFF-THE-POST JUMBO FLEXBARS

Heavy-Duty Flexible Holding Devices

- Knob locking, extra heavy cable.
- Extra heavy ball joints.
- Holds payload of 5 lbs. or more.



18042



18041 (13" LONG)

DIMENSIONS

- (A) Bottom of base to top of post (only).
No. 18042 — 6"
No. 18043 — 9.5"
- (B) Length of flexbar to post clamp — 13".
(C) For total length add "A + B".

*MAGNETIC BASE: 2 $\frac{3}{8}$ " x 2" x 4 $\frac{11}{16}$ " DEEP.

Model No. 18041 Flexbar, ARM ONLY.

Model No. 18042 Flexbar on 6" post with mounting flange.

Model No. 18043 Flexbar on 6" post with fine adjuster on LARGE ON/OFF LEVER MAGNETIC BASE*.

Replacement Cable:

Model No. 80063-1 Ball & Thread for Jumbo Flexbar Models 18041-18043 (includes easy instructions for replacing cable).



18043



Made in U.S.A.

FLEXBARS ON WEIGHTED BASES

IDEALLY SUITED FOR BENCHTOP AND LABORATORY USES.

Now, Universal and Off-The-Post Style Flexbars
Are Available Mounted On Heavy Duty 6" Dia. Weighted Base.

2 Models Available:



Model No. 18030-WB, Universal Cam Lever Style
Flexbar on Weighted Base
(See page 111 for Flexbar Features)

Model No. 18046-WB, Off-The-Post Style Flexbar on
Weighted Base
(See page 115 for Flexbar Features)



FLEXBARS ON SUPER-HOLD VACUUM CLAMPING BASES

Now, Universal and Off-The-Post Style Flexbars
Are Available Mounted On Super Hold Vacuum Clamping Base
(See Page 110 for Base Features).

IDEAL FOR USE ON GRANITE SURFACE PLATES OR PRECISION FLAT SURFACES.



2 Models Available:



Model No. 18031-VB, Universal Cam Lever Style Flexbar on Vacuum Base (See page 111 for Flexbar Features)

Model No. 18046-VB, Off-The-Post Style Flexbar on Vacuum Base (See page 115 for Flexbar Features)



FLEXBAR[®]

Made in U.S.A.

FLEXBAR ADD-A-CLAMP ATTACHMENT

Convert any Flexbar with a B Style Clamp into a powerfull holding tool!



1" Kant-Twist



Kit No. 16375

Flexbar has joined forces with the folks who manufacture the famous "Kantwist" clamp. The result is a device which can hold just about any object in position.

This kit comes with a T Handle 0-1" Kant-Twist clamp and a Flexbar adapter. (shown above)

See images below for some examples of Flexbars which have been adapted.



Shown with a 18046-WB



Shown with a 18053

Model No. 16375, Flexbar Add-A-Clamp Attachment Kit, includes 0-1" Kant Twist C-Clamp and bolt connector to connect with Flexbar[®] distal end "B" Universal Clamp (See Page 111)

LONG REACH JUMBO FLEXBAR CLAMP WITH 2" KANT-TWIST CLAMP

- 42" Total Reach
- 29" Total Boom Length
- 180lb. Magnetic Base
- 12" x 3/4" main post
- Heavy duty swivel clamp
- 15" x 1/2" Secondary opst
- 14" Long Jumbo Flexbar w/ 2" T-Handle Kant-Twist clamp

This clamping device combines some of the strongest components of the Flexbar line. Holds over 3lbs. at full 29" boom extension 12" high.



16380



16381



Model No. 16380, Long Reach Jumbo 2" Kant-Twist Clamp Flexbar on Mag Base

Model No. 16381, Long Reach Jumbo 2" Kant-Twist Clamp Flexbar on Mounting Flange Base

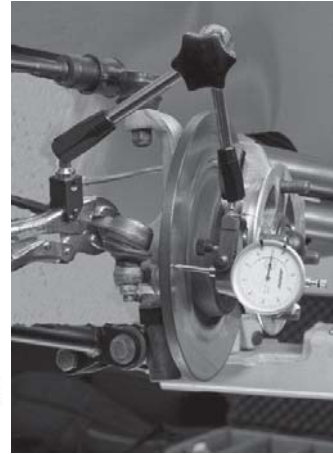


FLEXBAR RIGID ARM VISE-GRIP INDICATOR KIT

Extremely Rigid - Will not Slip * Made in the USA

16820-KIT Includes:

- Rigid Arm Assembly
- Vise-Grip No. 7 CR (curved jaws)
- No. 12001, 0-1" reading dial indicator
- Fine Adjustment Mechanism
- Indicator Safety Cable
- Heavy Duty Fitted Case for easy



The Flexbar Rigid Arm Vise-Grip Indicator Kit features an extremely rigid holding arm. A single knob locks both the arm and the indicator into position. Included on the vise-grip saddle block is a second tapped hole which permits the arm to be mounted horizontally to the vise-grip.

16820-KIT Flexbar Rigid Arm Vise-Grip Kit Complete

16824 Flexbar Rigid Arm Vise-Grip Only (Includes Arm and Vise-Grip Only)

EXTRA HAND DUAL CLAMP FIXTURING ARM

This dual clamp single arm holding device clamps on rounds, flats, anything.



Features:

- 2" T-Handle Kant-Twist™ Clamp
- Rugged Size 7 Visegrip Plier
- Rapid Locking Central Arm

Perfect For:

- Tack welding
- Soldering
- Glueing Parts
- Fixturing Parts



Can be manipulated to multiple positions

Model No. 16370, Flexbar Extra Hand Dual Clamp Fixturing Arm with 2" Kant-Twist Clamp

FLEXBAR EXTRA HAND-MINI

For Smaller more precise applications

This holding device has the same rugged, vise-grip, but with a 1" Kant-Twist™ T-Handle clamp

Model No. 16371, Flexbar Extra Hand-Mini with 1" Kant-Twist Clamp





FLEXBAR MADE IN AMERICA MAGNETIC BASE AND MAGNETIC BASE STANDS

Flexbar magnetic bases are manufactured, machined, powder coated and assembled in the U.S. from start to finish. Our goal is to produce a superior American-made precision tool. Flexbar bases have 180 pounds of pulling force, all metal part construction, and are made to precision ground tolerances.



10996

- 180 pounds of pulling power - much stronger than the average 100-110 lb. base
- Front handle assembly parts are made from nickel plated zinc die castings
- Back and bottom rails are surface ground square and parallel to within .001"
- Main body has durable blue powder coated finish
- Radiused corners on the top give the base a modern look
- On/off switch
- Base can be mounted vertically as well as horizontally
- V bottom base allows mounting on cylindrical surfaces
- Base without arms is 3 1/2" long (with on/off switch), 2" wide, 2.1" tall
- Model Nos. 10995 and 10996: Chrome plated columns and steel clamps are imported from a manufacturer of quality components. The main column is .475 x 7", clamping rod is .390 x 7". Stem hole is 5/32", lug stem is .225".



180 LBS. PULL



10998

Ordering:

Model No. 10998, Magnetic Base Only (without stand)

Model No. 10995, Magnetic Base With Standard Arms

Model No. 10996, Magnetic Base With Arms With Fine Adjustment Arm

Model No. 10997, Magnetic Base With Flexbar Arm



10997

ON/OFF MAGNETIC BASES

WITH REMOVABLE FLANGES SO CUSTOM RIGGING CAN BE MADE WITHOUT RUINING MAGNETIC CORES.

FEATURES:

- Heavy-Duty Housing
- Permanent Magnets
- M8 x 1.25mm Mounting Thread Located Under Removable Flange



11003



10999



11004



11000

Size (Inches)	Bottom Shape	Magnetic Pull*	Model No.
2 x 2 1/8 x 3 3/4	Vee	150 lbs.	11000
1 5/8 x 1 7/8 x 2	Flat	65 lbs.	11003
2 x 2 1/4 x 2 5/8	Vee	90 lbs.	11004
2.44 x 2 x 2.2	Vee	140 lbs.	10999**

*Must be on Steel, at least .250" thick

**Super Power Nd-Fe-B Mag base, does not include removable flange

ANYFORM MAGNETIC BASE

Adapts To Any Shape, Any Contour

Designed and Manufactured in U.S.A.

- 70 steel segments independently align and attach themselves firmly to uneven surfaces.
- Powerful magnetic base: 1 3/4" x 2 1/4".



11017

Model No. 11017
Anyform Mag Base w/ fine adjust and stand.

Model No. 11018
Anyform Mag Base only, 8mm x 1.25mm threaded mounting hole.

Model No. 11161
Anyform Mag Base w/ Swiss Style Holding

Arm (No. 16822) (see page 110.)



**STANDARD
INDICATOR STANDS
QUALITY MADE**

Large Size Stands Mounted on On/Off Mag Base.
Available with or without Fine Adjustor Rod



**18024
SHOWN**

STAND SPECIFICATIONS:

- Lug Back Holder.
- Accepts all AGD Dial Indicators, Stems, etc.
- Accepts Dial-Test indicators $\frac{3}{8}$ " and $\frac{5}{32}$ " dia.
- Rugged Locking Knobs.
- Adjusts in both horizontal and vertical planes.
- Main Post: .470 Dia. x 7" Long.
- Secondary Post: .385 Dia. x 6" Long.

Model No. 18024

Stand on - On/Off Mag Base with fine adjustor.
Mag Base: 2" x 2 $\frac{1}{4}$ " x 2 $\frac{5}{8}$ ", 90 lb. pull.

Model No. 18025

Same as 18024 but without fine adjustor.

Model No. 18018 Lug Back Adapter.

Model No. 18008

Holding rod with fine adjustor (includes Lug Back Adaptor).
Post is .385" dia. x 6" long.



18008



18018

**HEAVY-DUTY LONG-REACH™
MAG-BASED
INDICATOR STAND**

Over 4 Feet Total Reach!



(Indicator not included)

Model No. 18054-MAG
on Extra-Heavy Powerful
Magnetic Base ▶

**Features Heavy-Duty Swivel
Clamps**

**Long-Reach Indicator Stand Dimen-
sions:**

- Total Reach: 48".
- Main Post: $\frac{3}{4}$ " diameter x 12" long.
- 2nd Post: $\frac{1}{2}$ " diameter x 15" long.
- 3rd Post: $\frac{1}{2}$ " diameter x 15" long.
- 4th Post (includes fine adjustor and indicator holder): $\frac{7}{16}$ " diameter x 6" long.

**HEAVY POWERFUL MAGNETIC
BASE**

Model No. 18054-MAG, Long-Reach™ Indicator Stand on
Magnetic Base, 2 $\frac{3}{8}$ " x 2" x 4 $\frac{11}{16}$ " - 180lb. pull.

**MULTI-PURPOSE
DIAL STAND**

Featuring Precision Ground Cast
Iron Base With Fine Adjustment



Accommodated both plunger and
dial test indicators.
Base size: 4" x 3" (100mm x 78mm)
Main Post: .71" (18mm) diameter
2nd Post: 9" (225mm) long
Overall Height: 13.2" (330mm)
Net Weight: 2.6Kg

Model No. 19280, Multi-Purpose
Dial Indicator Stand

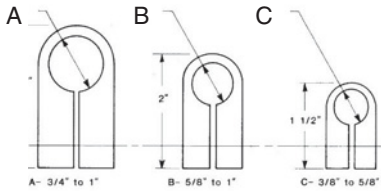


FLEXBAR ADJUSTABLE SWIVEL CLAMPS ANTI-VIBRATION LOCK

Provides Positive, Rigid Holding Power.

- Any combination of 17 standard size holding diameters: Heavy-duty: from $\frac{3}{8}$ " x $\frac{3}{8}$ " to 1" x 1" diameter. Medium duty: from $\frac{5}{32}$ " x $\frac{5}{16}$ " to $\frac{1}{2}$ " x $\frac{3}{8}$ " diameter.

LARGE MODELS



MEDIUM MODELS:

Model No.	Dimensions (I.D.)
12540	$\frac{5}{32}$ " x $\frac{5}{16}$ "
12541	$\frac{1}{4}$ " x $\frac{5}{16}$ "
12542	$\frac{1}{4}$ " x $\frac{3}{8}$ "
12543	$\frac{1}{4}$ " x $\frac{1}{4}$ "
12544	$\frac{5}{16}$ " x $\frac{5}{16}$ "
12545	$\frac{5}{16}$ " x $\frac{3}{8}$ "
12546	$\frac{3}{8}$ " x $\frac{3}{8}$ "
12547	$\frac{3}{8}$ " x $\frac{1}{2}$ "

DOVETAIL MODELS:

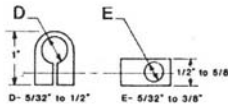
Model No.	Dimensions (I.D.)
12517	$\frac{1}{32}$ " x $\frac{1}{32}$ "
12518	$\frac{7}{32}$ " x $\frac{1}{4}$ "
12519	$\frac{1}{4}$ " x $\frac{1}{4}$ "

LARGE MODELS:

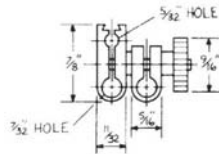
Model No.	Dimensions (I.D.)
12571	$\frac{3}{8}$ " x $\frac{3}{8}$ "
12572	$\frac{3}{8}$ " x $\frac{1}{2}$ "
12573	$\frac{1}{2}$ " x $\frac{1}{2}$ "
12574	$\frac{1}{2}$ " x $\frac{5}{8}$ "
12575	$\frac{5}{8}$ " x $\frac{5}{8}$ "
12576	$\frac{5}{8}$ " x $\frac{3}{4}$ "
12577	$\frac{3}{4}$ " x $\frac{3}{4}$ "
12578	$\frac{3}{4}$ " x 1"
12579	1" x 1"



MEDIUM MODELS

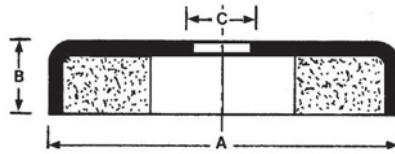


DOVETAIL MODELS



SUPER POWER MAGNETS

- Round, disc-shaped configuration.
- Large & extra large sizes.
- Zinc plated housing.
- Ceramic core.



Model No.	A	B	C	Magnetic Pull
34800	3.160"	.500"	.400"	100 lbs.
34700	2.650"	.425"	.400"	80 lbs.

FLEXBAR MIGHTY MAG

The Versatile Magnetic Base

Powerful—Accurate—50 Lb. Pull. Zinc Die-Cast Housing Has Nicely Painted Finish



11068



LOW PROFILE USE
12026

- 5 different locations for mounting accessories.
- 3 positions $\frac{1}{4}$ -20 for lug mounts.
- 1 tapped hole 10-32.
- 1 reamed hole $\frac{3}{8}$ ".
- 1 utility hole with clamping screw.
- Size $4\frac{1}{2}$ " x 1" x $1\frac{1}{4}$ ".

No. 11068, Mighty Mag

No. 12026, Mighty Mag with 1" Travel Indicator (No. 12001)



FLEXBAR SPLIT BALL TYPE PROBE MEASURING SYSTEM

...a unique, modular design bore gaging system of precisely fitted, quickly interchangeable components providing unmatched versatility and add-on capability.



Buy now only what you need (a single gage or set). Add-on later (other probes, accessories, etc.). You'll never have to duplicate in order to:

- 1. Inspect other size bores
- * 2. Reach greater gaging depths
- 3. Use higher or lower magnification readout
- 4. Gage blind or counterbore holes
- * 5. Adjust to selected gaging depths
- * 6. Readout at right angles to clear obstructions
- * 7. Employ bench stand techniques for rapid, high volume bore gaging

No other bore gaging system gives you such versatility or covers such an extensive range of bore sizes...from only .0185" (slightly more than 1/64") to 1.620".

MAIN FEATURES:

Durable, high accuracy Dial Indicator (.0001" grad) with revolution counter and balanced dial. Range selected to span longest range probe.

Smooth working, split collet holder with insulated grip. When knurled knob is semi-tight, Indicator can be easily positioned vertically and radially. Once fully tightened, holds securely.

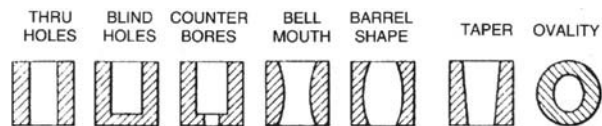
Split ball probe, quickly interchangeable with any other. Threads securely to holder.

Precisely relieved section provides closely controlled flex under normal indicator gaging force.

Split ball, hard chrome plated, automatically center in bore, easily passes over annular interruptions. Smooth radius permits easy bore entry.

Precision ground needle, hard chrome plated for durability, high surface smoothness and protection against rust.

USE FLEXBAR PROBES TO INSPECT:



BUY A BASIC GAGE OR A COMPLETE GAGING SET-SEE NEXT PAGES

* Available upon request. Phone or fax for details.



SPLIT BALL TYPE

.0185"-1.620"

English and Metric models
Self-centering, 2-point gaging

Depths up to 60"

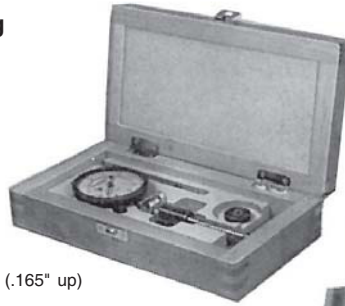
COMPLETE SET INCLUDES:

1. Probes and Needles as listed
2. Dial Indicator (see below) and Retraction Knob

3. Holder with .375" dia. collet
4. Fitted, protective case

OPTIONAL:

1. Depth Extensions
2. Right Angle Attachment
3. Depth Adjuster
4. Carbide inserted probes and needles (.165" up)
5. Holder with ⁵/₁₆" (8mm) collet
6. Setting Rings

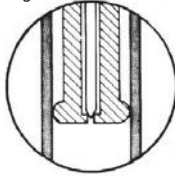


SPLIT BALL

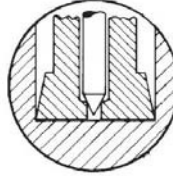
BLIND HOLE

OPTIONAL:

Blind hole probes—available from .057" up. Solid carbide gaging surfaces—available from .165" up. Not available for T series (Slimline) or blind hole probes.



Slim-line (T series) probes and extensions permit high accuracy, deep hole exploration of small bores from .0807" to .388". Ideal for small diameter glass and metal tubing.



Blind hole contacts have sharp radiused edges, permitting checks close to bottom of hole:

Probe Nos.	Range	From Bottom
011 thru 018	.057"- .169"	.012"
021 thru 029	.165"- .394"	.020"
031 thru 039	.380"- .830"	.039"
041 thru 046	.822"- 1.135"	.047"
051 thru 056	1.130"- 1.620"	.059"

PROBE RANGE	PROBE NO.*	NEEDLE NO.*	GAGING DEPTH	SETTING RING	COMPLETE SET NO.	
					THRU HOLE	BLIND HOLE*
.0185-.210"	0X	N-1	.059"	.020"	E00	—
.0205-.0228"	00		.071"	.022"		
.0224-.0264"	01		.079"	.025"		
.0256-.0300"	02	N-2	.099"	.028"		
.0295-.0343"	03		.110"	.032"	E0	—
.0335-.0380"	04		.118"	.036"		
.0375-.0450"	05		.4"	.040"		
.043-.0490"	06	N-3	.4"	.045"		
.047-.0530"	07		.4"	.050"	E1	E1B
.051-.0570"	08		.4"	.055"		
.054-.0610"	09		.4"	.060"		
.057-.075"	011	N-4	.67"	.0625"		
.067-.085"	012		.67"	.0750"	E2	E2B
.081-.096"	013		.67"	.0875"		
.091-.110"	014		.87"	.1000"		
.105-.126"	015	N-5	.87"	.1150"		
.120-.140"	016		.87"	.1300"	E3	E3B
.134-.155"	017		.87"	.1450"		
.149-.169"	018		.87"	.1600"		
.165-.200"	021	N-6	1.6"	.1800"		
.185-.220"	022		1.6"	.2000"	E4	E4B
.209-.244"	023		1.6"	.2250"		
.235-.270"	024		1.6"	.2500"		
.260-.295"	025	N-7	1.6"	.2750"		
.288-.323"	026		1.6"	.3000"	E5	E5B
.313-.347"	027		1.6"	.3250"		
.335-.370"	028		2.0"	.3500"		
.360-.394"	029		2.0"	.3750"		
.380-.425"	031		2"	.4000"	E6	E6B
.420-.480"	032		2"	.4500"		
.474-.531"	033		2"	.5000"		
.524-.583"	034		2"	.5500"		
.573-.634"	035		2"	.6000"	E7	E7B
.622-.681"	036		2"	.6500"		
.672-.730"	037		2"	.7000"		
.721-.780"	038		2"	.7500"		
.772-.830"	039		2"	.8000"		

PROBE RANGE	PROBE NO.*	NEEDLE NO.*	GAGING DEPTH	SETTING RING	COMPLETE SET NO.	
					THRU HOLE	BLIND HOLE*
.822-.880"	041		2"	.8500"	E4	E4B
.872-.930"	042		2"	.9000"		
.922-.980"	043	N-7	2"	.9500"		
.972-1.036"	044		2"	1.000"		
1.022-1.080"	045		2"	1.050"	E5	E5B
1.072-1.135"	046		2"	1.100"		
1.130-1.220"	051		2"	1.180"		
1.210-1.300"	052	N-8	2"	1.260"		
1.290-1.380"	053		2"	1.340"	E6	E6B
1.370-1.460"	054		2"	1.420"		
1.450-1.540"	055		2"	1.500"		
1.530-1.620"	056		2"	1.580"		

FOR DEEP BORES UNDER .388: (THRU HOLE) AND 337" (BLIND HOLE)

PROBE RANGE	PROBE NO.*	NEEDLE NO.*	GAGING DEPTH	SETTING RING	THRU HOLE	BLIND HOLE*
.0807-.0940"	013/T	N-9	3.5**	.0875"	E1/T†	—
.0920-.1075"	014/T			.1000"		
.1071-.1224"	015/T	N-10	3.5**	.1150"	E2/T††	E2/TB††
.1220-.1374"	016/T			.1300"		
.1370-.1523"	017/T			.1450"		
.1519-.1673"	018/T			.1600"		
.166-.187"	021/T	N-11	3.6**	.1800"	E3/T††	E3/TB††
.186-.212"	022/T					
.211-.237"	023/T					
.236-.262"	024/T					
.261-.287"	025/T					
.286-.312"	026/T					
.311-.337"	027/T					
.336-.362"	028/T					
.361-.388"	029/T					

* To specify blind hole probes and needles, add Suffix B.

** Includes length of Extension

† Optional - gaging depths up to 20", Phone or fax for extensions.

†† Optional - gaging depths up to 60", Phone or fax for extensions.

Also Available Upon Request: Depth Extensions, Depth Adjuster, Right Angle Attachment, Checking Stand and Stand Accessories.

Phone, Fax or Visit www.flexbar.com.

METRIC PROBES AND SETS ALSO AVAILABLE UPON REQUEST.

LARGE BORE TYPE SETS ALSO AVAILABLE: VISIT OUR WEBSITE FOR MORE INFORMATION.



THE FLEXBAR TRIGA-BORE™ /TRUE-BORE

3-POINT BORE GAGING SYSTEM...

For the accurate and precise measurement of internal diameters.

MEASURING RANGE: .236"/6mm to 7.87"/200mm

Premium Quality • Made in England



Ergonomically designed pistol style handle allows precise self-centered measurements to be performed



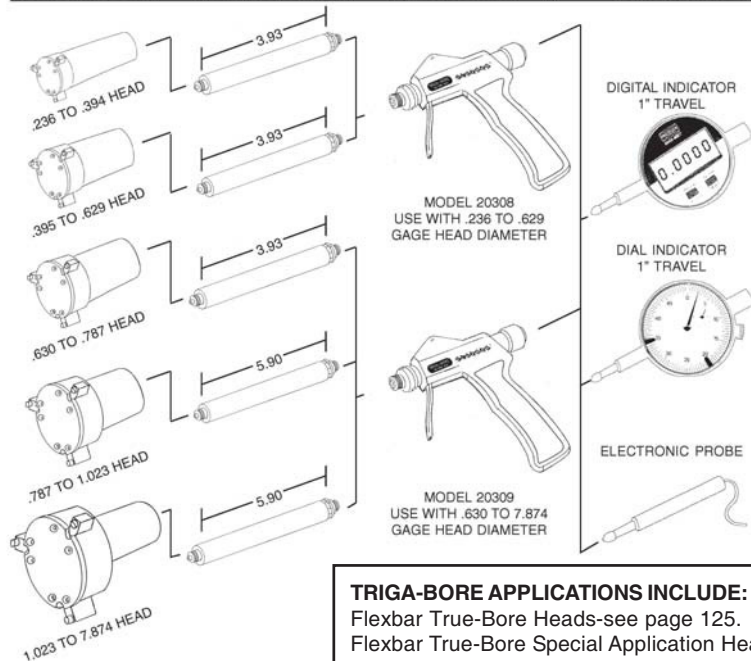
Shown Above: True-Bore Lever Style Handles in use with True-Bore gage heads and a variety of indicator options.

True-Bore is the result of over 25 years of design and manufacture of 3-point bore gaging systems. Ideal for solving internal diameter measurement problems on the shop floor and inspection areas, the system is available in a large measuring range for specific applications. Mechanical and electronic dial gages as well as linear probes can be used as specified.

Main Features:

- True-Bore heads have a large measuring range and are supplied with fixed anvils eliminating operator error. 24 heads cover .236"-7.87" (6-200mm range).
- Unique System design allows two measuring handles or pistol grip Triga-Bore™ to cover .236"-7.87" (6-200mm range).
- Extensions available for increased gaging depths.
- Accuracy: See chart on page 125.
- Repeatability: .0001"/0,002mm.
- High degree of accuracy can be achieved without need for special skills.
- Customer can specify type of output.
- Ideally suited to simple or integrated measurement applications.
- Can be used for special applications such as threads 'o' ring grooves, spherical forms, etc.
- Ergonomically designed handle offers single handed operation.
- Accurate calibration and linearity checks can also be made using Flexbar's Calibrated Ring Gages (See Page 129).

GAGE HEAD (II)	EXTENSION (III)	TRIGA-BORE™ (I)	INDICATORS (V)
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TRIGA-BORE APPLICATIONS INCLUDE:

Flexbar True-Bore Heads-see page 125.
Flexbar True-Bore Special Application Heads including Groove, and Spherical Measuring Heads- see page 127.

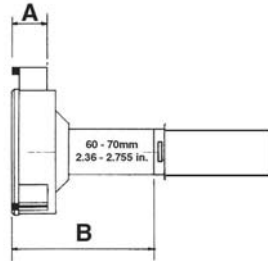


FLEXBAR TRIGA-BORE™ SYSTEM

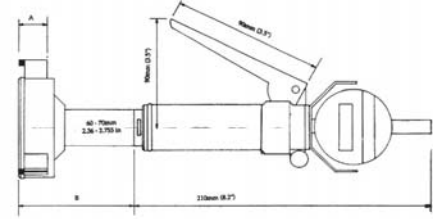
Pistol Grip Style Handle for Flexbar 3 Point Bore Gage Systems



Triga-Bore™ Handle shown with True-Bore Head, Digital Indicator, and Master Setting Ring



Above: 3-Point Bore Gage Head dimensions - see below



Flexbar Lever Style Bore Gage Handles can be used with the entire range of True-Bore 3-Point Bore Gage Heads. Ideal for use in vertical gaging applications and tight access situations.

*TRIGA-BORE ACCEPTS INDICATOR WITH 3/8" DIAMETER OR 8MM DIAMETER (WITH BUSHING INCLUDED)
OPERATES WITH INDICATORS HAVING 1" TRAVEL

Specifications for Ordering Handles, Gage Heads and Setting Rings

I. TRIGA-BORE™ PISTOL GRIP AND LEVER STYLE BORE GAGE HANDLES*

Model No. 20308, Pistol Grip Style Handle accepts heads: .236"/6mm - .630"/16mm

Model No. 20309, Pistol Grip Style Handle accepts heads: .630"/16mm - 7.874"/200mm

Model No. 20310, Lever Style Handle accepts heads: .236"/6mm - .630"/16mm

Model No. 20311, Lever Style Handle accepts heads: .630"/16mm - 7.874"/200mm

II. 3-POINT BORE GAGE HEADS AND MASTER SETTING RING**

MODEL NO.	HEAD SIZE		CONTACT LINE A	LENGTH B	HEAD ACCURACY	MASTER SETTING RING** BILATERAL CLASS Z STEEL	
	MM	IN				MODEL NO.	SIZE INCH
20312	6-8	.236-.315	.109	2.36	.0001	21162	.2912
20313	8-10	.315-.394	.118	2.36	.0001	21164	.3437
20314	10-13	.394-.511	.157	2.36	.00015	21167	.4375
20315	13-16	.511-.630	.157	2.36	.00015	21172	.5625
20316	16-20	.630-.787	.280	2.36	.00015	21177	.7187
20317	20-26	.787-1.023	.390	2.36	.00015	21185	.9062
20318	26-32	1.023-1.260	.390	2.36	.00015	21191	1.0312
20319	32-40	1.260-1.575	.433	2.75	.00015	21205	1.4062
20320	40-50	1.575-1.968	.591	2.75	.00015	21450	1.7500
20321	50-60	1.968-2.362	.591	2.75	.00015	21451	2.1875
20322	60-70	2.362-2.756	.591	2.75	.00015	21452	2.5625
20323	70-80	2.756-3.150	.591	2.75	.00015	21453	2.9375
20324	80-90	3.150-3.543	.591	2.75	.00015	21454	3.3437
20325	90-100	3.543-3.937	.591	2.75	.00015	21455	3.7500
20326	100-110	3.937-4.330	.767	2.75	.00015	21456	4.1250
20327	110-120	4.330-4.724	.767	2.75	.00015	21457	4.5625
20328	120-130	4.724-5.118	.767	2.75	.00015	21458	4.9062
20329	130-140	5.118-5.512	.767	2.75	.00015	21459	5.3125
20330	140-150	5.512-5.906	.767	2.75	.00015	21460	5.7187
20331	150-160	5.906-6.299	.767	2.75	.00015	21461	6.1093
20332	160-170	6.299-6.693	.866	2.75	.0002	21462	6.5000
20333	170-180	6.693-7.087	.866	2.75	.0002	21463	6.9062
20334	180-190	7.087-7.480	.866	2.75	.0002	21464	7.2912
20335	190-200	7.480-7.874	.866	2.75	.0002	21465	7.6875



III. EXTENSIONS (for longer depths)

Model No.	For Use With Gage Head Nos.	Length (mm)	Length (inch)
20345	20312-20313	100	3.937
20346	20314-20315	100	3.937
20347	20316	100	3.937
20348	20317	150	5.905
20349	20318-20335	150	5.905

Special Length extensions available upon request - phone or email.

Triga-Bore Stand, supports Triga-Bore handle/head when not in use.

20336 Stand



Extensions may be combined for longer gaging depths.

IV. ELECTRONIC DIGITAL INDICATORS (with Absolute/Preset measuring mode)

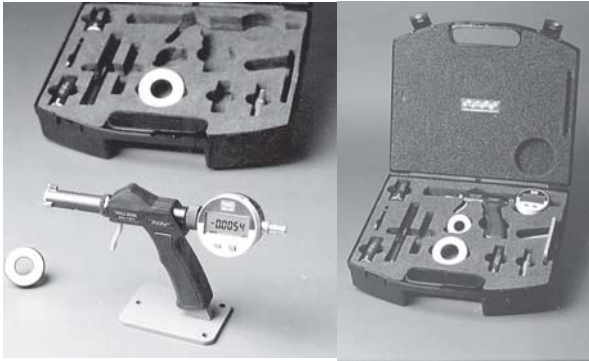
Available Gages Include:

Model No. 18318, Flexbar-Preisser Digi-Met Plus, see page 98

Model No. 15600, Flexbar Baty Digital Indicator, see page 100 (For Full 1" Range, please order Part #17262, 1/2" Indicator Point Extension)



FLEXBAR TRIGA-BORE™ SYSTEM SETS



Sets available covering a measuring range:
.236"/6mm to 3.9327"/100mm

- Easy to Use
- Interchangeable/Economical Heads
- Self Centering Operation
- Ordering as easy as 1,2,3 (see below)

Now Available in Complete Sets...
with or without indicator*

*Standard DIGI-MET® Electronic Indicator
No. 18318 Features:

Sets Include:

- Appropriate range of True-Bore 3-Point Bore Gage Heads – Self Centering with Fixed Anvils.
- Triga-Bore Pistol Grip Handle – accepts indicators with 3/8" dia. stem or 8mm dia. (with included bushing).
- Appropriate setting rings with Certificate of Calibration to N.I.S.T.
- Special stand for holding Pistol Grip.
- Fitted hard plastic carrying case.

- Resolution: .00005"/0.001mm
- Accuracy: .00015"/0.002mm
- True inch/metric conversion
- Preset Capability
- Preset Recall
- Bidirectional RS232 Output

**Optional DIGI-MET® Multi-Mode
Indicator No. 18515 also includes:

- Min/Max/TIR Modes
 - Tolerance Signal Lights
 - Selectable Resolution
- ABOVE INDICATORS INCLUDE FREE CERTIFICATE
OF CALIBRATION TRACEABLE TO N.I.S.T.

COMPLETE TRIGA-BORE/TRUE-BORE SETS INCLUDE:

Measuring Range		Contents of Set	Set Without Indicator Model No.	Sets w/Standard DIGI-MET Indicator Model No.
Inch	Metric			
.236-.630"	6-16mm	Triga-Bore Pistol Grip, 4 Heads, 2 Rings	20435	20442
.630-1.575"	16-40mm	Triga-Bore Pistol Grip, 4 Heads, 2 Rings	20436	20443
1.575-2.362"	40-60mm	Triga-Bore Pistol Grip, 2 Heads, 1 Ring	20437	20444
2.362-3.150"	60-80mm	Triga-Bore Pistol Grip, 2 Heads, 1 Ring	20438	20445
3.150-3.937"	80-100mm	Triga-Bore Pistol Grip, 2 Heads, 1 Ring	20439	20446

OPTIONAL EXTENSIONS (for longer measuring depths)

Model No.	For Use With Gage Head Sizes		Extension Length
20345	.236-.394"	6-10mm	3.937"
20346	.394-.630"	10-16mm	3.937"
20347	.630-.787"	16-20mm	3.937"
20348	.787-1.575"	20-40mm	5.905"
20349	1.575-7.874"	40-200mm	5.905"



**Model No. 18515
DIGI-MET
Multi-Mode
Indicator
(Optional)
0-1"/25mm range

LARGER DIAMETER BORE GAGE SETS up to 7.87"/200mm also available. Phone or Fax for pricing.



FLEXBAR TRUE BORE SPECIAL APPLICATION HEADS

For Use With Flexbar Triga-Bore & True-Bore Gage Handles

Flexbar Special Application Heads will fit and are interchangeable with the True-Bore and Triga-Bore Systems. Special heads are available to gauge diameters from 10mm to 200mm diameter.

Shown Right:

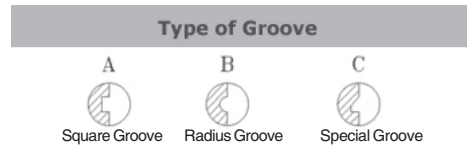
3-Point Groove Measurement Head in use with Triga-Bore Pistol Grip Handle No. 20309.



SPECIAL APPLICATION MEASURING HEADS PRODUCED BY FLEXBAR PER CUSTOMER'S REQUIREMENTS:

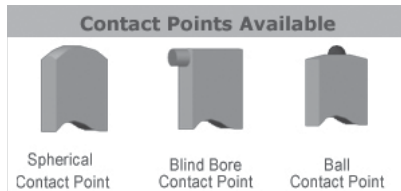
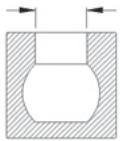
I. Groove / "O" Ring Groove Measurement

Precise groove measurements are made easily and accurately. Application requirements are groove width minimum is .060" (1.5mm). Groove depth may not exceed half the travel range of the True-Bore head, this dimension is .079" (2mm) to .394" (10mm).



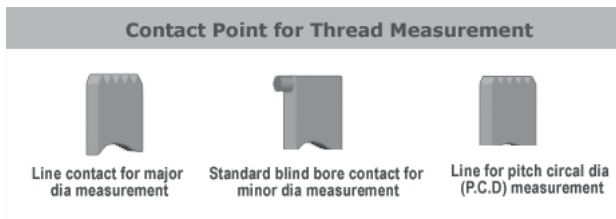
II. Spherical or Deep Bore Measurement

Spherical shaped heads are useful in deep bores where holding the bore gage straight in the bore is difficult, the spherical shape allows only a single contact point per anvil on the bore wall. All special shaped head applications can be reviewed upon request.



III. Thread & Ball Screw Thread Measurement

Available in two or three point thread measurement heads according to application.

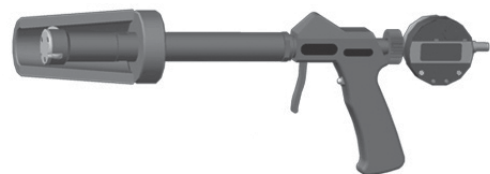
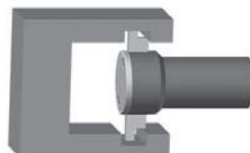
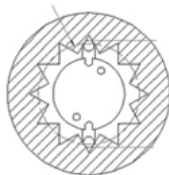
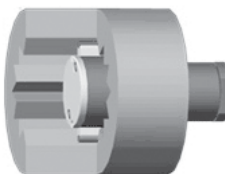


IV. Additional Special Applications include:

Spline Measurement

Slot Measurement

Taper Measurement



Complete information and On-Line Special Applications Quotation Requests available at www.flexbar.com.



FLEXBAR DIGITAL ELECTRONIC 3-POINT INTERNAL MICROMETERS

IP54 Water Resistant
Self-Centering 3-Point Bore Micrometers for the Accurate
Measurement of Internal Diameters



Each 3-Point Bore Micrometer comes in its own fitted hard case complete with setting ring and depth extension. Ring gage certificate to NIST available upon request.

- Self-aligning and self-centering
- Carbide tipped measuring contact points suitable for blind bore measurements
- Ratchet stop provides uniform measuring
- Setting ring accuracy: $\pm .000020''$
- Resolution: $.00005''/0.0001\text{mm}$ (Inch/Metric Conversion)
- Thimble Graduation: $0.0001''$
- Easy to read electronic digital display with the following measurement functions:
 - Absolute and incremental Measurement
 - Tolerance Settings
 - Preset (+ and -)
 - Hold Key
 - SPC Data Output Capability (RS232C)

Individual Bore Micrometer Sets Available as Follows:

Model No.	Measuring Range	Accuracy	Extension Rod Length	Setting Ring Dia.
20850	.275-.350"/6-8mm	.00016	4"	.35"
20851	.350-.425"/8-10mm	.00016	4"	.35"
20852	.425-.500"/10-12mm	.00016	4"	.5"
20853	.500-.650"/12-16mm	.00016	6"	.5"
20854	.650-.800"/16-20mm	.00016	6"	.65"
20855	.800-1.000"/20-25mm	.00016	6"	1.0"
20856	1.000-1.200"/25-30mm	.00016	6"	1.0"
20857	1.200-1.600"/30-40mm	.00016	6"	1.6"
20858	1.6-2.000"/40-50mm	.0002	6"	1.6"
20865	RS232C SPC Output Cable			
15831	Replacement Battery			



FLEXBAR PRECISION BORE GAGE SETS

Now Available with Standard Dial Indicator or High Resolution
Electronic Dual Analog/Digital Reading Bathy Indicator
($0.00005''$ Resolution)



- Digital Electronic Sets:
 $0.00005''/.001\text{MM}$ RESOLUTION**
- Extra Large LCD, 360° rotation
 - Dual Display: digital and electronic scale
 - True inch/mm conversion
 - Zero reset allows absolute or comparative measurements
 - One button easy calibration
 - Power Supply: 3V CR2032 lithium battery

Standard Features:

- Complete Sets with measuring ranges from $.24''$ to $6''$.
- For close tolerance measurements of holes, taper and roundness.
- Self centering.
- Gage Sets are supplied with either $.0005''$ dial or high resolution digital electronic indicator.
- Easy setting with micrometers or ring gages.
- Fitted case with anvils index.

.0005" Dial Set No.	Digital Set No.	Range	Probe Depth
13325	13325-D	0.24"-0.4"	2"
13326	13326-D	0.4"-0.7"	4"
13327	13327-D	0.7"-1.5"	6"
13328	13328-D	1.4"-2.4"	6"
13323	13323-D	2.0"-6.0"	6"



Shown: Set No. 13323



Made in U.S.A.

FLEXBAR STEEL CYLINDRICAL RING GAGES

All gages comply with AGD Standards
and include Certificate of Conformance to N.I.S.T.

Long Form Certificate Traceable To N.I.S.T. Available - Additional Charge.

Size Range	Class	Tolerance
.050"-.070"	Z	.0001"
1.27mm-1.78mm	Y	.000070"
Blank #00	X	.000040"
	XX	.000020"
.070"-.150"	Z	.0001"
1.78mm-3.81mm	Y	.000070"
Blank #00	X	.000040"
	XX	.000020"
.150"-.240"	Z	.0001"
3.81mm-6.10mm	Y	.000070"
Blank #0	X	.000040"
	XX	.000020"
.240"-.365"	Z	.0001"
6.10mm-9.27mm	Y	.000070"
Blank #1	X	.000040"
	XX	.000020"
.365"-.510"	Z	.0001"
9.27mm-12.95mm	Y	.000070"
Blank #2	X	.000040"
	XX	.000020"
.510"-.825"	Z	.0001"
12.95mm-20.96mm	Y	.000070"
Blank #3	X	.000040"
	XX	.000020"

Size Range	Class	Tolerance
.825"-1.135"	Z	.000120"
20.96mm-28.83mm	Y	.000090"
Blank #4	X	.000060"
	XX	.000030"
1.135"-1.510"	Z	.000120"
28.83mm-38.35mm	Y	.000090"
Blank #5	X	.000060"
	XX	.000030"
1.510"-2.010"	Z	.000160"
38.35mm-51.05mm	Y	.000120"
Blank #6	X	.000080"
	XX	.000040"
2.010"-2.510"	Z	.000160"
51.05mm-63.75mm	Y	.000120"
Blank #7	X	.000080"
	XX	.000040"
2.510"-3.010"	Z	.0002"
63.75mm-76.45mm	Y	.000150"
Blank #8	X	.0001"
	XX	.000050"



QUANTITY DISCOUNTS:
2 OR MORE OF SAME SIZE

Ring Gage Holders are available in
Black.
PHONE or FAX FOR PRICE & AVAIL-
ABILITY.

FLEXBAR THREAD GAGES & RING GAGES

- Gages are made in "X" tolerance
- Classes 2A and 2B most commonly used for general applications including bolts, nuts, screws and similar fasteners.

Thread Plug Gages GO-NOGO with Handle Class 2B		Thread Ring Gage Set GO-NOGO Class 2A	
Size	Item #	Size	Item #
4-40UNC	19510	4-40UNC	19526
5-40UNC	19511	5-40UNC	19527
6-32UNC	19512	6-32UNC	19528
8-32UNC	19513	8-32UNC	19529
10-24UNC	19514	10-24UNC	19530
10-32UNF	19515	10-32UNF	19531
1/4-20UNC	19516	1/4-20UNC	19532
1/4-28UNF	19517	1/4-28UNF	19533
5/16-18UNC	19518	5/16-18UNC	19534
5/16-24UNF	19519	5/16-24UNF	19535
3/8-16UNC	19520	3/8-16UNC	19536
3/8-24UNF	19521	3/8-24UNF	19537
7/16-14UNC	19522	7/16-14UNC	19538
7/16-20UNF	19523	7/16-20UNF	19539
1/2-13UNC	19524	1/2-13UNC	19540
1/2-20UNF	19525	1/2-20UNF	19541



FLEXBAR[®]

FLEXBAR ROK-IT

Easy to use **SPHERICAL PLUG GAGES**

GAGES ENTIRE BORE PRECISELY AND EFFORTLESSLY

Supplied from .250" up to 22.00" diameters (or metric equivalents)
in hard steel (RC-63).



Gages up to 1/2" diameter are taper-lock type. Overall length of double ended gage is 3 1/2 inches.



Gages from .501" diameter and up, blade type fixed onto hex handle.

The ROK-IT bore gage with its true spherical form eliminates the difficulties and limitations encountered in the use of the conventional type of "plug" or cylindrical gage which has maximum or excess frictional area contact with the work.

It will positively "accept" or "reject" down to the finest limits. It is extremely light and easy to handle. 4" diameter double ended gage weighs 1 lb. A blind operator can inspect bores with ROK-IT. It is not possible for the gage to seize or jam in the work. Gages can enter bore at angles as in the case of a component in a machine where quill is in the way. It reveals back taper in blind bores. ROK-IT gages work without having to line up gage perpendicular to bore. Hence it is self centering. ROK-IT gages are easily and quickly inspected with "Supermike" or any comparator (use flat anvil only).

Significant Advantages:

Gages to finer limits: 30 to 50 X greater life: Gages entire bore surface (line contact instead of point contact) :Gage cannot jam in bore: Can be used as an approach gage: Can check recesses: Enters bore from any angle: Gage in 1/5th the time: Checks shallow counterbores and blind holes: Little or no skill required. Checks entire geometry:—BELLMOUTH—HOURLASS BARREL SHAPE—TAPER and BACK TAPER and OVALITY.

EASY TO USE!

By cutting a section out of a ball we are cutting your gaging time...to a FRACTION!

No Skill Required - The ROK-IT is simple in operation and will considerably cut gaging time and reduce the number of scrapped or defective components.

Enter the ROCK-IT into the bore at an angle (1) and rock upwards through it's own axis (2). If the GO gage meets no resistance and the NOT GO gage meets resistance the bore is within tolerance.

Hourglass and Bellmouth Conditions

Barrelling

Taper - Back Taper

Ovality

ORDERING INFORMATION: When ordering, please provide:

1. Tolerances, e.g. GO—3.500"/NO GO 3.501".
2. Class required: e.g. XX, X, Y, Z.
3. Gage design: e.g. Whether single ended or double ended; For deep bore model specify length of parallel rods (allow approx. 3" for handling).
4. Special marking required on gage, e.g. any code which you may wish to imprint, space permitting.
5. Single ended gages—Do you want "GO" or "NO GO".

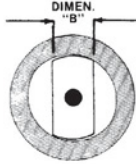
At no extra charge: • All metric sizes • Handles etched with size only • Extra charge for additional etchings • Gage handles



FLEXBAR ROK-IT SPHERICAL DIAMETER BORE GAGES

Ordering Information: Please specify your Rok-It gaging requirements per the following and we will promptly supply pricing and delivery.

GAGE WIDTHS
(Across Flats)
Other Widths Possible, as
Specials.



ROK-IT PLUG GAGES DIMEN. "B"

Dia. Range	Std. Gage Width	Dia. Range	Std. Gage Width
.250- .375	.200	1.500- 1.900	1.000
.375- .450	.310	1.900- 2.300	1.125
.450- .500	.370	2.300- 2.700	1.250
.500- .575	.370	2.700- 3.100	1.375
.575- .700	.440	3.100- 3.500	1.500
.700- .825	.500	3.500- 4.100	1.750
.825- .950	.570	4.100- 4.800	2.000
.950- 1.075	.630	4.800- 5.700	2.250
1.075- 1.250	.700	5.700- 6.700	2.500
1.250- 1.500	.875	6.700- 8.300	2.750
		8.300-22.000	3.000

HARDENED STEEL—ROCKWELL C-63 PRICES INCLUDE 4" HANDLE

Diameter in Inches (or equivalent metric)	"Z" Tolerances		"X" & "Y" Tolerances		"XX" Tolerances	
	Double End	Single End	Double End	Single End	Double End	Single End
from .240 to 12.000	Per Quotation					

FOR GAGES from 12" to 22" diameters—ask for SPECIAL QUOTATION. Class XXX on quotation.

Single-ended gages are recommended over 6" diameter, although double-ended gages will be supplied if specified. Standard handles supplied are 4" long. Handles required over this length are supplied at an additional charge per inch over standard. The above prices apply to both standard and non-standard gage sizes.

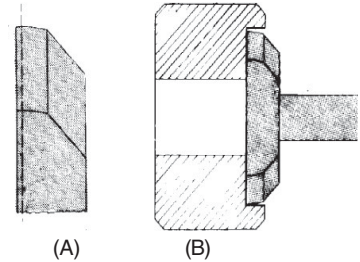
NOTE: RAPID DELIVERY ON ALL METRIC SIZES—at same price as above. **CERTIFICATION:** at an additional charge per net per member.

NOTE: ALL METRIC SIZES I.S.A. STANDARD OR AGD. TOLERANCES. **NO CHARGE FOR PRINTING ON HANDLE.**

⊕ SHALLOW COUNTERBORES

(CHECK DOWN TO VERY BOTTOM OF BORE)

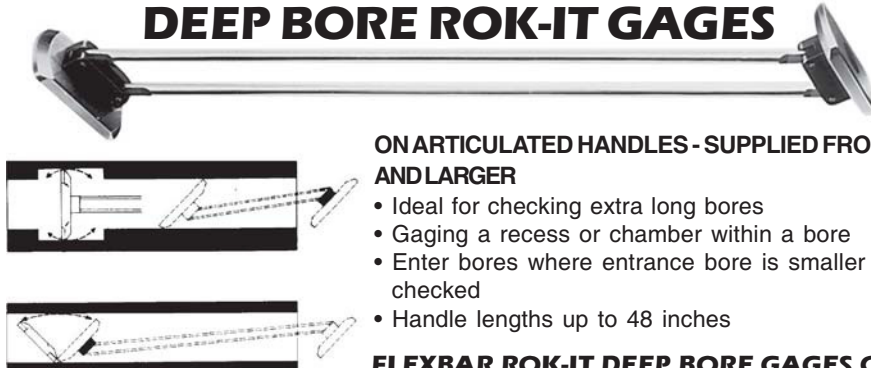
- (A) Center line of sphere on gage is ground forward to a position close to the front face of gage members.
- (B) You can see and feel gage bottoming in the shallow counterbore.
Nominal extra price add on for this feature.



When Ordering: Please Specify "Depth of Counterbore".

For COUNTERBORE APPLICATION add additional charge net per double ended gage for moving center-line forward (price applies to all diameters). Bores deeper than .3125" do not need special application.

DEEP BORE ROK-IT GAGES



ON ARTICULATED HANDLES - SUPPLIED FROM 1" DIA. AND LARGER

- Ideal for checking extra long bores
- Gaging a recess or chamber within a bore
- Enter bores where entrance bore is smaller than bore being checked
- Handle lengths up to 48 inches

FLEXBAR ROK-IT DEEP BORE GAGES ON ARTICULATED RODS (Parallel Rods)

OVERALL LENGTHS: Up to 12", 12" - 24", 24" - 36", 36" - 48".
PRICE ADD-ONS: Phone or Fax for Quote.



FLEXBAR PIN GAGE SETS

Made in U.S.A.

Available in Plus or Minus Tolerances: .0002" Limit



Flexbar Pin Gages, are ideal for accurate checking of hole size, location, gage slots, distance between holes, setting other gages, go and no-go gaging, and more.

- Every size gage hole is clearly marked for size. Size laser etched on each piece except .011 - .060 range sets.
- Gages fully hardened to 60-62 RC, centerless lapped to 10 millionths AA micro-finish or better.
- Each gage checked against master gages traceable to the National Bureau of Standards.
- Gages are cylindrical, 2" in length and have no sharp corners.

Handle not included in set.

Price includes case • Made in U.S.A. • Accurate to .0002".

Gage Set Number		Size Range of Set	No. of Gages Per Set
Plus .0002"	Minus .0002"		
—	12897	.006-.060"	55
17727	17745	.011-.060	50
17728	17746	.0115-.0605	50
17729	17747	.061-.250	190
17730	17748	.0615-.2505	190
17731	17749	.011-.250	240
17732	17750	.0115-.2505	240
17733	17751	.251-.500	250
17734	17752	.2505-.5005	250
17735	17753	.501-.625	125
17736	17754	.5015-.6255	125
17737	17755	.626-.750	125
17738	17756	.6265-.7505	125
17739	17757	.751-.832	82
17741	17759	.833-.916	84
17743	17761	.917-1.000	84

METRIC PIN GAGE SETS

Available in Plus or Minus Tolerances: .005mm Limit

ACCURACY -0.005mm +0.000mm

Model No.	Range	Set
12900	0.20 - 1.28mm	55 pcs.
12901	1.30 - 4.98mm	185 pcs.
12902	5.00 - 9.98mm	250 pcs.

ACCURACY +0.005mm -0.000mm

Model No.	Range	Set
12904	0.20 - 1.28mm	55 pcs.
12905	1.30 - 4.98mm	185 pcs.
12906	5.00 - 9.98mm	250 pcs.



17799

Pin Gage Handle

Model No. 17799

Capacity is 1/32" to 1/2" Diameter Pins

115 PIECE PRECISION STEEL PIN GAGE SET

A ~ Z, #1 ~ 60 and 1/16 ~ 1/2" X 64ths



- Made for checking most of the popular drill size holes
- Sizes marked on each pin for easy identification
- Fully hardened to 60-62 RC
- Finish to 10 micron or better
- OAL: 2"

Set includes

26pc - A to Z letter size

60pc- No. 1-60 wire gauge size

20pc- 1/16 - 1/2" by 64ths fraction size



Set No. 17070

Class: ZZ

Tolerance: -.0002"



Made in U.S.A.

FLEXBAR CHAMFER GAGES

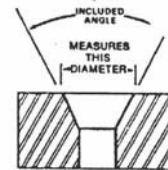
- Instant measuring of chamfers and tapered hole diameters.
- Direct diameter reading to .001". —Metric units for reading to 0,01mm.
- Hardened and precision ground 3-blade steel plunger assures high accuracy and repeatability.
- No setting masters required - zero on surface plate - to reading on gage.

ORDER NO.	CAPACITY	ANGLE RANGE
16340	0-1"	0-90°
16341	1-2"	0-90°
16342	2-3"	0-90°
16345	0-25mm	0-90°
16346	25-50mm	0-90°
16350	0-1"	90-127°
16351	1-2"	90-127°
16352	2-3"	90-127°
16355	0-25mm	90-127°
16356	25-50mm	90-127°

ALL ABOVE MODELS ALSO AVAILABLE WITH CARBIDE CONTACTS.



Made in U.S.A.



ELECTRONIC CHAMFER GAGES

Also Available Upon Request

ORDERING: Add -D to any of our model numbers above.

(Example: Model No. 16340-D)

Call for Information and Pricing.

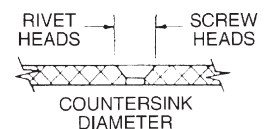
FLEXBAR COUNTERSINK GAGES

Instantly Measures Countersink Diameters

- Direct reading gage designed to measure the top (major) countersink diameter.
- Guaranteed accuracy: $\pm .0005"$ ($\pm .015\text{mm}$).
- Full-round conically ground exact (dedicated) angle
Gaging Plunger instantly alerts operator of incorrect countersink angle.
- Base Plate designed for use on any flat, concave or convex surface.
- Peak Hold mechanism for one hand operation.
- FURNISHED WITH CALIBRATED SETTING RING, FOAM CASE AND OPERATING INSTRUCTION.
- Made in U.S.A.

Model	C'Sink Angle	Capacity	Model	C'Sink Angle	Capacity
18442	82°	.020" to .170"	18457	100°	.560" to .780"
18443	82°	.160" to .360"	18458	100°	.780" to .980"
18444	82°	.360" to .560"	18459	100°	.980" to 1.180"
18445	82°	.560" to .780"	18460	110°	.020" to .170"
18446	82°	.780" to .980"	18461	110°	.160" to .360"
18447	82°	.980" to 1.180"	18462	110°	.360" to .560"
18448	90°	.020" to .170"	18463	110°	.560" to .780"
18449	90°	.160" to .360"	18464	110°	.780" to .980"
18450	90°	.360" to .560"	18465	110°	.980" to 1.180"
18451	90°	.560" to .780"	18466	120°	.020" to .170"
18452	90°	.780" to .980"	18467	120°	.160" to .360"
18453	90°	.980" to 1.180"	18468	120°	.360" to .560"
18454	100°	.020" to .170"	18469	120°	.560" to .780"
18455	100°	.160" to .360"	18470	120°	.780" to .980"
18456	100°	.360" to .560"	18471	120°	.980" to 1.180"

For Exact equivalent Metric Models, add -M to Model No.





FLEXBAR DIGITAL ELECTRONIC INTERNAL & EXTERNAL CALIPER GAGES

For the Precision Measurement of Diameters, Grooves, Recesses, etc.



Internal Model 12680



External Model 12685

COMMON FEATURES:

- New Analog/Digital Display
- Easy to hold
- RS232 output
- Rugged housing
- Large LCD display
- Resolution: .0005"/.01mm
- Accuracy: $\pm .0008''/\pm .02\text{mm}$
- Preset capability
- Direct inch/metric conversion
- Absolute/incremental measurements
- Supplied with rugged hard aluminum case

INTERNAL CALIPER GAGES:

Model No.	Measuring Range	L
12680	.200" - .590"/5-15mm	30mm
12681	.400" - 1.2"/10-30mm	50mm
12682	.790" - 1.6"/20-40mm	80mm
12683	1.2" - 2"/30-50mm	80mm

EXTERNAL CALIPER GAGES:

Model No.	Measuring Range	L
12685	0" - .400"/0-10mm	40mm
12686	0" - .790"/0-20mm	80mm
12687	.4" - 1.2"/10-30mm	80mm

Model No. 20865, Computer Connection Cable/Kit for Internal and External Caliper Gages

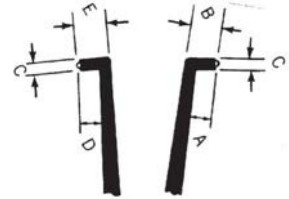
INTERNAL DIAL CALIPER GAGES

For Checking Internal Bores, Grooves
and Recesses... .001" Graduations

Made in Japan



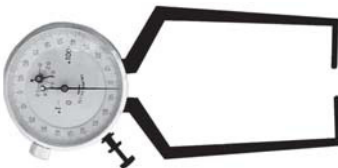
- Spring loaded arms and ceramic contact points for accurate measurements under constant pressure.
- Push-button to close arms.
- Dial reading .200" per revolution (2x.100").
- Revolution counter.
- Spring loaded-constant measuring pressure.
- Each caliper has 1" movement.
- Can be set with micrometer or ring gage.
- Bezel rotates for zero setting.
- Arms automatically open/close when button released.



Model No.	Range	Arm Length	A	B	C	D	E
18540	.75-1.375"	3.250"	.091"	.189"	.091"	.091"	.189"
18541	.750-1.750"	3.250"	.181"	.280"	.091"	.169"	.268"
18542	1.125-2.125"	3.250"	.574"	.673"	.091"	.169"	.268"

EXTERNAL DIAL CALIPER GAGES

For Checking Outside Diameters, Recess Diameters, etc.



- Same features as internal caliper gages above.
- 2" Dial Face Diameter.
- Length of arm is 3 1/4".
- Measuring anvil length = 13/32".
- Measuring anvil thickness = 3/32".
- Can be set with gage blocks or micrometer standards.
- Includes fitted case.

Model No.	Range
18550	.0-1.000"
18551	.375-1.375"
18552	.750-1.750"
18553	1.125-2.125"



Made in U.S.A.

FLEXBAR IPD GAGING SYSTEM

A versatile measurement system for internal pitch diameters, as well as internal bores, grooves, recesses and internal gears.

Major Features:

- Major breakthrough in utilizing computer software with a measuring instrument.
- With this new concept, accurate measurements of internal threads and compensation calculations for ball diameter variations or lead angles are made extremely simple.
- The software diskettes supplied with the IPD Gage can be used in any IBM compatible PC to obtain all data required for accurate inspection of any specific internal thread without the necessity of a master gage.
- Easy to set IPD Gage with Micrometer or Gage Blocks, etc.
- Universal, can be used as general purpose internal gage for measuring bores, grooves and pitch diameters of screw threads and internal gears, etc.
- Indicator alone, with the included adapter, extensions and contact points, make it possible to measure internal threads and bores from 7 1/2" to 18".
- Rigid construction plus special high precision pivot bearings assure repeatability of .0002" or less.
- Balanced body design for easy and convenient handling.
- Adjustable contact pressure.
- Carbide ball contact points are optional, not included.
- System includes internal gage, 1" travel indicator, indicator-adapter, 8 extensions (1/4", 3/8", 1/2", 3/4", 1", 2", 3" and 4" long), measuring tip organizer, 2 standard contact points 1/4" long, allen wrench, fitted case plus software cassette for internal pitch diameter threads and instruction manual.

Specifications:

Measuring Range: Bores .93" to 8"
 Nominal Size
 Threads 1 1/8" to 8"
 Extended range with included indicator adapter 7 1/2" to 18"
 Gage arm travel .625"
 Maximum reach in 1-1/4" dia. bore 4.8"
 1" Travel indicator graduation .0005"

Model No. 15870, IPD Gage & Software Complete System



Includes IBM PC compatible software package!



INCLUDES SOFTWARE CD

The IPD software complies with ANSI standards; fully compensates for the effects of lead angle.

USER FRIENDLY

On screen explanation, no commands to remember. Error free data entry, will detect invalid input data.

UNIVERSAL

Supports UN series and Metric threads as well as threads with user defined thread angle and number of starts for Acme, Whitworth and multiple start threads.

- Software calculates the correct diameter for any chosen ball contact point within the specified range per table below.
- Diameter setting with micrometer or gage blocks, no master thread setting ring required.

OPTIONAL CARBIDE BALL CONTACT POINTS. 1/4" LENGTH, A.G.D. #4-48 THREAD. SOLD IN PAIRS

Model No.	BALL DIAMETER Tolerance ±.0001"	UN Series Threads Per Inch	ACME Threads Per Inch	METRIC Threads Pitch (mm)
15871	.03125" (1/32)	24 - 14		1.25 - 1.75
15872	.046875" (3/64)	16 - 8		1.75 - 3
15873	.0625" (1/16)	11 - 6		2.5 - 4
15874	.07813" (5/64)	9 - 5		3 - 5
15875	.09375" (3/32)	6 - 4		4 - 6
15876	.10939" (7/64)	6 - 3.5	5	4 - 7
15877	.125" (1/8)	5 - 3	4	5 - 8
15878	.1875" (3/16)	3.5 - 2	3	7 - 13
15879	.250" (1/4)	3 - 1.5	2	8 - 17

15880, 4 Pairs Carbide Ball Contact Points, Package #1
 1/32, 3/64, 1/16, 3/32" Dia. covering UN Series threads from 24 to 4 pitch

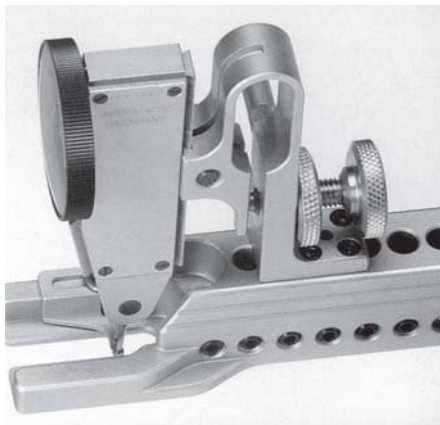
15881, 7 Pairs Carbide Ball Contact Points, Package #2
 1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8" Dia. covering UN Series 24 to 3 pitch single and multiple starts

Contact points with special ball diameter quoted on request



FLEXBAR SHALLOW-TEST™ GAGE

Ideal for accurate measurement of shallow bores, outside diameters, slots and more.



Features:

- Made of hardened tool steel, black-ox finish*, precision made in U.S.A.
- Works with most brands of horizontal, vertical or side-mounted test indicators (see specifications below for size and fit). (Indicator not included).
- Lightweight, handy and highly sensitive.
- Good visibility to measuring area.
- Easy set up with fine adjustment using gage blocks, ring gage or qualified part.
- Indicator contact point stopper ensures smooth entry to measuring area.
- Includes a hardened tool steel contact pin, two allen wrenches and storage box.

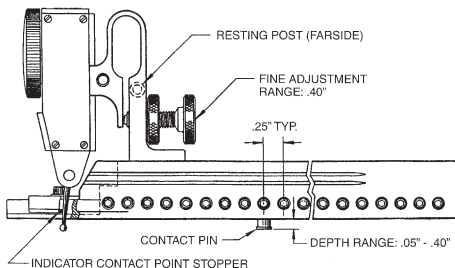
*Models 13420 and 13421 only.

3 MODELS AVAILABLE:

Specifications common to all models:

- Contact pin hole distances: .25"
- Fine adjustment range: .40"
- Depth range: .05" - .40"

Made in U.S.A.



Model No.	Internal Range	External Range
13420	.55"-5.20"	.24"-4.92"
13421	.55"-7.20"	.24"-6.92"
13422	2.00"-12.1"	1.95"-12.05"

Extensions available for Model 13422 to extend measuring range-phone or fax.

INDI-CAL INTERNAL GROOVE GAGE

Excellent for gaging "O" Ring grooves, blind bores, thread reliefs, undercuts, out of round and tapered bores.

Made in U.S.A.



For I.D. work
in small range use
contact point No. 3
and grind to proper size.

FEATURES:

- Satin chrome finish.
- .625" to 6" range.
- 4 pair of points and 8 extensions included.
- Supplied in fitted plastic case.
- Can be used with any Test Indicator (with Dovetail).

Model No. 13270, INDI-CAL Internal Groove Gage (Does not include indicator)

Model No. 13271, Stand for easy set-up

FLEXBAR INSIDE GROOVE DIGITAL CALIPER

Ideally suited for the measurement of inside groove widths.

FEATURES:

- 0-6"/150mm Range
- Inch/Metric and Zero Setting
- Measuring Point Depth: .135"/3.4mm
- Beam Width: .46"/11.7mm
- .0005"/.01mm Resolution
- RS 232 Data Output
- Fitted Wooden Case



Model No. 19250, Flexbar Inside Groove Digital Caliper, 0-6"/150mm

Model No. 15831, Replacement Battery for above



LEITECH THREAD DEPTH GAGING SYSTEM

HIGH RESOLUTION COMBI MODELS NOW AVAILABLE

Built-in micrometer eliminates calculation errors. Quicker and more accurate than previous methods.



Above: Standard Combi Thread Gage (.025"/0.5mm Resolution)

COMBI HI-RESOLUTION THREAD GAGE

- Features vernier scale built right into the gage body. This scale is accurate to a resolution of .005" (inch models) or 0,1mm (metric models).
- New locking device allows user to insert gage into the part being examined, tighten the thumb screw, remove gage and read at users convenience.

LOCKING DEVICE FOR REMOTE READINGS OR PRESETTING



Above: Hi-Resolution Combi: Direct Reading Vernier - .005"/0,1mm Increments

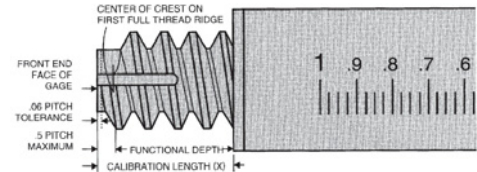
APPLICATION:

The gage can be used wherever a thread gage with depth steps is currently being utilized. It also eliminates the time consuming method of "counting turns" or using a vernier caliper depth scale - neither of which provide even a close indication of functional depth. The gage can also be provided with plain cylindrical members to check depths of drilled holes.

Pipe threads, both NPT and NPTF, do not require members with the costly basic step ground in. In addition, 1 pitch lines on the NPT and the 4 step lines for the NPTF are incorporated on the sleeves as a standard feature giving the user total flexibility in usage, and reducing costs. A 6 step plain gage is also available.

GAGING PROCEDURE:

Gage use is similar to any good quality double ended gage. As the GO member is inserted into the hole, the spring-loaded telescoping sleeve recedes. This provides user with an accurate DEPTH READING GAGE. (NO GO member is used in conventional way.)



INCH READING MODELS
SPECIFY - CLASS 2B OR 3B
STANDARD COMBI-.025" GRAD
HIGH RESOLUTION COMBI-.005" GRAD.

METRIC MODELS
6H TOLERANCE
STANDARD COMBI-0.5mm GRAD
HIGH RESOLUTION COMBI-0.1mm GRAD.

SIZE	THREADS PER INCH			MEASURING DEPTH
	UNC	UNF	UNEF	
2 (.086)	56	64		0,35
3 (.099)	48	56		0,40
4 (.112)	40	48		0,40
5 (.125)	40	44		0,40
6 (.138)	32	40		0,40
8 (.164)	32	36		0,78
10 (.190)	24	32		0,78
12 (.216)	24	28		0,90
12 (.216)			32	0,90
1/4 (.250)	20	28		0,90
1/4 (.250)			32	0,90
5/16 (.3125)	18	24		1,50
5/16 (.3125)			32	1,50
3/4 (.375)	16	24		1,55
3/4 (.375)			32	1,55
7/16 (.4375)	14	20		1,55
7/16 (.4375)			28	1,55
1/2 (.500)	13	20		2,0
1/2 (.500)			28	2,0
9/16 (.5625)	12	18		2,0
9/16 (.5625)			24	2,0
3/4 (.625)	11	18		2,0
3/4 (.625)			24	2,0
1 1/16 (.6875)			24	3,0
3/4 (.750)	10	16		3,0
3/4 (.750)			20	3,0
13/16 (.8125)			20	3,0
7/8 (.875)	9	14		3,0
7/8 (.875)			20	3,0

METRIC SIZE AND PITCH	MEASURING DEPTH
M2 x 0,4	9,0
M2,5 x 0,45	10,0
M3 x 0,5	10,0
M3,5 x 0,6	10,0
M4 x 0,7	19,0
M5 x 0,8	19,0
M6 x 1,0	20,0
M7 x 1,0	37,0
M8 x 1,25	38,0
M8 x 1,0	38,0
M9 x 1,25	38,0
M10 x 1,5	41,0
M10 x 1,25	41,0
M10 x 1,0	41,0
M10 x 0,75	41,0
M11 x 1,5	41,0
M12 x 1,75	41,0
M12 x 1,5	41,0
M12 x 1,25	41,0
M14 x 2,0	51,0
M14 x 1,5	51,0
M15 x 1,5	51,0
M15 x 1,0	51,0
M16 x 2,0	51,0
M16 x 1,5	51,0
M16 x 1,0	51,0
M17 x 1,5	75,0
M17 x 1,0	75,0
M18 x 2,5	75,0
M18 x 1,5	75,0
M20 x 2,5	75,0
M20 x 1,5	75,0
M20 x 1,0	75,0
M22 x 2,5	75,0
M22 x 1,5	75,0

PHONE OR FAX FOR PRICING & ORDER NUMBERS.



RADIUS GAGE SETS

- Made of rust-proof steel, satin chrome finish.
- Each gage is marked with its radius size.
- Each gage has 5 measuring surfaces for convex and concave radii.
- All sets furnished in vinyl case.

16027, 25 Piece Set. With holder, $\frac{1}{64}$ " to $\frac{17}{64}$ " in increments of 64ths and $\frac{9}{32}$ " to $\frac{1}{2}$ " by 32nds.

16028, 8 Piece Set. With holder, $\frac{9}{16}$ " to 1" in fractions of 16ths.

16029, 8 Piece Set. Without holder, $1\frac{1}{16}$ " to $1\frac{1}{2}$ " in fractions of 16ths.

METRIC AND DECIMAL SETS:

Same features as above. New models include metric and decimal sets.

Model No. 17390 (metrics), 26 Piece Set With holder, 0.5mm to 13mm in 0.5mm increments

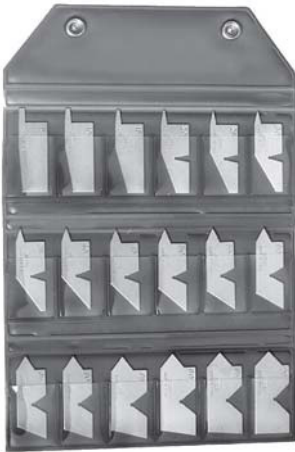
Model No. 17391 (decimal), 25 Piece Set With holder, .010", .015", .020", .025", .030" to .100" in increments of .010", .120" to .220" in increments of .020", .240", .280" and .300" to .500" in increments of .050".



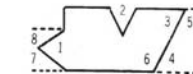
Set No. 16027

ANGLE GAGE SET

- Manufactured from stainless steel, satin finished.
- 18 individual gages for easy use.
- Eight gaging surfaces per gage.
- Precision finished edges for accurate checking.
- Each gage checks primary, $\frac{1}{2}$ primary and complementary angles.
- Sharp cornered workpieces can be checked at all 8 angles except below 50° on primary angle 2.
- Quick and accurate inspection of angles and I.D. or O.D. chamfers - in or out of the machine.
- Positioning of lathe tools for chamfers.
- Inspecting angles on ground form tools & cutters.
- Fast set-ups and fixturing of workpieces.
- Eliminates time consuming measuring set-ups.
- Indispensable for every inspector, tool maker, machinist, layout - and draftsman.



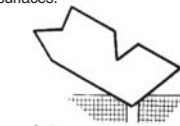
Set No. 18187, 18 Gages (above) In vinyl pouch.



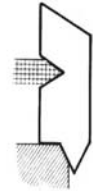
Angles 1, 2, 3, 4 are primary.
Angles 5, 6 are complementary.
Angles 7, 8 are 1/2 primary.



Gaging of angles of adjoining inside/outside diameters or flat surfaces.



Gaging of the countersink angles of drilled and tapped holes.



Gaging of I.D. and O.D. chamfers. Included angles are easily verified.

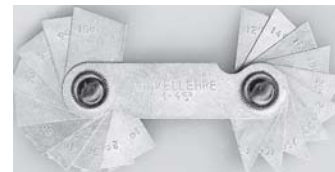


Gaging of primary and complementary angles from a surface plate.

ANGLE GAGE

Handy 20 Leaf Set

- The Angle Gage is an innovative tool which saves time in checking angles.
- Widely used by inspectors, toolmakers and diemakers.
- The gage has 20 leaves, each with a different angle.
- Leaves are made of the finest spring tempered steel.
- Angle edge as well as the two sides are ground.
- Gages are approximately .025" thick, $\frac{7}{8}$ " wide and $4\frac{3}{16}$ " long.



Model No. 16335, Angle Gage: 20 leaves with Lock Nut. Range: $1-45^\circ$ (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 25, 30, 35, 40 and 45).

12" DIGITAL PROTRACTOR



- Setting preset value
- Zero setting at any position
- Accuracy 0.008° or 30"
- (For quadrant) 3 measurement patterns (1x360°, 2x180°, 4x 90°)

Model No. 15590, 0-360° Range 12" Digital Protractor



ECONOMY UNIVERSAL BEVEL PROTRACTOR

With 6" and 12" Blades

FEATURES:

- Minimum reading is 5 minutes.
- Main scale and vernier scale are on the same plane to eliminate reading parallax.
- Fine adjustment of the blade insures precision measuring and laying out of angle.
- Main parts are of hardened stainless steel to prevent rust.

ACCESSORIES (included):

- 6" Blade. • 12" Blade
- Acute Angle Attachment.

Model No. 16330, Universal Bevel Protractor. Complete with 6" and 12" blades and acute angle attachment.

HEAVY DUTY PRECISION PROTRACTOR

EASY-TO-READ WITH SATIN CHROME FINISH
For machinists, toolmakers, draftsmen & mechanics.
LASER ETCHED — EASY TO READ



Semi-Circular Head

- Measures angles from 0° to 180°.
- Used for drawing radial lines at any angle.
- Measures 3 5/16" in diameter.
- Features a lock nut.

Model No. 16336, Heavy Duty Precision Protractor

ECONOMY PRECISION BEVEL PROTRACTOR



- Measures angles from 0° to 170°.
- 6" Protractor with 12" Blade.
- Satin Chrome with Easy-to-Read Vernier Scale.
- Features a lock nut.
- Includes protective vinyl pouch.

Model No. 16331, Economy Precision Bevel Protractor



ELECTRONIC DIGITAL LEVELS

BASIC FUNCTION DIGITAL PROTRACTOR

This protractor provides an immediate digital reading of any angle in a full circle of 0-90°-0-90°-0 readings. The machined aluminum frame is rigid and light with a precise platform that allows the sensor and its microprocessor circuit to provide high accuracy throughout the entire 360° range.

- Four 90° quadrants for display purposes.
- Calibrates in minutes without any special fixtures.
- HOLD button for freezing a reading in an unreadable position.
- ABS/ZERO button allows 2 measuring modes, Standard and Alternate Reference.
- V-Grooves on top and bottom for use on curved surfaces.
- Angle displayed upright regardless of protractor position.
- Supplied in fitted case.

SPECIFICATIONS:

Measuring Range: 360° (0-90°-0-90°-0)

Resolution: 0.1°

Operating

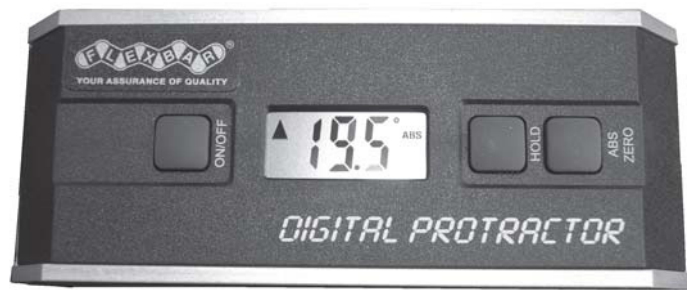
Temperature Range: 23°F to 122°F
-5° to +50°C

Power: 3V, Lithium cell

Accuracy: ± 0.1° -level ± 10
± 0.1° -plumb ± 10
± 0.2° -max. error
in between

Size: 6"L x 1 1/4"W x 2 3/8" H

Weight: 10.2 oz.



Model No. 17635, Digital Protractor

PRO 360 DIGITAL LEVEL

- Multi-functional. Digital Level, 360° Protractor and Inclinator.
- Instant LCD display of level, tilt, true vertical or any angle in between to highest accuracy, one tenth of a degree reading.
- Use upside down, display reverses to right side up.
- Deviation from the true plane is measurable through full 360° (4x90°).
- Floating zero! Provides zero selection anywhere within its 360° range.
- Hold button freeze! Displays reading for convenient out of sight measurements.
- High-impact machined aluminum frame houses a rugged electronic sensor, custom circuitry and the liquid crystal display.
- Baseplate has V-groove for accurate registration on curved or cylindrical surfaces.
- Tapped #6-32 holes in baseplate for special mountings.
- Operates on standard 9V Alkaline battery for up to 500 hours of operation.
- Low battery indicator. Automatic shutoff.
- Plastic case included.

SPECIFICATIONS:

Measuring Range: 360° (4 x 90°)

Resolution: 0.1°

Accuracy: ± 0.1° -level ± 10°
± 0.1° -plumb ± 10°
± 0.2° -max. error

Repeatability: same as accuracy

Cross Axis Error: <0.2° up to 20°

Size: 6.0" x 1.2" x 2.3" high

Weight: 10.2 oz.



Model No. 17629, Pro 360 Digital Level



MASTER PRECISION LEVELS

- Graduation: 0.0005" per 10".
- For accurately checking the work of machinists and toolmakers setting up machinery and other work that requires extreme leveling accuracy.
- Ground and graduated main vial of 10 second accuracy.



Model No. 12120, 4" Master Precision Level

Model No. 12121, 8" Master Precision Level

Model No. 12122, 12" Master Precision Level

PRECISION FRAME SPIRIT LEVELS



- Graduation: .0002"
- This level comes with frame level and master level.
- Comes with fitted case.

Model No. 12123, 6 x 6" Precision Frame Spirit Level

Model No. 12124, 8 x 8" Precision Frame Spirit Level

Model No. 12125, 12 x 12" Precision Frame Spirit Level

DIGITAL ANGLE GAGE W/MAGNET

- Auto Off
- Compact and lightweight
- Base has disk magnet

Model No. 15595

SPECIFICATIONS	
Resolution	0.1 degree
Repeatability	±0.1 degree
Angle Range	±180 degree
Power	3V CR2032 Lithium Battery
Dimension	2 x 2 x 1.3"



0-360° DIGITAL LEVEL/PROTRACTOR

- Easy reading 45° LCD Display
- Conversion between absolute and relative measurement
- Hold function to freeze measurements
- Auto off
- Backlight function

Model No. 15596

SPECIFICATIONS	
Accuracy	0 & 90°: 0.1°; Rest: 0.2°
Resolution	0.1 degree
Power	3V CR2032 Lithium Battery





Made in U.S.A.

FLEXBAR BALL BEARING "V" BLOCKS

...Overcomes Production or Set-Up Difficulties Inherent in Plain V-Blocks.
Overcomes Geometric Limitations.



ENABLES YOU TO INSPECT AND DETECT OUT-OF-ROUND CONDITIONS AND LOBES WITH NO DAMAGE TO PARTS AND NO DAMAGE TO BLOCKS

SPECIAL FEATURES:

- Accuracy of Balls: 25 millionth of an inch sphericity on small and medium set. 50 millionths of an inch on large set.
- Overall accuracy of matched pairs ± 5 microns.
- Balls Rockwell C-62 — Surface finish 0.2 microinches.
- Calibrated balls are certified.
- Class 40 cast iron, used on base and housing, is heat stabilized and seasoned.
- Spacers are hardened through and precision ground by pairs.
- Pair of blocks assembled using metrology equipment.

SPECIAL FUNCTIONS:

- Balls undergo slight elastic deformation when parts are loaded on. Hence parts will not be damaged while being inspected or produced.
- Detection of lobes and superimposed lobes made easy.
- Easy readjustment of balls which provide new bearing points.
- Handles diameters up to 15 inches.
- Increased contact area due to special geometric spacing of balls in blocks.
- 8 contact points per pair of blocks share load distribution.
- Balls are self-aligning and hard wearing.
- 1 each precision spacer per block provides 2 different angles per pair.
- Simply turn each block 90° and inspect component using both angles.
- Special inspection set ups using cylinder squares now possible.



IMPORTANT NOTE:

BALLS ARE FIXED IN BLOCKS AND ARE NOT DESIGNED TO ROTATE IN USE.

SIZE	INSPECTION CAPACITY	DIAMETER OF BALLS	WT. CAPACITY OF PAIR	WORK CAPACITY W/CLAMPS
Small Pair	$\frac{3}{64}$ " to 2 $\frac{1}{2}$ "	$\frac{1}{2}$ "	220 lbs.	1 $\frac{1}{4}$ "
Medium Pair	$\frac{3}{22}$ to 5"	$\frac{15}{16}$ "	1,100 lbs.	2 $\frac{1}{2}$ "
Large Pair	$\frac{3}{16}$ " to 15"	1 $\frac{1}{2}$ "	2,000 lbs.	3"

ORDER NO.	ORDER-DESCRIPTION- BALL-BEARING "V" BLOCKS
16097	PAIR BLOCKS, 2" X 2" X 1" (without clamps) & TEST BALL
16098	PAIR BLOCKS, 3 $\frac{3}{8}$ " X 3 $\frac{3}{8}$ " X 2 $\frac{3}{8}$ " (without clamps) & TEST BALL
16099	PAIR BLOCKS, 4 $\frac{3}{4}$ " X 4 $\frac{3}{4}$ " X 2 $\frac{3}{8}$ " (without clamps) & TEST BALL
16123	PAIR CLAMPS, For No. 16097
16124	PAIR CLAMPS, For No. 16098
16125	PAIR CLAMPS, For No. 16099
16067	SPARE BALLS, Set of 4, For No. 16097 or 16093
16068	SPARE BALLS, Set of 4, For No. 16098 or 16094
16069	SPARE BALLS, Set of 4, For No. 16099 or 16095
16093	PAIR BLOCKS, 2" X 2" X 1" (Complete with clamps & TEST BALL)
16094	PAIR BLOCKS, 3 $\frac{3}{8}$ " X 3 $\frac{3}{8}$ " X 2 $\frac{3}{8}$ " (Complete with clamps & TEST BALL)
16095	PAIR BLOCKS, 4 $\frac{3}{4}$ " X 4 $\frac{3}{4}$ " X 2 $\frac{3}{8}$ " (Complete with clamps & TEST BALL)



Made in U.S.A.



16509 SUPPLIED IN 2 PIECE SETS

DIMENSIONS:

BASE	1 3/4" x 4"
'V' SECTION	1 3/16" wide
HEIGHT CLOSED	3"
HEIGHT OPEN	3 1/2"
STANDARD 'V' ANGLE	120°
SPECIAL 'V' ANGLE	90°
<i>on request</i>	

MICRO-RISE

High Precision Adjustable V-Blocks
Patent No. 3,325,162

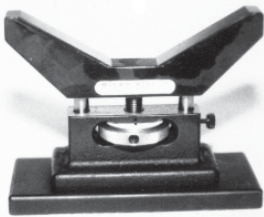
Use for inspection, production milling, work staging, spin grinding, or any operation requiring precision adjustable support.

FEATURES:

- Hardened and ground anvils support up to 1,000 lbs.
- Wide angle "V" accepts 3/16" to 5" diameters.
- Top flats ground parallel to base. Can hold wide, flat parts. Narrow flats may be held on a parallel across top.
- Vibration lock, (position lock), prevents creeping.
- Insures solid support without deflection.
- 1/2" total rise of "V", .050 per revolution. Dial graduated in increments of .001".
- Available in metric screw and dial.

No. 16505, Std. 2 pc. set
No. 16507, Std. 2 pc. set w/clamps

EXTRA-LARGE MICRO-RISE



High Precision Adjustable V-Blocks
FOR LARGE DIAMETER APPLICATIONS
5" to 10" Capacity

Same rugged features as MICRO-RISE models listed above.
1/2" total rise of "V", .050" per revolution, .001" graduations.

Set No. 16513*, Extra-Large Micro-Rise Standard 2 piece set

* Not supplied with clamps.

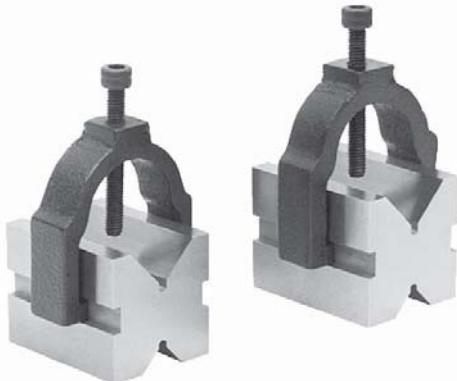
DIMENSIONS:

BASE	2 1/2" X 6"
"V" ANVIL THICKNESS	3/4"
HEIGHT CLOSED ...	4"
HEIGHT OPEN	4 1/2"
"V" ANGLE	120°

Above set available with carbide anvils upon request.

FLEXBAR PRECISION V-BLOCKS AND CLAMPS

Made in U.S.A.



- Dimensions 1 1/4" x 1 1/4" x 1 5/8" long.
- Capacity: Large Vee—1 inch diameter.
Small Vee—1/2 inch diameter.
- Hardened and Ground Steel.
- Accuracy: Square within .0002" per inch.
Parallel within .0002 inch.
- Serial Numbered in Matched Pairs.
- Two Vee Blocks and Two Clamps.

Model No. 18235
Precision V-Blocks and Clamps (matched pair).



ULTRA PRECISION V-BLOCKS = 60°+90° MODELS

All vee blocks are parallel, square and central within .0002. Each block comes with one clamp and blocks are available in matched pairs. All models are made of hardened steel. Sizes other than those listed are available by special order.

SINGLE BLOCKS: MATCHED PAIRS:

MODEL NO.	MODEL NO.	90° V-BLOCK DIMENSIONS	VEE CAPACITY	INDIVIDUAL WEIGHT
11132	11139	2½ x 2½ x 2	1¾"	3 lbs.
11133	11140	3 x 4 x 3	2¼"	9 lbs.
11134	11141	6 x 6 x 4	4¾"	33 lbs.
11135	11142	6 x 6 x 6	4¾"	50 lbs.
		60° V-BLOCKS		
11136	11143	2½ x 2½ x 2	1¾"	3 lbs.
11137	11144	3 x 4 x 2	2¼"	8 lbs.

Made in U.S.A.



PRECISION VEE BLOCKS

Matched Pair with Clamps

3 Sizes

- Accuracy .00015"
- Made from tool steel, hardened and ground, with clamp



Model No.	Dimension/Inch L x W x H	Diameter Range/Inch
14720	1.96 x 1.57 x 1.57	.2 to 1.18
14721	2.95 x 2.16 x 2.16	.2 to 1.96
14722	4.00 x 2.95 x 2.95	.27 to 2.75

PRECISION V-BLOCKS AND CLAMPS



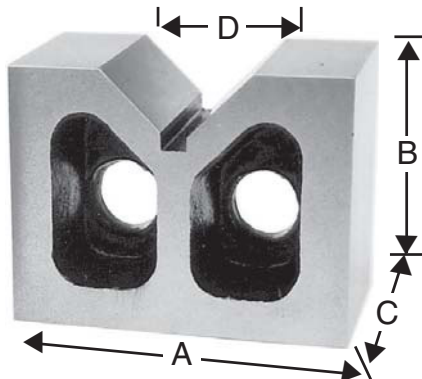
- All sides are ground square and parallel to each other.
- Matched accuracy .0002" and numbered in pairs.
- Sturdy enough to be used in matching operation.
- Supplied with two clamps.

Model No.	Capacity	Height	Size Width	Length
11086	1" diameter	1 - 3/8"	1 - 5/8"	1 - 3/4"
11087	1- 1/2" diameter	1 - 5/8"	1 - 3/4"	2 - 3/4"
11088	1- 1/2" diameter	1 - 3/4"	2 - 1/2"	2 - 3/4"
11089	2 - 1/8" diameter	2 - 3/4"	3 - 1/2"	4 - 7/8"

V-BLOCKS

Matched Pairs

- Made of high quality fine grained cast iron, stress relieved.
- Ideal for holding round and irregular shape parts in drilling, machining, inspection, etc.
- Accurately machined with 90° Vee in center.
- Machined square and parallel to base within .001".
- Supplied and priced in matched pairs.



Model No.	A	B	C	D
11077	3"	2 - 3/8"	1 - 3/4"	1 - 1/4"
11078	4"	2 - 5/8"	2"	2 - 5/8"
11079	5"	3 - 1/8"	2 - 5/8"	2"
11080	6"	3 - 1/2"	3 - 3/4"	2 - 3/8"
11081	7"	4 - 1/2"	3 - 3/4"	3"
11082	8"	5 - 1/2"	4 - 1/2"	4"



CHUCK PARALLELS & UNIVERSAL V-BLOCKS

Ideal for Use on Magnetic Chucks

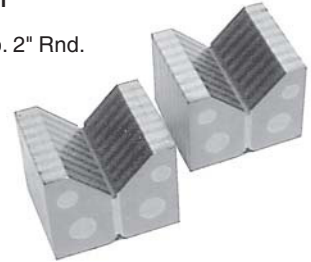
INTEGRALLY CAST INTO ONE SOLID PIECE! • Made in U.S.A.

Ground all over and serial numbered in pairs. These fine V-Blocks are now made UNIVERSAL (holds in any direction on the Magnetic Chucks)

1 x 2 x 4. Micro Parallels
ground all over & serial
numbered in pairs
ORDER SET NO. 18240



1 7/8 x 2 3/8 x 2. Large V Cap. 2" Rnd.
Small V Cap. 1/2" Rnd.
ORDER SET NO. 18241
2 (two) V's per block



Set No. 18240, One Pair Chuck Parallels

Set No. 18241, One Pair Chuck V-Blocks

All pairs are matched and serial numbered.

MAGNETIC TOOLMAKERS CHUCKS

Precision Ground • Made in U.S.A.



- Top, bottom and end magnetize simultaneously.
- All models precision ground flat, square and parallel to an overall accuracy of .0005".
- Bottom surface relieved .125 to minimize loss of magnetism.
- Model 19917 has 3/16" x 1/16" fine pole construction for holding small or thin parts, and removeable side and end rails.
- On/Off switch.
- Powerful alnico magnets.

Model No.	Width	Height	Length
19915	2"	2"	5
19916	2 3/4"	2 1/2"	5 1/2"
19917	2 3/4"	2 1/2"	5 1/2"
19918	2 3/4"	3 5/8"	5 1/2"
19919	Matched Pair of Model 19918		

FLEXBAR BENCH BLOCK



- Very handy for holding work when driving pins, drilling, etc.
- V-groove across face accommodates round & odd shaped stock.
- Smooth finish on the face preserves the work being held.
- Hardened and ground.
- Block is approximately 3" diameter and 1 1/2" high.
- 9 Holes range in sizes from .140 to .628"

Model No. 14169, Flexbar Bench Block



MAGNETIC V-SHAPE HOLDER



- Ideal for holding round or irregular shapes for grinding, machining, scribing or measuring.
- 150 lbs. of holding force.
- 90° Vee on top.
- Magnetic attraction on 5 sides.
- Turn it over and it has slots and vees topside.
- Fine precision ground finish.
- Fixed On/Off Switch.
- Height 3³/₄", Width 2³/₄", Length 4".

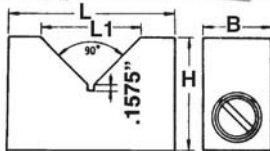
Model No. 11049, Magnetic V-Holder



MAGNETIC V-BLOCKS

(Matched Pair)

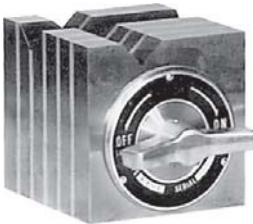
- Ideal for holding round and irregular shapes for grinding, measuring, and machining.
- Powerful magnetic force on all three surfaces: top, side, and V (90°).
- Includes two precisely identical blocks for use as a set.
- Has fixed On/Off switch.



Set No.	H	B	L	L1
11025	2"	1.6"	2.8"	1.44"
11026	3.2"	2"	4"	2.4"

SQUARE SHAPED MAGNETIC V-BLOCK

THREE SURFACE ATTRACTION
SOLD SINGLY



- Ideal for holding round or irregular shapes for scribing or measuring.
- Needs no conventional clamp down screws.
- Magnetic force on top, sides, and Vees.
- Fixed On/Off switch.

Model No. 11029, Square Shaped Magnetic V-Block, 1 each.
Dimensions: 6" H x 6" W x 6" L

MAGNETIC BASE PROTRACTOR

**Ideal for determination of angles on shapers, milling machines and grinders.
Also used for leveling and finding centers of squares and round stock.**



- Protractor features an extremely sensitive, sealed, mercury balanced needle.
- Powerful magnetic V-base contains Alnico magnets and is precision ground.
- V-base exerts magnetic pull in the "V" and also across the bottom surface of the two legs, enabling instant and firm attachment to any ferrous surface, round or flat.
- Gives immediate reading of angles through 360° and is accurate within 3 minutes of a degree.
- Height of 5¹/₄", width is 5" and depth 1".

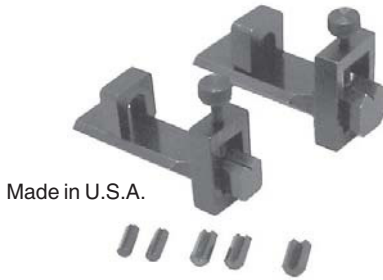
Model No. 18425, Magnetic Base Protractor



Made in U.S.A.

SUPER WEE BLOCKS

Smallest Vee Blocks in the World



Made in U.S.A.

Ideal for: holding and indexing pins and punches while grinding, drilling, milling, EDM work (electrodes, etc). Inspecting parts on optical comparators. Used in conjunction with large V-Blocks or Magnetic V-Blocks.
Provides maximum bearing surface.

- Precision hardened and ground, Wee Blocks are within .0002" in both squareness and parallelism.
- Clamps are reversible.
- Blocks and clamping bars are hardened.

Complete in Fitted Case, set includes:

- 1 each Super Wee Block "A" - capacity .030" - ⁵/₃₂"
- 1 each Bridge A (for above)
- 1 each Super Wee Block "B" - capacity .050" - ⁹/₃₂"
- 1 each Bridge B (for above)
- 1 each Ring Clamp with thumb screw for Block "A"
- 1 each Ring Clamp with thumb screw for Block "B"
- 2 each Top Clamping Bar - ¹/₈"
- 2 each Top Clamping Bar - ⁵/₃₂"
- 1 each Top Clamping Bar - ³/₁₆"

Model No. 16096, Super Wee Block Set

6 PIECE ADJUSTABLE PARALLEL SET

- Made of precision ground tool steel
- Easily expanded to size in openings for quick reference measurements
- Lock desired size by set screws
- Exact size can be set with micrometer
- Furnished in fitted plastic case with size range markings



Model No. 16671, 6 Piece Adjustable Parallel Set

Dimension: 3/8~1/2", 1/2~11/16", 11/16~15/16", 15/16~1-5/16", 1-5/16~1-3/4", 1-3/4~2-1/4"

4-WAY STEEL PARALLELS - MATCHED PAIRS

- Made of tool steel hardened to Rc 58-62 and ground in matched pairs on four sides for use where extra precision is required.
- Pairs are matched in size on the width and height to a tolerance of ±0.0002" on 6, 8 and 12" lengths and 0.0003" for longer lengths.
- Total parallelism, straightness over the full length and size tolerance between pieces of a matched pair is 0.0001" on 6 and 8" lengths, 0.0002 on 12" lengths and 0.0003" on longer lengths.
- Adjacent ground sides are square with each other within 0.0004", except the 6 x 1/4 x 3/4, 6 x 1/4 x 3/8 and 6 x 1/4 x 1/2 sizes, which are square within 0.0005".

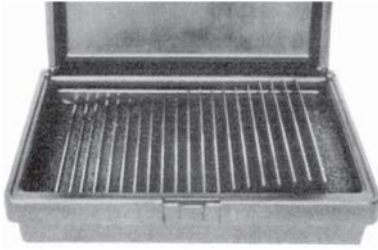


MODEL	SIZE	WT. (#)
21032	6 x 1/4 x 3/8	1
21033	6 x 1/4 x 1/2	1
21034	6 x 1/4 x 5/8	1
21035	6 x 1/4 x 3/4	1
21036	6 x 3/8 x 1/2	1
21037	6 x 3/8 x 3/4	2
21038	6 x 1/2 x 5/8	2
21039	6 x 1/2 x 3/4	2
21040	6 x 1/2 x 1	2
21041	6 x 5/8 x 1	3
21042	6 x 3/4 x 1	3
21043	6 x 3/4 x 1 1/2	5

MODEL	SIZE	WT. (#)
21044	8 x 1/2 x 1	3
21045	8 x 5/8 x 1 1/2	5
21046	8 x 3/4 x 1	4
21047	8 x 3/4 x 1 1/4	5
21048	8 x 3/4 x 1 5/8	6
21049	12 x 3/4 x 1	6
21050	12 x 1 x 1 1/2	11
21051	12 x 1 x 2	14
21052	12 x 1 1/2 x 2	21
21053	12 x 1 1/2 x 3	32
21054	18 x 1 x 2	22
21055	24 x 1 x 2	29
21056	36 x 1 x 2	53



FLEXBAR ULTRA THIN PARALLELS



17432

Made in U.S.A. • 1/32" Thick —20 Pair Set

Accuracy:

Parallelism in height ± .0001"

To size in height ± .001"

Range Of Sizes Include:

1/2" thru 1 11/16" in 1/16" increments

Features:

- Hardened to 50 RC
- Parallelism .0001"
- Height .001" accuracy
- Includes fitted case

Set No. 17432, Ultra Thin Parallels, 20 pair set



FLEXBAR 1/8" THIN PARALLEL SETS

Also Available in TiN Coated

Made in U.S.A.

1/8" Thick Parallel Set, in custom fitted plastic box

- 10 Pairs in Set • Hardened Steel
- 6" Length x 1/8" Thick
- Heights: 1/2", 5/8", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8", 1 1/2", 1 5/8"
- Heights matched within ±0.001 each pair



Parallel within ±0.0003" on 2 sides, top and bottom

Parallel within ±0.0008" each pair

Set No. 17431, Thin Parallels, 10 pair set

Set No. 17050, Thin Parallels, 10 pair set, TiN Coated

SINE BARS & SINE PLATES



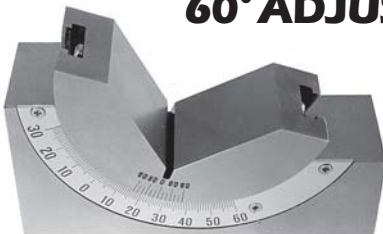
- Both Sine and Rolls are hardened and ground for extreme accuracy.
- Top surface is accurate to .00003" per inch of length.
- Used with gage blocks for accuracy.
- Various size holes are furnished for clamping purposes.

- There is a flange on the end for resting work.
- Parallelism = .00004".
- Sine Bars and 5" Sine Plates have holes for mounting.
- Center to center distance between center of Rolls is accurate within .0002".

Model Number	Description	Overall Width	Distance Between Center of Rolls
16292	5" Sine Bar	15/16"	5"
16293	10" Sine Bar	1"	10"
16294	5" Sine Plate	2"	5"

60° ADJUSTABLE PRECISION ANGLE BLOCKS

3 Sizes Available



18427

- Fast, simple, easy to use for drilling, milling and set-up applications.
- Bottom hex screw locks block in any angle between 0 and 60°.
- Squareness .0002"; angle accuracy ±10°.
- HRC 50-55.
- Supplied in wooden case.

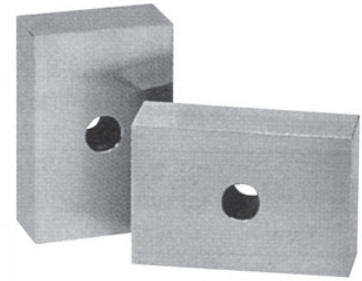
Model No.	Dimensions			Weight
	Width	Height	Length	
18426	1"	1 1/4"	3"	1.5 lb.
18427	1-3/16"	1-13/16"	4"	2.8 lb.
18429	1-13/16"	1-13/16"	4"	3.8 lb.



LAYOUT-GRINDING AND INSPECTION

1-2-3 BLOCKS with One Hole

- For precision grinding, layout, etc.
- Drilled Hole Size: .500 ~ .501
- Accuracy with Squareness on all sides within .0001 per inch
- Hardened to RC 58-60 and ground to surface finish from 6 to 10 micron inches.
- Dimensions: 1 x 2 x 3"



16163

No. 16163 Matched set of 2 Blocks

1-2-3 UNIVERSAL BLOCKS MATCHED PAIR • Made in U.S.A.

- Made of hardened steel, precision ground on all six sides to $\pm .0001$ " squareness per inch.
- To size within $\pm .0002$ ".
- The $\frac{5}{16}$ -18 tapped holes are arranged for screw mounting and conversion into angle plates and various other inspection or production set-ups.



No. 16916, Matched Pair, comp. with case

No. 16918, Matched set of 3

No. 16919, Velvet case for set of 3

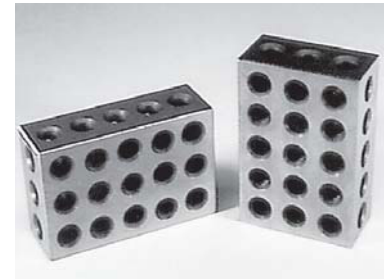
PRECISION 1-2-3 BLOCKS MATCHED PAIR - Quality Import

- Measuring 1" x 2" x 3".
- Precision Ground on all 6 sides to .0001" tolerance. Any two blocks used together would yield a tolerance of .0002" maximum.

23 HOLES ON EACH BLOCK

No. 16166, Pair of 2 Precision 1-2-3 Blocks

No. 16165, Pair of 2 Precision 1-2-3 Blocks TiN coated



PRECISION 2-3-4 BLOCKS

MATCHED PAIR-IMPORT

- Hardened and precision ground on all 6 sides of each block
- Accuracy with Squareness on all sides within .0001" per inch
- 23 holes consist of 5 ($\frac{3}{8}$ " -16) tapped holes for clamping and 18 untapped holes drilled

Model No. 16162, 2-3-4 Blocks, Matched Pair

PRECISION 2-4-6 BLOCKS

MATCHED PAIR-IMPORT

- Precision ground and hardened on all sides
- Blocks are matched within .0002" and measure 2" x 4" x 6"
- Squareness: .0001"
- Parallelism: .0003"
- Hardness: 55-60 HRC
- Flatness: .0001"
- $\frac{5}{8}$ "—11 tapped holes
- 23 Holes on each block

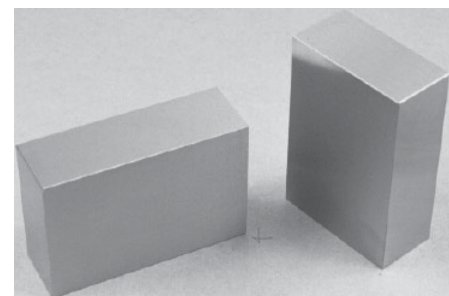
Model No. 16164, 2-4-6 Blocks, Matched Pair

1-2-3 BLOCKS WITH NO HOLE

Supplied in Matched Pair

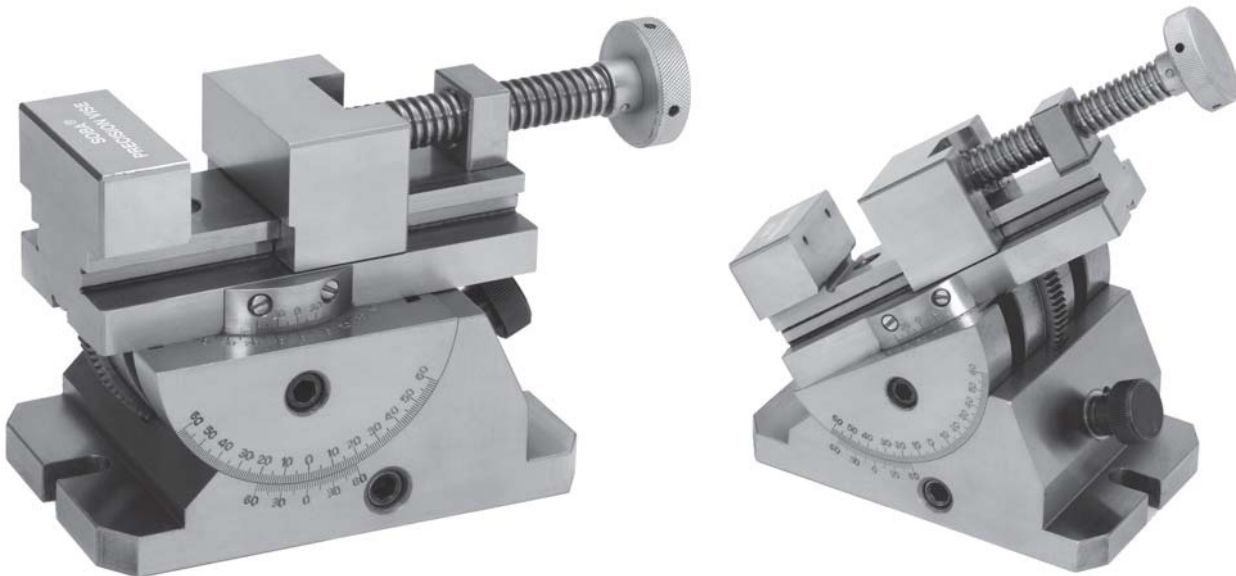
- Hardened to RC 58-60
- Precision Ground Surface Finish to 6-10 microinches
- Dimensions: 1" x 2" x 3"
- Squareness: +/- .0002"

Model No. 18965, 1-2-3 Blocks without Holes, Matched Pair





PRECISION TILT & SWIVEL GRINDING & INSPECTION VISE



Model No. 14678

High Quality Durability at an Affordable Price

Made of high precision ground and hardened (55-60 HRC) tool steel. The base is manufactured from close grained high tensile cast iron. The unit has 360° horizontal rotation and a ± 55° angular setting with precise minute scale. Easy to use adjustment knob for upward and downward swing. This vise is suitable for Inspection, Grinding, Boring, Milling, and EDM.

Technical Data

Jaw Width.....	2 ¾ Inch
Jaw Opening.....	3- ³ / ₁₆ Inch
Jaw Depth.....	1- ³ / ₁₆ Inch
Net Weight.....	27.80 lbs

PRECISION TOOLMAKER VISE

Used in milling, boring, grinding, inspection, and general machine work. The base, front and rear jaw is one piece, all steel construction. All surfaces are hardened and precision ground square and parallel to an accuracy of ± .0004". Clamping slots provided.

Toolmakers Vise with V-Grooved Jaw

- Parallelism of the "V" groove provided in the movable jaw is 0.00008".

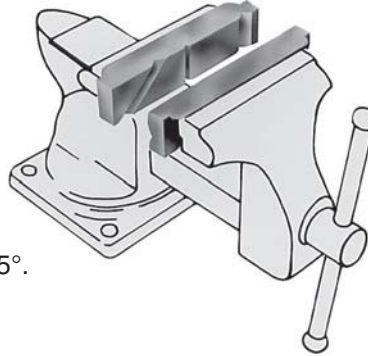


Model No.	Jaw Width	Jaw Opening	Depth	Overall Width	Length
14670	2- ³ / ₈ "	2- ³ / ₁₆ "	¹⁵ / ₁₆ "	2- ²³ / ₃₂ "	6- ⁹ / ₃₂ "



FLEXBAR-MADE MAGNETIC "SOFT-JAW" VISE LINERS

UNIQUE DESIGN • QUALITY FABRICATION • MADE IN U.S.A.



- One jaw has Vee Groove in Horizontal Plane.
- Second Jaw has 2 Vee's in Vertical Plane. Plus 1 Vee, 45°.
- Accepts all shapes.
- 5 inches (one size) fits all vises.
- Made of nylon.
- Overlap configuration for easy positioning assuring parallel set up.

Model No. 14001

MAGNETIC VISE JAWS

Aluminum & Brass- sold by pair



- Soft jaws with magnetic inserts for easy mounting and holding on your vises
- Protect your work piece against scratching and nicking
- Grooves ensure tight holding of different shapes of work piece

Model No.	Jaw Width	Material
13560	4"	Aluminum
13561	5"	Aluminum
13562	6"	Aluminum
13563	4"	Brass
13564	5"	Brass
13565	6"	Brass

UNIVERSAL VISE JAW

W/WORK STOP

- Multi-function V-shape jaw can hold workpiece at horizontal and vertical position
- Made of high grade tool steel hardened and precision ground
- Squareness and Parallelism: 0.0002"
- Will fit vise jaw with 6 to 6 1/2" width
- Two set screws for attached to vise and one long set screw used as work stop
- Jaw Width: 7.50"
- Jaw Height: 2.10"
- Jaw Thickness: 1.57"



Model No. 13566

FLEXBAR FLEXI-VISE™

Made in U.S.A.

Universal 3-Way Angle Twin Vise

Two infinitely adjustable vises can be independently locked in any position relative to one another. Achieves any compound angle. Ideal for assembly, soldering, welding, glueing, etc.

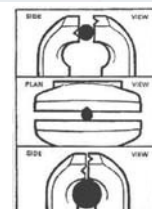
- Positive locking of all parts in any position.
- Jaws hold flat, round or hexagonal components.
- Quickly reset to new angles.
- Vises adjust 360° in every plane.
- Aluminum jaws give positive gripping without damaging parts held.
- Jaw width: 1 1/2".
- Jaw capacity: 11/16" (17.5mm).

CAST BASE MODELS:

(Includes mounting screw holes)

No. 14006, Twin Flexi-Vise

No. 14007, Single-Head Flexi-Vise

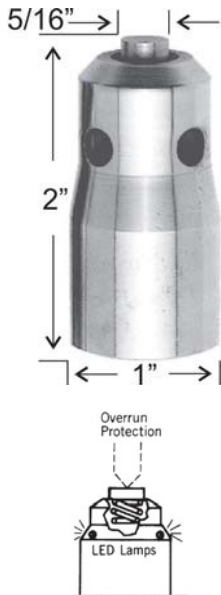


Jaw Configuration



ELECTRONIC LOCATING GAGE

HEIGHT OFFSET MODEL



- Precision made in U.S.A.
- Ultra sensitive solid state circuit for fast and accurate positioning.
- Models for specific applications in conventional milling & turning and CNC machine set-ups.
- Ready for instant use.
- LED indicator lamps light up at the slightest touch of the workpiece with 360° visibility.
- Spring loaded to safeguard against damage from overrun.
- Hardened and precision ground.
- 2 long life batteries (Varta V-13 Hm or equivalent) included.

Model No. 18511 Height Offset Presetting Gage, probe $\frac{5}{16}$ " dia.

Model No. 18514 Replacement Battery (2 required)

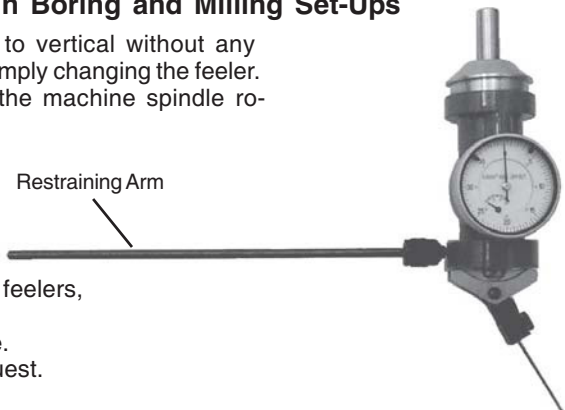
FLEXBAR CO-AX CENTERING INDICATOR SET

Provides Quick & Accurate Centering in Boring and Milling Set-Ups



- Operates at any angle from horizontal to vertical without any change, and from internal to external by simply changing the feeler.
- Indicator dial remains stationary while the machine spindle rotates (dial always faces operator).

- Capacity: Internal $\frac{5}{32}$ " x $4\frac{1}{2}$ "
External 0" x $4\frac{1}{2}$ "
- Includes: 3 internal feelers, 3 external feelers,
1 spring loaded feeler,
1 restraining arm, fitted case.
- Replacement parts available upon request.



Model No. 15920, Flexbar Co-Ax Indicator Set

CENTERING MICROSCOPE



- Adapts to any machine spindle with maximum accessibility to the operator.
- 45X magnification for optical position accuracy of .0001".
- Single dash line reticle for easy observation of the work reference line.
- Unique compensation of spindle runout by adjustment screw.
- Straight shank $\frac{1}{2}$ " diameter, eyepiece angle 60°.
- Field of view .100" diameter, focal length $\frac{5}{8}$ ".
- Optional Edge Block to locate the edge of any work piece to the spindle axis, and V-Block Gage for precision centering of a V-Block to the spindle for cross axis boring.

Model No. 17272, Centering Microscope in fitted case

Model No. 17273, Edge Block for Centering Microscope

Model No. 17274, V-Block Gage for Centering Microscope



FLEXBAR SUPER JUMP EDGE FINDER

Made in U.S.A.
The Finest Edge Finder Made

- Hand Lapped
- Ultra-Precision

Model No. 18508 Super Jump Edge Finder, $\frac{3}{8}$ " , .200".



BREAK-AWAY STYLUS ELECTRONIC EDGE FINDERS

Made in U.S.A.

- All electronic edge finders will locate work surfaces quickly and easily at almost any angle.
- *Model No. 19336 also "beeps" when stylus meets conductive metal surface. Great for blind and deep applications. Note: Model No. 19335 does not beep.
- No bulbs, all models have 5 LED lights that light on contact with conductive metal surfaces - last for years without replacement.
- Easy change 12 volt batteries included.
- Repeatability +/- .0002.
- All work surfaces precision ground.



Shown Above: Model No. 19336



Model No. 19335, .200" Stylus Break-Away Electronic Edge Finder

Model No. 19336, .400" Stylus Break-Away Electronic Edge Finder



MAGNETIC EDGE FINDERS

- Conveniently attaches itself to workpiece with built-in permanent magnet.
- Precision ground, allows workpieces to be indicated within accuracy of $\pm .0001$ ".
- If hole or slot is indicated to centerline of spindle, the edge of workpiece will automatically be on center line.
- Avoids calculation errors by eliminating additions or subtractions.
- Slotted model to pick up single edges.



Made in U.S.A.

Model No. 17275 Magnetic Single Edge Finder

ELECTRONIC TOOL SETTER

- Ideal to preset tools and to reference tool positions in CNC Machines, Machining & Turning Centers.
- Heat treated, precision ground tool steel.
- Parallel within .0002" to inside of groove.
- Repeatability .0002".
- Height bottom to inside of groove $2.0000 \pm .0001$ ".
- Built-in magnet for convenient use on horizontal and vertical faces.
- .196" (5mm) compression stroke for over-run protection.
- 3V lithium battery included. —Lasts approx. 1 year.

Model No. 15175, Electronic Tool Setter

Model No. 15174, Replacement Battery





OPTICAL CENTER PUNCH

Layout and Drill Hole Patterns Easily & Accurately

Set Contains:

- Precision Guide Base with scratch protection.
- Two Spotting Lens: one with center dot and circle, and one with cross-hair for easily lining up the punch as close as $\pm .001"$.
- 60° and 120° Center Punches made of hardened tool steel.
- Comes complete in a fitted wooden case.



Directions:

The operator scribes lines in the usual manner. He then takes the Optical Center Punch and locates it over the work, adjusts it until optically centered and then removes the optical pilot. He then inserts the punch in the previous position of the optical head, and taps the punch with a hammer. The punch mark is then drilled, etc.

Model No. 14517, Optical Center Punch Set Complete

ECONO-PIC HOLE TRANSFER CENTER PUNCH & ALIGNER

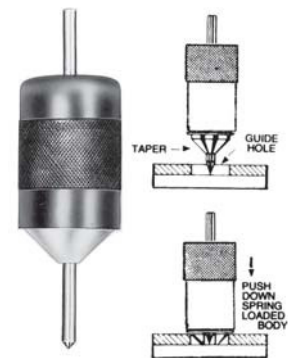
Automatically Transfers Hole Centers

- Unlike conventional slip-fit Transfer Punches, the true diameter of the hole is picked up and the center will be punched in the true position.
- Perfect centering—precision hardened punch.
- Light strike of hammer on punch will mark workpiece.
- All parts made of Hardened Steel for long life.
- Fits metric sizes too.

Model No. 14130, $\frac{3}{16}"$ - $\frac{5}{8}"$ (small body)

Model No. 14131, $\frac{3}{16}"$ - $1\frac{1}{16}"$ (large body)

2 MODELS AVAILABLE



TRANSFER PUNCH SETS

Precision Matched For Tool Makers and Machinists

- Made of finest tool steel.
- Black oxide finish.
- Heat treated.
- Diameters are .0025" undersized to facilitate slipfit use.
- 28 punches— $4\frac{7}{8}"$ long with indexed stand.
- $\frac{3}{32}"$ to $\frac{1}{2}"$ in increments of $\frac{1}{64}"$, plus handy $\frac{17}{32}"$ size punch.



11074

Set No. 11074, In metal stand

CENTER MASTER EXPANDING TRANSFER PUNCHES

- Compact set of 3 takes the place of numerous individual solid punches.
- Each punch expands within its range to pick up the true center holes from $\frac{1}{4}"$ to $\frac{11}{16}"$ dia.
- By turning the knurled head, the punch body expands to the perfect fit in the bottom of the hole.
- A light hammer stroke on the top of the center pin provides the desired "Tru-Center" mark.

Set No. 11090 Tru-Center Expanding Transfer Punch Set, range $\frac{1}{4}"$ to $\frac{11}{16}"$. In case.





ORIGINAL FLEXBAR HAND TAPPER & REAMER

Made in U.S.A.

CLOSE TOLERANCE & PERPENDICULARITY BETWEEN HARDENED SLEEVE OF TAPPER AND INSIDE OF TAPPING GUIDE MAKES FOR PERFECT ALIGNMENT. STOPS TAP BREAKAGE.



7/16" Across Flats
Square shank on top of tap wrench accepts conventional tap or socket wrench for large-sized taps.

TAPS HOLES FROM 0 - 80 UP TO 1/2 - 13 OR 1/2 - 20. SIMPLY CHANGE TAP JAWS.

- Jaws are carbonitrided for long life.
- Center drill on stem for floating center.
- Sliding T-Wrench Handle.
- Base of aligner body has 120° Vees hence accepts round parts.
- For changing jaws, slots in body serve as wrench for tightening.

No. 14013

Complete Set with Guide/Holder *Plus* 2 Sets of Jaws

EXTRA JAWS:

No. 14011, Small Spare Jaws (0-80 up to 1/4")

No. 14012, Large Spare Jaws (#12 up to 1/2")



FLEXBAR DIE HOLDERS

Made in U.S.A.

3 MODELS:

2 for Range .080 - 3/8" Thread Sizes,

1 for up to 3/4" Threads

- Ideal for short or medium-run threading of shafts, etc.
- Can be used safely on lathes, milling machines, tapping heads, etc.
- One piece body.
- Main body 1 1/2" dia. x 1" length, counterbored for chip clearance.
- Set screw 10-32 (2 each).
- 1/2" dia. shank 2" long, I.D. 25/64".

Model No. 14004, Electroless Nickel Plated For 1" O.D. Threading Dies

Model No. 14005, Electroless Nickel Plated For 1 3/16" O.D. Threading Dies

EXTRA-LARGE DIE HOLDER

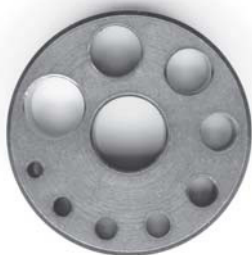
For 1 1/2" Threaded Dies • CAPACITY: 1/4 - 20 up to 3/4 - 16

- Main Body Diameter — 2"
- O.D. of Shank — 3/4" diameter
- I.D. of Shank — .570"
- Length of Shank — 1 7/8"
- Overall Length — 3 1/8"
- Black Oxide Finish

Model No. 14065, Extra-Large Die Holder

FLEXBAR PRECISION TAP GUIDE

Made in U.S.A.



Precision hardened Tap Guide Block for quick and accurate alignment of hand taps ranging from #0 through 5/8".

Actual size: 2-1/8" diameter X 3/4" high.

Model No. 14010, Precision Tap Guide



THE SIMUL-CUT™ FLY CUTTING SYSTEM

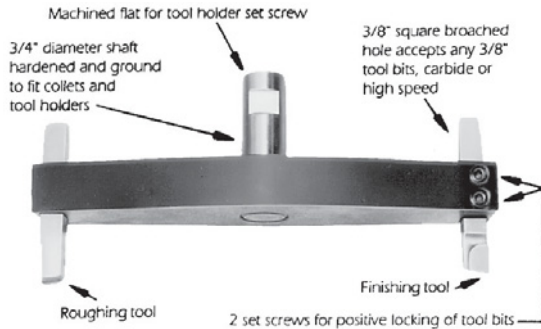
Large Capacity Combination Roughing & Finishing Fly Cutting Tool System for CNC and Conventional Milling Machines.

Made in U.S.A.

With Flexbar's new **SIMUL-CUT** Fly Cutters you can now expect **Better Surface Finish** and **Increased Productivity** over conventional fly cutting methods.

HOW DOES IT WORK?

By setting the finishing tool bit lower than the roughing tool bit, roughing and finishing operations are achieved **simultaneously!**

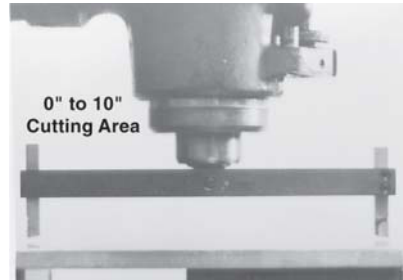


Model No.	Size
19003	3" Fly Cutting Tool
19004	4" Fly Cutting Tool
19005	5" Fly Cutting Tool
19006	6" Fly Cutting Tool
19007	7" Fly Cutting Tool
19008	8" Fly Cutting Tool
19009	9" Fly Cutting Tool
19010	10" Fly Cutting Tool

Above sizes each include 2 Tool bits and 1 hex wrench

FEATURES:

- Made of Carbon Steel and black oxide treatment to prevent corrosion.
- Precision machined and tapered for perfect balance to reduce vibration.



DISPOSABLE METAL ETCHING PEN



- Indispensable anyplace where metals, hardened as well as thin walled, have to be marked or identified.
- Strong effect on heavy metals, stainless steel, iron, copper, brass, nickel, tin, lead.
- No electrical flux is necessary. A special acid solution flows like ink in a felt-tip pen and a permanent etch is produced on the metal.
- Leaves distinctive, smudge-proof, black markings.
- Ideal for toolroom use and marking in the machine shop.
- Apply on clean surface. After application wipe dry with oily cloth.



Model No. 11098D, Metal Etching Pen



UNIQUE

FLEXBAR AQUAFLO® COOLANT DISPENSERS

Deluxe water-soluble oil dispensers enable you to take even heavy cuts such as in "flycutting". Compact in size, one-knob control instantly starts up and shuts down the nozzle. Spray settles on cutting tool and workpiece; will not clog or fog up your plant. Minimum Air Pressure 25 PSI with Maximum 80 PSI. Built to Last.



14015

SINGLE AQUAFLO®

Single coolant nozzle comes with bracket for fast attachment on to any 1/4" dia. fitting on your machine tool. Supplied with 2 each 4 foot length lines; one NPT fitting air line and one suction hose line. Works with any coolant container (not included).

14014 Made in U.S.A.

Model No. 14014, Single Aquaflo

Model No. 14015, Aquaflo with Aquastand

Model No. 14059, Aquastand Only

UNIVERSAL SPRING WINDER



14009

Make Your Own Perfect Springs • Made in U.S.A.

Tension or compression springs, electrical coils, etc., of any length or inside diameter made quickly and simply without the expense of setting up special machinery.

SPECIAL FEATURES OF THE UNIVERSAL SPRING WINDER:

- Wire being fed through the handle ensures absolute safety in operation.
- The tension of the wire can be easily adjusted both before and, if required, during actual operation.
- Any thickness of wire can be used up to 3/16" dia.
- Distance between the separate turns of the spring can be preselected and fixed in a reliable manner.
- Compact in design and easy in operation.

Model No. 14009, Universal Spring Winder, Instructions included.

PIN CHUCK SET



For holding small drills, taps, etc. Overall length 2 1/2". Black Oxide Finish.
3 Interchangeable Collets included:

- Small Collet
- Medium Collet
- Large Collet

CAPACITY
0-1/32"
1/32"-1/16"
1/16"-3/32"

Set No. 14080, Flexbar Pin Chuck Set

FLEXBAR REFRACTOMETERS - COOLANT STYLE



Features:

- Accurately measures coolant concentration
- Quick and easy procedure
- Just a few drops needed for test
- Optimize coolant and tool life

Model No.	Type	Range
15435	Synthetics	0-10%
15436	Water Soluable/Synthetics	0-18%
15437	Water Soluable	0-32%
15438	Propylene/Ethylene/Battery	N/A

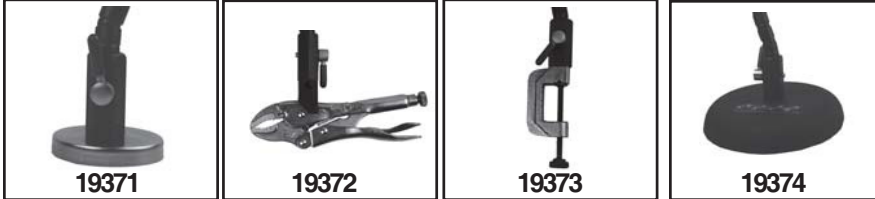


FLEXBAR LED FLEXI-LAMP

Advanced Technology 15-LED Lamp Providing Up To 1000 Hours Continuous Use.
Light Runs On 3 AAA Batteries

High Intensity, Cordless, Heavy-Duty Aluminum Light Is Mounted On Our Original Flexbar® Instant Positioning - Instant Locking Arm.

5 MODELS AVAILABLE WITH A CHOICE OF MOUNTING OPTIONS



ORDERING:

1. **Model No. 19370**, Flexi-Lamp on V-Bottom On/Off Mag Base
2. **Model No. 19371**, Flexi-Lamp on Disc Mag Base, 3 1/8" dia.
3. **Model No. 19372**, Flexi-Lamp on No. 7CR Vise Grip (U.S.A.)
4. **Model No. 19373**, Flexi-Lamp on C-Clamp, 1 3/8" Capacity
5. **Model No. 19374**, Flexi-Lamp on 6" dia. Weighted Base

Also Available:

Model No. 19375, 15-LED High Intensity Light, 4" Long

FLEXBAR HIGH INTENSITY COOL LED MACHINE LIGHTING

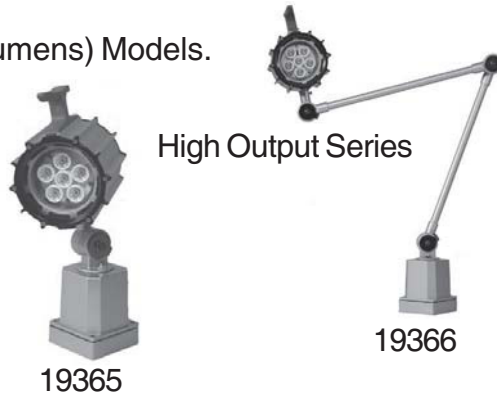
Featuring Waterproof Spot-Light Illumination With Highly Flexible Mounting and Positioning Possibilities

Fully sealed against the impingement of water, synthetic, and petroleum based fluids, Flexbar's new LED series Lights meets the stringent IP65 waterproof standards. Due to the rugged design, these fixtures are suitable for applications where extreme vibration shall be encountered. Our LED's provide 50,000+ hours of trouble free service.

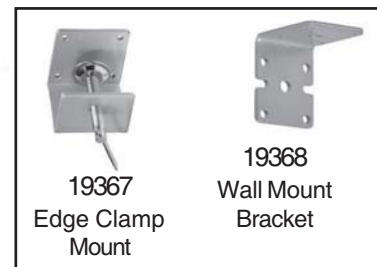
Deluxe 9W LED (540 total Lumens) Models.

Specifications:

- 120V-277V AC, 50/60HZ (24V Available Upon Request)
- 6 ft., 3 Prong Molded Cord
- "No Heat" Spot Light
- Direct Mount Pivoting Head
- Built-In Electronic Transformer
- Approvals: CE, IP65
- Mounting Options: See Below



WATER PROOF
IP65
UNDER PRESSURE



High Intensity Series:

Model No. 19365, High Output 6-LED Machine Light, Direct Pivot Mount

Model No. 19366, High Output 6-LED Machine Light, 32" Articulating Arm

Model No. 19367, Edge Clamp Mount for High Output Models

Model No. 19368, Wall Mount Bracket for High Output Models

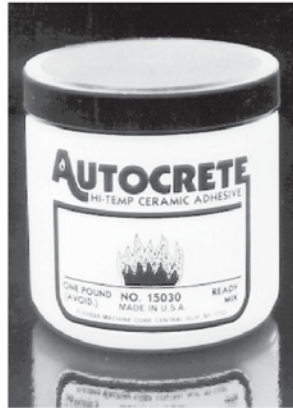
FLEXBAR®

Made in U.S.A.



AUTOCRETE™
HI-TEMP CERAMIC ADHESIVE

- It's easy to use and it's Sodium free!
- Superior electrical insulation properties.
- Self-Curing Ceramic Adhesive, Coating and Filler.
- Conducts heat. (High heat conductivity).
- Resists thermal shock and ultra-high temperatures.
- High temperature strength and stability.
- Provides optimum dielectric strength, is moldable.
- Finer, more uniform particle size distribution.



GOOD TO UP TO 3000°F FOR USE IN:

Lamps, appliances, heater, furnaces, resistors, and elements. AUTOCRETE is a white, odorless powder that, when mixed with water, delivers outstanding bonding characteristics ideally suited to applications that demand superior electrical insulation properties.



MIXING: Mixing is quick and easy: simply combine 12 to 16 parts of water (depending on your application requirements) to 100 parts of AUTOCRETE (by weight), and stir vigorously to a creamy, consistent texture. Mix all the water and all the AUTOCRETE together at once: do not add water gradually. And do not add more water as the mixture thickens; if you do, you will weaken the cement.

Order No. 15030, 1 lb. Jar

Order No. 15032, 60 lb. Pail

AUTOCRETE™—cures when mixed with water by CHEMICAL REACTION!

Physical Properties:

Color	White
Screen Analysis	90% ≤ 325 Mesh
Coefficient of Thermal Expansion	5.6 x 10 ⁶ in/in/°F
Compression Strength	5000 psi ± 500 psi
Thermal Conductivity	10 BTU/ft ² /hr/°F/IN
Maximum Service Temperatures	3000°F
Volume Resistivity	
@ 70°F	10 ¹¹ ohm-cm
@ 750°F	10 ¹⁰ ohm-cm
@ 1475°F	10 ⁹ ohm-cm
Dielectric Strength	
@ 70°F (21°C)	77 to 103.5 volts/mil
@ 750°F (300°C)	24 to 39.5 volts/mil
@ 1475°F (800°C)	13.5 to 24 volts/mil
Chemical Resistance	Does not exhibit resistance to acids or alkalis. Very oil resistant.
Tensile Strength	900 psi
	<i>(Stronger than our competitors' product)</i>

HIGH TEMPERATURE

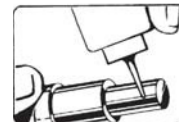
ROCKSETT™

THE ALL-PURPOSE ENGINEERING ADHESIVE CERAMIC CEMENT ...ONE GRADE DOES IT ALL!

Locks, Seals & Bonds—Nuts, Screws, Shafts, Keys, Splines, Pipes, Flanges, etc. INCREDIBLE TEMPERATURE RESISTANCE

(-350°F) up to 2,015°F

- Electrical insulation - for both A.C. and D.C. up to 20 Radio MHz (Mega/Hertz).
- Non-toxic - odorless - non-flammable.
- Rocksett with stands oil, fuels, acids, alkalis.
- Long shelf life.
- No mixing or priming required.
- Can only be removed by a hot water soak



BONDS CERAMIC, GLASS, METALS... EVEN KEYLESS SURFACES.

MODEL NO.	CODE (ROCKSETT)	SIZE	DROPPER BOTTLE
15014	R-2	2 oz.	YES
15015	R-4	4 oz.	YES
15016	R-6	1 Gal.	NO



AUTOSTIC

Hi-Temp Industrial Grade Adhesive Cement



AUTOSTIC® — A ceramic Inorganic Compound is a major advance over the 2-part epoxy resin type adhesives. Almost limitless applications in a wide range of industries. Adheres to Keyless Surfaces, e.g. Polished Glass to Polished Silver. Withstands reverse stresses at all temperature variations.

- **IT BONDS • IT'S A FILLER •**
- **IT'S A COATING •**
- **IT'S A HEAT AND ABRASION BARRIER •**

Impervious to oil, gasoline, acids and alkalis including concentrated sulfuric acid - has low thermal conductivity. Excellent electrical insulation for all voltages whether AC or DC and up to 20 radio MHz. • Coat electrical windings for motors (replacing shellacs).

APPLICATIONS: Coats Glass to Withstand Higher Temperatures — Glass to Metal — Glass to Ceramics — Metal to Metal — Asbestos to Glass — Ferrite to Ferrite — Glass to Ferrite — Carbon to Metal — Sealing Castings — Gas joint sealing — electric muffle linings — solder mask-fuse coatings — masks for heat treating furnace kilns — coats brick and mortar — coke burning appliances. Instrument Assemblies — Fill in cracks in stoves: thermocouples — brake linings — Quartz to Metal — Induction coils — Thermocouples Coating — Magnets — Potting — Insulators — Thermocouples — Repair tube furnaces — high temperature caulking — coat wooden patterns — WILL NOT ATTACK ANY METALS.

MOLDABILITY: Can be molded using polyethylene, teflon or nylon molds or make molds from inert-high density plastics. Can be machined — milled — drilled — tapped — sawcut — mold with additives such as mica dust* providing additional insulating properties.

INDEPENDENT TESTS PROVE THE STRENGTH OF AUTOSTIC

Tensile Strength: 250 lbf/in² (1.75 Nmm²)
Shear Strength: 450 lbf/in² (3.15 Nmm²)

DAMPENS NOISE & VIBRATION TO LESS THAN 80 DECIBLES—
AUTOSTIC HAS DEGREE OF FLEXIBILITY.

ABSOLUTELY SAFE • NO HEALTH HAZARDS

Autostic has been passed as "Safe to Use" in several countries which have extremely strict legislation.

TESTING OF AUTOSTIC

Compressive Strength	28.4 N/mm ²	(4100 psi)
Tensile Strength (between steel plates)	1.7N/mm ²	(250 psi)
Maximum Tensile Stress (bending test)	7.1 N/mm ²	(1030 psi)
Shrinkage	1.5%	
Density	2.08 g/cm ³	(130 pcf)
Hardness	VPN6	(1 kg load)
Volume Resistivity	2.9 x 10 ⁹ ohm/cm	
Dielectric Constant	41.2	
Electrical Capacitance	3.75 x 10 ⁹ Farads	
Coefficient of thermal expansion (linear expansion)	18.1 x 10 ⁻⁶ 1/K	
	(or 18.1 x 10 ⁻⁶ mm/mm/°C or 10.1 x 10 ⁻⁶ in/in/°F)	

LOW SHRINKING...LESS THAN 1%

Electrical—Domestic Appliances—Electronics—Coal Mines—Manufacturers of Stoves, Furnace & Boilers—Glass Manufacturers—R & D—Gas Appliances—Ceramics to Metal

MANUFACTURING FIREPROOF BULKHEAD PANELS ON SHIPS
FIREPROOFING BUILDING MATERIALS PANELS, CEILING TILE, ETC.
ACID TANKS—KILNS—CHEMICAL SEWERS

Model No.	Code	Size	Viscosity
15001	FC-4	1 lb. Can (500g)	Thin (Spray On)
15002	FC-6	1 lb. Can (500g)	Standard (Brush On)
15003	FC-8	1 lb. Can (500g)	Thick (Trowel On)
15006	FC-8	7 lb. Can (3kg)	Thick (Trowel On)

*For greater electrical insulating properties add Mica Dust



Made in U.S.A.

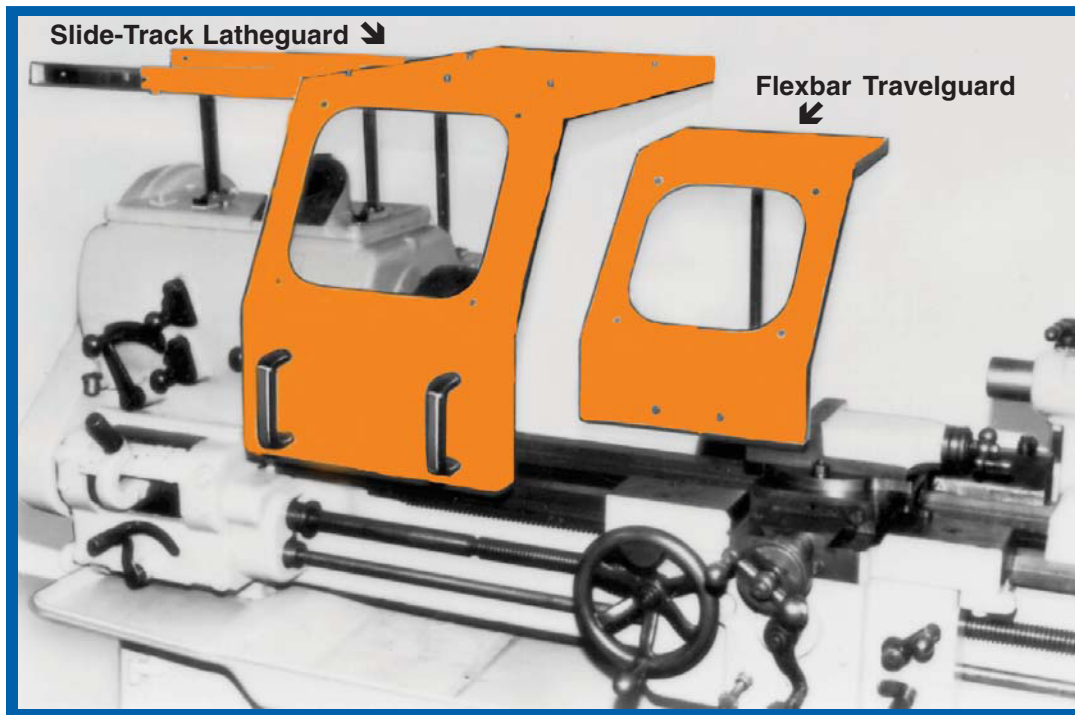
GET ON THE TRACK WITH

SLIDE-TRACK LATHEGUARD™

(Sliding Lathe Shields)

HEAVY-DUTY 14 GAUGE STEEL SHIELDS WITH LEXAN® WINDOWS MOUNT OVER HEADSTOCK AND SLIDE OVER CHUCK FOR MAXIMUM PROTECTION! ALLOWS EASY ACCESS TO THE POINT OF OPERATION WHEN POWER IS OFF.

FITS CONVENTIONAL LATHES AND CNC MACHINES
TWO STYLES AVAILABLE: "MINOR" AND "MAJOR"



Above: "MAJOR" SLIDE-TRACK LATHEGUARD (left)
with FLEXBAR TRAVELGUARD (right - See Page 168)

- The "Minor" Slide-Track Latheguard features two (2) $\frac{3}{16}$ " thick LEXAN® windows. Being situated on the top and front inclined panels, these windows provide excellent visibility for the operator. The front panel hinges up to allow access to the controls and settings of the machine - The "Minor" is designed to guard lathes having chucks ranging from 10" diameter up to 24" diameters.
- The "Major" Slide-Track Latheguard provides maximum operator protection on standard machines or large CNC lathes with chucks ranging up to 48" diameter. These guards incorporate one LEXAN® front panel window and do not require a top window.

SHIELDS SUPPLIED WITH OSHA ORANGE BAKED ENAMEL PAINTED FINISH FOR LONG WEAR

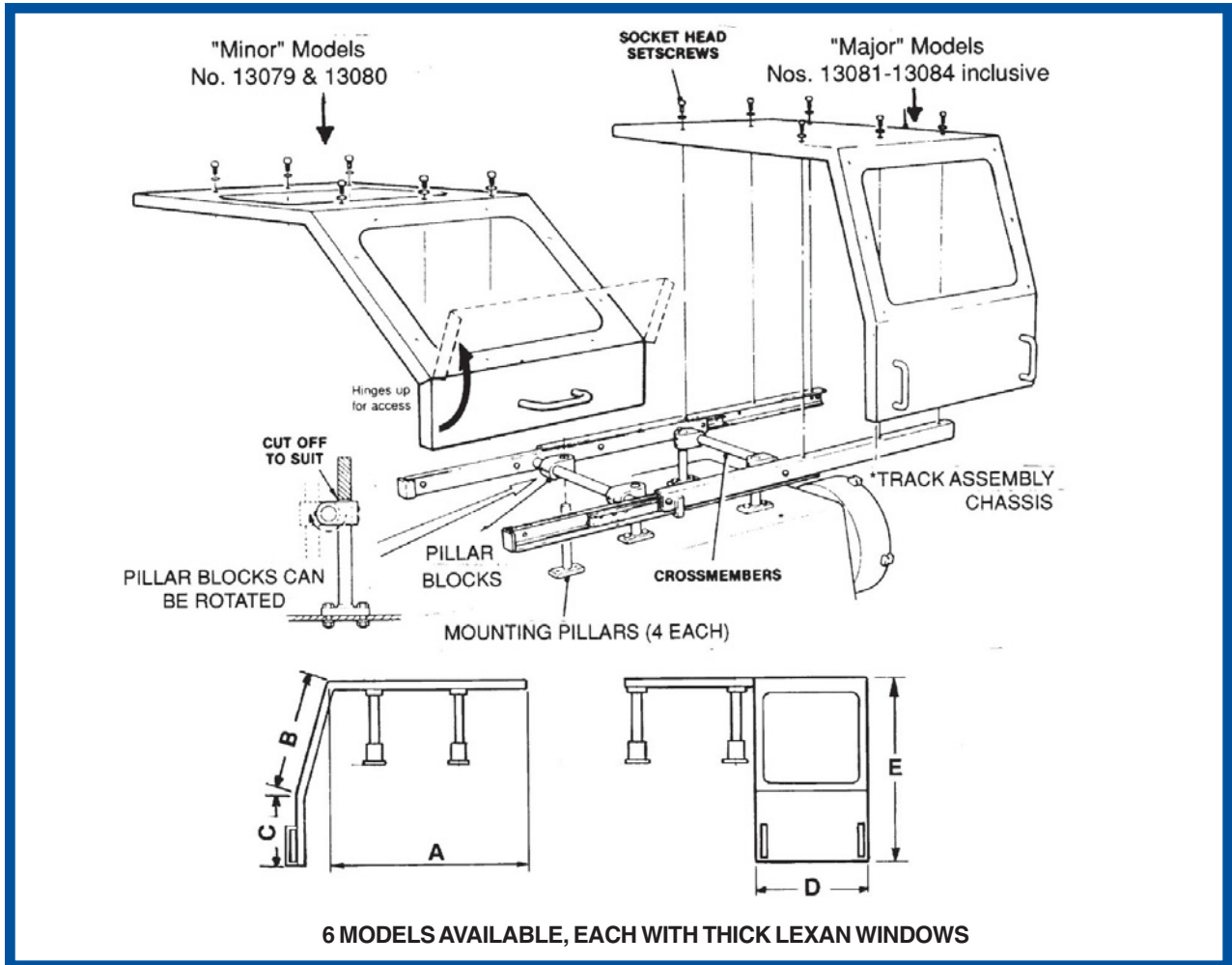


Made in U.S.A.

SLIDE-TRACK LATHEGUARD™

SPECIFICATIONS AND ORDERING:

You can now install a professional heavy-duty guard on any size lathe. Simply screw the 4 pillar posts supplied at 4 sites around the headstock and then slip on the track assembly chassis. Now mount the shield. Pillar posts, in relation to crossmembers are adjustable vertically hence easily positioned around the headstock without interference. *All hardware is included with easy-to-follow instructions.*



Model No.	Chuck Capacity	Dimensions				
		A	B	C	D	E
13079	24"	17"	19"	6"	14"	17.75"
13080	24"	17"	19"	6"	24"	17.75"
13081	28"	26"	14.88"	8.24"	19.75"	21.10"
13082	32"	27.19"	16.50"	8.71"	19.75"	23.00"
13083	40"	29.56"	19.75"	9.81"	19.75"	26.90"
13084	48"	33.88"	23.00"	10.85"	19.75"	30.75"

(*SUPPLIED COMPLETELY ASSEMBLED) REPLACEMENT WINDOWS AND PARTS SUPPLIED UPON REQUEST



**MADE OF
*LEXAN®
Certified**

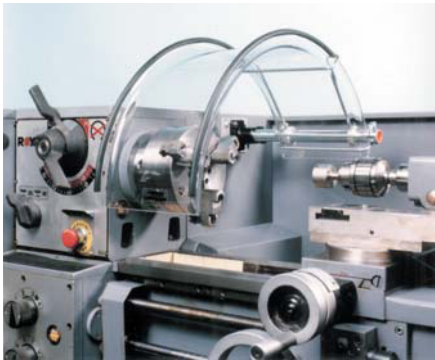
Made in U.S.A.



**EXCEEDS O.S.H.A.
REQUIREMENTS**

**NEITHER
RAZOR-SHARP CHIPS NOR
BROKEN TOOL BITS WILL
PENETRATE THE LEXAN® SHIELD**

- Rib reinforced
- Robust construction
- Light in weight
- Swings away easily



**Prevent Accidents With
LATHEGUARD™**

Clear LEXAN, Semi-Circular Wrap-a-round Guards

- Heavy Duty Cast Mounting bracket supplied.
- Heavy Duty Chrome-plated extension tube and hardware.
- Ready to mount; all you do is affix mounting bracket with two screws.
- Back of shield is reinforced with plated wire-form housing.
- Locks in swing away or functional positions.
- Accepts 3 or 4-Jaw Chucks.

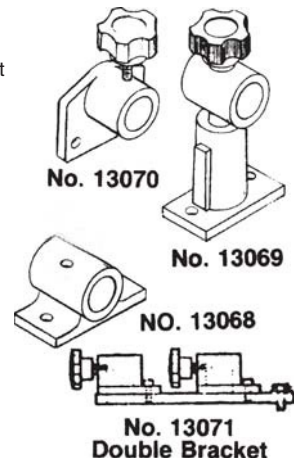
Model No.	Suggested Lathe Size	Center Height (A) (Shield Height)	Use With Chucks	Shield Width (F)	Shield Length (B)	Tube Length (E)
12999	Very Small Lathes	3.9"	Up to 6" Dia	6 ¼"	7.8"	10"
13060	6 to 12	6"	Up to 8" Dia	6 ¼"	11.8"	10"
13061	12 to 16	8"	Up to 12" Dia	8"	15.8"	11½"
13062	16 to 20	10"	Up to 16" Dia	8"	19.70"	13"
13064	20 to 24	13"	Up to 20" Dia	8"	23.6"	13"
13059	Extra Long Tube (E) for lathes where chuck sticks out a long way from headstock					16"

REPLACEMENT SHIELDS AVAILABLE. SEE NEXT PAGE.

***ALL LATHEGUARDS SUPPLIED WITH MOUNTING BRACKET NO. 13070**

Order from below if your Lathe needs either #13068 or #13069 Bracket, or No. 13071 Double Bracket

Model No.	Description
13068	For mounting to top or back of headstock.
13069	Extension or telescoping type for top or back mounting. Range: 3.25" to 5"
13070	If you want an extra mounting bracket.
13071	Double bracket: this enables you to mount the next larger shield when changing from a 3 jaw chuck to a 4 jaw chuck.
13075	Long Reach Latheguard Mounting Kit for easy mounting of Latheguard on large machines or difficult applications. Mount can be positioned up to 27" from Latheguard.



*REG. TRADEMARK OF GENERAL ELECTRIC CO.



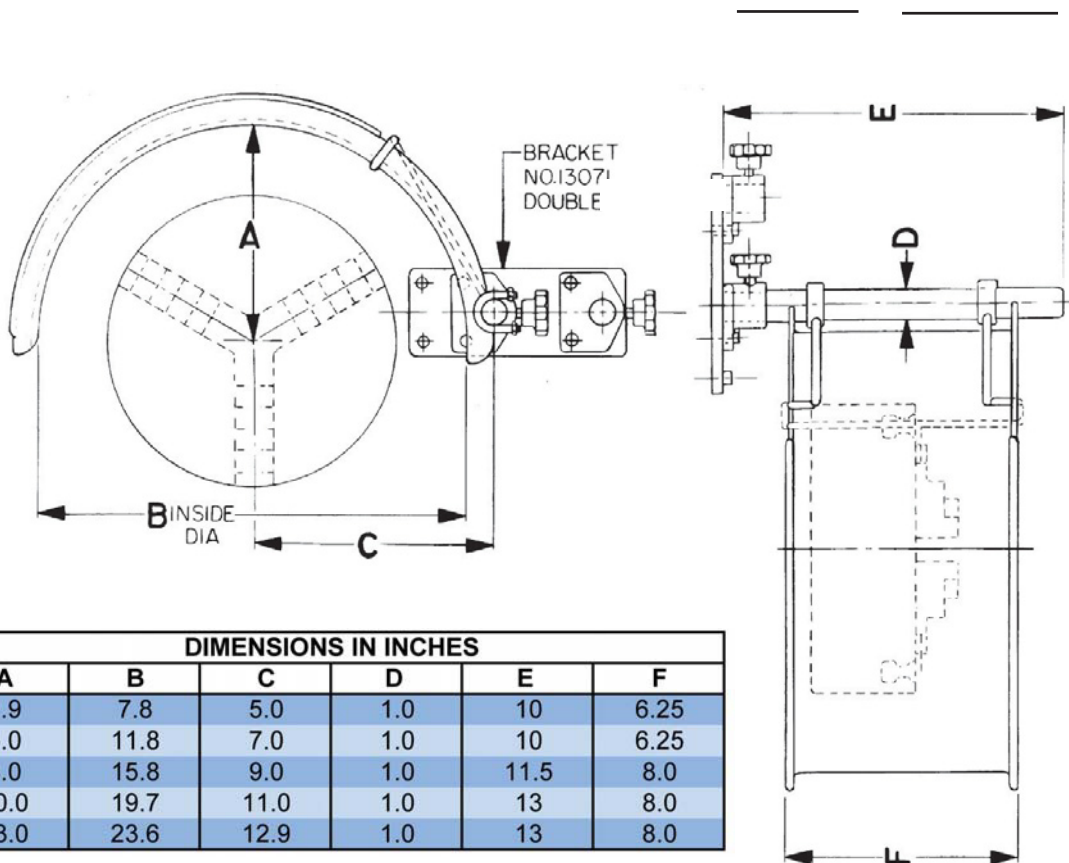
Made in U.S.A.

THE FLEXBAR LEXAN LATHEGUARD™

Information and Specifications HINTS, FOR SELECTING THE CORRECT LATHEGUARD!

- 1- The Chuck Diameter being used on your Lathe makes for a good formula.
- 2- Utilize Dimension "A" and other dimensions given in chart shown below.
- 3- On Lathes with center heights of 7 inches or more there is a significant variation in the diameter of a 3-Jaw as against a 4-Jaw Chuck. It may be necessary to install the next larger Latheguard to accommodate for the 4-Jaw Chuck. Keeping a double bracket (No. 13071) on the Lathe makes it possible to switch your latheguard from small to larger size and vice versa, in one minute.
- 4- When calculating Dimensions "A", always allow ample clearance for largest machined part or furthest jaw extension.

**NEITHER RAZOR-SHARP CHIPS NOR BROKEN TOOLS BITS
WILL PENETRATE THE LEXAN SHIELD**



Model No.	DIMENSIONS IN INCHES					
	A	B	C	D	E	F
12999	3.9	7.8	5.0	1.0	10	6.25
13060	6.0	11.8	7.0	1.0	10	6.25
13061	8.0	15.8	9.0	1.0	11.5	8.0
13062	10.0	19.7	11.0	1.0	13	8.0
13064	13.0	23.6	12.9	1.0	13	8.0

REPLACEMENT SHIELDS (only) for LATHEGUARD

Model No.	Shield Width (F)	Shield Length (B)	Shield Height (A)	Replacement For Latheguard Model No.
13072	6¼"	7.8"	3.9"	12999
13065	6¼"	12"	6"	13060
13066	8"	16"	8"	13061
13063	8"	19.70"	10.25"	13062
13067	8"	24"	12"	13064

FLEXBAR E.I.M.B.™

Electrical Interlocking Mounting Brackets

For use with all Flexbar Latheguards and Small Chuckguards (see p. 164 & 167)
4 MODELS AVAILABLE TO SUIT INDIVIDUAL LATHE DESIGNS

Functioning: Once wired to motor-control circuit (motor starter), the cam-operated limit switch opens the contacts when the safety shield is tilted up . . . and the machine stops running (see fig. 1 and fig. 2).

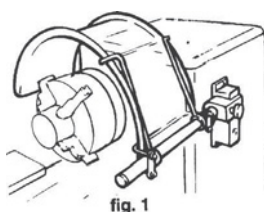


fig. 1

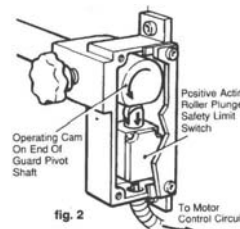


fig. 2

SPECIFICATIONS

Limit Switch:

- Roller-type
- Roller and head are metal in sealed plastic housing
- Electrical life - 1 million cycles
- Mechanical life - 30 million cycles
- NEMA 4 rated
- Approvals: UL A300, UL E140497, CSA A 300 & CSA LR26716 M20
- Snap acting SPDT INO-INC with double break ensures switch will open in event of minor contact welding
- Contact block & roller head are modular hence replaceable without discarding entire device



E.I.M.B. Housing:

- Heavy-duty casting
- Bright yellow painted finish

Electrical Conduit:

- Extremely flexible and withstands repeated flexing
- recognized - exceeds industry standards
- Liquid tight vs. oil, water and most chemicals
- * and certified and recognized

*Fittings:

Inside is nylon with BUNA-N gland which seals the two each (2) 18 gage wires, plus a grounding wire.

AVAILABLE IN 4 DIFFERENT MOUNTING STYLES:

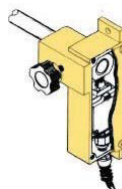
•Bright Yellow Painted Finish

Included with each E.I.M.B. model:

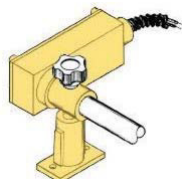
- Electrical Interlock Box with safety limit switch, wiring and mounting bracket with locking knob
- Special Latheguard tube
- Wiring diagram.

Dimensions of rectangular box portion of E.I.M.B.:

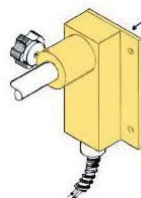
Approx. 6-5/8 X 2-3/8 X 1-5/8 inches (168mm x 60mm x 41.3mm)



Model No. 17001 (Style 1)
 Style 1 - Mount at back of lathe (see fig. 1). For all shield sizes.

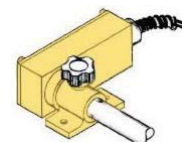


Model No. 17002 (Style 2)
 Style 2 - Telescoping & Swiveling Style. For lathes with irregular or dome-shaped headstock, E.G.- Hardinge. For all shield sizes.



Model No. 17003 (Style 3)
 Style 3 - Mounts on face of headstock. Backplate can be reversed 180° on housing thus flange portion can be on right (as shown) or on left side, if reversed. All shield sizes.

Flange (Reversible)



Model No. 17004 (Style 4)
 Style 4 - Top mounting for flat top of headstock. All shield sizes. NOTE: Observing the lathe structure and taking a few measurements makes proper selection easy.

ABOVE E.I.M.B. MODELS DO NOT INCLUDE LATHEGUARD SHIELDS/ASSEMBLIES. REFER TO PAGES 164 & 167 TO ORDER LATHEGUARDS.



Made in U.S.A.

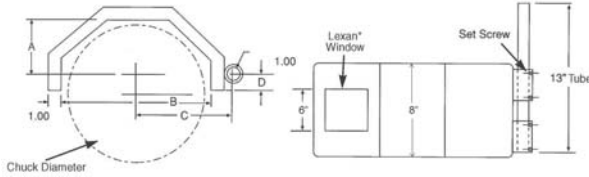
THE FLEXBAR SMALL CHUCKGUARD™

Designed For Heavy Duty Applications Where A Steel Shield Is Recommended On Lathes Up To 20" Diameter



See Through
Lexan® Window

Heavy Gauge
Steel Bright Safety
Painted Finish



Special Features:

- Available with Flexbar Electrical Interlocking Mounting Brackets (see page 166).
- Heavy-Duty Cast Mounting Bracket supplied (Model No. 13070).
- Optional Mounting Brackets for various applications are available (see page 164).
- Heavy-Duty Chrome-plated Extension Tube and Hardware.
- Ready to mount; All you do is affix mounting bracket with two screws.
- Locks in swing away or functional positions.
- Accepts 3- or 4-Jaw Chucks (Note: Some 4-Jaw Chucks may require a larger size).

INCLUDES HARDWARE & MOUNTING BRACKET No. 13070

Model No.	Center Height (Shield Size)	Use with Chucks	C	Shield Length
13250	9.5"	Up to 16" dia.	10.25"	19"
13251	10.5"	Up to 20" dia.	12.25"	21"
13059	Extra Long Tube (16") for Lathes where Chuck extends past width of guard			

* Reg. Trademark of General Electric Co.

FLEXBAR CHUCKGUARD™ SUPER HEAVY DUTY STEEL GUARDS

Made of 14 Gauge Steel for Chucks up to 49" Diameter



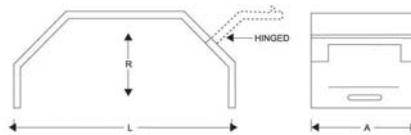
Large Diameter Chucks are, by themselves DANGEROUS! (Even more so at high speed settings.) Chuckguard protects the operator and the "passer-by" from serious injuries.

Each Chuckguard is supplied complete with mounting hinge, plate and support bar for mounting on headstock of lathe.

Features:

- Hinged front panel allows easy access to the chuck
- Lexan window for easy viewing
- Comes complete with mounting bracket and support bar for mounting on headstock
- Bright safety painted finish
- Exceeds O.S.H.A. requirements

Quick Reference Guide for
Selecting Correct Flexbar Steel
CHUCKGUARD



**ALSO AVAILABLE....
EXTRA LARGE CAPACITY
CHUCKGUARD**

Model No.	Dimensions			Chuck Diameters
	A	R	L	
13056	14"	17½"	35"	20", 24", 25", 26", 28", 30", 30½"
13057	14"	20"	40"	30½", 32", 36"
13058	14"	25½"	51"	39½", 47", 49"

Custom Built heavy gauge steel chuck shield available for very large diameter chucks up to 74".
Phone or email for more information!

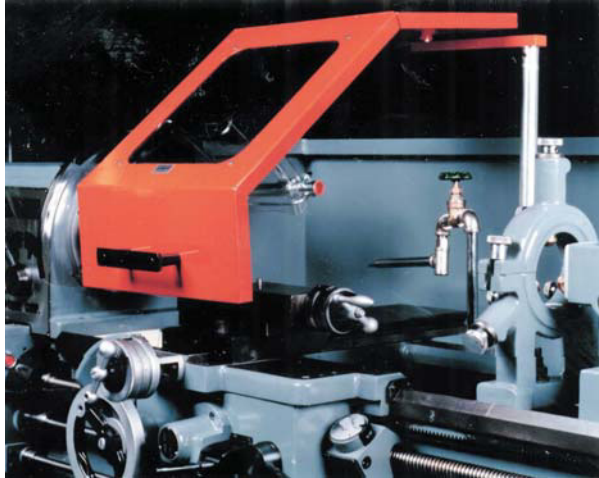


TRAVELGUARD™

MADE IN U.S.A.

CROSS SLIDE TYPE

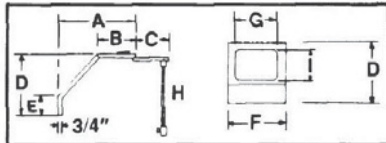
EXTRA-HEAVY DUTY O.E.M. TYPE FOR LATHES, GRINDING MACHINES, ETC. TRAVELS WITH CROSS SLIDE OPERATOR PROTECTION WHEREVER TOOL IS CUTTING



- Easy to mount on cross slide (tool compound).
- Fully adjustable in all directions—forwards & frontwards.
- Heavy steel construction with thick lexan window.
- Frame is 3/4" construction made of heavy gauge steel with high quality painted finish.
- Front panel is hinged and can be lifted for quick access to machine.

Model No. 13086—20" Chuck Max

Model No. 13087—28" Chuck Max



MODEL NO.	A	B	C	D	E	F	G	H	I
13086	16	8	7 ³ / ₄	13	4	11 ⁷ / ₈	8 ¹ / ₂	20 ¹ / ₂	8 ¹ / ₂
13087	22 ³ / ₄	10 ¹ / ₂	9 ³ / ₄	14 ¹ / ₂	5 ⁵ / ₈	14	9 ³ / ₄	20 ¹ / ₂	10 ³ / ₄

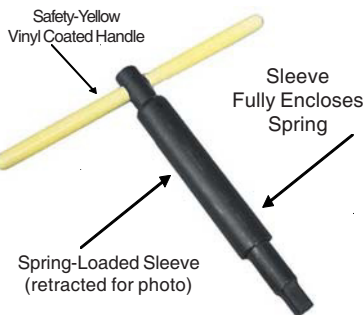
*REG. TRADEMARK OF GENERAL ELECTRIC CO.

FLEXBAR LATHE CHUCK SAFETY WRENCHES

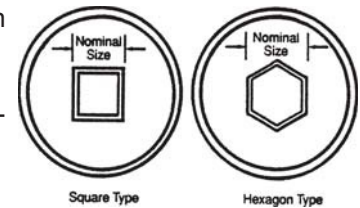
Spring-loaded, self-ejecting chuck wrenches designed for use with lathes and other machines equipped with manually adjusted chucks. Made in U.S.A.



Adjusting the chuck using a spring-load chuck wrench



- Spring-load sleeve ejects the wrench from the chuck after each use
- Chamfered end for easy entry
- Designed to provide proper loads for self-removal of the wrench weight
- **Helps prevent accidents**



Model No.	Nominal Size	Actual Size	Bar Dia.	Overall Dia.	Engagement Length
15470	9/32" SQ	.271"	1"	1.050"	3/4"
15471	5/16" SQ	.303"	1"	1.050"	3/4"
15472	3/8" SQ	.365"	1"	1.050"	3/4"
15473	7/16" SQ	.427"	1"	1.050"	3/4"
15474	1/2" SQ	.490"	1"	1.050"	3/4"
15475	1/2" HEX	.490"	1"	1.050"	3/4"
15476	5/8" HEX	.615"	1"	1.050"	3/4"
15477	9/16" SQ	.552"	1.3"	1.315"	3/4"
15478	5/8" SQ	.615"	1.3"	1.315"	3/4"
15479	11/16" SQ	.678"	1.3"	1.315"	3/4"
15480	3/4" SQ	.740"	1.3"	1.315"	3/4"
15481	3/4" HEX	.740"	1.3"	1.315"	3/4"



Made in U.S.A.

UNIVERSAL MOUNT MILL & GRINDER GUARD

Heavy Duty Steel Frame With Lexan Guards
For Milling Machines and Unguarded Machines Including
C.N.C.'s, Multi-spindles and Grinders
FULLY ADJUSTABLE WITH LONG REACH OPTION AVAILABLE



In use: Guard down



Flip up to change workpiece or tool...no loss in productivity!

Unique universal positioning design is fully adjustable. Frame/shield is mounted and supported by a heavy duty arm and swivel clamp thus allowing the operator to “custom fit” each guard as to overall length, angle and position of shield. Wing-shaped frame/shield protects workers at adjacent machines. Long Reach Extension Kit Model No. 13262 permits positioning of guard up to 40” from mounting point.

- Easy to mount (brackets supplied for most mountings).
- Frame is heavy steel construction with thick Lexan windows.
- High quality painted finish - Bright OSHA color.

Two Sizes Available: **Model No. 13258, 19” W x 16” H**
 Model No. 13260, 26½” W x 16” H

Ordering:

Model No. 13258, Universal Mount Mill/Grinder Guard with 19” W x 16” H heavy duty shield

Model No. 13259, Replacement Lexan window for 13258

Model No. 13260, Universal Mount Mill/Grinder Guard with 26½” W x 16” H heavy duty shield

Model No. 13261, Replacement Lexan window for 13260

Model No. 13262, Long Reach Extension Kit for Model Nos. 13258 and 13260

Includes adjustable extension arm and all connection and mounting hardware



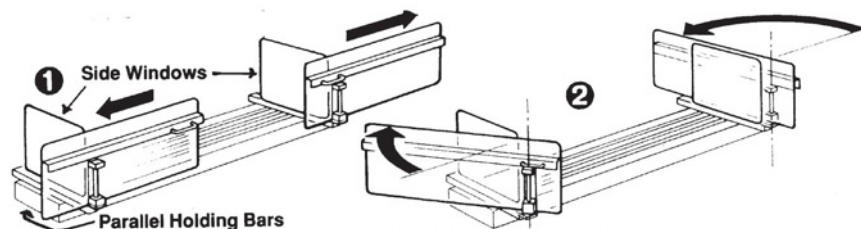
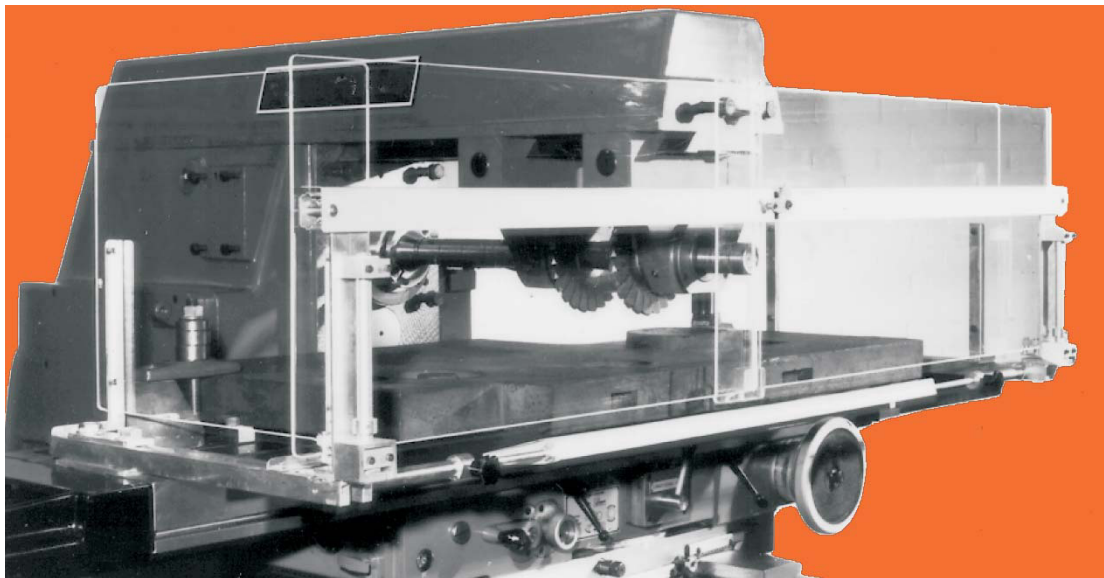
Made in U.S.A.

FLEXBAR TOTALGUARD™

SLIDE AND SWING ASIDE MILLING MACHINE GUARDS
FULLY ADJUSTABLE FOR
VERTICAL, HORIZONTAL AND C.N.C. MILLS

Available in three sizes to fit table lengths from 32" to 76". Heavy-duty construction with high impact resistant transparent Lexan® panels ($\frac{3}{16}$ " thick).

**ALL PANEL HEIGHTS NOW 23 $\frac{5}{8}$ " TALL
ACCEPTS LARGER PARTS SAFELY**



Unique construction allows the front panels to slide and swing aside revealing the whole of the table bed

The Flexbar Totalguard® is supplied in two separate assemblies which are mounted at either end of the table in just minutes. Model nos. 13089 and 13090 consist of two fixed side panels and two front sliding panels which allow the operator quick and easy access for loading and unloading large parts and castings. Model no. 13088 utilizes one front sliding panel and one hinged front panel as well as two fixed side panels. Fully adjustable, the parallel holding bars (see above) enable the guard to move backwards and forwards to cater for vises or parts that overhang the table.



Made in U.S.A.

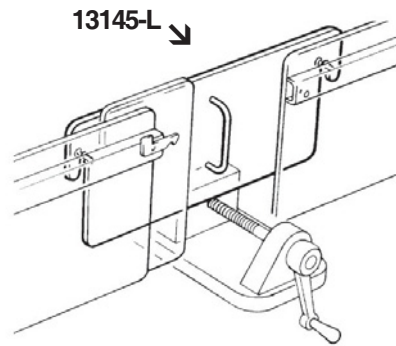
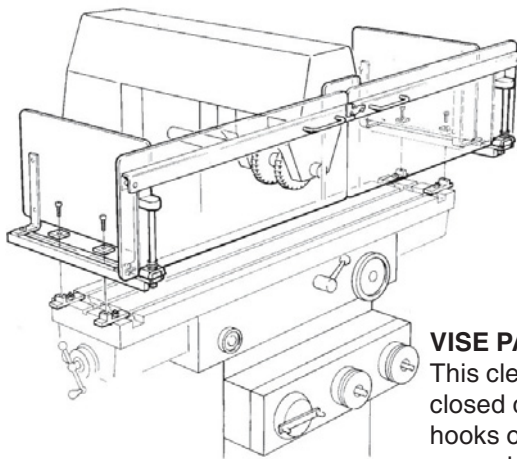
FLEXBAR TOTALGUARD™

FEATURES:

- Fits all milling machines, horizontal or vertical and C.N.C. mills as well.
- Takes up no more than exact width of table.
- Lexan® panels are crystal clear — good and thick and 25 times stronger than safety glass.
- Panels slide and swing aside quickly and smoothly for making setups; loading and unloading.
- Unlike patch quilt-type mill guards, still on the market, Totalguard does not have slots or apertures for hot chips to sneak through.

- Universal Mounting: Special tee-slot slugs fit all sizes of tee-slots so that Totalguard is installed in less than 5 minutes.
- All Lexan® panels butt together like a perfect window when closed yet reveals the entire table bed when opened.

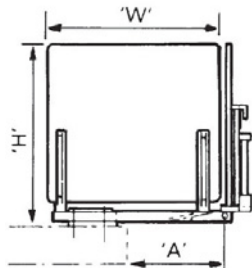
Special C.N.C. Utility Feature
 New parallel holding bars permit bringing Totalguard forward to accommodate 2, 3 or 4 vises which protrude on the lead edge of the table.



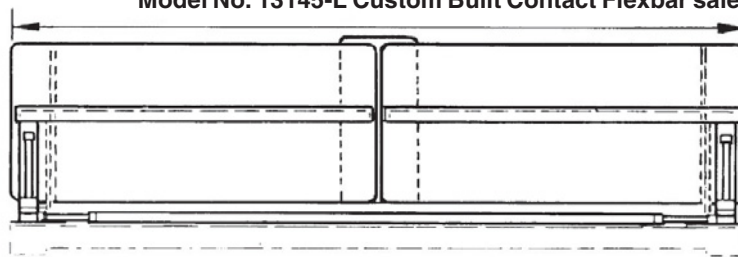
WISE PANEL (optional for 13089 & 13090)

This clear panel covers the gap left when the two front panels cannot be closed completely due to a protruding vise as shown. The guard simply hooks over locating pin (supplied) so it can be fitted or removed in seconds.

Model No. 13145-L Custom Built Contact Flexbar sales for ordering Info.



End elevation showing guard in maximum forward position.
 A=2"(min.) up to 11" (max.)



Front view with sliding guards closed

MODEL NO.	FOR TABLE LENGTH	SIDE PANEL HEIGHT	SIDE PANEL WIDTH	FRONT PANEL HEIGHT
*13088-H	32"-44"	23 ⁵ / ₈ "	19 ¹ / ₂ "	23 ⁵ / ₈ "
**13089-H	44"-56"	23 ⁵ / ₈ "	19 ¹ / ₂ "	23 ⁵ / ₈ "
**13090-H	56"-76"	23 ⁵ / ₈ "	19 ¹ / ₂ "	23 ⁵ / ₈ "

* Has ONE Sliding front door and one hinged front panel.

**Has TWO Sliding front doors of equal size.

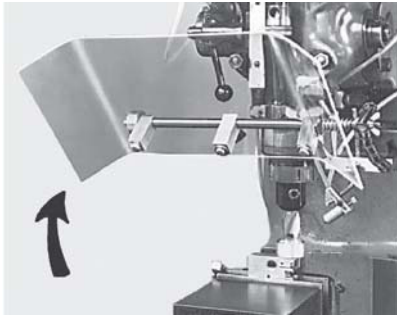


FLEXBAR VISORGUARD

Provides Complete Protection Between Cutting Tool and Operator's Eyes



IN USE: VISORGUARD DOWN



Flip up to change workpiece or tool . . . no loss in productivity!

DOWN-TO-EARTH FEATURES!

1. Flexbar arm permits setting of Visorguard at the correct height and angle for each setup.
2. Flip shield up to load part and down for machining.
3. Special spring-loaded shaft makes shield stay put - no springback.
4. Wing-shaped shield protects workers at adjacent machines.
5. Flexbar locks rigid; has stainless air-craft-grade tension cable.
6. Can be installed in minutes on CNC mills, conventional milling machines and others.

DIMENSIONS:

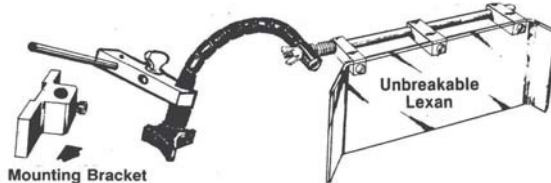
- Shield Size - 16" wide x 8" high
- Flexbar Arm - 10" long
- Mounting Bracket - 1.62" Center to Center hole pattern

Model No. 13055 - Visorguard

Complete with mounting bracket, Flexbar and all hardware including mounting hole and thumbscrew for attaching coolant system.

Model No. 13054

Replacement Shield, 16" wide x 8" high



LONG REACH VISORGUARD™

For Large Milling Machines (vertical and horizontal) and Unguarded Machines Including CNC's.

Due to many requests for VISORGUARDS for larger machine tools, we developed the **Long Reach Visorguard**.

We took a standard Visorguard and made a new body which attaches to a 1" diameter tube 30 inches long. The tube slip fits into our No. 13068 mounting bracket which is included in the device. The 30 inch tube plus the Flexbar Flexarm length provides 40 inches of reach. The extension tube is retractable in the socket of the mounting bracket so that it can be set up for smaller distances from point of attachment to the ideal setting of the Visorguard shield.



MADE IN U.S.A., U.S. PATENT NO. 4,543,021

Model No. 13050, Long Reach Visorguard™

Complete with hardware, tube and mounting bracket.

Replacement Lexan Shield for Long Reach Visorguard:

Model No. 13054

Replacement Cable for Visorguard:

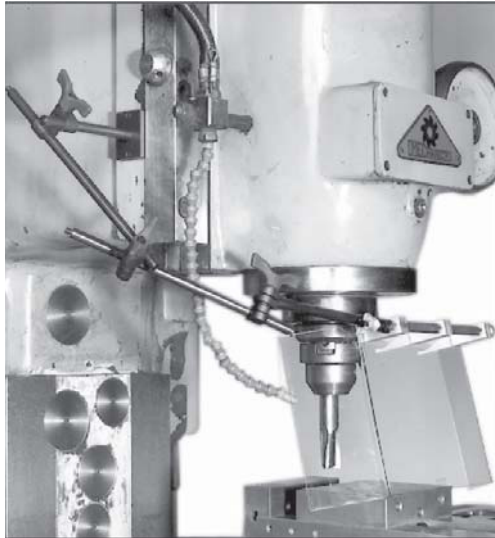
Ball & Thread Cable for all Visorguard Models **Model No. 80063-6**

OPTIONAL SIZES OF VISORGUARD SHIELDS NOW AVAILABLE: See bottom of next page.



Made in U.S.A.

VISORGUARD UNIVERSAL



**Fully Adjustable Long Reach Guard (Lexan®)
For Milling Machines and Unguarded Machines
Including C.N.C.'s, Multi-spindles, Bandsaws, etc.**



Flip up to change workpiece or tool...no loss in productivity!

Unique universal positioning design is fully adjustable. Visorguard shield is mounted and supported by a series of heavy duty arms and swivel clamps thus allowing the operator to "custom fit" each guard as to overall length, angle and position of shield. Wing-shaped Visorguard shield protects workers at adjacent machines.

LONG REACH FROM HEADSTOCK MOUNTING PLATE/POST IS ADJUSTABLE TO 36"

Visorguard Universal consists of:

- Mounting plate with 4" x 1/2" post — just drill and tap into headstock ... supplied with four cap screws
- 2 each 15" x 1/2" arms (24" arms available upon request - phone or fax)
- 3 each 1/2" x 1/2" heavy duty swivel clamps with extra-large wing style locking knob
- 16" x 8" high Lexan® Visorguard shield assembly with 6" attachment post & coupling

Ordering:

Model No. 13047, Visorguard Universal

Model No. 13048, Extra-Wide Visorguard Universal — same as 13047 but with 24" wide x 8" high Lexan® shield (3/16" thick) for larger machines such as multi-spindles

Model No. 13054, 16" x 8" Replacement Shield

Model No. 13046, 24" x 8" Replacement Shield

Other size shields available for Visorguard Universal - see bottom of page.

EXTRA-LARGE VISORGUARD™ LEXAN SHIELDS

Now available for use with all Visorguard™ Models (except 13032). These shields can be used in place of standard 16"W x 8"H shield and attach in seconds.

EXTRA-LONG VISORGUARD SHIELDS ONLY		
Model No.	Width	Height
13046	24"	8"
13073	14½"	12"
13074	15"	16"



New Easy-Mount Visorguard Products- Ideal for Tech-Ed Applications!

MILLING MACHINE VISORGUARD KIT

Provides Complete Protection Between Cutting Tool and Operator's Eyes



Down-To-Earth Features!

- Easy Grab Handle
- Flexbar Arm permits setting of Visorguard at the correct height and angle for each setup
- Mounts on most machines, even with digital readouts, in minutes
- All mounting brackets included
- Shield size 16" wide x 8" high

Model No. 13460, Milling Machine Visorguard Kit

Model No. 13054, Replacement Shield

Model No. 13461, Extra Long 24" Vertical Angle

Model No. 80063-1138, Replacement Flexarm Cable

DRILL PRESS VISORGUARD KIT

Provides Operator Protection from Chips and Broken Drills on Drill Presses and Drilling Equipment

- Easy Grab Handle
- Flexbar Arm permits setting of Visorguard at the correct height and angle for each setup
- Mounts on most machines in minutes
- All mounting brackets included
- Shield Size 6" wide x 6" high with 4" sides

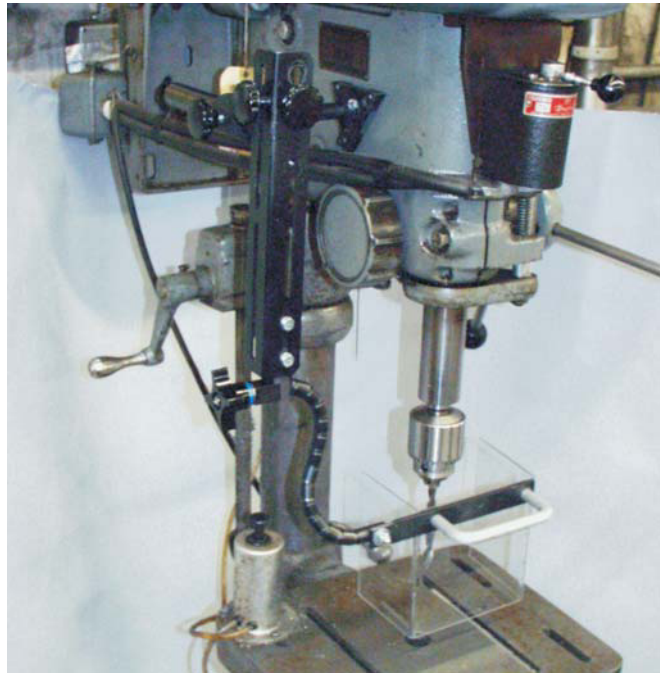
Model No. 13462, Drill Press Visorguard Kit

Model No. 13033, Replacement Shield

Model No. 13461, Extra Long 24" Vertical Angle

Model No. 13463, Extra Long 28" Horizontal Tube

Model No. 80063-1138, Replacement Flexarm Cable





DRILL/CHUCK VISORGUARD

Standard Mount and New Long Reach Mount
Provides Operator Protection From Chips And Broken Drills On Drill Presses,
Milling Machines And Other Drilling Equipment.
Similar features to Flexbar Visorguard Model No. 13055

SAFETY FEATURES INCLUDE:

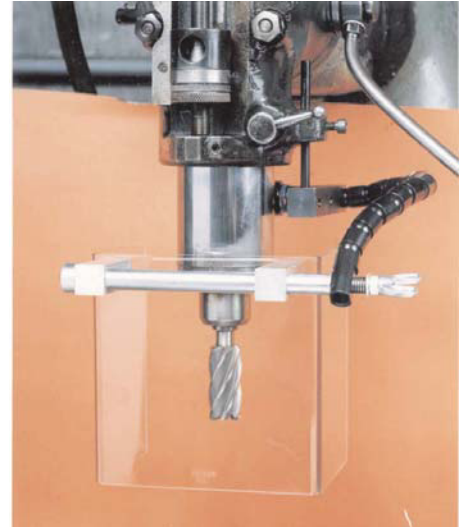
1. Flexbar arm permits setting of guard at the correct height and angle for each setup.
2. Flip shield up to load part and down for drilling.
3. Special spring-loaded shaft makes shield stay put - no springback.
4. Box-shaped shield (90° angled) protects workers at adjacent machines.
5. Flexbar locks rigid; has stainless aircraft-grade tension cable.
6. Can be installed in minutes on drill presses, mills, milling machines and others.

DIMENSIONS:

- Shield Size - 6" wide x 6" high
- Flexbar Arm - 10" long
- Mounting Bracket - 1.62" Center to Center hole pattern

Model No. 13032, Drill/Chuck Visorguard

Complete with mounting bracket, Flexbar arm and all hardware including mounting hole and thumbscrew for attaching coolant system.



Model No. 13032-L, Long Reach Drill/Chuck Visorguard. Same Mount as Model No. 13050. See Page 172.

Model No. 13033, Replacement Shield

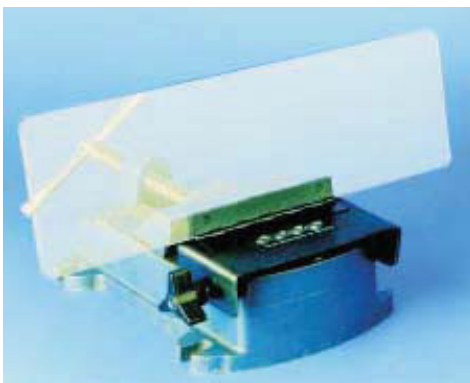
Replacement Cable for Visorguard:

Model No. 80063-6, Ball & Thread Cable for Visorguard



THE FLEXBAR VISEGUARD™

Quick and easy vise mount Lexan® shield helps to protect machine operators from hot chips and coolant spray at the spindle of your machine



Shield dimensions (both Models):
.25" x 5" x 17"

Advantages:

- Easy to use - the Viseguard fits over the end of most standard vises
- Clamps on in seconds
- Flexible - when access to the workpiece is needed, the shield flips down easily (using heavy-duty hinge)
- Deflects chips - chips are deflected down and away from the machine operator
- See-through - allows the operator to view the workpiece while the machining is being performed
- Easy mounting - clamps in place with the twist of a knob
- Shatter resistant - made of high strength polycarbonate

Model No. 13147, for use on standard 6" vise systems

Model No. 13148, for use on standard 8" vise systems



BAND SAW VISORGUARD™

Provides Complete Protection Between Cutting Blade and Operator's Hands and Eyes.



Features Include:

- L" Shaped Lexan Shield, 6" H x 6" W x 4" D
- Easy Position Handle
- Adjustable Tension 9" Long Flexbar Arm Permits Correct Setting of Guard for Each Setup
- Includes Vertical Angle Mounting Bracket with 11" of Height Adjustment
- Kit Includes Mounting Screws and Self Locking Nuts. Simply Drill and Tap 2 Holes and Install

Installs on most band saws with 18" maximum throat height.

Optional extra-long vertical angle bracket assembly available for larger throat height machines. Phone or fax for details.

Ordering:

- Model No. 13464** Band Saw Visorguard Kit
Complete with mounting bracket, Flexbar Arm, shield and all hardware
- Model No. 13465** Replacement Shield with Handle
- Model No. 80063-1138** Replacement Flexbar Arm Cable

SCROLL SAW VISORGUARD KIT

Provides Complete Protection Between Saw Blade and Operator's Eyes

- Easy Grab Handle
- Flexbar Arm permits setting of Visorguard at the correct height and angle for each setup
- Mounts on most machines in minutes
- All mounting brackets included
- Shield size 6" wide X 8" high

- Scroll Saw Visorguard Kit.....**Model No. 13466**
- Replacement Shield.....**Model No. 13467**
- Replacement Flexarm Cable....**Model No. 80063-1138**





UNIVERSAL POLE MOUNT ADAPTER KIT

Ideal For Use With Flexbar Visorguard Safety Guards
(Shown on Pages 172-176)



Take any Flexbar Visorguard and Pole mount it.

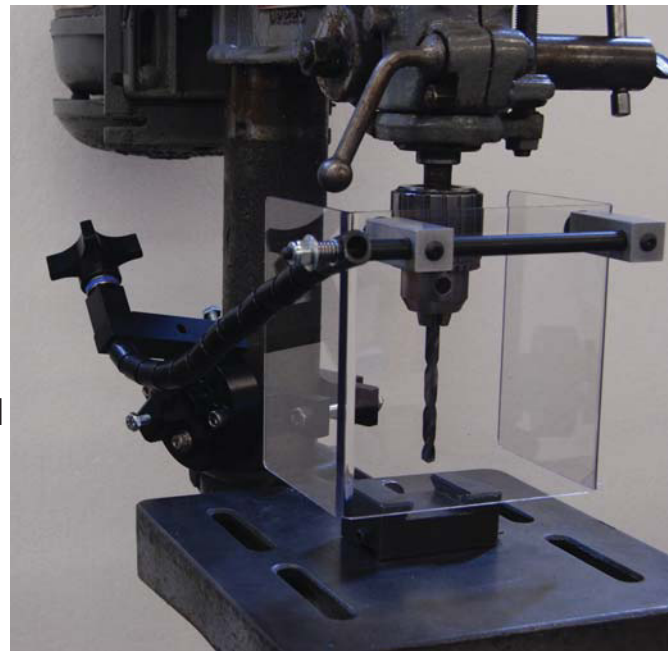
No Drilling and Tapping.

Mounts in Minutes.



Kit No. 13396

This Universal Pole Mount Adapter Kit comes with a multiple hole pattern mounting plate, 2 clamps and all the hardware to mount whichever style bracket you have. Fits round poles/posts from 1.75" to 4.25" diameter.



Above Image shows Model No. 13396 Universal Pole Mount Adapter used with a 13032 Drill Chuck Visorguard.

Model No. 13396, Universal Pole Mount Adapter Kit Complete

Shown below some actual mounting positions in use with various Flexbar Safety Guard mounting brackets. Mounting brackets not included with No. 13396 Kit shown above.





FLEXBAR DRILLGUARD™

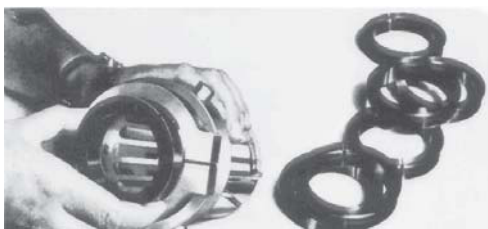
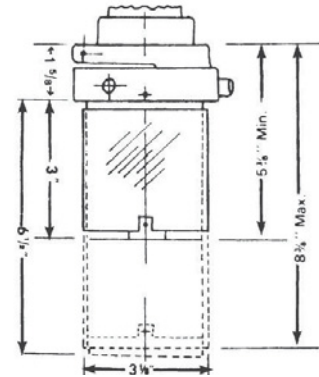
Provides Complete Operator Protection!

Interchangeable bushings available to accommodate most drill press quill sizes.

FEATURES:

- Complete operator vision and protection assured.
- Smooth telescopic action via patented spiral guide grooves-window caged housing moves up while drill comes down; hence cutting tool is totally guarded.
- For drill changes - simply pull down on housing. Three spring loaded ball catches disengage and the housing drops out. Conversely, it quickly snaps back in place.
- Inner cage moving down protects window hence the operator from metal slivers.

Quality made of heavy duty material, Drillguard comes complete with installation and operation instruction. The Quill Ring (which holds cage housing) is made of heavy die-cast aluminum, with smooth finish.



3-Stage Models now available for longer depth guarding applications
Phone or email.

Order No.	Description	Fits Quill Dia. (inches)	
		Up to	from
13125	Drillguard	2.75" to	2.626"
13127	Bushing	2.625" to	2.563"
13128	Bushing	2.562" to	2.501"
13129	Bushing	2.500" to	2.438"
13130	Bushing	2.437" to	2.376"
13131	Bushing	2.375" to	2.313"
13132	Bushing	2.312" to	2.251"
13133	Bushing	2.250" to	2.188"
13134	Bushing	2.187" to	2.126"
13135	Bushing	2.125" to	2.063"
13136	Bushing	2.062" to	2.000"
(or Metric Equivalent)			
13126	Acrylic	(Fits All)	
Replacement Windows			
While maximum diameter shown is 2 3/4" the mounting collar can be chucked and bored out to 2 7/8" diameter or slightly more.			



MADE IN U.S.A.

THE LEXAN® FLEX-SHIELD™

Protects Your Eyes Against Chip & Liquid Burns.
 Safety Shield on Flexbar® Universal Positioning Arm. Quick Cam Action Locking
 (Shield swivels 360° and locks positively where placed).



Flexbar Universal Cam-Lock Arm

Mag Base Model

Now Available in Mag Base, "C" Clamp and Base Mount Models.

- Overall height of Flexbar Stand: 14"
- Super Power Disc Mag Base: 3.16" dia.
- C-Clamp Capacity: 1 3/8", Throat to center of screw 11/16"
- Base Mount for permanent mounting on machine
- Shields made of durable clear view Lexan - 1/8" thick
- Choice of concave or flat



CONCAVE SHIELD MODELS - Complete			
Shield Size	Mag Base Model	C-Clamp Model	Base Mount Model
6" x 8"	13313	13313-C	13313-B
8" x 10"	13314	13314-C	13314-B
10" x 12"	13315	13315-C	13315-B



C-Clamp Mount



Base Mount

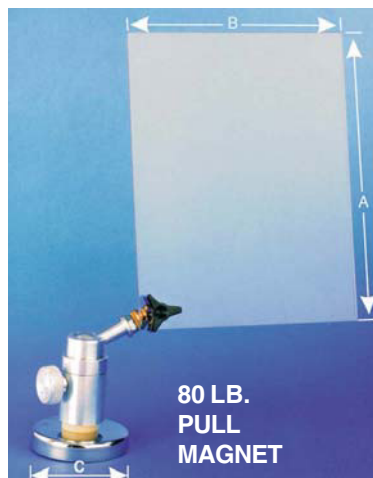
FLAT SHIELD MODELS - Complete			
Shield Size	Mag Base Model	C-Clamp Model	Base Mount Model
6" x 8"	13316	13316-C	13316-B
8" x 10"	13317	13317-C	13317-B
10" x 12"	13318	13318-C	13318-B

80060-2 Replacement 2 Ball Cable for Flexbar

LEXAN® REPLACEMENT SHIELDS - Carton of 3			
CONCAVE		FLAT	
13093-L	6" x 8"	13120-L	6" x 8"
13094-L	8" x 10"	13121-L	8" x 10"
13095-L	10" x 12"	13122-L	10" x 12"

CHIPGUARD™ DEFLECTORS

with Polycarbonate Shields Made of Lexan® (3/16" thick)



- Swivel Base Positioner affords incredible variety of shield positioning instantly. Shield swivels 360 degrees in two planes and 180 degrees in 3rd plane. A small twist on locking knob positively locks all.
- Cantilever Design - leaves room for shield to cover work area.

Model No.	On Magnetic Base		
	A	B	C
13010	4"	6"	2 5/8" dia.
13011	6"	8"	2 5/8" dia.
13012	8"	12"	2 5/8" dia.

SPARE SHIELDS AVAILABLE UPON REQUEST

EYEGUARD

"Protects Your Eyes Against Chip Burns"

Now Available in Lexan®



Safety Shield on Universal Positioning Magnetic Stand with On/Off Lever

- Overall Height of Stand:
 - Base to top of post is 10" long
 - Extension rod — 7" long
- Magnetic base is powerful
- Shields made of durable clear view plastic 1/8" thick - choice of acrylic or Lexan® models.
- Concave and flat shields interchangeable on all models (Eyeguard and Splashguard)

CONCAVE SHIELD MODELS (ACRYLIC)		FLAT SHIELD MODELS (ACRYLIC)	
MODEL NO.	SHIELD SIZE	MODEL NO.	SHIELD SIZE
13098	6" x 8"	13103	6" x 8"
13099	8" x 10"	13104	8" x 10"
13100	10" x 12"	13105	10" x 12"
13101	12" x 16"	13106	12" x 16"
13102	16" x 20"	13107	16" x 20"
LEXAN® SHIELD EYEGUARD MODELS			
13098-L	6" x 8"	13103-L	6" x 8"
13099-L	8" x 10"	13104-L	8" x 10"
13100-L	10" x 12"	13105-L	10" x 12"
13101-L	12" x 16"	13106-L	12" x 16"
13102-L	16" x 20"	13107-L	16" x 20"
CONCAVE REPLACEMENT SHIELDS (ACRYLIC) CARTON OF 3		FLAT REPLACEMENT SHIELDS (ACRYLIC) CARTON OF 3	
MODEL NO.	SHIELD SIZE	MODEL NO.	SHIELD SIZE
13093	6" x 8"	13120	6" x 8"
13094	8" x 10"	13121	8" x 10"
13095	10" x 12"	13122	10" x 12"
13096	12" x 16"	13123	12" x 16"
13097	16" x 20"	13124	16" x 20"
LEXAN® REPLACEMENT SHIELD			
13093-L	6" x 8"	13120-L	6" x 8"
13094-L	8" x 10"	13121-L	8" x 10"
13095-L	10" x 12"	13122-L	10" x 12"
13096-L	12" x 16"	13123-L	12" x 16"
13097-L	16" x 20"	13124-L	16" x 20"
Model No. 13092 Eyeguard Magnetic On/Off Stand Only			



SPLASHGUARD™

“State Of The Art Protection” Now Available in Lexan®



MAG BASE IS POWERFUL

Protects Your Eyes Against Chip & Liquid Burns. Safety Shield on Tilt-type Magnetic Stand (Shield swivels 360° and locks positively where placed).

- Overall Height of Stand: — Base to top of post — 9 inches
- Magnetic Base is powerful
- Shields made of durable clear view plastic — 1/8" thick - choice of acrylic or Lexan® models
- Concave and flat shields interchangeable on all models (Splashguard and Eyeguard)

ALL SHIELDS MADE IN U.S.A.

- 10 MODELS WITH CONCAVE SHIELD
- 10 MODELS WITH FLAT SHIELD

SPLASHGUARD SWIVELBALL MAGNETIC STAND COMPLETE WITH CONCAVE SHIELD		SPLASHGUARD SWIVELBALL MAGNETIC STAND COMPLETE WITH FLAT SHIELD	
MODEL NO.	SHIELD SIZE	MODEL NO.	SHIELD SIZE
13108	6" X 8"	13115	6" X 8"
13109	8" X 10"	13116	8" X 10"
13110	10" X 12"	13117	10" X 12"
13111	12" X 16"	13118	12" X 16"
13112	16" X 20"	13119	16" X 20"
LEXAN® SHIELD SPLASHGUARD MODELS			
13108-L	6" X 8"	13115-L	6" X 8"
13109-L	8" X 10"	13116-L	8" X 10"
13110-L	10" X 12"	13117-L	10" X 12"
13111-L	12" X 16"	13118-L	12" X 16"
13112-L	16" X 20"	13119-L	16" X 20"
Model No. 13091 Splashguard Magnetic Stand Only			
CONCAVE AND FLAT REPLACEMENT SHIELDS AVAILABLE- SEE BOTTOM OF PAGE 180.			



THE LEXAN VERSA-SHIELD

PROTECTS YOUR EYES AGAINST CHIP & LIQUID BURNS



The new, patent pending, tough 1/8" thick polycarbonate Versa-Shield offers clarity from its front or from its side plus resistance to impact, hot chips, oil, grease and splashing coolants. The uniquely curved shape directs chips away from the user and helps recycle coolants. The shield measures 12" wide by 11" high and is ideal for bench grinders, buffers, lathers, planers, spot welders and more. Versa-Shield is available on a rugged, flexible gooseneck arm or on a Flexbar® Universal Positioning Arm with Quick Cam Action Locking. The Flexbar Universal Positioning Arm locks the shield positively where placed. A variety of mounting options are offered below:

al Positioning Arm locks the shield positively where placed. A variety of mounting options are offered below:



I. Flexible Gooseneck Arm Models (on 3.16" diameter disc type magnetic base):

Model No. 13448, Versa-Shield on 12" long gooseneck arm

Model No. 13449, Versa-Shield on 24" long gooseneck arm



13450

II. Flexbar® Universal Positioning Arm Models (Flexarm is 14" long)

Model No. 13450, Versa-Shield on Flexbar with 3.16" diameter disc magnet

Model No. 13451, Versa-Shield on Flexbar with c-clamp. Clamp capacity 1 3/8" throat to center of screw

Model No. 13452, Versa-Shield on Flexbar heavy duty 6" diameter weighted base



13451

13452

Model No. 13453, Versa-Shield on Flexbar with No. 7 CR Vise Grip

Replacement Shield Model No. 13455 12" wide x 11" high. Fits all mounting options

Call or email for permanent mounting bracket options.



13453

FLEXBAR® FLEXIGUARD

Curved Plastic Shields On Rugged Flexible Goosenecks

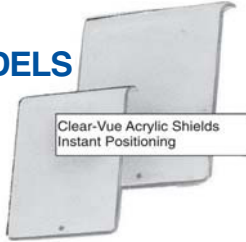
- Positively deflects chips and coolant.
- Permits clear & closer visual inspection of work.



1. ON C-CLAMP: Permits clamping of safety shield on hard-to-affix locations whether flat, round, etc. Made of malleable iron with 120° vee. Clamp capacity - 1³/₈". Throat to center of screw - 1¹/₁₆". Length of flex arm with C-Clamp - 13 1/2".

MODEL NO.	SHIELD SIZE
13001	7½" x 10"
13002	10" x 12"
13003	12" x 16"

2 MODELS



Clear-Vue Acrylic Shields
Instant Positioning



2. ON MAGNETIC BASE: Disc-type magnet - 85 lbs. pull. Length of flex arm with magnet - 10". Shield swivels and locks 360°.

MODEL NO.	SHIELD SIZE	SIZE OF MAGNET
13004	7½" x 10"	2.65" diameter
13005	10" x 12"	2.65" diameter
13006	12" x 16"	3.16" diameter

REPLACEMENT PARTS (SHIELD NOT INCLUDED)

REPLACEMENT SHIELDS

MODEL NO.		SIZE
13007	CTN. OF 3	7½" x 10"
13008	CTN. OF 3	10" x 12"
13009	CTN. OF 3	12" x 16"
13140	1 SHIELD	7½" x 10"
13141	1 SHIELD	10" x 12"
13142	1 SHIELD	12" x 16"

	NO.
FLEXIGUARD ARM ON C-CLAMP	13137
FLEXIGUARD ARM ON 2.65" DIA. MAGNET	13138
FLEXIGUARD ARM ON 3.16" DIA. MAGNET	13139

Made in U.S.A.

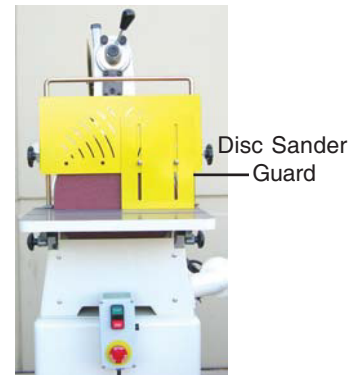
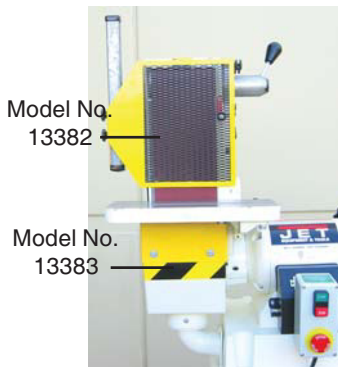
OTHER AVAILABLE GUARDING PRODUCTS

Belt/Disc Sander Guards

Protects User from Unused Portion of Belt/Disc

- Easily Adjustable
- Upper & Lower Guards Available

Model No. 13382, Upper Belt Sander Guard
 Model No. 13383, Lower Belt Sander Guard
 Model No. 13391, 9" Disc Sander Guard
 Model No. 13384, 12" Disc Sander Guard
 Model No. 13385, 16" Disc Sander Guard



Disc Sander Guard

Spindle Sander Guards

Upper and Lower Guards Available

Model No. 13386, 6" x 11" Floor Mount Spindle Sander Guard
 Model No. 13387, 6" x 11" Base Mount Spindle Sander Guard
 Model No. 13388, 6" x 11" Bench Mount Spindle Sander Guard
 Model No. 13389, 4" x 7" Bench Mount Spindle Sander Guard
 Model No. 13378*, Top Cover Guard
 Model No. 13379*, Lower Motor Guard

*Contact Flexbar Sales Dept. for quote- need make & model of machine



Drill Press Belt/Pulley Guard

Many styles Available for Top Covers & Lower Motor Guards



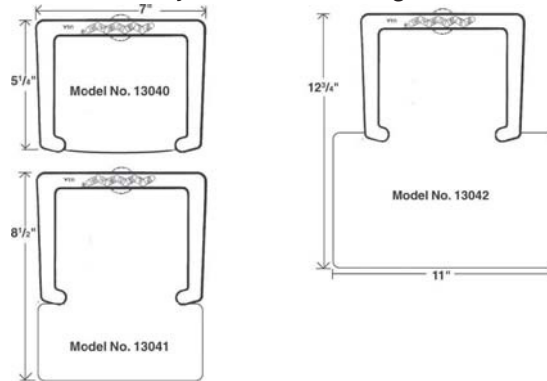


PIVOT MOUNT GRINDER GUARD AND UNIVERSAL SHIELD

Made in U.S.A.



Heavy-duty swivel-lock positioning shield protects operator from flying grit and debris. Cast frame with virtually unbreakable 3/16" thick Lexan® shield will contain and deflect any wheel breakage. One standard frame with a choice of three sizes of interchangeable Lexan® shields will provide protection for grinding and buffing wheels up to 14". An extra heavy-duty steel pivot with locking knob connects the frame to the curved adjustable mounting bracket.



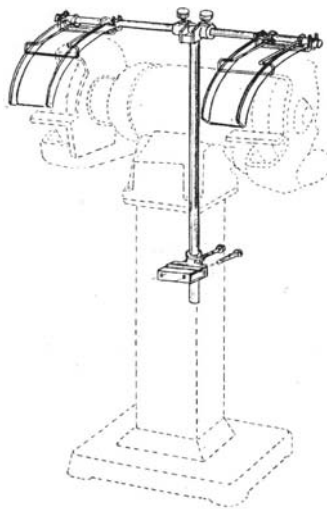
Each model supplied complete with frame, Lexan® shield and pivot mount hardware. Replacement shields available (see chart).

Model No.	For Bench Grinders	Shield Size
13040	6", 7", 8"	5 1/2" x 5 3/4"
13041	8", 10"	6 1/2" x 8 1/2"
13042	10" and up	12 3/4" x 11"
13043	Lexan® Replacement shield for 13040	
13044	Lexan® Replacement shield for 13041	
13045	Lexan® Replacement shield for 13042	

FLEXBAR GRINDER GUARD DELUXE™

Heavy-Duty Lexan® Shield (3/16" thick) Guards Against Wheel Explosions!

Designed to fit virtually all pedestal and bench grinders as well as buffers and speed lathes.



Shown Above: Pedestal Mount Grinder Guard Deluxe with adjustable mounting hardware.

Fits Grinder/Buffer wheel diameter from 6" to 14"

ALL UNITS INCLUDE:

- A) 2 Curved Shield Assemblies
- B) Vertical Post Assembled With 2 Mounting Brackets
- C) 2 Each, 1 inch wide standoffs with hex head bolts and washers
- D) 1 Vertical Mounting Bracket

*On Single Shield Models:

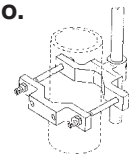
- A) 1 Each Curved Shield
- B) Vertical Post Has One Mounting Bracket
- C) Same as above
- D) Same as above

PEDESTAL MOUNT MODELS- ORDERING:

GRINDER/BUFFER WHEEL DIAMETER	WITH SINGLE SHIELD* MODEL NO.	WITH DOUBLE SHIELDS MODEL NO.
6" or 7"	13390-S	13390-D
8"	13391-S	13391-D
10" & 12"	13392-S	13392-D
14"	13393-S	13393-D

*Please specify "Left Mount" or "Right Mount" on Single-Shield Models. Single Shield Models are listed for Single-Wheel Buffers, etc., which are in existence.

Model No. 13395



Pedestal Grinders with Round Post Stanchions
It is necessary to order our Model No. 13395, Universal Post Clamp. It accepts Diameters 2" to 4.25"

BENCH MOUNT MODELS AVAILABLE - PHONE OR FAX.



FLEXBAR MOTOR CONTROLS



With One Easy-to-Install unit you can provide:

- Standardized machine controls
- Power Outage protection
- E-Stop actuator with mushroom shape
- Built with only the finest solid-state components
- No contacts to burn out - fail-safe design
- Just 3" x 3.75" x 6.25"

◀ Motor Control 120 Volt (13.8 amps) **Model No.13380**
 Motor Control 120 Volt (20 Amp) **Model No.13370**

Motor Control High Voltage.....**Model No. 13381** ▶
 (This control requires installation by a qualified electrician)



Easy to Install:

1. Mount the 13380/13370 on your machine.
2. Plug the machine into the 13380/13370.
3. Plug the 13380/13370 into your outlet.

EMERGENCY STOP BUTTON CONTROLLER

PLASTIC OR METAL ENCLOSURE

Current NFPA/NEC standards require that every machine be equipped with a compliant emergency stop control. The red, latching, mushroom shaped control button has a permanent, yellow background.

This device must be hardwired into your machine's power supply by a qualified electrician. For machines with greater than 120 VAC motors, motor magnetics are required to reduce the control circuit voltage to 115-VAC in order to comply with NFPA 79.



Model No. 13371



Model No. 13372

Model No. 13371, Emergency Stop Button, Heavy Plastic Enclosure - NEMA 4
Model No. 13372, Emergency Stop Button, Heavy Metal Enclosure - NEMA 12



MADE IN U.S.A.

FLEXBAR SENSING-SAF-START®

The Inexpensive Solution to OSHA. Anti-automatic Restart Protection Without the High Cost of Magnetic Motor Starters

THIS IS A MANDATORY OSHA SAFETY REQUIREMENT

OPERATING CHARACTERISTICS

When a **SENSING-SAF-START®** is installed on any equipment and there is an electrical power interruption to the equipment, the SENSING-SAF-START® will open the circuit so when the power source is restored, the SENSING-SAF-START® will prevent the equipment from restarting. The SENSING-SAF-START® will not reset until the equipment switch has been turned "off". There is a sensing circuit within the new SENSING-SAF-START® that sends a signal up to the equipment switch to see if it is in the "on" position. If the switch is still "on", the SENSING-SAF-START® sounds a warning buzz when the reset button is depressed, and it will not close the circuit until the equipment switch is turned "off". Only then, the SENSING-SAF-START® will close the circuit, so the equipment will operate again.

The following standards apply to machines driven by 120 volt and 240 volt motors:

- **OSHA** (29 DFR #1910.213 (b) (3)*)
- **NFPA** (Electrical Standard for Industrial Machinery, 1997 Edition, Section 8, Protection)

Sensing-Saf-Start® Installs In Minutes On:

- Drill Presses
- Tool Grinders
- Cut-Off Machines
- Band Saws
- Small Milling Machines
- Disc Sanders
- Table Saws
- Belt Sanders
- Power Hacksaws
- Radial Arm Saws

Now available in extension cord style or hard wire versions:

Model No. 17025, Short extension cord style. 14" cord on male plug end, 12" cord on female receptacle end. Rated 120 volts, A.C., 15-amp maximum, 50/60 Hz

Model No. 17023, 20" cord on equipment switch end. 8' cord on power end (no plug). Wire directly into disconnect box or install TwistLock Plug. Rated 120-volt, A.C., 18-amp maximum, 50/60 Hz

Model No. 17024, 20" cord on equipment switch end. 8' cord on power end (no plug). You must install matching plugs. Rated 200 to 240-volt A.C., 15-amp (single phase) maximum, 50/60 Hz



7" BRIDGEPORT DRAW BAR

Turning Shafts on Milling Machines (below 7 feet from the working surface) must be covered. A powerful ring magnet in the base of the shield secures it to the top of the mill covering the turning drawbar. A chain keeps the guard secured to the mill so it doesn't get lost during tool and draw bar changes. This simple shield features welded steel construction and is powder coated safety yellow.



Model No. 13469, 7" Bridgeport Draw Bar



FLEXBAR INDUSTRIAL SAFETY MATS

Flexbar introduces its new line of premium, made in U.S.A. Safety/Comfort Industrial Mats covering a wide range of usages. Rugged reliability designed for safety, comfort and increased productivity, mats are available for either wet/dry or dry-only environments.

I. Matting suitable for use on Wet, Moderately Greasy or Dry Floors

Reduce slip/fall accidents where wet, greasy floors and shop debris are present. Not only will matting improve shop safety but it's extremely comfortable and will reduce worker fatigue.

FLEXBAR DRAINAGE SAFETY MATS



- Mat design includes holes for drainage of fluids and collection of small debris from shop equipment
- Traction bars on surface help keep soles of shoes dry & clean
- Underside knobs help keep mat in place
- 100% all-purpose rubber construction
- Edges are safety beveled on all four sides; overall thickness of mat is 1/2"
- Color - Black

Model No. 13475 Drainage Safety Mat, 3' x 5'

Model No. 13476 Drainage Safety Mat, 3' x 10'

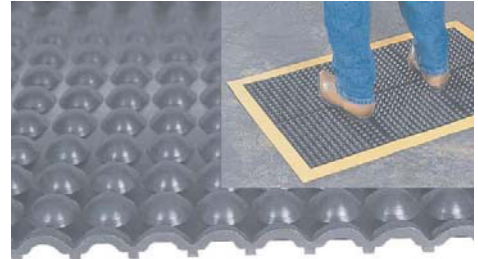
Model No. 13477 Drainage Safety Mat, 3' x 20'

FLEXBAR SAFETY BUBBLE MATTING

- Constructed of domed bubbles that the worker stands on allowing room for debris and fluids to settle
- Yellow ramped borders offer high visibility and promote safety
- Mat is molded using flexible natural rubber
- Overall mat thickness is 1/2"

Model No. 13480 Safety Bubble Mat, 2' x 3'

Model No. 13481 Safety Bubble Mat, 3' x 4'



- Domed surface promotes blood circulation resulting in greater worker comfort and less fatigue
- Color - Black mat with Yellow borders on all four sides

II. Matting suitable for use on Dry Floors only.

These high visibility mats feature bright yellow borders and promote workplace safety while offering uncompromising comfort for the user.

FLEXBAR ANTI-SLIP DIAMOND PLATE MATS ANTI-FATIGUE WITH SAFETY BORDERS



- Mat is constructed of a tough vinyl surface permanently bonded to a soft sponge base
- Vinyl surface features molded in Diamond Plate pattern to promote secure footing
- Wide bright yellow borders accent visibility and ramped edges on all sides facilitate easy access and promote safety

Flexbar Anti-Slip Diamond Plate Mats Available in the Following Sizes:

Model No. 13485, 2' x 3'

Model No. 13486, 3' x 5'

Model No. 13487, 2' x 75'

Model No. 13488, 3' x 75'

Model No. 13489, 4' x 75'

- Deep sponge base offers a high comfort level; Goodbye fatigue!
- Due to rugged vinyl surface, this mat makes an excellent choice where multiple shifts are run
- Overall thickness is 9/16"
- Color - Black with Yellow Borders on longitudinal sides

Custom Mats up to 75' Available in 2', 3' or 4' Widths Upon Request.



Made in U.S.A.

FLEXBAR PANELGUARD™

Flexible, Modular Machine Guarding System

The FLEXBAR PANELGUARD™ Movable, Multiple Function Machine Guard's 4 panel system provides complete flexibility and can be used for a variety of applications, which include:

- Creating Machine Safety Areas.
- Perimeter Guarding.
- Temporary Guarding.
- Machines having large parts or cutting tools.
- Reducing machine noise.
- Blocking off out of service machines or areas undergoing maintenance.



Model No. 13035
Basic 4-Panel System



Shown above: Panelguards used to separate in-line machines. Protects operators from chips and noise from neighboring machines.

The FLEXBAR PANELGUARD™ system has four modular panels 16"W x 71"H and opens 66" across. Its simple construction conforms to fit different configurations. The upper half of each panel has crystal clear high impact resistant Lexan®, which gives operator protection and a full view of guarded machines or areas.

The FLEXBAR PANELGUARD™ may be used free-standing or can be more permanently affixed to the shop floor.

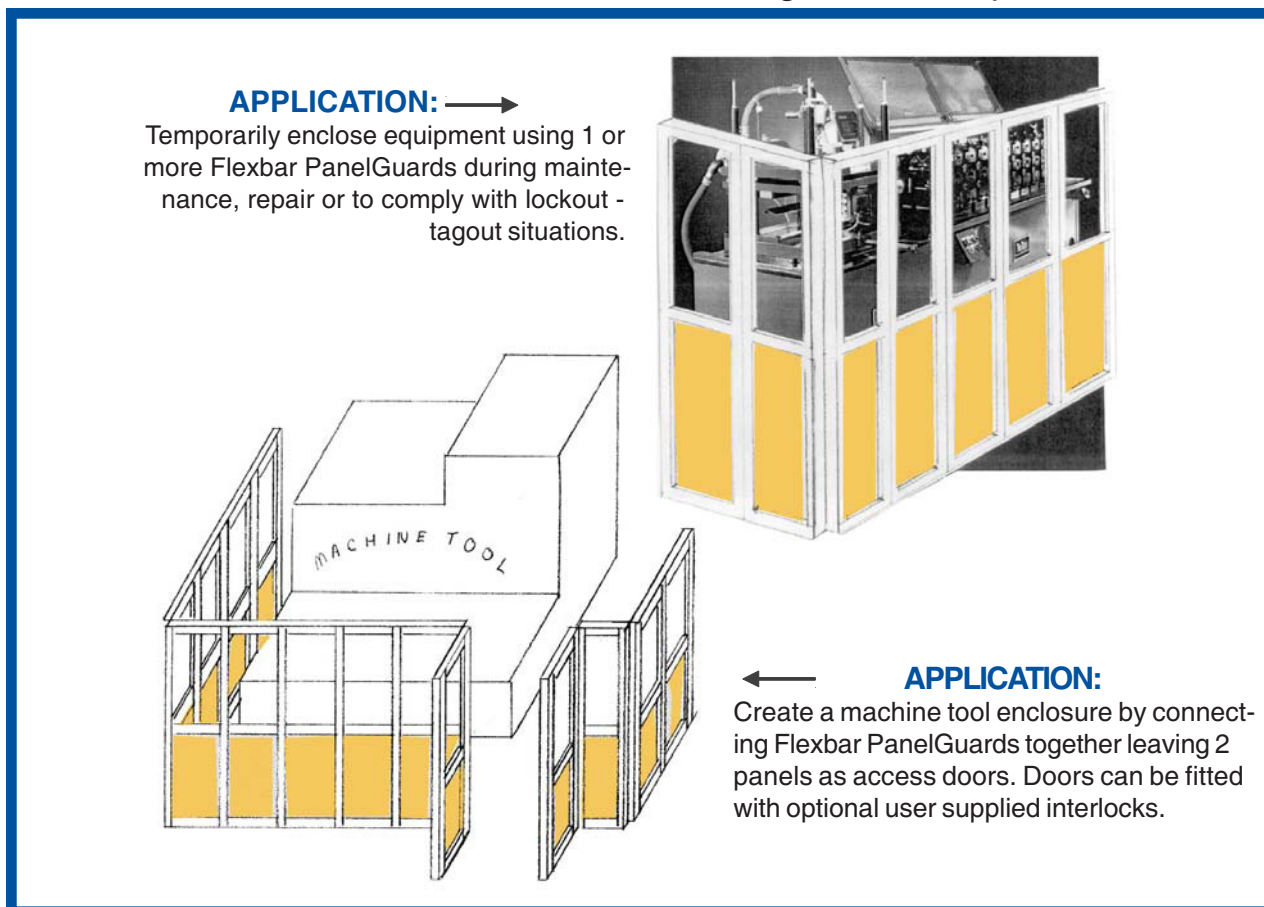


Made in U.S.A.

FLEXBAR PANELGUARD™

CREATE A CUSTOM MACHINE GUARDING SYSTEM OR SAFETY AREA BY ADDING MODULAR EXPANSION PANELS.

Sliding together optional panels and accessories creates a complete machine enclosure with access doors and interlocks. Easy to handle, the **FLEXBAR PANELGUARD™** folds to 18"W x 71"L x 4"H and weighs under 50 pounds.



*ORDERING:

Model No. 13035, FLEXBAR PANELGUARD™ Basic 4-Panel Set Complete

Model No. 13036, FLEXBAR PANELGUARD™ 2-Panel Expansion Set. Complete with extra slide-in flexible hinge

Model No. 13035-L, Basic 4-Panel Set w/ All Lexan Panels

Model No. 13036-L, 2-Panel Expansion Set w/All Lexan Panels

***Model No. 13037**, Extra slide-in flexible hinge (1 ea.)

Model No. 13038, Top Cap (1 ea. per panel)

*Used to connect two or more Panelguard sets together.



ELIPSE REUSABLE SAFETY RESPIRATOR

Designed to Fit the Contours of Your Face- NIOSH APPROVED!

The Elipse P100 is a unique High Efficiency Particulate Air filter that provides protection against dust particles, metal fumes, lubricants, cutting fluids, oil and water mists, bacteria & viruses. It is perfect for everyday use from Do-It-Yourself work through to Industrial and Commercial applications where respiratory protection is and may be required. The elipse half mask represents a major leap forward in mask design and filtration development. The result is a mask that enables the wearer to feel more comfortable and less constricted.

FEATURE	USER BENEFIT
Advanced filtration media "HESPA"	High Efficiency, low breathing resistance, flexible and robust
Exceptionally low profile	Unobtrusive, well balanced during wear and compatible with other PPE safety wear
New, modern design	Designed to meet the contours of your face, wearer acceptance
Mask is latex-free and silicone-free	Non irritant, non allergic reaction
Economical Replacement filters	Low through-life cost of ownership
Easy filter fit design	Quick and straightforward to fit and replace



HESPA® + filter,
Ultra low profile
design, depth of
visual filter on the
mask: 0.19"

Elasticated 4 point adjustable
head and neck strap, secure &
stable fit in use.

Large non-return
exhaust valve.



SPECIFICATIONS

Filter Type/Grade	HESPA+ P100* >99.995%
Filter Construction	Low Profile design, close-pleated composite HESPA® media, encapsulated with TPE, flexible frame easy to affix securely to mask.
Mask Construction	Mask: Blue TPE (thermoplastic elastomer), latex & silicone free, odour-free, non-allergenic material
Weight	Mask + Filters: 4.65oz.
Shelf Life	5 years (mask & filters) See storage conditions on Instructions for Use and MSDS
Filter Life in Use	>8 hours, re-usable
Safety Features	Large non-return exhaust valve to reduce risk of wearer fatigue. Low profile design HESPA® + filters offering wide field of vision. 4-point adjustable light weight head strap to ensure comfort and secure fit during use.

Model No. 13502 Elipse Half Face Mask, complete with twin filters

Model No. 13503 Replacement Hespera Filters

For Larger Quantity Purchase, please contact:
sales@flexbar.com

Performance Detail With HESPA®+ P100 Filters

HESPA® - High Efficiency Synthetic Particulate Air Filter

TESTS CONDUCTED BY NIOSH	P100 NIOSH TEST LEVELS	ELIPSE P100 PERFORMANCE
Exhalation Resistance		
Maximum Allowable Resistance (MM of H2O)	25	16.3
Inhalation Resistance		
Maximum Allowable Resistance (MM of H2O)	35	As low as 22.9
Exhalation Valve Leakage		
Maximum Allowable (mL/min)	30	As little as 4.22
DOP (filter efficiency):		
INITIAL Maximum Allowable % Penetration	0.03%	0.001%
FINAL Maximum Allowable % Penetration	0.03%	0.005%
DOP (filter efficiency):		
INITIAL Filter Efficiency	99.97%	99.999%
FINAL Filter Efficiency	99.97%	99.995%

- OSHA guidance/NIOSH approval 42 CFR 84 particulate P100 filters, Approval #: TC-84A-5395
- APF 10
- Fit Test: Qualitative and Quantitative. (Quantitative test kit available)
- Universal size face piece



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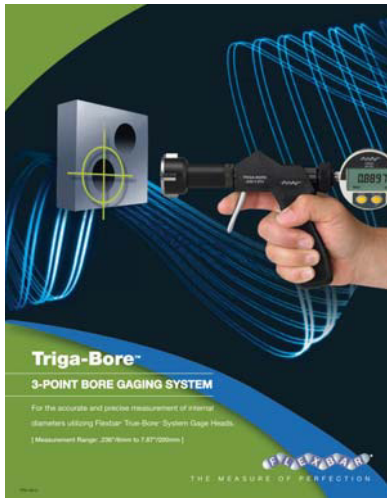
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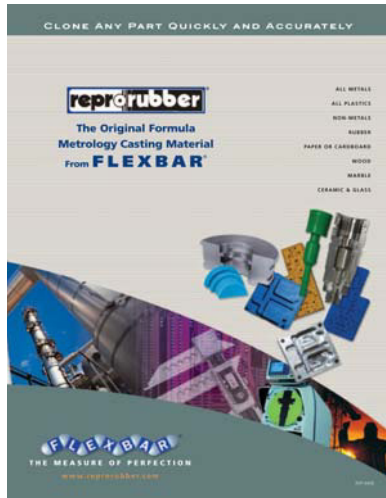
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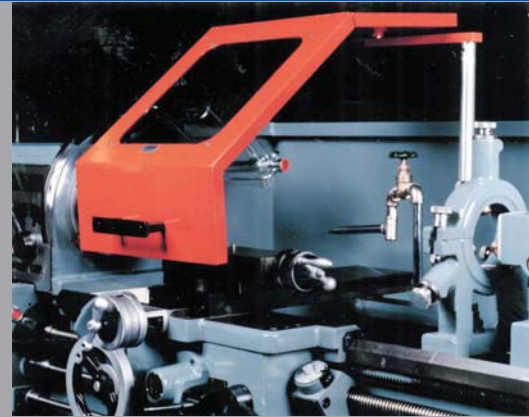


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