MOLD/DIE POLISHING

HYPREZ® DiaMold® Polishing Systems

Engis®

Engis Corporation is a leader in superabrasive finishing systems. Since 1938, Engis has been providing customers with finishing solutions utilizing quality equipment, tools and abrasives.

With our vast knowledge of polishing a wide range of materials, Engis sets the standard for superabrasive finishing and polishing.

This booklet has been developed to help guide our customers in the use of commonly used polishing equipment, tools and supplies for the finishing of molds and mold related tools.

We hope that it will help you understand basic mold finishing techniques and the tools used to perform these tasks. It is the goal of Engis to provide our customers with the best possible products and know–how that is available today.

Our products are sold by local stocking distributors who understand the mold & die business. Give us or your local distributor a call should you require any additional information or assistance.

Thank you for your business!

Stephen Griffin, President

ENGIS CORE VALUES

Teamwork – Teamwork is the essence of our ability to succeed as a trusted preferred supplier of engineered solutions to our clients. Our overriding loyalty is to the good of the whole organization, requiring us all to learn from each other and to share our skills and resources across organizational boundaries for our customers' benefit.

Respect – We respect every individual. We draw strength from equal opportunity and diversity, at the same time supporting personal growth and development. We value and all benefit from the entrepreneurial spirit of each individual.

Integrity – Above all, we are committed to integrity in all that we do, always, everywhere.

Professionalism – To be of service to our customers we are committed to the highest standards of professionalism, pursuing innovation, deploying imagination, being open to new ideas and acting decisively and consistently. We are determined to deliver outstanding quality products and services so that our relationships with our clients will be long lasting.

105 W. Hintz Road • Wheeling, IL 60090-6038
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

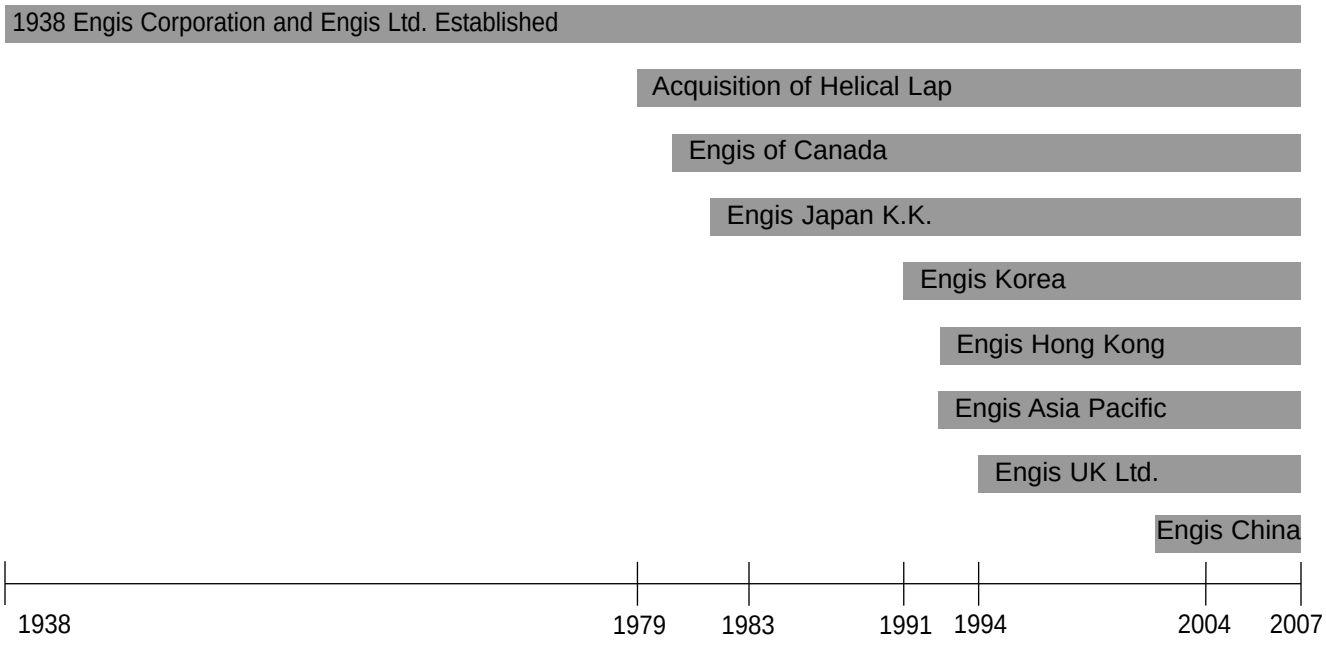
Corporate History

Engis Corporation was founded by Julius P. Steindler in 1938 as an import-export company with locations in the USA and UK. The company became involved in government projects during World War II which demanded extensive polishing on newly developed hard metals; the abrasive chosen to meet this challenge was diamond. Engis designed and perfected grading techniques which led to the creation of precision graded diamond powders. This initial project launched Engis into superabrasives and set the course for the company to become the “Leader in Superabrasive Finishing Systems”. Superabrasives remain the core product of the company to this day.

As the Superabrasive Finishing Industry evolved, Engis recognized the need for equipment to support the polishing operations. This resulted in the design of equipment and accessories which have come to be known as the Engis Systems Approach. As the company grew, the use of superabrasives expanded to include the manufacture of plated grinding products and bore finishing tools. Following the Engis Systems Approach, bore finishing systems were added to the line of products manufactured.

In the early 1960’s, Engis recognized the overseas opportunities for its products and, as a result, strategic associations were formed in Asia and Europe. In 1983 Engis Japan was formed as a joint venture to become the Asian Technology Center for the Engis Group. During the 1990’s Engis Korea, Engis Hong Kong and Engis Asia Pacific were added to the new worldwide organization. In 1994 Engis UK Ltd. was reorganized and became a subsidiary of Engis Corporation serving as the Technology Center in Europe. Today the Engis Group is truly a global organization with companies located around the world.

The Engis Group of Companies provide worldwide leadership in the field of Superabrasive Finishing Systems and take pride in working with major world-class companies as well as small family-owned businesses to satisfy our customers’ Superabrasive Finishing needs.



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Toolroom Solutions from Engis

Hyprez® Diamond Compounds

Engis provides everything you need to bring unsurpassed versatility to your toolroom finishing operations.

In addition to the Diprofil® and Minimo® hand finishing systems, Engis also provides diamond compounds and diamond-plated tools and accessories to tackle even the most demanding jobs in mold and die polishing.

Our Hyprez® diamond compounds, pastes and lubricants are used the world over and are recognized for their consistent quality and variety of formula options. When used in conjunction with Hyprez finishing stones, lapping sticks, bobs and abrasive caps, you can tackle most finishing tasks with speed and precision.

The Engis line of Electrogrip® diamond and CBN plated cutting and finishing tools bring added flexibility and capabilities to your superfinishing applications. We offer a complete line of diamond and CBN grinding pins, wheels and points, as well as diamond files and other finishing tools — including a comprehensive line of tools and accessories for ultrasonic finishing operations.

Diprofil® and Minimo® Hand Finishing Systems

Both the Diprofil® and Minimo® hand finishing systems are available through Engis and our exclusive network of trained and fully qualified distributors. This gives our customers in the metalworking profession a broad range of choices: shaft-drive reciprocating systems, both electric and air-driven; three families of rotary handpieces with finger-tip ON/OFF switching; ultrasonic finishing systems with an impressive array of tools for tackling EDM scale in hard-to-reach cavities; plus, tool holders and special accessories for hand lapping and other special operations.

Diprofil®, Minimo®, Hyprez® and Electrogrip® — the unbeatable combination for toolroom solutions.

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Table of Contents

Section	Products
1	Diprofil Finishing Systems, Tool & Accessories
2	Diprofil Files
3	Minimo Finishing Systems, Tools & Accessories
4	Hyprez Finishing Stones & Accessories
5	Diamond Compounds, High Intensity Polish, Lubricants
6	Bobs, Sticks, Brushes, Discs
7	Deburring Tools
8	Diamond Rotary Tools
9	Micro-Welders and Accessories

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Diprofil Finishing Systems

Engis Corporation is proud to be the exclusive importer and factory-authorized repair center for the high quality Diprofil range of polishing and deburring tools. Based in Sweden, Diprofil has been manufacturing tools of the highest quality for more than 50 years.

DIPROFIL®

ENGIS CORPORATION

HAS BEEN AUTHORIZED AS

AUTHORIZED DIPROFIL SERVICE CENTER

Certified by:
Tomas Skeppmark
Managing Director, Diprofil AB

The Diprofil range includes the new Di-Pro reciprocating tools, Dipromini mini polishing machines, rotary handpieces and power packs.

Diprofil tools are precise, fast action, high torque, easy-to-operate tools for performing such operations as filing, honing and polishing on complicated dies, precision finishing of bores and mold polishing.

Engis is the exclusive factory-authorized North American service center for the repair of Diprofil tools and offers fast turnaround service.

DiProfil Finishing Systems -- Table of Contents

Section	Products
1-2, 1-3	Di-Pro Reciprocating Tools
1-4	Rotary & Contra-Angle Handpieces
1-5	Electric Motors & Accessories
1-6	Diprofil Rotary Handpieces
1-7	Micro-Motor/Mini-FIling Machine
1-8	Diprofil Power Packs
1-9	Diprofil Ultrasonic Finishing System
1-10	Di-Pro Sets
1-11	High Frequency Polishing Machine
1-12	Air Operated Di-Profiler Accessories
1-13	Finishing System Lubricating Oil

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Di-Pro™ Range of Di-Profiler Reciprocating Tools

The new Di-Pro range of high-end reciprocating polishing/filing systems represents a quantum leap above the classic Di-Profiler units. Di-Pro tools have been engineered to increase operator comfort and safety. These new tools enhance the ergonomics of the polishing/filing action while at the same time providing adequate torque and precision to get the job done right.

Di-Pro Model FXC, Flexible-shaft driven machine with ball-joint (key-type) connection

Drive:	The FXC model should be driven by an electrical hanging-motor with speed control and a flexible-shaft with ball-joint connection (US standard) e.g. Diprofil type DSE-47. Corresponding motors of other brands may also be used.
Speed (maximum):	10,000 rpm
Speed (recommended):	5,000 - 7,000 rpm (depending on the weight of the used tool)
Stroke length:	0 - 6 mm (recommended 0.5 - 4 mm)
Tool-holder:	ø 3.5 mm
Weight:	750 g
Noise level:	Not exceeding 75 dB A at 6,000 rpm
Vibration levels:	Not exceeding 2.5 m/s^2 when the machine is operated according to the operation guide. For more information about vibration levels when using certain tools at different speeds and stroke lengths, please see the operation guide. Frequency weighed hand/arm vibration principally in accordance with SS-ISO 8662-1 and SS-EN ISO 8662-12.

Di-Pro Model FXD, Air driven machine

Drive:	The FXD model has a built-in air motor and should be driven by compressed and oil mist lubricated air. PLEASE NOTE: The built-in air motor may be damaged if operated with unlubricated air. Connection: The Diprofil quick-coupling HSL-M and fog lubrication unit MFB should be used for connection to your compressed air system. PLEASE NOTE: Protect the air inlet from dust and dirt when not in operation.
Speed (maximum):	8,000 rpm
Speed (recommended):	5,000 - 7,000 rpm (depending on the weight of the used tool)
Stroke length:	0 - 6 mm (recommended 0.5 - 4 mm)
Tool-holder:	ø 3.5 mm
Weight:	880 g
Oil consumption:	Minimum 30 mm^3/min. at maximum speed (about 2 drops/min.)
Noise level:	Not exceeding 75 dB A at 6,000 rpm
Vibration levels:	Not exceeding 2.5 m/s^2 when the machine is operated according to the operation guide. For more information about vibration levels when using certain tools at different speeds and stroke lengths, please see the operation guide. Frequency weighed hand/arm vibration principally in accordance with SS-ISO 8662-1 and SS-EN ISO 8662-12.

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Di-Pro™ Range of Di-Profiler Reciprocating Tools

Di-Pro Model FXP, Machine with built-in micro-motor (Diprofil connector)

Drive:	The FXP model has a built-in micro-motor, which is connected to, and controlled by, the Diprofil DPU/2 or corresponding power units.
Speed (maximum):	10,000 rpm
Speed (recommended):	5,000 - 7,000 rpm (depending on the weight of the used tool)
Stroke length:	0 - 6 mm (recommended 0.5 - 4 mm)
Tool-holder:	ø 3.5 mm
Weight:	960 g
Noise level:	Not exceeding 75 dB A at 6,000 rpm
Vibration levels:	Not exceeding 2.5 m/s^2 when the machine is operated according to the operation guide. For more information about vibration levels when using certain tools at different speeds and stroke lengths, please see the operation guide. Frequency weighed hand/arm vibration principally in accordance with SS-ISO 8662-1 and SS-EN ISO 8662-12.

Di-Pro Model FXV/D, Machine with micro-motor connection for brushless motor type HPM-BL1

Drive:	The FXV/D model has a connection for the Diprofil brushless motor type HPM-BL1, which should be connected to, and controlled by, the Diprofil TPU-20 twin power unit.
Speed (maximum)	10,000 rpm
Speed (recommended):	5,000 - 7,000 rpm (depending on the weight of the used tool)
Stroke length:	0 - 6 mm (recommended 0.5 - 4 mm)
Tool-holder:	ø 3.5 mm
Weight:	725 g
Noise level:	Not exceeding 75 dB A at 6,000 rpm
Vibration levels:	Not exceeding 2.5 m/s^2 when the machine is operated according to the operation guide. For more information about vibration levels when using certain tools at different speeds and stroke lengths, please see the operation guide. Frequency weighed hand/arm vibration principally in accordance with SS-ISO 8662-1 and SS-EN ISO 8662-12.

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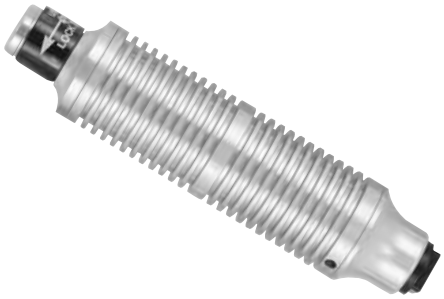
Model 30 Handpiece

The Model 30 Handpiece has a key-type chuck with a chuck capacity from 0 to 5/32". Grease sealed ball bearings provide long, trouble-free operations.
Chuck Key No. 72 (not shown).

Model 35 High Speed Handpiece



The Model 35 Handpiece, when used with Di-Profiler motors, will provide speeds up to 35,000 RPM. The safety torque control and low noise level makes operation fast and easy. The tool is especially efficient when used with high speed diamond burrs, points and wheels. The tool comes equipped with a 1/8" collet.

Additional collets for use with the Model 35 Handpiece are:

Size	Part No.
1/8"	103114
3/32"	103115
2.35mm	103117

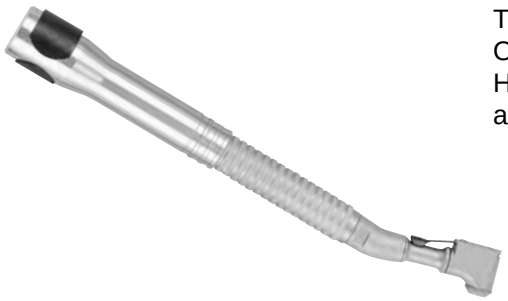
Model 44 Handpiece

This tool is equipped with a 1/4" collet for use with rotary tools having 1/4" shanks.

Additional collets for use with the Model 44 Hand Piece are:

Part No.	Capacity	Range
441	1/16"	.050 to .062
442	3/32"	.085 to .093
443	1/8"	.113 to .125
444	5/32"	.144 to .156
445	3/16"	.177 to .187
446	7/32"	.208 to .218
447	1/4"	.238 to .250
Set No. 440	Set of 7 collets	(441-447) with holder

Model 55A Handpiece



The Model 55A Right Angle Handpiece has a chuck capacity of 3/32". Overall length of this handpiece is 6-1/4", largest diameter 5/8". The Head is permanently set at a 30" angle. Note: Use only with wheels and points that have short type "R" slotted shanks.

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Model SR Motor
- 1/6 HP
- 18,000 rpm
- Ball bearing design
- 110 V

Includes motor, CFL-15 foot pedal, #93 flexible shaft and #77 sheath.

Replacement parts:
- *Flexible Shaft #93*
- *Sheath #77*
- *Brushes #132P*

Model C-300 Motor
- 1/10 HP
- 18,000 rpm
- Ball bearing design
- 110 V

Includes motor, foot pedal and No. 30 type rotary handpiece, shaft and sheath.

Replacement parts:
- *Flexible Shaft #34.365*
- *Sheath #34.366*
- *Brush set #34.30001*

EM-1 Dial Speed Control
Solid state motor speed control for precise adjustment by hand. Recommended for use with the new Di-Pro tools to maintain proper rpm range.

Constant Torque Foot Control SCR-1
This foot control works with Engis Model "R" Motor only. The foot control must not be used with any other motor.

Foot Rheostat Model CFL-15
For use with either RE Motor or C Motor. Serves both as switch and spread regulator and automatically returns to off position when foot is removed. AC/DC, 115-230 Volts.

93
Key Drive Flexible Drive shaft for CMOT & RMOT Motors. Suitable for FPC, FPS and other Rotary Handpieces.

77 *(not pictured)*
Sheath for flexible drive shaft to fit on the CMOT & RMOT motors.

93.SQ
Square Drive Flexible Drive shaft for CMOT and RMOT Motors. Suitable for FPH, FPH/RL, and other Rotary Handpieces.

80 *(not pictured)*
Sheath for flexible drive shaft to fit on the REMOT motor.

96
Key Drive Flexible Drive shaft for REMOT Motors. Suitable for FPC, FPS and other Rotary Handpieces.

96.SQ
Square Drive Flexible Drive shaft for REMOT Motors. Suitable for FPH, FPH/RL and other Rotary Handpieces.

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Diprofil Rotary Handpieces

Diprofil Rotary Handpiece C-HPM-B2

Micro-motor driven rotary handpiece with carbon brush motor replacing the HPA. For use together with power unit DPU-3 or twin power unit TPU-20. Also fits in the DPU/2 power unit. Features a quick change tool design and is supplied with 3.0 mm collet. Optional 2.35 mm collet available.

Speed:	*Max. 35,000 rpm*
Consumed power:	*100 W*
Torque:	*3.8N cm*
Weight:	*270 g*
Dimensions:	*L152 x ø29.5 mm*

Diprofil Rotary Handpiece C-HPM-B1

Micro-motor driven high speed rotary handpiece with carbon brush motor for use together with power unit DPU-3 or twin power unit TPU-20. Also fits in the DPU/2 power unit. Features a quick change design for both the collet and the tool and is supplied with 3.0 mm collet. Optional 2.35 mm collet available.

Speed:	*Max. 38,000 rpm*
Consumed power:	*100 W*
Torque:	*4.0N cm*
Weight:	*285 g*
Dimensions:	*L159 x ø29.5 mm*

Diprofil Brushless Rotary Handpiece C-HPM-BL1

Micro-motor driven rotary handpiece with brushless motor for use together with twin power unit TPU-20. Features a quick change design for both the collet and the tool and is supplied with 3.0 mm collet. Optional 2.35 mm collet available.

Speed:	*Max. 40,000 rpm*
Consumed power:	*Max. 230 W*
Torque:	*8.5N cm*
Weight:	*350 g*
Dimensions:	*L159 x ø27 mm*

Diprofil Brushless Rotary Handpiece C-HPM-BL2

Micro-motor driven high speed rotary handpiece with brushless motor for use together with twin power unit TPU-20. Features a quick change design for both the collet and the tool and is supplied with 3.0 mm collet. Optional 2.35 mm collet available.

Speed:	*Max. 50,000 rpm*
Consumed power:	*Max. 230 W*
Torque:	*7.6N cm*
Weight:	*350 g*
Dimensions:	*L159 x ø27 mm*

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Brush Motor HPM-B1

DC micro-motor adapter for Diprofil mini polishing/filing machines type FMR/N, FMV/N and rotary handpiece type C-HPM-B1. For use together with power unit DPU-3 or twin power unit TPU-20. Also fits in the DPU/2 power unit.

Speed:	*Max. 38,000 rpm*
Consumed power:	*100 W*
Torque:	*4.0N cm*
Weight:	*190 g*
Dimensions:	*L100 x ø29.5 mm*

Brushless Motor HPM-BL1

Brushless micro-motor adapted for Diprofil polishing/filing machines type FPV/DR, FPT/DR and Di-Pro machine type FXV/D. Also suitable for polishing/filing machines type FMR/N and FMV/N together with adapter B1F. For use together with twin power unit TPU-20.

Speed:	*Max. 40,000 rpm*
Consumed power:	*Max. 230 W*
Torque:	*8.5N cm*
Weight:	*255 g*
Dimensions:	*L100 x ø27 mm*

Dipromini Transverse Polishing/Filing Machine FMV/D

Dipromini transverse polishing/filing machine with connection for Diprofil micro motor type HPM-B1.

Tool holder:	*Max. ø 3.5 mm*
Stroke length:	*Variable stroke 0-4 mm (measured 60 mm from the machine housing)*
Speed:	*Recommended 6,000 - 10,000 rpm (max. 12,000 rpm at max. 2 mm stroke length)*
Dimension:	*ø24mm*
Weight:	*195 - 240 g*
Noise:	*<75 dB(A) at 12,000 rpm*
Vibration:	*<2.5 m/s2*

Frequency weighed hand/arm vibration, principally in accordance with ISO 8662-1. Measuring point: Front edge of machine housing (FMR-1). The machine is freely hanged and unloaded.

Dipromini Polishing/Filing Machine

Dipromini polishing/filing machine with connection for Diprofil micro motor type HPM-B1. Available with three different stroke lengths:

Stroke Length	***Part Number***
0.5 mm	*FMR/D5*
1.0 mm	*FMR/D10*
1.5 mm	*FMR/D15*

Tool holder:	*Max. ø 3.5 mm*
Stroke length:	*0.5, 1.0 or 1.5 mm*
Speed:	*Max. 10,000 rpm Recommended: 5,000 - 8,000 rpm*
Dimension:	*ø24mm*
Weight:	*Approx. 120 g*
Noise:	*<70 dB(A) at 7,000 rpm*
Vibration:	*Stroke 0.5 mm: <2.5 m/s2 Stroke 1.0 mm: 2 - 2.8 m/s2 Stroke 1.5 mm: 2 - 3.5 m/s2*

Frequency weighed hand/arm vibration, principally in accordance with ISO 8662-1. Measuring point: Front edge of machine housing (FMR-1). The machine is freely hanged and unloaded.

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Diprofil Power Packs

Diprofil offers a complete range of power packs and drive sources for its handpieces. The power packs feature high torque and electrical feedback circuitry. All feature the famous Diprofil standard of quality and are backed by our service technicians. The Diprosonic DUS-300 is a new and improved ultrasonic power supply for use in slots and nibs where hand work can be difficult.

Diprofil Power Unit DPU-3

This compact and ergonomic Power Unit replaces the DPU/2 and is designed for use together with dedicated rotary handpieces and micro-motor driven reciprocating Diprofil polishing/filing machines with carbon brush motors. It has high torque and electrical feedback circuitry. Other features include continuously variable speed, forward/reverse switch and automatic overload protection. Supplied with foot control type DPU-3-FC for optional speed adjustment.

Technical data	
Input:	AC 110/220 V at 50/60 Hz
Output:	DC 0 - 32 V, 1.2 A
Power:	Max. 100 W
Weight Power Unit:	1.7 kg
Dimensions Power Unit:	W115 x D147 x H96 mm
Weight Foot Control:	585 g

Diprofil Twin Power Unit TPU-20

Twin power unit featuring dual control system for both brushless and carbon brush micro-motors (not simultaneously). Variable speed control by hand dial or the included foot control type TPU-20-FC. Supplied with handpiece cradle and a convenient magnetic tool holder.

- Digital display showing the speed in rpm
- Maximum torque set mode
- Maximum speed set mode
- Built-in handle for best portability
- Error code display function
- Foot control with auto-cruise speed function
- Self diagnosis sytem

Technical data	
Input:	AC 200 ~ 240 V at 50/60 Hz
Output:	DC 0 - 32 V, 1.6 A
	BLDC 0 - 32 V, 1.6 A
Power DC:	Max. 185 W
Power BLDC:	Max 245 SW
Weight Power Unit:	2.9 kg
Dimensions Power Unit:	W137 x D232 x H180 mm
Weight Foot Control:	575 g

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Diprosonic DUS-300 Ultrasonic Finishing/Polishing System from DiProfil

The Diprosonic DUS-300 is the new and improved Ultrasonic Finishing System from Diprofil. This system's main advantage is its very short stroke length (10 - 35 µm) at a very high frequency (18 - 25 kHz). This makes this unit ideal for working in narrow and confined spaces such as cavities and slots where a short stroke length is preferable. For this kind of delicate work, the Diprosonic will give you precise finishing with rapid stock removal in a relatively clean environment without the need for lubricating fluids, etc.

The unit is excellent for use together with ceramic fiber stones and sintered diamond files, but it is also possible to use electroplated diamond files as long as the shank of the used tool is kept as short as possible.

Operation is either by hand or the included foot switch and the unit will automatically find the right frequency for each tool.

Important Features

- *36 W max. output*
- *Two output levels (high/low)*
- *Capable of long working periods*
- *Auto feedback system*
- *Small, compact and low weight*

System includes:

- *Ultrasonic Handpiece for DUS-300 (DUS-300-HP)*
- *Handpiece Cable (DUS-5)*
- *Power Cord - US type 110V (DUS-6)*
- *Foot switch (DUS-300-FS)*
- *10/11 mm Spanner (DUS-8)*
- *2.5 mm Hex-key (DUS-9)*
- *Handpiece stand (DUS-10)*
- *Tool-holder 1.1 mm (DUS-11)*
- *Tool-holder Diam. 3 mm (DUS-30)*
- *Tool Kit Complete (DUS-300-TK), consisting of 1 ea.*
  - *Fiber Stone 4 x 1 x 50 mm, 250 grit*
  - *Fiber Stone 4 x 1 x 50 mm, 400 grit*
  - *Fiber Stone 4 x 1 x 50 mm, 700 grit*
  - *Fiber Stone 6 x 1 x 50 mm, 250 grit*
  - *Fiber Stone 6 x 1 x 50 mm, 400 grit*
  - *Fiber Stone 6 x 1 x 50 mm, 700 grit*
  - *Sintered Diamond File DLU-641, 400 grit*
  - *Sintered Diamond File DLU-642, 600 grit*
  - *Sintered Diamond File DLU-740, 200 grit*
  - *Sintered Diamond File DLU-741, 400 grit*

Technical Data

Control Unit	
Input:	*AC 90 - 220 V, 50/60 Hz*
Ultrasonic Power Output:	*36 W*
Frequency:	*18 - 25 kHz*
Stroke:	*10 - 35 µm*
Dimensions:	*144W x 195D x 95H mm*
Weight:	*658 g*
Handpiece	
Cord length:	*1500 mm*
Dimensions:	*ø 30 x 131 mm*
Weight	*185 g*

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Set DXS3 - Electrically Operated

Set DXS3 includes the Model FXC Di-Pro, SR Electric Motor and Foot Rheostat with Key-Type Flexible Shaft. This set offers the user the flexibility to purchase the tools and accessories to perform specific jobs when the need arises.

Features:

- *Up to 10,000 strokes per minute*
- *Electric Motor with key drive flexible shaft*
- *Foot Rheostat*
- *Adjustable stroke 0-1/4"*
- *Compact*
- *Lightweight*
- *1/8" Tool Shank capacity*
- *Key drive*

Note:

Set DXS3 above includes the following:

- *FXC Di-Pro*
- *CFL-15 Foot Rheostat*
- *Model SR Motor*
- *#96 Flexible Shaft (Key Type)*
- *#80 Outer Sheath*

Frequency weighed hand/arm vibration, principally in accordance with ISO 8662-1 and ISO 8662-12. For further details, see diagram and other information in the corresponding Operation Guide.

Set DXS6 - Electrically Operated

Set DXS6 includes the Model FXC Di-Pro, C-300 Electric Motor and Foot Rheostat with Key-Type Flexible Shaft. This set offers the user the flexibility to purchase the tools and accessories to perform specific jobs when the need arises.

Features:

- *Up to 10,000 strokes per minute*
- *Electric Motor with key drive flexible shaft*
- *Foot Rheostat*
- *Adjustable stroke 0-1/4"*
- *Compact*
- *Lightweight*
- *1/8" Tool Shank capacity*
- *Key drive*

Note:

Set DXS6 above includes the following:

- *FXC Di-Pro*
- *CFL-15 Foot Rheostat*
- *Model C-300 Motor*
- *#34.365 Flexible Shaft (Key Type)*
- *#34.366 Outer Sheath*

Frequency weighed hand/arm vibration, principally in accordance with ISO 8662-1 and ISO 8662-12. For further details, see diagram and other information in the corresponding Operation Guide.

Set DXA2 - Air Operated

Includes the following items listed below:

- *Air operated Di-Pro Model FXD in plastic case with wrench and lathe adapter post*
- *Dipro-Fog MFB Lubricator-Pressure Control -- Air Cleaner-Water Separator Unit*
- *Five feet of flexible hose*
- *Quick disconnect HSL-M hose connector*
- *One bottle lubricating oil*

Note: The air operated Di-Pro's featured here must be used with the Dipro-Fog, Part No. MFB.

Features:

- *High torque to weight ratio -- low air consumption*
- *Constant torque regardless of speed or pressure*
- *Variable speed control -- up to 10,000 strokes per minute*
- *Automatic lubrication*
- *Piston type motor runs cooler, quieter*
- *Rugged construction*
- *Air pressure -- 57 pounds psi*
- *Adjustable stroke -- 0-1/4"*
- *Air consumption 0.18 cfm to 2.30 cfm*
- *Long life and low maintenance*
- *Tool shank capacity -- 1/8"*

Frequency weighed hand/arm vibration, principally in accordance with ISO 8662-1 and ISO 8662-12. For further details, see diagram and other information in the corresponding Operation Guide.

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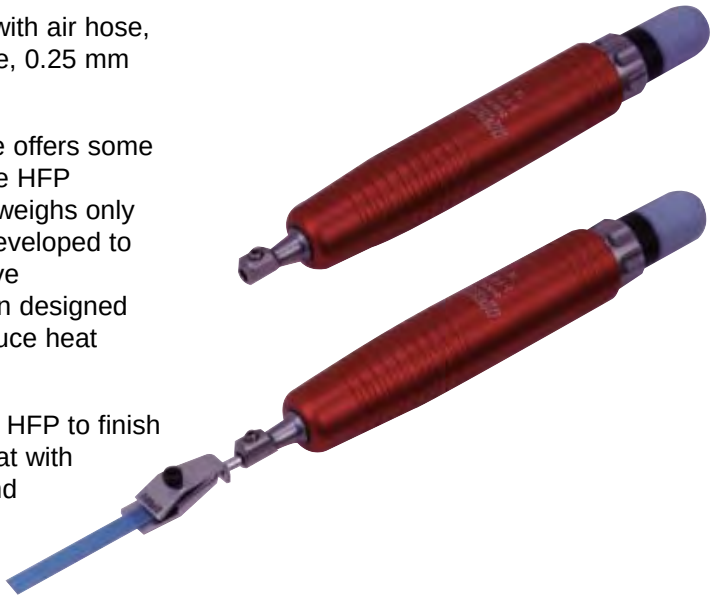
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Air Driven High Frequency Polishing Machine

The HFP/SK is supplied in a sturdy plastic box, with air hose, tools and instructions. 20,000 strokes per minute, 0.25 mm (.010") fixed stroke.

This air driven, high frequency polishing machine offers some of the advantages of the ultrasonic systems. The HFP reciprocating polishing machine is compact and weighs only 160 grams. It is easy to handle and has been developed to ensure optimum performance. The patented drive mechanism for the reciprocation motion has been designed to nearly eliminate all harmful vibrations and reduce heat dramatically.

Use any Engis ceramic polishing stones with the HFP to finish slots, ribs and all of your detail work. Works great with diamond files as well as wood sticks and diamond compound for polishing.



Technical Specifications:

Drive: Oil lubricated through air regulator 4-6 bar, 2-4 drops per minute
Frequency: 20,000 strokes per minute
Stroke: 0.25 mm (.010")
Tool-holder capacity: 3.6 mm (.141")
Weight: 160 grams
Noise: less than 78dB @ 6 bar
Vibration: less than 2.5 m/s

**The HFP requires an air regulator-dryer and lubricator (Dipro-Fog Part No. MFB).*

Frequency weighed hand/arm vibration, principally in accordance with ISO 8662-1 and ISO 8662-12. For further details, see diagram and other information in the corresponding Operation Guide.

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Lubricating Oil for Dipro-Fog MFA-K

The Dipro-Fog MFA-K oil was especially developed for the unique lubricating requirements of the Air Di-Profiler and Air Rotary Hand Piece.

Dipro-Fog MFB

The Dipro-Fog MFB package consists of air filter, regulator, manometer and fog lubrication device, all in one, with tubing and Dipro-Fog oil (MFA-K).

The air motors for filing and rotary handpieces are manufactured with a very high level of accuracy and require lubricated and filtered air (5m) to obtain a long and trouble-free lifetime.

Item No: MFB

Technical data:

Max. primary pressure:	*16 bar*
Max. capacity at 7 bar:	*1200 l/min*
Hose connection:	*7 mm*
Secondary pressure:	*0.5 – 10 bar*

HSL-M Quick Release Hose Connector

Each air-driven machine requires a quick coupling, type HSL-M, as well as a fog lubricating device type Dipro-Fog MFB to ensure efficient lubrication at all times.

Item No: HSL-M

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Lubricant for Di-Profiler & Minimo Recipron

FNA-K

Use the FNA-K oil for lubricating your Di-Profiler or Recipron machines. This lubricant is specially formulated to reduce wear and prolong the life of your reciprocating handpieces.

It is recommended that you use the FNA-K oil on your Di-Profiler and Recipron handpieces daily. 1-2 drops will reduce heat and friction.

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Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Diprofil Diamond Files are made from carefully selected quality diamonds, precisely bonded to obtain the best physical properties for added strength and resistance to wear.

Diamond files are excellent for EDM scale removal and for use on carbide, hardened steel, ceramics and other hard materials.

Section	Type	Intended Use
2-3	DLA	Short machining files for general use. Designed with a semi-flexible shank to obtain a good contact with the work piece. These precision files are the basic type for use with the Diprofil Polishing Machines. Different shapes and grain sizes are available as well as safe sided types. Medium to high stroke (3-5 mm).
2-3	DLE	Long precision machine files for general use. Low to medium stroke (2-4 mm). Different shapes and grain sizes are available as well as two safe sided types. Low to medium stroke (2-4 mm).
2-4	DLF	Precision riffle type machine files. Especially recommended for use on shaped surfaces. Available in both medium and coarse diamond grains.
2-4	DLK	Large machine files for use together with the heavy-duty type machines with ø 6.4 mm tool holder. Max 4 mm stroke recommended to avoid high levels of vibrations. Different shapes available as well as a safe sided type.
2-5	DLN	Precision mini hand files for delicate work. Different shapes.
2-5	DLG	“Habilis” type diamond hand files for general use. This file type can be comfortably used without a fitted handle.
2-6	DLH	Precision hand files for general use. Different shapes available as well as safe sided types.
2-7	DLM	Short conical machine files for general use. Specially recommended for EDM scale removal and other preparation of thin slots, e.g. after wire-EDM machining. Different shapes and grain sizes are available.
2-8	DBE	Long machine files for general use. Low to medium stroke (2-4 mm). Different shapes and grain sizes are available.
2-9	DLB	Riffle type machine files. Especially recommended for use on shaped surfaces.
2-10	DLS	Conical hand files for general use. Specially recommended for EDM scale removal and other preparation of thin slots, e.g. after wire-EDM machining. Different sizes and grain sizes are available.
2-11	DBH	Hand files for general use.
2-12	DLL	Short conical hand files for general use. Specially recommended for EDM scale removal and other preparation of thin slots, e.g. after wire-EDM machining. Different sizes and grain sizes are available.
2-13	DLD	One sided riffle type hand files. Specially recommended for use on shaped surfaces.
2-14	DLQ	Extra long (200 mm) hand files for general use. Different shapes are available.
2-15	DLX	Hand files for general use. This file type can be comfortably used without a fitted handle.

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Diprofil Steel Files

Diprofil Precision Steel Files are for use in soft and semi-hard steel as well as other materials of low and medium hardness.

Section	Type	Intended Use
2-16	STL-1 – STL-6	Standard steel files for use in Diprofil polishing machines. Low to medium stroke (2-4 mm). Available in both medium (-00) and fine (-1) cut as well as in different shapes.
2-16	STL-11 – STL-16	Precision riffle type machine files. Especially recommended for use on shaped surfaces. Low to medium stroke (2-4 mm). Available in both medium (-00) and fine (-1) cut as well as in different shapes.
2-16	STL-21 – STL-26	Mini steel files for use in Diprofil polishing machines. Low to medium stroke (2-4 mm). Available in both medium (-00) and fine (-1) cut as well as in different shapes.
2-17	STL-31 – STL-36	Large machine files for use together with the heavy-duty type machines with Ø 6.4 mm tool holder. Max 4 mm stroke recommended to avoid high levels of vibrations. Available in both medium (-00) and fine (-1) cut as well as in different shapes.
2-17	STL-101	Medium sized steel files especially recommended for deburring of cast aluminum goods. Low to medium stroke (2-4 mm). Available in both medium (-00) and fine (-1) cut.

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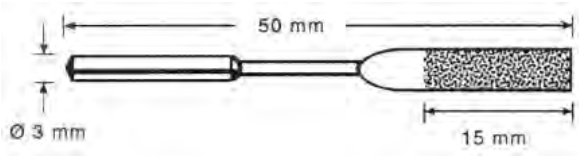
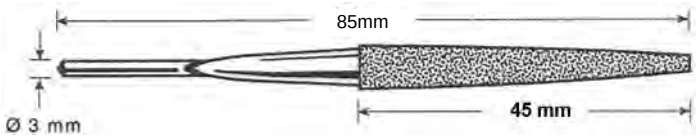
Diprofil Precision Files For Diprofil Filing Machines



Shape	Size mm	Diamond D64* • 50 (fine)	Diamond D151* • 100 (medium)	Diamond D181* • 150 (coarse)
Standard Files				
	2x1 3x1 4x1 4x2 5x2	DLA-2x1S DLA-3x1S DLA-4x1S DLA-4x2S DLA-5x2S	DLA-2x1S DLA-3x1S DLA-4x1S DLA-4x2S DLA-5x2S	DLA-2x1S DLA-3x1S DLA-4x1S DLA-4x2S DLA-5x2S
	Ø1 Ø2 Ø3 Ø4	DLA-1 DLA-2 DLA-3 DLA-4	DLA-1 DLA-2 DLA-3 DLA-4	DLA-1 DLA-2 DLA-3 DLA-4
	2x2x2 3x3x3 4x4x4	DLA-T2S DLA-T3S	DLA-T2S DLA-T3S DLA-T4S	DLA-T2S DLA-T3S DLA-T4S
	r = 1 r = 1.5 r = 2	 DLA-R2S	DLA-R1S DLA-R1.5S DLA-R2S	 DLA-R2S
	r = 5 r = 2.5	DLA-R2.5xR5	DLA-R2.5xR5	DLA-R2.5xR5
Safe Sided Files				
	2x1 3x1 4x1 4x2 5x2	DLA-2x1 DLA-3x1 DLA-4x1 DLA-4x2 DLA-5x2	DLA-2x1 DLA-3x1 DLA-4x1 DLA-4x2 DLA-5x2	DLA-2x1 DLA-3x1 DLA-4x1 DLA-4x2 DLA-5x2
	0,5x4 0.75x4 1x4		DLA-0. 5x4 DLA-0.75x4 DLA-1x4	 DLA-1x4
	2x2x2 3x3x3 4x4x4	DLA-T2 DLA-T3	DLA-T2 DLA-T3 DLA-T4	DLA-T2 DLA-T3 DLA-T4
	r = 1 r = 1.5 r = 2	 DLA-R2	DLA-R1 DLA-R1.5 DLA-R2	 DLA-R2



Shape	Size mm	Diamond D151* •100 (medium)	Diamond D181* • 150 (coarse)
Standard Files			
	5x1	DLE-11	DLE-11
	Ø3	DLE-2	DLE-2
	5x2	DLE-30	
	5x2	DLE-4	
	3.5x3.5x3.5	DLE-5	DLE-5
	25x2.5	DLE-6	DLE-6
Safe Sided Files			
	5x1	DLE-1	DLE-1
	5x2	DLE-3	

*Grain Sizes according to FEPA

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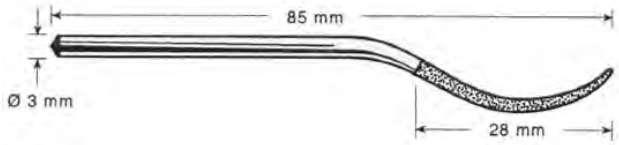
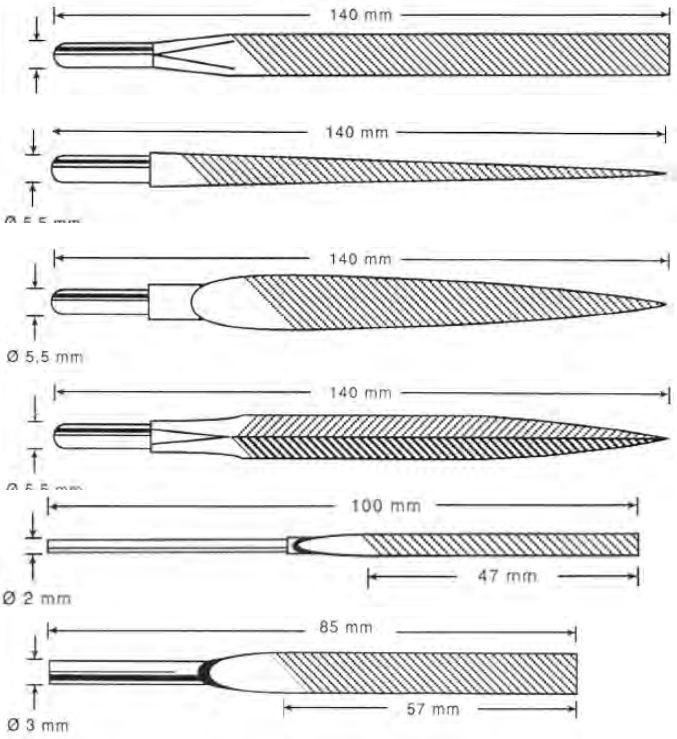
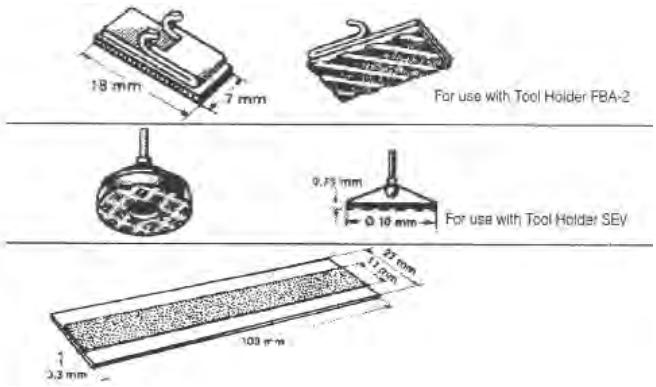
Diprofil Precision Files For Diprofil Filing Machines



Shape	Size mm	Diamond D64* • 50 (fine)	Diamond D151* • 100 (medium)	Diamond D181* • 150 (coarse)
Standard Files				
	4.5x2.5		DLF-1	DLF-1
	Ø3		DLF-2	DLF-2
	5x2.5		DLF4	DLF-4
	3x3		DLF6	DLF-6



Standard Files				
	10x2.5		DLK-11	
	Ø6.3		DLK-2	
	12.2x3.7		DLK-3	
	9.6x9.6x9.6		DLK-5	
	5.3		DLK-6	
Safe Sided Files				
	10x2.5		DLK-1	



DLC-7x18	DLC-7x18	DLC-7x18
DLD-10	DLD-10	DLD-10
	DTA	

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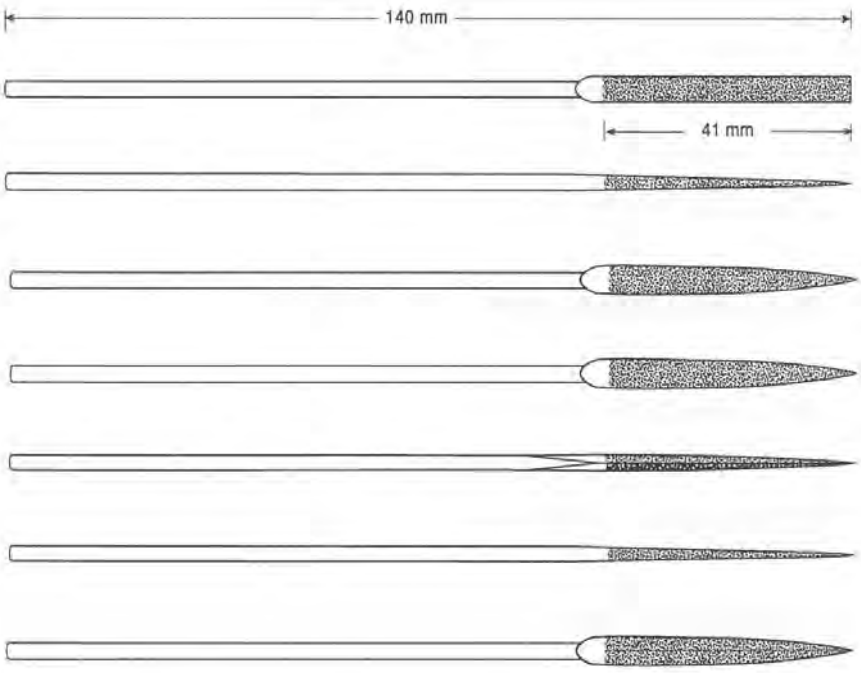
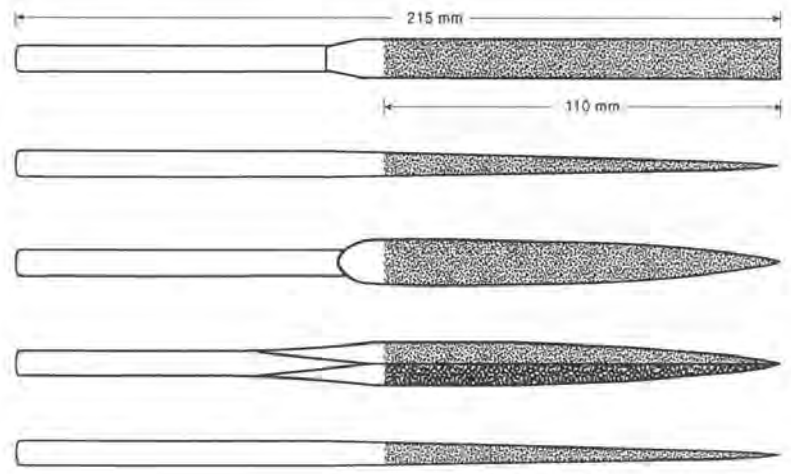
Diprofil Precision Files For Diprofil Filing Machines



Shape	Size mm	Diamond D151* • 100 (medium)
	4x1.3	DLN-1
	Ø1.6	DLN-2
	4x1.8	DLN-3
	4x1.6	DLN-4
	3x3x3	DLN-5
	Ø1.9	DLN-6
	4.1x1.5	DLN-7
Standard set, folder containing 7 files, one of each DLN1 to DLN-7.		DLN-100



Shape	Size mm	Diamond D151* • 100 (medium)
	10.3	DLG-1
	Ø6.5	DLG-2
	12x4	DLG-3
	9.5x9.5x9.5	DLG-4
	Ø5.5	DLG-5
Standard set, folder containing 5 files, one of each DL-1 to DLN-5.		DLG-100

*Grain Sizes according to FEPA

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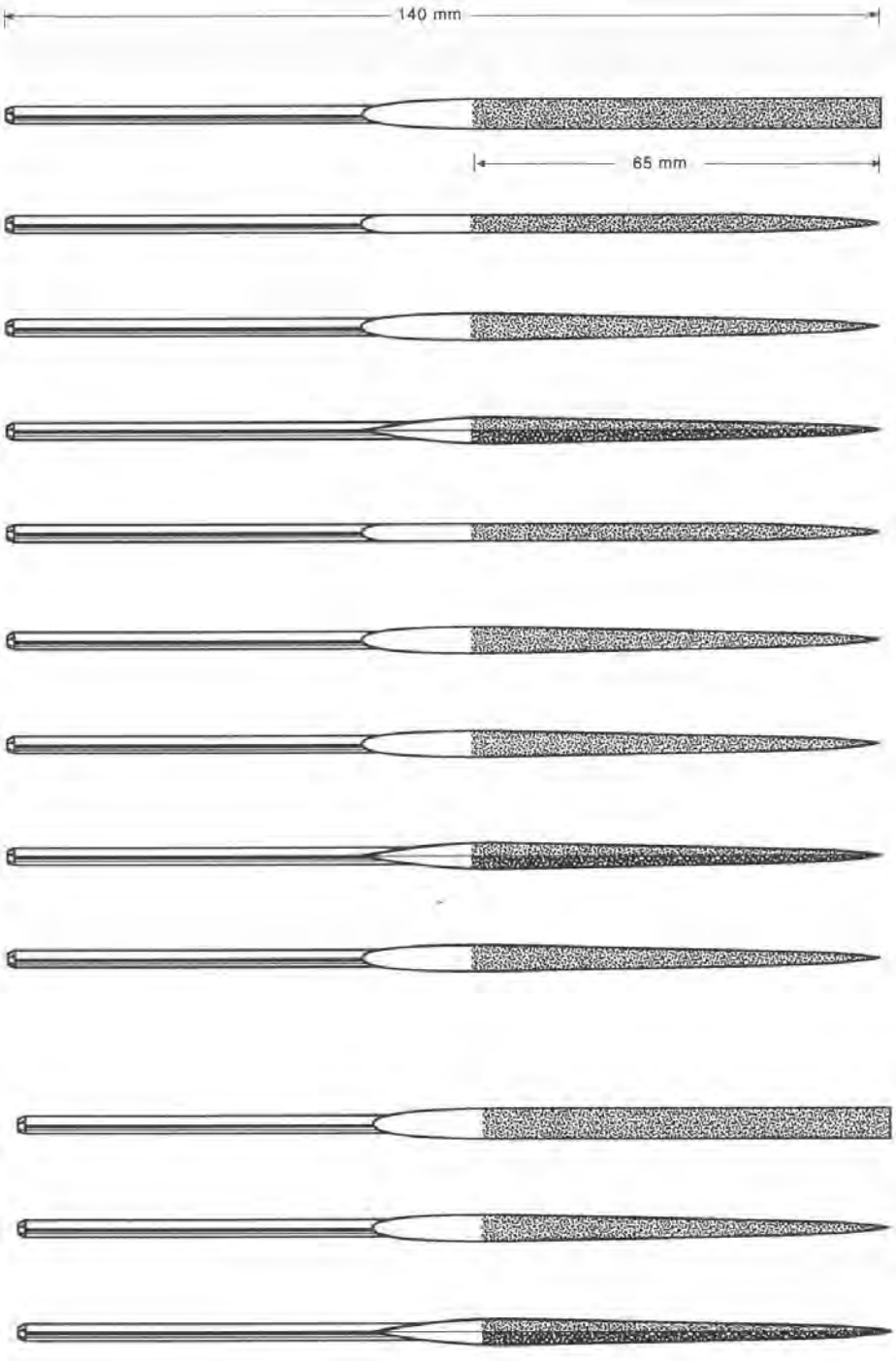
Diprofil Precision Hand Files



Shape	Size mm	Diamond D151* • 100 (medium)
	5.3x1.4	DLH-11
	Ø3	DLH-2
	5.1x2.2	DLH-4
	3.8x3.8x3.8	DLH-5
	Ø2.6	DLH-6
	5.2x1.6	DLH-8
	5.0x1.6	DLH-9
	5.0x2.4	DLH-10
	5.6x1.9	DLH-30

Safe Sided Files

	4.8x1.1	DLH-1
	5.5x1.7	DLH-3
	4.9x2.1	DLH-7

Standard set, plastic folder containing 7 diamond files, one of each of DLH-1 through DLH-7	DLH/100
Standard set, plastic folder containing 7 diamond files, DLH-2, DLH-5, DLH-6, DLH-8, DLH11 and DLH-30.	DLH/100S

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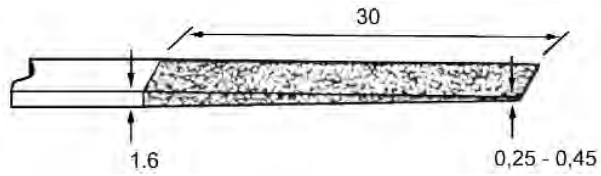
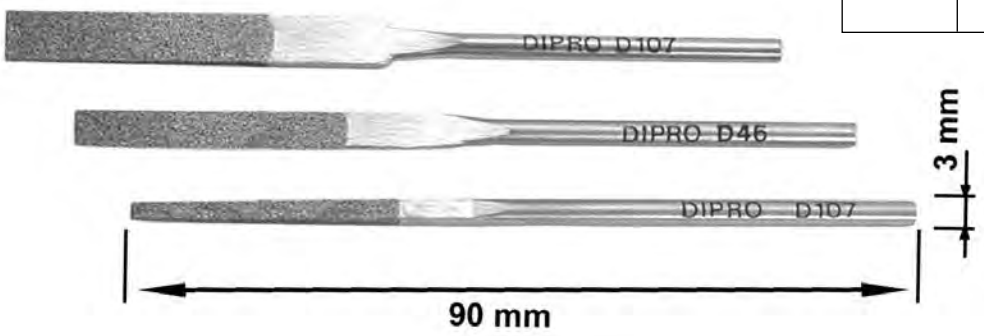
Diprofil Dipro Conical Diamond Machine Files

DIPROFIL CONICAL FILES FOR DIPROFIL FILING MACHINES



Shape	Size mm	Item Number Diamond D46	Item Number Diamond D107
	2,5x1.6	DLM-1-D46	DLM-1-D107
	4x1.6	DLM-2-D46	DLM-2-D107
	6x1.6	DLM-3-D46	DLM-3-D107



Max file length 90 mm
Max shaft diameter 3 mm

DLM-SET

Set consisting of the 6 different DLM files
(as specified above)

Item Number
DLM/1

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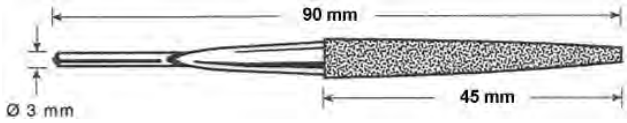
Diprofil Dipro Diamond Machine Files

DIPROFIL FILES FOR DIPROFIL FILING MACHINES



Shape	Size mm	Item Number Diamond D46	Item Number Diamond D76	Item Number Diamond 107
	4x2	DBE-1-D46	DBE-1-D76	DBE-1-107
	Ø3	DBE-2-D46	DBE-2-D76	DBE-2-D107
	5x2	DBE-3-D46	DBE-3-D76	DBE-3-D107
	5x2	DBE-4-D46	DBE-4-D76	DBE-4-D107
	3,5	DBE-5-D46	DBE-5-D76	DBE-5-D107
	2,5x2,5	DBE-6-D46	DBE-6-D76	DBE-6-D107

Total file length approx 90 mm.

DBE- SET

Set consisting of the above 6 different DBE machine files.

Item Number

DBE-SET-D46
DBE-SET-D76
DBE-SET-D107

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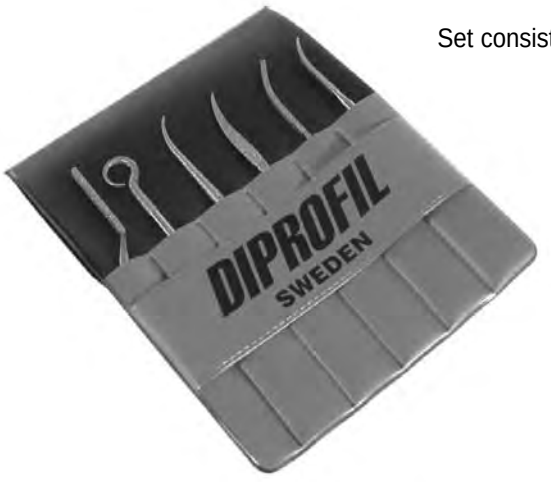
Diprofil Dipro Diamond Machine Files

DIPROFIL DIAMOND FILES FOR DIPROFIL FILING MACHINES

Approx file length 65 mm. Shaft diameter 3 mm.

Shape	Size mm	Item Number Diamond D107
	3.2X1.4	DLB-1-D107
	Ø3	DLB-2-D107
	Ø3	DLB-3-D107
	2.5	DLB-4-D107
	3.2x1.4	DLB-5-D107
	4x2	DLB-6-D107

DLB SET



Set consisting of the above 6 different DLB machine files.

Item Number

DLB-SET-D107

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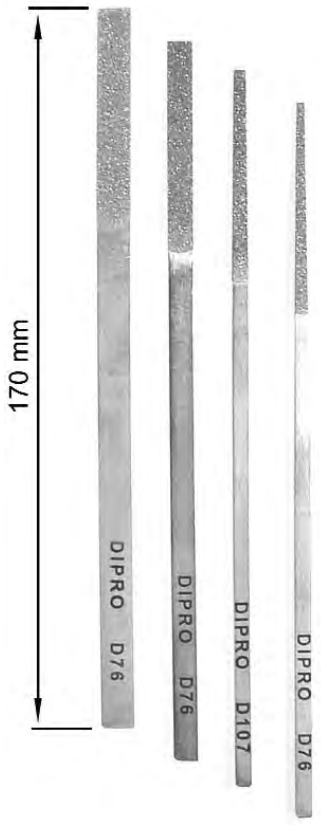
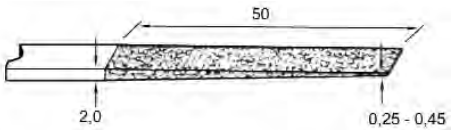
Diprofil Dipro Conical Diamond Hand Files

DIPROFIL DIAMOND FILES FOR DIPROFIL FILING MACHINES





Shape	Size mm	Item Number Diamond D46	Item Number Diamond D76	Item Number Diamond 107
	4 x 2		DLS-1-D76	
	4 x 3	DLS-2-D46	DLS-2-D76	DLS-2-D107
	6 x 6	DLS-3-D46	DLS-3-D76	DLS-3-D107
	8 x 8	DLS-4-D46	DLS-4-D76	DLS-4-D107

Total file length 170 mm

DLS SET

Set consisting of the above 10 different DLS

Item Number
DLS/1

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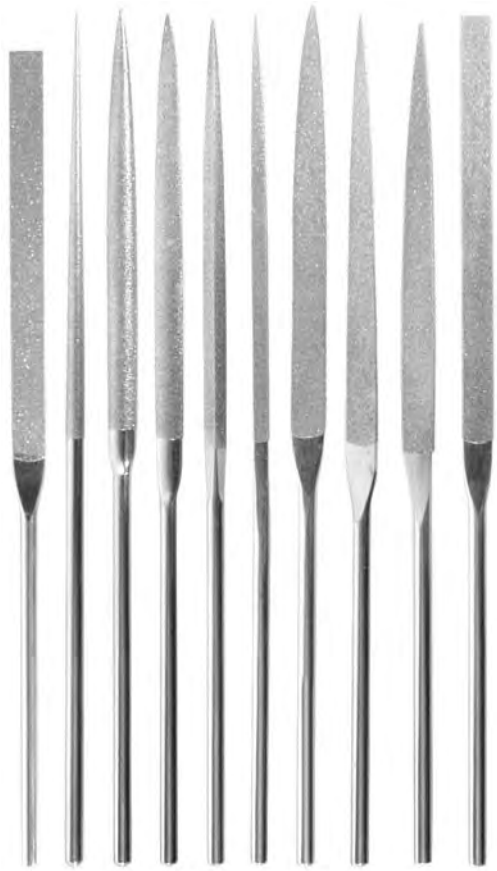
Diprofil Dipro Diamond Hand files

DIPROFIL FILES FOR HAND FILING



Total file length approx 140 mm.

Shape	Size mm	Item Number Diamond D46	Item Number Diamond D76	Item Number Diamond 126
	6x1.5	DBH-1-D46	DBH-1-D76	DBH-1-D126
	Ø3	DBH-2-D46	DBH-2-D76	DBH-2-D126
	5x2	DBH-3-D46	DBH-3-D76	DBH-3-D126
	5x2	DBH-4-D46	DBH-4-D76	DBH-4-D126
	3,5	DBH-5-D46	DBH-5-D76	DBH-5-D126
	2.5x2.5	DBH-6-D46	DBH-6-D76	DBH-6-D126
	6x2	DBH-7-D46	DBH-4-D76	DBH-7-D126
	5.4x1.5	DBH-8-D46	DBH-8-D76	DBH-8-D126
	1.7x6	DBH-9-D46	DBH-9-D76	DBH-9-D126
	6x1.5	DBH-10-D46	DBH-10-D76	DBH-10-D126

DIPROFIL FILES FOR HAND FILING

Set consisting of the above 10 different DBH hand files

Item Number
DBH-SET-D46
DBH-SET-D76
DBH-SET-D126

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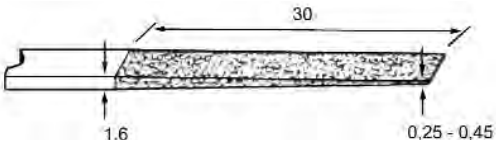
Diprofil Dipro Conical Diamond Hand files

DIPROFIL FILES FOR HAND FILING



Shape	Size mm	Item Number Diamond D30	Item Number Diamond D46	Item Number Diamond 76
	1.7x2	DLL-1-D30	DLL-1-D46	DLL-1-D76
	1.7x4	DLL-2-D30	DLL-2-D46	DLL-2-D76
	1.7x6	DLL-3-D30	DLL-3-D46	DLL-3-D76
	5x2	DLL-4-D30		

DLL Set

Set consisting of the above 10 different DLL hand files

Item Number
DLL-SET

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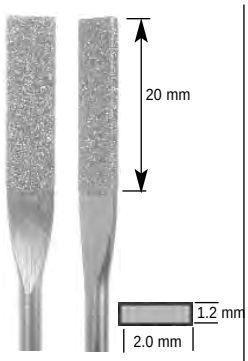
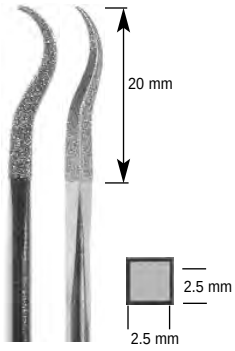
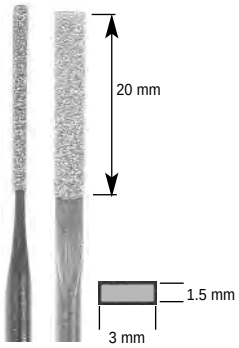
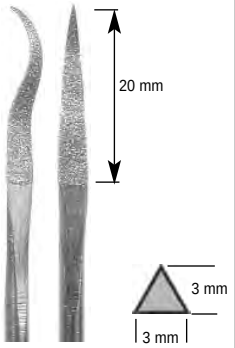
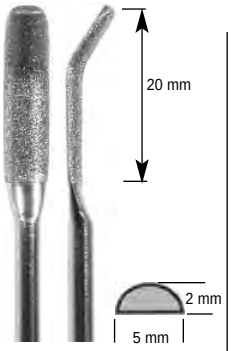
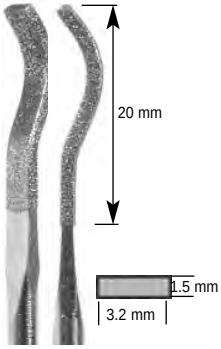
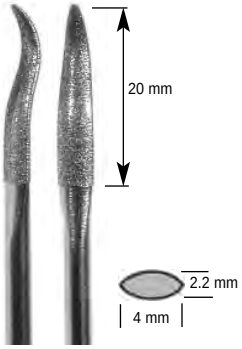
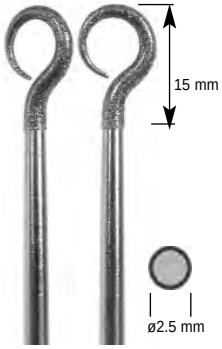
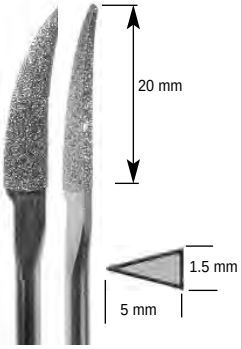
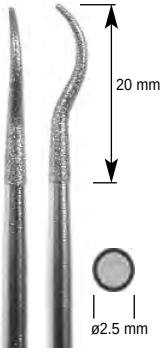
E-mail: info@engis.com

Diprofil Dipro Diamond Hand Files

DIPROFIL FILES FOR HAND FILING–Technical Specification

				
Item Number				
DLD-1	*DLD-2*	*DLD-3*	*DLD-4*	*DLD-5*
				
Item Number				
DLD-6	*DLD-7*	*DLD-8*	*DLD-9*	*DLD-10*

Item Number Diamond D107

DLD-1-D107	*DLD-1-D107*	*DLD-3-D107*	*DLD-4-D107*	*DLD-5-D107*
DLD-6-D107	*DLD-7-D107*	*DLD-8-D107*	*DLD-9-D107*	*DLD-10-D107*

DLD Set

Set consisting of the above 10 different DLD hand files.

Item Number

DLD-SET-D107

total file length approx. 140 mm

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Diprofil Dipro Diamond Hand Files

Shape	Size mm	Item Number Diamond D126
	8.5X1.6	DLQ-1-D126
	Ø4	DLQ-2-D126
	7x2.5	DLQ-3-D126
	35x3.5	DLQ-4-D126
	4.5	DLQ-5-D126

DLB SET

Set consisting of the above 5 different DLB Hand files.

Item Number

DLB-SET-D126

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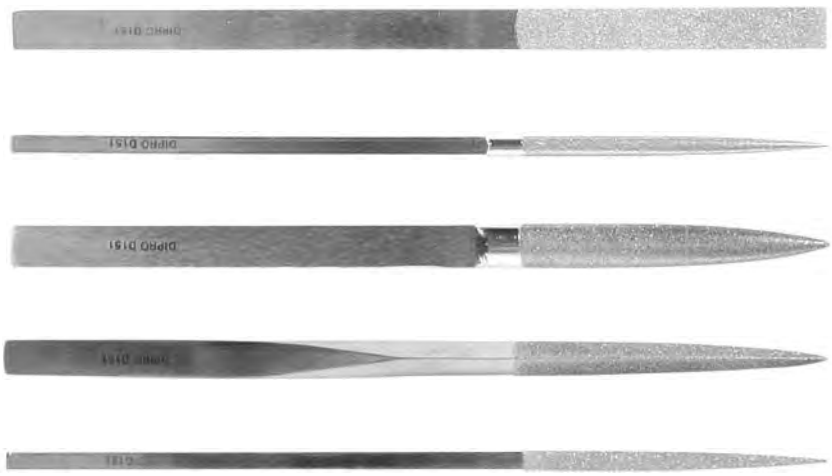
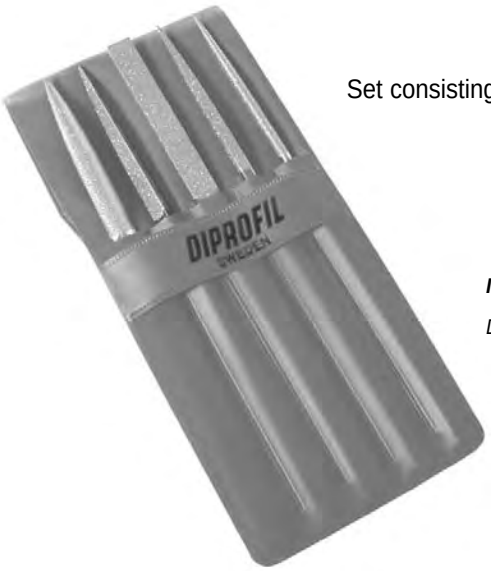
Diprofil Dipro Diamond Hand Files



Shape	Size mm	Item Number Diamond D151
	11X3.5	DLX-1-D151
	Ø5	DLX-2-D151
	10.5X4.4	DLX-3-D151
	7.7	DLX-4-D151
	6.3X6.3	DLX-5-D151

DLQ SET



Set consisting of the above 5 different DLX Hand files.

Item Number

DLX-SET-D151

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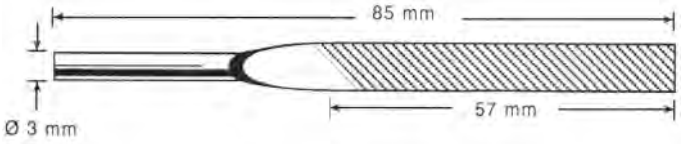
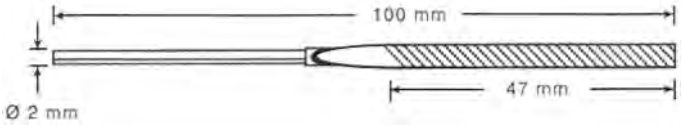
DIPROFIL Steel Files are for use on soft and semi-hardened steel as well as other materials of low and medium hardness.

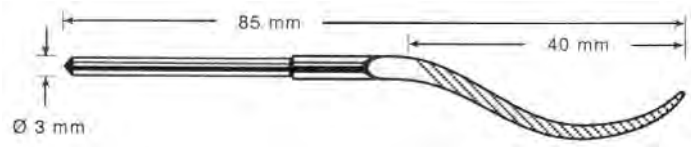
Diprofil Precision Steel Files



Shape	Size mm	Medium Cut -00	Fine Cut -1
	5x1.5	STL-1	STL-1
	Ø3	STL-2	STL-2
	5x2	STL-3	STL-3
	5x2	STL-4	STL-4
	3.5x3.5x3.5	STL-5	STL-5
	2.5	STL-6	STL-6
Assortment one of each STL-1 to STL-6		STL-1/6	STL-1/6



	3.3x1	STL-21	STL-21
	Ø2	STL-22	STL-22
	3.2x1.1	STL-23	STL-23
	3x1.3	STL-24	STL-24
	2.2x2.2x2.2	STL-25	STL-25
	1.7	STL-26	STL-26
Assortment one of each STL-1 to STL-6		STL-21/26	STL-21/26



	4x2	STL-11	STL-11
	Ø3	STL-12	STL-12
	4.7x2.5	STL-13	STL-13
	Ø3	STL-14	STL-14
Assortment one of each STL-1 to STL-6		STL-11/16	STL-11/16

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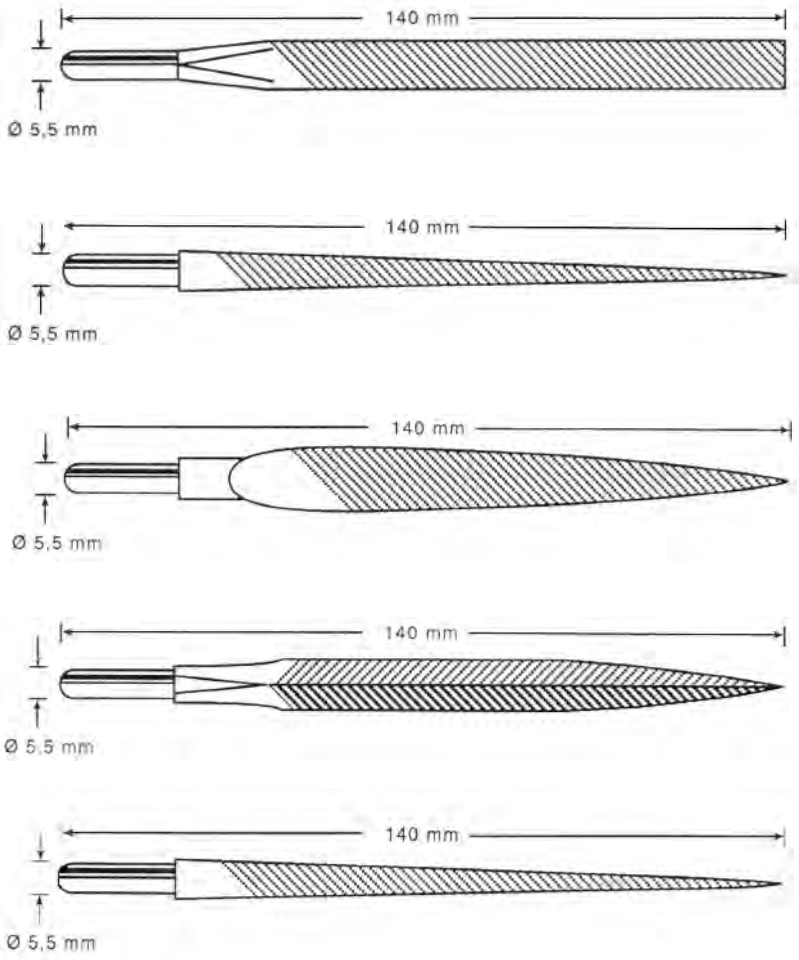
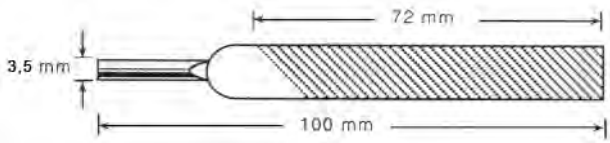
Diprofil Precision Steel Files



Shape	Size mm	Medium Cut -00	Fine Cut -1
	10x2.5	STL-31	STL-31
	Ø6.3	STL-32	STL-32
	12.2x3.4	STL-33	STL-33
	9.4x9.4x9.4	STL-35	STL-35
	⍁5.3	STL-36	STL-36
		Assortment one of each STL-1 to STL-6	STL-30



	10x2.5	STL-101	STL-101
		STL-1A	STL-1A

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Minimo One

The Minimo One Series hand finishing system is designed to provide unsurpassed accuracy, reliability, power and versatility, while being comfortable and natural to use with minimum fatigue. An innovative hand switch, built right into the handpiece itself, is just one of many new features that makes Minimo the most advanced and easy to use handpiece on the market.

Plus, when you use the Minimo One system in conjunction with Hyprez diamond compounds, pastes, lubricants and the full range of toolroom products from Engis, you can be assured of high precision results, time and time again.

Hand Switch

In combination with the MINIMO One POWER PACK, the HAND SWITCH feature, requiring only one free hand, enables every operator to start and stop the handpiece quickly, even when working out of reach of the POWER PACK. (An extension cord for your handpiece is available as an option.) This function provides higher operational efficiency and excellent results. The concave shape of the switch prevents unintentional starting. Foot switches are also available as an option.

Collet Release Ring:

Quick and Easy Exchange of Tools

The MINIMO One rotary heads utilize a simple and easy tool changing mechanism, requiring no keys or spanners. Tools are easily exchanged by slightly turning the collet release ring. Tools with different shank diameters can be used by simply changing the collet.

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Handpiece and Head Attachments

Adding to the Minimo One's versatility is a complete array of attachments, including heads, clamp heads and gear reduction units for more power.

Versatility of Handpieces

MINIMO One Rotary Handpieces consist of combinations of various heads and motor assemblies of different specifications. Different combinations of heads, motor assemblies and other attachments offer handpieces suitable for different applications. Heads can be mounted to motors in a snap.

Variety of Handpieces

ENGIS offers a full selection of handpieces, ranging from Standard, Slender and Heavy Duty Rotary units to POLYTOR Ultrasonic systems – the ideal solution for removing EDM scale.

Polytor Ultrasonic Handpiece

Standard Rotary Straight Head Handpiece

Anglon Angle Head Handpiece

Rubron Lateral Swing Handpiece

Recipron Reciprocating Handpiece

Minimo One Series -- Table of Contents

Section	*Products*
3-3, 3-4	*Power Packs*
3-5	*Polytor Ultrasonic Systems*
3-6 - 3-12	*Rotary Handpieces*
3-13	*Rubron System*
3-14, 3-15	*Anglon Systems*
3-16	*Recipron System*
3-17	*Mini-Belt Sander*
3-18, 3-19	*Motors*
3-20 - 3-22	*Heads*
3-23 - 3-26	*Accessories*
3-27	*Ultrasonic Toolholders*
3-28 - 3-35	*Anglon Tools*
3-36	*Mini Sand Belts*

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Compatible with Handpieces with ON/OFF Switch.

The POWER PACK is equipped with a feedback feature to detect overloading. It features an audible beep that lets you know when the handpiece is turned ON/OFF or when the tool is overloaded; this excellent feature allows the handpiece to perform to its full capability without damaging the handpiece or power pack.

Features:

• Audible Alert Function

Protecting against an over-current in the D.C. motor handpiece, it sounds before the overload protection function is activated. (Beep sound volume is adjustable).

• Compatible with the handpiece ON/OFF switch

Effective especially when work requires frequent switching ON/OFF or when working out of reach of the POWER PACK. (An extension cord for your handpiece is available as an option.)

• Audible Beep for starting or stopping the Handpiece

The POWER PACK beeps when starting or stopping the handpiece for clear identification. This function is effective especially with the POLYTOR ultrasonic handpiece which makes almost no sound during its operation.

• Soft start and quick brake mechanism.

Equipped with a mechanism that starts the handpiece softly and stops it quickly, it improves safety substantially.

• Quadplex Safety System

Provided with fourfold protective circuits, the POWER PACK and the handpiece are protected from overloading and overheating.

• Feedback Mechanism

Maintains constant rotation speed and preserves torque for the D.C. motor handpiece.

• Handpiece is grounded

The body of the handpiece also is grounded. (Grounding available only on handpieces of Minimo® One Series except the POLYTOR ultrasonic handpiece and Minimo® Seven Series.)

• Rotation Switch

Reverse rotation capable for the D.C. motor handpiece.

• Foot Switch can be used

Foot controlled operation is also possible with our foot switch.

• Convenient Carrying Handle

A foldable carrying handle that makes transportation easier.

• Removable Power Cord

Makes storage convenient.

P211

Polytor Power Pack – Multi-Station

115V ±5% USA

Supplied with 3 handpiece stations, one for ultrasonic operation and two standard. Suitable for multi-handpiece operation. These Hi-Performance units sound audible alerts when the handpiece is switched on and off as well as when the tool is overloaded.

Model	Input Voltage	Rated Input	Output Voltage	Dimensions
P211	AC115V±5%	60 VA	DC3-30V	144 mm (W)
	(50/60Hz)		AC Max	218 mm (D)
			80V (25±5KHz)	116 mm (H)

For safety only one handpiece can be used at a time.

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C311

Hi-Performance DC Power Pack – Multi-Station **3-Station 115V ±5%**

Supplied with 3 handpiece stations. Suitable for multi-handpiece operation. These Hi-Performance units sound audible alerts when the handpiece is switched on and off as well as when the tool is being overloaded. Six month limited warranty.

Model	Input Voltage	Rated Input	Output Voltage	Dimensions
C311	AC115V±5% (50/60Hz)	60 VA	DC3-30V	144 mm (W) 218 mm (D) 116 mm (H)

For safety only one handpiece can be used at a time.

C111

Hi-Performance DC Power Pack – Single-Station ***1-Station 115V ±5%***

Supplied with one handpiece station. All other features and performance are the same as C311.

Model	Input Voltage	Rated Input	Output Voltage	Dimensions
C111	AC115V±5% (50/60Hz)	60 VA	DC3-30V	144 mm (W) 218 mm (D) 116 mm (H)

P111

Polytor Power Pack – Ultrasonic ***1-Station 115V ±5%***

This power pack is provided with an automatic follow-up sensor that detects the optimal resonance frequency for each tool ensuring maximum performance. This unit has audible sound for on/off, an overload indicator with audible alert and a wide range of operational frequencies enables various tools to be used.
Included: 1 rubber handpiece cradle.

Model	Input Voltage	Rated Input	Output Voltage	Dimensions
P111	AC115V (50/60Hz)	60VA	80V AC	103 mm (W) 178 mm (D) 116 mm (H)

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US21 Polytor (Ultrasonic)

The POLYTOR handpiece (US21) is indispensable for mold finishing, providing powerful and stable ultrasonic vibration.

- *Removing EDM scale*
- *Ideal for de-burring, grinding, cutting, polishing and honing.*
- *Convenient for pattern cutting of printed circuit boards.*
- *Finishing precious metals and jewels.*

The US21 is great for small and intricate work. For use in slots and ribs where hand work is difficult. Because the reciprocation is short and moves with ultrasonic speed, the tool tip can be used in corners, wall ends and for fine detail work.

Since the frequency is adjusted automatically, operation of the US21 is simple and easy. Because of the tool's aggressive operation and strength, processing time is reduced dramatically, saving 70 to 75% of finishing time while improving quality. A large variety of tools for use with the US21 are available for cleaning up milled and EDM surfaces to mirror polishes. Tool selection can be found on pages 3-33 through 3-42.

POLYTOR HANDPIECE US21

- *Compact and light-weight*
- *Built-in ON/OFF SWITCH*
- *Removable curled power cord makes storage convenient*
- *Employs an advanced high performance oscillating unit*
- *Standard tools: F5112, F5031, F5503 1 pc. each*
- *1 year limited warranty*

The Hand Switch provides quick and easy ON/OFF manipulation.

The Hand Switch enables the handpiece to be switched ON/OFF on the handpiece side also; this offers great convenience when work requires frequent switching ON/OFF or when working out of reach of the Power Pack. This adoption of the new mechanism improves the switch durability as well.

Two spanners clamp the tool securely.

The 2 supplied spanners enable the tool to be attached securely; stable vibration delivered by the high performance vibrator is correctly transferred to the tip of the Polytor Tool.

P111

Polytor Power Pack ***115V+/-5% USA***

- The POWER PACK complete with 1 ultrasonic handpiece station.
- Automatic Follow-up Sensor detects the optimal resonance frequency for each tool ensuring better results.
- A wide range of operational frequencies enables various tools to be used.
- Resonance frequency - automatically adjusted.
- Standard accessory: Rubber Cradle (RM11) 1 pc.
- Audible sound for On–Off.
- Overload indicator with Audible Alert.
- 1 year limited warranty.

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Standard Rotary Handpieces

The Minimo One Series offers a versatile selection of handpieces with different specifications, suitable for a wide variety of applications ranging from deburring to mirror finishing.

POWER PACK: Can be used with all listed power packs.

- *Available in ranges from ultra-high torque model to super-high speed models.*
- *Built-in ON/OFF SWITCH.*
- *Easy and quick tool changing mechanism. No wrenches required.*
- *Removable curled power cord increases storage convenience.*
- *Supplied with 2 standard collets: 3/32" and 1/8" 1 pc. each.*
- *Precision balanced motors for vibration-free operation.*
- *6 month limited warranty.*

V11H/E — Ultra-high speed type

Standard Rotary ***Collets: 3/32" & 1/8"*** ***Ultra-High Speed*** ***Speed Range: 5,000-50,000 RPM***

Effective especially when small diameter tools are used.

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KV 11H/5,000-50,000 RPM*

M21H/E — High speed type

Standard Rotary ***Collets: 3/32" & 1/8"*** ***High Speed/High Torque*** ***Speed Range: 3,000-30,000***

High speed/high torque for general purposes.

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KM 21H/3,000-30,000 RPM*

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M11H/E — High speed type

Standard Rotary ***Collets: 3/32" & 1/8"*** ***High Speed*** ***Speed Range: 3,500-35,000 RPM***

Slim and compact providing high speed.

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KM 11H/3,500-35,000 RPM*

V21H/E — High speed type

Standard Rotary ***Collets: 3/32" & 1/8"*** ***High Speed*** ***Speed Range: 4,000-40,000 RPM***

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KV 21H/4,000-40,000 RPM*

M21/E — Medium speed type

Standard Rotary ***Collets: 3/32" & 1/8"*** ***Medium Speed*** ***Speed Range: 1,500-15,000 RPM***

High torque/medium speed.

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KM 21/1,500-15,000 RPM*

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M11/E — Medium speed type

Standard Rotary Collets: 3/32" & 1/8" Medium Speed Speed Range: 2,000-20,000 RPM

Compact, medium revolution speed model suitable for accurate and light processing.

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KM 11/2,000-20,000 RPM*

V21/E — Medium speed type

Standard Rotary Collets: 3/32" & 1/8" Med. Speed/Med. Torque Speed Range: 2,500-25,000 RPM

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KV21/2,500-25,000 RPM*

M11G/E — Low speed geared type

Standard Rotary Collets: 3/32" & 1/8" Low Speed/High Torque Speed Range: 660-6,600 RPM

A built-in gear mechanism provides ultra-low speed and ultra-high torque.

POWER PACK: Can be used with all listed power packs.

Head: H011/E - Standard Head *Motor: KM 11G/600-6,600 RPM*

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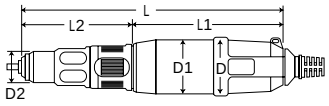
STANDARD ROTARY SPECIFICATIONS

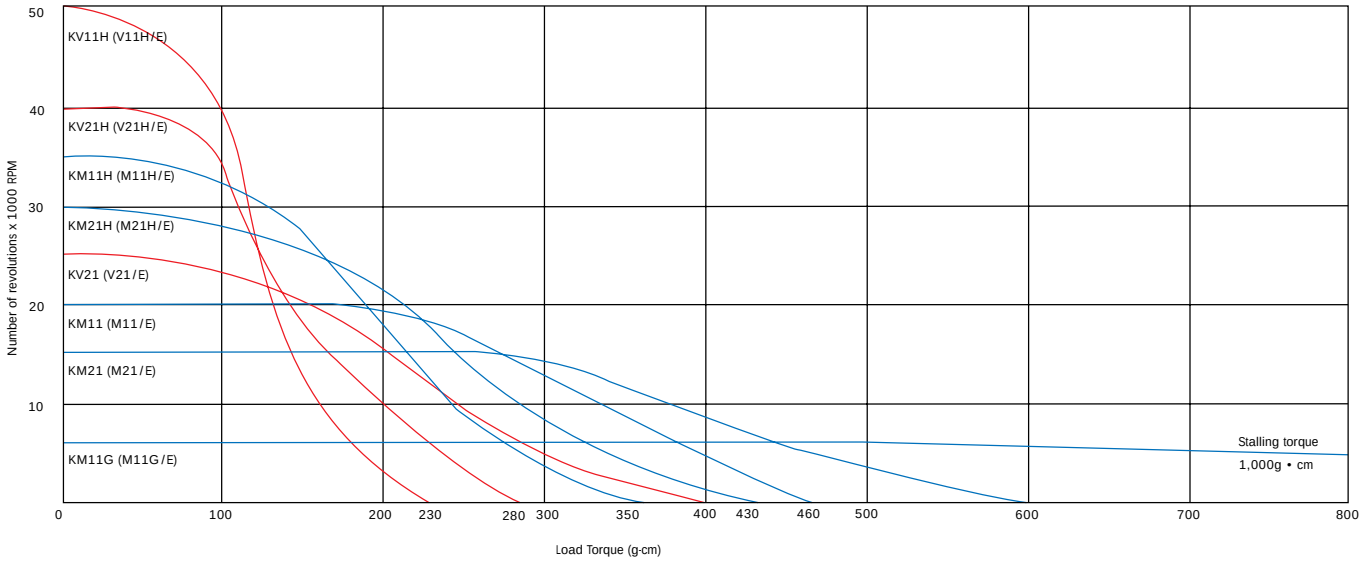
• Model	V11H/E	M21H/E	M11H/E	V21H/E	M21/E	M11/E	V21/E	M11G/E
• Speed	Ultra-high speed	High speed	High speed	High speed	Medium speed	Medium speed	Medium speed	Geared low speed
•Motor Model	KV11H	KM21H	KM11H	KV21H	KM21	KM11	KV21	KM11G
•Head Model	H011/E	H011/E	H011/E	H011/E	H011/E	H011/E	H011/E	H011/E
•Hand Switch Color	Ivory	Red	Violet	Pink	Green	Blue	Orange	Yellow
•Speed Range RPM	5,000–50,000	3,000–30,000	3,500–35,000	4,000–40,000	1,500–15,000	2,000–20,000	2,500–25,000	660–6,600
•Input Voltage (D.C.V.)	3–30	3–30	3–30	3–30	3–30	3–30	3–30	3–30
•No-load Current (D.C.A.)	0.45	0.40	0.35	0.40	0.30	0.30	0.40	0.34
•Maximum Torque (g -cm)	230	430	350	280	600	460	400	1,000
•Weight (g) [not including cord]	204	290	232	240	290	232	240	273
•Dimensions (mm) L	147	167	160	149	167	160	149	176
L1	76	96	89	78	96	89	78	105
L2	71	71	71	71	71	71	71	71
D	ø29	ø33	ø29	ø33	ø33	ø29	ø33	ø29
D1	ø26.4	ø30.4	ø26.4	ø30.4	ø30.4	ø26.4	ø30.4	ø26.4
D2	ø14.5	ø14.5	ø14.5	ø14.5	ø14.5	ø14.5	ø14.5	ø14.5



COLLET SELECTION TABLE (Standard Rotary)

Code	KP-050	KP-051	KP-007	KP-005	KP-052	KP-031	KP-036	KP-032	KP-033
Inside Diameter (mm)	ø 1.0	ø 1.2	ø 1.4	ø 1.6	ø 1.8	ø 2.0	ø2.34 (3/32")	ø 3.0	ø 3.175(1/8")

Speed/Torque Curve (data for different motor models)



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These are small and lightweight handpieces with precision balanced motors for vibration-free operation – very comfortable to hold and use for very long periods of time.

V11HS/E — Ultra-high speed type

Slender Rotary ***Collets: 3/32" & 1/8"*** ***Ultra-High Speed*** ***Speed Range: 5,000-50,000 RPM***

(SHORT TYPE) Short and handy, super lightweight, precision balanced.

POWER PACK: Can be used with all listed power packs.

Head: H021/E - Slender Head *Motor: KV11H/5,000-50,000 RPM*

M11HS/E — High speed type

Slender Rotary ***Collets: 3/32" & 1/8"*** ***High Speed*** ***Speed Range: 3,500-35,000 RPM***

Slim and compact providing high speed, precision balanced.

POWER PACK: Can be used with all listed power packs.

Head: H021/E - Slender Head *Motor: KM 11H/3,500-35,000 RPM*

V21HS/E — High speed type

Slender Rotary ***Collets: 3/32" & 1/8"*** ***High Speed*** ***Speed Range: 4,000-40,000 RPM***

(SHORT TYPE) Short and handy, super lightweight, precision balanced.

POWER PACK: Can be used with all listed power packs.

Head: H021/E - Slender Head *Motor: KV21H/4,000-40,000 RPM*

M11S/E — Medium speed type

Slender Rotary ***Collets: 3/32" & 1/8"*** ***Medium Speed*** ***Speed Range: 2,000-20,000 RPM***

Compact, slender, with medium speed. Suitable for accurate and light processing. Precision balanced.

POWER PACK: Can be used with all listed power packs.

Head: H021/E - Slender Head *Motor: KM 11/2,000-20,000 RPM*

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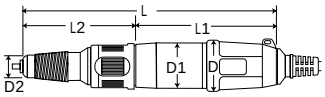
SLENDER ROTARY SPECIFICATIONS

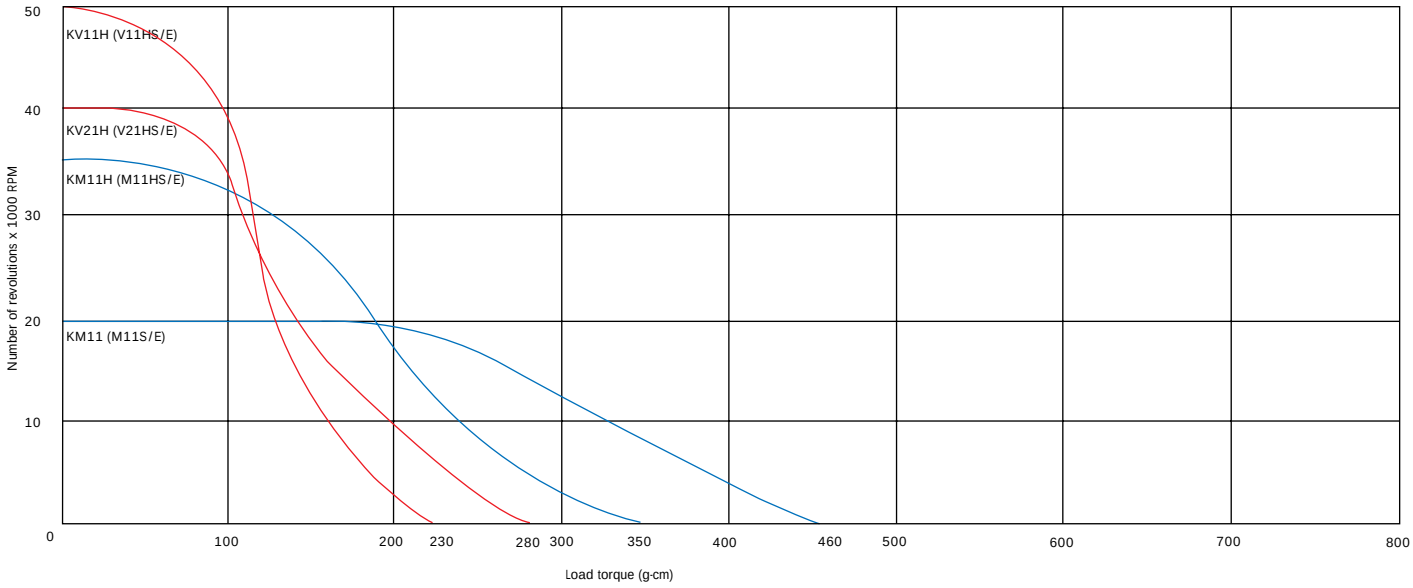
• Model	V11HS/E	M11HS/E	V21HS/E	M11S/E
• Speed	Ultra-high speed	High speed	High speed	Medium speed
• Motor Model	KV11H	KM11H	KV21H	KM11
• Head Model	H021/E	H021/E	H021/E	H021/E
• Hand Switch Color	Ivory	Violet	Pink	Blue
• Speed Range RPM	5,000–50,000	3,500–35,000	4,000–40,000	2,000–20,000
• Input Voltage (D.C.V.)	3–30	3–30	3–30	3–30
• No-load Current (D.C.A.)	0.45	0.35	0.40	0.30
• Maximum Torque (g-cm)	230	350	280	460
• Weight (g) [not including cord]	192	221	228	222
• Dimensions: L	145	158	147	158
L1	76	89	78	89
L2	69	69	69	69
D	ø29	ø29	ø33	ø29
D1	ø26.4	ø26.4	ø30.4	ø26.4
D2	ø10.8	ø10.8	ø10.8	ø10.8



COLLET SELECTION TABLE (Slender Rotary)

Code	KP-050	KP-051	KP-007	KP-005	KP-052	KP-031	KP-036	KP-032	KP-033
Inside Diameter (mm)	ø 1.0	ø 1.2	ø 1.4	ø 1.6	ø 1.8	ø 2.0	ø 2.34 (3/32")	ø 3.0	ø 3.175 (1/8")

Speed/Torque Curve (data for different motor models)



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A heavy duty head with a reinforced housing accepts larger shank diameters up to 6.35mm (1/4)" making large work easier. Use with carbide burrs, points, and diamond and CBN pins. Great to use with wood and felt bobs. Precision balanced motors provide vibration free operation.

- *Collet sizes from 2.34mm (3/32") to 6.35mm (1/4)" are available.*
- *Built-in ON/OFF SWITCH.*
- *Easy and simple tool changing mechanism–no wrenches required.*
- *Removable curled power cord.*
- *Supplied with 2 standard collets: 3.175mm (1/8") and 6.35mm (1/4").*

M21HD/E High speed type

Heavy-Duty Rotary Collets: 1/8" & 1/4" High Speed Speed Range: 3,000-30,000 RPM

High speed/high torque for general purposes.

POWER PACK: Can be used with all listed power packs.

Head: H031/E - Heavy-Duty Head *Motor: KM 21H/3,000-30,000 RPM*

M21D/E Medium speed type

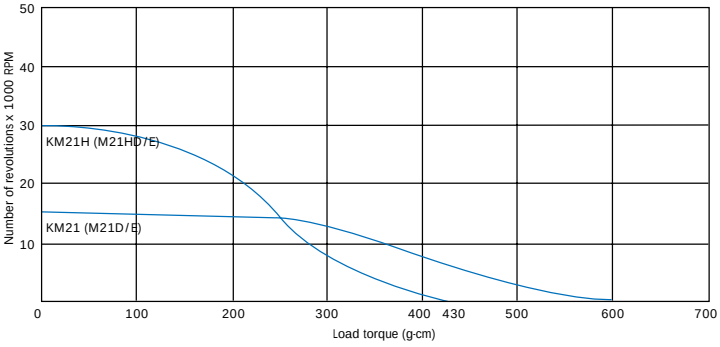
Heavy-Duty Rotary Collets: 1/8" & 1/4" Medium Speed Speed Range: 1,500-15,000 RPM

High torque/medium speed.

POWER PACK: Can be used with all listed power packs.

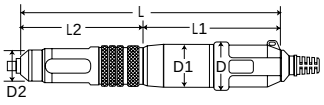
Head: H031/E - Heavy-Duty Head *Motor: KM 21/1,500-15,000 RPM*

Speed/Torque Curve (data for different motor models)



HEAVY DUTY ROTARY SPECIFICATIONS

• Model		M21HD/E	M21D/E
• Speed		High speed	Medium speed
• Motor Model		KM21H	KM21
• Head Model		H031/E	H031/E
• Hand Switch Color		Red	Green
• Speed Range R.P.M.		3,000–30,000	l,500–l5,000
• Input Voltage (D.C.V.)		3–30	3–30
• No-load Current (D.C.A.)		0.40	0.30
• Maximum Torque (g–cm)		430	600
• Weight (g) [not including cord]		350	351
• Dimensions	L	177	177
	L1	96	96
	L2	81	81
	D	ø33	ø33
	D1	ø30.4	ø30.4
	D2	ø20.0	ø20.0



COLLECT SELECTION TABLE (Heavy Duty Rotary)

Code	KP-061	KP-062	KP-063	KP-066	KP-067	KP-060	KP-064
Inside Diameter (mm)	ø2.34 (3/32")	ø3.0	ø3.175 (1/8")	ø4.0	ø5.0	ø6.0	ø6.35 (1/4")

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M21LRV

Rubron

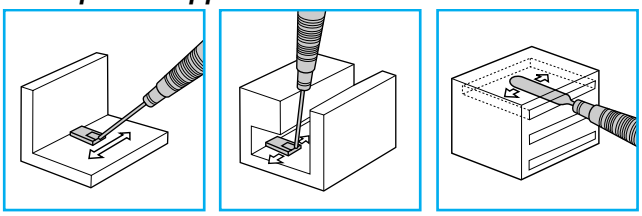
This unique handpiece has a side-to-side (lateral) movement which is adjustable to 1.6 mm. Great for working in deep cavities, slots, grooves and other difficult to reach areas.

POWER PACK: Can be used with all listed power packs.

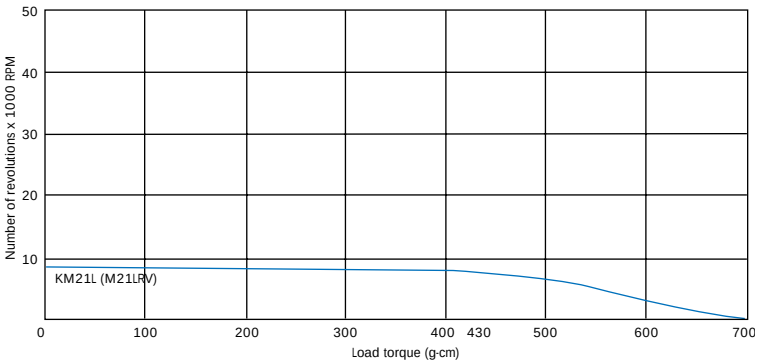
- *Compact and easy to hold for precise operations, ideal for finishing narrow slits and deep recesses.*
- *Employs "V-shaped chuck" accepting non-standard shank sizes as well as standard ones up to 5.5mm. (3/16")*
- *The swing stroke on one side is infinitely variable up to 1.6 mm at the chuck edge.*
- *Built-in ON/OFF SWITCH.*
- *Removable curled power cord makes storage convenient.*

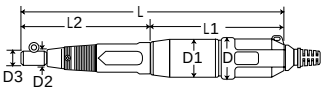
Head: H 311 *Motor: KM21L/800-8,000 RPM*

Examples of applications



Speed/Torque Curve





RUBRON SPECIFICATIONS

• Model		M21LRV
• Amplitude Graduations (mm)		0–1.6
• Frequency (times/min)		800 – 8,000
• Diameters of Mountable Shafts (mm)		1.5–4.7
• Input Voltage (D.C.V.)		3–30
• No-load Current (D.C.A.)		0.25
• Maximum Torque (g–cm)		700
• Hand Switch Color		Black
• Weight (g)		300
• Dimensions (mm)	L	187
	L1	96
	L2	91
	D	ø32
	D1	ø30.9
	D2	ø15
	D3	ø11

Note: The amplitude depends on the length of the tool used.

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A 90° or 120° angled head suitable for speedy grinding and polishing both on flat and curved surfaces. Great for areas where standard rotary handpieces will not reach.

- *Built-in ON/OFF SWITCH*
- *Easy and quick tool changing mechanism. No wrenches required.*
- *Removable curled power cord makes storage convenient.*
- *Supplied with 2 standard collets: 3/32" and 1/8" 1 pc. each.*

M21RA/E Medium speed type

Anglon - Standard 90° Collets: 3/32" & 1/8" Medium Speed Speed Range: 1,420-14,200 RPM

Medium speed for general purposes.

POWER PACK: Can be used with all listed power packs.

Motor: KM 21/1,500-15,000 RPM

Head: H211/E - Anglon Head

M21RAD/E Medium speed type

Anglon - Heavy Duty 90° Collets: 3/32" & 1/8" Medium Speed Speed Range: 1,420-14,200 RPM

With reinforced gripping power of the collet chuck.

POWER PACK: Can be used with all listed power packs.

Motor: KM21/1,500-15,000 RPM

Head: H221/E - Heavy Duty Anglon Head

M21A/E Medium speed type

Anglon - Heavy Duty 120° Collets: 3/32" & 1/8" Medium Speed Speed Range: 1,440-14,400 RPM

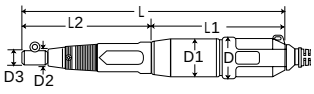
POWER PACK: Can be used with all listed power packs.

Head: H231/E

Motor: KM 21/1,442-14,200RPM

• ANGLON SPECIFICATIONS

• Model		*M21RA/E*	*M21RAD/E*	*M21A/E*	*M11GRA/E*	*M11GRAD/E*	*M11GA/E*
• Speed		*Medium speed*	*Medium speed*	*Medium speed*	*Low speed high torque*	*Low speed high torque*	*Low speed high torque*
• Motor Model		*KM21*	*KM21*	*KM21*	*KM11G*	*KM11G*	*KM11G*
• Head Model		*H211/E*	*H221/E*	*H231/E*	*H211/E*	*H221/E*	*H231/E*
• Hand Switch Color		*Green*	*Green*	*Green*	*Yellow*	*Yellow*	*Yellow*
• Speed Range RPM		*1,420–14,200*	*1,420–14,200*	*1,440–14,400*	*620–6,200*	*620–6,200*	*630–6,300*
• Input Voltage (D.C.V)		*3–30*	*3–30*	*3–30*	*3–30*	*3–30*	*3–30*
• No-load Current (D.C.A.)		*0.40*	*0.40*	*0.40*	*0.34*	*0.35*	*0.35*
• Maximum Torque (g–cm)		*600*	*600*	*600*	*1,000*	*1,000*	*1,000*
• Weight (g) [not including cord]		*279*	*387*	*395*	*260*	*368*	*351*
• Dimensions	*L*	*155*	*158*	*174*	*164*	*167*	*183*
	L1	*96*	*96*	*96*	*105*	*105*	*105*
	L2	*50*	*62*	*78*	*59*	*62*	*78*
	D	*ø33*	*ø33*	*ø33*	*ø29*	*ø29*	*ø29*
	D1	*ø30.4*	*ø30.4*	*ø30.4*	*ø26.4*	*ø26.4*	*ø26.4*
	H	*35.0*	*47.5*	*47.5*	*35.0*	*47.5*	*47.5*



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M11GRA/E Low speed gear type

Anglon - Standard 90° Collets: 3/32" & 1/8" Low Speed/High Torque Speed Range: 620-6,200 RPM

A built-in gear reduction mechanism provides ultra-low speed and super-high torque.

POWER PACK: Can be used with all listed power packs.

Head: H211/E

Motor: KM11G/660-6,600 RPM

M11GRAD/E Low speed gear type

Anglon - Heavy Duty 90° Collets: 3/32" & 1/8" Low Speed Speed Range: 620-6,200 RPM

With reinforced gripping power of the collet chuck.

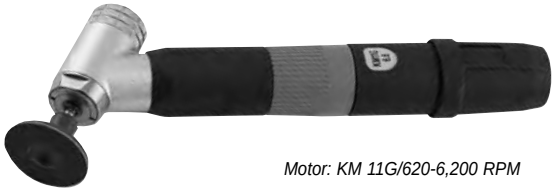
POWER PACK: Can be used with all listed power packs.

Head: H221/E

Motor: KM 11G/620-6,200 RPM

M11GA/E Low speed gear type

Anglon - Heavy Duty 120° Collets: 3/32" & 1/8" Low Speed Speed Range: 630-6,300 RPM



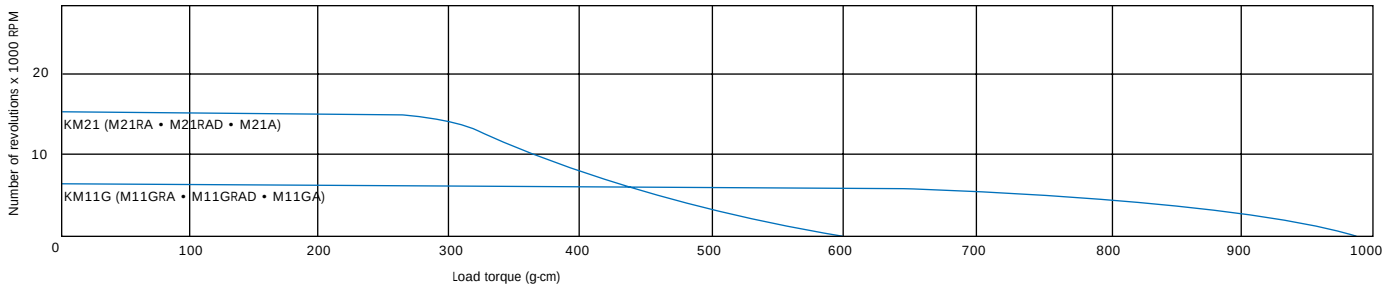
Head: H231/E

Motor: KM 11G/620-6,200 RPM

COLLET SELECTION TABLE (Anglon)

M21RA/E	*Code*	—	—	—	—	—	—	*KP-021*	*KP-022*	*KP-025*	—	—	—	—
M11GRA/E	*Inside Diameter (mm)*	—	—	—	—	—	—	*ø2.34 (3/32")*	*ø3.0*	*ø3.175 (1/8")*	—	—	—	—
M21RAD/E • M21A/E	*Code*	*KP-050*	*KP-051*	*KP-007*	*KP-005*	*KP-052*	*KP-031*	*KP-036*	*KP-032*	*KP-033*	—	—	—	—
M11GRAD/E • M11GA/E	*Inside Diameter (mm)*	*ø 1.0*	*ø 1.2*	*ø 1.4*	*ø 1.6*	*ø 1.8*	*ø 2.0*	*ø2.34 (3/32")*	*ø3.0*	*ø3.175 (1/8")*	—	—	—	—

Speed/Torque Curve (data for different motor models)



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RE11, RE21

The handpiece generates a reciprocating stroke, ideal for filing, lapping, stoning, polishing and scraping operations. Comfortable hand fitting pistol grip with built-in ON/OFF SWITCH provides greater processing accuracy. Smooth operation, vibration free. Eliminates operation fatigue.

- *Slim and smooth body shape allows more accurate processing.*
- *2 modes of the tool holder action. When the spindle securing knob is released, the tool holder will rotate freely, ensuring tools to fit the surface of the workpiece.*
- *Built-in ON/OFF SWITCH.*
- *2 models to choose from.*

RE11

Stroke range: 0 - 8 mm.
Stroke speed: 260 - 3,500 times/min.

• Stroke-oriented type.

RE21

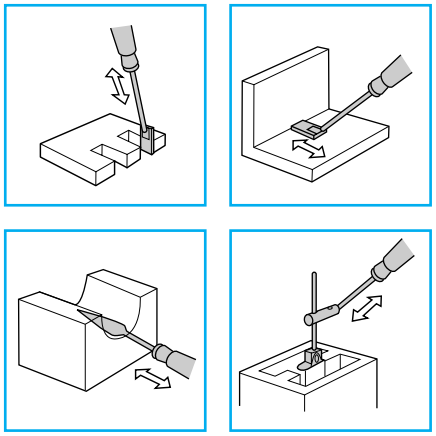
(Speed model) Stroke range: 0 - 2 mm.
Stroke speed: 460 - 7,000 times/min.

• Speed-oriented type

POWER PACK: Can be used with all listed power packs.

Both models will accommodate tools with shank size from 3/16” – 1/4” diameters.

Examples of applications

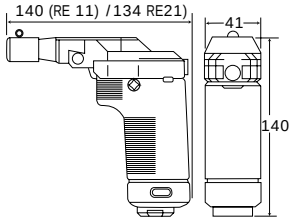


Hand Switch enables quick and easy ON/OFF operations

The Hand Switch is standard equipment on the pistol-shaped handpiece. To ensure manipulations by the fingertip only, the switch is recessed at a position on the grip where you can easily use it.

RECIPRON SPECIFICATIONS

• Model	*RE11*	*RE21*	*Dimensions*
• Stroke (m/min)	*0–8*	*0–2*	
• Speed range (times/min)	*260–3,500*	*460–7,000*	
• Input Voltage (D. C. V.)	*3–30*	*3–30*	
• No-load Current (D. C. A.)	*0.3*	*0.35*	
• Diameter of Mountable Shafts (mm)	*2.0–6.35*	*2.0–6.35*	
• Carbon Brush	*KE-580*	*KE-580*	
• Weight (g)	*790*	*783*	



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A handy type belt sander, equipped with ON/OFF SWITCH, that exerts its great effect in deburring, grinding and polishing.

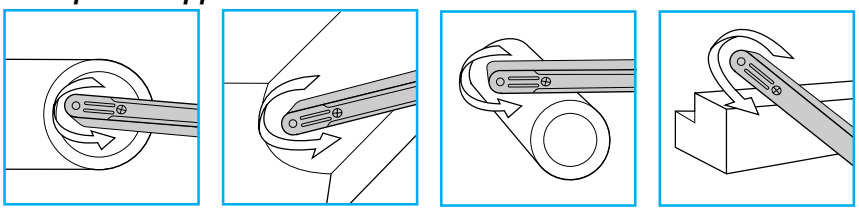
- Flexibly addresses machining of small parts and objects of complicated shapes.
- A large variety of exclusive endless belts are available that are suitable for various materials including metals, ceramics, stone and wood.
- Quick and easy exchange of belts.
- Optional belt arms are available, which allow you to extend the scope of applications.
- Built-in ON/OFF SWITCH.
- Removable curled power cord makes storage convenient.

POWER PACK: Can be used with all listed power packs.

Hand Switch enables quick and easy ON/OFF operations

The Hand Switch is standard. To ensure manipulations by the fingertip only, the switch is built in at a position on the grip where you can use it easily.

Examples of applications



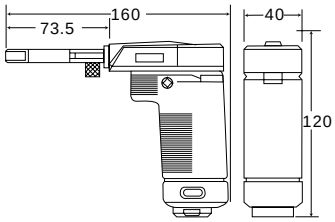
BS31

The main body is equipped with the belt arm H82 as standard; belts with a width of 6 or 8 mm can be used.

MINI BELT SANDER SPECIFICATIONS

• Model	*BS31*
• No-load Belt Speed (m/min)	*49 - 2,700*
• Input Voltage (D.C.V.)	*3 - 30*
• No-load Current (D.C.A.)	*0.3*
• Carbon Brush	*KE-580*
• Weight (g)	*440*

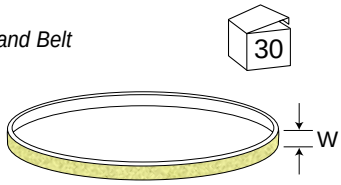
Dimensions



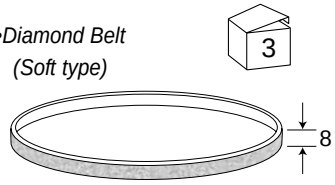
• Abrasive belt for the Mini Belt Sander (Circumference: 300mm)

** In addition to the belts described here, others are available; please see pages 3-51 & 3-52.*

• Sand Belt



•Diamond Belt (Soft type)



W = 4mm							
#80	*F 1001*	*#80*	*F 1021*	*#180*	*F 1121*	*#600*	*F 1125*
#120	*F 1002*	*#120*	*F 1022*	*#240*	*F 1122*	*#800*	*F 1126*
#180	*F 1003*	*#180*	*F 1023*	*#320*	*F 1123*	*#1000*	*F 1127*
#320	*F 1004*	*#240*	*F 1024*	*#400*	*F1124*		
W = 6mm		*#320*	*F 1025*				
#80	*F 1011*	*#400*	*F 1026*				
#120	*F 1012*	*#600*	*F 1027*				
#180	*F 1013*	*#800*	*F 1028*				
#320	*F 1014*	*#1000*	*F 1029*				

• Belt Arm

Standard Outfit

H82 Standard belt arm (applicable belt width: 6 and 8 mm)

Option

H81 Thin belt arm
(applicable belt width: 4 and 6 mm)

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E-mail: info@engis.com

Ranging from the ultra-high speed type to the low speed geared type, 9 types of micromotors, each with distinctive features, are available in the product line. Engis's unique product line answers a wide variety of customer needs.

The motor and the head can each be purchased separately, or as a complete unit.

KV11H — Ultra-high speed type

Speed Range: 5,000-50,000 RPM ***Torque: 230g-cm*** ***Carbon brush: KE-605***

Hand Switch Color: Ivory

KV21H — High-speed type

Speed Range: 4,000-40,000 RPM ***Torque: 280g-cm*** ***Carbon brush: KE-580***

Hand Switch Color: Pink

KM11H

Speed Range: 3,500-35,000 RPM ***Torque: 350g-cm*** ***Carbon brush: KE-575***

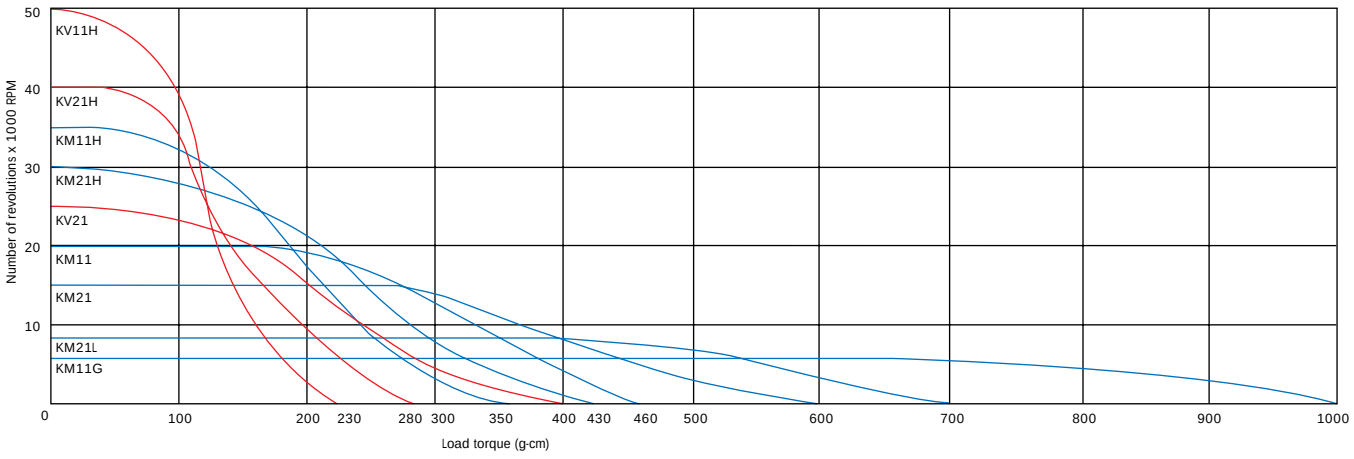
Hand Switch Color: Violet

KM21H

Speed Range: 3,000-30,000 RPM ***Torque: 430g-cm*** ***Carbon brush: KE-580***

Hand Switch Color: Red

Speed/Torque Curve (data for different motor models)



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KV 21 — Medium speed type

Speed Range: 2,500-25,000 RPM ***Torque: 400g-cm*** ***Carbon brush: KE-580***

Hand Switch Color: Orange

KM11

Speed Range: 2,000-20,000 RPM ***Torque: 460g-cm*** ***Carbon brush: KE-575***

Hand Switch Color: Blue

KM21

Speed Range: 1,500-15,000 RPM ***Torque: 600g-cm*** ***Carbon brush: KE-580***

Hand Switch Color: Green

KM21L — Low speed type

Speed Range: 800-8,000 RPM ***Torque: 700g-cm*** ***Carbon brush: KE-580***

Hand Switch Color: Black

KM11G — Low speed gear type

Speed Range: 660-6,600 RPM ***Torque: 1,000g-cm*** ***Carbon brush: KE-575***

Hand Switch Color: Yellow

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The most complete line of heads for a wide range of applications. Grinding, deburring, drilling, lapping, polishing and more can be performed using a combination of these heads and motors. Heads and motors are attached in a snap.

H011/E

Standard Head

The most universal head.
Standard collets 3/32" and 1/8". KP-036 & KP-033

H021/E

Slender Head

Slim & lightweight - suitable for delicate processing work.
Standard collets 3/32" and 1/8". KP-036 & KP-033

H031/E

Heavy-Duty Head

Standard collets 1/8" and 1/4". KP-063 & KP-064

H041/E

Long Slender Head

Ideal for hard to reach areas
with reach size 1/2" x 3-7/8".
Standard collets 3/32" and 1/8". KP-036 & KP-033

H051/E

Air Head

Produces a jet of air around the tool to blow shavings and dust off work area.
Standard collets 3/32" and 1/8". KP-036 & KP-033

HANDPIECE CROSS REFERENCE FOR MOTORS AND HEADS

Head Selection	*Motor Selection*								
	KV11H	***KV21H***	***KM11H***	***KM21H***	***KV21***	***KM11***	***KM21***	***KM21L***	***KM11G***
HO11/E	*V11H/E*	*V21H/E*	*M11H/E*	*M21H/E*	*V21/E*	*M11/E*	*M21/E*	•	*M11G/E*
HO21/E	*V11HS/E*	•	*M11HS/E*	•	*V21HS/E*	*M11S/E*	•	•	•
HO31/E				*M21HD/E*			*M21D/E*	•	•
HO41/E		•	•	•	•	•	•	•	•
HO51/E	•		•						
HO51P/E	•	•							
H211/E							*M21RA/E*	•	*M11GRA/E*
H221/E							*M21RAD/E*	•	*M11GRAD/E*
H231/E							*M21A/E*	•	*M11GA/E*
H311								*M21LRV*	•
MX52/E	•	•	•	•	•	•	•	•	•
MX53/E				•			•	•	•
FX91/E				•			•	•	•

• *Denotes that the motor and head can be used together, however, they do not have a combination part number*

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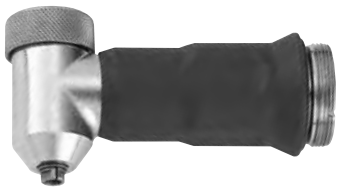
H211/E

Anglon Head 90°

Maximum speed - 15,000 RPM

Standard collets 3/32” and 1/8”. KP-021 & KP-025



H221/E

Heavy-Duty Anglon Head 90°

Maximum speed - 15,000 RPM.

Standard collets 3/32” and 1/8”. KP-036 & KP-033

H231/E

Heavy Duty Anglon Head 120°

Maximum speed - 15,000 RPM

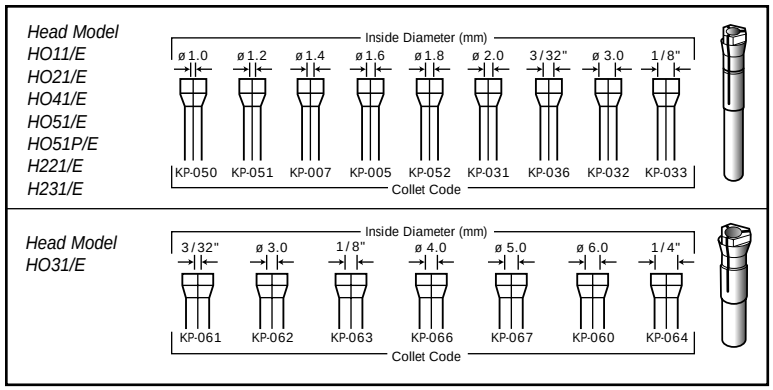
Standard Collets 3/32” and 1/8”. KP-036 & KP-033

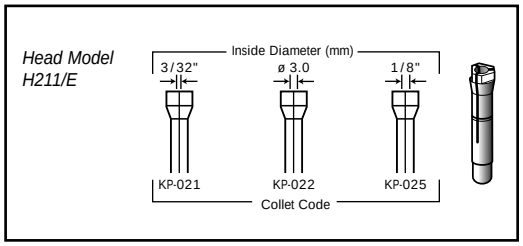
H311

Rubron Head (Adjustable swing up to 1.6 mm at chuck edge)

Maximum speed - 8,000 RPM

Collet Selection Table





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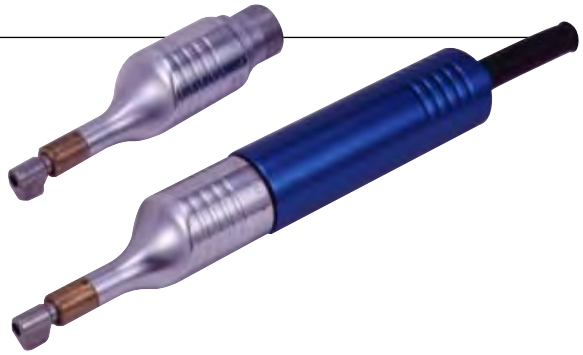
Mini Filing Machines



Lightweight and a thorough ergonomic design result in more effective finishing & polishing work, especially in narrow and difficult to reach places. Diprofil Mini filing machines are ideally suited for use with diamond plated filing tips. These lightweight handpieces are ideally suited for polishing and filing narrow and confined areas. Purchase the set DPMS or FMR/G series for use with your Minimo or Gesswein power packs. Use the FMR/B series for use with your flexible drive and motor.

Set DPMS-5 includes Dipro Mini filer with a .5 mm stroke, micromotor, Minimo power pack, foot switch and 1 set of mini diamond plated files.

Set DPMS-18 includes all of the above, however, the stroke of the Dipro Mini filer is 1.8 mm.

FMR/G used with Minimo power packs. G5 is .5 mm stroke & G18 is 1.8 mm.

FMR/B used with flexible shaft & motors. B5 is .5 mm stroke & B18 is 1.8 mm stroke.

Lubricant for Minimo Recipron

FNA-K

Use the FNA-K oil for lubricating your Recipron machines. This lubricant is specially formulated to reduce wear and prolong the life of your reciprocating handpieces.

It is recommended that you use the FNA-K oil on your Di-Profiler and Recipron hand pieces daily. 1-2 drops will reduce heat and friction.

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Reducer

Gear Joint

The reduction gear joint; designed to use between head and motor.
Best suited to work requiring low revolution and high torque.

MG03

Maximum speed 30,000 RPM 1/4 reduction ratio gear joint

Versatile joint with a built-in 1/4 reduction ratio gear, can be used with all listed heads, except Model H051/E and H051P/E, and all motors with maximum speed 30,000 RPM or less.

(Clamp section size: ø 26 x 29.5)

MG30

Maximum speed 20,000 RPM 1/30 reduction ratio gear joint

With a built-in 1/30 reduction ratio gear, it delivers ultra-low revolution and high torque; can be used with all listed heads, except Model H051/E and H051P/E and all listed motors with maximum speed 20,000 RPM or less.

(Clamp section size: ø 26 x 41)

Clamp Joint

For Integration into Machines
Installed in between head and motor, the clamp joint enables head to be used in integration with automatic machinery, etc.

ET51

Clamp Joint Maximum speed 35,000 RPM

Compatible with all types of heads and of motors with maximum speed 35,000 RPM or less; can be clamp held on the Rotary, ANGLON, RUBRON and others.

(Clamp section size: ø 26 x 40.6)

Clamp mount DM02

A mount for fixing the clamp head or clamp joint to machinery.

Heavy Duty Clamp Head - FX 91/E

Maximum shank diameter 6:35 mm

Employs a locking nut type of chucking mechanism ensuring more powerful chucking force.

- *Standard Collet KP-127 (1/4")*
  (Clamp section size: ø 26 x 70)

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Foot Switch (can be used with all POWER PACKS)

FS201

- *An ON/OFF type foot switch.*
- *When pressed the handpiece is on, when released, the handpiece will stop. (Cord length: 1.5 m)*

FS211

(2-mode changeover type)

- *You can perform the ON/OFF switching either in mode A or B. (Cord length: 1.5 m)*
- *A-mode: Once you step on the foot switch, the ON state continues even if you take your foot off the switch; step on it for a second time, and it changes into the OFF state.*

** B-mode: When pressed the handpiece is on, when released, the handpiece will stop.*

VC301

- *In addition to the ON/OFF switching, the speed control and power control for the POLYTOR action for the handpiece is provided depending on how far the pedal is depressed. (Cord length: 1.5 m)*

Power Cord for Handpiece

Cords for the D.C. motor Handpiece (with a 3-pin connector)

Curled cord
CC711

(Length: 1.5 m)

- *Power cord for the D.C. motor handpiece.*
- *Standard accessory with the handpiece.*

Curled cord
CC811

(Length: 1.5 m)

- *Power cord for the POLYTOR ultrasonic handpiece.*
- *Standard accessory with POLYTOR ultrasonic handpiece*

Extension cord
CB211

(Length: 3 m)

- *Straight extension cord for connecting the POWER PACK and the curled cord (CC711).*
- *Two or more extension cords can be connected.*

Extension cord
CB311

(Length: 3 m)

- *Straight extension cord for connecting the POWER PACK and the curled cord (CC811).*
- *Two or more extension cords can be connected.*

Power Cord for POWER PACK

Standard accessory with the POWER PACK

CA10

(Length: 2 m)

- *Power cord for all Minimo Power Packs (AC115V)*

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Tool Cases

Aluminum-made Carrying Case

- *Conveniently portable, the robust aluminum carrying case houses the POWER PACK, handpieces and other accessories neatly and safely, provided with the padded interior*

BX01 Carrying Case (small)

Outside dimensions: 365 (W) x 210 (D) x 280 (H) mm
Weight: 2.6kg

BX02 Carrying Case (large)

Outside dimensions: 470 (W) x 230 (D) x 340(H) mm
Weight: 4.2kg

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Tool Stand/Rubber Cradle

Rubber Cradle
RM11

- **Handpiece stand made of rubber**
- **Can be used for all listed handpieces**
- **Outside dimensions: 72(W) x 72 (D) x 30 (H) mm**

Drill Stand
DS52

- *With a Rotary Handpiece installed, the drill stand is used for drilling, boring, grinding and other similar purposes.*
- *Can be used in combination with all listed handpieces except RECIPRON and BELT SANDER.*
- *The handpiece can be set both in vertical and horizontal positions.*

Table Dimensions:	**132 (W) x 200 (D) x 30 (H) mm**
Height of the Support:	*230 mm (Effective height: 90 mm)*
Weight:	*5.4kg*
Maximum Slide Stroke:	*25 mm*
Accessories:	*Motor sleeve (1 set) Hexagonal bar wrench (1 set)*

Clamp Mount
DM02

- *Used to hold the clamp head, the gear joint or the clamp joint in place so the tool rests on the machine such as a lathe.*
- *DM02 and the axis of a clamped head are parallel to each other.*

Spherical Vise
V151

- *V-shaped grooves on the mouth ensure to grasp workpiece evenly.*
- *Detachable adjusting handle.*

- *Dimensions (mm):*
  Sphere diameter: 130
  Height: 165
  Base width: 60
  Max. mouth width: 62
  Sphere depth: 50
  Weight: 8.5 Kg

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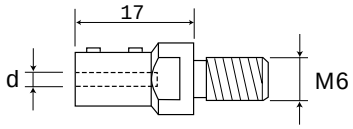
Polytor US21 Tool-Holders

Polytor tool-holders for use with the US21 or US17 Polytor Ultrasonic Handpieces.

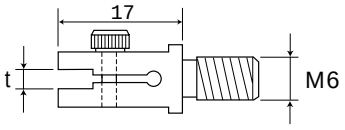
Used for stones, files, ceramic stones, lapping stones, brass and cutting tools.

POLYTOR US21 TOOL-HOLDERS

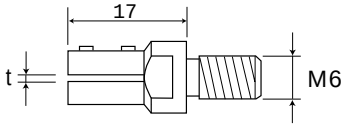
d = ø1mm	*F 5251*
d = ø2mm	*F 5252*
d = ø3mm	*F 5253*
d = ø4mm	*F 5254*



t = 1mm	*F 5261*
t = 2mm	*F 5262*
t = 3mm	*F 5263*
t = 4mm	*F 5264*



t = 0.5mm	*F 5271*
t = 1mm	*F 5272*



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Minimo Anglon System -- Versatility & Performance

Minimo Anglon angle grinders, with angles of 90 and 120 degrees, are suitable for polishing flat, curved and end surfaces. Great for areas where standard rotary handpieces will not reach.

Anglon Tools to Match the Job

Many types of exclusive Anglon tools bring unmatched versatility and performance.

Recommended combination of tools:

- *Medium speed Handpiece: Sand disc, Diamond disc, Rubber disc, etc.*
- *Low speed geared Handpiece: Bright Ring, Polishing cup, Felt disc, etc.*
  (Maximum speed of tools must be also considered)

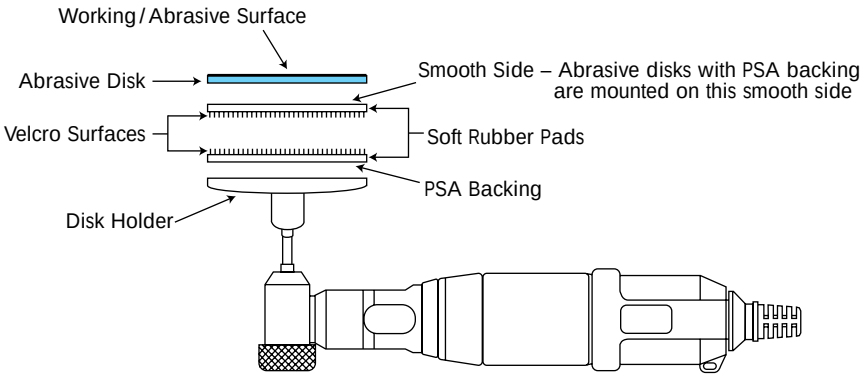
Additional Anglon Features:

- *Built-in ON/OFF SWITCH*
- *Easy and quick tool changing mechanism. No wrenches required*
- *Removable curled power cord makes storage convenient*
- *Supplied with 2 standard collets: 3/32" and 1/8" 1 pc. each*

Minimo Anglon Tools -- Easy-Switch Disc System

The Minimo's easy-switch abrasive discs system makes multi-step finishing/polishing operations simpler and faster.

Used in conjunction with Minimo disc holders and soft rubber pads (see next page), the system utilizes velcro discs with pressure sensitive adhesive (PSA) backings to make changing discs in mid-operation a snap. Simply apply the proper velcro pads to the disc holders and abrasive discs you'll need for the job, and then swap discs in and out to vary the cutting/polishing action required.



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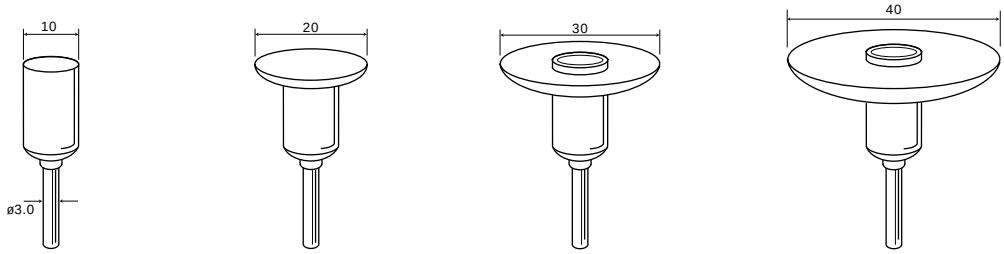
Tools for ANGLE ROTARY HANDPIECE

- *Soft rubber pads available in 4 different diameters (ø 10 mm, ø 20 mm, ø 30 mm, ø 40 mm) are available.*
- *Pressure sensitive adhesive (PSA) backing enables you to replace discs in a snap. This tape also serves as a cushion to enable softer contact with work pieces.*
- *Sandpaper discs are resistive to grain chipping and clogging with aggressive cutting action.*
- *Zirconia discs use zirconia grains developed especially for hard-to-cut materials.*

Abrasive Disc & Polishing Disc Holders

5

max. rpm 15,000



SHANK = ø3.0MM

F 2001	F 2002	F 2003	F 2004

Soft Rubber Pads

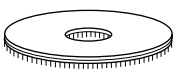
20

These discs are used to mount pressure sensitive adhesive (PSA) backed abrasive polishing discs to the smooth side. The opposite side has a velcro type surface that is used to work with the below rubber disc. Provides quick change capabilities without having to discard adhesive or polishing disc.

These rubber discs mount to the disc holder with PSA backing. The disc face has a velcro type surface used to mount the PSA backed disc above (F 2041, F 2041, F 2043).

PSA Backing Discs

ø21	F 2041
ø31	F 2042
ø40	F 2043



PSA

ø21	F 2046
ø31	F 2047
ø40	F 2048

EYE PROTECTION RECOMMENDED

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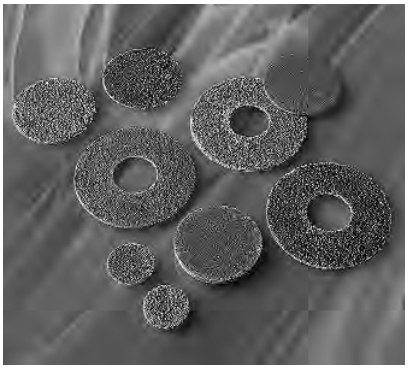
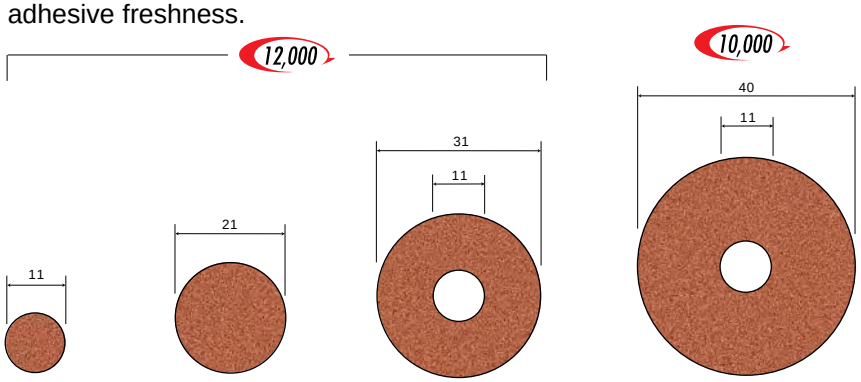
Sandpaper Disc (with PSA backing)

100



These flexible discs are made of aluminum oxide resin bonded for great durability. The pressure sensitive adhesive (PSA) backing can withstand the heat generated by high friction. PSA discs will hold until removed by hand. There is a peel-off backing on each disc to maintain adhesive freshness.

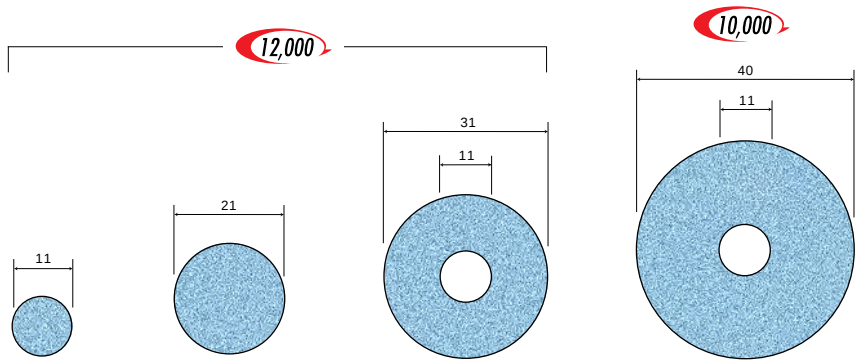


Abrasive Disc				
#60	F 2101	F 2121	F 2141	F 2161
#80	F 2102	F 2122	F 2142	F 2162
#120	F 2103	F 2123	F 2143	F 2163
#180	F 2104	F 2124	F 2144	F 2164
#240	F 2105	F 2125	F 2145	F 2165
#320	F 2106	F 2126	F 2146	F 2166
#400	F 2107	F 2127	F 2147	F 2167
#600	F 2108	F 2128	F 2148	F 2168
#800	F 2109	F 2129	F 2149	F 2169
#1000	F 2110	F 2130	F 2150	F 2170

Zirconia Disc (with PSA backing)

100

These Zirconia discs are used on hard-to-grind materials. Fast and clean cutting, they are available in 4 grit sizes and supplied with PSA backing.



Zirconia Disk				
#60	F 2251	F 2261	F 2271	F 2281
#80	F 2252	F 2262	F 2272	F 2282
#120	F 2253	F 2263	F 2273	F 2283
#150	F 2254	F 2264	F 2274	F 2284

EYE PROTECTION RECOMMENDED

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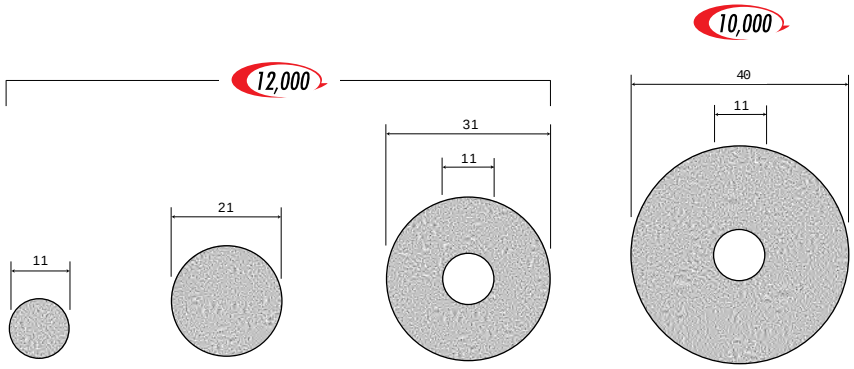
Metal-base Diamond Disc (with PSA backing)

1

These metal-base diamond discs are thin metal discs plated with diamond grains. Suitable for various materials such as sintered hard alloy, ceramics, glass, etc.

Also supplied with PSA backing.

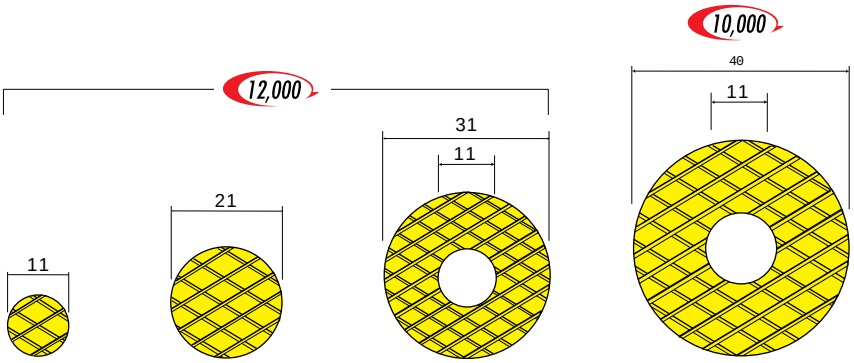


#140	F 2301	F 2311	F 2321	F 2331
#220	F 2302	F 2312	F 2322	F 2332
#320	F 2303	F 2313	F 2323	F 2333
#400	F 2304	F 2314	F 2324	F 2334
#600	F 2305	F 2315	F 2325	F 2335
#800	F 2306	F 2316	F 2326	F 2336
#1000	F 2307	F 2317	F 2327	F 2337
#2000	F 2308	F 2318	F 2328	F 2338

Cloth-base Diamond Disc (with PSA backing)

3

These cloth-base diamond discs are soft cloth discs plated with diamond grains. Suitable for sintered hard alloy, ceramics and glass.



Grit	Color				
#120	Sky Blue	F 2351	F 2361	F 2371	F 2381
#180	Orange	F 2352	F 2362	F 2372	F 2382
#240	Green	F 2353	F 2363	F 2373	F 2383
#320	Purple	F 2354	F 2364	F 2374	F 2384
#400	Brown	F 2355	F 2365	F 2375	F 2385
#600	Red	F 2356	F 2366	F 2376	F 2386
#800	White	F 2357	F 2367	F 2377	F 2387
#1000	Pink	F 2358	F 2368	F 2378	F 2388
#1500	Blue	F 2359	F 2369	F 2379	F 2389
#3000	Yellow	F 2360	F 2370	F 2380	F 2390

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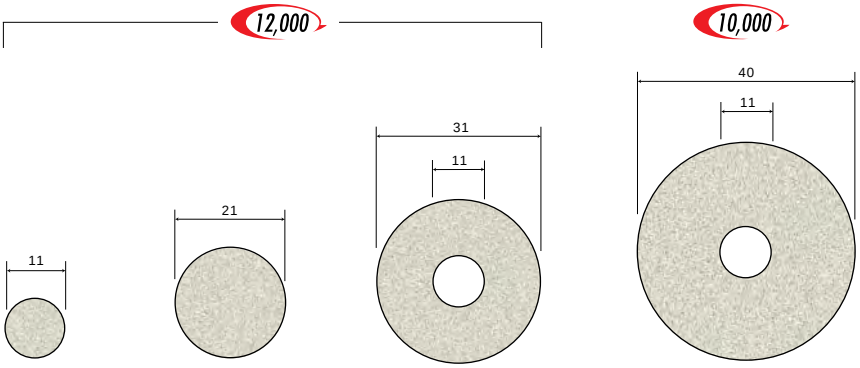
Cloth-base Diamond Disc Soft Type (with PSA backing)

1

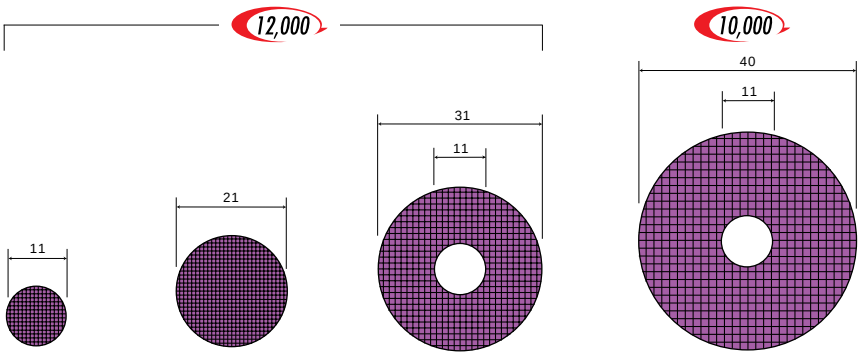


Cloth with diamond powder				
#100	F 2401	F 2411	F 2421	F 2431
#180	F 2402	F 2412	F 2422	F 2432
#240	F 2403	F 2413	F 2423	F 2433
#320	F 2404	F 2414	F 2424	F 2434
#400	F 2405	F 2415	F 2425	F 2435
#800	F 2406	F 2416	F 2426	F 2436

Mesh Diamond Disc (with PSA backing)

1

These mesh diamond discs are fine cloth discs with diamond powder. Less clogging and fast cutting. Suitable for sintered hard alloy, ceramics, glass, plastic, etc.



#80	Black	F 2801	F 2811	F 2821	F 2831
#140	Green	F 2802	F 2812	F 2822	F 2832
#170	White	F 2803	F 2813	F 2823	F 2833
#230	Blue	F 2804	F 2814	F 2824	F 2834
#270	Violet	F 2805	F 2815	F 2825	F 2835
#325	Orange	F 2806	F 2816	F 2826	F 2836
#400	Moss Green	F 2807	F 2817	F 2827	F 2837
#600	Sky Blue	F 2808	F 2818	F 2828	F 2838
#800	Yellow	F 2809	F 2819	F 2829	F 2839

Specifications are subject to changes without prior notice.

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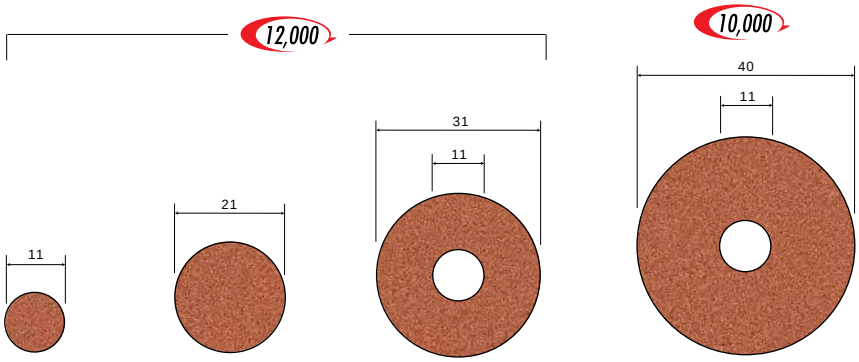
Film-base Diamond Disc (with PSA backing)

1

- *Film-base diamond discs are high quality film discs for precision polishing made out of a mixture of superfine diamond grains and resin.*
- *Polishing compounds of uniform quality enable precision finishing to create smooth surface with uniform surface. Base materials also have exceptional tensile strength and heat resistance.*
- *Suitable for polishing sintered hard alloy, ceramics, glass etc. or glossing jewelry, etc.*
- *Soft contact is possible because of PSA backing.*
- *For more efficient work, it is recommended that Hyprelube (see page 5-9) be used with diamond discs for lubrication or cooling purposes.*



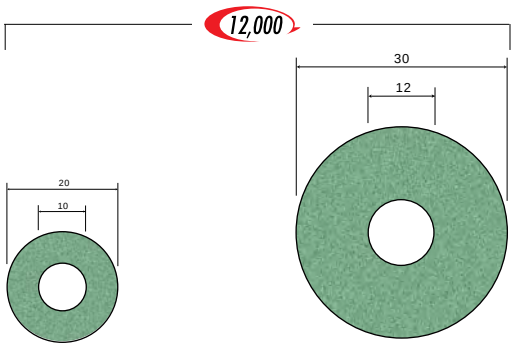
#280	*Moss Green*	*F 2842*	*F 2852*	*F 2862*	*F 2872*
#400	*Yellow*	*F 2843*	*F 2853*	*F 2863*	*F 2873*
#600	*Dark Brown*	*F 2844*	*F 2854*	*F 2864*	*F 2874*
#800	*Red*	*F 2845*	*F 2855*	*F 2865*	*F 2875*

Cushion Disc Non-Woven Cloth Impregnated with Polishing Compounds (with PSA backing)

20

These cushion discs have high elasticity and fit well with work pieces. Resultant surfaces are smooth and free of irregularities. They also produce minimal debris and resist clogging even with fine grains.

Elastic, pliable rubber discs are fit to polish flat and curved surfaces. These are extremely durable.



Thickness 2 mm		
#240	*F 2601*	*F 2611*
#320	*F 2602*	*F 2612*
#400	*F 2603*	*F 2613*
#600	*F 2604*	*F 2614*
#800	*F 2605*	*F 2615*
#1000	*F 2606*	*F 2616*
#1500	*F 2607*	*F 2617*

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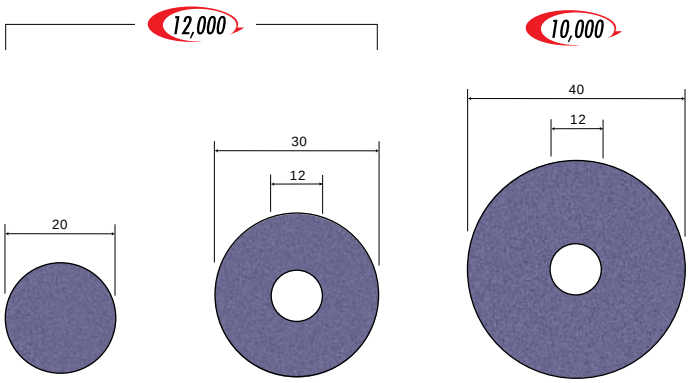
Rubber Disc (with PSA backing)

20

WA Disc-formed abrasive rubber



Thickness 1.5 mm

#60	*F 2651*	*F 2661*	*F 2671*
#80	*F 2652*	*F 2662*	*F 2672*
#120	*F 2653*	*F 2663*	*F 2673*

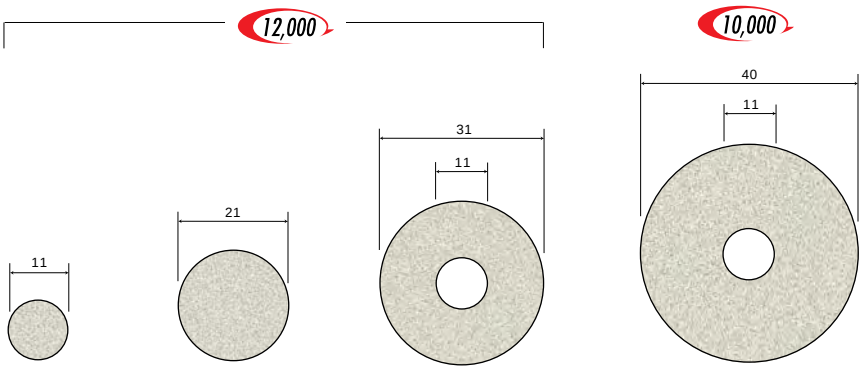
Felt Disc (with PSA backing)

20

(Thickness 2 mm)

These felt discs are compressed dense structures of carefully selected fine, quality wool.

These discs should be used with a Hyprez diamond polishing compound and Hyprelube lubricant (see Section 5). Rich in elasticity, they fit well with curved surfaces and are applicable to finish polishing.



F 2461 F 2462 F 2463 F 2464

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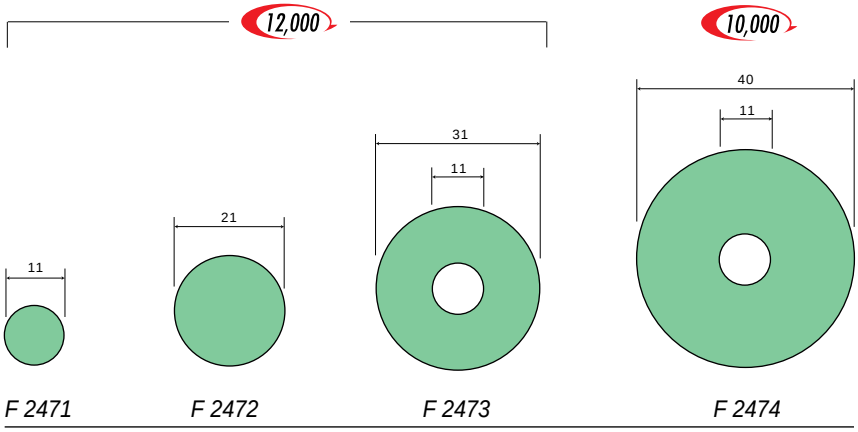
Green Felt Disc (with PSA backing)

20

(Compound impregnated. Thickness 2 mm)

These green felt discs are compressed dense structure of carefully selected fine, quality wool impregnated with chromium oxide polishing compound. They are directly applicable to finish polishing, precision polishing and glossing, and require no polishing compounds.



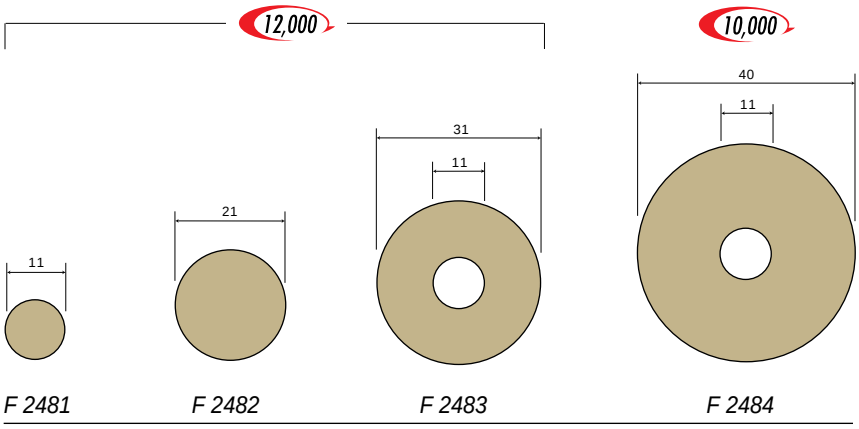
Special Felt Disc (with PSA backing)

20

(Thickness 2 mm)

These special felt discs are compressed dense structures of pure quality rabbit hair, finer than felt disc wool. They are not susceptible to static electricity.

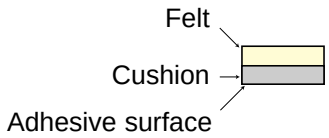
Capable of scratch-free polishing with soft contact.

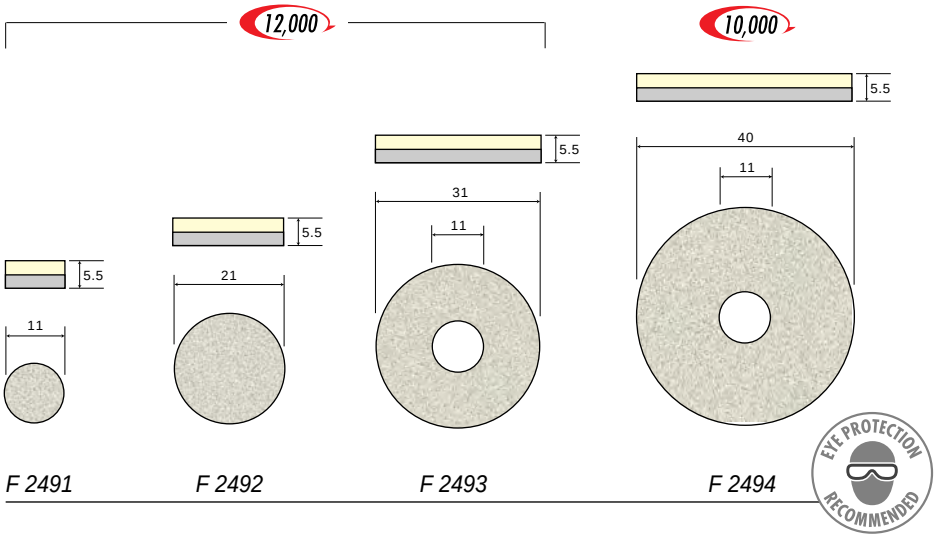


Felt Disc with Soft Cushion (with PSA backing)

20

These felt discs have a soft cushion inserted between contact surface and felt disc so that they fit well with curved surfaces and enable impact-free polishing.





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Mini Sand Belts

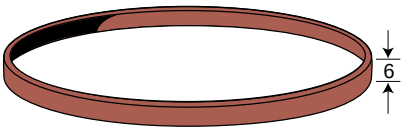
30

(circumference 300 mm)

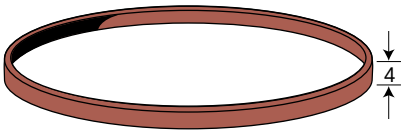
- *These belts are only applicable to MINIMO MINI BELT SANDER*
- *There are various types of belts of different materials. Wide selection available.*

Standard type sand belts for MINI BELT SANDER are strong in cutting power and resist clogging.

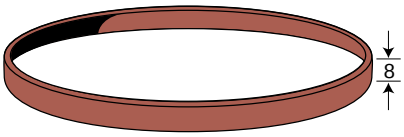
There are sand belts with three different widths (4 mm, 6 mm and 8 mm) applicable to metal or wood grinding.



6mm	
#80	F 1011
#120	F 1012
#180	F 1013
#320	F 1014



4mm	
#80	F 1001
#120	F 1002
#180	F 1003
#320	F 1004



8mm	
#80	F 1021
#120	F 1022
#180	F 1023
#240	F 1024
#320	F 1025
#400	F 1026
#600	F 1027
#800	F 1028
#1000	F 1029

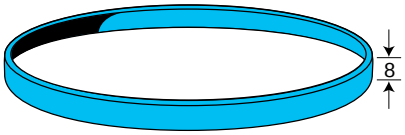
Zirconia Belt

30

(circumference 300 mm)

Coated with zirconia grains developed for hard-to-cut materials such as aluminum die-cast. Because of the special coating method used for zirconia grains, stable cut ability can be maintained to create smooth and uniform surfaces under diverse cutting conditions. These belts are capable of deburring such metals as aluminum, brass and stainless steel.

(Not applicable to the Angle arm.)



Width 8 mm	
#80	F 1091
#120	F 1092
#150	F 1093

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Hyprez Ceramic Stones

Engis Hyprez Ceramic Stones are made from the finest ceramic fiber with a special resin binder developed originally for the aerospace industry. These virtually unbreakable polishing stones work well in the finishing of small detail areas such as slots, ribs and other narrow areas of molds and dies. They can be used either by hand or with a reciprocating or ultrasonic Diprofil polishing system.

Since these high quality ceramic stones can be easily shaped and come in a broad range of sizes and grits, they are one of the most versatile tools for precision finishing of molds and dies.

- *High strength, resists breakage*
- *High efficiency*
- *Uniform finishes*
- *Resists loading or clogging*
- *Low heat generation*
- *Efficient cleaning of EDM scale*
- *Fast removal of fine burrs*
- *Variety of grits available*

USAGE

- *Precision finishing of ribs, edges, etc., on dies and molds*
- *No loading or clogging of the stone even on some materials such as aluminum*
- *Can be used in very narrow areas without the risk of breakage*
- *Can be used on complex shapes where uniform finishing can be a challenge*
- *Can be used by hand or with Diprofil reciprocating or rotary systems*

Stone Holders

Item Number	Length	Width of stick	
29950	For Profiler	1/8" Mandrel	A
29925	5-1/2"	3mm round	B
29940	5-3/4"	8-10mm stick	C
29935	5-3/4"	6mm stick	D
29930	5-3/4"	2-4mm stick	E
29945	Set of above three		

Size	Gold 120 Grit P/N	Lt. Brown 180 Grit P/N	Orange 220 Grit P/N	Dk. Brown 320 Grit P/N	Blue 400 Grit P/N	White 800 Grit P/N	Red 1000 Grit P/N
.5 x 2 x 100		CS052100LB	CS052100O	CS052100DB	CS052100B	CS052100W	CS052100R
.5 x 4 x 100	CS054100G	CS054100LB	CS054100O	CS054100DB	CS054100B	CS054100W	CS054100R
.5 x 6 x 100	CS056100G	CS056100LB	CS056100O	CS056100DB	CS056100B	CS056100W	CS056100R
.8 x 4 x 100	CS084100G	CS084100LB		CS084100DB	CS084100B		
.8 x 6 x 100	CS086100G	CS086100LB		CS086100DB	CS086100B		
.8 x 10 x 100	CS0810100G						
1 x 2 x 100	CS12100G	CS12100LB	CS12100O	CS12100DB	CS12100B	CS12100W	CS12100R
1 x 4 x 100	CS14100G	CS14100LB	CS14100O	CS14100DB	CS14100B	CS14100W	CS14100R
1 x 6 x 100	CS16100G	CS16100LB	CS16100O	CS16100DB	CS16100B	CS16100W	CS16100R
1 x 10 x 100	CS110100G	CS110100LB	CS1101000O	CS1100100DB	CS110100B	CS110100W	CS110100R
1.5 x 4 x 100	CS154100G	CS154100LB	CS1541000O	CS154100DB	CS154100B		
1.5 x 6 x 100	CS156100G	CS156100LB	CS1561000O	CS156100DB	CS156100B		
3mm dia. x 100	CS3100G	CS3100LB	CS3100O	CS3100DB	CS3100B	CS3100W	CS3100R

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Hyprez® Polishing Stones MATERIALS AND APPLICATIONS

Section	Type	Abrasive	Color	Grits	CHARACTERISTICS AND APPLICATION
4-3	**DM**	*Aluminum Oxide*	*Gray*	*150-600*	*Similar to the DS general purpose finishing stone. This stone is slightly harder and does not break down as rapidly as the DS. Engineered to cut very fast yet provides a smooth finish. Excellent for removing cutter marks on all tool and die steels.*
4-4	**EDM**	*White Aluminum Oxide*	*Dark Brown*	*100-600*	*The EDM stone is engineered for the removal of EDM scale. This stone is a soft grade which breaks down fast adn cuts freely. Specially designed for hand applications.*
4-4	**RG**	*Green Silicon Carbide*	*Green*	*120-600*	*A medium stone with premium silicon carbide grains. Cuts very fast, yet provides an excellent finish on most die and mold steel types ranging from 28 to 58 Rc. Also permits finishing on aluminum, cast iron and bronze.*
4-5	**DS**	*Regular Aluminum Oxide*	*Green / Tan*	*100-900*	*Very popular medium hard stone for all types of steel. Fast cutting, provides a fine, even finish and has the perfect breakdown for a finishing stone.*
4-5	**A/L**	*White Aluminum Oxide*	*Tan*	*150-600*	*A specially treated, medium hard stone that cuts fast and leaves an excellent finish. Similar to AOT, but breaks down faster. It works well on aluminum, not scratching or tearing the surface.*
4-6	**HY**	*White Aluminum Oxide*	*Cream/Ivory*	*120-600*	*Extremely well liked, this medium hard stone is treated with a special oil to resist loading. Cuts very fast yet provides smooth finishes on most tool and die sheets. 220 grit and 320 grits work well on hard EDM scale.*

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DM

Similar to the DS general purpose finishing stone. This stone is slightly harder and does not breakdown as rapidly as the DS. Engineered to cut very fast yet provides a smooth finish.

Excellent for removing cutter marks on all tool and die steels.

- *General purpose*
- *Fast cutting*
- *Consistent breakdown*
- *For use on all tool steels*

Size	Pcs/ Box	150	180	220	320	400	600
1/16 x 1/4 x 6	12	0810179		0812039	0813239	0814059	0816119
1/16 x 1/2 x 6	12	0810129		0812109	0813249	0814099	0816209
1/8 x 1/8 x 6	12	0810159	0811129	0812159	0813299	0814129	0816259
1/8 x 1/4 x 6	12	0810199	0811179	0812239	0813339	0814199	0816299
1/8 x 1/2 x 6	12	0810229	0811239	0812259	0813359	0814219	0816319
1/8 x 1 x 6	12	0810259	0811289	0812319	0813369	0814229	0816339
5/32 x 5/32 x 6	12	0810309	0811359	0812359	0813399	0814259	0816399
1/4 x 1/4 x 6	12	0810379	0811399	0812369	0813409	0814369	0816409
1/4 x 1/2 x 6	12	0810429	0811429	0812429	0813429	0814429	0816429
1/4 x 1 x 6	6	0810459	0811499	0812739	0813499	0814499	0816469
3/8 x 3/8 x 6	12	0810489		0812789	0813539	0814529	0816559
1/2 x 1/2 x 6	6	0810539	0811549	0812839	0813549	0814559	0816629
1/2 x 1 x 6	4	0810579	0811579	0812869	0813559	0814609	0816649
1 x 1 x 6	2	0810629	0811639	0812899	0813599	0814659	0816699
1/4 TRI x 6	6	0810659		0812909	0813619	0814699	
3/8 TRI x 6	6	0810699		0812919	0813649	0814709	
1/4 RND x 6	6	0810739		0812959	0813679	0814889	0816709
3/8 RND x 6	6	0810789		0812979	0813719	0814899	0816759
1/2 RND x 6	6	0810999		0812999	0813749	0814959	

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EDM

The EDM stone is engineered for the removal of EDM scale. This stone is a soft grade which breaks down fast and cuts freely. Specially designed for hand application.

Size	Pcs/ Box	100	120	150	180	220	280	320	400	600
1/16 x 1/4 x 6	12		0212609	0213709	0214809	0215909	0205909	0218109	0219209	0221409
1/16 x 1/2 x 6	12	0211609	0212709	0213809	0214909	0216009	0217109	0218209	0219309	0221509
1/8 x 1/8 x 6	12				0215009	0216109		0218309	0229409	0221609
1/8 x 1/4 x 6	12	0211809	0212909	0214009	0215109	0216209	0217309	0218409	0219509	0221709
1/8 x 1/2 x 6	12	0211909	0213009	0214109	0215209	0216309	0217409	0218509	0219609	0221809
1/8 x 1 x 6	12	0212009	0213109	0214209	0215309	0216409	0217509	0218609	0219709	
5/32 x 5/32 x 6	12		0213209		0215409	0216509		0218709	0219809	0222009
1/4 x 1/4 x 6	12	0212309	0213409	0214509	0215609	0216709	0217809	0218909	0220009	0222209
1/4 x 1/2 x 6	12	0212409	0213509	0214609	0215709	0216809	0217909	0219009	0220109	0222309
1/4 x 1 x 6	6	0212509	0213609	0214709	0215809	0216909	0218009	0219109	0220209	0222409

RG

A medium stone with premium silicon carbide grains. Cuts very fast, yet provides an excellent finish on most die and mold steel types ranging from 28 to 58 Rc. Also permits finishing on aluminum, cast iron and bronze.

Size	Pcs/ Box	120	150	220	320	400	600
1/16 x 1/2 x 6	12		0352059	0353059	0355059	0356059	0358059
1/8 x 1/4 x 6	12	0351139	0352139	0353139	0355139	0356139	0358139
1/8 x 1/2 x 6	12	0351179	0352179	0353179	0355179	0356179	0358179
5/32 x 5/32 x 6	12				0355259	0358259	0358259
1/4 x 1/4 x 6	12	0351299	0352299	0353299	0355299	0356299	0358299
1/4 x 1/2 x 6	12	0351339	0352339	0353339	0355339	0356339	0358339
1/4 x 1 x 6	6		0352379	0353379	0355379	0356379	0358379
3/8 x 3/8 x 6	12		0352419	0353419	0355419	0356419	
1/2 x 1/2 x 6	6		0352459	0353459	0355459	0356459	0358459
1/2 x 1 x 6	4		0352499	0353499	0355499	0356499	0358499
1 x 1 x 6	2		0352539	0353539	0355539	0356539	0358539
1/4 RND x 6	6			0353739	0355739	0356739	

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DS

Very popular medium hard stone for all types of steel. Fast cutting, provides a fine, even finish and has the perfect breakdown for a finishing stone.

Size	Pcs/ Box	100	150	180	220	280	320	400	500	600	900
1/16 x 1/4 x 6	12	0232109	0233409		0236009	0237309	0238609	0239909	0241209	0242509	0245109
1/16 x 1/2 x 6	12	0232209	0233509		0236109		0238709	0240009		0242609	0245209
1/8 x 1/8 x 6	12	0232309	0233609	0234909	0236209		0238809	0240109		0242709	0245309
1/8 x 1/4 x 6	12	0232409	0233709	0235009	0236309	0237609	0238909	0240209	0241509	0242809	0245409
1/8 x 1/2 x 6	12	0232509	0233809	0235109	0236409	0237709	0239009	0240309	0241609	0242909	0245509
1/8 x 1 x 6	12	0232609	0233909	0235209	0236509	0237809	0239109	0240409	0241709	0243009	
5/32 x 5/32 x 6	12	0232709	0234009	0235309	0236609		0239209	0240509	0241809	0243109	0245709
1/4 x 1/4 x 6	12	0232909	0234209	0235509	0236809	0238109	0239409	0240709	0242009	0243309	0245909
1/4 x 1/2 x 6	12	0233009	0234309	0235609	0236909	0238209	0239509	0240809	0242109	0243409	0246009
1/4 x 1 x 6	6	0233109	0234409	0235709	0237009	0238309	0239609	0240909	0242209	0243509	0246109
3/8 x 3/8 x 6	12	0233159	0234459		0237059	0238359	0239659	0240959		0243559	
1/2 x 1/2 x 6	6	0233209	0234509	0235809	0237109	0238409	0239709	0241009	0242309	0243609	0246209
1/2 x 1 x 6	4	0233309	0234609	0235909	0237209	0238509	0239809	0241109	0242409	0243709	0246309
1 x 1 x 6	2	0233319	0234619	0235919	0237219		0239819	0241119	0242419	0243719	
1/4 TRI x 6	6		0234639		0237239		0239839	0241139			
3/8 TRI x 6	6		0234649		0237249		0239849	0241149			
1/4 RND x 6	6		0234669		0237269		0239869	0241169		0243769	
1/2 RND x 6	6		0234689		0237289		0239889	0241189			
3/8 RND x 6	6		0234679		0237279		0239879	0241179		0243779	

A/L

A specially treated, medium hard stone that cuts fast and leaves an excellent finish. Similar to AOT, but breaks down faster. It works well on aluminum, not scratching or tearing the surface.

Size	Pcs/ Box	150	220	320	400	600
1/8 x 1/4 x 6	12	0381929	0383529	0384329	0385129	0385929
1/8 x 1/2 x 6	12	0381969	0383569	0384369	0385169	0385969
1/4 x 1/4 x 6	12	0382089	0383689	0384489	0385289	0386089
1/4 x 1/2 x 6	12	0382129	0383729	0384529	0385329	0386129
1/4 x 1 x 6	6	0382169	0383769	0384569	0385369	0386169

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E-mail: info@engis.com

HY

Extremely well liked, this medium hard stone is treated with a special oil to resist loading. Cuts very fast yet provides smooth finishes on most tool and die sheets. 220 grit and 320 grits work well on hard EDM scale.

Size	Pcs/ Box	120	150	220	320	400	600
1/16 x 14 x 6	12	0331019	0332019	0334019	0336019	0337019	0339019
1/16 x 1/2 x 6	12	0331059	0332059	0334059	0336059	0337059	0339059
1/8 x 1/8 x 6	12	0331099	0332099	0334099	0336099	0337099	0339099
1/8 x 1/4 x 6	12	0331139	0332139	0334139	0336139	0337139	0339139
1/8 x 1/2 x 6	12	0331179	0332179	0334179	0336179	0337179	0339179
1/8 x 1 x 6	12	0331219	0332219	0334219	0336219	0337219	
5/32 x 5/32 x 6	12	0331259	0332259	0334259	0336259	0337259	0339259
1/4 x 1/4 x 6	12	0331299	0332299	0334299	0336299	0337299	0339299
1/4 x 1/2 x 6	12	0331339	0332339	0334339	0336339	0337339	0339339
1/4 x 1 x 6	6	0331379	0332379	0334379	0336379	0337379	0339379
3/8 x 3/8 x 6	12	0331419	0332419	0334419	0336419	0337419	
1/2 x 1/2 x 6	6	0331459	0332459	0334459	0336459	0337459	0339459
1/2 x 1 x 6	4	0331499	0332499	0334499	0336499	0337499	0339499
1 x 1 x 6	2	0331539	0332539	0334539	0336539	0337539	0339539
1/4 TRI x 6	6				0336699	0337699	
3/8 TRI x 6	6	0331739		0334739		0337739	
1/2 TRI x 6	6	0331779					
1 TRI x 6	4	0331819					
1/4 RND x 6	6	0331899	0332899	0334899	0336899	0337899	0339899
3/8 RND x 6	6		0332939	0334939	0336939	0337939	0339939
1/2 RND x 6	6			0334979	0336979	0337979	0339979

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Polishing Stone-Applications Chart

Type	Surface: TOOL STEEL	ALUMINUM	NON-FERROUS	STAINLESS STEEL	EDM	Method: HAND	PROFILER	ULTRASONIC	Use: DRY	WET
EDM STONE										
EDM	●				●	●	●		●	●
GENERAL PURPOSE STONES										
DS	●	●	●	●		●	●		●	●
RB	●	●				●	●		●	●
DM	●	●	●	●		●	●		●	●
SPECIALTY STONES										
A/L	●	●				●	●			●
HY	●				●	●	●			●
ROM	●					●	●		●	●
SILICON CARBIDE STONE										
RG	●	●	●			●	●		●	●

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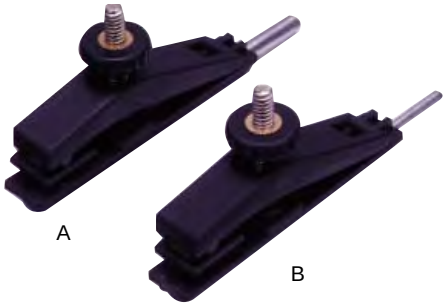
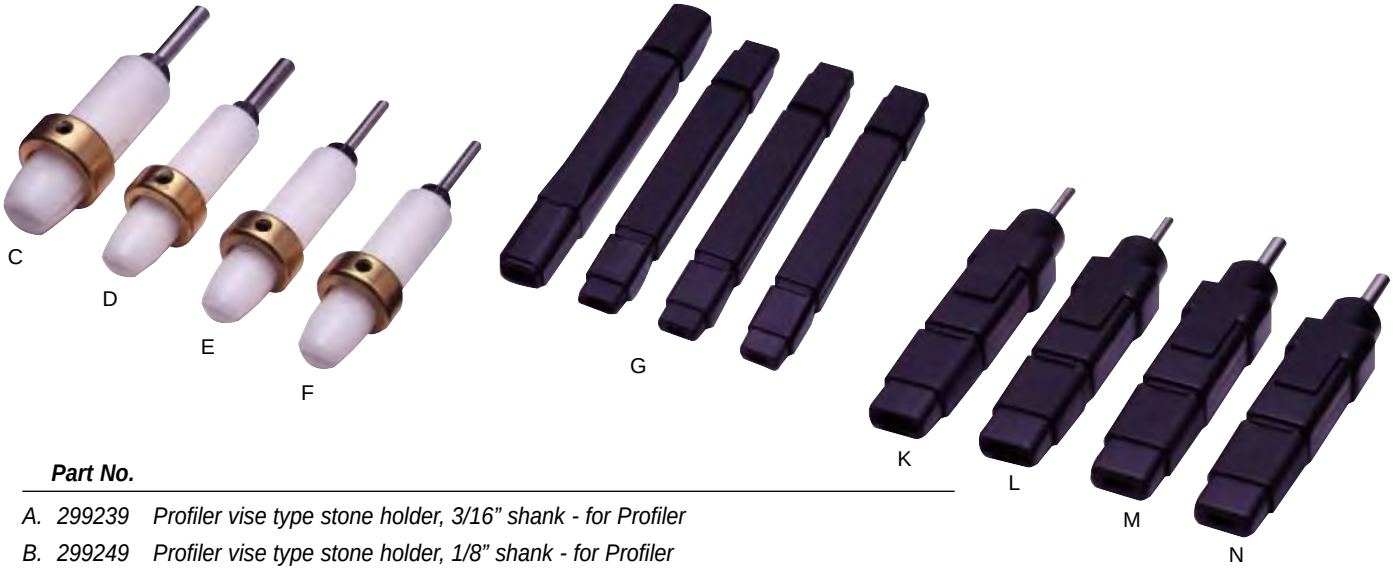
Hyprez® Polishing Stone Holders

A selecton of Polishing Stone Holders is available from Engis DiaMold products group. Holders for hand and machine polishing are listed below.





	Part No.	
A.	299239	Profiler vise type stone holder, 3/16” shank - for Profiler
B.	299249	Profiler vise type stone holder, 1/8” shank - for Profiler
C.	299609	Holder Pro for 1/4” Stone (Long), 3/16” shank - for Profiler
D.	299639	Holder Pro for 1/4” Stone (Short), 3/16” shank - for Profiler
E.	299679	Holder Pro for 1/8” Stone (Short), 3/16”shank - for Profiler
F.	299549	Holder Pro for 1 mm ceramic stone, 3/16” shank
G.	299159	4 piece hand stone holder kit. Holds round and all sizes of square and rectangular polishing stones from 1/16” to 1/2”
K.	299199	1/8” x 1/2” & 1/4” x 1/4” - 1/8” Shank - for Profiler
L.	299189	1/8” x 1/4” - 1/8” Shank - for Profiler
M.	299169	1/8” x 1/4” - 3/16” Shank - for Profiler
N.	299179	1/8” x 1/4” & 1/4” x 1/4” - 3/16” Shank - for Profiler

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Stones, Lapping Stick & File Holders

The Hyprez Stone and Stick Holder (VEA) will hold sticks and stones up to 1/2" diameter, round, square and rectangular at an angle for those hard-to-reach operations (45 to 90° angles).

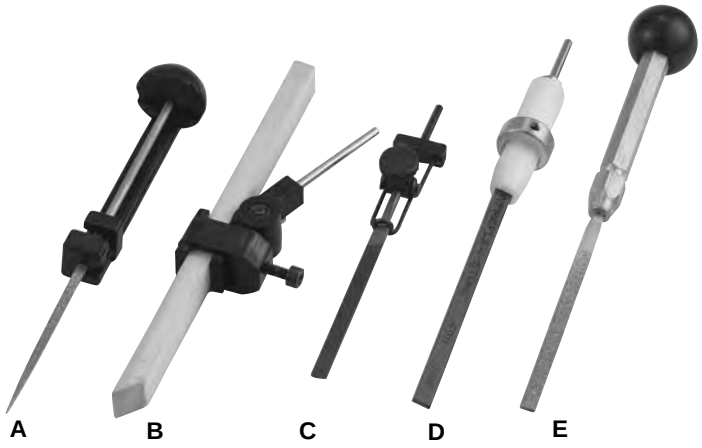
The Hyprez Stone and Stick Holder is for use with the Di-Profiler Reciprocating Hand Machine. It is designed to add greater flexibility to lapping operations.

Stone Holder Kit with accessories – Part No. SHK 101

Accessories include one each:
- *Holder VEA*
- *Abrasive Stones 1/4" x 1/2" x 6"*

Stone Part Number:
0249109, 0254709, 0356339, 0358339, 0286409

- *Hyprez Lapping Sticks D, SE, F, SG, H, SJ, K and SL*



A. FH.1 - File Holder
B. VEA - Stick & Stone Holder
C. FVA - File & Shoe Holder
D. 29950 - Hyprez Ceramic Stone Holder
E. IF-20 - File Holder

Lubricant for Di-Profiler & Minimo Recipron

FNA-K

Use the FNA-K oil for lubricating your Di-Profiler or Recipron machines. This lubricant is specially formulated to reduce wear and prolong the life of your reciprocating hand pieces.

It is recommended that you use the FNA-K oil on your Di-Profiler and Recipron handpieces daily. 1-2 drops will reduce heat and friction.

S.P.I. Mold Finish Guide

The first ever Pocket-Sized Mold Finish Reference Guide that goes with you anywhere. It has a 72 RC hard finished surface that will retain exact finishes for years to come and is quick and easy to read.

Includes a direct cross-reference between the Roughness Average and S.P.I. Scales for ease in comparisons. (No other gauge does this.)

The Pocket S.P.I. Mold Finish Guide comes with a handy carrying sheath for convenience.

Part No. SPI

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Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

DiaMold Diamond Compound

DiaMold Diamond Compound is a diamond polishing compound specially formulated for use in mold & die applications.

Mold & Die Polishing Compound for the finishing specialist who demands the best!

Proven Formulation

DiaMold Diamond Compound will withstand severe lapping conditions without loss of cutting quality. The use of a stable carrier assures sustained particle suspension throughout the process cycle.

Better Coverage

DiaMold Compound's unique blend also provides more surface coverage and improved impregnation of lapping tools.

Oil-Soluble

DiaMold Diamond Compound can be used with Hyprelube and Hyprez OS Type IV (oil soluble) lubricants to meet specific requirements of material and surface finish.

Great Advantages

DiaMold Diamond Compound offers these outstanding advantages:

- *Superior surface tension*
- *Consistent viscosity*
- *Does not evaporate*
- *Oil-based*
- *Pleasant odor*
- *Economical*
- *Aggressive removal rates*
- *High adhesion to tools and surfaces*
- *Generates highly reflective surface*
- *Easily cleans with Hyprelube Lubricant*

DiaMold Diamond Compounds are available in several dispensing containers:

- 10 gram syringe
- 20 gram syringe
- 10 gram dip jar

VALUE KITS
1 ea. 10 gram syringe 3, 6 & 9 (item #340.5144)
1 ea. 10 gram syringe 1, 3, 6 & 9 (item #340.5143)
1 ea. 10 gram syringe 9, 15 & 30 (item #340.5145)

Ordering guide:

Specify quantity, micron size, type of compound, container size and type, i.e. 3 pcs. 6-DiaMold Diamond Compound 20 gram syringe.

105 W. Hintz Road • Wheeling, IL 60090-6038
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

DiaMold® Compound

Micron Size	*Product Code*	*Compound Color*	*Application*
1	1-DiaMold	Ivory	Final Polishing
3	3-DiaMold	Yellow	Final Polishing
6	6-DiaMold	Orange	Lapping & Pre-Polishing
9	9-DiaMold	Green	Lapping & Pre-Polishing
15	15-DiaMold	Blue	Lapping & Pre-Polishing
30	30-DiaMold	Red	Rapid Stock Removal
45	45-DiaMold	Brown	Rapid Stock Removal
60	60-DiaMold	White	Rapid Stock Removal

For best results, use DiaMold Lubricants. They are specially formulated to work with DiaMold Diamond Compounds.

Lubricants

- Hyprelube Lubricant
- OS Type IV (oil-soluble)

Available Packaging

- 10 gram syringe
- 20 gram syringe
- 10 gram dip jar
- Other packaging on request

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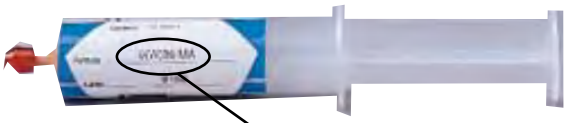
Hyprez® Diamond Compounds

Hyprez Diamond Formulas are enhanced products of the highest quality, the result of Engis' deep understanding of diamonds. Our expertise on how to mill, shape and grade diamonds of various types and friabilities is unmatched. Coupled with this experience is our knowledge of chemistry, compounding techniques, carrier formulations and concentration factors.

This wealth of technical know-how, combined with our ISO 9002 certified quality systems, have made Hyprez the most trusted name in diamond compounds throughout the world.

Understanding Our Formulas for Compounds & Slurries



{9 (W) 35-MA

The type of diamond used in the formula: MA (monocrystalline), PC (polycrystalline) or NAT (virgin natural).

Diamond concentration shown by a code number, or by MED (medium), STD (standard) or STR (strong)

Type of carrier -- (W) water soluble, (OS) oil soluble or special formula

Micron size of diamond in the compound or slurry

If you would like assistance in placing your order, simply call Engis at 1-800-993-6447.

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E-mail: info@engis.com

Compounds For Every Application

A comprehensive range of Hyprez Diamond Compounds has been developed to meet all the variables involved in mold and die polishing, including:

- *Material being processed*
- *Working pressure applied to parts*
- *Amount of stock to be removed*
- *Size of area involved*

By using the proper Hyprez compound, in conjunction with the appropriate accessories, you can be assured of consistent, repeatable results of the highest quality.

Engis application engineers and technical sales representatives will gladly assist you in any way possible. Simply give us a call.

Engis carries a wide selection of Hyprez diamond compounds in stock for timely delivery.

Hyprez Five Star®
Combines the excellent cutting characteristics of natural diamonds with the durability of manufactured diamonds, into an all-purpose, precision blend.

Hyprez W Compound
Water soluble formula that cleans easily from the workpiece. Suitable for high luster polishing. Used extensively in mold polishing and die finishing.

Hyprez Specialty Compounds
Custom formulations engineered to meet special application requirements. Diamond concentrations and carrier chemistry tailored to the task.

Hyprez Formula L
For use on harder materials, such as tungsten carbide tooling and ceramics, as well as coarse lapping on natural metal and Hyprez special composite laps.

Hyprez OS Compound
Oil-based formula absorbs more abraded material and is self-lubricating. Also ideal for rapid stock removal operations using oil-based lubricants.

Hyprez Diamond Die Compounds
Very heavy concentrations of diamond, sold by the carat instead of the gram. Used with wire polishing and ultrasonic machines.

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E-mail: info@engis.com

C11 & L Hyprez® Diamond Compounds

For Tungsten Carbide & Mold Materials

Both C11 & L diamond compounds are specially formulated for use with harder materials. Typical applications include finishing tungsten carbide, tooling and molds.

C11 – Water Soluble for Easy Clean Up

Use Hyprez C11 diamond compound where contamination from oil or solvents cannot be tolerated. C11 is a water soluble diamond compound that cleans up with mild detergent and water. The cutting action of C11 is slightly slower than that of the Hyprez L diamond compound.

For best results, it is recommended to use the Hyprez W lubricant with the Hyprez C11 diamond compound.

L – Oil-soluble for better application

Hyprez Formula L is a diamond particle suspension which is not affected by dilution. It will hold to vertical surfaces, slots, ribs and other hard to reach areas. The compound can be thinned to any desired consistency with Hyprez OS Type IV or Hyprelube lubricants. It utilizes a special chemical carrier with increased surface tension to improve tool adhesion.

Withstands Frictional Heat

The consistency of Hyprez C11 & L formulas are not affected by frictional heat generated during use. Only minimal lubrication is required for optimal results.

Hyprez C11 and L Diamond Compounds are available in several standard dispensing containers:

- *5 gram dip jar*
- *5 grams in a 10 gram syringe*
- *18 gram syringe*
- *Special packaging available on request*

Formula L or C11 Compound Grade	Micron Size Range	Approximate Mesh Size Comparison	Color Code Identification	Diamond Concentration
1/10-MA or NAT	0-1/5	240,000	Grey	Standard
1/4-MA or NAT	0-1/2	100,000	Grey	Standard
1/2-MA or NAT	0-1	60,000	Grey	Standard
1-MA or NAT	0-2	14,000	Ivory	Medium Standard Strong
2-MA or NAT	1-3	11,000	Light Yellow	Medium Standard Strong
3-MA or NAT	2-4	8,000	Yellow	Medium Standard Strong
6-MA or NAT	4-8	3,000	Orange	Medium Standard Strong
9-MA or NAT	6-12	1,800	Green	Medium Standard Strong
15-MA or NAT	10-20	1,200	Blue	Medium Standard Strong
30-MA or NAT	22-36	600	Red	Medium Standard Strong
45-MA or NAT	36-54	325	Brown	Medium Standard Strong
60-MA or NAT	54-80	270	White	Medium Standard Strong
230-MA or NAT	Mesh	230	Purple	Medium Standard Strong
170-MA or NAT	Mesh	170	Grey Black	Medium Standard Strong
100-MA or NAT	Mesh	100	Black	Medium Standard Strong

The C11 and L formula diamond compounds are available with Hyprez monocrystalline (MA), polycrystalline synthetic (PC) and virgin natural (NAT) diamond.

Standard color coding is used to identify the C11 & L diamond compound.

For polishing of molds and dies, the C11 & L diamond compounds are the premium formulations that polishers prefer.

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Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Hyprez® Five-Star® Diamond Compound–The Mold Finisher's Choice

Ideal for Hand Finishing of Molds and Dies

Hyprez Five-Star is a universal compound for use in virtually all applications.

Proven Formulation
One of the world's most widely used diamond compounds, Hyprez Five-Star is formulated to withstand severe lapping conditions without loss of cutting quality. The use of a stable carrier assures sustained particle suspension throughout the process cycle.

Better Coverage
Hyprez Five-Star compound's unique blend of manufactured diamonds also provides more surface coverage and improved impregnation of laps.

2-Way Solubility
Five-Star diamond compound can be used with Hyprez OS Type IV (oil soluble) or Type W (water soluble) lubricants to meet specific requirements of material and surface finish.

18 gram syringe

Micron Size	*Product Code Concentration*	*Compound Color*	*Application*	*Concentration*
1/10	*1/10-FS/US* *1/10-FS/US*	*Grey*	*Final Polishing*	*Medium Standard Strong*
1/4	*1/4-FS/US* *1/4-FS/US*	*Grey*	*Final Polishing*	*Medium Standard Strong*
1	*1-FS/US* *1-FS/US* *1-FS/US*	*Ivory*	*Final Polishing*	*Medium Standard Strong*
3	*3-FS/US* *3-FS/US* *3-FS/US* *3-FS/US*	*Yellow*	*Final Polishing*	*Medium Standard Strong*
6	*6-FS/US* *6-FS/US* *6-FS/US*	*Orange*	*Lapping and Pre-polishing*	*Medium Standard Strong*
9	*9-FS/US* *9-FS/US* *9-FS/US* *9-FS/US*	*Green*	*Lapping and Pre-polishing*	*Medium Standard Strong*
15	*15-FS/US* *15-FS/US* *15-FS/US*	*Blue*	*Lapping and Pre-polishing*	*Medium Standard Strong*
30	*30-FS/US* *30-FS/US* *30-FS/US*	*Red*	*Rapid Stock Removal*	*Medium Standard Strong*
45	*45-FS/US* *45-FS/US* *45-FS/US*	*Brown*	*Rapid Stock Removal*	*Medium Standard Strong*
60	*60-FS/US* *60-FS/US*	*White*	*Rapid Stock Removal*	*Medium Standard Strong*

Lubricant

Use OS Type IV (oil soluble) or W (water soluble) lubricant.

Available Packaging

- *5 gram, 10 gram, 18 gram syringe*
- *5 gram dip jars*
- *Other packaging available on request*

Concentration

For concentration recommendation, consult your Engis representative.

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Hyprez® Formula W and OS

All grades of Hyprez compounds are also available with Hyprez polycrystalline synthetic (PC) and virgin natural (NAT) diamond.

Hyprez Grade W Compound

A water-soluble formula that cleans easily from the workpiece, Hyprez W is recommended for areas requiring a very high luster, but which might be affected by an oil-base compound.

Grade W was the first commercially successful diamond compound. Formulated by Engis, it is still in general use by the die and mold industry and for precision hand lapping. For additional lubrication, use W lubricant.

Hyprez Grade OS Compound

This oil-based formula perfectly complements Grade W. It is especially popular in lapping areas where oil base lubricants help provide faster cutting action. It absorbs more abraded material and is self-lubricating. However, when additional lubricant is desired, use OS Type IV lubricant for best results.

Classifications For General Use	W Compound Grade	OS Compound Grade	Micron Size Range	Approximate Mesh Size Comparison	Color Code Identification	Diamond Concentration
For Operations Requiring Precise Finishes And Tolerances	1/10-W-475-MA	1/10-OS-475-MA	0-1/5	240,000	Grey	Standard
	1/4-W-475-MA	1/4-OS-475-MA	0-1/2	100,000	Grey	Standard
	1/2-W-475-MA	1/2-OS-475-MA	0-1	60,000	Grey	Standard
	1-W-48-MA	1-OS-48-MA				Medium
	1-W-47-MA	1-OS-47-MA	0-2	14,000	Blue	Standard
	1-W-45-MA	1-OS-45-MA				Strong
Final Finishing Grades For Most Molds, Dies, Flat Lapping And Assorted Production Lapping	2-W-48-MA	2-OS-48-MA				Medium
	2-W-47-MA	2-OS-47-MA	1-3	11,000	Light Green	Standard
	2-W-45-MA	2-OS-45-MA				Strong
	3-W-45-MA	3-OS-45-MA				Medium
	3-W-40-MA	3-OS-40-MA	2-4	8,000	Green	Standard
	3-W-35-MA	3-OS-35-MA				Strong
	6-W-42-MA	6-OS-42-MA				Medium
	6-W-375-MA	6-OS-375-MA	4-8	3,000	Yellow	Standard
	6-W-30-MA	6-OS-30-MA				Strong
	9-W-40-MA	9-OS-40-MA				Medium
	9-W-35-MA	9-OS-35-MA	6-12	1,800	Red	Standard
	9-W-30-MA	9-OS-30-MA				Strong
Grades Most Commonly Used As First Step In Finishing Carbides, Steels And Production Lapping	15-W-40-MA	15-OS-40-MA				Medium
	15-W-35-MA	15-OS-35-MA	10-20	1,200	Brown	Standard
	15-W-30-MA	15-OS-30-MA				Strong
	30-W-40-MA	30-OS-40-MA				Medium
	30-W-30-MA	30-OS-30-MA	22-36	600	Mahogany	Standard
	30-W-20-MA	30-OS-20-MA				Strong
	45-W-40-MA	45-OS-40-MA				Medium
	45-W-30-MA	45-OS-30-MA	36-54	325	Purple	Standard
	45-W-20-MA	45-OS-20-MA				Strong
For Very Fast Stock Removal	60-W-35-MA	60-OS-35-MA				Medium
	60-W-30-MA	60-OS-30-MA	54-80	270	Orange	Standard
	60-W-25-MA	60-OS-25-MA				Strong
	230-W-35-MA	230-OS-35-MA				Medium
	230-W-30-MA	230-OS-30-MA	Mesh	230	White	Standard
	230-W-25-MA	230-OS-25-MA				Strong
	170-W-35-MA	170-OS-35-MA				Medium
	170-W-30-MA	170-OS-30-MA	Mesh	170	White	Standard
	170-W-25-MA	170-OS-25-MA				Strong
	100-W-35-MA	100-OS-35-MA				Medium
	100-W-30-MA	100-OS-30-MA	Mesh	100	White	Standard
	100-W-25-MA	100-OS-25-MA				Strong

Lubricant	*Use W (water soluble) lubricant with W compound • Use OS Type IV (oil soluble) lubricant with OS compound*
Available Packaging	*• 5 gram & 18 gram plastic syringe • 5 gram dip jars • Hyplicator by request • Other packaging available.*
Concentration	*The above compounds are all normally available from stock. Other concentrations are available on request.*

105 W. Hintz Road • Wheeling, IL 60090-6038
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Hyprez®
DiaMold®
Finishing Products Engis

High Intensity Polish

- No harsh odors or smells
- Easily applied and removed
- Produces a high finish with very little effort
- Can be used on brass, bronze, chrome, aluminum and other metals
- Removes rust deposits
- Removes tarnish, dirt and oils
- Leaves protective film which retards oxidation and rust
- Use after diamond polishing to remove haze

High Intensity Polish (HIP) safely removes plate-out, oxidation and stains on fine tooling surfaces quickly and cost-effectively from any metal surface. It is ideal for all types of molds, dies and fixtures. It restores surface finish while providing high luster sheen. Easier to remove than other polishes, it wipes on and off without leaving a residue. Non-hazardous and non-corrosive, it cleans and removes haze from diamond-finished molds safely, without causing spiral webs, cattails or other fine surface scratches. HIP is offered in 50 gram, 250 gram, 500 gram and 1,000 gram containers.

ORDERING GUIDE

Size	Part No.
50 grams	HIP.50
250 grams	HIP.250
500 grams (1/2 kilo)	HIP.500
1,000 grams (1 kilo)	HIP.1000

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Hyprez® Lubricants

Importance of proper lubrication

Lubricants used with any diamond compound should be compatible with the carrier used to give the best cutting action possible, maintain even dispersion of diamonds and produce uniform finishes. The proper lubricant will reduce lapping time and also reduce the amount of diamond compound needed to complete the lapping operation.

Hyprez Hyprelube®

A synthetic-based type lubricant, Hyprelube was developed especially for use with Formula L and Diamond Die compounds used to finish wire drawing and cold heading dies. This superior lubricant, with its penetrating qualities and oil/water solubility, not only increases cutting action but assures continued lubrication of every diamond particle throughout the lapping cycle.

OS Type IV Lubricant

This low-viscosity, oil soluble lubricant is compatible with oil-based slurries and compounds, including Hyprez® Five Star®, Formula L, Hyprez OS and S1313-T4. In proper concentrations, it is also partially compatible with Hyprez W compound.

W Lubricant

This water-based fluid is thicker than OS Type IV and is compatible with Hyprez W compound and S4889 slurry.

Speciality Lubricants

Engis also formulates special lubricants to complement specialty compounds and slurries.

W Lubricant

Hyprelube®

OS Type IV Lubricant

Available Packaging

All Hyprez lubricants are available in the following containers:

- *4 oz. bottles*
- *1 liter plastic bottles*
- *1 gallon cans*
- *1 pint glass bottles*
- *1 quart bottles*
- *5 gallon drums*
- *1 pint pump spray (not shown) is also available for use with lubricants.*

	W Lubricant	Hyprelube	OS Type IV Lube
4 oz.	*510.W.4 oz*	*510.HL.4 oz*	*510.2030*
1 pt.	*510.W.1 pt*	*510.HL.1 pt*	*510.2029*
1 qt.	*510.W.1 qt*	*510.HL.1 qt*	*510.2028*
1 gal.	*510.W.1 ga*	*510.HL.1 ga*	*510.2027*
16 oz. Dip Jar		*510.2082*	

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Hyprez® Mounted Wool Felt Bobs

max. rpm 15,000

1

Mandrel Mounted

Hyprez Felt Bobs are made of pure wool in a broad variety of sizes, shapes, and degrees of hardness - for any finishing requirement. The mandrels are exactly centered for true-running operation. In ordering, specify part number and hardness desired.

Ordering Example:

Prefix	P/N	Hardness
503.	MS.1A.	(M)*

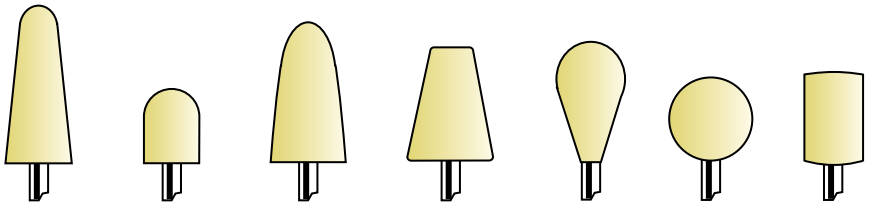
* M = Medium
H = Hard
RH = Rock Hard

STANDARD SHAPES in Medium, Hard

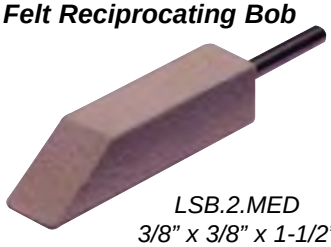
Part No.	Standard Shapes Width	Depth	Shank
503.MS.1A	1/2"	1"	1/8"
503.MS.1C	1"	2	1/4"
503.MS.2A	1/2"	1/2"	1/8"
503.MS.3C	3/8"	1/2"	1/8"
503.MS.3F	1/2"	1"	1/8"
503.MS.4B	1/2"	3/4"	1/8"
503.MS.5A	1/2"	3/4"	1/8"
503.MS.6A	1/2"	1/2	1/8"

CYLINDERS - Medium, Hard, Rock Hard

Part No.	Cylinder Shape Width	Depth	Shank
503.CB.2	1/4"	1/4"	1/8"
503.CB.2A	3/8"	3/8"	1/8"
503.CB.3	3/8"	1/2"	1/8"
503.CB.4	1/2	1/2"	1/8"
503.CB.5	1/2"	3/4"	1/8"
503.CB.6	1/2"	1"	1/8"
503.CB.7	3/4"	3/4"	1/8"
503.CB.10	1"	1"	1/4"



Felt Reciprocating Bob



LSB.2.MED
3/8" x 3/8" x 1-1/2"

Hyprez® Felt Bob Assortment #40

max. rpm 15,000

This assortment includes the following:

12 cylinders -
2 each of 4 sizes in each hardness; Medium, Hard, Rock Hard; all 1/8" mandrel

Sizes:
CB-2 1/4" x 1/4", CB-3 3/8" x 1/2", CB-4 1/2" x 1/2", CB-7 3/4" x 3/4"

8 standard shapes - 1 each of 4 sizes in Medium & Hard all 1/8" mandrel, 1/2" diameter - MS1A 1/2" x 1", MS2A 1/2" x 1/2", MS3F 1/2" x 1", MS6A 1/2" x 1/2"

6 Finger Pads - 1" x 3" - 1/8" thick

**Felt Finger Pads 1" x 3" approximately 1/8" thick*

EYE PROTECTION RECOMMENDED

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Hyprez® Wood Bobs

Wood Bobs

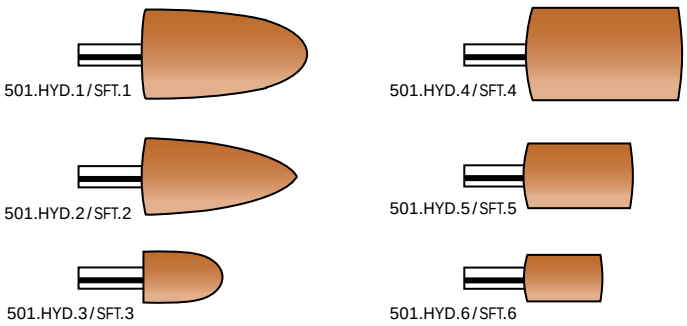
Hyprez Bobs are available in Hydulignum, a highly-compressed hard wood laminated in layers with plastic. The grain direction is perpendicular to the circumference to assure uniform lapping surface and efficient charging. They are recommended for fast stock removal or where exact contour or shaping is required - use 15 micron or coarser Hyprez Diamond Compounds for these applications. Hyprez Bobs are also available in selected soft pine for pre-finish before final felt polishing. Hyprez Diamond Compounds grade of 15 micron or finer are recommended for use with these bobs.

1/8" Mandrel Mounted Cones and Cylinders

HYD-1/SFT-1
HYD-2/SFT-2
HYD-3/SFT-3
HYD-4/SFT-4
HYD-5/SFT-5
HYD-6/SFT-6

Hydulignum (Hard Wood)	Pine (Soft Wood)	Size	Shape
501.HYD.1	501.SFT.1	3/4" x 1-3/16"	Cone
501.HYD.2	501.SFT.2	7/16" x 1-3/16"	Cone
501.HYD.3	501.SFT.3	9/32" x 5/8"	Cone
501.HYD.4	501.SFT.4	3/4" x 1-1/8"	Cylinder
501.HYD.5	501.SFT.5	7/16" x 3/4"	Cylinder
501.HYD.6	501.SFT.6	9/32" x 1/2"	Cylinder

max. rpm 10,000



Hyprez Wood Bobs

EYE PROTECTION RECOMMENDED

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Hyprez® Lapping Sticks

Hyprez Hard Wood Lapping Sticks
Hyprez laminated 6" lapping sticks are designed especially for fast stock removal using Hyprez Diamond Compounds. Made of highly compressed wood layers with alternating grain direction, saturated and bonded with synthetic resin, they are dense, easily formed, shape retaining, and perform like a cast iron lap of top quality such as Meehanite. The many shapes available include square and rectangular with 45° bevels or round with conical points.

Hyprez Soft Wood Lapping Sticks
Designed for immediate and final polishing. Square and rectangular shapes are beveled to 45°; round sticks are pointed. All shapes are 6" long.

Wood Selection		Description All One Size and Wood Hardness Contained in Each Package		
Hard	Soft	In Each Pack (20)	Size	Shape
502.D	502.SD	20	1/8" x 1/8" x 6"	Square
502.E	502.SE	20	1/8" x 1/4" x 6"	Rectangle
502.F	502.SF	20	1/4" x 1/4" x 6"	Square
502.G	502.SG	20	3/16" x 3/16" x 6"	Square
502.H	502.SH	20	5/16" x 1/2" x 6"	Rectangle
502.I	502.SI	20	5/16" x 3/4" x 6"	Rectangle
502.J	502.SJ	20	1/8" x 6"	Round
502.K	502.SK	20	3/16" x 6"	Round
502.L	502.SL	20	1/4" x 6"	Round

Special Group Combinations of Lapping Sticks

Wood Selection		Description All One Size and Wood Hardness Contained in Each Package		
Hard	Soft	Quantity	Size	Shape
		6	1/8" x 1/8" x 6"	Square
		6	1/8" x 1/4" x 6"	Rectangle
Group	Group	4	1/4" x 1/4" x 6"	Square
502.A	502.SA	4	3/16" x 3/16" x 6"	Square
		2	5/16" x 1/2" x 6"	Rectangle
		2	5/16" x 3/4" x 6"	Rectangle
Group	Group	12	1/8" x 1/8" x 6"	Square
502.B	502.SB	12	1/8" x 1/4" x 6"	Rectangle
		12	1/4" x 1/4" x 6	Square
Group	Group	5	5/16" x 1/2" x 6"	Rectangle
502.C	502.SC	5	5/16" x 3/4" 6"	Rectangle
Group	Group	10	1/8" x 6"	Round
502.M	502.SM	8	3/16" x 6"	Round
		4	1/4" x 6"	Round

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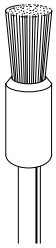
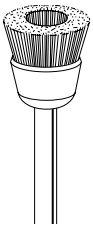
Hyprez® Polishing Brushes

12

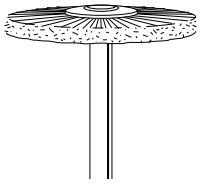
These top quality brushes will hold diamond compounds longer, provide more cutting action, at lower production costs. They are made of natural stiff bristle for long life; available in three shapes with long shank for straight handpieces and in three shapes with short shank for contra-angle handpieces.



End Shape



Cup Shape



Wheel Shape

Brush No.	Shank Diameter	Shape	Description
Use these brushes with any Straight Handpiece			
504.7HL	1/8"	End Shape	Plastic Ferrule
504.7HS	3/32"	End Shape	Metal Ferrule
504.2HL	1/8"	Wheel Shape	Firm, natural bristles hold shape
504.2HS	3/32"	Wheel Shape	Firm, natural bristles hold shape
504.12HL	1/8"	Cup Shape	More bristles for longer life
504.12HS	3/32"	Cup Shape	More bristles for longer life
Use these brushes with Contra-Angle Handpiece only - for hard-to-get-at places			
504.73RC	3/32"	End Shape	
504.23RC	3/32"	Wheel Shape	
504.123RC	3/32"	Cup Shape	

max. rpm 10,000

EYE PROTECTION RECOMMENDED

105 W. Hintz Road • Wheeling, IL 60090-6038
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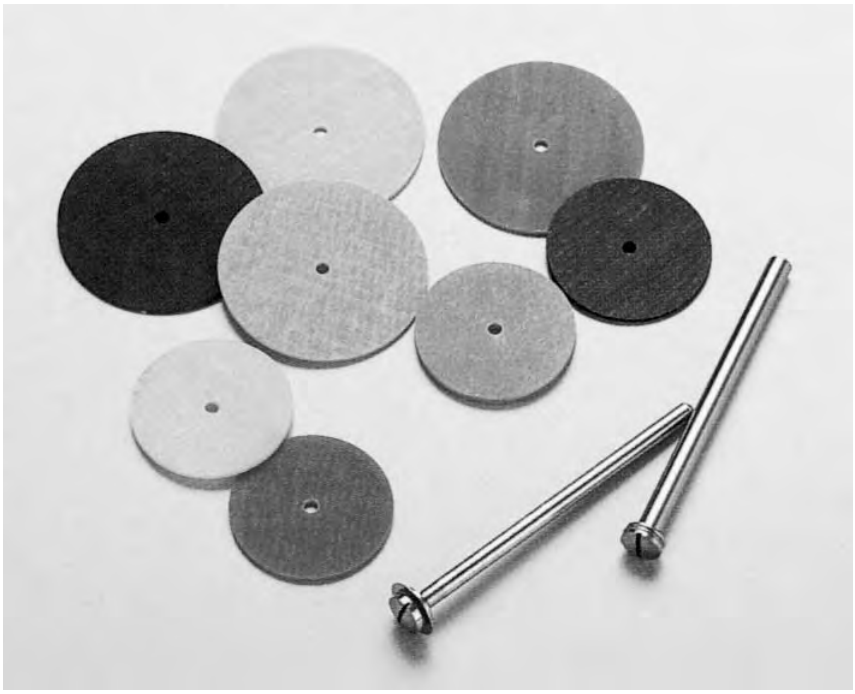
E-mail: info@engis.com

Hyprez® Ceramic Polishing Discs

The Hyprez ceramic discs are made of ceramic fibers that will not break under demanding conditions. They are solid ceramic, therefore the entire disc can be used.

Great for achieving uniform and consistency on die and mold components. Excellent results on copper, stainless steel, aluminum, alloys, plastics and many other materials.

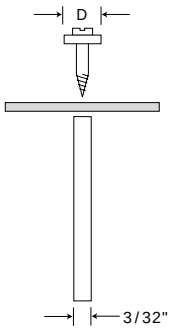
Discs mount to 3/32" diameter shafts and are used on Minimo rotary handpieces. See Max. RPM rating for safe operation.



Dimensions (mm)	Black 240 Grit P/N	Blue 400 Grit P/N	White 600 Grit P/N	Red 1000 Grit P/N	max. rpm
FLAT					
.6 x 13 Dia.	D2251	D2252	D2253	D2254	Max. RPM 30,000
.6 x 19 Dia.	D2261	D2262	D2263	D2264	Max. RPM 20,000
.6 x 22 Dia.	D2271	D2272	D2273	D2274	Max. RPM 15,000
.6 x 25 Dia.	D2281	D2282	D2283	D2284	Max. RPM 15,000
.6 x 30 Dia.	D2291	D2292	D2293	D2294	Max. RPM 10,000

DISC MANDREL

Part No.	Size "D"	Shank Size
B6011	3 mm Flange	3/32"
B6013	6 mm Flange	3/32"
B6016	14 mm Flange	3/32"



Hyprelube® Lubricant

Importance of proper lubrication

Lubricants used with any diamond compound should be compatible with the carrier used to give the best cutting action possible, maintain even dispersion of diamonds and produce uniform finishes. The proper lubricant will reduce finishing time and also reduce the amount of diamond compound needed to complete the polishing operation.

Hyprez Hyprelube®

A synthetic-based type lubricant, Hyprelube was developed especially for use with Hyprez Diamond compounds used to finish tools and dies. This superior lubricant, with its penetrating qualities and oil/water solubility, not only increases cutting action, but assures continued lubrication of every diamond particle throughout the finishing operation.

See Section 5 for further information on lubricants

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E-mail: info@engis.com

Abra-Cap Seamless Throw-Away Caps

Cap 25 Holder 1

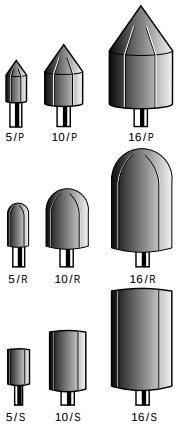
For grinding, deburring, tool and die work, and other production operations, Hyprez Abra-Caps are efficient and economical. They are seamless, with multi-coated abrasives that assure constant cutting efficiency and uniform surface feet per minute. After repeated uses, only the throw-away cap is discarded - no need to waste an entire tool because of dimensional change. The hard rubber holder is never exposed to wear.

17 sizes and shapes in two grit sizes to meet all requirements in working flat and curved surfaces, slots and grooves.

Abra-Cap Assortment No. 61 comprises 180 Abra-Caps; 10 coarse grit and 10 fine grit for each of the 9 sizes shown. Also included are 9 holders (one of each size) with 1/8" steel shank.

Assortment No. 61, complete in compartmented plastic case.

Replacement Abra-Caps for Assortment 61 available in packages of 100.



Series No. 61 Holders

EYE PROTECTION RECOMMENDED

Abra-Cap Replacement Series No. 61

Cap No	*Grit**	*Cap Diameter*	*Cap Length*	*Use Rubber Holder No.*
506.5.PC	*80*	*.20*	*.40*	*5 P*
506.5.PF	*320*			
506.10.PC	*80*	*.40*	*.63*	*10 P*
506.10.PF	*320*			
506.16.PC	*80*	*.63*	*.79*	*16 P*
506.16.PF	*320*			
506.5.RC	*80*	*.20*	*.40*	*5 R*
506.5.RF	*320*			
506.10.RC	*80*	*.40*	*.63*	*10 R*
506.10.RF	*320*			
506.16.RC	*80*	*.63*	*.79*	*6 R*
506.16.RF	*320*			
506.5.SC	*80*	*.20*	*.40*	*5 S*
506.5.SF	*320*			
506.10.SC	*80*	*.40*	*.59*	*10 S*
506.10.SF	*320*			
506.16.SC	*80*	*.63*	*.79*	*16 S*
506.16.SF	*320*			

max. rpm 10,000

**All caps in package of one grit and size*

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E-mail: info@engis.com

Abra-Cap Replacement Series No. 70

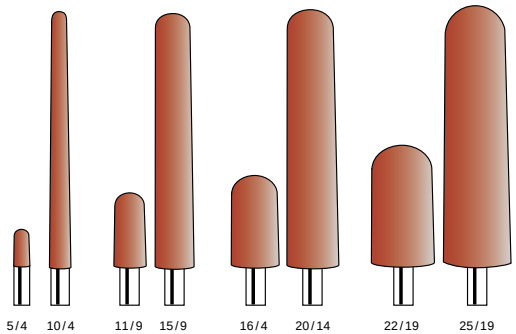
Cap No	Grit*	Cap Largest Diameter	Cap Smallest Length	Cap Length	Use Rubber Holder No.
506.5.CT	80	.20	.157	6.00	5/4 or 10/4
506.5.FT	150	.20	.157	6.00	5/4 or 10/4
506.10.CT	80	.40	.157	3.30	10/4
506.10.FT	150				
506.11.CT	80	.43	.354	1.00	11/9 or
506.11.FT	150				15/9
506.15.CT	80	.60	.354	3.30	15/9
506.15.FT	150				
506.16.CT	80	.63	.551	1.25	16/14 or
506.16.FT	150				20/14
506.20.CT	80	.79	.551	3.30	20/14
506.20.FT	150				
506.22.CT	80	.90	.748	1.60	22/19 or
506.22.FT	150				25/19
506.25.CT	80	1.00	.784	3.30	25/19
506.25.FT	150				

**All caps in package of one grit and size*

Abra-Cap Assortment No. 70 comprises 160 Abra-Caps: 10 coarse grit and 10 fine grit Abra-Caps for each holder shown. 8 holders are included, 4 short and 4 long, with 1/4" steel shanks. Each short tapered cap can be used either on the long or short holder of corresponding diameter.

Assortment No. 70, complete, in compartmented plastic case.

Replacement Abra-Caps for Assortment 70 available in packages of 25 as listed at left. Note that each short cap can be used on one short and one long holder of corresponding diameter.



Series No. 70 Holders

EYE PROTECTION RECOMMENDED

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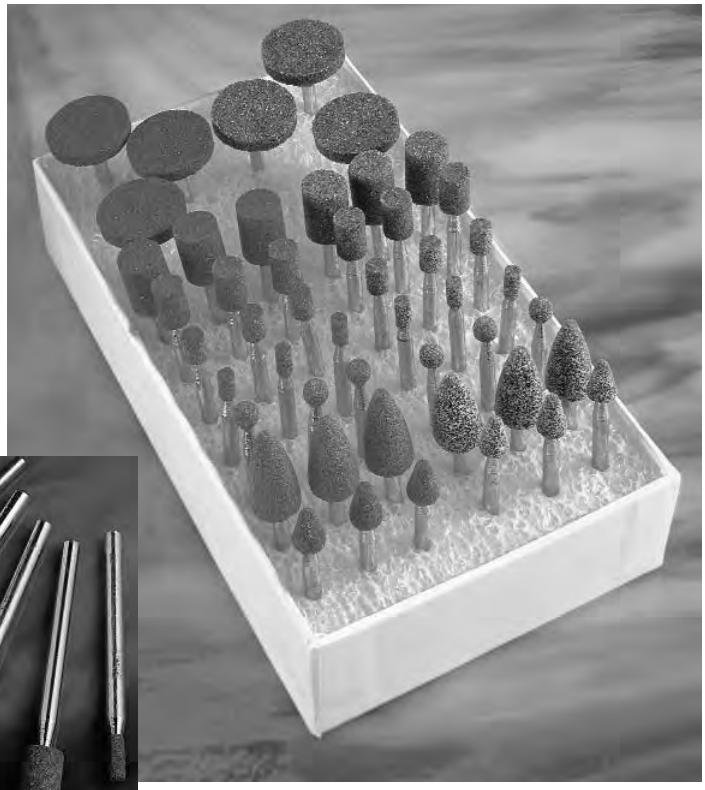
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Mounted Points for Mold and Die Work

Engis mounted abrasive points are designed specifically for mold and die work and include:

- ***Popular "B" and "W" shapes in both medium (red) and hard (blue) grades***
- ***Assortments containing the most popular shapes***

Points are manufactured from the premium aluminum oxide and special bonding materials to assure rapid stock removal and long life. Stones are carefully formed and securely mounted on the mandrels to run true.



Ordering and Packaging
Items shown in these listings are stocked and available for immediate shipment.

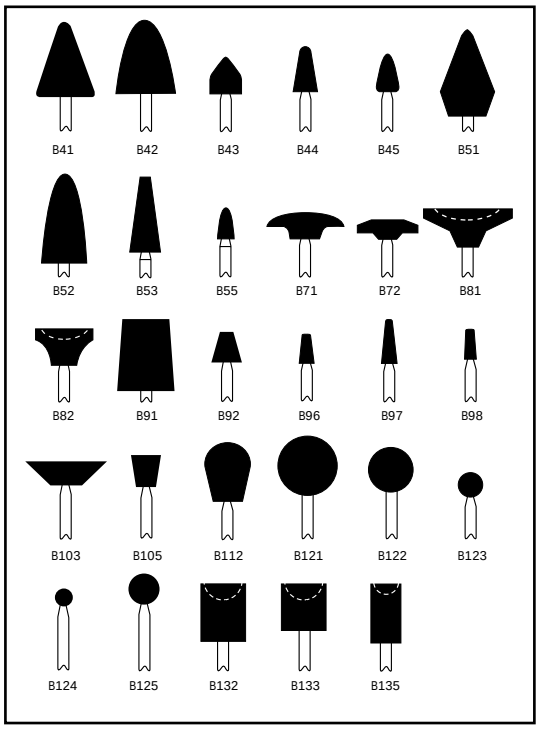
All items are packaged in quantities of 25.

Operating Recommendations
Use mounted points with safety precautions similar to larger grinding wheels. Before use inspect each point and mandrel for damage. Insert the mandrel into the collet as far as possible. Do not exert excessive pressure in the grinding operation. WEAR ADEQUATE EYE AND FACE PROTECTION.

Refer to the ANSI B7.1 for safe operating speeds and an understanding of the factors which affect safe use. The insert accompanying each shipment contains speed recommendations based upon ANSI B7.1 and "Do's and Don'ts".

Use of abrasive wheels can cause nuisance dust. Take precautions to minimize exposure.

"B" SHAPES RED & BLUE GRADES



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E-mail: info@engis.com

"B" SHAPES RED (Medium) & BLUE (Hard) GRADES

Shape	Size (inches) Diam.	Thick.	Mandrel (Inches)	Red Grade Item Number	Blue Grade Item Number
B41	5/8	5/8	1/8	204181	204183
B42	1/2	3/4	1/8	204281	204283
B43	1/4	5/16	1/8		204383
B44	7/32	3/8	1/8	204481	204483
B45	3/16	5/16	1/8		204583
B51	7/16	3/4	1/8		205183
B52	3/8	3/4	1/8	205281	205283
B53	1/4	5/8	1/8	205381	205383
B55	1/8	1/4	1/8		205583
B71	5/8	1/8	1/8		207183
B72	1/2	1/8	1/8		207283
B81	3/4	3/16	1/8		208183
B82	1/2	1/4	1/8		208283
B91	1/2	5/8	1/8	209181	
B92	1/4	1/4	1/8	209281	
B96	1/8	1/4	1/8	209681	209683
B97	1/8	3/8	1/8		209783
B98	3/32	1/4	1/8		209883
B103	5/8	3/16	1/8		210383
B105	1/4	1/4	1/8		210583
B112	3/8	1/2	1/8		211283
B121	1/2	1/2	1/8		212183
B122	3/8	3/8	1/8	212281	212283
B123	3/16	3/16	1/8	212381	212383
B124	1/8	1/8	1/8	212481	212483
B125	1/4	1/4	1/8	212581	
B132	3/8	1/2	1/8	213281	
B133	3/8	3/8	1/8		213383
B135	1/4	1/2	1/8	213581	213583

Standard Packaging is 25.

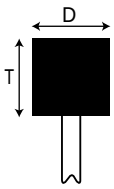
KITS	Item Number
KIT 1, 48 POINTS	299901
Three medium (red) and three hard (blue) each of the following: B44, B52, B96, B123, W144, W152, W162, W170, W175, & W200	
KIT 2, 100 POINTS	299902
Ten hard (blue) each of the following: B44, B52, B96, B123, W144, W152, W162, W170, W175 & W200	

"W" SHAPES RED (Medium) & BLUE (Hard) GRADES

25

Shape	Size (inches) Diam.	Thick.	Mandrel (Inches)	Red Grade Item Number	Blue Grade Item Number
W140	1/4	5/64	1/8		214083
W141	3/32	5/32	1/8	214181	
W142	3/32	1/4	1/8	214281	214283
W144	1/8	1/4	1/8	214481	214483
W145	1/8	3/8	1/8	214581	214583
W146	1/8	1/2	1/8	214681	214683
W149	5/32	1/4	1/8		214983
W152	3/16	1/4	1/8	215281	
W153	3/16	3/8	1/8	215381	215383
W154	3/16	1/2	1/8	215481	215483
W160	1/4	1/4	1/8	216081	216083
W161	1/4	5/16	1/8		216183
W162	1/4	3/8	1/8	216281	216283
W163	1/4	1/2	1/8	216381	216383
W164	1/4	3/4	1/8		216483
W168	5/16	5/16	1/8		216883
W169	5/16	3/8	1/8	216981	
W170	5/16	1/2	1/8	217081	217083
W175	3/8	3/8	1/8		217583
W176	3/8	1/2	1/8	217681	217683
W178	3/8	1	1/8		217883
W182	1/2	1/8	1/8	218281	
W185	1/2	1/2	1/8		218583
W189	1/2	2	1/4	218941	
W200	3/4	1/8	1/8	220081	220083
W208	3/4	2	1/4	220841	
W216	1	1/4	1/8		221683
W220	1	1	1/4	222041	
W222	1	2	1/4	222241	
W225	1-1/4	1/4	1/4	222541	
W235	1-1/2	1/4	1/4	223541	
W236	1-1/2	1/2	1/4	223641	
W242	2	1	1/4	224241	

Standard Packaging is 25.



All "W" shapes are basically rectangular or square in their form. The diameter (D) and thickness (T) are detailed in the charts.

EYE PROTECTION RECOMMENDED

105 W. Hintz Road • Wheeling, IL 60090-6038
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Engis Tungsten-Carbide Cutters

1

For use with Air and Electric Rotary Handpieces

The precision construction and design of the Engis Tungsten-Carbide cutters makes them ideal for use on all materials from 25 RC thru 65 RC, including brass, cast iron, aluminum, bronze, fiberglass, plastics, etc. These all-purpose cutters are ideal for hard to reach operations such as dies, small cavities, etc.

1/8" Shank Diameter -- 1-1/2" Overall Length

Part No.	Cutting Head Diameter (D)	Cutting Head Length (L)
EA-1	1/16	1/4
EA-2	3/32	7/16
EA-3	1/8	9/16
EC-4	3/32	7/16
EC-5	1/8	9/16
ED-6	3/32	3/32
ED-7	1/8	1/8
EE-8	1/8	7/32
EF-9	1/8	1/4
EF-10	1/8	1/2
EG-11	1/8	1/4
EG-12	1/8	3/8
EH-13	1/8	1/4
EJ-14	1/8	60°
EK-15	1/8	90°
EL-16	1/8	8°
EL-17	1/8	8°
EM-18	1/8	12°
EM-19	1/8	14°
EM-20	1/8	7°
EN-21	1/8	10°

When ordering, indicate part number and description

1/4" Cutting Head Diameter -- 1/8" Shank Diameter -- 1" Shank Length

Part No.	Cutting Head Length or Incl. Angle
EA-22	1/2"
EB-23	3/16"
EC-24	1/2"
ED-25	1/4"
EE-26	3/8"
EF-27	1/2"
EG-28	1/2"
EM-29	22°
EN-30	10°

When ordering, indicate part number and description

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Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

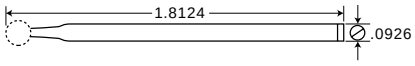
Diamond Wheels and Points

1

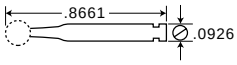
Single Layer -- 3/32" Shanks

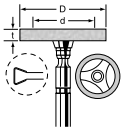
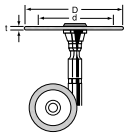
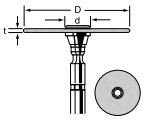
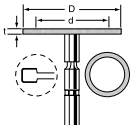
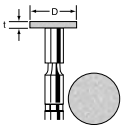
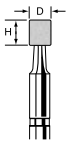
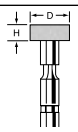
Fifteen shapes and a total of 49 sizes permit a broad selection of single layer diamond wheels and points for every type of grinding job. These tools are precision made with a special bond of metal plating that holds the diamonds in an exposed position for fast, constant cutting action.

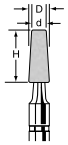
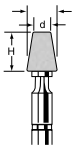
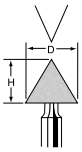
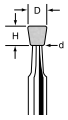
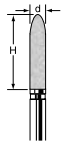
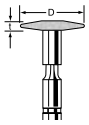
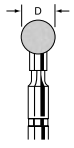
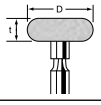
• *For long shank, used in all straight handpieces, specify "H" in ordering.*



• *For short shank, for contra-angle handpiece #55 only, specify "R" in ordering (see * below)*



Part No.	D	d	t/h	
DT-99P*	.598	.496	.138	
DT-72P*	.677	.575	.094	
DT-124P*	.602	.512	.018	
DT-125P*	.721	.630	.018	
DT-126P*	.799	.709	.020	
DT-127P*	.878	.787	.020	
DT-76AP*	.591	.276	.012	
DT-74AP*	.787	.276	.014	
DT-128P*	.361	.276	.020	
DT-56P	.343	.268	.051	
DT-132P*	.748	.453	.039	
DT-129P	.248	--	.020	
DT-105P*	.252	--	.035	
DT-130	.157	--	.030	
DT-107*	.102	--	.118	
DT-100*	.098	--	.276	
DT-114*	.087	--	.276	
DB-305*	.075	--	.196	
DT-110*	.071	--	.102	
DT-304*	.067	--	.196	
DT-111*	.165	--	.059	
DT-116*	.232	--	.236	

Part No.	D	d	t/h	
DT-113	.102	.069	.276	
DT-108*	.102	.059	.114	
DT-236*	.287	60°	.236	
DT-93*	.201	27°	.374	
DT-103*	.169	80°	.106	
DT-94*	.122	31°	.189	
DB-202	.051	.035	.051	
DT-117	.094	--	.295	
DT-509	.063	--	.394	
DT-510	.094	--	.394	
DB-902a	.051	--	.158	
DT-112*	.161	--	.059	
DT-109*	.366	--	.051	
DB-108*	.098	--	--	
DB-102*	.051	--	--	
DB-2/0*	.032	--	--	
DB-104*	.067	--	--	
DB-105*	.071	--	--	
DT-101	.118	--	--	
DT-119	.158	--	--	
DT-531*	.386	--	.134	

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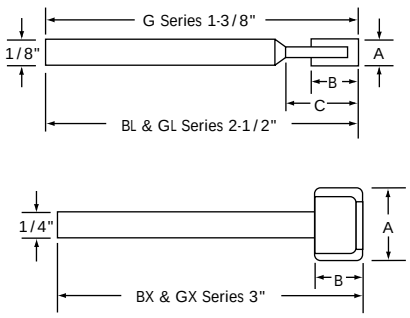
Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Precision Plus Electroplated Diamond & CBN Grinding Pins

1

Featuring hardened steel shanks and bonded diamond or CBN particles, these precision grinding pins are ideal for use on jig and internal grinding machines and/or hand tools. Through our Electrogrip® process, particle exposure is maximized, assuring a free cutting action that greatly reduces heat and wear.

When ordering: Specify catalog number and grit size. Special pins quoted upon request (please furnish print or sketch).



BL (CBN) & GL (Diamond) Series Pins - Specifications

CBN Grit Size	Catalog Number	Diamond Grit Size	Catalog Number	A	B	C
	BL.20	Coarse	GL.20	.020	1/16	1/8
140/170	BL.25	140/170	GL.25	.025	3/32	1/4
	BL.30	Fine	GL.30	.030	3/32	1/4
	BL.35	200/230	GL.35	.035	3/32	1/4
	BL.40		GL.40	.040	1/8	3/8
	BL.45	Coarse	GL.45	.045	1/8	3/8
80/100	BL.50	Fine	GL.50	.050	1/8	3/8
	BL.50-1	200/230	GL.50-1	.050	1/8	1"
	BL.55		GL.55	.055	1/8	3/8
	BL.60		GL.60	.060	1/8	3/8
	BL.60-1	Coarse	GL.60-1	.060	1/8	1"
80/100	BL.70	100/120	GL.70	.070	5/32	1/2
	BL.70-1	Fine	GL.70-1	.070	5/32	1"
	BL.80	200/230	GL.80	.080	5/32	1/2
	BL.80-1		GL.80-1	.080	5/32	1"

CBN Grit Size	Catalog Number	Diamond Grit Size	Catalog Number	A	B	C
	BL.90		GL.90	.090	5/32	1/2
	BL.90-1		GL.90-1	.090	5/32	1"
	BL.100	Coarse	GL.100	.100	5/32	1/2
80/100	BL.100-1	100/120	GL.100-1	.100	5/32	1"
	BL.110	Fine	GL.110	.110	5/32	1/2
	BL.110-1	200/230	GL.110-1	.110	5/32	1"
	BL.125		GL.125	.125	5/32	1/2
	BL.125-1		GL.125-1	.125	5/32	1"
	BL.141		GL.141	.141	1/4	—
	BL.156	Coarse	GL.156	.156	1/4	—
80/100	BL.188	100/120	GL.188	.188	1/4	—
	BL.218	Fine	GL.218	.218	1/4	—
	BL.250/2	200/230	GL.250/2	.250	1/8	—
	BL.250/4		GL.250/4	.250	1/4	—

EYE PROTECTION RECOMMENDED

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Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

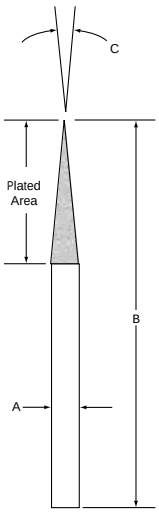
Precision Plus Diamond-Plated Taper Pins

These diamond-plated taper pins are ideal for grinding or ripping tungsten carbide drawing dies for the wire and tube industries, and for cold heading dies. You get fast, efficient and precise grinding, with long wear.

Specifications

Part Number	A	B	C
GLT.125.10	1/8"	2-1/2"	10°
GLT.125.12	1/8"	2-1/2"	12°
GLT.125.16	1/8"	2-1/2"	16°
GLT.125.26	1/8"	2-1/2"	26°
GLT.250.10	1/4"	3"	10°
GLT.250.12	1/4"	3"	12°
GLT.250.16	1/4"	3"	16°
GLT.250.26	1/4"	3"	26°

When ordering: Specify grit desired; 80/100 Coarse or 200/230 Fine.
Price sheet available on request.



G (Diamond) Series Pins — Specifications

Diamond Grit Size	Catalog Number	A	B	C
Coarse	G.20	.020	1/16	1/8
140/170	G.25	.025	3/32	1/4
Fine	G.30	.030	3/32	1/4
200/230	G.35	.035	3/32	1/4
Coarse	G.40	.040	1/8	3/8
100/120	G.45	.045	1/8	3/8
Fine	G.50	.050	1/8	3/8
200/230	G.55	.055	1/8	3/8
	G.60	.060	1/8	3/8
	G.70	.070	5/32	1/2
Coarse	G.80	.080	5/32	1/2
100/120	G.90	.090	5/32	1/2
Fine	G.100	.100	5/32	1/2
200/230	G.110	.110	5/32	1/2
	G.125	.125	5/32	1/2

BX (CBN) & GX (Diamond) Series Pins - Specifications

CBN Grit Size	Catalog Number	Diamond Grit Size	Catalog Number	A	B
	BX.141		GX.141	9/64	1/4
	BX.156		GX.156	5/32	1/4
	BX.188		GX.188	3/16	1/4
	BX.218	Coarse	GX.218	7/32	1/4
80-100	BX.250/2	100/120	GX.250/2	1/4	1/8
	BX.250/4	Fine	GX.250/4	1/4	1/4
	BX.312/2	140/170	GX.312/2	5/16	1/8
	BX.312/4		GX.312/4	5/16	1/4
	BX.312/6		GX.312/6	5/16	3/8
	BX.375/2		GX.375/2	3/8	1/8
	BX.375/4		GX.375/4	3/8	1/4
	BX.375/6	Coarse	GX.375/6	3/8	3/8
80/100	BX.500/4	100/120	GX.500/4	1/2	1/4
	BX.500/6	Fine	GX.500/6	1/2	3/8
	BX.500/8	140/170	GX.500/8	1/2	1/2
	BX.750/4		GX.740/4	3/4	1/4
	BX.750/8		GX.750/8	3/4	1/2

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Toll Free: 1-800-99-ENGIS (1-800-993-6447)
E-mail: info@engis.com

Fax Quotation Request

1-847-808-9430

Co. Name: _____ Contact: _____

Address: _____ City: _____ State: _____

Zip: _____ Phone: _____

Fax: _____ E-mail:_____

Machine to be used: _____ Avail. RPM: _____

Coolant: Yes_____ No_____ Do you use superabrasive grinding machines?_____

If yes, how many per: Week _____ Month _____ Year _____ CBN _____ Diamond _____ Grit Size _____

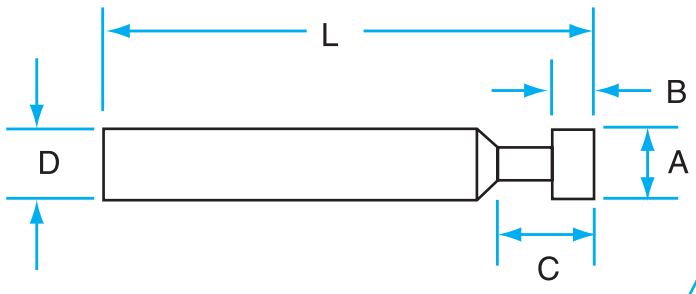
Explain process:

_____

_____

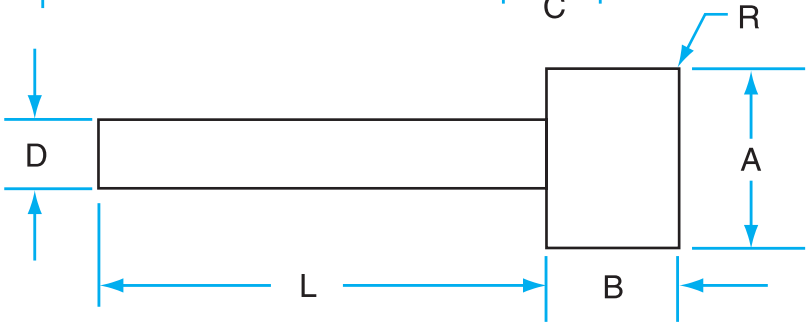
_____

Mandrels



A _____
B _____
C _____
D _____
L _____

Wheels



A _____
B _____
D _____
R _____
L _____

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E-mail: info@engis.com

Engis Mold Medic Weld Pro SW-V01

The Engis Mold Medic Weld Pro SW-V01 is designed for in-house repairs, reducing costly downtime from sending your molds out for repair. The system offers both resistance and TIG pulse welding. The SW-V01 generates very low heat, is cool to the touch, leaving a homogonous weld.

Features

- *Flexible system - can resistance and TIG weld a variety of materials including powdered metal, ribbon, yarn, porous metal and a wide variety of wire. Can repair every mold material except aluminum.*
- *Safe and easy operation; no special training is required.*
- *Operator controls allow for adjustment of current, 5-250 amps and weld pulse time of 1/1000 - 600/1000 seconds on TIG. Resistance current range 5-750 amps and a pulse weld time of 1-600 ms.*

Applications

- *Parting lines*
- *Pin-gate areas*
- *Slide edges*
- *Pin holes*
- *Ejector holes*
- *Edges*
- *Corners*
- *Surface scratches*
- *Dents*
- *Vent areas*
- *Tunnel-gate areas*

Standard Accessories

1) Tool box
2) Foot switch
3) Gas hose
4) Output cord for resistance welding for 13mm dia., hand piece for resistance welding for 2/3 mm dia., or,
5) Output cord for resistance welding for 18 mm dia., hand piece for resistance welding for 5mm dia.
6) Torch cord for TIG welding
7) Work cord
8) Silver tungsten electrode for resistance welding
9) Tungsten electrode for TIG welding 1.6mm dia.
10) Metal cutter

Note: Engis reserves the right to substitute standard accessories

Specifications

Power required:	*220 volts, 1 phase, 60 Hz*
Input current:	*10.4 KVA*
Output current:	*250 amps (TIG)/750 amps (resistance)*
Output range:	*2-250 amps (TIG)/30-750 amps (resistance)*
Welding time range:	*1-600 ms (TIG)/1-30 ms (resistance)*
Duty cycle:	*12% (TIG)/7.5% resistance*
Welding tack time:	*1/1000 second*
Control method:	*Inverter method*
Cooling:	*Automatic internal fan*
Gas required:	*Argon (TIG)*
Gas pre-flow time:	*0.3 seconds (TIG*
Dimensions:	*15"H x 8"W x 16"D*
Weight:	*52.5 lbs.*

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Engis Mold Medic II

The Engis Mold Medic and accessories are used to repair the damaged part by welding 0.2 mm metal strip material to the damaged area or by building up the damaged area using either a metal powder or metal paste. The machine uses resistance welding technology creating a series of high-energy through a capacitance circuit. This method of welding creates no heat, therefore, there is no distortion or deformation of the mold being repaired.

Standard Accessories

- *Tool box*
- *Electrode holder cable (1 meter)*
- *Scissors*
- *Foot switch*
- *Standard grounding plate*
- *Electrode holder*
- *Spare fuse*
- *Electrode 2 X 50 (round)*
- *Electrode 3 X 50 (round)*
- *Electrode 4 X 50 (round)*
- *Electrode 1.5 X 5 X 50 (flat)*
- *Welding strip - 0.2 mm P20*
- *Welding strip - 0.2 mm H13*
- *Welding strip - 0.2 mm 420SS*
- *Yarn Metal - 420 SS*
- *Porous Metal - 420 SS*
- *Paste - H13*
- *Powder P20, H13*

Note: Engis reserves the right to substitute standard accessories

Features

- *Applicable to all mold materials (except aluminum) hardened molds, nitrated molds, beryllium copper, etc.*
- *Applicable to a wide range of molds, from high precision connector mold pins to all other molds.*
- *EDM machine milling, automatic polishing and manual finishing are possible after welding.*
- *Easy operation; special training is not necessary.*
- *Short welding current gives only very small heat effect on the material, applicable mirror finish, edging, etc.*
- *Hardening and plating possible after welding.*

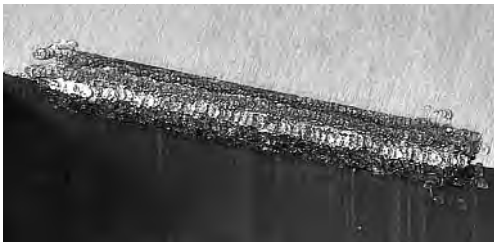
Applications

- *Repair of parting lines, triple points and edges.*
- *Repair of crater and pin holes after TIG welding.*
- *Repair of wear, flaws or worn areas on slides, sharp edge molds, thin core parts.*
- *Repair scratches, make design changes, modify, and many other applications are also possible.*

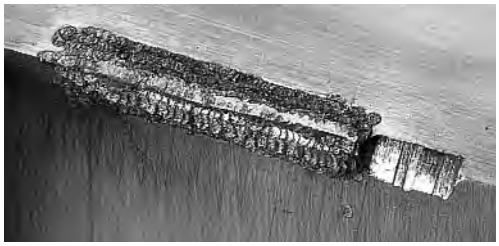
Specifications

Power:	*AC, 110 volts 60 Hz*
Capacitors:	*1350 microfarad*
Output current:	*0-3000 Amps*
Charging voltage:	*Max. 450 volts*
Energy display:	*Digital color*
Tact time:	*0.2 sec. – 0.2.7.*
Cooling:	*Automatic cir. fan*
Weight:	*17 kg. (37 lbs.)*
Dimensions:	*7" X 9.5" X 15.3"*
Color:	*Beige*

Application Examples



Repair parting areas



Repair corner areas

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Supplies for Engis Mold Medic Welders

WELDING ROD/WIRE MATERIAL

Item No.	Material	Diameter (inches)	Length (inches)
W4001	P-20	0.032	78-3/4
W4002	P-20	0.023	78-3/4
W4003	P-20	0.015	78-3/4
W4004	P-21	0.032	78-3/4
W4005	H-13	0.032	78-3/4
W4006	H-13	0.023	78-3/4
W4007	H-13	0.011	78-3/4
W4008	D-2, A-2	0.032	78-3/4
W4009	D-2, A-2	0.023	78-3/4
W4010	D-2, A-2	0.015	78-3/4
W4011	STAVAX	0.032	78-3/4
W4012	STAVAX	0.023	78-3/4
W4013	STAVAX	0.015	78-3/4
W4014	M-2, D-2, S-7	0.032	78-3/4
W4015	M-2, D-2, S-7	0.023	78-3/4
W4016	M-2, D-2, S-7	0.015	78-3/4
W4017	RIGOR	0.032	78-3/4
W4018	ORVAR	0.032	78-3/4
W4019	IMPAX	0.032	78-3/4
W4020	MAS-1	0.032	78-3/4
W4021	303 SS	0.015	275
W4022	303 SS	0.011	59
W4023	Ni-42	0.032	78-3/4
W4024	S50C	0.032	197
W4025	S50C	0.023	197
W4029	Copper Beryllium	0.015	80
W4030	Copper Beryllium	0.032	80

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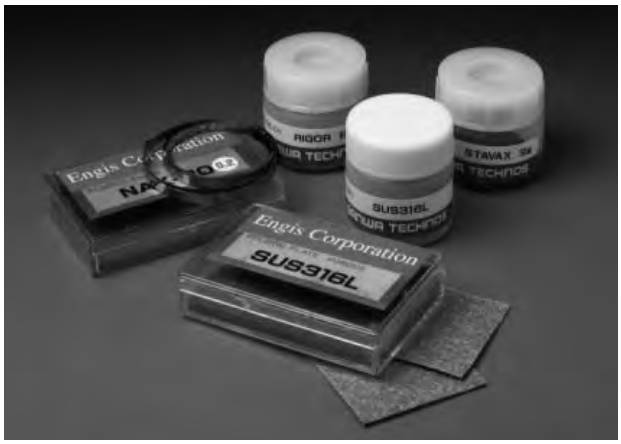
Supplies for Engis Mold Medic Welders



Item No.	Old Item No.	Metal Ribbon Material	Hardness	Size
W2004		P-20	Rc 30-50	.196" x .004" x 40"
W2004-1		P-20	Rc 30-50	.196" x .008" x 40"
W2002	A-011	P-21	Rc 38-40	.196" x .004" x 40"
W2002-1	A-01	P-21	Rc 38-40	.196" x .008" x 40"
W2005	A-08	420 SS	Rc 30-33	.196" x .004" x 40"
W2005-1	A-09	420 SS	Rc 30-33	.196" x .008" x 40"
W2016		304 SS	Rc 50-52	.196" x .004" x 40"
W2016-1		304 SS	Rc 50-52	.196" x .008" x 40"
W2008		H13	Rc 40-53	.196" x .004" x 40"
W2008-1	A-11	H13	Rc 40-53	.196" x .008" x 40"
W2007		D2, A2	Rc 50-60	.196" x .004" x 40"
W2007-1	A-10	D2, A2	Rc 50-60	.196" x .008" x 40"
W2009		M2, D2, S7	Rc 60 min	.196" x .004" x 40"
W2009-1		M2, D2, S7	Rc 60 min	.196" x .008" x 40"
W2010		STAVAX	Rc 50-60	.196" x .004" x 40"
W2010-1		STAVAX	Rc 50-60	.196" x .008" x 40"

Item No.	Old Item No.	Powder Metal	Hardness	Quantity
W2031	B-03	P-20	Rc 30-50	50 grams
W2033	B-05	P-21	Rc 38-40	50 grams
W2032	B-07	420 SS	Rc 30-33	50 grams
W2038		316 LSS		50 grams
W2035	B-09	H13	Rc 40-53	50 grams
W2034	B-23	D2, A2	Rc 50-60	50 grams
W2036	B-13	M2, D2, S7	Rc 60 min	50 grams
W2037		STAVAX	Rc 50-60	50 grams

Item No.	Old Item No.	Paste Metal	Hardness	Quantity
W2031-1	C-03	P-20	Rc 30-50	50 grams
W2033-1	C-05	P-21	Rc 38-40	50 grams
W2032-1	C-07	420 SS	Rc 30-33	50 grams
W2038-1		316 LSS		50 grams
W2035-1	C-09	H13	Rc 40-53	50 grams
W2034-1	C-23	D2, A2	Rc 50-60	50 grams
W2036-1	C-11	M2, D2, S7	Rc 60 min	50 grams
W2037-1		STAVAX	Rc 50-60	50 grams

Item No.	Porous Metal	Thickness	Size
W2052	P-20	.027"	.196" x 40"
W2055	P-21	.027"	.196" x 40"
W2054	420 SS	.027"	.196" x 40"
W2053	STAVAX	.027"	.196" x 40"
W2051	316 LSS	.027"	2" x 3"

Item No.	Yarn Metal	Description	Unit
W2062	P-20	Steel wool like material	Plastic jar
W2065	P-21	Steel wool like material	Plastic jar
W2064	420 SS	Steel wool like material	Plastic jar
W2063	STAVAX	Steel wool like material	Plastic jar
W2061	316 LSS	Steel wool like material	Plastic jar

ENGIS MOLD MEDIC II ELECTRODES

Item No.	Description	Size
W1009	Pointed, .078" diameter	2" long
W1010	Round, .078" diameter	2" long
W1011	Round, .118" diameter	2" long
W1012	Round, .157" diameter	2" long
W1013	Round, .196" diameter	2" long
W1014	Flat	.06" x 196" x 2"

MAGNETIC ELECTRODES

W1015	Round, .078" diameter	2" long
W1016	Round, .118" diameter	2" long
W1017	Round, .157" diameter	2" long
W1018	Round, .196" diameter	2" long

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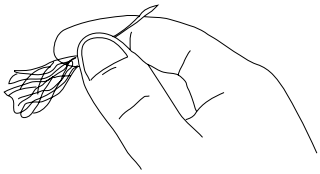
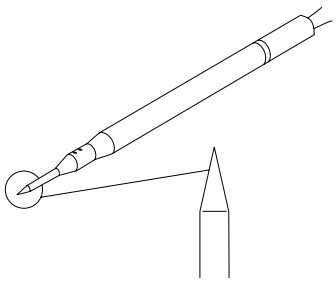
Mold & Die Welding Equipment & Supplies

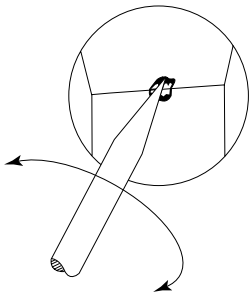
Using Yarn



1. Yarn is effective for precision welds. Yarn is a patented product and looks similar to steel wool.Yarn is effectively used for small welds in corners that need repairing, V-grooves, pin holes, etc.

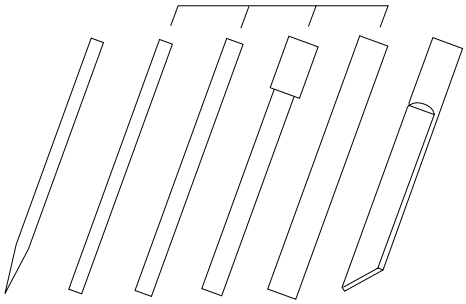


2. Choose an electrode. Shape the electrode tip to the weld point.



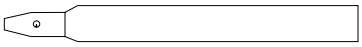
3. Weld the yarn to the base material.
   Set the weld mode to PRECISION.
   - For weld current, see the "Setting Current" table in instruction manual.

Electrodes

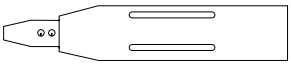


Model Code	Product Name	Length (mm)	Material
W1009	Pointed .078"	2"	Silver Tungsten
W1010	Round .078"	2"	Silver Tungsten
W1011	Round .118"	2"	Silver Tungsten
W1012	Round .157"	2"	Silver Tungsten
W1013	Round .196"	2"	Silver Tungsten
W1014	Flat	.06 x .196 x 2"	Silver Tungsten

Electrode Holders (Hand Piece)

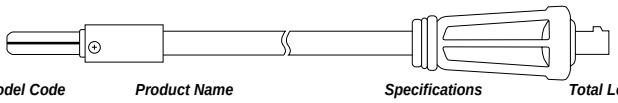


Model Code	Product Name	Specifications
W1001	For .078" electrodes	For PRECISION mode

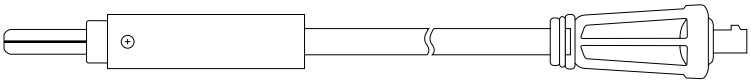


Model Code	Product Name	Specifications
W1002	For .118", .157", .196"	For STANDARD mode

Output Cable

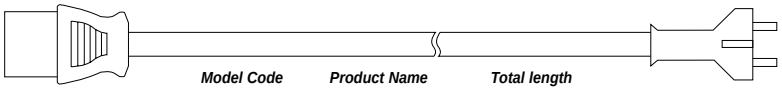


Model Code	Product Name	Specifications	Total Length
W1003	Precision electrode holder cable	For .078" & .118" electrode holder	51"



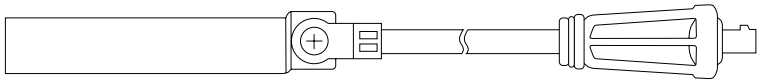
Model Code	Product Name	Specifications	Total Length
W1004	Standard electrode holder cable	For .196" electrode holder	51"

Power Supply Cable



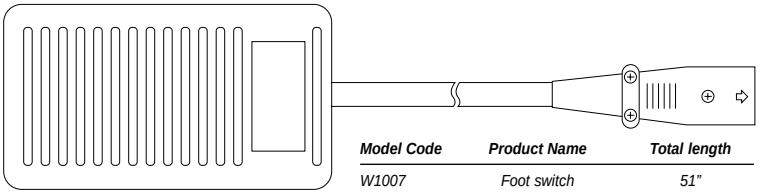
Model Code	Product Name	Total length
W1005	Power supply cord	98"

Grounding Cable



Model Code	Product Name	Total length
W1006	Grounding cable (with grounding plate)	40"

Foot Switch



Model Code	Product Name	Total length
W1007	Foot switch	51"
W3003	Foot switch	

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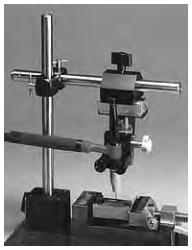
	W3001	Welding torch
	W3002	Electrode cable
	W3003	Foot switch
	W3004	Tungsten electrode 1/16” x 6”
	W3005	Collet for electrode
	W3006	Helmet Shield – Welding helmet with adjustable and automatic variable darkness shield, 9-12 shades. Comfortable to wear and easy to use.
	**W3007**	2 Axis Torch Stand – Use for support of welding torch to make small precise adjustments in movement. Comes with magnetic base and connecting rod.
	W3008	Gas Regulator with Flow Meter – Solid brass forging easy to adjust and read gauges.
	W3010A	Microscope with Magnetic Base Auto-Lens Shield – 10X microscope with adjustable stand with a magnetic base. Comes complete with automatic and variable darkening lens shield, 9-12 shades.

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