

Natoli Engineering, founded in 1973, is the primary source of tablet compression tooling, presses, parts, accessories and hands-on training for hundreds of pharmaceutical, nutritional, confectionary and industrial tablet manufacturers throughout the world.

Natoli has created this catalog in support of the tablet compression industry. The color-coded sections are filled with an assortment of quality products to meet a variety of set-up, inspection and maintenance needs. Please reference the index located in the back of the catalog to locate specific items. Orders of any size and type are welcome, including special requests and custom requirements. All of the products listed in this catalog are available for shipment worldwide.

No matter what your tablet compression needs are, we look forward to helping your business succeed.

Natoli Engineering... You demand. We deliver.



INSPECTION





Inspecting tablet compression tooling on a regular basis is vital for maximizing tooling longevity, press performance and tablet uniformity. Natoli stocks a variety of precision Mitutoyo® measuring instruments (calipers, micrometers, indicators), a complete punch inspection system with everything needed to properly check punch working length, overall length and cup depth, high-powered microscope and magnification systems and much more. Plus, Natoli provides the world's most advanced punch inspection and tool control system, the TM2 (Tool Management 2), which features non-contact laser technology and the most complete database currently available.



Instrument Certifications

Abbreviations Key

- ◆ SPC = Standard Process Control
- ◆ UL = Underwriters Laboratories
- ◆ USB = Universal Serial Bus
- ◆ ID = Inside Diameter
- ◆ OD = Outside Diameter
- ◆ OL = Overall Length
- ◆ V = Volt
- ◆ VAC = Volts Alternating Current
- ◆ Hz = Hertz
- ◆ lb = Pound
- ◆ dia = Diameter
- ◆ mm = Millimeter

Certificate of Calibration

A Certificate of Calibration is available for each instrument listed in this section.

Part No.	Item Description
IN 7400	Certificate of Calibration



Mitutoyo® Certificate of Inspection

A Certificate of Inspection is included with each Mitutoyo instrument listed in this section.



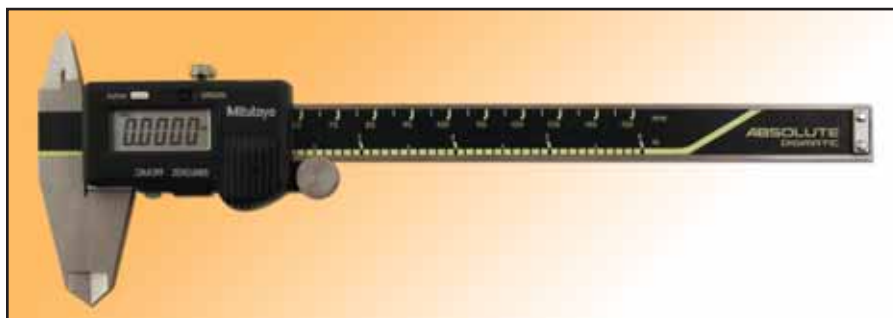
Digital Calipers with Absolute Encoder

These calipers are designed for outside or inside measurements. They feature an Absolute Encoder with special functions that allow it to remember its measuring position after being switched off.

Absolute Encoder Features

- ◆ **Origin:** Allows setting of an origin point to be used for reference in subsequent measurements. Once set, the Absolute Encoder caliper will switch on showing its true position from the origin point rather than from 0.0000 as with standard models.
- ◆ **Zero/ABS:** Allows the display to be set to zero at any point along the slider for incremental comparison measurements. This switch will also allow return to the absolute mode and display the true position from the origin point.

Part No.	Measuring Range	Accuracy
IN 7519	0 – 6" (0 – 152mm)	± 0.001" (± 0.025mm)
IN 7520	0 – 12" (0 – 300mm)	± 0.0015" (± 0.038mm)



Features

- ◆ SPC port
- ◆ Inch/mm conversion
- ◆ Storage case included

Dial Calipers

These calipers quickly and easily measure outside, inside, step and depth dimensions.

Part No.	Measuring Range	Accuracy
IN 7516	0 – 6" (0 – 152mm)	± 0.001" (0.025mm)
IN 7518	0 – 12" (0 – 305mm)	± 0.002" (0.051mm)



Features

- ◆ “Quadri” (4-way) measurement
- ◆ Hardened stainless steel body
- ◆ Storage case included

Micrometers

How to Select the Proper Micrometer Measuring Range

A measuring range of 0 – 1" is for "B" and "D" punch barrels, tips and 0.945" dies.

A measuring range of 1 – 2" is for punch barrels and tips larger than 1" and die diameters of 1³/₁₆" and 1¹/₂".



Outside Digital Micrometers with Absolute Encoder

- ◆ SPC port
- ◆ Carbide-tipped measuring face
- ◆ Inch/mm conversion
- ◆ Storage case included

Part No.	Measuring Range	Accuracy	Standard
IN 7425	0 – 1"	± 0.00005"	N/A
	0 – 25.4mm	± 0.00127mm	N/A
IN 7426	1 – 2"	± 0.00005"	1"
	25.4 – 50.8mm	± 0.00127mm	25.4mm

Recommended Calibration Standards

Part No.	Item Description
IN 7680	0.375" Standard
IN 7681	1.0" Standard

Outside Dial Micrometers

- ◆ Carbide-tipped measuring face
- ◆ Slip thimble
- ◆ Storage case included



Part No.	Measuring Range	Accuracy	Standard
IN 7512	0 – 1"	± 0.0001"	N/A
	0 – 25mm	± 0.00254mm	N/A
IN 7514	1 – 2"	± 0.0001"	1"
	25.4 – 50.8mm	± 0.00254mm	25.4mm

Recommended Calibration Standards

Part No.	Item Description
IN 7680	0.375" Standard
IN 7681	1.0" Standard

Micrometer Stands

- ◆ Easily mounts to benchtops
- ◆ 6.5 x 4.5 x 3.5" (165 x 114 x 89mm)

Part No.	Item Description
IN 7498	Fixed-Angle Micrometer Stand
IN 7499	Swivel-Angle Micrometer Stand



Calibration Height Standard Gauges

Confirm dial or digital indicator accuracy with Natoli calibration standards. A Certificate of Inspection and hard case are included with each standard.

Part No.	Item Description
IN 7589	5.25" Length Calibration Standard
IN 7597	5.25" 3-Step (± 0.01) Length Calibration Standard
IN 7648	5.26" Length Calibration Standard
IN 7649	5.26" 3-Step (± 0.01) Length Calibration Standard
IN 7000	6.062" Length Calibration Standard
IN 7001	6.250" Length Calibration Standard



Head Gauge Go/No-Go

Accurately checks punch head and neck profile.

Reject any punch that cannot pass through the "go" end or that passes through the "no-go" end of the gauge.

◆ Custom head gauges are available upon request

Part No.	Size/Type
IN 7526	TSM B
IN 7528	TSM D
IN 7525	DS3
IN 7527	533/328 45-Station Turret
IN 7529	Domed – B
IN 7530	Domed – D
IN 7534	Domed – DS3
IN 7535	Domed – 533/328 45-Station Turret
IN 7551	Fette European (EU-19) – B
IN 7552	Fette European (EU-1) – D
IN 7553	Kilian European – B
IN 7554	Kilian European – D
IN 7555	Korsch European – B
IN 7556	Korsch European – D
IN 7557	Manesty European – B
IN 7558	Manesty European – D
IN 7559	Special Order



Punch Inspection

Punch Inspection

Natoli provides all the necessary items to properly check punch working length, overall length and cup depth for optimal tablet uniformity. Indicators can also be used for checking die table runout and proper setting of feed frames, which reduces granulation loss and press damage.

Part No.	Item Description
IN 7501	Indicator Magnetic Base
IN 7503	Granite Gauge Stand (6 x 6 x 2")
IN 7575	Punch Holder
IN 7509	Flat Steel Plate (6 x 9")
IN 7450	Flat Steel Plate (8 x 12")
IN 7504	Dial Indicator (Inch)
IN 7474	Dial Indicator (Metric)
IN 7508	Digital Indicator with Absolute Encoder
IN 7588	Indicator Lifting Lever
IN 7507	Nylon Indicator Replacement Tip
IN 7506	Dial Indicator Replacement Points (22-Piece Set) (9 Flat, 5 Ball, 4 Tapered, 3 Regular, 1 Bent-Regular)



Die Bore Gauge Test Stand Sets

Ideal for checking die wear, Die Bore Gauge Test Stand Sets measure the wear ring inside a die, which causes premature tool wear, punch binding and tablet capping and lamination. Each Die Bore Gauge Test Stand Set includes a digital indicator, stand and one split ball bore gauge set.



Die Bore Gauge Test Stand Sets

With Setting Rings

Part No.	Range
IN 7785	0.037 – 0.061"
IN 7786	0.060 – 0.157"
IN 7787	0.145 – 0.290"
IN 7790	0.95 – 1.55mm
IN 7791	1.5 – 4.0mm
IN 7792	3.7 – 7.3mm

Without Setting Rings

Part No.	Range
IN 7788	0.3 – 0.4"
IN 7789	0.4 – 0.7"
IN 7793	7 – 10mm
IN 7794	10 – 18mm

Replacement Items

Split Ball Bore Gauges

With Setting Rings

Part No.	Range
IN 7740	0.037 – 0.061"
IN 7741	0.060 – 0.157"
IN 7722	0.145 – 0.290"
IN 7744	0.95 – 1.55mm
IN 7745	1.5 – 4.0mm
IN 7746	3.7 – 7.3mm

Split Ball Bore Gauges

Without Setting Rings

Part No.	Range
IN 7742	0.3 – 0.4"
IN 7743	0.4 – 0.7"
IN 7747	7 – 10mm
IN 7748	10 – 18mm

Part No.	Item Description
IN 7721	Die Bore Gauge Stand
IN 7508	Digital Indicator

Indicators



Digital Indicator with Absolute Encoder

Use the Digital Indicator to check the overall length, working length and cup depth of a punch to ensure proper tablet hardness, thickness and weight consistency. The indicator can also be used to check die table runout for proper feeder installation.

Features

- ◆ Inch/mm conversion
- ◆ SPC port

Part No.	Measuring Range	Accuracy
IN 7508	0 – 0.5" (0 – 12.7mm)	± 0.008" (± 0.02mm)



Horizontal/Vertical Tenth Indicators

- ◆ Scratch-resistant, glare-free crystal
- ◆ Anti-magnetic
- ◆ Water and dust resistant
- ◆ No-clutch structure
- ◆ Jeweled bearings

Part No.	Type	Graduation	Range	Accuracy
IN 7730	Inch	0.0005"	0.03"	± 0.005"
IN 7731	Metric	0.013mm	0.8mm	± 0.008mm
IN 7732	Inch/Metric	0.0005"/0.01mm	0.03"/0.76mm	± 0.0005"/± 0.013mm

Mini-Processor

The Mini-Processor is equipped with a built-in thermal line printer. Transfer data directly to a printer with an optional SPC cable or transmit data directly to a computer for storage or sharing.



Features

- ◆ Records measurement data
- ◆ Tolerance judgment
- ◆ Statistical analysis and history
- ◆ Records calculation results

Part No.	Item Description
IN 7546	Digimatic Mini-Processor
IN 7550	5-pack Thermo Paper Rolls
IN 7572	220V Adapter

SPC Connecting Cables

Please consult specification sheet for input cable requirement.

- ◆ For use with all calipers without absolute encoder
- ◆ For use with all calipers with absolute encoder
- ◆ For use with all micrometers



Part No.	Plug Type	Length	Reference No.
◆ IN 7460	Straight	40"	905338
◆ IN 7461	Straight	80"	905409
◆ IN 7462	Back	40"	905689
◆ IN 7463	Back	80"	905690
◆ IN 7464	Right	40"	905691
◆ IN 7465	Right	80"	905692
◆ IN 7466	Left	40"	905693
◆ IN 7467	Left	80"	905694
◆ IN 7468	6-Pin	40"	937387
◆ IN 7469	6-Pin	80"	965013
◆ IN 7470	Straight	40"	959149
◆ IN 7471	Straight	80"	959150

Vise, V-Block & Punch Holders



Vise with Vacuum Base

Designed to secure a variety of work pieces.
Ideal for holding punches while removing keys.

Features

- ◆ 360° rotation, 360° swivel, 90° pivot
- ◆ Adjustable jaws (0 – 2.5")

Part No.	Item Description
IN 7562	Vise with Vacuum Base



V-Block

Custom manufactured with a clearance for the punch head and key. Use to check punch and die concentricity

Part No.	Item Description
IN 7565	5" V-Block with Head and Key Cutout and Clamp



Punch Holders

Part No.	Tooling Size
IN 7575	"B" Tooling
IN 7577	"D" Tooling
IN 7574	533/328-33 Station Turret
IN 7576	533/328-45 Station Turret

Tableting Specification Manual & Punch Key Gauges

Tableting Specification Manual (Current Edition)

The Tableting Specification Manual (TSM) is the most valuable source of tooling information available. Order it in English or Spanish.



Summary of Topics and Guidelines

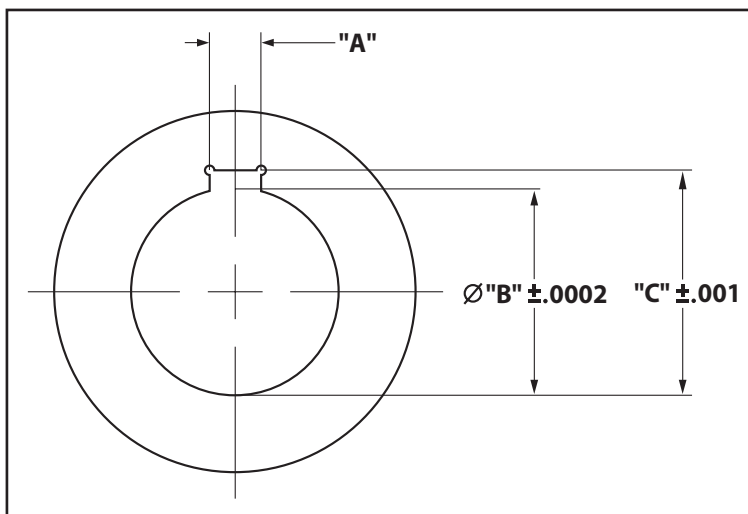
- ◆ Tooling terminology
- ◆ Specifications and design options
- ◆ Tablet design
- ◆ Tool steel, compression forces
- ◆ Procurement, Inspection, Maintenance
- ◆ Troubleshooting tablet production

Part No.	Language
IN 7548	English
IN 7571	Spanish

Punch Key Gauges

Natoli Punch Key Gauges will help ensure the proper fit between the punch key and turret guide keyway.

Part No.	Machine Type	"A"	"B"	"C"
IN 7521	"B"	0.1875 – 0.1880"	0.7500"	0.8200"
IN 7523	"D"	0.1875 – 0.1880"	1.0000"	1.0780"
IN 7647	533/328-33	0.2500 – 0.2505"	1.2500"	1.3580"
IN 7646	533/328-45	0.1875 – 0.1880"	1.1250"	1.2040"



Tool Management System (TM2)

Tool Management System (TM2)

The TM2 database application software is a complete tool control and punch inspection system. TM2 helps tablet manufacturers improve product quality and consistency, eliminate waste and ensure compliance with cGMP record-keeping requirements. TM2 assists users in effectively managing their tooling in many ways including: tool storage, tool inspection, tolerance reporting, monitoring tool usage, identifying tool location, maintaining tool drawing files, printing reports, efficiently creating purchase orders for additional or replacement tool sets and more. TM2 places comprehensive tool management and inspection information at your fingertips, resulting in better tablet quality and reduced press downtime. Management and purchasing will also benefit from access to the TM2 database.

Part No.	Item Description
IN 7578	TM2 System (Single-User)



Options

Part No.	Item Description
IN 7443	LVS Automatic Laser Punch Inspection System
IN 7583	TM2 Working Length, Cup Depth and OL Kit
IN 7560	TM2 Software Validation Package
IN 7579	TM2 Multi-User Network Upgrade
IN 7715	TM2 Tip and Barrel Kit for "B" and "D" Tooling
IN 7716	TM2 Tip and Barrel Kit for 533/328 Tooling
IN 7717	TM2 Tip Concentricity Kit
IN 7718	TM2 Die ID, OD and OL Kit
IN 7599	Multi-Tip Module (Software add-on)
IN 7451	LVS Tamping Pin Tool Nest
IN 7452	LVS Tamping Pin Calibration Gauge
IN 7453	LVS IMA Tool Nest
IN 7454	LVS IMA Calibration Gauge
IN 7488	Special Order Punch Holder

Automatic Non-Contact Laser Punch Inspection System

The combination laser measurement and vision system automatically measures the critical dimensions of a punch: working length, cup depth and overall length. Plus, it is fully integrated with the TM2. The vision system captures digital images of the punch and stores them with the punch measurements in the TM2 database.

Features

- ◆ Standard “B” and “D” Tooling
- ◆ IMA Comprima Tooling
- ◆ Capsule Filler Tamping Pins
- ◆ Multi-Tip Tooling
- ◆ Efficient 1-step measurements
- ◆ Non-contact measuring
- ◆ Laser technology
- ◆ Real-time punch adjustments
- ◆ Few moving parts
- ◆ Video camera

Part No.	Item Description
IN 7443	LVS Automatic Laser Punch Inspection System



TM2 Punch & Die Inspection Kits

Part No.	Item Description
IN 7583	TM2 Working Length, Cup Depth and OL Kit

Kit Includes

Part No.	Item Description
IN 7508	Digital Indicator
IN 7675	Data Input Tool for USB Port
IN 7532	Connecting Cable #905-409
IN 7503	Granite Gauge Stand (6 x 6 x 2")
IN 7588	Indicator Lifting Lever
IN 7513	Indicator Tip – Long
IN 7589	5.25" Length Calibration Standard
IN 7575	Punch Holder for “B” Tooling
IN 7577	Punch Holder for “D” Tooling
IN 7676	Foot Controller

Part No.	Item Description
IN 7716	TM2 Tip and Barrel Kit for 533/328 Tooling

Kit Includes

Part No.	Item Description
IN 7426	1 – 2" Outside Digital Micrometer
IN 7675	Data Input Tool for USB Port
IN 7532	Connecting Cable #905-409
IN 7676	Foot Controller

Part No.	Item Description
IN 7718	TM2 Die ID, OD and OL Kit

Kit Includes*

Part No.	Item Description
IN 7426	1 – 2" Outside Digital Micrometer
IN 7675	Data Input Tool for USB Port
IN 7532	Connecting Cable #905-409
IN 7676	Foot Controller

*Kit also includes

Die Bore Gauge Test Stand Set
Please specify range when ordering
See page 39 for details

Part No.	Item Description
IN 7717	TM2 Tip Concentricity Kit

Kit Includes

Part No.	Item Description
IN 7508	Digital Indicator
IN 7675	Data Input Tool for USB Port
IN 7532	Connecting Cable #905-409
IN 7503	Granite Gauge Stand (6 x 6 x 2")
IN 7588	Indicator Lifting Lever
IN 7513	Indicator Tip – Long
IN 7565	5" V-Block with Head and Key Cutout and Clamp
IN 7676	Foot Controller

Part No.	Item Description
IN 7715	TM2 Tip and Barrel Kit for “B” and “D” Tooling

Kit Includes

Part No.	Item Description
IN 7425	0 – 1" Outside Digital Micrometer
IN 7675	Data Input Tool for USB Port
IN 7532	Connecting Cable #905-409
IN 7676	Foot Controller



TM2 Laser Focused on a Multi-Tip Punch

Horizontal Optical Comparator

The Horizontal Optical Comparator provides a bright, crisp image for error-free inspection of compression tooling and tablets. The comparator comes equipped with factory-mounted linear glass scales for the display counter. The comparator is perfect for inspecting punch tip wear, punch head profiles, surface details of punch tips and tablets, embossed logos, bisects and more.

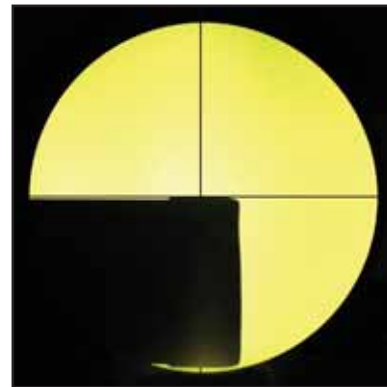
Features

- ◆ Generous X, Y work stage travel (8 x 4")
- ◆ Handles workloads up to 100 lbs
- ◆ 10x projection lens
- ◆ Fiber illuminator included
- ◆ 120VAC, 50/60Hz

Exterior Dimensions (L x W x H)

53.3 x 25.5 x 43.3 (1355 x 648 x 1100mm)

Part No.	Item Description
IN 7800	Horizontal Optical Comparator
IN 7801	Machine Stand
IN 7802	Display Counter



Video Magnification System

Video Magnification System with Oblique Viewer

Designed to increase productivity by allowing rapid examinations at varying magnifications, the Video Magnification System provides complete control when viewing a 3D image. The system can be used to magnify tablets or capsules and will assist with quality-control troubleshooting.

An innovative feature within the magnification system allows a live video to be sent anywhere for group viewing, discussion, documentation or training.

Features

- ◆ 3x – 32x optical (33x – 64x digital) magnification range with 15" monitor
- ◆ 4x – 45x optical (46x – 90x digital) magnification range with 17" monitor
- ◆ True auto-focus and one-touch zoom
- ◆ Articulating gas cylinder lift arm
- ◆ Stainless steel base and camera housing
- ◆ Glass coated optics for distortion-free viewing
- ◆ Manual focus override
- ◆ Freeze frame for distortion-free printing
- ◆ Available in a 110 or 220V configuration

Part No.	Item Description
IN 7564	Video Magnification System with Oblique Viewer



Zoom Stereo Microscope

The Zoom Stereo Microscope provides 3D imaging, allowing the observer to focus on the height and depth of tooling and tablets.

Features

- ◆ 10x wide-field eye pieces
- ◆ Pod zoom range 7.5x – 45x
- ◆ 360° fluorescent illuminator
- ◆ Boom stand with base
- ◆ Focusing holder
- ◆ Available in a 110 or 220V configuration

Part No.	Item Description
IN 7539	Zoom Stereo Microscope



Tooling & Tablet Magnification

Illuminated Inspection Magnifiers

Illuminated inspection magnifiers cast the ideal angle of light for highlighting tooling and tablets.



5-Diopter Magnifiers

5-Diopter Magnifiers feature a quartz halogen bulb that maintains 100% of initial lumen output during its entire 2000 hour lifespan. A specular finish reflector provides evenly diffused light.

Features

- ◆ 100-watt quartz halogen lamp
- ◆ 3-position switch for varied light intensity
- ◆ 700-watt convenience outlet in base
- ◆ Integrated UVB filter enclosure
- ◆ UL Listed

<u>Part No.</u>	<u>Item Description</u>
IN 7705	5-Diopter Halogen Magnifier (clamp-on)
IN 7706	5-Diopter Halogen Magnifier (weighted base)

Dual-Lamp Magnifier

The Dual-Lamp Magnifier features a 3-diopter lens with a 14" reach for versatile positioning and two lamps for shadow-free illumination.

Features

- ◆ 3-diopter lens (5" dia)
- ◆ 20-watt MR-16 lamps (x2)
- ◆ 24" flexible arms (x2)
- ◆ 3 x 3" heat dissipation shades
- ◆ Integrated 12V transformer in a portable 4 x 6" zinc-cast base
- ◆ 9" grounded cord and plug

<u>Part No.</u>	<u>Item Description</u>
IN 7707	Dual-Lamp Magnifier



Long-Reach Magnifier Combo

The Long-Reach Magnifier Combo features a 30" flexible lamp and a 20" flexible lens, which move independently to create the ideal lighting position. The combo attaches with the provided clamp.

Features

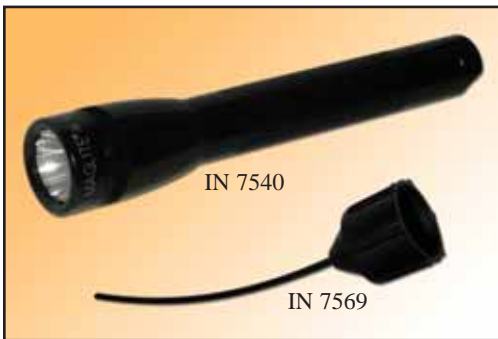
- ◆ 3-diopter lens (5" dia)
- ◆ 50-watt low voltage halogen lamp
- ◆ 4" shade with UVB filter enclosure
- ◆ Plug-in, remote 12V transformer
- ◆ 8" cord and plug

Part No.	Item Description
IN 7708	Long-Reach Magnifier Combo



Handheld Magnifiers

Part No.	Measuring Range	Focal Length
IN 7541	4x Illuminated Magnifier (Batteries and bulb included)	4"
IN 7544	4x Single Lens Eye Loupe	2.5"



Mini MagLite® and Fiber-Optic Wand Adapter

Use to illuminate punch cups in the press, turret guides, key slots and other dark areas.

Part No.	Item Description
IN 7540	Mini MagLite (AA batteries included)
IN 7569	7" Flexible Fiber-Optic Wand Adapter

